

Environmental and Energy Program

Program Description

This section Includes environmental and energy strategy projects and describes the on-going Sustainability Policy for building construction.

Link to the Comprehensive Plan

The Environment Section of the Policy Plan within the Fairfax County Comprehensive Plan includes the following established objectives:

- Improve the identification and mitigation of environmental impacts, and the monitoring and enforcement of environmental policies as applied to land disturbing activities.
- Design and construct buildings and associated landscapes to use energy and water resources efficiently and to minimize short- and long-term negative impacts on the environment and building occupants.

Source: 2017 Edition of the Fairfax County Comprehensive Plan, Policy Plan - Environment, Amended through 12-3-2019

Program Initiatives

The Fairfax County Board of Supervisors has set the framework for the county's environmental initiatives through its vision, goals, policies, and ordinances and has dedicated considerable resources to support implementing these initiatives. The county's Environmental Vision helps to guide environmental sustainability initiatives, strategies, policies, and programs. Two key principles direct the vision: the conservation of limited natural resources, and a commitment to providing the resources needed to protect the environment. The vision is connected to how the county provides services, and it focuses on seven core service areas: Land Use, Transportation, Water, Waste Management, Parks and Ecological Resources, Climate and Energy, and Environmental Stewardship

Each year Environmental Improvement Plan (EIP) projects are selected based on a project selection process supported by the Environmental Quality Advisory Council (EQAC), which includes the application of specific project criteria, review of proposals from county agencies, and identification of projects for funding. Some of the programs approved for funding have previously included the Park Authority's Invasive Management Area (IMA) Program, the Green Purchasing Program, the Watershed Protection and Energy Conservation Matching Grant Program, outreach and education programs, the installation of web-based smart technologies to limit water consumption, and natural landscaping projects.

Environmental Initiatives

The county established two committees to facilitate collaboration and coordination regarding environmental initiatives, the Environmental Coordinating Committee (ECC) and the Energy Efficiency and Conservation Coordinating Committee (EECCC). Both committees develop recommendations on policy and practice related to the environment and energy efficiency. Recognizing that federal and state legislation and administrative proceedings may affect county policies, the ECC and EECCC keep abreast of the status of relevant legislation and administrative proceedings. Both committees also coordinate closely with the county's Environmental Quality Advisory Council (EQAC), which is an independent, board-appointed advisory committee. EQAC is tasked with reporting the state of the environment in Fairfax County and in recommending a variety of policy and programmatic actions that the board can take in support of the environment.

Operational Energy Strategy

In July 2018, the Board of Supervisors adopted an Operational Energy Strategy. This Energy Strategy is intended to further the objectives of the Board's Environmental Vision by providing goals, targets, and actions in each of the following 10 focus areas: Energy Use and Efficiency, Water Use and Efficiency, Green Building, Innovative Energy Solutions, Electric Vehicles, Goods and Services, Waste Management, Awareness and Engagement, Utility Cost Management, and Reporting and Collaboration. The Energy Strategy promotes cost effective solutions and an energy-conscious culture for county government agencies and employees. The resulting reductions in energy use will help mitigate escalating energy costs and promote a more sustainable future for Fairfax County.

The Energy Strategy is designed to advance the county's goal of reducing energy use 20 percent by 2029. This reduction in energy use will help mitigate escalating energy costs and promote a "greener" future for the county. Some of the projects being implemented through the Energy Strategy Program include replacing incandescent or fluorescent lighting with LED lighting, reducing water use at county facilities, installing solar panels at county facilities, and optimizing resource conservation by increasing recycling rates. All of these projects are designed to reduce greenhouse gas emissions, lower utility bills for county buildings and promote an energy-conscious culture within the county's workplace. The 10-year investment for this goal is approximately \$45 million, however, by year seven, savings generated will essentially pay for the projects. The projected annual energy savings are 264 million kBtu and the simple Return on Investment is \$82 million over 10 years. The first set of funded projects included lighting retrofits at existing county and park facilities to LED lighting and the conversion of streetlights throughout the county to LED lighting. In addition to saving electricity, the benefits of LED lighting retrofit projects include reductions in greenhouse gas emissions and the need for less frequent lighting maintenance and replacement.

Sustainable Development Policy

In September 2020, the Board of Supervisors adopted an updated green building and sustainable development policy for county facilities. This updated policy is designed to demonstrate an increased commitment to environmental, economic, and social stewardship through sustainable development practices for county facilities and buildings. The policy also provides a framework within which to yield cost savings to county taxpayers through reduced operating costs; to provide healthy work environments for county employees and visitors to county facilities; to protect, conserve and enhance the region's environmental resources; and to help establish a community standard of sustainable development for Fairfax County. Since the adoption of the original policy in 2008, thirty-three county buildings have been designed and constructed under the sustainable development policy, and the LEED® program of the U.S. Green Building Council. Of these 33 buildings, 15 are certified as LEED Gold buildings, with the remaining 18 certified as LEED Silver, all meeting or exceeding the prior policy goal of LEED Silver.

