Countywide Infrastructure Replacement Requirements

Program Description

This section provides a compilation of the Infrastructure replacement and upgrade requirements associated with the various program areas contained in the Capital Improvement Program (CIP). Infrastructure replacement and upgrades is the planned replacement of building subsystems, such as roofs, electrical systems, HVAC systems, plumbing systems, and other infrastructure, that has reached the end of its useful life. Without significant reinvestment in building subsystems, older facilities can fall into a state of deterioration and the maintenance and repair costs necessary to keep them functional will increase. One of the primary roles in facility management is to maximize the life of facilities, avoid their obsolescence, and provide for a planned program of repairs, improvements, and restorations. Infrastructure replacement and upgrade projects also include the reinvestment required for stormwater facilities and conveyance pipes, sewer lines, parks, trails, and bus shelters. It is important to support the reinvestment and maintenance of spaces, structures, and infrastructure in a routine, scheduled, or anticipated fashion to prevent failure and/or degradation. More importantly, this type of infrastructure replacement and upgrade work can reduce the potential for the exorbitant cost and inconvenience associated with unanticipated failures and safety concerns.

Link to the Comprehensive Plan

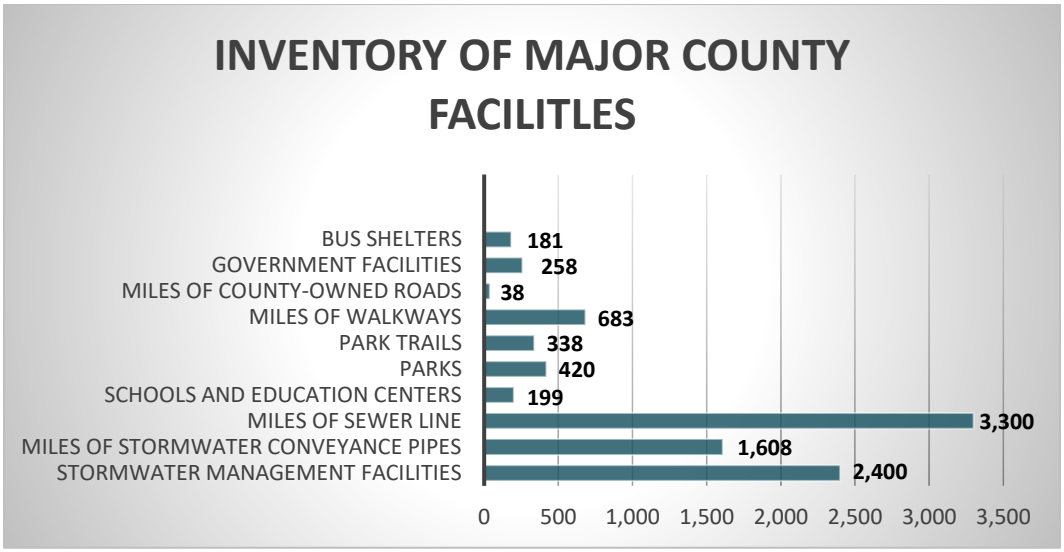
The Public Facilities Policy Plan within the Fairfax County Comprehensive Plan, includes the following established objectives:

- Construct and maintain facilities in accordance with expected levels of service objectives and fiscal limitations.

Source: Fairfax County Comprehensive Plan, 2017 Edition; Policy Plan

Current Infrastructure Replacement Program

As the County infrastructure ages, more frequent replacement and upgrades are required. Fairfax County's inventory of infrastructure includes not only government buildings, but housing units, miles of walkways and sewer pipes, and many facilities, such as residential facilities and fire stations that operate 24/7, 365 days per year. Infrastructure Replacement and Upgrade projects are prioritized based on life safety concerns, repair history, and availability of replacement parts. The following chart displays some of the types of infrastructure that the County is responsible for maintaining.



Infrastructure Replacement and Upgrades

In the spring of 2014, the Board of Supervisors and the School Board approved the Infrastructure Financing Committee's Final Report and Recommendations regarding long-term maintenance plans for both the County and Schools. The Report contained many recommendations, one of which was to develop standard definitions. The Joint Board definition approved for infrastructure replacements and upgrades is stated below:

Infrastructure Replacement and Upgrades

Infrastructure Replacement and Upgrades refers to the planned replacement of building subsystems that have reached the end of their useful life. These systems, once replaced, will have an average life cycle of 20 years or more. Without significant reinvestment in facility subsystems, older facilities can fall into a state of ever-decreasing condition and functionality, and the maintenance and repair costs necessary to operate the facilities increase. Currently these types of infrastructure replacement and upgrades are funded within operational budgets or financed using municipal bonds. Examples of infrastructure replacement and upgrades include:

- Electrical System Replacement
- Elevator Replacement
- Emergency Generator Replacements
- Fire Alarm System Replacements
- HVAC Replacements
- Parking Lot Resurfacing
- Plumbing Systems Replacements
- Roof Replacement
- Sprinkler Systems
- Windows Replacements

Infrastructure Life Cycles

Some of the major work completed annually at County facilities includes the replacement of building subsystems: HVAC and electrical system repairs and replacement, roof repairs and waterproofing, carpet replacement, parking lot and garage repairs, window repairs/replacement, elevator/escalator repairs/replacement, fire alarm replacement, and emergency generator replacement. Replacement of these building subsystems is based on not only age and lifecycle, but on repair history, safety concerns, and availability of replacement parts. For planning purposes, the County uses the following life cycle guidelines when projecting future replacement requirements.

General Guidelines for Expected Service Life of Building Subsystems

Conveying Systems		**HVAC**	
Conveying Technology	7 to 10 years	Boilers	15 to 30 years
Elevator	15 to 25 years	Building Control Systems	7 years
Escalator	15 to 25 years	Equipment	20 years
Electrical		**Plumbing**	
Fire Alarms	15 years	Fixtures	30 years
Generators	25 years	Pipes and Fittings	30 years
Lighting	20 years	Pumps	15 years
Service/Power	25 years		
		Roofs	
Finishes		Replacement	20 years
Broadloom Carpet	7 years		
Carpet Tiles	15 years	**Site**	
Systems Furniture	20 to 25 years	Paving	15 years

