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 and plumbing systems that have reached the end of their 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 Upgrades projects support 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 in systems and components.

LINK TO THE COMPREHENSIVE PLAN

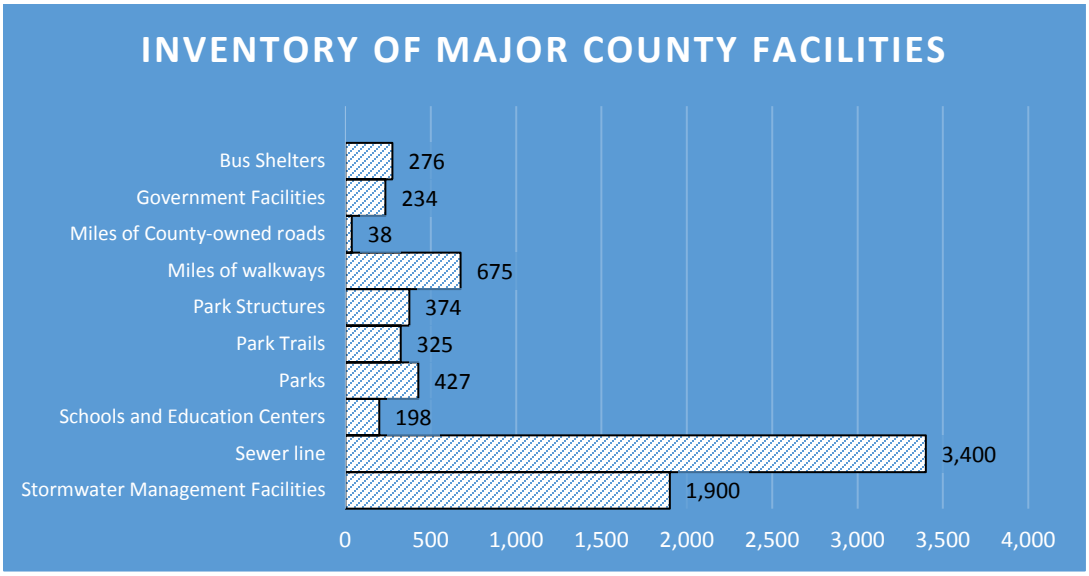
Fairfax County's Comprehensive Plan has established a number of objectives and policies in order to:

- ✓ Maintain a high-quality system of public infrastructure.
- ✓ Ensure adequate infrastructure replacement and upgrades of existing facilities, and provide urgently needed repairs to meet public health or safety needs.

Source: 2017 Edition of the Fairfax County Comprehensive Plan, Area IV, and the Policy Plan Element, Economic Development and Public Facilities Sections, as amended.

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 pipe and many facilities such as residential facilities and fire stations that operate 24/7, 365 days per year. Infrastructure replacement and upgrades 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:

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

Infrastructure Life Cycles

For planning purposes, the County uses the following life cycle guidelines when projecting future replacement requirements. 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. The following chart includes the expected lifecycle of building infrastructure.

GENERAL GUIDELINES FOR EXPECTED SERVICE LIFE OF BUILDING SUBSYSTEMS

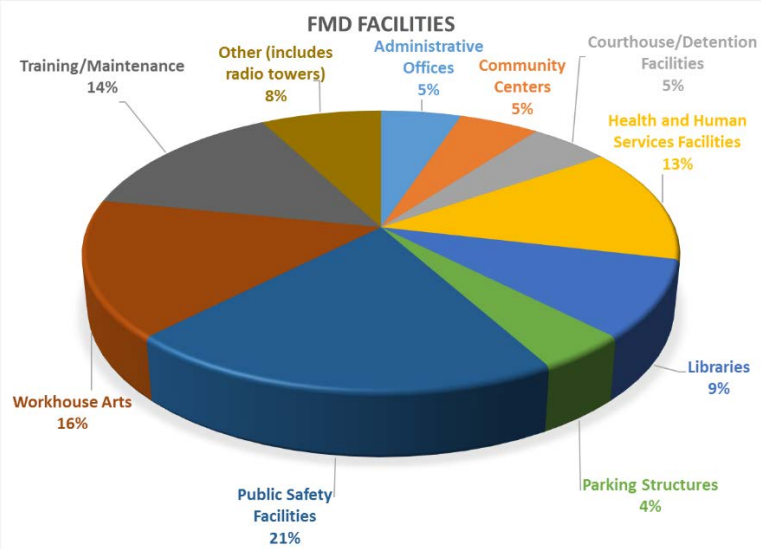
ELECTRICAL	
Service/Power	25 years
Generators	25 years
Lighting	20 years
Fire Alarms	15 years
HVAC	
Equipment	20 years
Boilers	15 to 30 years
Building Control Systems	10 years
PLUMBING	
Pipes and fittings	30 years
Fixtures	30 years
Pumps	15 years
OTHER	
Elevator	25 years
Escalator	25 years
Systems Furniture	20 to 25 years
Roofs	20 years
Paving	15 years
Carpet Tiles	15 years
Broadloom Carpet	7 years