The Policy update establishes a new baseline of Gold Certification under the United States Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) program with a plan for transition to Net Zero Energy (NZE). The Policy update also establishes minimum energy performance improvement levels and associated reductions in fossil fuel consumption and Greenhouse Gas (GHG) emissions for capital building projects. Other goals include:

- Achieve LEED Gold Certification.
- Include solar and Electric Vehicle (EV) readiness.
- Provide an on-site renewable energy generation component, as practicable, with off-site renewable energy generation as a supplement.

- Achieve a minimum 30 percent energy performance improvement for new construction, and a 25 percent energy performance improvement for major renovations.
- Achieve a reduction in GHG emissions of 32 percent for new construction, and 24 percent for major renovation.

In addition, the updated Policy provides for incremental strengthening of the energy performance improvement criteria and the reduction in GHG emissions in future years, with a target of achieving Net Zero Energy (NZE) eligibility by FY 2031, at the latest.

This policy directs appropriate departments to incorporate the use of the Leadership in Energy and Environmental Design (LEED) rating system into the design, construction, renovation, and operation of county facilities and buildings. New facility construction, additions, and renovations with an occupied area greater than 10,000 square feet shall be designed and built under the LEED program, shall be guided by a LEED Accredited Professional, and shall strive to achieve LEED certification of at least the Gold rating level under the most recent version of the LEED rating system, and achieve energy performance goals. Design and project management teams are encouraged to meet LEED ratings beyond the Gold level, if practicable.

The updated Policy also incorporates a commitment to an ongoing program for monitoring and analysis of actual building energy performance data; identifying existing buildings as priority candidates for systems recommissioning; recommissioning of priority buildings with initial focus on buildings previously certified by LEED; and for more proactive management of building systems and controls.

Sustainability Rating Systems

LEED provides a holistic approach to sustainability. Some of the key benefits of LEED include:

- **Financial:** Lower operating costs, lower life cycle costs, and increased building value.
- **Environmental:** Greenhouse gas emission reductions, energy and water savings, waste diversion from landfill, conservation of natural resources, air and water quality improvement, biodiversity and ecosystem protection.
- **Social/Cognitive:** Increased cognitive function, focused and applied activity level, crisis response, increased user productivity and satisfaction, public relations and community benefits.

In addition, the county tracks infrastructure projects under the Envision Rating System for sustainable practices. The Huntington Levee project received Bronze Certification, and the Disinfection System Replacement project received Gold Certification under Envision. County garages follow the Parksmart Sustainability Rating System.

Sustainable Strategies for Capital Projects

Early in the design phase, the county addresses energy and explores cost-effective opportunities to reduce energy consumption and greenhouse gas emissions in four holistic interconnected elements: Energy Demand, Energy Efficiency, Renewable Energy and Ongoing Energy Performance.

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- **Energy Demand** – County strategies that are utilized to reduce the building's energy demand include the following:
 - **Design and Energy Goals:** Set targets to establish building performance indicators.
 - **Size the Building Appropriately:** The building serves its function and reduces unproductive energy demand.
 - **Utilize Free Energy:** Orient the building to reduce the building envelope losses and gains, utilize natural ventilation, solar and daylighting.
 - **Building Envelope:** Design buildings with a well-designed envelope assembly that reduces heating or cooling losses through the thermal envelope, thereby reducing energy demand. Furthermore, the building envelope performance for some county projects may include Envelope Commissioning which verifies that the performance meets the design requirements.
 - **Monitor Building Energy Consumption:** Buildings are provided with advanced energy metering via the building automation and energy management system(s) to capture real-time performance data.
- **Energy Efficiency** – The efforts to reduce building energy demand provide the foundation for energy efficiency within the supporting systems and end users. County strategies to achieve energy efficiency improvements include the following:
 - **Utilize Passive Design Opportunities:** The use of natural resources from sun and wind to heat, cool and illuminate a building without additional energy.
 - **Install High Performance Building Systems:** During the design, decisions are made to invest in energy efficient technologies. To date, such systems have been implemented in county buildings as follows: Variable Air Volume (VAV) HVAC Systems with Control Strategies, Variable Refrigerant Flow (VRF) HVAC Systems, Energy Recovery Systems, Geothermal Systems, Indoor and Outdoor LED lighting systems and Lighting controls (Systems that actively track building occupancy lighting needs and harvest nature daylighting to reduce lighting fixture demand and energy consumption via sensors and can communicate to central lighting controls.) Recent projects that have incorporated high efficiency VRF systems are Lewinsville Center and Woodrow Wilson Library. Advanced lighting control systems have been installed in Tysons Pimmit Library and Public Safety Headquarters.
 - **Specify High Efficiency Appliances:** All county appliances are specified as Energy Star Certified.
 - **Utilize Energy Simulation:** Energy Modeling software is used during the design to determine and prioritize energy efficiency measures and system types.
 - **Monitor and Verify Building Performance:** Commissioning and or Enhanced Commissioning is a project requirement for the county which provides an independent



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authority to verify the operation of all systems meets the design, installation requirements, and future operation.