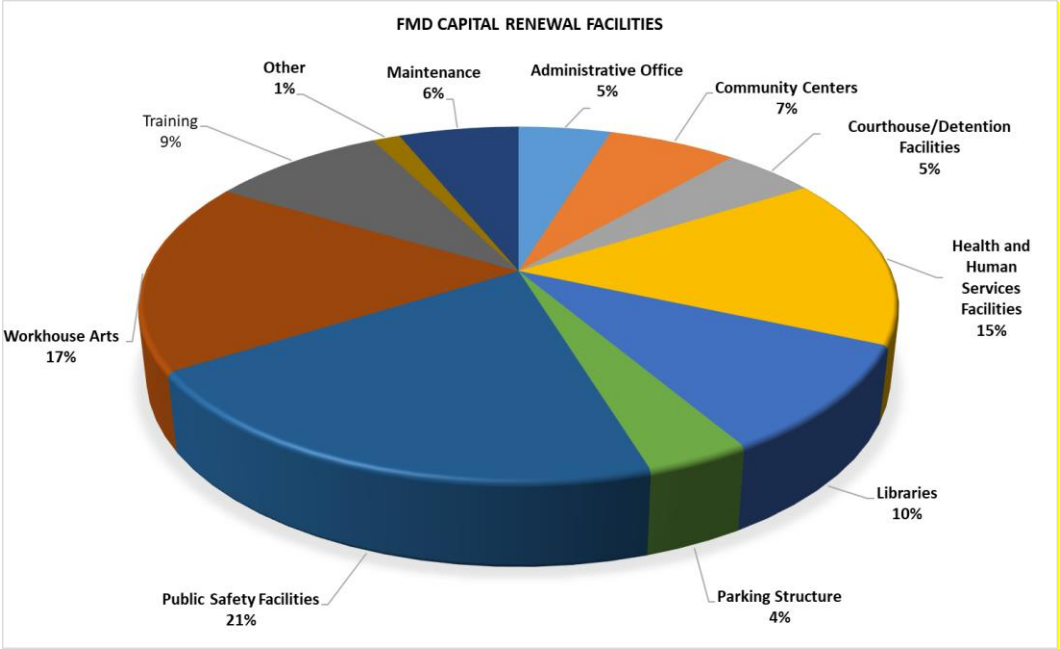
Program Area Requirements

The sections that follow are grouped by specific capital program areas. Each program area has identified slightly different methodologies for categorizing projects, measuring the facility conditions, and identifying funding sources. Many program areas are assessed on an annual basis, and some have developed multi-year plans for maintaining infrastructure.

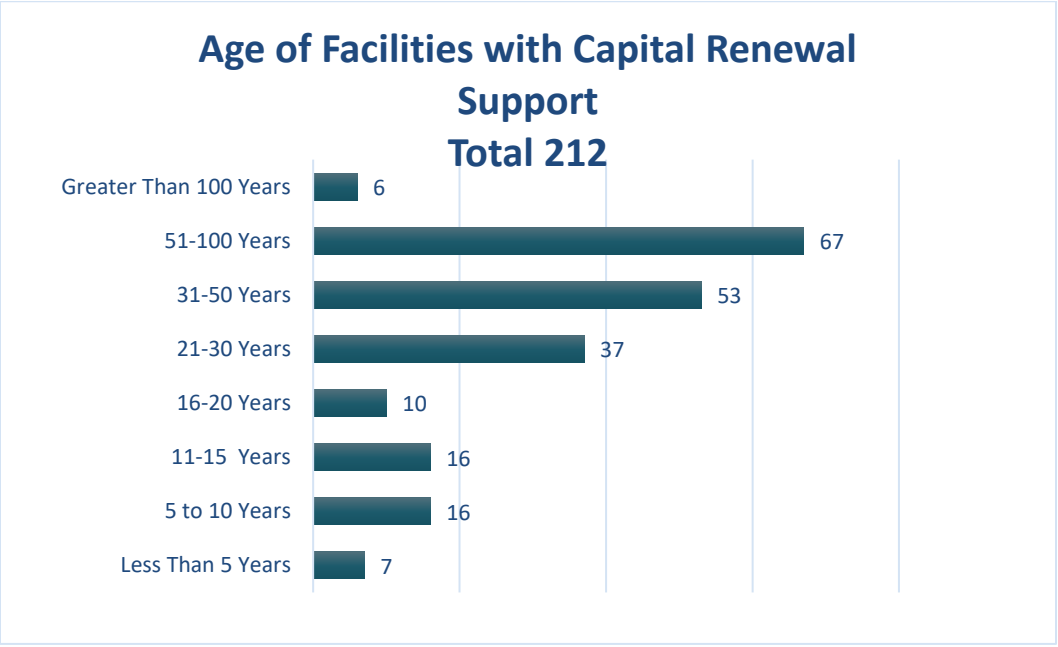
Each year, many County agencies prioritize and classify infrastructure replacement and upgrades projects into five categories. Projects are classified as Category F: urgent/safety related, or endangering life and/or property; Category D: critical systems beyond their useful life or in danger of possible failure; Category C: life-cycle repairs/replacements where repairs are no longer cost effective; Category B: repairs needed for improvements if funding is available, and Category A: good condition. Other County organizations have other methodologies for prioritization of projects, including the Fairfax County Public Schools (FCPS).

County Facility Infrastructure Replacement and Upgrades - FMD

The Facilities Management Department (FMD) currently provides support for evaluating facilities, identifying problems, developing costs estimates, establishing priorities, and performing the upgrades required to county-owned buildings. Fairfax County will have a projected FY 2025 facility inventory of nearly 12 million square feet of space throughout the County (excluding schools, parks, and housing facilities). This inventory is expanding both with the addition of newly constructed facilities and with the acquisition of additional property. With such a large inventory, it is critical that a planned program of repairs and restorations be maintained. In addition, the age of a major portion of this inventory of facilities is reaching a point where major reinvestments are required in the building subsystems. The chart below includes the types of facilities managed by FMD.



FMD is currently responsible for an inventory of 258 buildings. Of this amount, 212 facilities are maintained and infrastructure replacement and upgrade work is performed by FMD. Infrastructure replacement and upgrades for the remaining 46 structures is performed by another entity, such as the Department of Housing and Community Development. As the inventory of County facilities ages, reinvestment in buildings and building equipment becomes critical. Currently, 75 percent of the buildings for which FMD has responsibility for infrastructure replacement and upgrades are over 20 years old. Per industry standards, most building systems require replacement at 20 to 25 years of age. Infrastructure replacement and upgrades extend the serviceability and life of a building and provide for the continued effective, efficient, and safe operation of a building. These needs vary by building size and type, the extent of facility use, and maintenance management.



