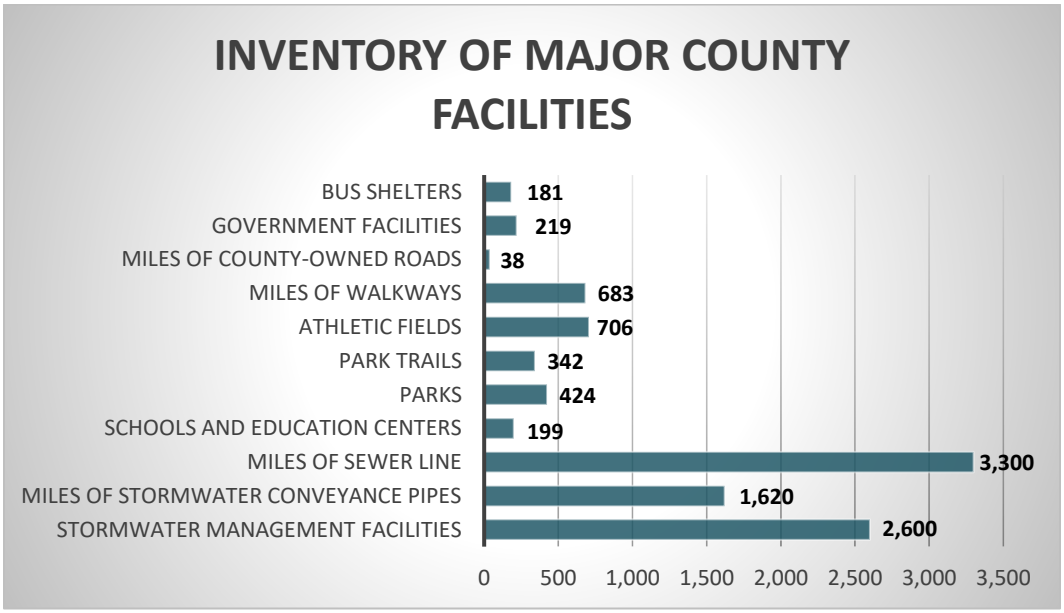
Countywide Infrastructure Replacement Requirements

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 exorbitant costs and inconvenience associated with unanticipated failures and safety concerns.

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 and School System 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 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

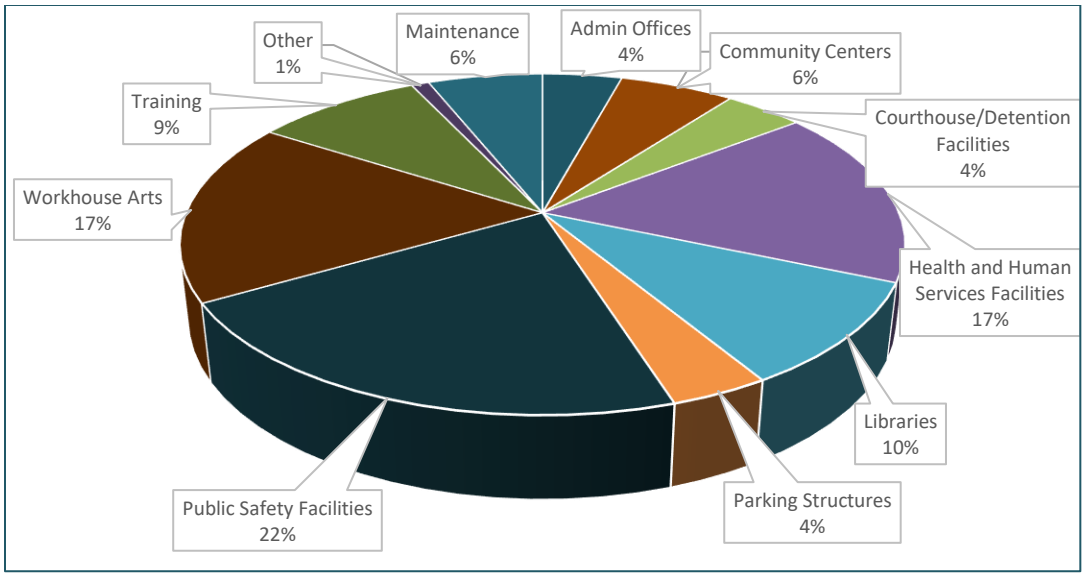
The sections that follow are grouped by specific capital program areas. Each program area has identified slightly different methodologies for categorizing projects, measuring the facility conditions, and identifying funding sources. Many program areas are assessed on an annual basis, and some have developed 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 different 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 for county-owned buildings. Fairfax County will have a projected FY 2027 facility inventory of approximately 12 million square feet of space (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 Capital Renewal Facilities by Category