- **Renewable Energy** – Efforts to reduce demand and increase efficiency to meet the building's energy needs.
 - All projects are analyzed early in design to determine the feasibility of solar photovoltaic systems.
 - The county has awarded contracts to vendors for solar Power Purchase Agreement (PPA) services and is working with the vendors on the implementation and O&M phases.
 - A solar photovoltaic (PV) system was installed on the roof of the Stringfellow Park and Ride facility. There are nine buildings currently in design with infrastructure for PV systems.
 - Infrastructure for EV Charging Stations is being phased into the building design which will provide stations for building occupants, and visitors.
- **Ongoing Energy Performance/Post Occupancy** – To maintain all efforts made during design and construction, it is critical to be mindful of the post occupancy activities that maintain energy performance targets.
 - **Continuous and Retro Commissioning:** Continues to confirm the building is performing as designed or to support future occupancy changes by the end user.
 - **Provide Staff Training:** O&M personnel are trained properly on new building system technologies.
 - **Create Incentives for Occupants:** Promote energy efficient strategies with occupants.



Water Conservation

The conservation and creative reuse of water are important in addressing overall water use reduction in buildings and on sites. The following strategies are evaluated early in the design process:

- **Plumbing Fixtures:** Fixtures such as showerheads, toilets and faucets are specified as low flow since they utilize low gallons per minute of water. The low flow requirement has been incorporated in the design guidelines for all current and future projects. Some recently completed projects with low flow fixtures are Lewinsville Center, Tysons Pimmit Library, John Marshall Library, McLean Community Center and Reston Police Station and Governmental Center.
- **Rainwater Harvesting:** Storage tanks or cisterns can hold rainwater that can be utilized for non-potable uses, such as irrigation. The feasibility of incorporating a rainwater harvesting system is evaluated during the design of new construction projects.
- **Water Re-Use:** Strategies to reuse wastewater for non-potable uses will be evaluated for new construction projects that are in early design.

- **Natural Landscaping:** New construction projects are designed to follow the county's natural landscaping policy, with a goal to minimize resource consumption, reduce stormwater runoff, increase the habitat value of the site and increase soil and plant health. A few projects that currently incorporate natural landscaping are Lorton Community Center and Library, Sully Community Center, Lorton Fire Station and the Stormwater Wastewater facility.
- **Irrigation:** The use of natural landscaping and native species reduces the need for irrigation, thereby reducing outdoor water usage. Exterior hose bibs are provided at strategic places around the building in lieu of an automatic irrigation system, in all new construction projects.
- **Green Roofs:** An early feasibility study of the use of green roofs is included in each project scope. Green roofs have been installed at the West Ox Bus Operations Center, Merrifield Center, Dolley Madison Library, Great Falls Volunteer Fire Station, Providence Community Center, Herndon Fire Station and the Public Safety Headquarters. Green roofs minimize heating and air conditioning costs, in addition to reducing stormwater runoff.



Sustainable Sites

Focusing on sustainable strategies is key to maintaining the environment surrounding the building, vital relationships among buildings and ecosystems, restoring project site elements, integrating the site with local and regional ecosystems and preserving the biodiversity that natural systems rely on.

- **Parking Reduction and Public Transportation:** Reducing the parking footprint can minimize the environmental harms associated with impervious areas, including automobile dependence, land consumption and rainwater runoff. Location and available alternate transportation options are evaluated for each project site during design. Potential reduction in parking requirements are developed, depending on user needs. Parking reduction was recently sought and approved for the Lorton Community Center and Library project.
- **Low Impact Development (LID):** Green Infrastructure and LID reduce rainwater runoff volume and improve water quality by replicating the natural hydrology and water balance of the site. Approaches and techniques for LID involve minimizing disturbed areas on the site, limiting the amount of impervious cover on the site and infiltrating, filtering, storing, evaporating or detaining rainwater runoff at or close to its source. Strategies for stormwater management including bioswales, dry ponds and infiltration trenches, and going above and beyond minimum code requirements, are analyzed early in the design process. Recent examples include Sully Community Center, the Stormwater Wastewater facility, and the South County Police Station and Animal Shelter.

Indoor Environmental Quality

Green buildings with good indoor environmental quality promote the health and comfort of building occupants. High quality indoor environments also enhance productivity, decrease absenteeism and increase the building value.

- **Low VOC:** Design guidelines for all projects require use of products that have low volatile organic compounds.
- **Green Cleaning:** Green cleaning products and procedures are practiced, minimizing negative impact and protecting the health of employees.

- **Daylighting:** All new projects strive to optimize natural daylighting strategies to enhance the indoor lighting quality.

