Fairfax County
VIRGINIA

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SUSTAINABILITY INITIATIVES

FY 2018

FAIRFAX COUNTY, VIRGINIA | OFFICE OF THE COUNTY EXECUTIVE

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Fairfax County VIRGINIA

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PREFACE

***Fairfax County Sustainability Initiatives* (FCSI)** provides an overview of many of the projects and programs carried out by Fairfax County and its partners in support of the Energy and Environmental goals and policies of the Board of Supervisors (board).

Specifically, FCSI is intended for an audience interested in learning what Fairfax County is doing to promote sustainability and protect the environment, consolidated into a single go-to resource. Although the FCSI is accessible to the general public and formatted with clear text and engaging images, it is not a simple brochure intended for the casual reader, but for those with a stronger, more specific interest. It is a resource for students conducting research, environmental organizations and their members, and as a reference guide for county staff, residents and businesses.

FCSI would not have been possible without the tireless efforts of the many highly dedicated professionals who contributed to the development of this document. I would like to especially thank Susan Hafeli, Noel Kaplan, John Stokely, Charlie Forbes and Emily Burton of Fairfax County.

We wish to also thank Deputy County Executive David J. Molchany for his direction, encouragement and support.

It is our hope that the *Fairfax County Sustainability Initiatives* report will clearly demonstrate the Fairfax County Board of Supervisors leadership and commitment to promoting sustainability in the county.

This report represents only one aspect of the county's Environmental Improvement Program, which also consists of a projects funding process and an energy strategy with goals and actions that is currently a work in progress. I hope that you will take up the challenge and work with us to further develop the county's sustainability initiatives.

Kambiz Agazi, Ph.D., P.E.
Environmental & Energy Coordinator
Fairfax County, Virginia

INTRODUCTION

A healthy environment enhances our quality of life and preserves the vitality that makes Fairfax County a special place to live and work. As such, the county government has a responsibility to be an environmental steward through its operational practices and to establish and implement policies and programs that will foster broader environmental protection and stewardship efforts throughout the community and in the broader region.

On June 20, 2017, the Fairfax County Board of Supervisors (board) adopted its updated Environmental Vision, entitled *Fairfax County Environmental Vision*. The Environmental Vision, as described in more detail in Section 2.2.2, affirms that, in Fairfax County, environmental stewardship and prudent management of natural resources are not merely "add-ons," or afterthoughts, but rather are essential and fundamental responsibilities of local government that must be given fullest consideration at all times. The Environmental Vision, which was initially adopted in 2004 and revised in 2007 and again in 2017, is available at http://www.fairfaxcounty.gov/living/environment/environmentalvision.htm.

Achieving the goals articulated in the board's Environmental Vision requires cooperation and coordination between county residents and government leadership and agencies. This document, *Fairfax County Sustainability Initiatives*, provides an overview of many of the projects and programs carried out by Fairfax County and its partners in support of the board's Environmental Vision.

Section 1 describes the county government structure, particularly as it relates to sustainability initiatives.

Section 2 summarizes the strategic, policy and regulatory framework that guides the sustainability efforts of the Fairfax County Board of Supervisors and county staff.

Section 3 describes sustainability activities with a community-wide impact.

Section 4 highlights a number of innovative and successful efforts to implement environmental and energy goals for county facilities and operations.

Section 5 identifies those projects and programs that receive funding set aside by the Board of Supervisors for the county's Environmental Improvement Program.

Section 6 lists a number of the sustainability awards and recognitions received by the county over the last decade.

Environmental stewardship is both a key responsibility and a critical legacy of any elected public body. . . . It is the county's overarching vision to attain a quality environment that provides for a high quality of life and is sustainable for future generations. These aspects of a quality environment are essential for everyone living and working in Fairfax County. No matter what income, age, gender, ethnicity, or address, everyone has a need and right to breathe clean air, to drink clean water, and to live and work in a quality environment.

Board of Supervisors' Environmental Vision (2017)

SECTION 1

FAIRFAX COUNTY GOVERNMENT: AN OVERVIEW

FAIRFAX COUNTY GOVERNMENT: AN OVERVIEW

Featured in this Section

SECTION 1

1.1 Introduction

Fairfax County is a diverse and growing community. It is home to over 1.1 million residents, almost double its 1980 population. Over a third of the county's residents speak a language other than English at home, and more than 60 percent are college graduates. The county has a total land area of 395 square miles, a fiscal year (FY) 2018 (July 1, 2017 through June 30, 2018) adopted budget of $7.99 billion, including the General Fund and appropriated funds such as state and federal grants, and a 2015 median household income of $113,208. See www.fairfaxcounty.gov/demogrph/gendemo.htm.

The county is governed by the elected Fairfax County Board of Supervisors (board). The board engages residents and businesses, protects investment in the county's most critical priorities and maintains strong responsible fiscal stewardship to ensure:

- A quality educational system.
- Safe streets and neighborhoods.
- A clean, sustainable environment.
- Livable, caring and affordable communities.
- A vibrant economy.
- An efficient transportation network.
- Recreational and cultural opportunities.
- Affordable taxes.

To ensure the third priority – a clean, sustainable environment – Fairfax County has pledged to "continue to protect our drinking water, air quality, stream valleys and tree canopy through responsible environmental regulations and practices. We will continue to take a lead in initiatives to address energy efficiency and sustainability and to preserve and protect open space for our residents to enjoy." See www.fairfaxcounty.gov/government/board/priorities/.

Advancing the board's priorities requires the coordinated efforts of many actors working within the governance structure provided by state law. This section describes the county's governance structure and briefly discusses the roles of key agencies and partners working on behalf of a clean, sustainable Fairfax County.

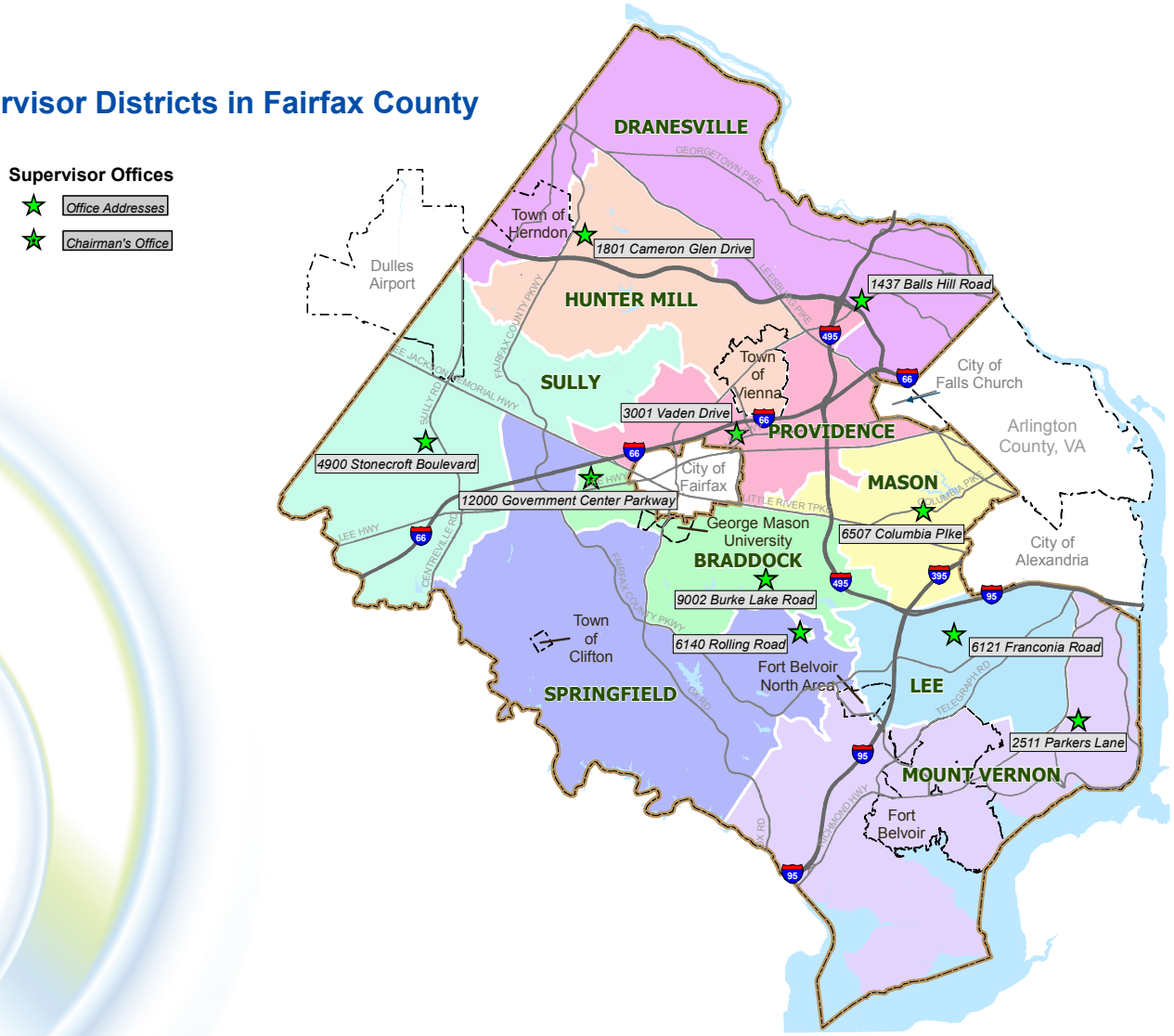
1.2 Fairfax County Government

1.2.1 County Governance

The Fairfax County government is organized under the Urban County Executive form of government as defined in the Code of Virginia. The county's governing body is the Board of Supervisors.

The Board of Supervisors consists of ten members: the Chairman (elected at large) and one member from each of nine supervisor districts of approximately equal population. The supervisors (other than the chairman) must be residents and qualified voters of their districts and be elected only by voters living in those districts. All voters in the county may vote for the chairman. The board elects the vice chairman annually from among its members at its first meeting in January. Board members are elected for four-year terms. There is no legal limit to the number of terms a member can serve.

Supervisor Districts in Fairfax County



The Fairfax County Board of Supervisors

From left to right: Daniel G. Storck (Mount Vernon District); John C. Cook (Braddock District); Catherine M. Hudgins (Hunter Mill District); Jeffrey C. McKay (Lee District); Sharon Bulova (Chairman, At-Large); Penelope A. Gross (Mason District, Vice Chairman); John W. Foust (Dranesville District); Kathy L. Smith (Sully District); Linda Q. Smyth (Providence District); and Pat Herrity (Springfield District)

Chairman, At-Large
Sharon Bulova
703-324-2321, TTY 711
www.fairfaxcounty.gov/chairman/

Braddock District Supervisor
John C. Cook
703-425-9300, TTY 711
www.fairfaxcounty.gov/braddock/

Dranesville District Supervisor
John W. Foust
703-356-0551, TTY 711
www.fairfaxcounty.gov/dranesville/

Hunter Mill District Supervisor
Catherine M. Hudgins
703-478-0283, TTY 711
www.fairfaxcounty.gov/huntermill/

Lee District Supervisor
Jeff C. McKay
703-971-6262, TTY 711
www.fairfaxcounty.gov/lee/

Mason District Supervisor and
Vice Chairman
Penelope A. Gross
703-256-7717, TTY 711
www.fairfaxcounty.gov/mason/

Mount Vernon District Supervisor
Daniel G. Storck
703-780-7518, TTY 711
www.fairfaxcounty.gov/mountvernon/

Providence District Supervisor
Linda Q. Smyth
703-560-6946, TTY 711
www.fairfaxcounty.gov/providence/

Springfield District Supervisor
Pat Herrity
703-451-8873, TTY 711
www.fairfaxcounty.gov/springfield/

Sully District Supervisor
Kathy L. Smith
703-814-7100, TTY 711
www.fairfaxcounty.gov/sully/

The board establishes county government policy, passes resolutions and ordinances (within the limits of its authority established by the Virginia General Assembly), approves the budget, sets local tax rates, approves land use plans and makes appointments to various positions. These actions are taken in open meetings, which the public is encouraged to attend. All discussions are held in public, with the exception of issues exempt from the Virginia Freedom of Information Act, such as legal or personnel issues.

Board members also participate in various committees, subcommittees and regional agencies, which are listed at www.fairfaxcounty.gov/bosclerk/board-committees/. Several board committees address aspects of sustainability, including the Environmental Committee, the Community Revitalization and Reinvestment Committee and the Transportation Committee. Each of these committees is a "committee of the whole," or comprised of all board members.

Sustainability issues are also addressed in regional committees in which board members are active participants, including:

- Metropolitan Washington Council of Government (COG) Region Forward Committee.
- COG Climate, Energy and Environment Policy Committee.
- Metropolitan Washington Air Quality Committee.
- COG Chesapeake Bay and Water Resources Policy Committee.
- COG Task Force on Regional Water Supply Issues.
- Potomac Watershed Roundtable.
- Northern Virginia Regional Commission.

The Board of Supervisors appoints a County Executive to act as the administrative head of the county. The County Executive serves at the pleasure of the Board of Supervisors, carries out the policies established by the Board of Supervisors, directs business and administrative procedures and recommends officers and personnel to be appointed by the board.

Like other Virginia local governments, Fairfax County has limited powers. Virginia courts have concluded that local governments in Virginia have only those powers that are:

- Specifically conferred on them by the Virginia General Assembly.
- Necessarily or fairly implied from a specific grant of authority.
- Essential to the purposes of government – not simply convenient, but indispensable.

More information about this doctrine of limited authority for local governments, which is commonly called the Dillon Rule, is available at www.fairfaxcounty.gov/government/about/dillon-rule.htm.

The Board of Supervisors web page, http://www.fairfaxcounty.gov/government/board/, provides links to the board members' individual web pages, podcasts, RSS feeds, a "Find Your District Supervisor" application, Board of Supervisors' news, committee assignments, goals and priorities, pictures of presentations to residents and more. An organizational chart of Fairfax County government is available at www.fairfaxcounty.gov/government/county-org-chart.pdf.

1.2.2 Cities and Towns

In Virginia, cities and counties are distinct units of government and do not overlap. Fairfax County completely surrounds the City of Fairfax and is adjacent to the City of Falls Church and the City of Alexandria. Property within these cities is not subject to taxation by Fairfax County, and the county generally is not required to provide governmental services to their residents. However, pursuant to agreements with these cities, the county provides certain services to their residents.

Unlike cities, incorporated towns are overlapping units of government within the county. There are three incorporated towns in Fairfax County: Clifton, Herndon and Vienna. These towns have land use policies and regulations that are independent of the county's, although other county ordinances and regulations are generally effective in them. Property in these towns is subject to county taxation and the county provides certain services to their residents.

1.2.3 Boards, Authorities and Commissions

Advisory bodies and citizen participation play very important roles in Fairfax County government. The Board of Supervisors has established dozens of boards, authorities and commissions (BACs) to ensure that residents and other stakeholders are involved in all aspects of the county government's functions. Residents interested in serving on a county board, authority, commission or committee, should contact their Supervisor.

A complete list of BACs is available at www.fairfaxcounty.gov/bacs/. BACs with environmental roles include the following:

Boards, Authorities and Commissions	
Name	**Purpose and Link**
Agricultural and Forestal Districts Advisory Board	To advise the Board of Supervisors and Planning Commission regarding the proposed establishment, modification, renewal, continuation and determination of agricultural and forestal districts; to render expert advice on the desirability of establishing such districts. www.fairfaxcounty.gov/bacs/BoardDetails.aspx?BoardID=23335
Airports Advisory Committee	To advise the Board of Supervisors on all airports and aircraft operations affecting Fairfax County; to expand the committee's responsibilities and feasibility of establishing a countywide aircraft noise complaint center. www.fairfaxcounty.gov/bacs/BoardDetails.aspx?BoardID=23354
Board of Zoning Appeals	To hear and decide: (1) appeals of administrative decisions made pursuant to the Zoning Ordinance; (2) applications for special permits and variances as authorized by the Zoning Ordinance; and (3) applications for interpretation of the Zoning Map where there is uncertainty as to the location of a zoning district boundary. www.fairfaxcounty.gov/dpz/bza/
Chesapeake Bay Preservation Ordinance Exception Review Committee	To review applications to conduct land disturbing activities within Resource Protection Areas. www.fairfaxcounty.gov/dpwes/environmental/cbay/erc/
Engineering Standards Review Committee	To provide technical and engineering advisory services to the Board of Supervisor; to thoroughly review the input data for the annual update of the Public Facilities Manual. www.fairfaxcounty.gov/bacs/BoardDetails.aspx?BoardID=23312
Environmental Quality Advisory Council	To advise the Board of Supervisors on environmental matters through ongoing review of the quality of the county's physical environment and to advocate and promote environmental preservation, protection and enhancement. www.fairfaxcounty.gov/dpz/eqac/
Fairfax County Park Authority	To be responsible for the acquisition, development and maintenance of the parks in the county. www.fairfaxcounty.gov/parks/

Boards, Authorities and Commissions	
Name	**Purpose and Link**
Geotechnical Review Board	To adopt ordinance amendments, official map and criteria regulating development in areas of Marumsco/Marine Clay soils and other problem soil areas. www.fairfaxcounty.gov/bacs/BoardDetails.aspx?BoardID=23317
Health Care Advisory Board	To be responsible for a periodic review of a comprehensive health plan for the county; to initiate an on-going health care information process in coordination with local, regional, state and federal agencies. www.fairfaxcounty.gov/hd/hcab/
Planning Commission	To advise the Board of Supervisors on all matters related to the orderly growth and development of Fairfax County; to approve or disapprove the location, character and extent of all public facilities in the county. www.fairfaxcounty.gov/planning/
Redevelopment and Housing Authority	To be responsible for providing rental housing for low-income families in Fairfax County. www.fairfaxcounty.gov/rha/aboutfcrha.htm/
Trails and Sidewalks Committee	To report to the Board of Supervisors for the purpose of providing citizen input and oversight to planning and developing a countywide trails system. www.fairfaxcounty.gov/trails/
Transportation Advisory Commission	To advise the Board of Supervisors and provide information and comments on major transportation issues faced by the county. www.fairfaxcounty.gov/fcdot/tac/
Tree Commission	To provide advice to the Board of Supervisors based on an annual reevaluation of the administration and implementation of local law relating to vegetation preservation and planting; to provide leadership in developing an understanding of the objectives and methods of tree conservation; to assist the Urban Forest Management Division in the development and maintenance of technical specifications and guidelines. www.fairfaxcounty.gov/bacs/BoardDetails.aspx?BoardID=23331
Wetlands Board	To preserve and prevent the despoliation and destruction of wetlands within its jurisdiction while accommodating necessary economic development in a manner consistent with wetlands preservation. www.fairfaxcounty.gov/bacs/BoardDetails.aspx?BoardID=23219

1.2.4 Other Authorities and Commissions

The following authorities and commissions have regional environmental responsibilities:

Fairfax County Water Authority (FCWA) – FCWA, known as Fairfax Water, is Virginia's largest water utility, serving nearly two million people. Fairfax Water operates two water treatment plants with a combined capacity of 376 million gallons per day and produces, on average, 163 million gallons of water per day. Fairfax Water also purchases up to 30 million gallons of water per day from the Washington Aqueduct. See www.fairfaxwater.org/.

Northern Virginia Regional Commission (NVRC) – NVRC is a regional council of 14 member governments in Northern Virginia. NVRC's energy and environmental programs and projects include those addressing energy efficiency, water resources and solid waste and recycling. See www.novaregion.org/.

Northern Virginia Regional Park Authority (NVRPA) – NVRPA was established in 1959 to protect natural resources from the threat of urban sprawl and provide recreational amenities. NVRPA currently owns about 7,000 acres in Fairfax County. See www.nvrpa.org.