Many County facilities have outdated HVAC and electrical systems which are susceptible to failure or are highly inefficient energy users. Sites are identified for upgrades and/or replacement based on existing conditions of equipment and components as well as maintenance history. Each individual HVAC and electrical project includes a two-step process normally requiring two years to complete design and construction. Roof repairs and waterproofing are conducted in priority order after an annual evaluation of the maintenance history. Based upon the results of that evaluation, critical requirements are prioritized, and a plan is established. Repairs and replacement of facility roofs are considered critical to avoid serious structural deterioration caused by water leaks. By addressing this problem in a comprehensive manner, a major backlog of roof problems can be avoided. Carpet replacement and parking lot resurfacing are evaluated annually and prioritized, based on the most critical requirements for high traffic areas. In addition, emergency generators and fire alarm systems are replaced based on equipment age, coupled with maintenance and performance history. Minor repairs and renovations are also conducted in priority order. These projects, usually generated by customer requests, are small projects which abate building obsolescence, improve facility efficiency and effectiveness, and address major structural repairs.

Each year, FMD prioritizes and classifies infrastructure replacement and upgrades projects into five categories. Projects are classified as Category F: urgent/safety related, or endangering life and/or property; Category D: critical systems beyond their useful life or in danger of possible failure; Category C: life-cycle repairs/replacements where repairs are no longer cost effective; Category B: repairs needed for improvements if funding is available, and Category A: good condition.

Acceptable Levels of Infrastructure Replacement and Upgrades

The following chart includes both funded and unfunded infrastructure replacement and upgrade requirements identified to date at County owned facilities. This list totals approximately $173 million, of which $2.5 million is funded as part of the FY 2025 Adopted Budget Plan and $12.5 million was approved as part of the *FY 2024 Third Quarter Review* for a total of $15.0 million to support the FY 2025 program. It should be noted that when facilities undergo full renovation, they are removed from this list, reducing the outstanding requirements. In addition, this number is a moving target, as building systems and components can fail without notice and many buildings have not been fully assessed. The backlog of requirements will continue to increase as capital components pass the end of their useful life.

Category	FY 2025 Program	Unfunded	Total
Asphalt and Paving	$0	$7,525,249	$7,525,249
Building Envelope	250,000	17,596,481	17,846,481
Electrical	2,050,000	20,930,681	22,980,681
Elevators and Escalators	250,000	6,699,733	6,949,733
Fire Alarms and Fire Suppression	4,250,000	7,132,430	11,382,430
Generators	250,000	1,276,232	1,526,232
HVAC & Building Automation	1,850,000	62,770,763	64,620,763
Interior & Exterior Repairs	4,150,000	10,465,376	14,615,376
Parking Garage	300,000	7,592,000	7,892,000
Plumbing	0	11,215,568	11,215,568
Roof	1,650,000	4,468,301	6,118,301
Total	$15,000,000	$157,672,814	$172,672,814

Emergency System Failures Project

In addition to the planned replacement of building systems, unplanned emergencies often occur. The Board of Supervisors periodically approves funding to support unexpected emergency system failures that occur at aging County facilities throughout the year. This project provides a source of funding for unforeseen emergency repairs and allows FMD to address projects not currently funded for which repairs are becoming more imminent. The Board makes every effort to replenish this fund annually as part of the Carryover Review to address emergency repairs at facilities in the event of a major systems failure. Some examples of Emergency System Failure projects include: the replacement of a failing Building Automation System and failed Roof Top Unit at the Mount Vernon Government Center and Police Station, replacement of failing channel beams at the Adult Detention Center, replacement of failed HVAC equipment at the Springfield Warehouse, structural repairs to the Bailey's Community Center retaining wall, replacement of a the Building Automation System at Hybla Valley Community Center, replacement of the failed structural beam in the courtyard at the courthouse, replacement of a failed HVAC mini-split system at Joanne Jorgenson Laboratory, and replacement of a failed condensing boiler at McLean Government Center.

Fairfax County Public Schools (FCPS)

FCPS maintains more than 28 million square feet of school buildings and office space. FCPS uses a comprehensive asset management approach to measure the condition of physical assets. This involves detailed inventorying of building systems and major equipment, along with using advanced analytics to prioritize equipment replacement.

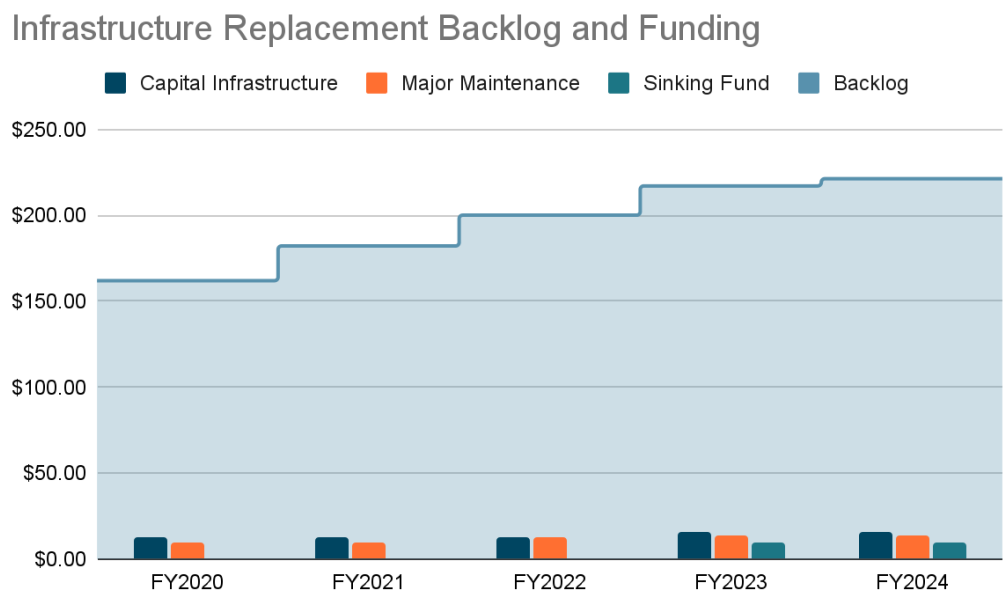
Building systems are assessed based on condition and criticality, resulting in an industry-recognized asset Assessment Index (AI). This guides resource allocation for maintenance and replacement, supporting FCPS's commitment to Resource Stewardship. While all major building systems and equipment are tracked, FCPS lacks an asset-level Facility Condition Assessment (FCA) that is needed to better address deferred maintenance and capital renewal prioritization. The FY 2023 Approved Budget included $2.0 million toward a comprehensive condition assessment of all schools and office buildings. Implementing an asset-level FCA program through the Office of Facilities Management (OFM) is essential to provide accurate data for capital renewal funding projections and validate the maintenance backlog. Assets, such as flooring, plumbing/electrical fixtures, doors/windows, paint, and building exteriors, are needed to better determine future renovation priorities. Doing so will better enable maintenance staff to be proactive in addressing issues and less reliant on schools and offices to report issues before they are addressed.