Program Area Requirements

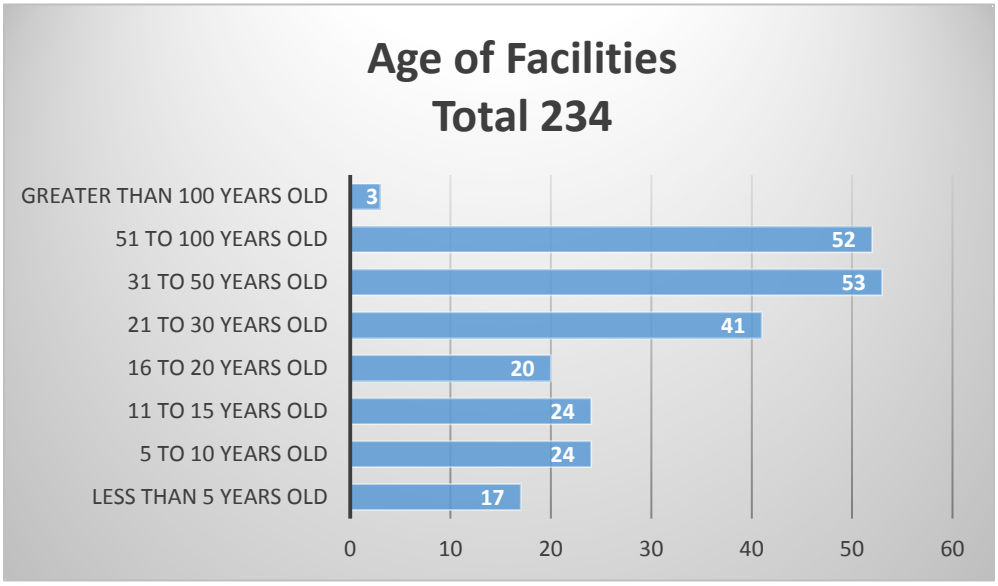
The sections that follow are grouped by specific capital program areas. Each program area has identified slightly different methodologies for categorizing projects, measuring the facility conditions and identifying funding sources. Many program areas are assessed on an annual basis and some have developed multi-year plans for maintaining infrastructure. The data that follows has been compiled for the first time in FY 2019, and will need to be refined in the future to ensure that information is comparable.

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 2019 facility inventory of over 10 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.



FMD is currently responsible for an inventory of 246 buildings. Of this amount, 12 facilities are maintained by FMD, but Infrastructure Replacement and Upgrade work is performed by another entity, such as the Department of Housing and Community Development. As the inventory of County facilities age, reinvestment in buildings and building equipment becomes critical. Currently, over 60 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 and each individual project involves 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, 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: For many years, the requirement for County infrastructure replacement and upgrades has been estimated at $26 million per year. This estimate is based on collected assessment data, as well as industry standards (2 percent of the current replacement value). Based on current staffing levels, the complexity of many of the projects, and the timeline for completing replacement and upgrade projects, it is estimated that approximately $15 million per year would be a good funding goal. The following chart includes both funded and unfunded infrastructure replacement and upgrade requirements identified to date at County owned facilities. This list totals approximately $135 million, of which $9.9 million is proposed to be funded as part of the *FY 2018 Third Quarter Review* or as part of the FY 2019 budget. In addition, approximately $9.4 million is associated with projects that are currently underway. An additional $75.1 million is associated with projects that are scheduled for renovation as part of the 5-10 year CIP period. As a result, the total requirement could be reduced to approximate $41 million. However, this number is a moving target, as building systems and components can fail without notice and many buildings in the portfolio have not been assessed in over 15 years. In addition, many of facilities with category “F” and “D” upgrade projects identified may not be remediated for several years. The backlog requirements will continue to increase as capital components pass the end of their useful life.

Fund	Proposed FY 2018 Third Quarter/Carryover	Unfunded	Total
Asphalt and Paving	$1,242,000	$7,830,758	$9,072,758
Building Envelope	$458,000	$9,927,019	$10,385,019
Electrical	$866,000	$19,569,698	$20,435,698
Elevators and Escalators	$1,350,000	$6,929,461	$8,279,461
Fire Alarms and Fire Suppression	$493,000	$7,613,152	$8,106,152
Generators	$700,000	$1,104,844	$1,804,844
HVAC & Building Automation	$2,183,000	$51,468,452	$53,651,452
Interior/Exterior Repairs	$260,000	$6,981,160	$7,241,160
Plumbing	$300,000	$7,563,878	$7,863,878
Roofs	$2,086,000	$4,478,719	$6,564,719
Parking Garages	$0	$1,969,000	$1,969,000
Total	$9,938,000	$125,436,141	$135,374,141

Emergency System Failures Project: In addition to the planned replacement of building systems, unplanned emergencies often occur. As part of the *FY 2013 Carryover Review*, the Board of Supervisors approved an amount of $5.0 million to support unexpected emergency system failures that occur at aging County facilities throughout the year. This project provides a source of funding for these types of 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 in order to maintain this level of funding and address emergency repairs at facilities in the event of a major systems failure such as a large HVAC system, or other unforeseen event. Some examples of Emergency System Failure projects include: the replacement of a failed Uninterruptable Power Supply at the Jennings Courthouse, replacement of a failed booster pump at the Government Center, replacement of failed grease piping and traps in the Pennino Building child care center kitchen, replacement of electrical service at West Ox Department of Vehicle Services Garage to correct safety issues, structural repairs to the Government Center cooling towers and platforms, replacement of a failed roof top unit at the Kings Park Library, remediation of tunnels at the Workhouse Arts Center, replacement of the failed/leaking roof at the Jennings Courthouse, drainage corrections at the Clifton Fire Station and Town Hall, and replacement of the chiller at Reston Library to correct a noise ordinance violation.