Upper Occoquan Service Authority (UOSA) – UOSA was formed in 1971 to construct, finance and operate a regional water reclamation facility. It is currently authorized to process 54 million gallons of wastewater a day. See www.uosa.org/.

1.3 Energy and Environment Agencies and Business Areas

1.3.1 Department of Public Works and Environmental Services

The mission of the Fairfax County Department of Public Works and Environmental Services (DPWES) is to build and maintain healthy, safe and environmentally responsible communities in Fairfax County. DPWES's areas of responsibility include building and infrastructure construction, solid waste management and stormwater and wastewater management. The following highlights several DPWES divisions:

- *Capital Facilities* provides Fairfax County with quality, cost-effective buildings and infrastructure in a safe, timely, and environmentally-sound manner. The Capital Facilities division implements the county's Green Building policy, described in both Sections 2.2.8 and 4.2. See www.fairfaxcounty.gov/dpwes/construction/capitalprojects.htm.

- *The Solid Waste Management Program* (SWMP) oversees the county's municipal solid waste management system, through public outreach/education, demonstrated best management practices and enforcement of the county's solid waste management ordinance and related environmental requirements. The program mission and statutory authority covers the storage, collection, recycling and disposal of all municipal solid waste (MSW) generated within the county. The program also manages two MSW disposal sites and provides refuse and recyclables collection to 45,000 county residences and also county government operations. Further, the SWMP implements the county's 20-year Solid Waste Management Plan, which is required by State regulation to be reviewed and updated every five years.

For decades, the program has also provided a suite of services that further promote sustainable values, including:

- Source reduction, reuse and recycling education and outreach to residents and target industry/business sectors.
- Ready access to recycling, through curbside *and* drop-off programs, for as many materials as practical within market limits.
- The use of waste-to-energy (WTE) as the primary disposal technology.
- Resource recovery to minimize impacts from waste disposal systems (e.g., metal recovery from WTE ash, landfill gas-to-energy).
- Specialty waste collection, to provide economies-of-scale for more expensive or specialized recycling and disposal options. Examples of these specialty programs include E-waste collection, household hazardous waste collection, used tire recycling and document shredding events.
- Research and adoption of state-of-the-art technologies that support sustainable and efficient solid waste management and keep the county's integrated solid waste management system functioning well. Recent examples of the SWMP's work in this area include pilot programs to explore food waste composting and alternate technologies for recycling glass, and using the closed portion of the I-95 landfill as a potential host for pollinators and for the generation of solar power.

More information about these programs is contained in Sections 2, 3 and 4. Also refer to www.fairfaxcounty.gov/living/recycling/.

- *Stormwater Management* develops and maintains a comprehensive watershed and infrastructure management program that protects property, health and safety, enhances the quality of life and preserves and improves the environment. The business area plans, designs, constructs, operates, maintains and inspects the county's extensive

stormwater infrastructure. It also performs environmental assessments through coordinated stormwater and maintenance projects. Several Stormwater Management initiatives are discussed in Section 3.4.1. See www.fairfaxcounty.gov/dpwes/stormwater/.

- *Wastewater Management* safely collects and treats wastewater in compliance with all regulatory requirements using state-of-the art technology. The county's wastewater collection and conveyance system, one of the nation's largest sanitary sewer systems, covers nearly 234 square miles. The total system capacity is 157.18 million gallons of wastewater per day for about 340,000 residential and business connections in Fairfax County. See www.fairfaxcounty.gov/dpwes/wastewater/.

1.3.2 Other County Departments

A number of other county departments and agencies play instrumental roles in promoting environmental stewardship and prudently managing natural resources.

- *Land Development Services* provides oversight and enforcement of site and building requirements for construction projects within the county including environmental requirements like erosion and sediment control and Chesapeake Bay regulations. Its efforts support the county's Tree Action Plan and Tree Canopy Goals, both of which are discussed in Section 3.6, and the Environmental Improvement Program. For an overview of the land development process in Fairfax County, see www.fairfaxcounty.gov/dpwes/develop/.
- *Fairfax County Park Authority* (FCPA), which was created in 1950 by the Board of Supervisors, currently owns over 23,000 acres in Fairfax County. Its mission, as expressed in its *Great Parks, Great Communities Plan, is:*

  To set aside public spaces for and assist citizens in the protection and enhancement of environmental values, diversity of natural habitats and cultural heritage to guarantee that these resources will be available to both present and future generations. To create and sustain quality facilities and services that offer citizens opportunities for recreation, improvement of their physical and mental well-being, and enhancement of their quality of life.

More information about FCPA, including its resource management practices, is provided in Section 3.5. See www.fairfaxcounty.gov/living/parks/.

- *Department of Planning & Zoning* provides proposals, advice and assistance on land use, development review and zoning issues to those who make decisions on such issues in Fairfax County. DPZ's mission is to promote livable communities which enhance the quality of life for the present and the future. See www.fairfaxcounty.gov/dpz/.

- *Facilities Management Department* (FMD) provides a full range of facility management services to the approximately 240 county-owned and leased facilities in its portfolio. Key FMD services include energy management, capital renewal, maintenance, repair and renovation. The department also provides space planning and interior design services, as well as custodial, security and moving services. Several of FMD's energy-related initiatives and accomplishments are described in Section 4.4.

- *Department of Health*, through its Division of Environmental Health (DEH), protects and improves public health by using its regulatory authority and community-based outreach activities to prevent, minimize or eliminate exposure to biological, chemical or physical hazards. DEH's regulatory activities include the permitting and inspection of the operations of various businesses that can potentially impact the community's health, pest surveillance and public health complaint investigations. Section 3.9 discusses five of the potential environmental hazards and exposures that pose a risk to human health that DEH addresses: contaminated ground and surface water; vector-borne diseases; rabies; radon; and naturally-occurring asbestos. See www.fairfaxcounty.gov/hd/eh/.

- *Department of Vehicle Services* (DVS) provides fleet management services support to all county customers and ensures that county vehicles and equipment are maintained in accordance with all federal, state and county safety and environmental policies, procedures and regulations. DVS is fully committed to conservation of the county's natural environment and to initiatives that contribute to cleaner air and water. Section 4.7 discusses several of these DVS initiatives. See www.fairfaxcounty.gov/dvs/.

1.4 Interagency Collaboration and Coordination

Fairfax County has long recognized the need for coordinated and proactive policies and initiatives to address its environmental and energy related challenges. Federal and state guidelines and regulations demand diligence in the development of concrete strategies for a healthy environment, as well as inter-agency and inter-jurisdictional coordination to address environmental issues that know no organizational or political boundaries.

1.4.1 Internal Collaboration and Coordination

The county has established two committees to facilitate agency collaboration and coordination: the Environmental Coordinating Committee (ECC) and its companion, the Energy Efficiency and Conservation Coordinating Committee (EECCC). Both are inter-agency management committees intended to facilitate communication among agencies and to break down walls that separate individual agencies and their respective missions. Committee members act as advisors to and a "sounding board" for each other about environmental and energy issues, including programs, initiatives and strategies.

Both committees develop recommendations on policy and practice related to the environment and energy efficiency, which are then presented to the appropriate parties (i.e., the County Executive and/or the Board of Supervisors Environmental Committee). 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 and provide guidance as to any application in Fairfax County.

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. EQAC also provides a forum for citizen input on environmental issues through its annual public hearing and e-mail address. See www.fairfaxcounty.gov/dpz/eqac/ for more information regarding EQAC and its *Annual Report on the Environment*.

1.4.2 Regional Collaboration

As discussed in Section 1.2.1, board members are active participants in committees and initiatives within the metropolitan Washington, D.C. region, particularly those sponsored by the Metropolitan Washington Council of Governments (COG) and the Northern Virginia Regional Commission.

County staff is also active on a regional basis. The COG committees and boards in which county staff participates includes:

- COG Climate, Energy and Environment Policy Committee.
- COG Built Environment and Energy Advisory Committee.
- Metropolitan Washington Air Quality Committee and the MWAQC Technical Advisory Committee.
- Transportation Planning Board.

Information about the Metropolitan Washington Council of Governments and its committees and boards is available at www.mwcog.org/about/.

Information about the Northern Virginia Regional Commission, including its programs and projects, is available at www.novaregion.org/.

1.5 Partner Organizations

Fairfax County provides financial or other tangible support to a number of agencies and nonprofit organizations that promote the general health and welfare of the community. The county's environmental partners include:

Clean Fairfax Council works to prevent litter, encourage recycling and promote sustainability. See www.cleanfairfax.org/.

Earth Sangha promotes conservation through its native plant nursery and ecological restoration projects. See www.earthsangha.org/.

Fairfax County Restoration Project connects, creates and promotes efforts to restore ecosystem functions through collaboration with public, private, and volunteer organizations. See www.fcrpp3.org/.

Fairfax ReLeaf works to conserve, restore and promote sustainable urban forests by engaging volunteers in tree planting projects. See www.fairfaxreleaf.org/FFR/about.html.

Northern Virginia Conservation Trust helps local governments and private landowners preserve natural areas, trails, streams and parks through voluntary conservation easements. See www.nvct.org.

Northern Virginia Soil and Water Conservation District works for clean streams, protected natural resources and community engagement in Fairfax County. See www.fairfaxcounty.gov/nvswcd/.

Volunteer Fairfax matches the skills and interests of volunteers and donors to the needs of local nonprofit organizations, helping to build a better community through service. See www.volunteerfairfax.org/.

Earth Day planting at the Government Center

Photo credit: Dennis O'Conner

SECTION 2

REGULATORY, POLICY AND STRATEGIC FRAMEWORK

REGULATORY, POLICY AND STRATEGIC FRAMEWORK

Featured in this Section

SECTION 2

2.1 Introduction

The Fairfax County Board of Supervisors (board) has set the framework for the county's environmental initiatives through its vision, goals, policies and ordinances and has dedicated considerable resources to implementing these initiatives. This section of the report addresses this framework.

The board's vision statement includes the following (paraphrased slightly):

Our vision is to protect and enrich the quality of life for the people, neighborhoods and diverse communities of Fairfax County by maintaining safe and caring communities, building livable spaces, connecting people and places, maintaining healthy economies, practicing environmental stewardship, creating a culture of engagement and exercising corporate stewardship.

We envision that local government, industry and residents will seek ways to use all resources wisely and to protect and enhance the county's natural environment and open space. As a result, residents will feel good about their quality of life and embrace environmental stewardship as a personal and shared responsibility.

Vision of Fairfax County Board of Supervisors, available at www.fairfaxcounty.gov/government/vision.htm.

2.2 Policies Adopted by the Board of Supervisors

2.2.1 Priorities and Goals

Environmental initiatives are driven by goals, policies and priorities agreed upon at the highest levels of the county government. Through its Statement of Priorities, the Board of Supervisors has pledged to engage residents and business and protect investment in eight critical areas, including "a clean, sustainable environment."

Fairfax County will continue to protect our drinking water, air quality, stream valleys and tree canopy through responsible environmental regulations and practices. We will continue to take a lead in initiatives to address energy efficiency and sustainability and to preserve and protect open space for our residents to enjoy.

Fairfax County Statement of Priorities, available at www.fairfaxcounty.gov/government/board/priorities/.

The county's goals, adopted by the Board of Supervisors in 1988 and subsequently revised, serve as the basis for the Comprehensive Plan and encompass all aspects of the county government.

Of 20 adopted goals, many speak directly to environmental protection and resource conservation:

***Environmental Protection** – The amount and distribution of population density and land uses in Fairfax County should be consistent with water quality, ambient air quality and other environmental standards. Development in Fairfax County should be sensitive to the natural setting, in order to prevent degradation of the County's natural environment.*

***Energy Conservation** – Fairfax County should promote energy efficiency and energy conservation within the public, commercial, residential, and industrial sectors.*

***Open Space** – Fairfax County should support the conservation of appropriate land areas in a natural state to preserve, protect and enhance stream valleys, meadows, woodlands, wetlands, farmland, and plant and animal life. Small areas of open space should also be preserved in already congested and developed areas for passive neighborhood uses, visual relief, scenic value, and screening and buffering purposes.*

Three other goals, "Quality of Life," "Land Use" and "Transportation," also have environmental components. The Fairfax County Goals reflect the belief of the community that environmental protection and preservation are overarching components of the quality of life. They demonstrate an understanding of the interdependence of decisions regarding private development, transportation and public works with the environment. How we use land affects, and is affected by, the natural environment.

See the board's statement of priorities at www.fairfaxcounty.gov/government/board/priorities/ and the county's goals at www.fairfaxcounty.gov/dpz/comprehensiveplan/policyplan/preface.pdf.

2.2.2 Environmental Vision

Fairfax County has long recognized the need for proactive policies and initiatives to address its environmental challenges. Indeed, environmental considerations are embedded in the county's policy and regulatory documents, and the county has pursued a myriad of environmental initiatives that continue to grow in number and complexity.

For this reason among others, at its regular meeting on Monday, June 21, 2004, the board, in continuation of its long history of environmental vigilance and dedication, endorsed and adopted the "Environmental Excellence for Fairfax County: A 20-year Vision," also known as the Environmental Vision, or Environmental Agenda. The Environmental Vision as adopted in 2004 and revised in 2007 was organized into six core services:

- Growth and Land Use.
- Air Quality and Transportation.

- Water Quality.
- Solid Waste.
- Parks, Trails, Open Space.
- Environmental Stewardship.

On October 6, 2015, the Board of Supervisors directed that county staff review the Environmental Vision with community and board involvement to determine whether the document needed to be updated. Following extensive public and internal comment, staff drafted an updated Vision document that the board adopted on June 20, 2017. As articulated in a preface from Sharon Bulova, Chairman of the Board of Supervisors, the updated Environmental Vision document establishes *"an overarching vision to attain a quality environment that provides for a high quality of life and is sustainable for future generations. These aspects of a quality environment are essential for everyone living and working in Fairfax County. No matter what income, age, gender, ethnicity, or address, everyone has a need and right to breathe clean air, to drink clean water, and to live and work in a quality environment."*

The updated Environmental Vision document is premised on the same two principles originally adopted by the board in 2004. First, that *"conservation of our limited natural resources must be interwoven into all government decisions."* And, second, that *"the Board must be committed to providing the necessary funds and resources to protect and improve our environment for better quality of life now and for future generations."*

Major changes to the Environmental Vision included the addition of a new section addressing Climate and Energy, refinements to the scope of the initial six core services, and the addition of environmental vision statements and supporting objectives. The Vision now includes sections on:

- Land Use.
- Transportation.
- Water.
- Waste Management.
- Parks and Ecological Resources.
- Climate and Energy.
- Environmental Stewardship.

The Environmental Vision provides guidance for board members, county staff and the community when making decisions that have environmental impacts. Environmental concerns are not seen as trade-offs or compromises but, instead, are foundational to the decision-making process. The Environmental Vision is an aggressive, multi-year plan that will require a long-term financial commitment. The board's Environmental Vision is available at www.fairfaxcounty.gov/living/environment/environmentalvision.htm.

2.2.3 Cool Counties Climate Stabilization Initiative

In collaboration with local, regional and national partners, Fairfax County led a national effort, called Cool Counties, to reduce global warming emissions. The Board of Supervisors signed the Cool Counties Climate Stabilization Declaration on July 16, 2007. In signing this pledge, the board committed to certain actions, including working closely with local, state and federal governments to create a regional greenhouse gas emissions inventory and to limit regional emissions by 2050. As a result of these efforts, Fairfax County cut its per capita greenhouse gas emissions between 2005 and 2012 by 10 percent, as did the metropolitan Washington, D.C. region.

Fairfax County's climate change actions and initiatives include:

- Reducing greenhouse gas emissions in county government operations through efficiency, conservation and education.
- Implementing air quality, land use planning and zoning, transportation, tree and open space preservation, solid waste management, recycling and water conservation and reuse initiatives.
- Encouraging similar efforts in the wider community by supporting transit-oriented mixed-use development, green building and energy-conserving design, particularly in redevelopment areas such as Tysons Corner.

More information about Cool Counties, including the text of the U.S. Cool Counties Climate Stabilization Declaration, is available at www.fairfaxcounty.gov/living/environment/coolcounties/.

2.2.4 Energy Policy

The Fairfax County Energy Policy, adopted in 2009, promotes pragmatic conservation and management of energy resources. The policy supports nine measures:

- Energy efficiency and conservation in buildings, facilities, operations and vehicles.
- The use of alternative and sustainable energy options.
- Waste reduction and recycling.
- The use of more fuel efficient and alternate fuel vehicles in the county's fleet.
- Implementation of energy efficiency and conservation projects.
- Generation of energy on-site.
- Land use patterns and transportation systems that serve to reduce energy use.
- Intergovernmental energy efficiency efforts.
- Energy efficiency and conservation efforts by county employees, employers and residents.

The energy policy is available at www.fairfaxcounty.gov/living/environment/county-energy-policy.htm/.

The primary implementation mechanism to address and support environmental and energy policies and goals set forth in the board's Environmental Vision, the 2007 Cool Counties Initiative and the 2009 Energy Policy is the county's Environmental Improvement Program. Two collaborative inter-agency committees – the Environmental Coordinating Committee and the Energy Efficiency and Conservation Coordinating Committee – are vital to implementation, as they help ensure that cross-cutting action is coordinated across county agencies, authorities and schools. More information on the Environmental Improvement Program is presented in Sections 2.4.2 and 5 of this document.

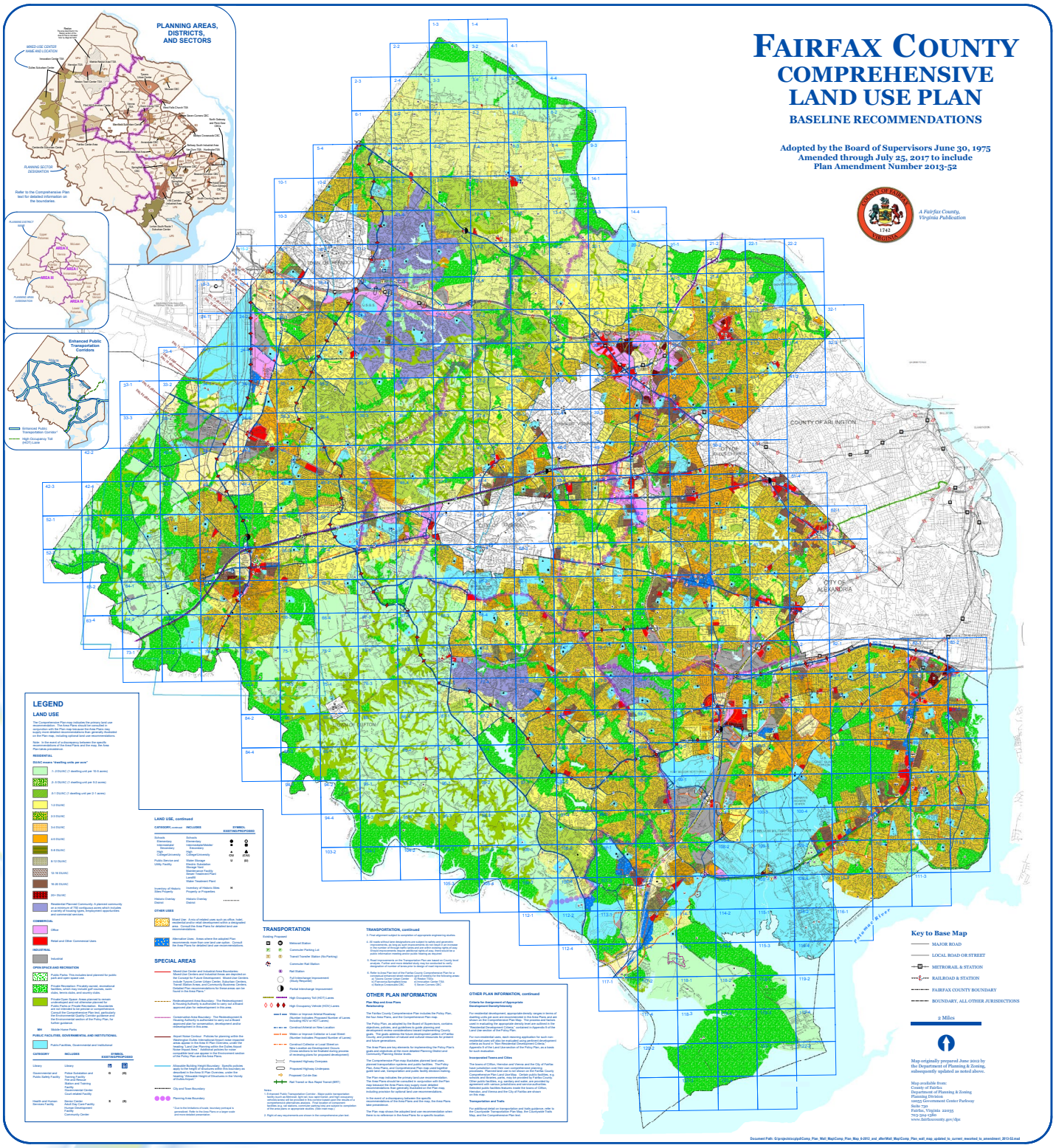
2.2.5 Comprehensive Plan

The Comprehensive Plan guides land use-related decision-making about the environment by the county's Board of Supervisors, Planning Commission and Board of Zoning Appeals. It is also a guide for county staff and the public about development and redevelopment in the county.