While critical building systems and components have been inventoried at most FCPS facilities, except for the schools currently under renovation there are other capital assets that remain to be inventoried such as: finished flooring, plumbing fixtures, and building exteriors that will require capital investment to replace. Inventorying these assets will also increase existing financial requirements both in future needs and current deferred replacement backlogs. Currently, the average asset age of capital assets inventoried is 19 years with 34 percent of these past their life cycle.

FCPS has a robust capital replacement program including renovations, new schools, and capacity enhancements. Starting in FY 2016, the County transfer for FCPS Infrastructure replacement and upgrades has grown from $13.1 million to $15.6 million. As part of the FY 2022 and FY 2023 County Carryover packages, Fairfax County also allocated portions of the carryover budget (e.g., Sinking Fund) to FCPS for infrastructure. This inclusion will help offset the growing backlog but does not address the amount that has accrued since the mid-1990s.

Analyzing the five-year infrastructure replacement backlog for FY 2020 to FY 2024, as shown in the table below, a 37 percent increase in the total backlog amount is anticipated. FCPS will need to increase the Capital Infrastructure Funding (County Transfer), Major Maintenance, and Sinking Fund allocation to keep pace and provide effective stewardship of FCPS capital assets. This increase will positively impact health, safety, and indoor air quality, and provide an educationally inspiring environment in which students and staff can thrive.

FY 2020-FY 2024 Infrastructure Replacement Backlog and Funding



FCPS received a portion of the Fairfax County Capital Sinking Fund as part of the FY 2022 and FY 2023 Carryover Budget Packages which helped support the FY 2023 and FY 2024 Programs.

The inclusion of capital sinking funds has helped to slow the growing backlog, but additional investments are still needed to reverse the trend of deferred maintenance at FCPS. The Office of Facilities Management is working to streamline its service level production and utilize alternative fund sources such as state and federal grants and Energy Savings Performance Contracts (ESPC) to set FCPS on a positive trajectory over the next 10 years.

FCPS received federal funding from the Elementary and Secondary School Emergency Relief (ESSER) grant. A total of $84 million in ESSER II funds and $188.7 million in ESSER III funds is for return to school (RTS) and other COVID-19 related expenses. ESSER II funds are expected to be spent in three primary areas:

- Enhanced summer school;
- Facility infrastructure enhancements; and
- Technology leasing costs and TSSpec positions

Funding of $33 million was initially identified for facility infrastructure for HVAC and air quality improvements. This funded more than 50 projects that were completed by the summer of 2023.

Funding from ESSER II was primarily focused on IAQ improvements at several FCPS facilities by modifying/replacing HVAC system equipment that are past their useful life, not utilizing current air conditioning industry standards, or do not have enthalpy control (e.g., cannot manage humidity and moisture). The HVAC systems that will be upgraded or replaced include make up air units (MAUs), chillers, boilers, cooling towers, roof top units (RTUs), and air handling units (AHUs). All of these are critical components that contribute to good air quality.

In addition, under ESSER II funding FCPS was able to replace obsolete and antiquated building automation systems that control all the HVAC systems within a facility. This was critical to ensure the proper monitoring of indoor air quality for students, visitors, and staff from a central location, and provide consistency of indoor air quality across the school division.

The current capital infrastructure replacement backlog is at $225.3 million, and the projected 5-year capital asset End of Useful Life replacement requirement is an additional $154.5 million (see table below).

Infrastructure Replacement Backlog and Project Replacement Requirements

Asset Category	Current Backlog	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	Total
HVAC Capital	$128.3M	$17.2M	$8.8M	$19.5M	$22.7M	$16.7M	$213.2M
Athletic Capital	$8.5M	$1.3M	$2.9M	$2.4M	$1.9M	$0.7M	$17.8M
Asphalt Capital	$11.8M	$1.1M	$0.3M	$1.0M	$0.2M	$0.8M	$15.2M
Major Maint.	$76.7M	$9.1M	$11.2M	$12.5M	$13.9M	$10.2M	$133.6M
Total	$225.3M	$28.7M	$23.2M	$35.4M	$38.7M	$28.4M	$379.8M

FCPS has a combined value of $6.7 billion in school facilities and other property assets. To maintain a safe and effective learning environment between renovations, FCPS applies industry-approved standards for maintenance and infrastructure renewals.

According to the National Research Council (NRC) report titled Committing to the Cost of Ownership: The Maintenance and Repair of Public Building, "The appropriate level of Maintenance and Repair spending should be, on average, in the range of 2 to 4 percent of Current Replacement Valve (CRV)."

- The current replacement value for FCPS is $6.7 billion
- FCPS' total cost of ownership should be between 2 and 4 percent of the CRV.
    - FCPS' operating budget of $55.7 million represents about 0.84 percent of the total CRV
    - FCPS' major maintenance, infrastructure renewal, and capital renewal budgets ($39.0M), are 0.59 percent of the total CRV.
- FCPS' total maintenance and repair budget is 1.42 percent of the CRV.

In addition to dedicated funds for maintenance and infrastructure replacement, FCPS utilizes energy savings contracts and other purchasing vehicles to provide critical system maintenance and renewals between renovations that will better enable FCPS to stay within the industry-recommended percentile between 2-4 percent CRV.

Lack of adequate funding for facilities maintenance is allowing systems to run past the useful life cycle, is inefficient, and introduces a myriad of other risks and higher maintenance costs. The lack of funding support for a capital asset replacement program significantly increases the risk of critical equipment failure, which can result in the potential disruption of instructional time, though OFM strives to minimize both factors.

Park Authority Infrastructure

The Park Authority has been working to address the backlog of reinvestment requirements at deteriorating facilities, athletic courts, pedestrian bridges, parking lots, and trails located throughout the County. The Park Authority is responsible for structures at 420 Parks with 62 percent of this total inventory over 30 years old. In addition, the Park Authority owns a total of 23,854 park acres which equates to over 9.16 percent of the land mass of Fairfax County. The Park Authority will start the process of updating the Needs Assessment in FY 2025. The current Parks Count Needs Assessment provided recommendations for capital investments in the park system based on a body of data. The total projected ten-year need in 2016 was $939,161,000, which has been reduced by $94,700,000 due to the approval of the 2016 Park Bond Referendum and by $100,000,000 due to the approval of the 2020 Park Bond Referendum. The remaining needs of $744,461,000 (in FY 2017 dollars) were broken out into three strategic areas in five-year increments:

- Critical, “Repairing what we have” makes the most of existing resources with the primary goal being for FCPA to maintain services. The plan partially addresses deferred maintenance at existing parks and facilities. The Critical funding need is $82,691,424 over the next five years.

- Sustainable, “Upgrade Existing” looks at enhancing existing programs, beginning new alternative programs, or making other strategic changes that would require additional operational or capital funding. The Sustainable need for years 1-5 is $102,461,220 and the need for years 6-10 is $164,282,756, for a total of $266,743,976.