Fairfax County Public Schools (FCPS)

Fairfax County Public School (FCPS) is the largest educational system in the Commonwealth of Virginia and the tenth largest school system nationwide, ranked by enrollment. FCPS is currently responsible for 191 schools and 7 special education centers. There are currently 141 Elementary Schools, 23 Middle Schools, 22 High Schools, 3 Secondary Schools (Grades 7 through 12), 2 Alternative Schools and 7 Special Education Centers. FCPS maintains more than 26 million square feet of school buildings and office space, including 153 Energy Star certified schools (more than any other school system in the country). FCPS has a robust capital program including renovations, new schools and capacity enhancements. In addition, approximately $10 million is allocated annually for infrastructure replacement and upgrades at schools, centers, and administrative facilities. Since FY 2016 the County has transferred $13.1 million annually (a total of $39.3 million through FY 2018) to the FCPS Capital Program to offset expenses previously funded by school bonds for facility infrastructure replacement and upgrades. This $13.1 million for infrastructure management includes repairs, replacement, and upgrades in school system facilities such as HVAC, ADA, security, roof replacement, athletic infrastructure, life safety systems, and asphalt paving.

The following chart includes both funded and unfunded infrastructure replacement and upgrade requirements throughout the FCPS system. Any renovation project that has been bid for construction has not been included below; however, infrastructure replacements and upgrades associated with renovation projects planned over the 5-10 year period are included here as many of these building components will require replacement prior to scheduled renovations. In FCPS' 10-year CICP, the backlog of requirements will continue to increase by 12 percent or $15 million annually as capital components pass the end of their useful life. This chart provides a point in time snapshot and does not include all projected requirements.

SUMMARY-FCPS FY 2019 REPLACEMENT AND UPGRADE REQUIREMENTS			
Fund	**Funded FY19**	**Unfunded**	**Total**
ADA-Facilities	$1,250,000	$5,000,000	**$6,250,000**
Asphalt Capital	$904,815	$4,212,098	**$5,116,913**
Athletic Capital	$1,110,000	$1,666,831	**$2,776,831**
Electrical Systems	$0	$12,504,670	**$12,504,670**
Health-Safety-ADA Equipment	$0	$12,217,779	**$12,217,779**
HVAC Capital	$3,618,067	$76,698,465	**$80,316,532**
Information Technology	$2,000,000	$0	**$2,000,000**
Plumbing Systems	$139,804	$4,337,971	**$4,477,775**
Roofing	$3,625,000	$14,500,000	**$18,125,000**
Safety and Security	$600,000	$414,000	**$1,014,000**
Total	**$13,247,686**	**$131,551,814**	**$144,799,500**

FCPS' Comprehensive Investment Capital Plan (CICP) provides an assessment index (AI) to prioritize capital asset renewal projects, based on the capital asset's useful life and criticality. Nationally, 21st Century Schools recommends a best business practice of investing 2 percent of an organizations current replacement value (CRV) to support its capital renewal program. FCPS' CRV is estimated at $6.2 billion, but only receives funding from internal and County sources totaling 0.4 percent of the CRV. This significantly under-funded requirement created a deferred backlog which continues to grow; FY2015 - $99 million, FY 2016 - $110 million, FY 2017 - $128 million and FY 2018 - $142 million. This snow ball effect will continue with the current investment amount. A review of FCPS CICP 10-year cash flow of $446,639,593 in End of Useful Life (EOUL) requirements, in addition to $74,750,000 in Roofing, Security, Facility ADA, and DIT EOUL requirements, over this same 10-year period, total $521,389,593. FCPS will need an increase in the Infrastructure Replacement Funding and FCPS Major Maintenance allocation to keep pace and become good stewards of the capital asset program prior to renovations. Total funding for FCPS at the goal of 1 percent of CRV would be $62 million, of which $23.1 million is currently funded. These improvements will positively impact health and safety, indoor air quality, and result in an educationally inspiring environment for our students and staff.

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 374 structures at 427 Parks with 58 percent of this total inventory over 30 years old. In addition, the Park Authority owns a total of 23,418 park acres which equates to over 9.3 percent of the land mass of Fairfax County. In 2016, Parks Count, which is the Park Authority Needs Assessment was completed and provides recommendations for capital investments in the park system based on a body of data that the Park Authority will continue using for years. The total projected need for the ten-year period was $939,161,000; that amount has been reduced by $87,700,000 due to the approval of the 2016 Park Bond Referendum for a future need of $851,461,000. The remaining needs of $851,461,000 are 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 addresses deferred maintenance at existing parks and facilities. The Critical funding need is $98,892,000 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 $107,945,000, the need for years 6-10 is $172,350,000, for a total of $280,295,000.
- 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 Visionary need is $472,274,000 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.