The Plan consists of the Policy Plan, four Area Plans, the Land Use Plan map, the Countywide Trails Plan map, the Bicycle Plan map and the Transportation Plan map. The Policy Plan provides broad, countywide policy guidance, while the Area Plans provide more specific recommendations for smaller geographic areas, often specific to individual parcels of land. Development proposals requiring zoning approval are evaluated in regard to how they would implement or otherwise support both Policy Plan and Area Plan guidance.

The Policy Plan contains goals, objectives, and policies relating to 11 functional elements:

- Land Use.
- Transportation.
- Housing.
- Economic Development.
- Environment.
- Heritage Resources.
- Public Facilities.
- Human Services.
- Parks and Recreation.
- Revitalization.
- Visual and Performing Arts.



The Plan map may be viewed at a larger scale at: http://www.fairfaxcounty.gov/dpz/comprehensiveplan/compplanmap07252017.pdf

The plan provides objectives, policies and guidelines for future development in Fairfax County, while protecting natural and cultural resources. The policies and objectives in the Environment section address environmental resources, conservation, pollution, hazards and coordination as well as green building practices.

More information about the county's growth and land use policies is presented in Section 3.2 of this report. See also www.fairfaxcounty.gov/dpz/comprehensiveplan.

2.2.6 Tree Action Plan

The Tree Action Plan, adopted in December 2006, is a 20-year strategy document to preserve and restore tree cover in Fairfax County. Members of the Fairfax County Tree Commission, county staff, residents and builders worked together to develop goals and recommendations. The goals include:

- A commitment to the preservation of current tree assets.
- Enhancement of the legacy for future generations by increasing the quantity and quality of trees and wooded areas.
- More effective integration of urban forestry with planning and policy making.

The Plan includes 12 core recommendations through which trees are accorded a high priority and are integrated into urban planning with related goals, strategies and tactics.

After completing the plan, the Board of Supervisors adopted a 30-year tree canopy goal to increase the county's tree cover to 45 percent by the year 2037. A study of urban tree canopy in 2017 using high resolution satellite imagery showed that over 53 percent of the county is now covered by tree canopy.

The Tree Commission, Urban Forest Management Division and stakeholders have begun drafting an update to the Tree Action Plan with the goal of completing the update by the end of 2017.

Information about the Tree Action Plan is available at www.fairfaxcounty.gov/dpwes/environmental/tap.htm and in Section 3.6.

2.2.7 Solid Waste Management Plan

The Solid Waste Management Program (SWMP) is responsible for the management and long-range planning for refuse and recycling within the county. Program elements are summarized within the county's Solid Waste Management Plan. Program operations, as included in the plan,

are identified in Section 2.4.1 of this report and are described in more detail in Section 3.7.

The county's Solid Waste Management Plan, including the 2015-2035 Update submitted to the Department of Environmental Quality in March 2015, is available at www.fairfaxcounty.gov/dpwes/swmp/. The Solid Waste Management Program is a part of the county's Department of Public Works and Environmental Services.

2.2.8 Sustainable Development Policy for Capital Projects

Fairfax County supports green building in its own capital projects as well as private sector development. The Sustainable Development Policy for Capital Projects addresses Fairfax County facilities. The Environment section of the Fairfax County Comprehensive Plan covers the private sector.

County projects greater than 10,000 square feet in size must have a goal of achieving Silver certification in the Leadership in Energy and Environmental Design, or LEED®, rating system; smaller facilities are recommended for LEED certification.

The Sustainable Development Policy for Capital Projects is available at www.fairfaxcounty.gov/dpwes/construction/sdpolicy.pdf. More information about the county's green building policies and efforts is presented in Sections 3.2.4 and 4.2 of this report.

2.2.9 Fairfax County Park Authority Policy

The Fairfax County Park Authority mission is: "To set aside public spaces for and assist citizens in the protection and enhancement of environmental values, diversity of natural habitats and cultural heritage to guarantee that these resources will be available to both present and future generations. To create and sustain quality facilities and services which offer citizens opportunities for recreation, improvement of their physical and mental wellbeing, and enhancement of their quality of life."

Fairfax County Park Authority, Five Year Strategic Plan, available at www.fairfaxcounty.gov/parks/plandev/downloads/strategic-plan-fy14-18-final.pdf.

The Fairfax County Park Authority manages over 23,000 acres, 425 parks, five nature centers and a horticultural center, more than 300 miles of trails, over 650 public garden plots, 220 playgrounds, 779 athletic fields and one of only four state natural area preserves in Northern Virginia.

The Fairfax County Park Authority Board, appointed by the Board of Supervisors, works collaboratively with constituents, partners, stakeholders and government leaders to champion the preservation and management of natural and cultural resources and facilitate the

Burke Lake

development of park and recreation programs and facilities. To guide park planning and programs, numerous policies and plans have been adopted:

- *Fairfax County Comprehensive Plan* – Parks and Recreation – Provides guidance and goals for park planning and land use decisions affecting the conservation of natural and cultural resources, protection of environmental quality and provision of parks and park facilities to meet countywide needs. www.fairfaxcounty.gov/dpz/comprehensiveplan/policyplan/parksrec.pdf
- *Fairfax County Park Authority Policy Manual* – This manual guides Park Authority Board and staff decision making in accordance with the Park Authority mission, objectives and associated laws. www.fairfaxcounty.gov/parks/parkpolicy/
- *Great Parks, Great Communities 2010-2020 Comprehensive Park System Plan* – This document offers a long-range plan for the place- based, physical aspects of the park system, its land, its natural and cultural resources and its facilities. www.fairfaxcounty.gov/parks/plandev/greatparks/
- *Natural Resource Management Plan* – This plan coordinates agency-¬wide efforts to achieve the natural resource preservation mission of the Fairfax County Park Authority and implement agency Policy 201 – Natural Resources. www.fairfaxcounty.gov/parks/nrmp.htm
- *Cultural Resource Management Plan* – This plan provides the tools, policies and practices to best manage and protect cultural resources, both on parkland and countywide. www.fairfaxcounty.gov/parks/gmp/crmpfinal.pdf

- *Park Master Plans* – These plans serve as general guides for appropriate park uses and facilities and their approximate locations within a specific park site as well as guide future park development and programming. www.fairfaxcounty.gov/parks/plandev/mparchives.htm

2.3 Ordinances Adopted by the Board of Supervisors

Fairfax County's regulations support, complement and implement the county's environmental policies and state and federal mandates. They are the *"shall"* requirements that accompany the *"should"* policies. Both are critical to the success of the county's comprehensive environmental program.

The Fairfax County Code contains all county-adopted ordinances and associated requirements. These ordinances are not static but are reviewed and updated as needed. The current set of county ordinances is available at https://www.municode.com/library/va/fairfax_county. Environmental ordinances and other ordinances with key environmental provisions include:

- Chapter 62, Fire Protection.
- Chapter 67.1, Sanitary Sewers and Sewage Disposal.
- Chapter 68.1, Individual Sewage Disposal Facilities.
- Chapter 70.1, Private Water Well Ordinance.
- Chapter 101, Subdivision Provisions (including, by reference, the Public Facilities Manual).
- Chapter 103, Air Pollution Control.
- Chapter 104, Erosion and Sedimentation Control.
- Chapter 107, Problem Soils.
- Chapter 108.1, Noise Ordinance.
- Chapter 109.1, Solid Waste Management.
- Chapter 112, Zoning Ordinance (including Floodplain Regulations, the Airport Noise Impact Overlay District and the Water Supply Protection Overlay District). (Available at www.fairfaxcounty.gov/dpz/zoningordinance/).
- Chapter 113, Water Use, Emergency Regulations.
- Chapter 114, Agricultural and Forestal Districts of Statewide Significance.
- Chapter 115, Local Agricultural and Forestal Districts.
- Chapter 116, Wetlands Zoning Ordinance.
- Chapter 118, Chesapeake Bay Preservation Ordinance.

- Chapter 120, Heritage, Specimen, Memorial and Street Tree Ordinance.
- Chapter 122, Tree Conservation Ordinance.
- Chapter 123, Coastal Primary Sand Dune Zoning Ordinance.
- Chapter 124, Stormwater Management Ordinance.

Other ordinances also have environmental provisions that are secondary to other purposes.

2.4 Funding Mechanisms

2.4.1 Funds Used for Environmental Efforts

Fairfax County supports environmental initiatives through several county agencies and funds. Each year, the General Fund supports priority projects through a rigorous project selection process in support of the Environmental Vision. Recent funding has been included for projects such as: the establishment of a pollinator meadow at a county vehicle service facility; the installation of honeybee hives and pollinator habitat at the I-95 landfill property; the installation of real-time water leak and freeze detection controls at county RECenters and historic sites; the purchase of alternative fueled propane ride-on lawn mowers for the Park Authority; support for the Park Authority's Invasive Management Area Program; environmental education and outreach; the Green Purchasing Program; and a watershed protection and energy conservation matching grant program. General Fund support is provided as available on an annual basis.

The General Fund also supports two nonprofit environmental agencies through a contributory fund. For several years, Fairfax County has contributed to Earth Sangha, an environmental nonprofit organization which provides numerous volunteer opportunities involving environmental work. Fairfax ReLeaf is another nonprofit organization of volunteers that plants and preserves trees and restores forest cover on public and common lands in Northern Virginia.

Several important environmental program areas are supported through funding sources outside of the General Fund.

The Wastewater Management Program keeps track of requirements relating to the Chesapeake Bay Program as these requirements relate to amounts of nutrient pollutants allowed to be discharged from wastewater treatment facilities. A phased approach was taken to renovate and upgrade plant facilities to accommodate more stringent nutrient discharge requirements. The plant is in full compliance with the new requirements. The Wastewater Management Program is primarily supported by sewer service charges, connection charges and availability fees; these funds are used to fully

recover program operation and maintenance costs, debt service payments and capital project requirements attributable to improving wastewater treatment effluent quality as mandated by state and federal agencies.

The Solid Waste Management Program is responsible for ensuring that the county has adequate, environmentally-responsible resources to manage refuse and recycling. Operations include: a county-owned and operated refuse transfer station; a privately-owned and operated Energy/Resource Recovery Facility; two closed municipal solid waste landfills; a regional ash fill operated by the county; two recycling and disposal facilities that include the collection of household hazardous waste and e-waste; and equipment and facilities for refuse collection, disposal and recycling operations for approximately 44,000 residents in sanitary districts. The Solid Waste Program includes the following funds: Leaf Collection; Refuse Collection and Recycling Operations; Refuse Disposal; Energy/Resource Recovery Facility; and I-95 Refuse Disposal. These funds are all supported by special revenue fees and charges.

The Stormwater Services fund is also essential in supporting environmental mandates such as those aimed at protecting the Chesapeake Bay and the water quality of local waterways. This fund is supported by a special service district fee currently based on 3.00 cents per $100 of assessed real estate value. This fund is used to improve, operate and maintain the county's stormwater system, meet state and federal regulatory and water quality standards and meet dam safety requirements. The stormwater fee also supports contributions to both the Northern Virginia Soil and Water Conservation District (NVSWCD) and the Occoquan Watershed Monitoring Program (OWMP). The NVSWCD is an independent subdivision of the Commonwealth of Virginia that provides leadership in the conservation and protection of Fairfax County's soil and water resources. The OWMP and the Occoquan Watershed Monitoring Laboratory were established to ensure that water quality is monitored and protected in the Occoquan Watershed.

2.4.2 Environmental Improvement Program

The Environmental Improvement Program (EIP) was first developed in 2005 by the county's Environmental Coordinating Committee (ECC) in response to direction by the board following the adoption of its Environmental Vision on June 21, 2004. Until recently, the EIP was largely a compilation of projects, initiatives and actions that the county had taken, was in the process of taking or could take to support board-adopted environmental and energy policies and goals.

The EIP was updated annually through a coordinated and collaborative process. Please see www.fairfaxcounty.gov/living/environment/eip/ for further information regarding past EIP documents.

In consultation with the Board of Supervisors and the county's Environmental Quality Advisory Council, staff revised the EIP in 2012 to include a more formal project selection and prioritization process to better support the board-adopted Environmental Vision.

In this revised process, EIP project proposals are evaluated and prioritized annually. Projects identified through this process are forwarded to the county executive for consideration for inclusion in the advertised budget. A description of the EIP project selection process and additional information about EIP projects are provided in Section 5.3 of this report.

SECTION 3

PROMOTING A SUSTAINABLE COMMUNITY

PROMOTING A SUSTAINABLE COMMUNITY

Featured in this Section

SECTION 3

3.1 Introduction

Section 2 of this report identified the broad policy framework guiding the county's sustainability initiatives. This section addresses how the county furthers the policy framework through promotion of sustainability within the community.

Environmental stewardship is both a key responsibility and a critical legacy of the Fairfax County Board of Supervisors. Its Environmental Vision, updated in 2017, affirms that environmental stewardship and prudent management of natural resources are essential responsibilities of local government that must be given fullest consideration at all times. The Environmental Vision is available at www.fairfaxcounty.gov/living/environment/environmentalvision.htm.

Achieving this goal of sustainability requires an on-going commitment to support environmental stewardship in every aspect of daily life.

Fairfax County made this commitment to sustainability, demonstrated by an extensive range of policies, programs and efforts, including those promoting:

- Transit-oriented mixed-use development and green building practices.
- Clean air and reduced carbon emissions.
- Healthy waterways and clean drinking water.
- Adaptive, holistic management of natural resources.
- Tree canopy conservation, forest management and access to open space.
- Recycling and other waste management initiatives that minimize use of landfills.
- Outreach and educational programs that support stewardship values.
- Reduction of environmental hazards to human health and quality of life (e. g., biological, chemical and physical hazards, noise, light pollution and visual pollution).

3.2 Growth and Land Use

Both Fairfax County and the larger metropolitan Washington, D. C. area are expected to experience substantial growth into the future. Fairfax County's 2016 population of approximately 1.13 million is projected to increase to over 1.25 million by 2030. Over this same period, the number of households is forecast to increase from about 402,000 to over 458,000. The Metropolitan Washington Council of Governments (COG) forecasts that the population in the region (i.e., jurisdictions within the COG/Transportation Planning

Board Planning Area) will grow by over 1.5 million between 2015 and 2045, increasing from approximately 5.4 million to approximately 6.9 million. COG forecasts that between 2015 and 2045 the region will add over 1.1 million jobs, with over 240,000 of these new jobs located in Fairfax County.

The question, then, is not if the county will grow, but how it will grow.

The county's growth and land use policies favor growth in mixed-use, transit-oriented centers. These centers provide for employment growth near both transit opportunities and residential areas. They also support vibrant communities by creating safe and attractive streets for pedestrians and reducing the need for vehicle trips and resulting traffic congestion.

3.2.1 Zoning and Planning

Land use in Fairfax County is regulated by the Zoning Ordinance. Each parcel of land in the county is zoned, and the zoning establishes both rights and restrictions on the use and development of that parcel. These restrictions include allowed uses and standards, including setback, building height, open space and parking requirements. Additional requirements exist in "overlay" districts that have been established to address area-specific issues, such as water quality within the Occoquan Reservoir watershed.

Development that conforms to allowed uses and standards under the zoning ordinance proceeds "by right" – that is, it is approved administratively and does not require a public hearing. Legislative approval following public hearing is required for other development:

- Requests for special permit uses are subject to approval by the Board of Zoning Appeals.
- Requests for special exceptions or to change the zoning of a parcel (rezoning) are subject to approval by the Board of Supervisors.

The Fairfax County Planning Commission holds public hearings and provides recommendations to the Board of Supervisors on all special exception and rezoning proposals.

In making decisions on these matters, members of the boards and Planning Commission are guided by the Comprehensive Plan. This plan, which is discussed in Section 2.2.5, describes the county's land use vision for the future and includes countywide and area-specific policies to help attain this vision.

More information about the Zoning Ordinance and process is available at www.fairfaxcounty.gov/dpz/zoning/. The Comprehensive Plan is available at www.fairfaxcounty.gov/dpz/comprehensiveplan/.

3.2.2 Transit-Oriented Mixed-Use Development

The Policy Plan volume of the county's Comprehensive Plan contains the Board of Supervisors' goals, policies and objectives regarding land use, transportation, housing, the environment, human services, public facilities, parks and recreation, revitalization, economic development, heritage resources and visual and performing arts.

The land use and transportation policies of the Comprehensive Plan emphasize locating mixed uses, including employment and multifamily housing, in activity centers (i.e., the Tysons Urban Center, suburban centers, community business centers and transit station areas) with transportation options, especially rail transit. Transit-oriented mixed-use development (TOD) guidelines were incorporated into the Policy Plan in March 2007.

In June 2010, the Board of Supervisors adopted an amendment to the Comprehensive Plan for the Tysons area. The Plan amendment, which was the culmination of one of the largest targeted planning efforts in county history, supports TOD concepts, including the provision of housing in employment centers. This amendment, which was designed to take advantage of the four new Metro stations that have now been built in the area, received the 2011 Daniel Burnham Award from the American Planning Association. This award is granted to only one urban plan in the nation each year for advancing the science and art of planning.

Plaza at Tyson's Corner Center

Other Plan amendments that support TOD concepts and/or mixed-use development and connectivity include those for Annandale, Baileys Crossroads, Seven Corners, Franconia-Springfield, Lake Anne Village Center, the Fairfax Center Area, the Dulles Suburban Center, McLean, Richmond Highway, areas near Fort Belvoir and areas near existing and future rail stations in the Reston and Herndon areas. Efforts to incorporate TOD, mixed-use and connectivity concepts into the Comprehensive Plan are continuing as demonstrated by the ongoing Embark Highway major study, which is focused on bringing bus rapid transit to eight mixed use nodes along Richmond Highway.

The Plan's guidance is implemented through the approval of zoning applications. Approved and pending rezoning applications regarding

TOD and mixed-use development include those affecting properties in Tysons, Reston, the Dulles Suburban Center, Merrifield, Springfield and the Huntington and Vienna Metrorail station areas.