FMD is currently responsible for an inventory of 265 buildings. Of this amount, 219 facilities (at 176 sites) 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. As depicted below, there are currently 160 out of 219 or 74 percent of the buildings for which FMD has responsibility that 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 performed.

Facility Ages	Greater Than 100 Years	51-100 Years	31-50 Years	21-30 Years	16-20 Years	11 to 15 Years	5 to 10 Years	Less Than 5 Years	Total
Facility Total	6	67	48	39	14	10	17	18	219
Percentage of Total	3%	31%	22%	18%	6%	4%	8%	8%	100%
Cumulative		34%	56%	74%	80%	84%	92%	100%	

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 as well as maintenance history. Each individual HVAC and electrical project requires approximately two years to complete design and construction. Roof repairs and waterproofing are conducted in priority order after an annual evaluation of 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.

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 $224 million, of which $10 million is funded as part of the FY 2027 Adopted Budget Plan and $7 million was funded as part of the *FY 2026 Third Quarter Review*. The FY 2027 total program of $17.0 million will reduce the backlog of unfunded projects to approximately $207 million. 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. The backlog of requirements will continue to increase as capital components pass the end of their useful life.

Category	Total	FY 2027 Program	Unfunded
Asphalt and Paving	$6,850,249		$6,850,249
Building Assessments	1,650,000	$1,650,000	0
Building Envelope	13,171,481		13,171,481
Electrical	22,980,681	3,700,000	19,280,681
Elevators and Escalators	12,342,164	3,600,000	8,742,164
Fire Alarms and Fire Suppression	11,382,430		11,382,430
Generators	16,526,632	325,000	16,201,632
HVAC and Building Automation	64,620,763	3,885,000	60,735,763
Interior and Exterior Repairs	13,305,376		13,305,376
Parking Lots and Garages	11,000,000	2,995,000	8,005,000
Plumbing	11,215,568		11,215,568
Roof	38,845,000	845,000	38,000,000
Total	$223,890,344	$17,000,000	$206,890,344

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. 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.

Fairfax County Public Schools (FCPS)

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 funds for a comprehensive condition assessment of all schools. In November 2024, the School Board approved additional funds to conduct the forthcoming work.

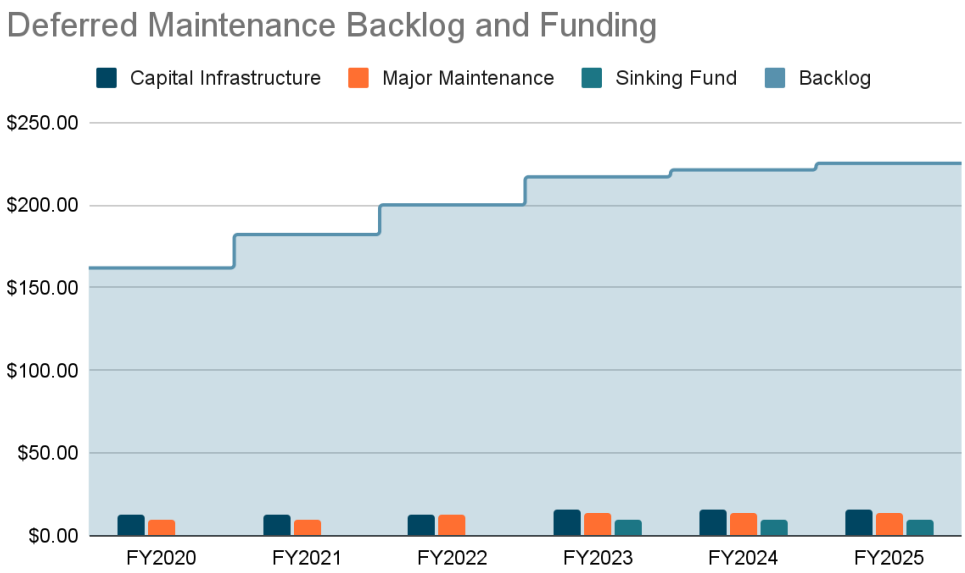
In spring 2025, FCPS issued a Request for Proposal (RFP) to establish a contract through competitive negotiation for a comprehensive Facilities Condition Assessment (FCA) and the development of a framework for the renovation queue. In the fall of 2025, the Fairfax County School Board approved awarding a contract to proceed with the base scope of work outlined in the RFP.