Materials and Resources and Waste Management

Sustainably produced materials and waste reduction, reuse and recycling strategies help in minimizing embodied energy and impacts associated with the extraction, processing, transport, maintenance, and disposal of building materials. Project requirements emphasize the use of locally produced materials and staff must develop and implement a construction and demolition waste management plan with a goal to reduce waste disposed of in landfills and incineration facilities by recovering, reusing and recycling materials.

Innovation in Design

Other sustainable strategies employed on projects include options such as bird friendly design, involving articulation of facades and a combination of opaque and transparent materials to reduce bird collisions.

The county's green building policy is intended to reduce the consumption of non-renewable resources, reduce greenhouse gas emissions, minimize waste, and foster healthy, productive environments. Some examples of recently completed CIP projects that have achieved many of the green building policy objectives include:

- **Public Safety Headquarters (PSHQ):** Achieved LEED Gold certification. The PSHQ



accommodates both Police and Fire and Rescue Department administrative staff to maximize shared resources among first responder agencies that often work together in the field. This building uses LED lighting throughout. Other sustainable design strategies include: Green roofs, permeable pavements and stormwater management features that work together to slow down, filter, absorb and purify rain water as it leaves the site, a 25,000-gallon tank that harvests water runoff and reuses it for on-site irrigation, daylight harvesting sensors that take advantage of natural lighting and adjust indoor light levels depending on the amount of sunlight available, use of low-flow plumbing fixtures and recycled materials, and the use of low VOC emitting materials to improve interior air quality.

- **Lewinsville Redevelopment Project:** Achieved LEED Silver certification. The project provides services to community members of varying generations that include a Senior Center, Adult Day Health Care Center and two Childcare providers. The building provides a comfortable balance of spacious design and flexible multi-purpose spaces for seniors and school age children. LED lighting along with occupancy sensors are provided to reduce energy consumption. Solar tubes provide natural lighting to the common lounge area while daylight harvesting sensors adjust indoor light levels in the dining areas and multi-purpose rooms. Other sustainable design strategies include: an energy efficient VRF mechanical system, recycled building materials and regionally sourced materials, use of low flow plumbing fixtures, low VOC emitting interior finishes to improve indoor air quality for the occupants, and use of native planting species for landscaping to eliminate the need for irrigation.



Current Project Descriptions

1. **Community - CECAP (Countywide):** \$750,000 has been approved to date, to support the development of phases I and II of the Community-Wide Energy and Climate Action Plan (CECAP). This funding will provide for consulting services for technical analysis and plan development as well as outreach materials. The consulting services will support community outreach and engagement, including facilitating meetings and developing an interactive, online web presence. The community-wide greenhouse gas inventory will be updated, climate mitigation actions tied to inventory and community priorities will be developed, and a long-form technical report, summary documents and online resources will be produced.
2. **Community – Energy Action Fairfax (EAF) (Countywide):** \$525,000 has been approved to date for the Energy Action Fairfax (EAF) residential energy education and outreach program, including EAF's LED Light Bulb Exchange Program. In the spring of 2018, EAF hosted seven LED Lightbulb Exchanges throughout the County in conjunction with the Fairfax County Public Library system. The LEDs that EAF distributed in 2018 were 60W equivalent, warm white and ENERGY STAR® certified. These LEDs use 85 percent less energy than a comparable incandescent bulb and 33 percent less energy than a compact fluorescent light (CFL). In total, 8,000 LEDs were distributed in 2018 to approximately 1,600 people at seven events. Based on an average home's lighting consumption, use of these LEDs will result in annual avoidance of nearly 200,000 kilowatt hours (kWh) and energy savings of \$22,000. The avoided electricity use equates to approximately 280,000 pounds of carbon dioxide not being released into the atmosphere – about the same as taking 28 passenger vehicles off the road.
3. **Community - HomeWise Outreach Program (Countywide):** \$184,000 for the HomeWise energy education and outreach program. HomeWise is intended to educate, empower, and enable low- and moderate-income residents to lower their utility bills by reducing their energy and water use. The program emphasizes relationship-building between qualified volunteers and specific communities in the County where energy-efficiency improvements and changes to daily behaviors are likely to have the greatest impact. The program also includes an educational component focused on school-age children to help them make smart choices about their resource use starting at a young age. FY 2022 funding of \$88,000 has been included for this program.
4. **Community - NVSWCD Intern Program (Countywide):** This is an annual project that supports the award-winning spring outreach programs. These programs reach thousands of people and have a deep impact on many youth and adults. Programs supported by spring interns include classroom presentations, outdoor learning experiences, outreach events and festivals, high school Envirothon competitions, rain barrel workshops, seedling sales, high school science fair project judging, stream monitoring, EnviroScape trainings, storm drain marking, the Sustainable Garden Tour and more. FY 2022 funding of \$7,115 has been included for this program.