The Policy Plan is available at www.fairfaxcounty.gov/dpz/comprehensiveplan/policyplan/. More information about TOD is available in the Land Use section of the Comprehensive Plan, available at www.fairfaxcounty.gov/dpz/comprehensiveplan/policyplan/landuse.pdf, particularly Objectives 2, 6, 16 and Appendix 11.

3.2.3 Revitalization

Fairfax County's Office of Community Revitalization (OCR) facilitates strategic redevelopment and investment opportunities within the older and transforming commercial activity centers of the county. These centers include the five Commercial Revitalization Districts (CRD) of Annandale, Baileys Crossroads/Seven Corners, McLean, Richmond Highway and Springfield; the two Commercial Revitalization Areas (CRA) of Lake Anne Village Center and Merrifield; the Springfield Town Center; Reston Transit Station Areas (TSA) and village centers; and the Tysons Urban Center (Tysons).

Mosaic District

OCR includes a dedicated team of planning and design professionals who work with developers, property owners, community stakeholders, cross-agency teams and consultants to provide review and direction on zoning applications, site plans, Comprehensive Plan amendments, streetscape and wayfinding projects, infrastructure improvement projects, public outreach, special studies, urban design guidelines, solicitations regarding county facilities and related development and public-private partnerships.

Board policy and OCR's work program have been instrumental in promoting a sustainable community through redevelopment and reinvestment. New incentives to reduce barriers for redevelopment and facilitate revitalization and redevelopment are being implemented through countywide initiatives aimed at improving the development process.

To achieve and sustain revitalization goals and objectives, the county has adopted Plan guidance for each CRD/CRA, Tysons and Reston; incorporated the Urban Parks Framework into the Policy Plan; and adopted Urban Design Guidelines for many of its mixed-use activity centers, with the goal of adopting

such standards for additional areas. These guidelines promote walkable, pedestrian-oriented, sustainable development and are used to evaluate development applications and site plans.

Through the use of strategic financing mechanisms, such as the Community Development Authority/Tax Increment Financing (CDA/TIF) that was used for the Mosaic-Merrifield Town Center project, and other forms of public-private partnerships, the county forms partnerships with the private sector to complete major projects that serve the public interest.

More information about revitalization is available at www.fcrevit.org.

3.2.4 Green Buildings

Green Building Policy – In addition to adopting a green building policy that applies to county capital projects, as discussed in Section 4.2.1, Fairfax County has adopted green building policies for private sector development. These policies for private sector development are found in the Comprehensive Plan and are implemented through the zoning process.

The Policy Plan volume of the Comprehensive Plan includes broad support for green building practices. It also establishes links between green building/energy conservation practices and the attainment of certain Comprehensive Plan options and planned uses, as well as development densities and intensities. One example of these linkages involves proposals at the high end of the planned density/intensity range in the county's growth centers. In these centers, green building certification through the Leadership in Energy and Environmental Design (LEED®) program or its equivalent is recommended for certain nonresidential and multi-family residential proposals. Another example that applies countywide is the recommendation for other residential projects to incorporate green building practices sufficient to attain certification under

Dolley Madison Library

an established residential green building rating system that incorporates multiple green building concepts and that includes an ENERGY STAR® Qualified Homes designation or comparable level of energy performance.

The Area Plan volumes of the Comprehensive Plan include area-specific green building policy. For example, the Tysons Urban Center Area Plan recommends a LEED Silver or equivalent level of certification for nonresidential development. Plan guidance recommends similar efforts for specific areas within the Richmond Highway Corridor, an area near the Town of Herndon, Reston's Transit Station Areas and areas near the Huntington and Franconia-Springfield Metrorail stations. Another example of an area-specific policy is found in the Annandale Community Business Center Plan. This Plan includes an incentive development option that allows for increased building heights in certain areas where any of a number of benefits are provided, including commitments to LEED Gold or LEED Platinum certification.

During the zoning application review process, county staff receives commitments from applicants to green building certification and other green building efforts. Commitments to green building certification have been made for more than 200 buildings that have been approved through the zoning process. A majority are linked to LEED certification, with many buildings linked to certification at the LEED Silver or higher level.

More information about the county's green building policies for private sector development is available at www.fairfaxcounty.gov/dpz/comprehensiveplan/policyplan/environment.pdf (Objective 13).

Green Building Priority Plan Review – Both residential and commercial development projects that will be designed to attain certain thresholds of green building design are eligible for shorter waiting times during the building plan review process. Commercial projects designed to reach a minimum LEED rating of silver or equivalent are eligible for this incentive, as are residential projects designed to, as a minimum, attain one of the following rating levels: LEED for Homes Silver; National Green Building Standards™ Silver; Earthcraft™ Select; or three "Globes" in the Green Globes™ rating system. Other green building rating programs are evaluated for approval on a case-by-case basis.

County Incentives for Solar Installations – Current solar incentives include a zero cost for the permit fee (solar hot water or solar photovoltaic projects) and a limited solar tax incentive in accordance with Va. Code Section 58.1-3661. This is covered by the county ordinance in Article 18, Chapter 4 of the Fairfax County Code. Essentially, qualifying solar equipment as approved by the Department of Public Works and Environmental Services (DPWES) can result in a tax credit (not an exemption) against the amount of normal property taxes due. The credit is determined by applying the local tax rate to the value of the solar equipment (the value is typically the cost of the equipment).

The tax credit is available the first tax year following the date of application. The credit is good for five years. Although the concept for this was generally aimed at homes, both commercial and residential properties qualify. The link provided is the application from DPWES at www.fairfaxcounty.gov/dpwes/forms/solarenergy.pdf.

In addition, it is possible to obtain a same-day solar permit if sufficient structural and electrical design information is provided to the walk-through counter at the county's Permit Application Center.

3.3 Air Quality and Transportation

The federal Clean Air Act was passed in 1970 to protect public health and welfare. Congress amended the Act in 1990 to establish requirements for areas not meeting the National Ambient Air Quality Standards (NAAQS) for ground-level ozone (smog), oxides of nitrogen (NOx), sulfur dioxide (SO2), carbon monoxide (CO), lead and particulate matter (PM). The metropolitan Washington region is a "Marginal" nonattainment area for the 2008 eight-hour standard for ground level ozone. The region is in compliance with the NAAQS for the other five criteria pollutants.

The Clean Air Act Amendments of 1990 (CAAA) established a legal process for evaluating air quality and identifying and classifying nonattainment areas according to the severity of their air pollution problems. Although emissions from stationary sources such as industrial power generation facilities and manufacturing are significant contributors to overall air quality, the focus of this section will be on transportation related (mobile) emissions.

Since 1970, significant progress has been made in reducing mobile source emissions in the Washington Metropolitan region, despite increases in population, employment and vehicle miles traveled. Most of the emissions reductions have resulted from cleaner vehicles and cleaner fuels.

Transportation agencies, both state and local, have also contributed to emission reductions through the implementation of transportation system management (TSM) strategies such as traffic signalization projects and high occupancy vehicle lanes, and through transportation demand management (TDM) strategies such as transit facilities and pedestrian and bicycle programs. Nevertheless, mobile sources continue to contribute to overall air quality issues and remain an area of concern to regulatory agencies and to the general public. More recently, mobile source air toxics and greenhouse gas emissions have also become concerns.

3.3.1 Air Quality Planning in the Washington Metropolitan Region

Under Section 174 of the CAAA, the governors of Maryland and Virginia and the mayor of the District of Columbia certified the Metropolitan Washington Air Quality Committee (MWAQC) to develop specific recommendations for a regional air quality plan in the Washington, DC-MD-VA nonattainment area.

Members of MWAQC include: elected officials from the Cities of Bowie, College Park, Frederick, Gaithersburg, Greenbelt, Rockville and Takoma Park in Maryland and Alexandria, Fairfax, Falls Church, Manassas and Manassas Park in Virginia; representatives of the Montgomery and Prince George's county councils; the Montgomery and Prince George's county executives; the mayor of the District of Columbia and representatives of the Council of the District of Columbia; and representatives of Calvert, Charles and Frederick counties in Maryland, and Arlington, Fairfax, Loudoun and Prince William counties in Virginia. Representatives of the general assemblies of Maryland and Virginia, the state air management directors, the state transportation directors and the chairman of the National Capital Region Transportation Planning Board also are members of MWAQC.

The Metropolitan Washington Council of Governments (COG), in close cooperation with state air quality and transportation agencies, provides technical support to MWAQC. Staffs from the local counties and cities provide additional technical support.

MWAQC also has established an Air Quality Public Advisory Committee (AQPAC) to provide recommendations regarding public participation in the development of the air quality plans. AQPAC members represent academic, business, civic and environmental groups.

In addition, MWAQC works with the Interstate Air Quality Council (IAQC), a cabinet-level collaboration among the District of Columbia, the state of Maryland and the commonwealth of Virginia that includes the secretaries of the environment and transportation. The purpose of the IAQC is to address issues of interstate transport of air pollutants and to provide a sound process for improving regional air quality.

Once MWAQC approves the air quality attainment plan, it will be forwarded to the Interstate Air Quality Council for approval. The governors and the mayor (or their designees) are then required to submit the air quality State Implementation Plans (SIPs) to the U.S. Environmental Protection Agency (EPA) to meet the requirements of the CAAA.

3.3.2 Transportation Planning in the Washington Metropolitan Region

Transportation planning in the Washington metropolitan region is heavily influenced by air quality planning. Transportation plans are tested to ensure that the projects in the plan, when considered collectively, contribute to the air quality improvement goals embodied in the CAAA. A series of tests are performed with computer models that predict how much air pollution will be generated over the next 25 years by facilities in the plan, and how much the air will be improved by cleaner gasoline standards and many other factors.

If the transportation plan is found to meet regional air quality goals, federal agencies certify that the plan is "in conformity." In other words, the plan "conforms" to air quality improvement goals. If the plan encounters difficulty in meeting conformity, transportation agencies may be required to adopt Transportation Emission Reduction Measures, such as ridesharing and telecommuting programs, improved transit and bicycling facilities, clean fuel vehicle programs or other possible actions.

The transportation conformity rule and the Clean Air Act require that Transportation Control Measures (TCMs) in approved SIPs be implemented.

State air, environmental and health agencies are typically responsible for the development of SIPs that explain how each nonattainment area will meet the requirements of the CAAA. However, state and local transportation agencies are required to implement the transportation measures, so it is important that they take an active role in the development of the SIP.

3.3.3 Washington Metropolitan Air Quality Status

The metropolitan Washington region has met National Ambient Air Quality Standards, often referred to as NAAQS, for carbon monoxide and fine particulate matter, but not for ozone pollution.

Ozone – In July 2012, the Washington region was designated as a "Marginal" nonattainment area for the 2008 ozone standard of 75 ppb. The region was to have attained the 2008 standard by July 20, 2015 using 2012-2014 data. Based on the data for 2012-2014, the ozone design value for the Washington region was 76 ppb, so the region did not attain the NAAQS. However, the region has been progressively lowering the ozone level in the region, so state air agencies of the District of Columbia, Maryland, and Virginia requested that EPA extend the attainment date by one year. EPA granted the request in April 2016. The preliminary design value of 70 ppb for 2013-2015 shows that the region now is in attainment of the 75 ppb standard. Therefore, the Washington region plans to submit a re-designation request and a maintenance plan for the above standard by late 2017 or early 2018.

EPA published a revised eight-hour ozone standard of 70 ppb in October 2015. EPA is scheduled to publish by October 2017 designations regarding whether or not regions have attained the new standard based on 2014-2016 data. Depending on the designation for the metropolitan Washington region, federal, state and local governments may be required to implement new measures to meet the revised tougher standard.

Fine Particulate Matter ($PM_{2.5}$) – The region is in attainment of the 1997 primary annual $PM_{2.5}$ standard. Based on the 2012-2014 data, the Washington region's design values for the annual $PM_{2.5}$ standard (12 µg/m^3) is 9.5 µg/m^3 and the daily $PM_{2.5}$ standard (35 µg/m^3) is 22 µg/m^3. Also, there was no exceedance of the daily $PM_{2.5}$ standard in 2015.

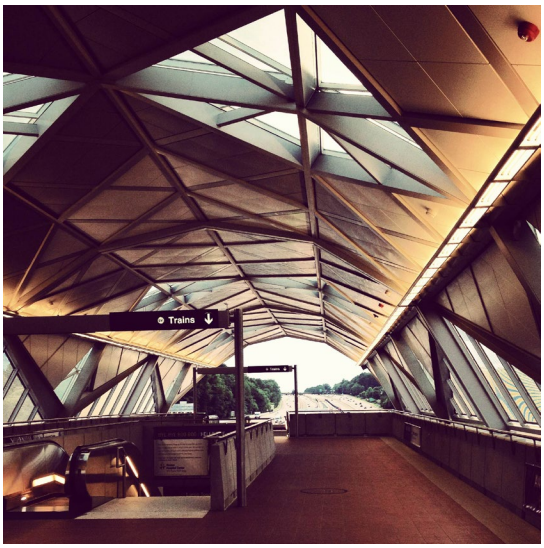
However, the region is covered under a maintenance plan for the 1997 primary annual $PM_{2.5}$ NAAQS. This plan must demonstrate that the region will continue to meet the standard. Virginia, Maryland and the District of Columbia are revising the maintenance plan in 2016 to reflect revised annual motor vehicle emissions budgets (MVEBs) for $PM_{2.5}$ and NOx using the EPA approved MOVES2014 model. EPA had earlier approved the region's MVEBs for the two pollutants which were developed using EPA's older MOVES2010a model. The revised MVEBs will reflect the lower emissions calculated by the new model.

Carbon Monoxide – The region has been in attainment of the carbon monoxide NAAQS for the twenty year period of its maintenance plan and is projected to remain considerably under the NAAQS into the future. Therefore, there are now fewer requirements to assess the effects of transportation projects and other development on carbon monoxide emissions.

3.3.4 Fairfax County Multimodal Transportation Initiatives

The Fairfax County Department of Transportation (FCDOT) has a number of initiatives supporting transit and other forms of alternative transportation use in Fairfax County. The Employer Services Program provides outreach to employers on transportation demand management strategies, including rideshare incentives and promotions, computerized ridematching, carpool incentives such as preferred parking, subsidies and telework programs.

In recent years, FCDOT's Bicycle Program has made great improvements to bicycle infrastructure and opportunities for county residents. The Bicycle Master Plan was approved by the Board of Supervisors in October 2014. Since then, FCDOT has partnered with the Virginia Department of Transportation (VDOT) to install over 50 miles of on-road facilities as a part of the Northern Virginia Paving Program. An interactive map of bicycle lanes planned or complete through the paving program is available online at http://www.virginiadot.org/projects/northern_virginia/northern_virginia_paving_program.asp.



Wiehle-Reston East Metro Station

In October 2016, the Capital Bikeshare system launched in Reston and Tysons. From October to December, the most recent reporting period for which data are available, the busiest bikeshare station in Fairfax County was at the Wiehle-Reston East Metro station. There were 371 total trips at this station. Since the launch of bikeshare, over 800 individuals have joined as annual members and an additional 200 casual riders have registered (i.e. single-trip, day pass, week pass or monthly pass memberships). FCDOT will continue to evaluate potential areas to expand the system in the future.

Other FCDOT efforts include: the Connector Bus system; the "RideSources" program, which provides ridesharing information and ridematching assistance to commuters (part of the regional Commuter Connections system); the Community Residential Program, which assists residential communities with the assessment and promotion of alternatives to single occupant vehicle trips; and the provision of Park-and-Ride lots. Employees are eligible to receive a subsidy for transit use of up to $120 per county employee. More information is available at www.fairfaxcounty.gov/fcdot/.

Fairfax Connector Bus

3.4 Water Resources

Protecting the Potomac and Occoquan Rivers as drinking water sources, for their recreation and wildlife benefits is not only the right thing to do, it's also a legal requirement. The Federal Water Pollution Control Act of 1948 was enacted as the first law to address water pollution. Increased awareness and concern regarding water pollution in the following years throughout the U.S. led to amendments to the law in 1972, which became known as the Clean Water Act (CWA).

Fairfax County and the Commonwealth of Virginia are required by the Clean Water Act to meet certain water quality standards for all contaminants in surface waters. The act established:

- Authority for EPA to implement pollution control programs (with delegation to the states).
- A basic structure for regulating pollutant discharges (through construction, industrial, wastewater and municipal separate storm sewer systems or MS4 permits).
- Water quality standards for surface waters (including impaired waters and total maximum daily loads).
- The need to address critical issues in the Chesapeake Bay.

Government Center Stream Restoration Before and After

Additionally, in 1974 Congress passed the Safe Drinking Water Act, which regulates public drinking water supplies through national health-based standards for drinking water from every day water systems across the country, including Fairfax County's. The law has been amended twice and requires actions to be taken to protect drinking water and its sources.

The Clean Water Act and the Safe Drinking Water Act have had great success in controlling pollution from point sources (industrial and

wastewater discharges) and in protecting public water supplies. To further improve the water quality of rivers and lakes, we have also focused more on nonpoint source pollution such as urban and agricultural stormwater runoff.

3.4.1 Stormwater

Fairfax County has made significant investments in addressing stormwater management and controlling water pollutants. Stormwater is the runoff from rainfall and snowmelt that flows across the land and impervious areas such as paved streets, parking lots and building rooftops. Stormwater runoff can pick up and carry sediments, nutrients, toxic substances, pathogens and other pollutants to lakes, streams, rivers, wetlands and coastal waters. These pollutants have the potential to impact drinking water supplies, recreation and aquatic life. In addition, impervious surfaces prevent water from infiltrating the ground, causing higher volumes of stormwater runoff to flow into storm drains at higher speeds.

When these higher volumes of stormwater runoff empty into receiving streams, they can erode stream banks and damage sensitive stream valley ecosystems.

The county is proactive in the mission of reducing runoff and preventing water pollution. We implement environmentally friendly stormwater management and control through implementation of a broad range of ongoing activities. For more information on stormwater management funding to protect streams and rivers, see Section 2.4, Funding Mechanisms.

Watershed Management Planning – The Board of Supervisors has adopted watershed management plans covering all 30 of the county's watersheds. Each plan provides an assessment of watershed conditions, recommends protection strategies, prioritizes improvement projects and encourages public involvement in project selection and implementation.

Pond Retrofit Before and After

The watershed management plans and recommended improvement projects can be found online at www.fairfaxcounty.gov/dpwes/watersheds/.

Stormwater Capital Projects – Fairfax County and its partners continue to implement stormwater management-related capital projects, including flood mitigation projects, stormwater management facility retrofits, green infrastructure projects, stream restoration, meadow installation and stream stabilization projects.

Operations – Fairfax County maintains and operates its stormwater management facilities and stormwater drainage infrastructure consistent with the requirements of its Municipal Separate Storm Sewer System (MS4) permit, which regulates discharges of stormwater from the county's MS4. To minimize the pollutants reaching the MS4 and streams, the county also implements best management practices as required by the permit for: operation of county maintained roadways; use of pesticides, herbicides and fertilizers on county properties; controlling industrial and high risk runoff; detection and elimination of sources of illicit discharges; and spill response.

Monitoring and Assessment – Fairfax County conducts in-stream water quality monitoring, dry weather screening, wet weather screening, physical habitat evaluations and biological assessment of fish and aquatic macroinvertebrates.

Public Outreach and Education – Fairfax County continues to partner with local organizations to implement programs informing residents of water quality issues and encouraging environmental stewardship.

Strategic Initiatives – Fairfax County and its partners work proactively to improve the county's stormwater management through the MS4 permit and TMDL compliance, workplace modernizations, watershed management plans structural projects and updating job hazard assessments.