- Visionary, “New, Significant Upgrades” includes new and expanded facilities to fully meet needs desired by the community and ensure that the Park Authority remains a preferred provider of park and recreation amenities. The remaining Visionary need is $395,025,600 over the 10-year period, and if funding is made available in 1-5 years, staff would accelerate visionary elements that include expansion and renovation of existing recreation centers and development of new athletic facilities.

In addition, the Park Authority’s Rec Center system has entered an era of aging infrastructure that requires lifecycle redevelopment and modernization to meet the continuing needs of the community and remain fiscally sustainable as an enterprise funded activity. In 2018, the Park Authority completed a System-wide Sustainability Plan for Rec Centers that identified strategies to maximize operational effectiveness, improve community responsiveness, and ultimately ensure the long-term financial sustainability of the Rec Center system through a series of capital improvements. As part of the strategic recommendations, each Rec Center was assigned one of six “thematic” decisions. These recommendations outlined a course of action for capital improvements at each Rec Center to maximize the sustainability of the overall system. Aggressive reinvestment in Rec Centers has helped to both reduce the backlog of urgent maintenance projects and to begin a new phase of capital projects, beginning with the reconstruction of the Mount Vernon Rec Center (currently

underway), followed by the Audrey Moore Rec Center. Additional progress towards the overall improvements is currently estimated at $182,500,000 which includes escalation for a seven-year period with projects that began in 2022.

Based on continual facility condition assessments, growing and shifting community needs and expectations, an ever-increasing amount of funding will be needed for capital maintenance and replacement of aging park assets in order to maximize the life of the existing facilities and to develop new facilities. The following table includes a total of $176,338,898 in estimated Park Authority Category "F" projects and Category "D" projects combined, a net increase of $11,298,518 or 6.8 percent over the previous year. In addition, the Park Authority realigned their renewal projects to the categories as defined by FMD, resulting in additional Category "C" items being reclassified as "Category D" based on many subsystems categorized as beyond their useful life or in danger of possible failure. The impact of failed/failing/beyond end of useful life includes higher cost of operations, difficulty to repair and maintain, availability of spare parts, unhappy visitors, inefficient energy usage, and deteriorated/compromised structural systems and elements.

To further safeguard and align with County practices, the Park Authority established a Capital Sinking Fund within their Park Improvement Fund. To date, the Park Authority has identified approximately $65 million in category D and F projects associated with 8 Rec Centers, while Mount Vernon is under construction. Of that amount, more than $17 million has been committed from a combination of sinking funds and ARPA federal funds to address some level of the current need. This critical funding element of sustainability cannot be realized through charging of fees. It is anticipated that this sinking fund will assist with funding for lifecycle/capital renewal maintenance of the revenue facilities. It should also be noted that the Board of Supervisors approved $5 million in General Fund support for Rec Center Renewal and Upgrades which will reduce the overall requirements.

Category	Total
Athletic Courts	$4,696,491
Athletic Fields	$20,370,000
Building/Structures	$9,821,668
Equipment and Vehicles	$10,641,049
Fire and Security	$940,000
Golf Renovations	$2,934,800
Lighting and Irrigation Systems	$3,626,000
Rec Centers	$58,500,000
Recreation/Playgrounds	$28,631,300
Roads & Parking Lots	$26,552,420
Trails	$9,625,170
Total	**$176,338,898**

Athletic Field Infrastructure

The Athletic Field Program facilitates the development, maintenance, and replacement of athletic fields, including synthetic turf fields, throughout the County. The maintenance of athletic fields includes field lighting, fencing, irrigation, dugout covers, infield dirt, aeration, and seeding. These maintenance efforts improve safety standards, enhance playing conditions, and increase user satisfaction. Athletic field maintenance is funded by the General Fund and is supplemented by an Athletic Services Fee. FY 2025 funding in the amount of $10,916,174 has been included for the athletic field maintenance and sports program, supported by a General Fund transfer of $7,713,338 and revenue generated from the Athletic Services Fee in the amount of $3,202,836.

In FY 2025, the Athletic Service Fees will increase from $5.50 per participant per season and $15 for tournament team fees to $10 per participant per season and $20 for tournament team fees for diamond field users and indoor gym users. The rate for rectangular field users will increase from $8.00 per participant per season and $50 for tournament team fees to $10 per participant per season and $60 for tournament team fees. These increased fees will generate an additional $710,000 for the athletic field capital program. Finally, the fee for non-County participants will increase from $30 to $50 for all field types per player, generating an estimated $1,017,836 for the athletic field capital program. This revenue had previously been reflected in the General Fund; however, beginning in FY 2025, all revenue associated with field use will be reflected in Fund 30010, General Construction and Contributions, and directly applied to the Athletic Sports Program. All revenue projected in FY 2025 will support indoor gym custodial fees, maintenance of diamond fields, turf field replacement, turf field development and sports scholarships. Due to the potential negative impact of this fee increase on vulnerable populations, a larger portion of the revenue increase has been dedicated to sports scholarships.

Maintenance efforts include contracted services to improve the condition of 715 athletic fields, including 452 Fairfax County Public School (FCPS) and 263 Park Authority fields. This total includes 104 synthetic turf fields of which 24 are FCPS stadium fields and 80 are County Park/FCPS non-stadium fields. Synthetic turf fields allow for year-round use in most weather, increasing playable hours, providing playing surfaces and conditions that are similar to grass fields, and eliminating the need for watering, mowing, and fertilizing. Increased annual funding has been provided to begin to address the growing need for field replacement and to establish a 10-year replacement schedule. Most manufacturers provide an eight-year warranty for a properly maintained synthetic turf field; however, it is a generally accepted practice to assume a life expectancy of the synthetic turf field of no more than 10 years.