5. **EIP - Composting Pilot (Countywide):** \$92,800 will support the County two County composting projects. One project supports a Composting Pilot Program at Fairfax County government offices, managed by an employee volunteer group. Each department participating in the pilot will receive a compost bin to place in its office kitchenette. On a weekly basis, a private composting company will remove the bins for off-site composting and provide clean bins. A second project supports a pilot composting program that is being developed by DPWES's Solid Waste Management Program (SWMP). SWMP plans to implement a pilot drop-off program for residential food scraps, with initial drop-off locations near the existing residential recycling drop-off centers at the I-66 Transfer Station and the I-95 Landfill Complex. The drop-off composting sites will include an enclosure that can hold up to 12 64-gallon carts, to be serviced up to three times per week by the selected contractor(s). SWMP efforts to help educate residents about the new program will include the creation and distribution of fact sheets, the development of an instructional video, and community presentations. FY 2022 funding of \$80,800 has been included for these two composting projects.
6. **EIP - DPMM Green Intern (Countywide):** \$25,000 to support limited term staff to assist in developing environmental initiatives applicable to the county's procurement process. Fairfax County maintains an electronic Contract Register of over 2,000 active contracts and emphasizing environmental attributes such as recycling, energy efficiency, durability and reduced toxicity during the procurement process can contribute to the purchase of green products, creating fiscal and environmental savings. The intern will also pursue Zero Waste Certification for the Springfield Logistics Center. The certification process serves as a foundational element from which facilities can achieve cost avoidance, support sustainable initiatives, and improve material life cycles. If certified, Fairfax County would become one of the first jurisdictions with a certified public facility. FY 2022 funding of \$15,000 has been included for this program.
7. **EIP - DPMM Supply Chain GHG Emissions (Countywide):** \$50,000 will support an analysis of the greenhouse gas (GHG) emissions related to the County's purchasing expenditures, or "spend." This expenditure is about \$1 billion annually and spans hundreds of sectors and thousands of suppliers. Using spend data from FY 2021, this project will develop a detailed understanding of the environmental impacts of the County's supply chain and inform staff as it develops programs and policies to improve the County's procurement-related environmental footprint. Department of Purchasing and Material Management staff expect that, once measured, the County's supply chain impacts will present a number of opportunities for climate impact reductions that can improve the environment as well as the community's health and well-being. FY 2022 funding of \$50,000 has been included for this program.
8. **EIP - DVS Pollinator Meadow (Countywide):** \$45,515 has been previously approved for the conversion of gravel surfaces to pollinator meadows. The funding supports Phase II of the DVS Pollinator Meadow at the Alban Road maintenance facility, a 5.5-acre site within the lower Accotink Creek watershed. This second phase will convert a 16,000 square foot area of highly compacted gravel surface to a pollinator meadow, thereby reducing stormwater run-off, sediment and other pollutants while extending the native habitat for birds and other pollinators. Phase I of this project received funding in FY 2018.

9. **EIP - DVS Water Fountains (Countywide):** \$36,400 will support the purchase and installation of four water-bottle filling stations at convenient locations within the Newington and West Ox vehicle maintenance facilities. A water bottle filling station is a hands-free way of filling a refillable bottle with tap water, ensuring that both employees and customers awaiting repairs have a healthy hydration option. The bottle-filling stations will replace older drinking fountains that are not being used due to health concerns or because they have fallen into disrepair. It is anticipated that the stations will reduce waste by reducing or eliminating the need for staff and customers to bring their own water and soda bottles, most of which are disposable and end up in the trash. The water bottle-filling stations are expected to include a ticker that will allow staff to track the number of disposable bottles saved by using the filling station. FY 2022 funding of \$36,400 has been included for this project.
10. **EIP - Green Bank Initiatives (Countywide):** \$300,000 has been approved to support the analysis and research options to implement a Green Bank in Fairfax County. Green banks offer invaluable funding to environmentally-focused businesses that have historically struggled to find capital through traditional means. This financing tool will ensure that economic recovery is targeted to communities with the most need in both an equitable and sustainable manner.
11. **EIP - Natural Landscaping (Countywide):** \$335,000 will provide for a multi-phase, multi-year demonstration project that reimagines the Government Center grounds while creating inviting, comfortable and aesthetically pleasing outdoor spaces with ample shade and a unifying plant palette. An amount of \$130,000 is included in FY 2022 for Phase II of a natural landscaping initiative at the Government Center.
12. **EIP - NVSWCD CAP Program (Countywide):** This is a continuing program, managed by the Northern Virginia Soil and Water Conservation District (NVSWCD). The Watershed Protection and Energy Conservation Matching Grant Program, or “Conservation Assistance Program,” is intended to support energy education, and outreach initiatives and promote community engagement regarding sustainability and conservation issues. The program provides financial incentives to empower civic associations, places of worship and homeowners, through their associations, to implement on-the-ground sustainability projects. The initiative builds on current programs that provide technical assistance, hands-on support, outreach and education to Fairfax County homeowners and residents. Projects will improve water quality, reduce greenhouse gas emissions, and conserve energy and water. The funding provides support for materials and printing, matching grants, outreach and education, site assessments, and inspections. An amount of \$75,000 is included for this initiative in FY 2022.
13. **EIP – Parks Bike to Parks Pilot (Countywide):** \$60,000 has been approved to date for the “Bike to Parks” pilot program. This program will provide for the installation of bike racks in recreational areas, promoting biking as a safe and reliable transportation choice for recreational destinations. The Park Authority will add 60 bike racks in approximately 15 parks and RECenters that are near Countywide trails in two high density revitalization areas, Annandale and Richmond Highway. In addition to the bike racks installation at the collaboratively identified locations, this project will include public outreach, and targeted improvements such as adding bike lanes and connections at appropriate locations and adding signage and wayfinding systems from major regional trails to the bicycle parking locations at park entrances.