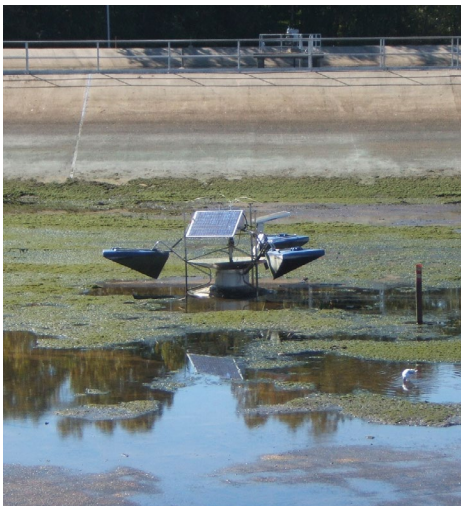
Stormwater Management Status Reports are available at www.fairfaxcounty.gov/dpwes/stormwater/stormwater_status.htm.

3.4.2 Wastewater

Fairfax County's Wastewater Management Program provides wholesale sewer service to the Towns of Herndon and Vienna, the Cities of Fairfax and Falls Church, and a small portion of Arlington County in addition to Fairfax County. The county's wastewater system has been featured on the United States Environmental Protection Agency's website for innovative use of Capacity, Management, Operation and Maintenance (CMOM) techniques as well as system rehabilitation and diagnostic methods for minimizing sanitary sewer overflows, which in turn protect the quality of life in Fairfax County and water quality in its streams. See www.epa.gov/npdes/pubs/sso_casestudy_fairfax.pdf.

Wastewater Capital Projects – A majority of the recent capital projects have been related to upgrading the wastewater treatment plants that serve the county to meet the more stringent federal and state requirements for improving the water quality in the Potomac River and the Chesapeake Bay.

The completed plant upgrades have resulted in nitrogen discharge levels that are consistently below permitted limits.



Solar mixer at Noman M. Cole, Jr. Pollution Control Plant

Operations – The county's wastewater system consists of approximately 3,400 miles of sewer lines, 63 sewage pumping stations, 280 sewage grinder pumps and 53 flow metering stations.

Currently, the approximately 100 million gallons per day (MGD) of wastewater generated and collected in Fairfax County is conveyed and treated at the county-owned and operated Noman M. Cole, Jr. Pollution Control Plant, at five regional treatment facilities (Prince William County Service Authority, DC Water Blue Plains plant, Alexandria Renew, Arlington County, Upper Occoquan Service Authority), and at a privately owned (Colchester) plant through sewer service agreements and in accordance with their Virginia Pollutant Discharge Elimination System permits. Additionally, 1 MGD capacity at Loudoun's Broad Run plant has been purchased in anticipation of future growth in the northern part of the county. The treatment plants serving the county under service agreements are listed below, showing the county's allocated capacity at each of the plants:

Plant	County Capacity (MGD)
Noman M. Cole, Jr.	67.00
Colchester (Private)	0.08
Prince William County Service Authority	0.10
Blue Plains (DC Water)	31.00
Alexandria (AlexRenew)	32.40
Arlington County	3.00
Upper Occoquan Service Authority	22.60
Loudoun County (Broad Run)	1.00
TOTAL	157.18

Public Outreach – Wastewater Management employees bring Sewer Science to the county's high schools. The Sewer Science program, which meets the requirements of Virginia Standards of Learning, is a hands-on program that teaches high school students about wastewater treatment in a laboratory setting. See www.fairfaxcounty.gov/dpwes/wastewater/sewerscience.htm.

Pretreatment – Fairfax County has long recognized the need for an effective, enforceable pretreatment program to protect the county's wastewater collection, conveyance, and treatment infrastructure against interferences, and to prevent pollutants of concern from passing through the wastewater treatment facilities to receiving surface waters. The program is mandated under the Clean Water Act and state law, and was approved by EPA in 1985 and by the Virginia Department of Environmental Quality (VDEQ) in 1993 – 1994. The pretreatment program incorporates the elements necessary to protect the wastewater treatment infrastructure and the environment, including sanitary sewer discharge prohibitions, local limits, compatible pollutant limitations, permits, discharge authorizations, pretreatment requirements, slug control plans, hauled waste requirements, discharge monitoring, facility inspections and compliance reporting. These requirements are enforced through the county's Sanitary Sewers and Sewage Disposal Code, which integrates elements of the National Pretreatment Rule (40 Code of Federal Regulations 403) and the Virginia Administrative Code. Continuous industrial waste surveys ensure that the latest information on county businesses is available and being used to assess industrial user compliance with the applicable code. Approximately 1.3 million gallons per day, or 1.5 percent of the total average daily wastewater flow in the county, is allocated to significant industrial users, who are issued permits by the county. The county's compliance assurance approach focuses initially on educating industrial users about discharge regulations and providing technical guidance on options for maintaining compliance. When violations are detected, a variety of enforcement actions may be taken, including issuance of notice of violations, and escalating actions, if needed, leading up to show cause hearings, administrative orders, cease discharge orders, and termination of sewer service. The county recognizes industrial users for consistent compliance with pretreatment regulations. In 2009 and 2014, two significant industrial users received Virginia Water Environment Association's platinum award for 100 percent compliance over a period of more than five years.

Rigorous and Sustainable Analytical Services – Value-added and reliable laboratory capacity is a critical function for defining environmental quality. Wastewater Management maintains an advance analytical capability that is certified under Virginia Environmental Laboratory Accreditation Program

to accurately and confidently assess the environmental effects of its programs and ensure regulatory compliance. Wastewater Management is also pursuing more sustainable laboratory practices through upgrading or adding new, more energy efficient analytical instrumentation, which uses less toxic/hazardous reagents as well as minimizes sample and reagent waste, and reduces chemical emissions to ensure more consistent use of green chemistry principles.

Wastewater Reuse – In addition to wastewater reuse at the waste-to-energy facility described in Section 3.7.2, fully treated wastewater is being delivered to the Laurel Hill Golf Course and the South County Little League Athletic Fields for irrigation purposes. In addition, the Upper Occoquan Service Authority (UOSA) discharge supplements flows into the Occoquan Reservoir and is an internationally recognized example of successful indirect reuse.

Virginia Environmental Excellence Program – The Virginia Department of Environmental Quality has established the Virginia Environmental Excellence Program to encourage superior environmental performance by use of environmental management systems and pollution prevention. Wastewater Management has received the highest level of the Environmental Excellence Program, which is "Extraordinary Environmental Enterprise," or E4.

3.4.3 Water Supply Planning

Virginia experienced serious droughts in 1999 and 2002. Largely as a result of these droughts, in November 2005 the State Water Control Board (SWCB), a regulatory board comprised of citizen-appointees, enacted regulations establishing the requirement and criteria for a planning process for all local governments to develop local or regional water supply plans. The purposes of these regulations, codified at 9 VAC 25-780, Local and Regional Water Supply Planning, are to: (1) ensure that adequate and safe drinking water is available to all citizens of the commonwealth; (2) encourage, promote and protect all other beneficial uses of the commonwealth's water resources; and (3) encourage, promote and develop incentives for alternative water sources, including but not limited to desalinization. Localities were required to submit their Water Supply Plans (WSPs) by November 2011 to the Virginia Department of Environmental Quality (DEQ), which administers regulations enacted by the SWCB.

Fairfax County has participated in the development of a regional water supply plan (WSP) encompassing 22 Northern Virginia jurisdictions. In 2007, these jurisdictions designated the Northern Virginia Regional

Commission (NVRC) as the lead agency responsible for developing the initial Northern Virginia WSP. Fairfax Water (www.fairfaxwater.org), which provides water service to nearly two million people in the Northern Virginia counties of Fairfax, Loudoun and Prince William, the cities of Fairfax, Falls Church and Alexandria and the Towns of Vienna and Herndon, served as the county's designated agent in the WSP development process.

The Northern Virginia WSP includes numerous elements, including: descriptions of existing water uses, sources and resource conditions; an assessment of projected water demand; water management actions that address water conservation; and an evaluation of alternative water sources to address projected deficits in water supplies.

The SWCB also conducts a five-year review to assess the adequacy of a WSP to meet water demands. A revised WSP must be submitted within five years if the circumstances have changed significantly or new information renders a WSP inadequate. The Northern Virginia WSP five-year review process is due in December 2018. WSPs must be reviewed, revised if necessary and resubmitted to DEQ every ten years from the date of last approval (December 2013).

The planning horizon for Northern Virginia's WSP extends to the year 2040. The WSP assessment indicates that new sources of supply are needed in the 2035-2040 timeframe in order to avoid emergency restrictions and potential water shortages.

Fairfax Water has planned proactively to meet future water supply demands. In June 2015, the Fairfax County Board of Supervisors and Fairfax County Board of Zoning Appeals approved a series of zoning applications from Fairfax Water and Vulcan Construction Materials that will provide for a two-phase conversion of a quarry into a water supply storage facility; this effort has been designed to address the need for new water supply sources in the 2035-2040 timeframe and ultimately into the next century.

The county also has adopted regulations restricting water use during drought and emergencies. These regulations, located in Chapter 113 (Water Use, Emergency Regulations) of the County Code, satisfy state requirements for drought response and contingency plans.

More information regarding the Northern Virginia WSP is available at www.novaregion.org/index.aspx?nid=1214.

3.5 Parks and Ecological Resource Management

3.5.1 Open Space in Fairfax County

Fairfax County contains approximately 50,800 acres of open space owned by local, state and federal agencies and organizations. (This number does not include unknown but substantial acreage under special tax district, rural or low-density residential areas or lands owned by civic associations within subdivisions.)

Almost half of the open space in the county – over 23,000 acres – is owned by the Fairfax County Park Authority (FCPA). The Board of Supervisors created FCPA in December 1950 and authorized it to make decisions concerning land acquisition, park development and operations in the county. Today, FCPA manages and operates over 420 parks. In addition to its role in providing recreational facilities and services, FCPA is the primary public mechanism for preserving environmentally-sensitive land and resources and areas of historic significance in Fairfax County. More information about FCPA is available at www.fairfaxcounty.gov/parks/.

Listed below are other owners of substantial open space in the county, including state and federal agencies and organizations.

Northern Virginia Regional Park Authority/NOVA Parks (NVRPA) – NVRPA was established in 1959 to protect natural resources from the threat of urban sprawl and provide recreational amenities. NOVA Parks owns about 8,270 acres in Fairfax County, primarily along the Bull Run-Occoquan river corridor and reservoir, the Potomac River and on Pohick Bay on Mason Neck. See www.novaparks.com.

Reston Association (RA) – Founded as Virginia's first planned residential community in the mid-1960s, RA owns over 1,350 acres of open space. Its holdings include 55 miles of paved and natural surface trails, more than 700 acres of forest, 50 meadows and numerous water resources including four lakes and 20 miles of stream. See www.reston.org.

Burke Lake Park

U.S. Department of Defense – Fort Belvoir is a strategic sustaining base for the U.S. Army that houses numerous agencies providing logistical, intelligence and administrative support. The county considers about 4,990 of Fort Belvoir's 8,500 acres to be open space. See www.belvoir.army.mil/default.asp.

U.S. Department of Interior, Bureau of Land Management (BLM) – In October 2001, BLM exchanged a portion of the former Lorton Prison property to acquire the 800-acre Meadowood Special Recreation Management Area. The acquisition was intended to preserve open space on Mason Neck and provide wildlife habitat, recreation and environmental education. See www.blm.gov/visit/meadowood-special-recreation-management-area.

U.S. Department of the Interior, Fish and Wildlife Service – The 2,277-acre Elizabeth Hartwell Mason Neck National Wildlife Refuge, located on Mason Neck, is the oldest and largest refuge within the Potomac River refuge complex. Established in 1969 under the Endangered Species Act, its focus is on forest, marsh and riverine habitat important to the bald eagle. See www.fws.gov/refuge/mason_neck.

U.S. Department of the Interior, National Park Service – George Washington Memorial Parkway is a 7,600-acre national park protecting the landscape, historic sites and native habitat of the Potomac shoreline. See www.nps.gov/gwmp/index.htm.

Virginia Department of Conservation and Recreation – Mason Neck State Park is comprised of 1,825 acres within the Elizabeth Hartwell Mason Neck National Wildlife Refuge that include wetlands, forest, open water, ponds and open fields. See www.dcr.virginia.gov/state-parks/mason-neck.shtml.

Blue Heron at Huntley Meadows Park

Additionally, certain organizations work to preserve open space through the negotiation and acquisition of conservation easements. A conservation easement typically restricts an owner's rights to subdivide or develop his/her property, to remove trees or to excavate or fill the property.

One such organization active in Fairfax County is the Northern Virginia Conservation Trust (NVCT). NVCT, which was founded in 1994, helps local governments and private landowners voluntarily preserve natural areas, trails, streams and parks. NVCT has helped preserve 739 acres in Fairfax County. See www.nvct.org.

3.5.2 Natural Resource Management

Until a few decades ago, land management consisted of benign neglect, with areas left alone under the assumption that they were self-sustaining. Land management professionals now understand that there are tremendous pressures on remaining natural areas, that their conditions are declining and that active management is necessary to restore their health.

Today, natural resources are considered natural capital. This capital consists of various elements: living organisms; non-living components such as air, water and soil; the ecosystems they form; and the environmental services they provide, including cleaning air and water, supporting wildlife and contributing to the quality of life. Natural capital is not self-sustaining; instead, deliberate care and investment are required to enhance, protect and preserve it.

Agencies that manage resources in Fairfax County include FCPA, Urban Forest Management, the Stormwater Division of the Department of Public Works and Environmental Services, the Police Department and the Northern Virginia Soil and Water Conservation District. Additionally, the county has engaged many partners, including nonprofit organizations such as the Audubon Society of Northern Virginia, Earth Sangha, Fairfax ReLeaf, the Fairfax Chapter of Virginia Master Naturalists, the Virginia Native Plant Society and organized Friends Groups.

Examples of the county's natural resource/capital management programs include:

- Fairfax County Watershed Planning and Watershed Plan Implementation (www.fairfaxcounty.gov/dpwes/watersheds/).
- Fairfax County Park Authority Natural Resource Management Plan Implementation (www.fairfaxcounty.gov/parks/resource-management/nrmp.htm).
- Fairfax County Deer Management Program (www.fairfaxcounty.gov/living/wildlife/deer-management/).

- Fairfax County Goose Management (www.fairfaxcounty.gov/living/wildlife/management/geese-management.htm).

3.5.3 Policy and Regulatory Mechanisms for Protecting Natural Resources

Section 2 describes the regulatory, policy and strategic framework of the county's environmental programs, including a brief introduction to the county's Comprehensive Plan and environmental ordinances. Section 3.5.3 discusses three county regulations that play a key role in the protection of natural resources: the Chesapeake Bay Preservation Ordinance, the Floodplain Regulations of the county's Zoning Ordinance and the Wetlands Zoning Ordinance. Also discussed is the Environmental Quality Corridor policy in the Comprehensive Plan, which plays a significant role in protecting natural resources.

Difficult Run

3.5.3.A Chesapeake Bay Preservation Ordinance

All of Fairfax County drains into the Potomac River and ultimately the Chesapeake Bay. As a result, land use and development activities in the county can adversely impact the water quality of both the county streams and downstream resources.

In 1988, the Commonwealth of Virginia enacted the Chesapeake Bay Preservation Act, which required 84 localities in Virginia, including Fairfax County, to institute water quality protection measures to improve the declining health of the Chesapeake Bay and its tributaries.

The county adopted the Chesapeake Bay Preservation Ordinance in 1993 to protect both local streams and the Chesapeake Bay from pollution due to land use and development in the county. The ordinance was substantially revised in 2003.

The Chesapeake Bay Preservation Ordinance imposes water quality requirements on all development and redevelopment projects in the county. Sensitive areas along streams, rivers and other waterways throughout the county are designated as Resource Protection Areas (RPAs). With some exemptions and exceptions, land disturbance in RPAs is prohibited. Other areas of the county that are not in RPAs have been designated as Resource Management Areas (RMAs). RMAs are comprised of lands that, if improperly used or developed, have the potential to significantly harm water quality or diminish the functional value of the RPA. Collectively, RPAs and RMAs are known as Chesapeake Bay Preservation Areas.

More information about the Chesapeake Bay Preservation Ordinance, including maps and FAQs, is available at www.fairfaxcounty.gov/dpwes/environmental/cbay/.

3.5.3.B Floodplain Regulation

A floodplain is the flat area located adjacent to a stream channel that is prone to flooding. When stream banks overflow during or after a storm, the floodplain provides natural storage for the excess water. In Fairfax County, the 100-year frequency storm is used to determine the limits of the floodplain.

The Floodplain Regulations of the Zoning Ordinance establish two types of regulated floodplain areas:

- The “Minor Floodplain,” associated with streams with drainage areas between 70 and 360 acres.
- The “Major Floodplain,” associated with streams with drainage areas greater than 360 acres.

The Floodplain Regulations serve a number of purposes. They are intended to protect against loss of life, health or property from flood or other dangers. They are also intended to preserve and protect floodplains in as natural a state as possible, thereby (1) preserving wildlife habitats; (2) maintaining the natural integrity and function of the streams; (3) protecting water quality; and (4) promoting a zone for ground water recharge.

A limited number of uses are permitted in floodplains, although additional uses can be approved by the Board of Supervisors through a special exception. All floodplain uses are subject to a series of limitations that serve to protect public safety and minimize adverse environmental impacts associated with these uses.

Floodplain Regulations are addressed in Part 9 of Article 2 of the Zoning Ordinance, available at www.fairfaxcounty.gov/dpz/zoningordinance/articles/art02.pdf.

3.5.3.C Wetlands Zoning Ordinance

The Virginia Tidal Wetlands Act, adopted by the General Assembly in 1972, states the following:

Therefore, in order to protect the public interest, promote the public health, safety and the economic and general welfare of the Commonwealth, and to protect public and private property, wildlife, marine fisheries and the natural environment, it is declared to be the public policy of this Commonwealth to preserve the wetlands, and to prevent their despoliation and destruction and to accommodate necessary economic development in a manner consistent with wetlands preservation.

In the 45 years since the Act was adopted by the General Assembly, the commonwealth has improved, modified and fine-tuned the program to keep up with advances in wetlands science.

Fairfax County takes great pride in its tidal shoreline. According to the Center for Coastal Resources Management at the Virginia Institute of Marine Science, the county contains 112 linear miles of the resource. The shoreline traverses south along the Potomac River from Cameron Run to the Occoquan Reservoir, where the tidal influence terminates at the dam. The county acknowledges that tidal wetlands are a valuable natural resource that helps to prevent flooding, improve water quality and provide habitat. The Wetlands Zoning Ordinance was adopted in recognition of the environmental functions provided by tidal wetlands and the need to ensure that development activities in tidal areas occur in a manner that minimizes adverse impacts to these wetlands. More information is available at www.fairfaxcounty.gov/dpz/environment/wetlands/.

Current wetland science promotes natural shoreline stabilization (living shoreline treatment) where the conditions are appropriate. In support of living shoreline stabilization the Fairfax County Wetlands Board adopted a “Living Shoreline” Stabilization Policy in 2007. The policy is available at www.fairfaxcounty.gov/dpz/environment/finallivingshoreline.pdf.

In 2015, the Virginia Marine Resources Commission finalized the regulations and guidance to support the general permit for the use of living shoreline measures as the preferred alternative to stabilizing tidal shorelines. The Living Shoreline General Permit can be found at www.mrc.virginia.gov/regulations/MRC_Scanned_Regs/Habitat/FR1300_09-01-15.pdf.