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 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 $8.1 million in estimated Park Authority Category “F” projects which are estimated to be funded between FY 2019 and FY 2021. In addition, to this list, the Park Authority has identified $32 million in unfunded Category “D” projects. These category “D” projects can often become Category “F” projects if left unattended. The Category “D” list includes infrastructure replacement and upgrades such as: fire alarm systems, electrical panels, playgrounds, HVAC systems, trail renovations, athletic courts, irrigation systems parking lots, historic houses, shelters, restrooms, picnic areas and other small mixed-use buildings.

To further safeguard and align with County practices, the Park Authority established a Capital Sinking Fund within their Park Improvement Fund. Annual Net Revenue is designed to be transferred to this capital sinking fund to contribute to fund ongoing needs at revenue-generating sites. Recent analysis identified an unfunded annual need for lifecycle/capital renewal maintenance at revenue supported facilities. To date, the Park Authority has identified approximately $21.9 million in category D and F projects associated with their 9 RECenters. 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.

INFRASTRUCTURE REPLACEMENT AND UPGRADE REQUIREMENTS: PARKS

PRIORITY	PROJECT TYPE	FACILITY	CATEGORY	EXISTING CONDITIONS/DEFFICIENCIES	ESTIMATE	Funding Status
1	Fire Alarm Systems	Park Authority Facilities throughout the County	F	- Increased equipment breakdowns - Disruption to building operations/users - Unreliable; potential failure - Maintenance and repairs no longer feasible - Safety Hazard	$5,000	FY 2019
2	Storage Facilities	Park Authority Facilties throughout the County	F	- Maintenance and repair no longer feasible - Disruption to building operations/end-users - Increased utilities cost	$3,000,000	FY 2019 - FY 2021
3	Shelters/ Shade Structures/ Restrooms/ Picnic Areas	Park Authority Properties throughout the County	F	- Maintenance and repair no longer feasible - Disruption to building operations/end-users - Increased utilities cost	$2,800,000	FY 2019 - FY 2020
4	Playgrounds	Park Authority facilities throughout the County	F	- Maintenance and repair no longer feasible - Disruption to building operations/end-users	$1,500,000	FY 2019 - FY 2020
5	Turf Athletic Fields	Park Authority facilities throughout the County	F	- Maintenance and repair no longer feasible	$250,000	FY 2019 - FY 2020
6	Athletic Court Surfaces	Park Authority facilities throughout the County	F	- Maintenance and repair no longer feasible	$351,150	FY 2019 - FY 2020
7	Demolish or Repair Houses/ Garages/ Barns	Park Authority facilities throughout the County	F	- Safety hazard	$200,000	FY 2019
	Total Category F				**$8,106,150**	
8	Replace and Upgrade Fire Alarm Systems	Park Authority facilities throughout the County	D	Safety hazard	$15,000	FY 2020
9	Replace and Upgrade Electrical	Park Authority facilities throughout the County	D	Does not meet current code requirements	$105,000	FY 2020-FY 2021
10	Replace Playgrounds	Park Authority facilities throughout the County	D		$3,720,000	FY 2021- FY 2923
11	HVAC Systems	Park Authority facilities throughout the County	D	Increased equipment failure Old technology Disruption to building operations/users Increased Utility Costs	$100,000	FY 2021- FY 2022
12	Renovate Trails	Park Authority Properties throughout the County	D	Address Safety Concerns Heavy usage	$1,503,977	FY 2021 - FY 2022
13	Replace and Renovate Failing Parking Lots, roadways and	Park Authority Properties throughout the County	D	Increased failures Maintenance and repair no longer feasible	$2,435,950	FY 2020-FY 2022
14	Maintenance/ Storage	Park Authority facilities throughout the County	D	Renovation required	$18,000,000	FY 2022 - FY 2024
15	Irrigation Systems	Park Authority Properties throughout the County	D	Replacement required	$216,000	FY 2020-FY 2021
16	Athletic Court Surface	Park Authority Properties throughout the County	D	Repairs or Replacement required	$1,951,920	FY 2020 - FY 2023
17	Shelters/ Shade Structures/ Restrooms/ Picnic Areas	Park Authority Properties throughout the County	D	Replacement or renovation required	$3,401,000	FY 2021- FY 2023
18	Historic Houses	Park Authority Properties throughout the County	D	Maintain or Remove	$85,000	FY 2020- FY 2021
19	Houses/ Garages/ Barns	Park Authority Properties throughout the County	D		$185,000	FY 2020- FY 2021
20	Small Buildings with Mixed Use		D		$15,000	FY 2022
	Subtotal Category D				**$31,733,847**	
	Total				**$39,839,997**	

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. Annual funding of $7.6 million is included for the athletic field maintenance and sports program in FY 2019. This level of funding is supported by a General Fund transfer of $6,135,338 and revenue generated from the Athletic Services Fee in the amount of $1,475,000. Of the Athletic Services Fee total, $800,000 will be dedicated to the turf field replacement program, $275,000 will be dedicated to custodial support for indoor sports organizations, $250,000 will be dedicated to maintenance of school athletic fields, $75,000 will be dedicated to synthetic turf field development, and $75,000 will partially fund the Youth Sports Scholarship Program. The Athletic Service Fee revenue is based a rate of $5.50 per participant per season and $15 for tournament team fees for diamond field users and indoor gym users and a rate of $8.00 per participant per season and $50 tournament team fees for rectangular fields users. The increase for rectangular field users is specifically to pay for the turf field replacement fund.