14. **EIP - Parks Invasive Management Area (IMA) Program (Countywide):** This is a continuing program managed by the Park Authority to provide for the removal of invasive plants from park properties. The program is volunteer supported and helps to restore hundreds of acres of important natural areas and protect tree canopies. More than 22,000 trained volunteer leaders have contributed 80,000 hours of service since the program's inception in 2005, improving over 1,000 acres of parkland. This funding will support the ecological integrity of additional natural areas and prevent further degradation of their native communities. Funding of \$300,000 is included in FY 2022 for the IMA.
15. **EIP - Parks Magnolia Bog Restoration (Mason District):** \$86,000 will support 1.25 acres of wetland restoration at Green Springs Garden, specifically the restoration of a magnolia bog. This type of bog is a rare geologic feature known to occur only in Virginia, Maryland, and the District. The magnolia bog at Green Springs Garden is one of only 11 known occurrences in Virginia, making its restoration and preservation of particular significance. The bog is located adjacent to a pedestrian trail at Green Springs Garden, offering unique interpretative and educational opportunities for visitors. Restoration activities will include the design and installation of a rock structure to stabilize soil and protect the bog's hydrologic integrity, as well as the removal of non-native invasive plants and installation of native plants. Project partners will include Friends of Green Springs, Earth Sangha, and the Virginia Native Plant Society. Funding of \$86,000 is included in FY 2022 for the restoration.
16. **EIP – Parks Meadow Restorations (Countywide):** \$319,460 will support the restoration of meadows. The restorations will establish native plant diversity and provide support to pollinators and native birds by removing non-native invasive plants, remedying prior inappropriate management choices, and improving habitat. Funding of \$75,160 is included in FY 2022 to fund the restoration of three acres of meadows at Lake Fairfax and one-half acre at Green Springs Garden.
17. **EIP - Parks Pool UV Replacement (Countywide):** \$46,400 will provide for the installation of an Advanced Oxidation Process (AOP) treatment system at a Park Authority pool to replace the existing ultraviolet (UV) water treatment system. An AOP treatment system improves air quality while yielding both electricity and chlorine cost savings. An AOP unit is more efficient than a UV unit, which reduces the chlorine demand for the pool system, thereby reducing patron and lifeguard exposure when using or maintaining the pool. The improved air quality, which is the primary benefit of an AOP treatment system, is expected to reduce complaints from pool patrons and frequent users such as swim teams. AOP treatment systems require periodic cartridge replacement, but the cartridge replacement costs are offset by cost savings associated with reduced electricity and chlorine consumption. Funding of \$46,400 is included in FY 2022 for this project.
18. **EIP - Parks Solar Panels Support (Countywide):** \$50,000 has been allocated to date to provide support for the installation of solar panels at both County and Park Authority facilities.

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19. **EIP – Parks Sully Woodlands Center (Sully District):** \$250,000 has been previously approved to support energy efficiency and renewable energy systems at the Sully Woodlands Stewardship Education Center. The Stewardship Education Center will be an indoor/outdoor, state-of-the-art interpretive center, providing educational and visitor services in environmental stewardship, natural and cultural resource management activities, and land management of the Sully Woodlands region. A major goal of the program is to achieve net positive energy usage, meaning the facility must produce more energy than it uses. The building will be used as a demonstration tool educating the public about sustainable features used on the facility that could also be used at their homes.
20. **EIP – Parks Watch the Green Grow (Countywide):** \$41,500 has been previously approved for the *Watch the Green Grow* pilot program. This is an outreach and education program with the overarching goal of creating buffers surrounding natural areas by encouraging green behaviors on private property. The outcome will be a web map “snapshot” of stewardship activities of an informed citizenry that actively and voluntarily engages in behaviors that protect and enhance Fairfax County’s natural areas and wildlife corridors. This project is designed as a public education project to increase residents’ awareness of the value of public green spaces (especially wildlife corridors) and lead them to adopt small but important stewardship behaviors that will help buffer these places from urbanization stressors like invasive plants.
21. **EIP - Parks Water Smart Controls (Countywide):** \$138,000 has been previously approved for the installation of water smart web-based irrigation controllers at Green Spring Gardens. More than 30 acres are watered at Green Spring Gardens using 400 feet of hose and oscillating sprinklers. The current practice leads to an excess of inefficiencies. The new irrigation controller uses local weather data to automatically adjust watering times and saves water consumption by watering only when needed. The manufacturer estimates that smart irrigation technology can save 40 percent on water consumption.
22. **EIP - Permeable Athletic Courts (Mason District):** \$156,000 has been approved to support the installation of a permeable basketball court at the Baileys Community Center. The outdoor basketball court is regularly used by Head Start students and community members. Replacing the existing worn and cracked court surface with a permeable asphalt surface will support stormwater planning goals, while also establishing an educational resource about watersheds and stormwater planning. The funding supports all costs related to the court replacement, including the installation of the permeable surface and equipment for a full basketball court.
23. **EIP - Zero Waste Initiatives (Countywide):** \$100,000 has been approved to support the development and implementation of a zero waste plan in Fairfax County. A zero waste plan is already in development and is expected to be finalized by June 30, 2021. The County’s interagency Zero Waste Planning Team has engaged a consultant to assist with waste audits, stakeholder engagement, and the planning of a tiered implementation.
24. **Energy - Energy Contracts (ESCO) (Countywide):** \$2,363,823 has been approved to support a pilot ESCO contract at select county facilities. ESCOs offer comprehensive energy saving solutions by performing building assessments, identifying energy saving upgrades, estimating potential savings, implementing the upgrades, and verifying the savings.