The Board of Supervisors has advocated that staff make information readily available to homeowners about the regulations for tidal shoreline

property that protect against negative impacts to the environment. In furtherance of this goal, staff developed an information sheet for owners of tidal shoreline property. Before making changes to waterfront property or undertaking land-disturbing activities, a property owner may need to obtain a permit from the Wetlands Board and other agencies. An information brochure is available at www.fairfaxcounty.gov/dpz/environment/wetlands/mailingbrochure.pdf. Additional information is available at www.fairfaxcounty.gov/dpwes/sitedevelopment/.

The Wetlands Board requires mitigation or compensation for unavoidable tidal wetlands loss, as explained in its policy, available at www.fairfaxcounty.gov/dpz/environment/wetlands/mitigation_compensation_policy_adopted.pdf.

3.5.3.D Comprehensive Plan Policy

The Environment section of the Policy Plan volume of the Comprehensive Plan provides broad environmental policy guidance that is applied during the zoning process. The Environment section includes numerous policies, including those recommending the identification, protection and restoration of Environmental Quality Corridors (EQCs) and streams and buffer areas upstream of EQCs.

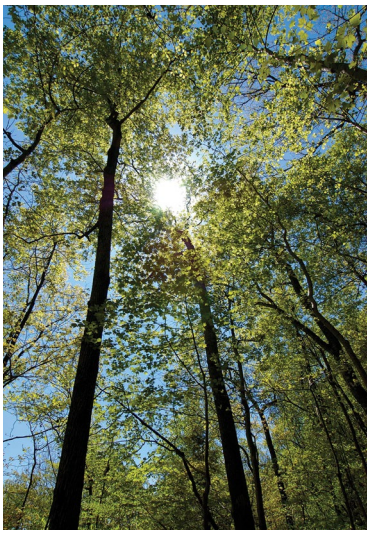
The EQC system is an open space system in Fairfax County designed to preserve, restore and link natural resource areas. The core of this system is the county's streams. The EQC policy recommends protection and restoration of environmentally-sensitive lands, including a number of features near streams (steep slopes in stream valleys, wetlands connected to stream valleys and 100-year floodplains). The policy also recommends protection and restoration of upland habitats that augment the habitats and buffers provided by stream valleys. The EQC policy has been refined since its initial adoption in 1975 but continues to be a centerpiece of Fairfax County's environmental policy.

The Department of Planning and Zoning, which negotiates zoning commitments made by developers, estimates that EQC commitments have protected thousands of acres of land that would not otherwise have been protected through regulation. Flexible zoning provisions often allow developers to concentrate densities/intensities on the less-sensitive portions of their sites, thereby achieving both desired levels of development and the protection of EQCs and other desirable open space.

The EQC policy is found in Objective 9 of the Environment section of the Policy Plan, available at www.fairfaxcounty.gov/dpz/comprehensiveplan/policyplan/environment.pdf.

3.6 Trees and Tree Conservation

Fairfax County's urban forest is critical to enhancing the livability and sustainability of our community. Management of the trees within our urban forests to maximize the multitude of benefits they provide to residents is an essential step in successfully reaching the commitments and goals of the Fairfax County Environmental Vision, the Tree Action Plan, the Cool Counties Climate Stabilization Initiative and other county public health, livability and sustainability initiatives and programs.



The value of urban trees' and forests' contributions to human health and well-being, including physical and mental well-being, building a sense of community and economic development, are now well documented. Much of the social science on the value of urban forests and urban greening is available at the *Green Cities: Good Health* website of the University of Washington, http://depts.washington.edu/hhwb/.

An August 2010 study commissioned by the county using i-Tree Ecosystem Analysis assessed the structure, function and value of the Fairfax County urban forest as of 2009. According to the assessment, Fairfax County's urban forest has over 20,900,000 trees that provide significant environmental, economic and social benefits. Each year, this urban forest removes 4,670 tons of air pollutants at a value of close to $22 million a year, and stores 3,879,000 tons of carbon, equal to the annual carbon emissions from 1,169,000 single family homes. Other economic benefits include residential energy savings of approximately $11.9 million (based on 2002 prices) due to shading and evaporative cooling. The i-Tree Ecosystem Analysis is available at www.fairfaxcounty.gov/dpwes/environmental/trees.htm.

Another i-Tree Ecosystem Analysis will be conducted in summer 2017 to update the urban forest values for the county. This new study will also establish permanent study plots to monitor health and changes of our forests over time.

An Urban Tree Canopy Analysis (UTC) was conducted by the University of Vermont Spatial Analysis Laboratory based on high resolution satellite imagery " . . . gathered in the summer of 2016." The analysis report, published in March 2017, indicated that the county's tree canopy has increased by one percent in the five years since the previous UTC in

2012. This is the first time the county has had comparable, high resolution imagery to monitor land use change over time. This UTC and change analysis will be updated every 3-5 years.

3.6.1 Urban Forest Management

The Urban Forest Management Division (UFMD) of the Department of Public Works and Environmental Services is the primary county agency responsible for managing trees and forests in Fairfax County. UFMD coordinates and implements the county's efforts to manage our urban forest resources, including advancing the Environmental Vision to:

- Increase tree conservation in land development.
- Improve air quality through tree conservation policies and practices.
- Improve water quality and stormwater management through tree conservation.
- Foster an appreciation for our urban forest and inspire county residents to protect, plant and manage trees and forest stands on public and private lands.

UFMD draws on science, education and strong partnerships to help achieve a healthy urban forest. Its key responsibilities and activities include:

- Implementing the Tree Action Plan. See www.fairfaxcounty.gov/dpwes/environmental/tap.htm/
- Conducting vegetation mapping and surveys.
- Developing ordinances and policy for tree preservation, including the Tree Conservation Ordinance and tree conservation provisions of the county's Public Facilities Manual. See www.fairfaxcounty.gov/dpwes/publications/pfm/chapter12.pdf.
- Providing public education and outreach at a range of venues, including community tree planting events, school programs and local fairs.
- Partnering with nonprofit environmental and tree planting groups in support of the county's tree planting and conservation efforts.
- Promoting the use of natural landscaping techniques on public and private property.
- Providing assistance on tree and landscape requirements and issues to residents, the development community and other county agencies throughout the land development process including:
    - Rezoning and other zoning case reviews.
    - Site plan reviews.

  - Site inspections.
  - Final inspections for bond release.
- Identifying, monitoring and providing limited suppression of forest insect pest infestations throughout the county to prevent defoliation and maintain the health of the urban forest. See www.fairfaxcounty.gov/dpwes/environmental/forest_pest.htm.

In addition, the Urban Forest Management Division provides staff support to the Tree Commission. The Tree Commission is comprised of 15 citizens appointed by the Board of Supervisors to advise the board on tree-related matters. These matters include tree conservation as well as vegetation preservation and planting. The commission also assists the UFMD in developing and maintaining technical specifications and guidelines. More information about the UFMD, including a link to the Tree Commission, is available at www.fairfaxcounty.gov/dpwes/environmental/ufmdmain.htm.

3.6.2 Tree Action Plan

The Tree Action Plan is a 20-year strategy for conserving and managing the county's tree resources. The Tree Action Plan, which was adopted in December 2006, was developed through a collaborative process that involved the Tree Commission, county staff, residents and builders. The plan reflects three key goals: to commit to conserve current tree assets; to enhance the legacy for future generations; and to increase the effectiveness of urban forestry with planning and policymaking.

To achieve these goals, the Tree Action Plan includes 12 core recommendations through which trees are accorded a high priority and integrated into urban planning. Trees are not considered ornamental or decorative but, instead, are recognized as infrastructure providing environmental, economic and social benefits.

Tree Action Plan Core Recommendations

- Engage and educate.
- Build strong partnerships and alliances.
- Optimize tree conservation in county policies.
- Improve air quality and address climate change through tree conservation.
- Improve water quality and stormwater management through tree conservation.
- Use ecosystem management to improve and sustain the health and diversity of our urban forest.
- Strengthen state-enabling authority for tree conservation.
- Encourage sustainable design practices.

- Plant and protect trees by streams, streets and trails.
- Optimize tree conservation in land development.
- Optimize tree conservation in utility and public facilities projects.
- Support and refine the county's urban forestry programs.

Each of the plan's 12 core recommendations includes goals, strategies and tactics to help achieve the recommendation.

The Board of Supervisors has taken a number of actions based on recommendations in the Tree Action Plan. For example, in June 2007, the board formally adopted a tree canopy goal of 43 percent for the county by the year 2037. A study of urban tree canopy in 2012 using high resolution satellite imagery showed 53 percent of the county is now covered by tree canopy. A follow-up tree canopy study was completed and allows for an accurate determination of the gain or loss in canopy over the last four years. To support tree planting programs to support the goals of the Tree Action Plan, the board established the Tree Preservation and Planting Fund (TPPF). The TPPF collects and disburses funding for tree-related projects to nonprofit organizations, county agencies and regional government agencies. The UFMD is currently looking at ways to more effectively implement the TPPF and establish partnerships to plant trees in the county.

More information, including links to the Tree Action Plan and the TPPF brochure, is available at www.fairfaxcounty.gov/dpwes/environmental/tap.htm/.

The Tree Commission, UFMD and stakeholders have begun drafting an update to the Tree Action Plan with the goal of completing the update by the end of 2017.

3.7 Solid Waste Management

The Fairfax County Solid Waste Management Program (SWMP) is responsible for providing solid waste management services in an efficient and cost-effective manner while complying with federal and state environmental regulations. The SWMP has managed disposal and recycling services for Fairfax County residents and businesses since 1950.

3.7.1 Recycling

In 1990, the SWMP established a residential curbside recycling collection program. In 2015, Fairfax County reported a 50 percent recycling rate for municipal solid waste generated within the county.

In addition to curbside recycling, the SWMP has established a number of related recycling and waste disposal programs for county residents.

- Since the early 1990s, SWMP has operated two permanent collection sites where it accepts residents' household hazardous waste at no charge for disposal in accordance with local, state and federal regulations. See www.fairfaxcounty.gov/dpwes/trash/disphhw.htm.

- Recycling drop-off centers are located at two permanent collection sites, accepting cardboard and mixed paper, metal food and beverage containers, glass bottles and jars, plastic bottles and jugs, appliances and grass, leaves and brush.

- Each year, SWMP hosts secure document shredding events at various locations around the county. County residents can drop off up to five medium-sized boxes of sensitive documents for secure on-site shredding. See www.fairfaxcounty.gov/dpwes/recycling/shredding.htm.

- The county recycles e-waste (old televisions, computers and peripheral devices such as keyboards, speakers, printers and external drives) at two Recycling and Disposal Centers at no charge to county residents. See www.fairfaxcounty.gov/dpwes/recycling/mat-comp.htm.

E-Waste Recycling

More information about the SWMP recycling programs is available at www.fairfaxcounty.gov/living/recycling/.

3.7.2 SWMP Green Initiatives

In addition to offering environmentally-responsible waste recycling and disposal options to residents, the SWMP strives to be environmentally responsible in its own operations. These operations include:

Waste-to-Energy – Solid waste disposal capacity in Fairfax County is provided by a waste-to-energy facility located in Lorton, Virginia. This facility burns about 3,000 tons per day of solid waste. Incineration avoids the need to landfill refuse and the resulting production of potent

greenhouse gases (GHG). About one half of a ton of carbon dioxide equivalent is prevented from being released into the atmosphere for each ton of solid waste processed. It also powers generators that produce about 80 megawatts of electricity. The facility has had a strong compliance history with its air pollution control and Title V permits, during its operational history. Use of reagents, scrubbers, combustion controls and other technology to clean the stack gases ensures that roughly 98 percent of all pollutants are removed. See www.fairfaxcounty.gov/dpwes/trash/dispomsf.htm/.

Landfill Gas – The SWMP is responsible for managing two closed landfills in the county: the I-95 Landfill Complex and the I-66 Transfer Station. Landfill gas (LFG) collection systems are installed at both sites, with both supporting beneficial use of LFG as an alternative to natural gas or other fossil fuels. At the I-95 Landfill Complex, LFG is used to generate about 4.5 megawatts of electricity, which is sold to the local electric utility. LFG from the I-95 site is also used in the combustion process, which dewaters bio-solids at the county's nearby wastewater treatment plant. At the I-66 site, LFG is used to fuel heating systems for nearby bus maintenance garages, the transfer station worker's facility and truck washes. Beneficial use of the county's LFG reduces atmospheric emissions that are equivalent to 260,000 tons of carbon dioxide. The reductions in atmospheric emissions come from gas that would otherwise be emitted by the landfill if no collection system were in place, and by using the collected gas in place of fossil fuels. See www.fairfaxcounty.gov/dpwes/trash/dispmethrvc.htm.

Wastewater Reuse – The SWMP partnered with the county's wastewater treatment program to develop a wastewater reuse project. Under this project, about 1.3 million gallons of treated but non-potable water is pumped per day from the wastewater treatment plant to the waste-to-energy facility, where it is used as cooling water. Substituting non-potable for potable (drinking) water conserves water resources and reduces water purchase costs. See www.fairfaxcounty.gov/dpwes/wastewater/water_reuse/.

Water Reuse

Other Sustainability Initiatives – The SWMP continues to pursue green initiatives. In 2011, the I-66 Transfer Station workers' facility was designed and built as a LEED Silver facility. At the I-95 Landfill Complex, the SWMP is exploring the development of additional power generating capacity. This project, part of the Lorton Green Energy Triangle, involves the possible installation of solar panel arrays on the cap of the closed landfill. The SWMP is partnering with George Mason University on a project to assist in honeybee habitat sustainability. This project, known as the Honeybee Initiative Pollinator Program or HIPP, involves the installation of honeybee hives at the I-95 landfill. The program is directed at establishing wildflower meadows as a cover crop on the closed portion of the I-95 landfill to provide suitable habitat for honeybee colonies. This wildflower meadow will create habitat to support additional hives and is intended to help honeybee colonies to procreate and thrive. This will increase the number of honeybees available to pollinate local crops, in addition to creating a visually-enhanced landscape at the I-95 landfill.

3.8 Community Outreach, Education and Stewardship

3.8.1 Community Stewardship Opportunities

A wide variety of Fairfax County programs engage adults and youth in volunteer opportunities and other hands-on environmental stewardship activities, including:

- Stream Monitoring – Volunteers monitor local stream health four times each year. Training, equipment and certification are provided by the Northern Virginia Soil and Water Conservation District.
- Storm Drain Marking – The county's network of storm drains directs stormwater to streams, not the wastewater treatment plant. As a result, substances dumped in the storm drains – from pet waste to trash – flow into county streams.

  To remind residents to protect the streams, program volunteers label storm drains with watershed-specific "no dumping" markers.
- Stream Clean-ups – Free supplies for litter cleanups in parks, streams and neighborhoods are provided through partnerships with community organizations including Clean Fairfax and the Alice Ferguson Foundation.

- Tree Planting – Fairfax County and partner organization Fairfax ReLeaf support volunteer tree planting in the spring and fall on community property, schoolyards and other sites.

More information about these and other watershed volunteer opportunities is available at www.fairfaxcounty.gov/dpwes/stormwater/volunteer.htm/.

Other volunteer opportunities focus on county parkland, including:

- Invasive Management Area Program – This Fairfax County Park Authority (FCPA) program recruits and trains volunteers to lead and participate in invasive plant removal in county parklands. See www.fairfaxcounty.gov/parks/resources/ima/.
- Trail Improvements – FCPA has seven trail partner groups that have adopted sections of the Cross County Trail. Each group is responsible for oversight and routine maintenance of its individual section. Re-routings and other trail improvements are also coordinated through these groups. See www.fairfaxcounty.gov/parks/cct/.

Community Stream Cleanup Event—Difficult Run

- Adopt-A-Field/Adopt-A-Park – This program is a cooperative venture between FCPA and interested community organizations and citizens. Groups or individuals assume maintenance responsibility for designated park areas or facilities. Areas within parks may include flower beds, playgrounds, stream valleys, trees and other points of interest. See www.fairfaxcounty.gov/parks/volunteer/wp-adopt.htm.

More information about volunteer opportunities in the parks is available at www.fairfaxcounty.gov/parks/volunteer/rmdvol-main.htm.

County residents can also pursue service on one of the county's many boards, authorities and commissions that address environmental issues (see Section 1.2.3). Residents interested in serving on a board, authority or commission should contact their Supervisors.

In addition to volunteer opportunities, the county and its partner organizations offer activities that promote environmental stewardship. A number of such activities are offered by the Northern Virginia Soil and Water Conservation District (NVSWCD), including:

- Conservation Assistance Program – Technical and financial assistance for installing rain gardens, conservation landscaping, dry well/infiltration trenches, porous pavement and more. See www.fairfaxcounty.gov/nvswcd/cap.
- Seedling Sale – NVSWCD distributes low-cost native shrubs and trees to residents each spring for planting on private property. See www.fairfaxcounty.gov/nvswcd/seedlingsale.htm.

- Sustainable Garden Tour – Rain gardens, green roofs, porous pavers and other features are highlighted in this annual tour of innovative home, school and community gardens. See www.fairfaxcounty.gov/nvswcd/gardentour.htm.
- Rain Barrel Program – Participants build and take home low-cost rain barrels, reducing runoff and harvesting rainwater for reuse. Since 2007, more than 3,000 barrels have been distributed. See www.fairfaxcounty.gov/nvswcd/rainbarrels.htm.
- Build-Your-Own Composter – Each workshop participant builds and takes home a low-cost tumbler-style composter built from a recycled pickle barrel, gas pipe and pre-cut 2x4s. See www.fairfaxcounty.gov/nvswcd/announcements.htm.

3.8.2 Outreach

One way the county promotes environmental awareness and stewardship is through its Facebook Environment page. Other ways include public education campaigns, presentations, awards and its website.

Young children can learn about a healthy environment with the "Stormy the Raindrop" program. This public education campaign encourages children to appreciate and take better care of their environment, and to pass on this desire to their peers and parents. The campaign includes two Stormy-themed activity books, puppet shows and numerous appearances at county events and venues. The program earned Best of Category in the National Association of Counties 2012 Achievement Awards. More information is available at www.fairfaxcounty.gov/dpwes/stormwater/stormy/

Fairfax County public and private school students can take a field trip to a Fairfax County park to experience an up close look at county habitats and nature. Fairfax County Park Authority (FCPA) naturalists will also visit schools to bring nature education to the students in an outreach program. Science and stewardship related field trip programs are offered at 11 FCPA sites. For more information, visit www.fairfaxcounty.gov/parks/riverbend-park/fieldtrips.htm.

For older children and teens, educational programs sponsored by FCPA supplement the hands-on activities described in Section 3.8.1. For example, the county's Hidden Pond Nature Center and Park offers teens a chance to be on an Envirothon team. Envirothon is North America's largest high school environmental education competition. More information on the county's Envirothon program can be found at www.fairfaxcounty.gov/nvswcd/envirothon.htm.

Families can learn about stewardship and the environment through the hundreds of educational program offerings each year at FCPA's five nature centers, horticultural center, farm and three lake front parks. Programs range from educational campfires to birdwatching hikes and live animal programs. Listings for these programs are available at www.fairfaxcounty.gov/parks/parktakes/.

FCPA also offers programs for various scout groups like the Boy Scouts of America and Girl Scouts of America, as well as 4H, American Heritage Girls and other organizations. These programs focus on helping local scouts earn badges in nature and science. More details can be found at www.fairfaxcounty.gov/parks/wp-scouting.htm.

Residents of all ages can watch television programs with environmental themes produced by the county and broadcast on its Channel 16 station.

Programs include Can the Grease, Stop Bagging our Streams, Green Buildings and Live Energy Efficient Now. These and other programs are available on a video-on-demand (VOD) basis at www.fairfaxcounty.gov/cable/channel16/vod.htm.