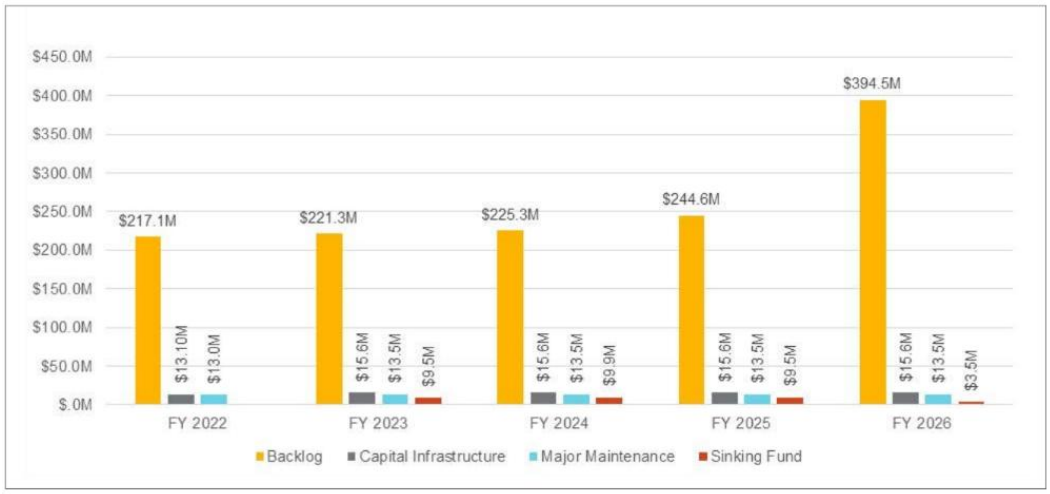
Implementing an asset-level FCA program through the Office of Facilities Management (OFM) is essential to provide accurate data for capital renewal funding projections and validate the maintenance backlog. More information regarding the existing condition of facilities will inform the next renovation queue and future planned capital infrastructure improvements. 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.

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. Since the FY 2022 Carryover Review, Fairfax County also allocated portions of the carryover budget balance (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 2022 to FY 2026, as shown in the figure below, an 82 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 2022-FY 2026 Infrastructure Replacement Backlog and Funding





Note: The Infrastructure Replacement Backlog values were recently updated utilizing third-party data. The prior dataset had not been revised for approximately ten years.

FCPS received a portion of the Fairfax County Capital Sinking Fund as part of the FY 2022 through FY 2025 Carryover Budget Package.

Including capital sinking funds through FY 2025 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 funding 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.

The capital infrastructure replacement backlog is currently $394.52 million, and the projected 5-year capital asset End of Useful Life replacement requirement is an additional $236.97 million (see table below). The table below excludes the four City of Fairfax schools (Fairfax HS, Providence ES, Daniels Run ES, & Katherine Johnson MS), nine schools currently under renovation and undergoing asset inventory (Armstrong ES, Falls Church HS, Bren Mar Park ES, Brookfield ES, Dranesville ES Lees Corner ES, Mosaic ES, Herndon ES, and Bonnie Brae ES), and three schools in permitting (Willow Spring ES, Centreville HS, and the new Dunn Loring ES).