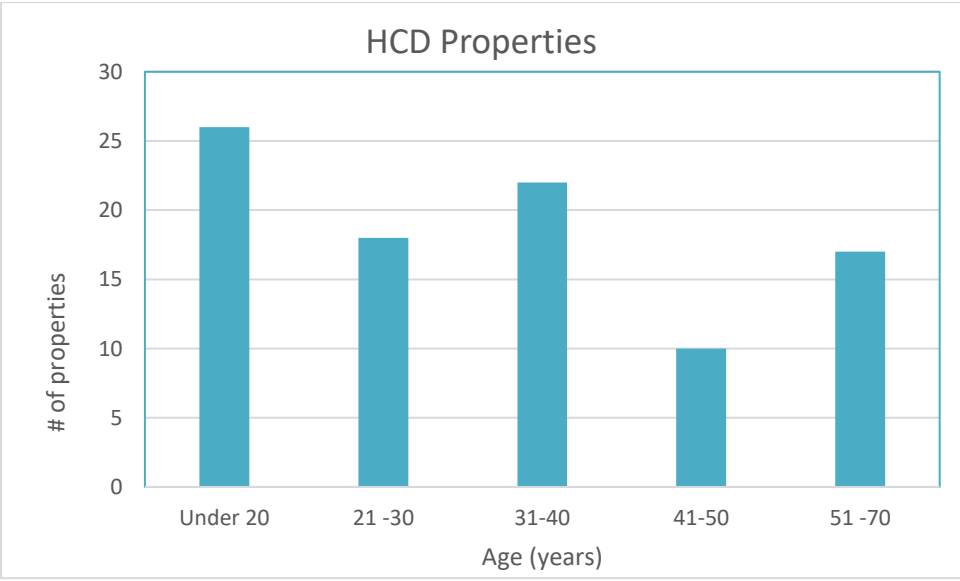
The following chart outlines the plan for turf field replacement at the current levels of both Athletic Service Fee revenue and General Fund support. The program includes the number of fields anticipated to be replaced per year and is fully funded through FY 2026. There is currently a projected small unfunded requirement beginning in FY 2027; however, beginning in FY 2028 there is a potential larger unfunded amount. Staff will be monitoring the effect of the new fees and the pace of the required field replacements.

Turf Field Replacement Plan

10 year Replacement cycle	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
Total Available Funds	**$9,137,785**	**$7,910,621**	**$5,126,757**	**$5,577,093**	**$3,102,229**	**$2,038,465**
Estimated # of FCPS Turf Field Replacements Required	3	5	3	2	3	2
Estimated # of FCPA Turf Field Replacements Required	6	6	2	9	5	5
Fields to be Replaced (Red = FCPS Fields)	Edison HS Mt. Vernon HS West Potomac HS EC Lawrence #2 EC Lawrence #3 Ken Lawrence #2 Loisdale #1 Sully Highlands #1 Sully Highlands #2	Annandale HS Justice HS South County MS (2) Waters Vienna ES Arrowhead #1 Arrowhead #3 Grist Mill #5 Ken Lawrence #1 McLean Police Rolling Valley #2	Hayfield SS South County HS Westgate ES** Mason District #3 Pine Ridge #6	Sandburg MS Thomas Jefferson HS ** Braddock #7 Great Falls NIKE #7 Lake Fairfax #1 Lake Fairfax #4 Poplar Tree #2 Poplar Tree #3 South Run #5 South Run #6 Wakefield #5	Bryant Alt HS Hutchison ES Marshall HS Franconia #4 Nottoway #4 Patriot Park #1 Spring Hill #2 Spring Hill #3	Bailey ES Westfield HS Greenbriar #5 Lee District #4 Nottoway #5 Nottoway #1 Quantum #1
Estimated Costs	$4,510,000	$6,066,700	$2,832,500	$5,757,700	$4,346,600	$3,738,900
Actuals Only						
Projected Year End Fund Balance	**$4,627,785**	**$1,843,921**	**$2,294,257**	**($180,607)**	**($1,244,371)**	**($1,700,435)**

Housing and Community Development (HCD) Facilities

Housing and Community Development's (HCD) property inventory includes ninety-six residential properties and one office building. Among these, there are multifamily properties, townhomes, condominiums, group homes, assisted living facilities, and a manufactured home rental park. As evidenced in the graph below, 53 percent of the properties are 31 years or older. Many infrastructure replacement and upgrade projects have been deferred as funding for major projects is limited and rental revenue is constrained at the properties. Some of the major items that have been deferred include replacement of central boilers, HVAC systems, roofs, electrical systems, flooring, windows, and resurfacing of parking lots. Deferral of these items results in inefficient utility usage as well as higher future maintenance costs.



The following table identifies the top 13 Housing facility priorities including $1.069 million category D projects which are scheduled to be funded in FY 2025. In addition, Housing and Community

Development staff have identified $0.143 million in Category C projects that will require funding in FY 2025, totaling $1.212 million.

Infrastructure Replacement and Upgrade Requirements: Housing					
Priority	Project Type	Facility	Category	Existing Conditions - Deficiencies	Estimate
1	Asphalt driveway, paint exterior, replace roof shingles, Kitchen rehabs (cabinets, countertops, flooring, appliances), replace unit flooring	Greenwood	D	Critical systems beyond their useful life	$466,744
2	Replace furnaces, replace condensing units, rehab bathrooms (vanity cabinets, shower surrounds, flooring)	Westford	D	Critical systems beyond their useful life	$218,147
3	Sealcoat parking lot, concrete sidewalk replacements, replace metal doors, bathroom rehabs (countertops, flooring, countertops), refurbish wood flooring	Kingsley Park	D	Critical systems beyond their useful life	$85,134
4	Replace windows, replace water heaters	Ragan Oaks	D	Critical systems beyond their useful life	$77,312
5	Replace gas furnace, replace a/c unit	Briarcliff II	D	Critical systems beyond their useful life	$38,159
6	Replace smoke detectors, replace flooring	Rosedale	D	Critical systems beyond their useful life	$22,946
7	Replace vinyl exterior siding, replace water heaters	Tavenner	D	Critical systems beyond their useful life	$27,471
8	Replace heating/cooling units, replace exterior doors, patch driveways, replace townhouse washer/dryers	The Green	D	Critical systems beyond their useful life	$133,523
9	Replace exterior siding, replace kitchen flooring in units	Old Mill Garden	C	Life cycle repairs where repairs are no longer cost effective	$45,831
10	Partial roof replacement, replace windows, replace heat pumps, exterior painting	Atrium	C	Life cycle repairs where repairs are no longer cost effective	$44,047
11	Replace kitchen cabinets/countertops	Villages at Falls Church	C	Life cycle repairs where repairs are no longer cost effective	$29,920
12	Replace asphalt shingles, Bathroom rehab flooring and tile	Newington Station	C	Life cycle repairs where repairs are no longer cost effective	$15,897
13	Replace Brick veneer	Barros Circle	C	Life cycle repairs where repairs are no longer cost effective	$6,795
	Total				**$1,211,926**

Wastewater Infrastructure

There are two major infrastructure systems, within the Wastewater System: the Collection System consisting of sewer pipes, manholes, and pump stations, and the Noman Cole Pollution Control Treatment Plant. In any given year, the amount scheduled for infrastructure replacement and upgrades in each area may vary based on specific project schedules; however, staff is attempting to manage the system on a programmatic basis over a ten-year period.