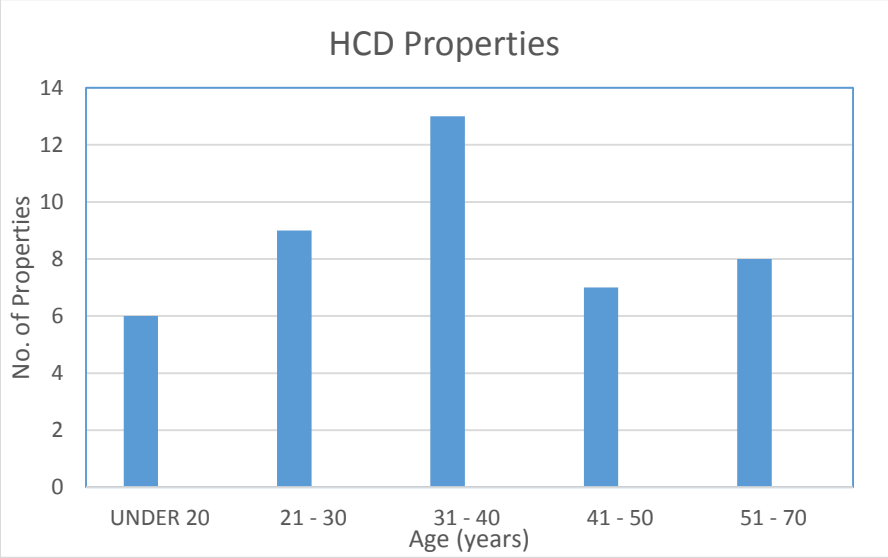
Maintenance efforts include: contracted services to improve the condition of 417 non-Park Authority athletic fields scheduled for community use at FCPS elementary schools, middle schools and centers; upgrades to athletic field lighting systems at middle and high schools; and the development and replacement of synthetic turf fields. Maintenance responsibilities include mowing at a frequency of 29 times per year and annual aeration/over-seeding. A large portion of the program supports synthetic turf fields which allow for year-round use in most weather increasing playable hours, provide playing surfaces and conditions that are similar to grass fields, and eliminate the need for watering, mowing, and fertilizing. There are a total of 91 synthetic turf fields throughout the County, of which 24 are FCPS stadium fields and 67 are County park/FCPS non-stadium fields. Increased annual funding has been provide to begin to address the growing need for field replacement and to establish a 10-year replacement schedule. The first turf field replacement efforts began in 2013 for the first two fields developed. 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 current projected replacement cost per field is approximately $450,000.

The following chart outlines the 10-year 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 2024. The level of funding support will need to be re-evaluated prior to FY 2025.

NCS - Turf Field Replacement Plan (Current Funding)										
10 year Replacement cycle	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**
Fund - Beginning Balance	$1,612,617	$685,003	$1,660,003	$2,285,003	$3,460,003	$3,835,003	$3,260,003	$1,985,003	-$1,539,997	-$764,997
Replacement Fund Contribution	$2,250,000	$2,250,000	$2,250,000	$2,250,000	$2,250,000	$2,250,000	$2,250,000	$2,250,000	$2,250,000	$2,250,000
Partner/Matching Funds	$300,000	$0	$100,000	$200,000	$300,000	$700,000	$0	$0	$250,000	$100,000
One-time Agency Contribution (from Application Fee)	$122,386	$75,000	$75,000	$75,000	$75,000	$75,000	$75,000	$75,000	$75,000	$75,000
Total Available Funds	**$4,285,003**	**$3,010,003**	**$4,085,003**	**$4,810,003**	**$6,085,003**	**$6,860,003**	**$5,585,003**	**$4,310,003**	**$1,035,003**	**$1,660,003**
Estimated # of Turf Field Replacements Required	8	3	4	3	5	8	8	13	4	11
Estimated Cost	$3,600,000	$1,350,000	$1,800,000	$1,350,000	$2,250,000	$3,600,000	$3,600,000	$5,850,000	$1,800,000	$4,950,000
Year End Fund Balance	**$685,003**	**$1,660,003**	**$2,285,003**	**$3,460,003**	**$3,835,003**	**$3,260,003**	**$1,985,003**	**-$1,539,997**	**-$764,997**	**-$3,289,997**
The replacement of high school stadium fields is the sole responsibility of FCPS.										

Housing and Community Development (HCD) Facilities

HCD's housing inventory includes thirty-two residential properties, ten group homes, one mobile home park and two office buildings. The inventory is significant, housing approximately 21,948 residents in 2,238 apartments, 551 townhouses, 10 group homes and 115 mobile homes. As evidenced in the graph below 65 percent of the properties are 31 years or older. Many of the infrastructure replacement and upgrade projects have been deferred due to increasingly less funding from HUD. 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 10 Housing facility priorities totaling $3.3 million which are scheduled to be funded between FY 2017 and FY 2021. In addition, Housing and Community Development staff have identified an additional $4.5 million category "D" projects that will require funding during the same time-period. The total requirement identified between FY 2017 and FY 2021 is $7.8 million.