Infrastructure Replacement Backlog and Project Replacement Requirements

Asset Category	Current Backlog	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	Total
HVAC Capital	$234.58M	$32.2M	$25.66M	$31.75M	$31.95M	$36.01M	$392.15M
Athletic Capital	$13.21M	$1.14M	$0.23M	$0.9M	$2.28M	$0.53M	$18.29M
Asphalt Capital	$35.85M	$7.69M	$0.75M	$1.74M	$1.57M	$0.91M	$48.51M
Major Maint.	$110.88M	$11.84M	$12.97M	$11.95M	$13.50M	$11.40M	$172.54M
Total	$394.52M	$52.87M	$39.61M	$46.34M	$49.30M	$48.85M	$631.49M

FCPS has a combined value of $8.9 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 $8.9 billion
- FCPS' total cost of ownership should be between 2 and 4 percent of the CRV.
    - 2 and 4 percent of FCPS CRV is an annual recommended spending between $174 million and $348 million
    - By contrast, FCPS' operating budget ($59.8M) represents about 0.73 percent of the total CRV
    - FCPS' major maintenance, infrastructure renewal, and capital renewal budgets ($32.6M), are 0.37 percent of the total CRV
- FCPS' total maintenance and repair budget is 1.104 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.

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 buildings/structures at 424 Parks with 62 percent of this total inventory over 30 years old. In addition, the Park Authority owns a total of 23,869 acres which equates to over 9.16 percent of the land mass of Fairfax County. The Park Authority will complete the 2026 Needs Assessment in FY 2027. The 2026 Parks Count is the Park Authority Needs Assessment which provides recommendations for capital investments in the park system. The 2026 Needs Assessment report will help the Park Authority prioritize efforts to meet existing and future park and recreation needs in the County and ensure Fairfax County's park and recreational needs are aligned with park system offerings. The Needs Assessment will be used to evaluate and update level of service standards, assess park system gaps, and inform the future planning and development of facilities and programs. The 2026 Parks Count survey pointed to the need to maintain facilities across the County. In combination with the Needs Assessment, the Park Authority also uses several other plans and decision factors to help influence the overall Capital Improvement Program (CIP) recommendations. These include using specific park amenity studies (Playground Study, Synthetic Turf Study, etc.), condition assessments, amenity usage, amenity distribution, and the Parks, Recreation, Open Space, and Access (PROSA) Strategy. In anticipation of the 2026 Park Bond Referendum, the 2026 CIP framework will establish a comprehensive investment strategy. The Audrey Moore Rec Center renovation will be included at $60 million. A projected $25 million is needed for more modest improvements for either the Providence or Franconia recreation centers, and the remaining $95 million is anticipated to be distributed among five core pillars: $55.5 million for deferred capital replacements and renovations, $18 million for whole Park projects, $10.5 million for land acquisition, $8 million for resource stewardship, and $3 million for targeted new construction.

Central to the focus of the agency's recreation activities, the Park Authority's Rec Centers have entered a phase where on-going renovations and replacement are necessary. With five Rec Centers originally constructed over the period of 1977-1982; three in 1987-1988; and one in 2005, the useful lives of the structures have long since passed. FCPA is faced with the question of how these buildings are going to be kept operational, safe, and inviting, while also maintaining these components and planning for the capital replacement cycle. 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. The plan outlined a course of action for capital improvements at each Rec Center to maximize the sustainability of the overall system.

As the Plan forewarned, the longer the Park Authority waits to replace these Rec Centers, the more expensive maintenance will become. The Mount Vernon Rec Center was almost forced to close just months before the planned renovation was set to begin as the HVAC and electrical systems were failing. Now, the community has celebrated the re-opening of Mount Vernon Rec Center as a brand-new facility in 2025, 46 years after it originally opened. Staff have continued to work through the Sustainability Plan and have updated the information with extensive assessments to identify a tiered approach to keeping the centers operational until they require capital replacement. The backlog of urgent deferred maintenance projects is estimated at close to $10 million per Rec Center. While staff work to keep the centers open, the Park Authority is also beginning a new phase of capital projects, which began with Mount Vernon and will be followed by the Audrey Moore Rec Center. Staff anticipate that at least one Rec Center will be the major focus of each bond cycle going forward. Additional progress towards the overall improvements is currently estimated at $256,594,000 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 to maximize the life of the existing facilities and to develop new facilities. The following table includes a total of $201,066,630 in estimated Park Authority both Category "F" and Category "D" projects, a net increase of $24,727,732 or 14 percent over the previous year. The impact of failed/failing/beyond end of useful life systems can result in 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. As of the end of FY 2024, the Park Authority identified approximately $68 million in category D and F projects associated with 8 Rec Centers, while Mount Vernon is nearing construction completion. Of that amount, more than $20 million was completed from a combination of sinking funds and ARPA federal funds. This critical funding element of sustainability cannot be realized through the 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 has approved $10 million in General Fund support for Rec Center Renewal and Upgrades which will help reduce the overall requirements.