The Collection System consists of approximately 3,300 miles of pipe, 95,000 manholes, 70 wastewater pump stations, 57 permanent flow meter stations, 3 pump and haul facilities, grinder pumps, and associated low pressure sewer systems. Approximately 70 percent of the system is 30 years or older. The County has a routine inspection program for gravity sewers and manholes, and identifies repairs, replacement or upgrades needs based on asset risks. In the late 1990s, the County began a significant reinvestment program by relining existing pipes utilizing a trenchless technology called cured-in-place-pipe (CIPP). Approximately 20 percent of the system has been rehabilitated utilizing this technology, primarily on the smaller, 8" to 18" lines. Each of the System's pump stations typically have multiple pumps for peak flows and emergency backup, motors associated with the pumps, a backup generator, a force main, electrical control equipment, communication equipment for monitoring and remote operation, and a building or other structure. County staff monitors the condition of each asset at each pump station and attempts to schedule rehabilitation or replacement before failure. Each pump station is also monitored as a unit, and prior to replacing a major component, an in-depth review is completed to determine if rehabilitation or replacement of other component systems are required at the same time. The 10-year financial plan (FY 2025 - FY 2034) includes a continual increase in funding for Collection System rehabilitation with an average of $95.9 million per year for reinvestment, rehabilitation, and expansion of these facilities. With this gradual ramp-up and based on current information, this component of the system is currently fully funded. Failures in either the Collection System, Pump Stations, or Treatment Plant will likely result in discharges of untreated raw sewage into basements or streams; therefore, all of these systems are

considered critical. As a result, the wastewater rates are reviewed each year and the 10-year financial plan is reviewed and updated to ensure adequate funds are programed to safely maintain and operate the systems.

At the Noman Cole Treatment Plant, there are over 4,000 assets monitored making up 32 major operating systems, such as odor control, primary treatment, and others. Each operating system consists of many components, such as pumps and concrete tanks. Redundancy is built into all critical systems to allow for maintenance. The condition of each component is monitored during routine maintenance checks and tracked by age. Based on age and condition, reinvestment schedules are determined. Currently, in the 10-year plan, there is an average of $50.2 million per year programmed for treatment plant capital improvements, the majority is for replacement and rehabilitation. Based on current information, the appropriate reinvestment amounts are being funded.

At this time, based on current information, there is not a funding gap to safely operate the wastewater systems. Annual infrastructure replacement and upgrades throughout the Wastewater system are reflected below:

INFRASTRUCTURE REPLACEMENT AND UPGRADE REQUIREMENTS: WASTEWATER FACILITIES						
PRIORITY	PROJECT TYPE	FACILITY	CATEGORY	EXISTING CONDITIONS/DEFFICIENCIES	ESTIMATE	FUNDING STATUS
1	Collection System	Countywide	C	Projected lifecycle is 30 years	$90,980,700	Annual Requirement
2	Treatment Plan Improvements	Noman Cole Pollution Control Plant (NCPCP)	C	Projected lifecycle is 30 years	$50,241,100	Annual Requirement
	Total				**$141,221,800**	

It should be noted that the Wastewater Management System also has an established Capital Reinvestment Reserve which is intended to address both anticipated and unanticipated increases within the Capital Improvement Program. This reserve provides for significant rehabilitation and replacement of emergency infrastructure repairs. A reserve of 3.0 percent of the five-year capital plan is consistent with other utilities and is recommended by rating agencies. Based on the total five-year capital plan, an amount of approximately $23 million would be required to reach 3.0 percent. The Wastewater Management System is currently maintaining a reserve of approximately $54 million.

Stormwater Infrastructure

There are two major infrastructure systems associated with the Stormwater Program: the Conveyance system including pipes, manhole inlets, and open channels, and the management facilities including bio retention, infiltration, wet and dry ponds, porous pavements, manufactured devices, and other items used to improve water quality or manage water quantity. There are currently 1,608 miles of pipes and improved channels, and 66,892 manholes and inlets. The pipes range in size from 12 to 84 inches and are made with reinforced concrete, corrugated metal, or plastic. The life of the system varies with the material type and the original construction practices, but the general estimated lifecycle is 50-75 years. A study indicated the County should invest an estimated $16 million per year in rehabilitating or replacing the existing system on about a 70-year cycle.

The County currently maintains approximately 8,400 stormwater management facilities ranging from small rain gardens to large flood control dams. Reinvestment projects vary in scope and size; many of them include replacement of plant materials as part of the treatment process for dredging the larger lakes and ponds. As the routine and life cycle operating procedures for many of these facilities are still being developed, a good life cycle cost model does not exist. The County has prepared

estimates based on recent dredging experiences as well experiences with "green" infrastructure facilities and estimates an annual program expense of $17 million. Because the plant material is an active component of the "green" infrastructure and because routine maintenance relates directly to the life and function of the facility, the $17 million estimate includes both annual operating expenses as well as capital expenses, such as dredging and dam repair.

While staff continues to further evaluate the impact of recent initiatives and the long-term requirements for the Stormwater Program, the FY 2025 rate will remain the same as the FY 2024 Adopted Budget Plan level of $0.0325 per $100 of assessed value. Actual revenue collected in recent years has been higher than projected as a result of increases in property values throughout the County. Based on capital project costs and projected revenues, it is anticipated that in the next several years, incremental rate increases will be required to support continued growth of stormwater facilities and infrastructure that must be inspected and maintained by the County, the implementation of flood mitigation projects, and additional requirements in the forthcoming Municipal Separate Storm Sewer System (MS4) permit. On an annual basis, staff will continue to evaluate the program, analyze future requirements, and develop Stormwater operational and capital resource needs. Annual infrastructure replacement and upgrades for the County's Stormwater Facilities are reflected below:

INFRASTRUCTURE REPLACEMENT AND UPGRADE REQUIREMENTS: STORMWATER FACILITIES						
PRIORITY	PROJECT TYPE	FACILITY	CATEGORY	EXISTING CONDITIONS/DEFFICIENCIES	ESTIMATE	FUNDING STATUS
1	Conveyance System	66,892 structures and 1,608 miles of pipes	D	Lifecycle is 50-75 years	$16,000,000	Annual Requirement
2	Stormwater Management Facilities	2,400 county facilities including 20 state regulated dams and 6,000 private facilities	C	Projected lifecycle is 35 years	$17,000,000	Annual Requirement
	Total				$33,000,000	

Revitalization Infrastructure

The Board of Supervisors defines five geographical boundaries as Commercial Revitalization Districts (CRDs): Annandale, Baileys/Seven Corners, McLean, Route 1, and Springfield. The County implements an ongoing enhanced maintenance program in all CRDs to improve the economic vitality, appearance, and function of these revitalization areas. Routine maintenance includes mowing, weeding, edging, mulching, pruning, leaf removal, litter pick-up, sidewalk/street sweeping, and monthly inspections of approximately 821,000 square feet of landscaped areas. Non-routine maintenance projects include, but are not limited to, replacing or repairing pavers, sidewalks, street furnishing, streetscaping, and bus shelters are completed as needed. Asset-based CRD projects, such as sidewalk and bus shelter replacement, utilize the sinking fund. Current projects include the Route 50 Pedestrian Bridge Stairwell modifications to provide a safer, cleaner passage through a pedestrian bridge, the Springfield CRD Stormwater Pilot project evaluating the feasibility/options to implement a stormwater facility within the CRD streetscape, and replacing sidewalks in several CRDs.