INFRASTRUCTURE REPLACEMENT AND UPGRADE REQUIREMENTS: HOUSING

PRIORITY	PROJECT TYPE	FACILITY	CATEGORY	EXISTING CONDITIONS/DEFFICIENCIES	ESTIMATE	Funding Status
1	Replace doors, water heaters, appliances & electrical panels	The Atrium Apartments	D	- Increased equipment breakdowns - Disruption to building operations/users - Unreliable equipment; potential failure - Maintenance and repairs no longer feasible - Safety Hazard	$266,000	FY 2017 - FY 2021
2	Replace doors, water heaters, HVAC, flooring & appliances	Audubon Apartments	D	- Increased equipment breakdowns - Disruption to building operations/users - Unreliable equipment; potential failure - Maintenance and repairs no longer feasible - Safety Hazard	$164,834	FY 2017 - FY 2021
3	Replace roofs, water heaters, HVAC, kitchen cabinets, appliances & flooring	Barkley Square Townhomes	D	- Increased equipment breakdowns - Disruption to building operations/users - Unreliable equipment; potential failure - Maintenance and repairs no longer feasible - Safety Hazard	$33,840	FY 2017 - FY 2021
4	Replace playground equipment, kitchen cabinets & appliances	Barros Circle Townhomes	D	- Increased equipment breakdowns - Disruption to building operations/users - Unreliable equipment; potential failure - Maintenance and repairs no longer feasible - Safety Hazard	$297,694	FY 2017 - FY 2021
5	Replace playground equipment, windows, doors, water heaters, HVAC, flooring & appliances	Briarcliff Townhomes	D	- Increased equipment breakdowns - Disruption to building operations/users - Unreliable equipment; potential failure - Maintenance and repairs no longer feasible - Safety Hazard	$118,706	FY 2017 - FY 2021
6	Replace HVAC, kitchen cabinets, flooring & electrical panels	Colchester Condominiums	D	- Increased equipment breakdowns - Disruption to building operations/users - Unreliable equipment; potential failure - Maintenance and repairs no longer feasible - Safety Hazard	$103,826	FY 2017 - FY 2021
7	Replace fencing, water heaters, kitchen cabinets, flooring, appliances & sump pumps	Greenwood II Townhomes	D	- Increased equipment breakdowns - Disruption to building operations/users - Unreliable equipment; potential failure - Maintenance and repairs no longer feasible - Safety Hazard	$31,499	FY 2017 - FY 2021
8	Seal & stripe parking lots, repair/replace walkways, paint exterior, replace roofs, HVAC, kitchen cabinets, flooring & appliances	Greenwood Apartments	D	- Increased equipment breakdowns - Disruption to building operations/users - Unreliable equipment; potential failure - Maintenance and repairs no longer feasible - Safety Hazard	$1,618,229	FY 2017 - FY 2021
9	Seal & stripe parking lots, repair/replace walkways, replace playground equipment, entrance doors, water heaters, flooring & appliances	Kingsley Park Townhomes	D	- Increased equipment breakdowns - Disruption to building operations/users - Unreliable equipment; potential failure - Maintenance and repairs no longer feasible - Safety Hazard	$335,315	FY 2017 - FY 2021
10	Replace water heaters, HVAC, kitchen cabinets, flooring, appliances & tub surrounds	Newington Station Townhomes	D	- Increased equipment breakdowns - Disruption to building operations/users - Unreliable equipment; potential failure - Maintenance and repairs no longer feasible - Safety Hazard	$299,363	FY 2017 - FY 2021
Total					$3,269,306	

Wastewater Infrastructure

There are 3 major infrastructure systems, within the Wastewater System: Pump Stations, the Noman Cole Pollution Control Treatment Plant, and Collections System. In any given year, the amount programed 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. There are 63 wastewater pump stations. Each station typically has 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 housing 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 current 10-year financial plan (FY2017-FY2026) includes an average $9.6 million per year for reinvestment and rehabilitation of these facilities. This component of the system is currently fully funded.

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 as well as by the age of system. Based on age and condition, reinvestment schedules are determined. Currently in the 10-year plan there is an average of $90 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.

The Collection system consists of approximately 3,400 miles of pipe and 94,000 manholes. Approximately 70 percent of the system is 30 years or older. In the late 1990s the County began a significant reinvestment program by relining existing pipes utilizing trenchless technology. Over 15 percent of the system has been rehabilitated utilizing this technology, primarily on the smaller, 8" to 15" lines. In recent years, the program has been expanded to include inspection and rehabilitation of the larger trunk lines. The 10-year financial plan includes a continual increase in funding for collection system rehabilitation with an average of $24 million per year. With this gradual ramp up and based on current information, the appropriate reinvestment amounts are being 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 three 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 insure adequate funds are programed to safely maintain and operate the systems.