Category	Total
Athletic Courts	$4,055,559
Athletic Fields	18,716,143
Bridges and Fairweather Crossings	13,950,000
Building/Structures	4,213,904
Equipment and Vehicles	11,236,698
Fire and Security	1,510,427
Golf Renovations	2,684,126
Lighting and Irrigation Systems	3,672,078
Rec Centers	67,990,480
Recreation/Playgrounds	33,580,815
Roads and Parking Lots	30,530,484
Trails	8,925,916
Total	**$201,066,630**

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 2027 funding in $11,428,690 has been included for the athletic field maintenance and sports program, supported by a General Fund transfer of $7,410,854 and estimated revenue generated from the Athletic Services Fee in the amount of $4,017,836.

In FY 2027, the Athletic Service Fees increased from $10 per participant per season and $20 for tournament fees to $12 per participant per season and $60 for tournament fees for diamond field users and indoor gym users. The rate for rectangular field users increased from $10 to $12 per participant per season and remain at $60 for tournament fees. Finally, the fee for non-County participants is increased from $50 to $75 for all field types per player. These fee increases will result in estimated additional revenue of $815,000 to support the athletic field capital program.

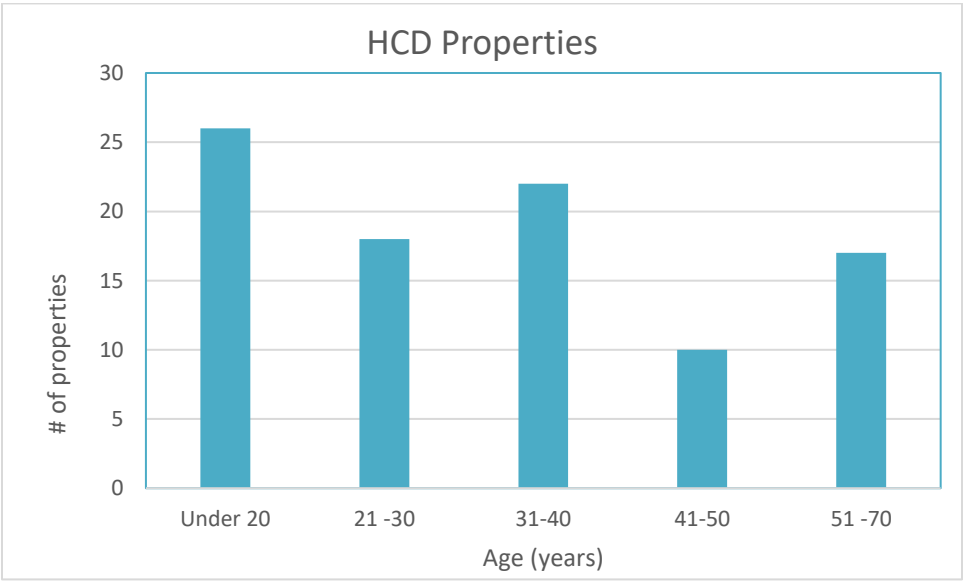
Maintenance efforts include contracted services to improve the condition of 706 athletic fields, including 442 Fairfax County Public School (FCPS) and 264 Park Authority fields. This total includes 105 synthetic turf fields of which 52 are FCPS fields, 51 are County Park fields, and two are owned by the Board of Supervisors and Town of Vienna, respectively. 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. There is currently a projected unfunded requirement beginning in FY 2027; however, it will be difficult to replace the planned 14 fields in one year and the projected shortfall may not occur. Beginning in FY 2028, there is the potential for a larger unfunded amount. Staff will be monitoring both athletic field revenues and field costs as well as the pace of construction on the required field replacements.