25. **Energy - EV Stations (Countywide):** \$1,646,000 will support the Board's updated Environmental Vision, adopted in 2017, which includes objectives intended to reduce both the county's operational use of energy from fossil fuel sources and the greenhouse gas emissions associated with that energy use. It also supports the Operational Energy Strategy, which envisions transitioning from gasoline-powered passenger vehicles to hybrid-electric and electric vehicles. Consistent with the Board's policy and strategic direction, in 2020 the county awarded a contract for the purchase of Level II commercial electric vehicle charging stations (EVCS) and software that allows the Department of Vehicle Services to manage usage, set rates, receive payment, bill county fleet drivers for electricity usage, and run sustainability reports. An amount of \$146,192 is included in FY 2022 to support EVCS program.
26. **Energy - FMD Retrofits (Countywide):** \$8,985,000 has been approved to date to support cost-effective, energy-efficient, innovative technologies at county facilities. A reduction in energy use will help mitigate escalating energy costs and promote a "greener" future for the county. Some of the projects identified to date include replacing incandescent or fluorescent lighting with LED lighting, reducing water use at county facilities, installing solar panels at county facilities and optimizing resource conservation by increasing recycling rates. All of these projects are designed to reduce greenhouse gas emissions, lower utility bills for county buildings and promote an energy-conscious culture within the county's workplace. The Board of Supervisors endorsed the goal of reducing energy use 20 percent in the county by 2029. The 10-year investment for this goal is approximately \$45 million, however, by year seven, savings generated by the investment will essentially pay for the projects. The annual energy savings are 264 million kBtu and the simple Return on Investment is \$82 million over 10 years. Annual funding for this program is typically included at year end. An amount of \$42,315 is included in FY 2022 to fund a pilot Energy Efficient Replacement Fund. This fund will assist County departments in purchasing more efficient appliances and equipment when there is a cost premium, and they cannot afford to choose the most efficient option.
27. **Energy - LED Streetlights (Countywide):** \$9,000,000 is estimated to support the five-year LED streetlight conversion plan. The goal of the plan is to convert more than 56,000 existing mercury vapor, high pressure sodium and metal halide fixtures to Light Emitting Diodes (LED) streetlights. The new LED streetlights are "Smart City Capable" with features being incorporated through added hardware and software upgrades. This cost of the conversion plan is expected to be partially offset by projected savings in utility costs. It is anticipated that after conversion is completed on all streetlights, approximately \$1.4 million in savings will be realized annually. In addition, conversion of these streetlights will remove 32.4 million pounds of carbon dioxide equivalent emissions annually. Finally, conversion will result in reduced maintenance costs given the longer life of LED lighting, result in higher quality lighting, and allow for dimming and automated outage reporting once smart technologies are implemented. Annual funding for this program is typically included at year end.