Additional responsibilities in the program include maintenance of assets within Phase 1 and 2 of Metro Silver Line and commuter facilities. Work consists of plant maintenance, mowing, edging, mulching, weeding, and trash removal routinely performed at 27 bioretention facilities, 145 tree boxes, and Metro commuter facilities. Commuter facility maintenance also includes pavement replacement, and snow removal. Maintenance responsibility of Phase 2 Silver Line commuter assets were transferred to the County in November 2022, while the County assumed maintenance responsibilities of the Phase 1 Silver Line commuter facilities in 2014.

Staff continues enhancing the appearance, functionality, and sustainability of CRD streetscape and infrastructure and continues supporting the long-term goal of expanding the enhanced maintenance program to all streetscape and walkways within the entirety of each CRD boundary.

Transportation Infrastructure

The County maintains an assortment of transportation infrastructure that has not been accepted into VDOT's system for maintenance. These infrastructure items include bus shelters, street name signs, trails, sidewalks, and pedestrian bridges. The trails and sidewalks provide pedestrian access to commuter facilities or are constructed for the recreational use of County residents and visitors. The County also maintains various roadways that have not been accepted into VDOT's secondary roadway system.

Bus Shelters

The County maintains approximately 181 bus shelters. The focus of the infrastructure replacement and upgrade program is to complete repairs to damaged shelters. A fully funded program would include cleaning, trash collection, and reinvestment. Annual funding is used to address safety related issues. If there is not adequate funding to perform these tasks, damaged shelters are removed until funding is identified. Some shelters are in need of replacement and a sustainable program to replace shelters on a 20-year cycle estimating $20,000 per shelter, is $208,000. This level of funding would replace approximately 10 shelters per year.

Included with bus shelter maintenance is emptying trash cans located in the vicinity of bus shelters, at commuter lots and within the Silver Line commuter facilities. Approximately 228 trash cans are emptied three days a week at an estimated annual cost of $1,000,000. Prior to September 2022, the emptying of trash cans was the responsibility of the Community Labor Force. The Community Labor Force suspended operations in September 2022, resulting in the County assuming trash removal via a contractor.

Street Signs

As part of the 911 emergency system, all roads are required to have a name and street sign to assist emergency response personnel. These signs are not maintained by VDOT and are the responsibility of the County. There are approximately 40,000 signs at 20,000 intersections in the current inventory. The County currently replaces street signs only when they are damaged beyond repair. Over time, signs lose their reflectivity and become more difficult to read at night. It is estimated that if the signs are replaced on a 20-year cycle, the average annual capital cost would be $675,000.

Walkways

The County manages the infrastructure replacement and upgrades of 683 miles of walkways and 78 pedestrian bridges valued at an estimated $220 million. An assessment of trails and sidewalks is being implemented, using current technology and computer software. It is anticipated that this assessment of walkways will continue into FY 2025. In addition to walkways being assessed, an assessment of all pedestrian bridges is ongoing. All pedestrian bridges are being evaluated in accordance with National Bridge Inspection Standards. Pedestrian bridges in poor condition will be evaluated for repair or replacement. The Sinking Fund allocation has provided nearly $16 million to date for reinvestment in these most critical trail needs and continues to provide for trails that have since been identified as deteriorating. In addition, a 5-year plan was developed identifying annual emergency funds which are currently funded at $1,000,000 for both annual reinvestment and the continued effort to complete an assessment of County maintained walkways. The assessment will rate the condition of all walkways to facilitate a walkway replacement schedule. Assuming an average service life of 50 years for concrete sidewalks and 25 years for asphalt and bridges, a fully

funded reinvestment program is estimated at $6.4 million annually. In the last several years, the sinking fund program has more than doubled the amount being invested in walkways and bridges.

County-Owned Roads

The County is responsible for emergency safety and road repairs to 38 miles of County-owned roads, service drives, and County-owned stub streets which are currently not accepted in the Virginia Department of Transportation (VDOT) highway system for maintenance. This infrastructure is valued at over $230 million. The Sinking Fund allocation has provided over $12 million to date for reinvestment in the most critical needs. In addition, a 5-year plan was developed identifying annual emergency funds to supports pothole repair, drive surface overlays, subgrade repairs, curb and gutter repairs, traffic and pedestrian signage repairs, hazardous tree removal, grading, snow and ice control, minor ditching and stabilization of shoulders, and drainage facilities. Funding of $500,000 has been included for this program in FY 2025. A fully funded reinvestment program is estimated at $5.2 million annually.

Summary of Transportation Infrastructure	
Program Area	**Annual Amount**
Bus Shelters	$1,208,000
County-owned Roads	$5,200,000
Street Signs	$675,000
Walkways	$6,400,000
Total	**$13,483,000**

Capital Sinking Fund

The Board of Supervisors first approved the establishment of the Infrastructure Financing Committee's recommended Capital Sinking Fund as part of the *FY 2014 Carryover Review*. On December 7, 2021, the Board of Supervisors approved the recommendation to increase the year end allocation to the Sinking Fund to 30 percent and include FCPS in the distribution of funds. The distribution of capital sinking funds is as follows: 45 percent for Facilities Management Department (FMD), 25 percent for FCPS, 15 percent for the Park Authority, 7 percent for Walkways, 5 percent for County-owned Roads and service drives, and 3 percent for Revitalization improvements. This change was approved as part of the *FY 2022 Carryover Review.* The following table includes the allocation of Capital Sinking funds to date.

Program Area	Total Allocated to Date
County Roads	$12,036,458
FCPS	$19,384,503
FMD	$84,020,366
Parks	$29,685,889
Revitalization	$6,210,771
Walkways	$15,714,494
Total	**$167,052,481**

The breadth of the infrastructure upgrades and benefits of the sinking fund allocations can be seen in significant accomplishments throughout the County. Many projects have been initiated or completed in all of the program areas. Below are some examples of Capital Sinking Fund projects:

Athletic Court Repairs

Before	After

Roof Replacement

Before	After

Trail Repairs

Before	After

Generator Replacement

Road Repairs

Before	After