Turf Field Replacement Plan (Current Funding)						
10 year Replacement cycle	**FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**FY 2031**
Total Available Funds	**$6,320,519**	**$4,057,344**	**($641,580)**	**($2,538,992)**	**($3,331,063)**	**($3,609,000)**
Estimated # of FCPS Turf Field Replacements Required	5	5	3	2	3	2
Estimated # of FCPA Turf Field Replacements Required	2	9	6	5	3	2
Fields to be replaced (Red = FCPS Fields)	Hayfield SS South County MS #1 South County MS #2 South County HS Annandale HS Mason District #3 Pine Ridge #6	Falls Church HS Justice SS Sandburg MS Thomas Jefferson HS Westgate ES 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 #1 Spring Hill #2 Spring Hill #3 Waters Vienna	Bailey ES Westfield HS Greenbriar #5 Lee District #4 Nottoway #1 Nottoway #5 Quantum #1	Centreville HS Herndon HS Luther Jackson MS Arrowbrook #1 Ossian Hall #3 Pine Ridge #4	Graham Rd ES Robinson HS Linway Terrace SpringHill #5
Estimated Costs (Included in out years to calculate Year End Fund Balance)	$4,015,000	$8,129,400	$5,327,888	$4,222,547	$3,708,413	$2,521,721
Year End Fund Balance	**$626,868**	**($4,072,056)**	**($5,969,468)**	**($6,761,539)**	**($7,039,476)**	**($6,130,720)**

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 26 Housing facility priorities including $0.402 million category D projects which are scheduled to be funded in FY 2027. In addition, Housing and Community Development staff have identified $0.997 million in Category C projects that will require funding in FY 2027, totaling $1.4 million.

Infrastructure Replacement and Upgrade Requirements: Housing FY 2027						
Priority	Project Type	Facility	Category	Existing Conditions - Deficiencies	Estimate	Funding Status
1	Replace Sewer Mains/ Replace Electric Heat Pump/ Replace Electric Baseboard Heater (Common area)/ Replace Tile Roofing	The Atrium	D	Critical systems beyond useful life	$35,803	FY 27
2	Replace Gas Boiler/Replace Electric Heat Pump (Common area)/ Replace Thru-Wall A/C Unit/ Replace Gas Range/ Replace Range - HDCP	Audubon	D	Critical systems beyond useful life	$32,757	FY 27
3	Replace gas furnace	Barros Circle	D	Critical systems beyond useful life	$23,085	FY 27
4	Replace Refrigerator	Heritage Woods I & South	D	Critical systems beyond useful life	$1,377	FY 27
5	Replace Gas Heat/AC Unit	Heritage Woods North	D	Critical systems beyond useful life	$3,000	FY 27
6	Replace gas water heater/ Replace Galvanized Plumbing	Kingsley Park	D	Critical systems beyond useful life	$30,282	FY 27
7	Replace Asphalt Shingles	Newington Station	D	Critical systems beyond useful life	$13,708	FY 27
8	Replace Fire Panel/ Replace Range Hood/ Replace refrigerator	Old Mill Gardens	D	Critical systems beyond useful life	$13,628	FY 27
9	Replace gas water heater	Ragan Oaks	D	Critical systems beyond useful life	$16,759	FY 27
10	Replace Furnace	Reston Town Center	D	Critical systems beyond useful life	$20,735	FY 27
11	Replace in-unit heating/ Replace gas range/ Replace refrigerator/ Replace railroad tie retaining wall	Rosedale Manor	D	Critical systems beyond useful life	$73,684	FY 27
12	Replace Asphalt Shingles/ Replace Electric Range/ Replace Refrigerator	Sheffield Village	D	Critical systems beyond useful life	$9,551	FY 27
13	Replace Electric unit heater (Common area)/ Replace Fire Alarm Panel	Tavenner Lane	D	Critical systems beyond useful life	$6,026	FY 27
14	Replace Furnace and condensing units/ Replace gas range	West Ford I,II,III	D	Critical systems beyond useful life	$121,274	FY 27
15	Replace all 72"x80" Sliding Glass Doors/ Replace Laminate Countertops/ Replace Bathroom tile/ Seal Coat, Line Stripe Asphalt	The Atrium	C	Life cycle repairs when repairs are no longer cost effective	$33,285	FY 27
16	Replace VCT Flooring (Common area)/Replace Carpet (Common area)/ Replace Carpet	Audubon	C	Life cycle repairs when repairs are no longer cost effective	$22,380	FY 27
17	Replace playground equipment	Greenwood	C	Life cycle repairs when repairs are no longer cost effective	$40,006	FY 27
18	Replace Vinyl Lap Siding/ Replace single Metal Door - Conditioned Space/ Replace Vanity Cabinets	Greenwood II	C	Life cycle repairs when repairs are no longer cost effective	$3,240	FY 27
19	Replace Gutters and Downspouts/ Replace Wood Sign/ Replace Vinyl Lap Siding/ Replace VCT Flooring (Common Area)/ Replace Kitchen Cabinets/ Replace Bathroom Countertops/ Replace Vanity Cabinets/ Replace Carpet (5 BR)	Kingsley Park	C	Life cycle repairs when repairs are no longer cost effective	$90,957	FY 27
20	Replace Fence/ Replace Windows/ Replace VCT flooring/ Replace vanity cabinet/ Replace Vinyl tile	Old Mill Gardens	C	Life cycle repairs when repairs are no longer cost effective	$306,799	FY 27
21	Patch--seal parking & driveways/ Replace windows	Ragan Oaks	C	Life cycle repairs when repairs are no longer cost effective	$39,744	FY 27
22	Seal & fill cracks/Replace sliding glass door	Reston Town Center	C	Life cycle repairs when repairs are no longer cost effective	$9,000	FY 27
23	Replace sliding glass door/ Replace Kitchen Cabinets/ Replace countertop/ Replace Kitchen Floor Vinyl tile/ Replace Bathroom sinks/ Replace VCT flooring/ Replace vanity cabinet/ Replace Tub/shower surround/ Replace carpet flooring/ Paint Exterior Guardrails	Rosedale Manor	C	Life cycle repairs when repairs are no longer cost effective	$223,754	FY 27
24	Replace Single Metal Door - Unconditioned Space/ Replace Sliding Window/ Replace Metal Door - Single/ Repair and Repaint Soffits and Fascia/ Replace Laminate Countertops/ Replace VCT Flooring	Sheffield Village	C	Life cycle repairs when repairs are no longer cost effective	$22,160	FY 27
25	Seal and fill cracks	Tavenner Lane	C	Life cycle repairs when repairs are no longer cost effective	$107,724	FY 27
26	Purebond Kitchen Cabinets/ Tub/shower surround/ Vinyl tile	West Ford I,II,III	C	Life cycle repairs when repairs are no longer cost effective	$98,109	FY 27
	Total				$1,398,827	