In addition to the VOD programs, the county's website offers a wealth of resources related to environmental awareness and stewardship. For example:

- The county's Energy Action Fairfax Web pages include energy-saving tips and innovative video presentations to help homeowners reduce their energy consumption. In April 2017, Energy Action Fairfax added information about its new Thermal Cameral Loan Program, through which residents can borrow thermal cameras from Fairfax County Public Libraries in order to reveal air leaks and missing insulation in their homes. See www.fairfaxcounty.gov/energyactionfairfax/.
- The Green Business Partners Program provides a directory of Fairfax County businesses that have demonstrated sustainable business practices. The website also provides information for businesses interested in becoming more sustainable. Visit www.fairfaxcounty.gov/energy/greenbusiness/.
- Stewardship Brochures published by FCPA address topics ranging from beavers to wildlife conflicts, while its Nature Pages help visitors explore the county's environmental and cultural resources. See www.fairfaxcounty.gov/parks/resource-management.
- A Water Overview provided by the Department of Public Works and Environmental Services explains how the county manages various water uses – drinking water, stormwater and wastewater – and how residents can help keep water clean for future generations. See www.fairfaxcounty.gov/dpwes/environmental/water.htm.

Meetings, seminars, festivals and town hall meetings provide additional options to enhance energy and environmental awareness. Speakers from county agencies and partner groups give presentations to neighborhoods and other community groups on a range of topics. Master Gardener, Master Naturalist and Tree Steward courses educate and establish a volunteer base for environmental projects and programs. Green Breakfast presentations sponsored by the Northern Virginia Soil and Water Conservation District engage county residents six times a year on emerging and innovative green topics. Meetings of the Fairfax County Environmental Quality Advisory Council (www.fairfaxcounty.gov/dpz/eqac/) and other boards and commissions are open to the public and offer more opportunities to hear from speakers about environmental issues in the county.

Award ceremonies also create opportunities to further environmental awareness. For example, each year the Board of Supervisors recognizes those who dedicate their time and energy to benefit the environment and support county environmental initiatives. Since 2000, 61 Environmental Excellence Award winners have been selected. These awardees, who have been honored by the Board of Supervisors during its public meetings, include 20 individuals, 19 organizations, 11 businesses, and 11 county employees. A list of award recipients is available at www.fairfaxcounty.gov/dpz/eqac/previous-environmental-award-recipients.htm.

3.9 Environmental Health

The Division of Environmental Health (DEH) provides public health services that protect the community from potential environmental hazards and exposures that pose a risk to human health—as the prevention of epidemics and spread of disease is one of the core functions of the Health Department. DEH has three program areas: the Consumer Protection Program; the Onsite Sewage and Water Program; and the Disease Carrying Insects Program. The primary services conducted by these programs include permitting, inspections, complaint investigations, commercial and residential plan reviews, surveillance and control activities and community outreach. DEH supports the general public, the regulated community and other agencies in encouraging healthy behaviors and maintaining voluntary, long-term compliance with state and local regulations.

DEH strives to integrate Health in All Policies (HiAP). By definition, HiAP recognizes that health and well-being are influenced by a variety of factors beyond health care, including the social and environmental conditions in our communities. HiAP is a collaborative approach to improving community health by incorporating health considerations into decision-making across sectors and policy areas, including policies related to environmental sustainability and stewardship. The Health Department may participate in a Health Impact Assessment (HIA). HIA incorporates data, research, and stakeholder input to determine a project's potential impact on the health of a population and the environment.

DEH addresses sustainability and the environment within the following areas:

Ground and Surface Water – DEH regulates the design, installation, operation and maintenance of private sewage disposal and well water systems. Effective installation and maintenance allows for appropriate treatment of sewage and protection of ground water and drinking water supplies from contamination.

DEH also partners with the Department of Public Works and Environmental Services to maintain the infrastructure of the public sewer system and reduce sanitary sewer overflows or accidental discharges to the environment. A brochure titled Understanding Your Grease Trap-Interceptor informs regulated food establishments of the procedures to prevent or reduce the amounts of fats, oil and grease (FOG) being discharged into the sewer. See www.fairfaxcounty.gov/hd/food/foodpdf/understanding-grease-trap.pdf.

Disease-Carrying Insects Program (DCIP) – The bite of an infected mosquito or tick may result in a life-changing illness, such as West Nile virus, Zika virus, Chikungunya virus or Lyme disease. The DEH's Disease Carrying Insect Program, established in 2003, works to minimize the threat of vector-borne diseases through active surveillance, community education and vector management. The DCIP utilizes an ecological approach to control pests of public health importance, guided by the principle of Integrated Pest Management (IPM). IPM combines appropriate pest control strategies into a unified, site-specific plan. The goal of an IPM program is to reduce pest numbers to acceptable levels in ways that are practical, cost-effective and safe for people and the environment. Pesticides are just one component of IPM that can be utilized in combination with other methods such as public education and personal protection—as behavioral change at the individual and community level can significantly reduce the need for pesticide applications. Most larvicides used by the DCIP are derived from naturally-occurring soil bacteria that specifically target mosquitoes, minimizing the impact on non-target organisms that may be beneficial to the environment. Products with different modes of action and active ingredients are routinely rotated across years to help minimize pesticide resistance in local vector populations. See www.fairfaxcounty.gov/hd/westnile/.

Rabies – Rabies is a preventable viral disease of mammals most often transmitted through the bite of a rabid animal. The vast majority of rabies cases reported to the Centers for Disease Control and Prevention each year occur in wild animals like raccoons, skunks, bats and foxes. Domestic animals account for less than 10 percent of the reported rabies cases. State law and county ordinance require dogs and cats four months of age and older to be inoculated against rabies. Each year, Fairfax County offers several reduced cost rabies vaccination clinics for pets. See www.fairfaxcounty.gov/hd/rabies/.

Radon – Radon is a naturally-occurring radioactive gas produced by the breakdown of uranium in soil, rock and water. It cannot be seen, smelled or tasted. Long-term exposure to elevated radon levels is estimated to cause thousands of lung cancer deaths nationally each year. Fairfax has been identified as having a high risk for radon. The County Radon Potential Map provides a general description of radon within Fairfax County. The County radon

webpage also provides links for more information from the Virginia Department of Health and U. S. Environmental Protection Agency to help homeowners in assessing their risk of radon exposure and how to mitigate elevated radon levels in their homes. See www.fairfaxcounty.gov/hd/air/radon.htm.

Naturally-Occurring Asbestos – Naturally-occurring asbestos has been mapped in approximately 11 square miles of Fairfax County and Fairfax City. Asbestos-bearing rock is interspersed in the greenstone rock formations that underlie the surface soils in the orange soils group. This information is useful to help reduce exposure to asbestos during construction or other earth disturbing activities. Surface exposures of these rock formations are not usually seen. See www.fairfaxcounty.gov/hd/chs/natural-asb.htm.

3.10 Noise, Light Pollution and Visual Pollution

While not traditionally considered to be sustainability issues, noise, light pollution and visual pollution can adversely affect the county's environment and quality of life.

3.10.1 Noise

The county has long had a Noise Ordinance that limits the noise that can be generated from stationary and other sources. Noise generated from airport and highway operations is not within the county's regulatory purview, however.

Although noise from airport operations is not addressed in the Noise Ordinance, the county has taken steps to ensure that land uses near Washington Dulles International Airport will remain compatible with airport operations into the future. The Zoning Ordinance includes an Airport Noise Impact Overlay District in the area of the county near the airport.

This district establishes interior noise standards and associated acoustical mitigation requirements that apply to development that is pursued within the district. Additionally, Comprehensive Plan policy recommends against new residential development within specific areas near the airport.

The Comprehensive Plan also provides guidance regarding land use compatibility near highways. Applying this guidance during the zoning process, the county has obtained commitments from developers to noise mitigation measures, including highway noise barriers and acoustical mitigation for noise-sensitive indoor areas.

A comprehensive set of links addressing various transportation and other noise-related concerns is available at www.fairfaxcounty.gov/dpz/environment/noise.

3.10.2 Light Pollution

"Light pollution" is used to describe light output, primarily from exterior (outdoor) sources, that is excessive in amount and/or that causes harmful glare directed into: (1) the path of travel; (2) light-sensitive areas such as residential neighborhoods; or (3) the sky in general. Light pollution can occur in commercial, residential and roadway settings.

Light pollution can interfere with enjoyment of the night sky. Improper lighting can also waste energy. In recognition of these impacts, the county has established an Outdoor Lighting Ordinance. To reduce glare, the ordinance requires full cut-off lighting fixtures in most cases. Such fixtures prevent light from being emitted at or above a horizontal plane drawn through the bottoms of the fixtures.

The requirements of the Outdoor Lighting Ordinance do not affect the outdoor lights used by most homeowners. Requirements apply to roof and canopy lighting, architectural and landscape lighting, recreation/sports facility lighting and internally-illuminated signs. In addition, the ordinance establishes after-hours parking lot lighting reduction requirements for developed nonresidential lots that contain four or more parking light poles.

More information about the county's outdoor lighting rules is available at www.fairfaxcounty.gov/code/lighting/.

3.10.3 Visual Pollution

Litter, unkempt properties and poorly-placed signs are typically considered examples of visual pollution that degrades the environment. Fairfax County has taken steps to address visual pollution, including:

- Public outreach on litter-related issues. See www.fairfaxcounty.gov/dpwes/trash/litter.htm.
- A blight abatement program that provides for the reporting and remediation of vacated, dilapidated structures. See www.fairfaxcounty.gov/code/property/blight/.
- Zoning Ordinance limitations on signs. See www.fairfaxcounty.gov/dpz/zoningordinance/articles/art12.pdf.
- A review process for proposed telecommunications towers. See www.fairfaxcounty.gov/dpz/2232/telecommunications.htm.

In addition, in early 2013, Fairfax County and the Virginia Department of Transportation (VDOT) finalized an agreement regarding signs placed in VDOT public rights-of-way. State law makes all such signs, including political advertising, illegal. The agreement authorizes the county, acting on behalf of VDOT, to remove the illegal signs and fine the offenders in accordance with state code.

SECTION 4

PROMOTING SUSTAINABLE COUNTY OPERATIONS

PROMOTING SUSTAINABLE COUNTY OPERATIONS

Featured in this Section

SECTION 4

4.1 Introduction

Fairfax County government has long been proactive in its environmental stewardship, as described in the preceding sections. This section describes several of the county's innovative and successful efforts to implement environmental and energy goals for county facilities and operations. It concludes with a discussion of the county's greenhouse gas emissions inventory and results.

Significant efforts have been made over time to reduce the county's operational demand for energy through efficiency, conservation and education. The basis for these efforts is Fairfax County's strategic direction and commitment to achieve environmental and energy goals, including those set forth in the board's Environmental Vision, originally adopted in 2004 and amended in 2007 and 2017, the 2007 Cool Counties Initiative, the 2009 Energy Policy and the county's Comprehensive Plan.

Two collaborative inter-agency committees – the Environmental Coordinating Committee, and the Energy Efficiency and Conservation Coordinating Committee – are vital to achieving these goals. These committees help ensure coordinated action across county agencies, authorities and schools. Their meetings provide a forum for participants to share project updates, discuss emerging trends and technologies, candidly review their experiences with equipment and systems and raise issues of mutual interest.

4.2 Building Design and Construction

4.2.1 Green Building Policy for County Facilities

In 2008, the county Board of Supervisors adopted the Sustainable Development Policy for Capital Projects, which is applicable to the construction of new county buildings and renovations or additions to existing buildings. The policy requires buildings with more than 10,000 square feet to be constructed to meet or exceed minimum green building standards. The policy applies only to county government capital projects. County public school projects are designed using the Virginia-Collaborative for High Performance Schools criteria.

The county's government buildings are certified under established green building rating systems that recognize outstanding performance in several key areas:

- *Sustainable Sites* – discourages development on undeveloped land and seeks to minimize a building's environmental impacts.

- *Water Efficiency* – encourages the smarter use of water inside and out.
- *Energy & Atmosphere* – encourages the implementation of energy-wise strategies.
- *Materials & Resources* – encourages the use of sustainably produced materials and waste reduction, reuse and recycling strategies.
- *Indoor Environmental Quality* – promotes strategies that improve indoor air quality, acoustics and access to natural daylight.
- *Innovation in Design* – encourages the use of technologies and strategies that improve a building's performance.
- *Regional Priority* – encourages builders to consider and address local high-priority environmental concerns.

Currently, 26 county buildings have satisfied the certification criteria established by the Leadership in Energy and Environmental Design (LEED®) program of the U.S. Green Building Council; of these, 12 have been certified as LEED Gold buildings, including the Providence Community Center, described below. Two buildings have received Green Globe certifications from the Green Building Initiative's environmental assessment and rating system for commercial buildings. There are 19 projects in the design, construction or post-construction phase that have the goal of achieving LEED Silver certification, and one project – the Huntington Levee project – is being designed to achieve a bronze-level rating under the Institute for Sustainable Infrastructure Envision rating system.

The Providence Community Center is a 32,000 square foot modern and environmentally-friendly facility that attained LEED Gold certification in November 2015, exceeding the county's sustainability goals. The design and construction of the Providence Community Center is expected to reduce energy and water use by 35 percent as compared to a conventionally-designed facility, thereby achieving savings in operational

costs and utility bills. The community center also provides a healthier work and play environment for the building's occupants and users.

Key sustainable-site design and construction features of the Providence Community Center include a vegetated green roof to reduce stormwater runoff and provide additional roof insulation, native Virginia drought-resistant plant materials for landscaping, and site lighting designed to comply with LEED Dark Sky and light trespass requirements. Design and construction elements in the area of energy and water efficiency include a lighting control system and dimmers to balance lighting with available natural light, energy-efficient electrical and mechanical systems, insulation values for the roof and walls that exceed code requirements, and low-flow sensor-operated plumbing fixtures and dual flush restroom controls for additional water use reduction. Other LEED design and construction elements incorporated in the Providence Community Center include use of regional and recycled content materials, large windows to let in natural light and provide outdoor views, and thermally-controlled zones that are responsive to the specific thermal requirements of the interior environment.

Information about the county's green building policy for its capital facilities, including a list of green buildings and their key features, is available at www.fairfaxcounty.gov/living/environment/coolcounties/county_green_buildings.htm.

The county's green building policies for private sector development are discussed in Section 3.2.4. These policies are found in the Environment section of the Comprehensive Plan and are implemented through the zoning process.

4.2.2 Green Roofs

The Providence Community Center is one of several county capital facility projects that have incorporated a green roof. Other projects incorporating a green roof include the West Ox Bus Operations Center, Merrifield Center, Dolley Madison Library, Great Falls Volunteer Fire Station, Herndon Fire Station and the county's Public Safety Headquarters.

A 5,000 square foot green roof is located on the upper level of the five-story Herrity Building parking garage in the Government Center complex. Its ability to absorb stormwater volume and related pollutants is monitored and compared to an unplanted area on the opposite side of the garage. This green roof – which can be seen from county offices that issue permits to developers and builders – also showcases the three varieties of green roofs.

Within the vegetated roof area, three different planting levels illustrate the three types of green roofs: extensive, semi-intensive and intensive. The

largest area, which is planted predominantly with tiny, drought- tolerant plants called sedums, is of the extensive type. Extensive green roofs have shallow soil layers of three to four inches and are the most common, lightest and most low-maintenance type of green roof. Semi-intensive green roofs, like the shallow planters on the Herrity garage, have deeper soils – about four to eight inches – and support a greater variety of drought-tolerant plants, including shallow rooted perennials. Intensive green roofs are true roof-top gardens intended for public enjoyment, and can include water features, gardens and even trees and shrubs.

4.3 Purchasing and Materials Management

4.3.1 Green Purchasing Program

Fairfax County spends over $700 million annually on goods and services. The Environmentally Preferable Purchasing Policy (EPP Policy) directly supports the Board of Supervisors' Environmental Vision. The EPP Policy acts as a guiding form of reference and encourages county departments to consider the environmental impacts of the goods and services they purchase without compromising on quality or cost.

The Department of Procurement and Material Management (DPMM) manages the EPP Policy through the Green Purchasing Program. Using the competitive procurement process, county departments can partner with innovative contractors to help lower the county's operational impact on the environment while reducing cost. DPMM maintains a catalog of over 40 contracts for goods and services with demonstrated environmental benefits. The catalog includes LEED-compatible furniture, energy- and paper-saving copiers, water recycling car wash and services and carpet recycling. DPMM strives to choose materials with an inherently lower impact on the environment, such as materials from sustainably managed renewable resources, and to use recycled materials wherever possible without compromising quality. The program also includes a focus on responsible equipment disposal, which has resulted in cost savings and serves as a model for sustainable resource recovery.

Fairfax County employees can use the DPMM Environmentally Preferable Purchasing (EPP) Buyer's Guide to both help the environment and make a fiscal impact while doing their jobs. The guide, subtitled "What we buy matters," answers questions related to environmentally preferable purchasing. The Buyer's Guide offers both conceptual and practical ideas for buying environmentally preferable goods and services, and provides examples and details of the paybacks that green purchasing offers the county.

Other highlights of the Green Purchasing Program include:

- Considering the life-cycles of products purchased and used by the county, including end-of-life reuse or recycling options.
- Establishing an office supply contract that offers over 6,500 "green" products that are verified and certified by third-party organizations as meeting specific environmental standards.
- Purchasing and using environmentally-friendly cleaning products in county facilities, where feasible.
- Partnering with the Fairfax Employees for Environmental Excellence, an advisory group of employees who embrace and support efforts that promote environmental awareness.

In addition to promoting and enabling green purchasing within the county, DPMM supports the national market for green solutions. DPMM continues its work with U.S. Communities, which hosts the combined potential purchasing power of up to 90,000 public agencies, to strengthen green language in national solicitations. The National Association of Counties holds DPMM as a proven success story for its green purchasing accomplishments and continued growth in its sustainability efforts.

More information about the county's Environmentally Preferable Purchasing Policy is available at www.fairfaxcounty.gov/news/2009/environmentally-preferable-purchasing-policy.htm.

4.3.2 Surplus Equipment

DPMM promotes responsible reuse and disposal of surplus items through a variety of approaches, including:

- Expanding recycling options by using trade-in, "producer responsibility" and take-back clauses in vendor contracts.
- Marketing and selling surplus equipment on consignment, and by on-line and sealed-bid auctions.
- Fostering strategic donations of surplus equipment to charities that further the county's mission.

DPMM's on-line *Reuse, Sale, Recycle* program to manage surplus property countywide is a notable success in this area. Its use of e-auctions, which are open to the public, optimizes revenue from the sale of surplus sporting goods, office furniture, office equipment, industrial machinery, tools,

household and industrial appliances, fleet vehicles and specialized vehicles such as fire trucks and trash trucks. In addition, the on-line reuse program allows employees to shop for surplus equipment from their desks and have items delivered, all at no direct cost to the requesting department. The *Reuse, Sale, Recycle* program has increased the reuse rate, decreased disposal costs and saved thousands on the purchase of new equipment. In FY 2015, the county redistributed or sold 91.4 percent of excess surplus property, achieving $2.0 million in sales revenue.

The county's internal electronics recycling program, begun in 2011, continues to evolve and now encompasses any item with a circuit board. DPMM's e-cycling contract offer robust recycling options that include de-manufacturing the equipment for recycling and refurbishing components for continued use in new manufacturing. Other recycling initiatives address cell phones, toner cartridges, batteries, scrap metal, used tires and spent oil.

Using its toolbox of options, DPMM promotes and leads collaborative and innovative approaches to reducing waste. These approaches also improve the county's bottom line by reducing disposal costs and generating revenue. More information about DPMM's environmentally-responsible surplus equipment programs are available at www.fairfaxcounty.gov/dpmm/surplus.htm.