28. **Energy - Parks Historic Houses (Countywide):** \$127,500 will provide for efficiency improvements at selected vacant historic houses maintained by Parks. These historic houses are among the 30 properties being considered for the Resident Curator Program. Under this program, a resident curator assumes responsibility for building rehabilitation in exchange for the right to occupy the property. HVAC inefficiencies and building envelope issues in these houses lead to excessive utility bills and increased maintenance needs while the houses remain unoccupied; they also discourage potential curators from program participation. Making energy improvements in these houses prior to inclusion in the Resident Curator Program addresses both issues. Energy improvements include adding insulation to crawlspaces and attics, adding weather-stripping and interior storm windows, and upgrading HVAC systems and controls. FY 2022 funding of \$127,500 has been included for this project.
29. **Energy - Parks Lighting (Countywide):** \$1,147,856 has been approved for lighting retrofits and upgrades at Fairfax County Park Authority facilities for energy efficiency and conservation. Lighting will be upgraded to LED fixtures and lighting controls will be installed to manage operating hours more efficiently. These energy saving retrofits will reduce approximately 80 percent of energy usage, improve lighting, reduce greenhouse gas emissions and contribute to the dark sky's initiative.
30. **Energy - Parks Retrofits (Countywide):** \$2,150,800 has been approved to date to support the Board of Supervisor's Energy Strategy by implementing cost-effective, energy-efficient, innovative technologies, at park facilities. This project represents the Park Authority portion of the Board of Supervisors endorsed goal of reducing energy use 20 percent in the county by 2029. The 10-year investment for this goal is approximately \$45 million, however, by year seven, savings generated by the investment will essentially pay for the projects. Annual funding for this program is typically included at year end.
31. **Energy - Parks Unstaffed HVAC (Countywide):** \$45,000 has been approved for the purchase and installation of HVAC controls at park facilities that are not staffed. These controls will prevent heaters and ventilation fans from working at the same time, will establish set points for heating and cooling, and will prevent the public and unauthorized employees from adjusting the settings. In FY 2019, a pilot installation of HVAC controls at Poplar Tree Park resulted in electricity use dropping by approximately 25 percent in the five-month period following installation.
32. **Reserve for JET Recommendations (Countywide):** \$750,000 has been approved to provide a reserve to begin to implement the recommendations of the Joint Environmental Task Force (JET). The JET was formed in April 2019 and is comprised of representatives from the Board of Supervisors, the School Board, and the community. The JET was tasked with identifying areas of collaboration to advance county and school efforts in energy efficiency and environmental sustainability. An overarching recommendation is for the county, schools, Park Authority and Fairfax County Redevelopment and Housing Authority to commit to being energy carbon neutral by 2040. Additional goals pertain to electrification of county and school fleet vehicles and buses, the development of a Zero Waste Plan, and the provision of "green" career resources for students and adult learners. Funding for this initiative was supported by utilities savings identified during FY 2021 based on lower occupancy in County buildings and reduced usage during the COVID-19 pandemic.

Project Cost Summaries

Environmental and Energy Programs

(\$000's)

	Project Title Project Number	Source of Funds	Budgeted or Expended Through FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total FY 2022 - FY 2026	Total FY 2027 - FY 2031	Total Project Estimate
16	EIP - Parks Meadow Restorations	G	\$244	\$75					\$75		\$319
	PR-000131										
17	EIP - Parks Pool UV Replacement	G	\$0	\$46					\$46		\$46
	PR-000143										
18	EIP - Parks Solar Panels Support	G	\$50						\$0		\$50
	2G51-047-000										
19	EIP - Parks Sully Woodlands Center	G	\$250						\$0		\$250
	PR-000139										
20	EIP - Parks Watch the Green Grow	G	\$42						\$0		\$42
	2G51-045-000										
21	EIP - Parks Water Smart Controls	G	\$138						\$0		\$138
	PR-000138										
22	EIP - Permeable Athletic Courts	G	\$156						\$0		\$156
	GF-000059										
23	EIP - Zero Waste Initiatives	G	\$100						\$0		\$100
	2G02-032-000										
24	Energy - Energy Contracts (ESCO)	G	\$2,364						\$0		\$2,364
	2G02-035-000										
25	Energy - EV Stations	G	\$1,500	\$146					\$146		\$1,646
	GF-000063										
26	Energy - FMD Retrofits	G	\$8,985	\$42	\$3,000	\$3,000	\$3,000	\$3,000	\$12,042	\$12,000	\$33,027
	GF-000064										
27	Energy - LED Streetlights	G	\$3,600	\$1,800	\$1,800	\$1,800			\$5,400		\$9,000
	GF-000065										
28	Energy - Parks Historic Houses	G	\$0	\$128					\$128		\$128
	PR-000128										
29	Energy - Parks Lighting	G	\$1,148						\$0		\$1,148
	PR-000135										

Project Cost Summaries

Environmental and Energy Programs

(\$000's)

			Budgeted or Expended Through FY 2021						Total FY 2022 - FY 2026	Total FY 2027 - FY 2031	Total Project Estimate
Project Title Project Number		Source of Funds		FY 2022	FY 2023	FY 2024	FY 2025	FY 2026			
30	Energy - Parks Retrofits	G	\$2,151	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$7,500	\$3,000	\$12,651
PR-000136											
31	Energy - Parks Unstaffed HVAC Controls	G	\$45						\$0		\$45
PR-000129											
32	Reserve for JET Recommendations	G	\$750						\$0		\$750
2G02-038-000											
Total			\$23,534	\$4,598	\$6,600	\$6,600	\$4,800	\$4,800	\$27,398	\$15,000	\$65,932

Notes: Numbers in bold italics represent funded amounts. A "C" in the 'Budgeted or Expended' column denotes a continuing project.

Key: Source of Funds	
B	Bonds
G	General Fund
S	State
F	Federal
X	Other
U	Undetermined