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 M. Cole, Jr. Water Recycling Facility. 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. To effectively manage this vast system, the County has adopted an asset management framework that prioritizes system assessments and risk-based decision-making. As a result, the County has identified a large number of assets for renewal over the next 10 years due to aging pipeline and pumping station infrastructure. By leveraging enhanced inspection protocols and advanced assessment tools, the County can focus on high-priority projects and implementing strategies to extend asset longevity. 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 monitor the condition of each asset at each pump station and attempt 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 2027 – FY 2036) includes a continual increase in funding for Collection System rehabilitation with an average of $100.4 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 Water Recycling Facility 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 M. Cole, Jr. Water Recycling Facility, there are over 4,000 assets 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 $116.5 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	$100,371,100	Annual Requirement
2	Treatment Plan Improvements	Noman M. Cole, Jr. Water Recycling Facility	C	Projected lifecycle is 30 years	$116,451,700	Annual Requirement
	Total				**$216,822,800**	

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 $31 million would be required to reach 3.0 percent. The Wastewater Management System is currently maintaining a reserve of approximately $48 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. The conveyance system is comprised of 1,620 miles of pipes and improved channels which also include 66,800 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 $14 million per year in rehabilitating or replacing the existing system on about a 70-year cycle.

The County currently maintains an inventory of approximately 10,400 private and public stormwater management facilities, ranging from small rain gardens to large state regulated flood control dams. Reinvestment projects vary in scope and size and often include infrastructure improvements, such as dam repairs, structural rehabilitation, or the replacement of vegetation used in green stormwater practices. As the County's stormwater inventory continues to grow, many facility types still lack fully developed life cycle operating procedures, and a reliable life cycle cost model does not currently exist. To address the gap, the County is initiating a valuation study to better understand the long-term operational and capital needs associated with maintaining this extensive and diverse stormwater infrastructure portfolio. Based on recent experience with dredging, dam repair, and green infrastructure maintenance, the County currently estimates an annual program cost of approximately $17 million. This estimate includes both routine operating expenses and capital reinvestment activities, recognizing that components, such as plant material in green infrastructure, are critical to function and longevity, and must be regularly maintained or replaced to ensure facility performance.