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	Pump Stations	Countywide	C	Projected lifecycle is 30 years	$9,600,000	Annual Requirement
2	Treatment Plan Improvements	Noman Cole Pollution Control Plant (NCPCP)	C	Projected lifecycle is 30 years	$90,000,000	Annual Requirement
3	Gravity Sewer Lines	Countywide	C	Projected lifecycle is 50 to 75 years	$24,000,000	Annual Requirement
	Total				**$123,600,000**	

It should be noted that the Sanitary Sewer 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 $30 million would be required to reach 3.0 percent. The Sanitary Sewer System is currently maintaining a reserve of approximately $13 million.

Stormwater Infrastructure

There two major infrastructure systems associated with the stormwater program, the conveyance system including pipes, manholes and inlets; 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 1,400 miles of pipes and paved channels, and approximately 62,000 manholes and inlets. The pipes range in size from 12 to 78 inches and can be made from concrete, various metals, 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 recent 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. In FY 2019, this program is funded in the amount of $7.0 million.

The County currently also maintains approximately 1,900 stormwater management facilities ranging from small rain gardens to large flood control dams. Reinvestment projects vary in scope and include replacement of plant materials as part of the treatment process for dredging the larger lakes and ponds. Because many of these facilities are newer and the routine and life cycle operating procedures 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 $16.6 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 $16.6 million estimate includes both annual operating expenses as well as traditional capital expenses such as dredging and dam repair. In FY 2019, this program is funded in the amount of $7.5 million.

In FY 2015, staff developed a five-year rate plan and a phased approach for funding and staffing to support the stormwater system, including the anticipated regulatory increases. FY 2019 represents the final year of the five-year plan and during the next year, staff will be evaluating the success of the program, analyzing the stormwater rate requirements and developing the next 5-10 year Stormwater Plan. It is anticipated that the next multi-year plan will continue to include ¼ cent increases per year until such time as the rate is at the target level of 4 cents to fully fund the reinvestment and regulatory program. In FY 2019 the Stormwater Services Fund will support $54.7 million for capital project implementation. This level of funding supports not only infrastructure replacement and upgrade projects, such as the upgrading of the conveyance system, dam safety improvements, and stormwater facility improvements, but funding for the regulatory program, inspections, stream and water quality, and contributory funding requirements.

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	62,000 structures and 1,400 miles of pipes	D	Lifecycle is 30 years	$16,000,000	Annual Requirement
2	Stormwater Management Facilities	1,900 county facilities and 4,200 private facitilites including 20 state regulated dams	C	Projected lifecycle is 50 to 75 years	$16,600,000	Annual Requirement
	Total				$32,600,000	

Revitalization Infrastructure

The five geographical areas in the County that are defined as Commercial Revitalization Districts (CRDs) include: Annandale, Baileys/Seven Corners, McLean, Route 1 and Springfield. These five CRDs total 821,521 square feet. Both routine maintenance (trash removal, quality control inspections, grass mowing, edging, pruning, mulching, bus shelter glass cleaning, pest control, leaf removal) and non-routine capital improvement projects are conducted annually. The non-routine improvements in the CRDs include: under grounding utilities; roadway design and construction; and, streetscape improvements that consist of new paver sidewalks, street furnishings, signage, and bus shelters. Several of these non-routine improvement projects have been initiated in the CRDs with the sinking fund allocation and have been focused on sidewalk and bus shelter repairs. There are 20 bus shelters that have been identified to be replaced throughout the

County by spring 2018. The Bailey's Sidewalk rehabilitation and Bland Street Public Private Partnership projects are currently underway and include infrastructure repairs such as retaining walls, brick paver repairs, stair relocations and sidewalk redesigns. Routine maintenance efforts are supported by annual funding of $750,000. In addition, the FY 2019 Advertised Budget Plan includes increased funding of $200,000 for a total program of $950,000. This additional funding will support 2 Project Manager positions to plan, manage, implement and provide some identified service enhancements in the CRDs as supported by the Board of Supervisors. These positions will facilitate the coordination between the Board of Supervisors, Office of Community Revitalization and community groups in each area to choose and implement each project.

Staff continues to develop a multi-year implementation plan to phase in an enhanced level of service provided within Commercial Revitalization Districts (CRDs). Staff is working to develop a more sustainable maintenance and reinvestment approach by reviewing the current inventory, reviewing urban streetscape standards, researching best management practices, and developing a more rigorous review and implementation process for new projects. The goal of the program is to enhance the appearance, functionality and sustainability of the pedestrian environment in CRDs and to prevent CRD infrastructure and aesthetic improvements from falling into a state of disrepair. The proposed Plan will include expanding the areas eligible for enhanced levels of service for grass cutting, landscaping, litter control, weed control and street light inspections. In addition, the plan would include routine street sweeping and provide for the repairs and replacement of sidewalks and curbs for areas within the CRD.

Transportation Infrastructure

The County maintains an assortment of transportation infrastructure that is beyond the service levels provided by VDOT. Some of these include bus shelters, street name signs, trails and sidewalks that provide pedestrian connections, and roads and service drives not maintained by VDOT.