While staff continues to further evaluate the impact of recent initiatives and the long-term requirements for the Stormwater Program, the FY 2027 rate will remain the same as the FY 2026 Adopted Budget Plan level of $0.0325 per $100 of assessed value. Revenue collected in recent years has been higher than projected as a result of increases in property values throughout the County. However, it is anticipated that in the next several years, incremental rate increases will be required based on continued growth of the stormwater system, the increased implementation of flood mitigation projects, and additional requirements in the Municipal Separate Storm Sewer System (MS4) permit reissued in January 2024. 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	66,800 Stormwater structures and 1,620 miles of pipes	D	Lifecycle is 50-75 years	$14,000,000	Annual Requirement
2	Stormwater Management Facilities	2,600 County facilities (including 20 state regulated dams) and 7,800 private facilities	C	Projected lifecycle is 35 years	$17,000,000	Annual Requirement
	Total				$31,000,000	

Revitalization Infrastructure

The Fairfax County Board of Supervisors has designated five geographic areas as Commercial Revitalization Districts (CRDs): Annandale, Bailey's Crossroads/Seven Corners, McLean, Route 1, and Springfield. To support the economic vitality, appearance, and functionality of these districts, the County administers a comprehensive maintenance program, which also extends to the Tysons Silver Line area.

The program covers approximately 1.1 million square feet of landscaped space and provides routine services, such as mowing, weeding, edging, trash removal, mulching, plant pruning, street sweeping, bus shelter power washing, and monthly inspections. In addition to these activities, the program undertakes arbor care and replanting projects that promote long-term landscape health and sustainability. Larger asset-based improvements are also manages through the program, including the repair or replacements of sidewalks, pavers, streetscape features, and bus shelters. Funding for these infrastructure needs is supported through the sinking fund. Current initiatives include new signage in the Annandale and Richmond Highway CRDs to strengthen district identity, as well as a replating effort in Bailey's Crossroads/Seven Corners that advances the County's adopted Urban Design Guidelines.

The program also encompasses 145 tree boxes and six Metro commuter facilities that are part of Phases I and II of the Silver Line corridor. At these sites, staff provide landscape care that includes mowing, edging, mulching, weeding, plant pruning, and litter removal. Arbor care and replanting projects are carried out here as well to maintain canopy health and enhance visual appeal. The program is also responsible for surface maintenance of walkways and travel ways, as well as snow removal during the winter.

Overall, the program continues to enhance the appearance, performance, and sustainability of CRD streetscapes and infrastructure.

Transportation Infrastructure

The County maintains an assortment of transportation infrastructure that has not been accepted into VDOT's system for maintenance. Transportation infrastructure items include bus shelters, street name signs, trails, sidewalks, and pedestrian bridges. 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.

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. All County maintained roads are being assessed using current technology and computer software. Upon completion of this assessment, a plan will be developed to repave roads with a poor rating. The Sinking Fund allocation has provided over $13 million to date for reinvestment in the most critical needs. In addition, a 5-year plan was developed identifying annual emergency funds to support 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. A fully funded reinvestment program is estimated at $5.2 million annually.

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 will continue into FY 2026. The assessment will rate the condition of all walkways to facilitate a walkway replacement schedule. In addition, 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 over $18 million to date for reinvestment in the most critical trail and bridge needs and continues to provide for those that have since been identified as deteriorating. In addition, a 5-year plan was developed identifying annual emergency funds for both annual reinvestment and the continued effort to complete assessments. 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.

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 a 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 currently 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. The following table includes the allocation of Capital Sinking funds to date.

Program Area	Total Allocated to Date
County Roads	$14,652,292
FCPS	32,463,678
FMD	107,562,878
Parks	37,343,028
Revitalization	7,780,271
Walkways	19,376,663
Total	**$219,178,810**

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

Road Repairs

Before	After

Trail Repairs

Before	After