Bus Shelters:
The County maintains 276 bus shelters. The infrastructure replacement and upgrade program focuses on repairs to damaged shelters. A fully funded program would include cleaning, trash collection and reinvestment. Some of the cleaning and trash collection is provided by the Office of the Sheriff's Community Labor Force. Annual funding is used to replace damaged panels and replace shelters destroyed by vandalism or accidents. 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 $10,000 per shelter, is $140,000. This level of funding would replace 14 shelters per year.

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 $665,000.

Walkways:
The County manages 675 miles of walkways and 69 pedestrian bridges, valued at an estimated $220 million. This inventory includes 63 percent of walkways that are over 19 years old. Projects are prioritized based on condition as well as pedestrian usage. On-going repairs provide for upgrades required for public standards, address safety and hazardous conditions, and rehabilitation of pedestrian bridges. Damaged trail surfaces, retaining wall failures, and handrail repairs are just a few of the common issues. The 2013 Rinker Study revealed that there are approximately 10 miles of trails in extremely poor condition requiring $3 million in initial reinvestment as well as increased funding for annual emergency repairs. A 3-Year Plan was developed to address the $3 million initial reinvestment program estimating approximately $1 million per year to eliminate the backlog. The Sinking Fund allocation has provided $2.7 million of the $3 million estimated for the 3-Year Plan, leaving approximately $300,000 remaining to be funded. Once the initial backlogged reinvestment has been completed, it is anticipated that funding for annual repairs will continue to address those walkways not yet considered in extremely poor condition and to sustain the Program in the future.

In addition, the Rinker Study did not include an assessment of pedestrian bridges. 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 $5.4 million annually. In the last several years the sinking fund program has more than doubled the amount being invested in walkways and staff continues to work to implement this program.

County-Owned Roads:

The County is responsible for emergency safety and road repairs to County-owned service drives and County-owned stub streets which are currently not accepted in the Virginia Department of Transportation (VDOT) highway system for maintenance. The County is currently responsible for 38 miles of roadways, valued at over $230 million. On-going road repairs often include: pothole repair, pavement rehabilitation, sidewalk and curb repairs, traffic and pedestrian signage, hazardous tree removal, grading, patching, and stabilization of shoulders. The 2015 Rinker study identified an amount of $4 million in initial reinvestment funding required for the roadways with the most hazardous conditions, as well as increased funding for annual emergency repairs. A 5-Year Plan was developed to address the $4 million reinvestment program, estimating $800,000 per year to address the backlog. The Sinking Fund allocation has provided $2.7 million of the 5-Year Plan, leaving approximately $1.3 million remaining to be funded. Once the initial backlogged reinvestment has been completed, it is anticipated that funding for annual reinvestments will continue to address those roads not yet considered hazardous and to sustain the Program in the future. Assuming a 20-year life, the estimated annual reinvestment funding required is $6.2 million. In the last several years the sinking fund program has more than doubled the amount being invested in these roads and staff continues to work to implement this program.

Summary of Transportation Infrastructure	
Program Area	**Annual Amount**
Bus Shelters	$140,000
Street Signs	$665,000
Walkways	$5,400,000
County-owned Roads	$6,200,000

Capital Sinking Fund

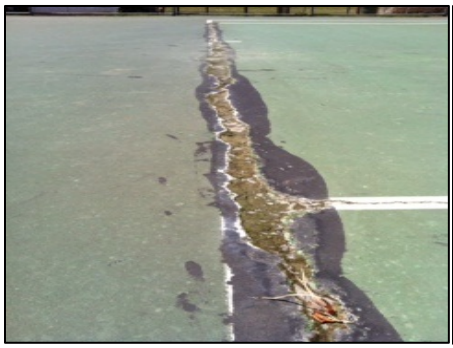
In April 2013, the County and School Board formed a joint committee, the Infrastructure Financing Committee (IFC), to collaborate and review both the County and School's Capital Improvement Program (CIP) and infrastructure upgrade requirements. One of the goals of the Committee was to develop long-term maintenance plans for both the County and Schools, including annual requirements and reserves. The committee conducted a comprehensive review of critical needs and approved recommendations to support the development of a sustainable financing plan to begin to address current and future capital requirements. One of the components of the Final IFC Report included support for a capital sinking fund which would be populated each year as part of the Carryover Review based on 20 percent of the available year end balances. Funding was to provide for infrastructure replacement and upgrades, such as replacement roofs, electrical systems, HVAC and other facility requirements. The Board of Supervisors first approved the establishment of the IFC recommended Capital Sinking Fund as part of the *FY 2014 Carryover Review*. The Board of Supervisors also approved the allocation of the total sinking fund based on specific percentages for each infrastructure area, including: 55 percent for FMD, 20 percent for Parks, 10 percent for walkways, 10 percent for County roads and service drives, and 5 percent for revitalization. These funds support prioritized critical infrastructure replacement and upgrades projects throughout the County. The following table includes the allocation of Capital Sinking funds to date.

Program Area	Total Allocated to Date
MD	$14,722,086
Parks	$5,353,485
Walkways	$2,676,744
County Roads	$2,676,744
Revitalization	$1,338,372
Total	$26,767,431

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. Some examples of Capital Sinking Fund projects follow:

Athletic Court Repairs

Before



After

Trail Repairs

Before

After

Window Replacement

Before

After

1742