4.4 Facilities and Site Management

Fairfax County's Facilities Management Department (FMD) portfolio is comprised of 244 properties, totaling over 10 million square feet of space. This space includes offices, libraries, residential treatment facilities and 24/7 facilities such as adult detention facilities, fire stations and police stations. FMD's portfolio does not include facilities operated by the Department of Public Works and Environmental Services, the Park Authority, the Redevelopment and Housing Authority or the Fairfax County Public Schools.

4.4.1 Energy Efficiency Upgrades

Energy management is an important focus area for FMD. Over a decade ago, FMD established the goal of reducing energy use by one percent per year, as measured in one thousand British thermal units (kBtu) per square foot. Recent numbers show FMD meeting or exceeding its goal, despite a substantial increase in the square footage of its portfolio. By reducing energy consumption, FMD reduces both greenhouse gas emissions and energy costs. During the period FY 2012 through FY 2016, FMD saved over $1.4 million dollars on utility bills.

FMD undertakes a wide range of energy improvement projects to achieve energy savings. It installs energy management control systems, right-sizes heating, ventilating and air conditioning (HVAC) equipment, installs lighting controls and efficient lighting, including LEDs, and replaces aging roofs, caulking and window sealant.

Energy improvements completed by FMD since 2012 include:

- 43 HVAC and plumbing component replacement projects.
- 28 roof replacement projects.
- 20 projects to replace window and building caulking and sealant.
- 11 LED lighting projects.

FMD's LED lighting projects include the replacement of 950 T-8 fluorescent fixtures in the underground Government Center parking garage with 420 LED fixtures with motion sensors, and the conversion of 650 fluorescent lamps at the Adult Detention Center (ADC) to LEDs providing 24/7 illumination. A similar project in FY 2015 reduced annual energy consumption at the Herndon Park and Ride facility by more than 80 percent. Over 1,500 fixtures were retrofitted in FY 2017 at facilities across the county.

FMD's HVAC energy improvements include a FY 2014 project at the Government Center that replaced or retrofitted 644 variable air volume boxes and added direct digital controls, and a FY 2017 project to replace HVAC controls on air handler units at the ADC.

FMD also has undertaken improvements to reduce water use. Part of a multi-phase two-year project at the Government Center replaced all restroom and locker room flush valves and faucets with low flow, infrared sensor-operated fixtures and replaced shower heads with low flow fixtures. This aspect of the project has reduced water consumption by more than 45 percent, as compared to the prior year's usage. Similar replacements were undertaken in FY 2016 at the Herrity and Pennino buildings and at smaller buildings throughout the county.

4.4.2 Energy Monitoring

With over 700 utility accounts, computerized energy monitoring and evaluation are essential elements of FMD's energy management practice. Monitoring and evaluation are facilitated by automated energy management control systems that have been installed in 97 county buildings. FMD also uses data available from its energy management software to measure and track energy and water consumption.

Monitoring allows the county to make adjustments based on real-time information, rather than relying on the historical records of past bills. These adjustments yield immediate and continuing savings. Monitoring also allows FMD to identify cost-saving opportunities due to leaks, equipment inefficiencies or problems with building controls. Further, using the data available from its systems, FMD can more precisely determine the costs of operating the facilities in its portfolio and can determine the greenhouse gas emissions associated with that portfolio's energy consumption. This information provides key inputs to the county's annual calculation of its greenhouse gas emissions.

4.5 Information Technology

4.5.1 IT Energy Efficiency Initiatives

Fairfax County's information technology (IT) infrastructure is designed to ensure the continuous delivery of quality services in a cost-effective and resource-efficient manner. Energy efficiency IT initiatives reduce the power consumption of IT equipment, decrease the emission of greenhouse gases and reduce the county's carbon footprint.

Virtualization and cloud-computing technologies are the foundation of the county's agile enterprise infrastructure architecture. Elements of this strategic approach include consolidating and standardizing IT resources while still ensuring visibility, security and accountability. The county's server virtualization and consolidation initiative, which was established in FY 2007-2008, was funded in part by an FY 2010 federal stimulus award for energy efficiency projects. This initiative reduced the need for physical servers from 870 to fewer than 300.

The FY 2010 federal stimulus award also helped accelerate the deployment of a personal computer (PC) power management program. The "NightWatchman" program automatically shuts down almost 11,200 end-user PCs across 55 offices when not in operation. In 2015, reductions in PC-related electricity use saved $240,228 in electricity costs and avoided the emission of 5.19 million pounds of carbon dioxide. The NightWatchman program also supports the county's virtualization initiative. Because it measures server workloads, the program helps determine which servers are underutilized and thus good candidates for virtualization and consolidation.

Both the virtualization initiative and PC power management programs have been nationally recognized for achieving carbon reductions and operational efficiencies. More information about Fairfax County's IT program and initiatives is available at www.fairfaxcounty.gov/dit/itplan/.

4.6 Waste Management

4.6.1 Landfill Gas Recovery and Reuse

Landfill gas (LFG) is essentially an equal mixture of methane and carbon dioxide that is a by-product of the decomposition of organic matter buried in sanitary landfills. Fairfax County recovers LFG from several hundred gas wells at the county's two landfills and, after conditioning, uses the LFG to produce electricity, incinerate bio-solids and heat maintenance facilities. The county's LFG use prevents the release of an estimated 260,000 tons (CO2 equivalents) of greenhouse gases annually.

Electricity Generation – The county's LFG operations began in 1990 at the I-95 Landfill Complex. Although it has been operating more than 25 years, approximately 1,650 cubic feet/minute (cfm) of LFG is captured from the I-95 landfill, much of which is used to fuel generators at the site. In 2016, these generators produced an average of four megawatts of electricity. This electricity is sold directly to wholesale electric market, helping keep the Solid Waste Management Program a self-funded agency.

Incineration – A three-mile pipeline transmits LFG from the I-95 landfill to the nearby Noman M. Cole, Jr. Pollution Control Plant at a rate of up to 400 cfm. The LFG is used in the plant's incineration process to destroy bio-solids and to fuel afterburners that reduce hydrocarbon emissions.

Heating – At the I-66 Transfer Station site, LFG is used to provide fuel heating systems at an on-site maintenance shop, truck wash, worker's facility and nearby bus maintenance facilities operated by the Fairfax County Department of Transportation (Fairfax Connector), Department of Vehicle Services (school buses) and Washington Metropolitan Area Transit Authority, or WMATA (Metro buses).

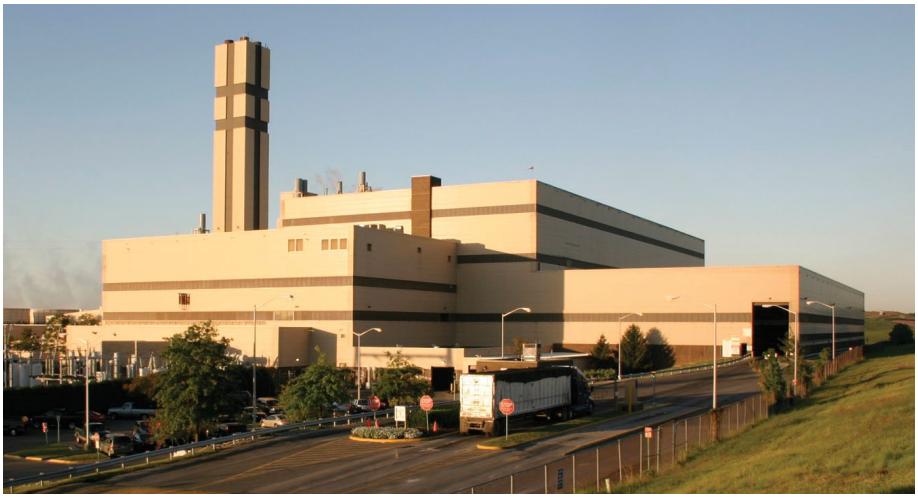
In 2005, the U. S. Environmental Protection Agency designated Fairfax County as ***Landfill Methane Outreach Program Community Partner of the Year.*** More information about Fairfax County's LFG projects is available at www.fairfaxcounty.gov/dpwes/trash/dispmethrvc.htm.

4.6.2 Waste-to-Energy

The Energy Resource Recovery Facility (ERRF) combusts municipal solid waste to generate enough electricity to power the facility itself with sufficient residual power to sell to the local electrical power provider.

In a multi-step process, the heat from burning waste produces steam that turns turbines capable of generating over 80 megawatts of electricity. With four industrial boilers that can burn over 3,000 tons per day of solid waste – or about 1.1 million tons per year – the ERRF is one of the largest waste-to-energy facilities in the country. The ERRF, which is located adjacent to the I-95 Landfill Complex, has been in operation since 1990.

Using solid waste to generate electricity avoids both the cost and emissions of using a fossil fuel to produce the electricity. Since 1990, energy production by the ERRF has replaced the equivalent of approximately two million barrels of crude oil per year. Incineration of municipal solid waste at the ERRF has other environmental benefits.



- As a result of pre-incineration sorting, enough metal is recycled each year to build over 20,000 automobiles.
- Incineration reduces waste by up to 90 percent in volume, leaving an ash product that is landfilled.
- Incineration prevents one-half ton of greenhouse gas emissions from entering the atmosphere for every ton of garbage incinerated, making the county's waste-to-energy operation carbon-neutral to negative.

The ERRF is heavily regulated, subject to continuous emissions monitoring, and Covanta Fairfax is required to report to regulators if the ERRF exceeds emissions limits.

The Energy Resource Recovery Facility is privately owned and operated by Covanta Fairfax, Inc., a subsidiary of Covanta Energy, under contract to Fairfax County. More information about the facility is available at www.fairfaxcounty.gov/dpwes/trash/dispomsf.htm.

4.6.3 Water Reuse

Fairfax County's Water Reuse Program delivers clean but non-potable water from the Noman M. Cole Jr. Pollution Control Plant to non-residential customers for irrigation and industrial purposes. Reusing water conserves valuable treated drinking water and reduces the amounts of nitrogen and phosphorus that reach the Chesapeake Bay. Water reuse also generates revenue for the county.

The program sells water that is not safe for drinking but is safe for other uses, such as watering lawns. Prior to delivery, the water is extensively filtered and disinfected and thoroughly treated to remove harmful organisms and substances, including bacteria, viruses and heavy metals. The Pollution Control Plant continuously monitors and tests the quality of this reclaimed water to ensure it exceeds strict state and federal requirements.

To avoid confusion, every pipe that carries the reclaimed water is painted purple and purple signs are posted at any public location where reclaimed water is being used.

The program delivered 432 million gallons of reclaimed water in 2016.

A purple water reuse pipeline installed along Lorton Road connects the Pollution Control Plant to the county's waste-to-energy plant, the Energy

Resource Recovery Facility. This pipeline delivers treated reclaimed non-potable water to the waste-to-energy plant each year for its use in generating electricity. The pipeline also delivers reclaimed water to both the Laurel Hill Golf Course and the Lower Potomac Ball Fields for irrigation purposes.

The county's use of reclaimed water has both economic and environmental benefits. It requires an estimated 2,300 kilowatt hours of electricity to pump, treat, transmit and distribute one million gallons of potable water. The electricity use associated with reclaimed water is substantially reduced because the water is not treated to the levels required for potable water. Lower electricity costs translate to lower purchase costs. Reductions in electricity use also translate to reductions in greenhouse gas emissions. County staff estimates that using reclaimed water saves approximately 1.1 pounds of equivalent carbon dioxide (CO_2e) per kilowatt hour, based on the mix of generation sources that supply electricity to the Northern Virginia region.

More information about Fairfax County's water reuse is available at www.fairfaxcounty.gov/dpwes/wastewater/water_reuse/.

4.7 Vehicle Services

The Department of Vehicle Services (DVS) provides management and maintenance services to the county's vehicle fleet and maintenance support to the Fairfax County Public Schools. The Department of Transportation (DOT) provides, among many other services, the Fairfax Connector transit bus system for public transportation throughout the county. Both agencies strive for economically responsible environmental stewardship by working increased fuel efficiency, and reduced emissions and petroleum consumption characteristics into vehicle specifications.

4.7.1 Hybrid and Electric Fleet

DVS's responsibilities include management of the county's Vehicle Replacement fund. In response to the county's desire for cleaner and more energy-efficient vehicles, DVS has included hybrid-electric vehicles in its Vehicle Replacement program, where appropriate. As a result, a conventional gasoline-fueled county fleet vehicle at the end of its service life may be replaced with a hybrid vehicle, if acceptable to the using agency and conditions warrant.

As plug-in hybrids and electric vehicles continue to come to market, DVS procures them in place of traditional gasoline-powered vehicles. The county fleet currently includes 118 hybrids and six all-electric vehicles. Use of these vehicles saves over 16,000 gallons of gasoline on average each

year. The DVS five-year strategic plan includes replacing 10 percent of the administrative fleet with alternative energy vehicles.

In 2011, the Fairfax County Environmental Quality Advisory Council (EQAC), an appointed citizen advisory board, selected DVS as one of two recipients of EQAC's annual Environmental Excellence Award. The award recognized DVS's strong environmental stewardship as demonstrated by initiatives including the development and continuing expansion of a hybrid-electric vehicle fleet. In 2017, DVS received renewed participation as an Environmental Enterprise (E2) participant in the Virginia Environmental Excellence Program (VEEP) for all four DVS maintenance facilities. DVS has been a proud VEEP participant since 2003.

4.7.2 Other Vehicle Services Initiatives

Specifications for new vehicles purchased by DVS and DOT include features designed to reduce emissions and increase fuel efficiency.

Since FY 2015, DVS has purchased school buses with Selective Catalytic Reduction (SCR) technology. SCR meets the EPA 2010 requirement of providing engine emissions to near zero. Since 2009, DOT has included variable frequency cooling fans in the buses it purchases. These fans have reduced fuel consumption by 12 percent compared to vehicles with hydraulic fans. Currently, 184 Fairfax Connector buses, or 65 percent of the fleet, are equipped with variable frequency cooling fans.

DVS and DOT also have established a number of initiatives to improve the energy and environmental performance of the vehicles they manage and maintain. For example:

- To reduce fuel consumption and vehicular emissions, DVS and DOT programmed automatic idle shutdown into all county solid waste trucks and Fairfax Connector buses.
- DOT transitioned to nitrogen filled tires to provide longer life and increased fuel mileage.
- After determining it to be cost-effective, DVS installed three Diesel Exhaust Fluid (DEF) dispensers adjacent to diesel fuel pumps, thereby allowing customers to purchase diesel fuel or DEF without moving their vehicles.

4.8 Fairfax Employees for Environmental Excellence

The Fairfax Employees for Environmental Excellence (FEEE) serves as Fairfax County's employee green team. FEEE's goal is simple: to foster a greener workplace culture. FEEE encourages employees to take advantage of existing environmental programs, including recycling and a green purchasing option. FEEE also encourages employees to use their diverse perspectives to develop creative solutions that can minimize the environmental impact of county operations.

Cumulatively, the simple, habitual behaviors of Fairfax County's 13,000 employees can have significant environmental impact. Examples include deciding which office supplies to buy, whether to use the recycling bins or, in those offices without occupancy sensors, whether to turn the lights off after the work-day. FEEE believes that routine and forgetfulness are the most common impediments to environmentally-responsible action in the work-place. As a result, FEEE focuses on employee behavior.

FEEE is especially known for its action campaigns. Many of these campaigns, like FEEE's 2011 "Junk the Junk Mail," are friendly competitions intended to raise awareness about simple but environmentally-responsible activities. FEEE's junk mail competition reduced junk mail overall by 70 percent among participants. The winning agency, the Office of Public and Private Partnerships, achieved a 93 percent reduction. After the conclusion of FEEE's 2012 friendly competition, "Take the Stairs Week," county staff reported opting for the stairs over the elevator nearly 3,000 times.

Other FEEE initiatives include:

- Using its internal website and blog to disseminate information and tips. Because it offers two-way communication, the blog has the added advantage of allowing employees across the organization to join the conversation.

- Highlighting innovative green ideas on the FEEE website and through FEEE's award program, "Fairfax Sustainability Champions."
- Hosting lunch-and-learn events. Recent events include a stream restoration tour, a green roof tour and the display of a replica green office.
- Hosting an annual "Green Lounge" that coincides with the county's Administrative Professionals Conference. Attractions include raffles, a mock "green" cubicle and information on sustainability issues.
- Distributing over 700 of its branded green lanyards to county employees to help spread the word about FEEE.

By empowering employees to exercise environmental responsibility, FEEE has helped the county realize a range of benefits, including cost savings and increased recycling revenue.

4.9 Community Greenhouse Gas Emissions Inventory

Pursuant to its 2007 Cool Counties Climate Stabilization Declaration, Fairfax County conducted and in 2013 released its greenhouse gas (GHG) emissions inventory for the period 2006-2010. This inventory was intended to provide a baseline measurement of the county's GHG emissions as well as to guide future efforts to reduce those emissions. Subsequently, the Metropolitan Washington Council of Governments (COG) released both its regional emissions inventory and inventories specific to its member jurisdictions. To ensure consistent reporting among the COG member jurisdictions, Fairfax County agreed to the COG methodology, which differs slightly from the methodology used by Fairfax County. As a result, Fairfax County no longer conducts and releases its own inventories.

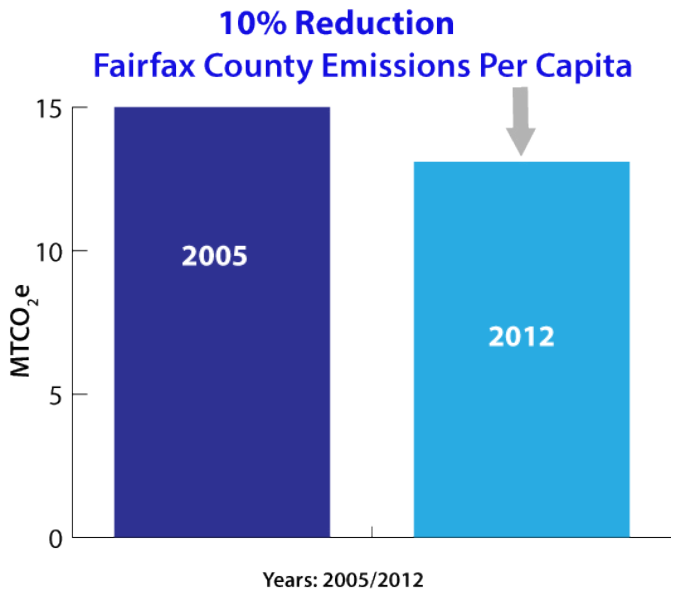
COG's Fairfax County emissions inventory measures GHG-emitting activities undertaken by residents, businesses, industry and government located in Fairfax County, as well as emissions from visitors. Emissions sources accounted for in the inventory include electricity consumption, combustion of natural gas and other fuels, mobile transportation (including on-road vehicular traffic, air travel and off-road activities), collection and treatment of solid waste, pumping and treatment of water and wastewater and hydrofluorocarbon release.

As reported in the COG inventory, over the period 2005-2012 Fairfax County reduced its per capita GHG emissions by 10 percent, from 15.1 metric tons carbon dioxide equivalent (MT CO2e) in 2005 to 13.1 MT CO2e in 2012. According to the inventory, electricity use accounted for 41 percent of total emissions, with mobile transportation the second-largest contributor, accounting for 32 percent of total emissions. Despite population growth, overall and per capita GHG emissions in Fairfax County decreased between inventory years in large part due to reductions in building-based fuel combustion across all sectors.

The COG community-wide GHG inventory summary factsheet for Fairfax County is available at www.fairfaxcounty.gov/living/environment/coolcounties/regional-greenhouse-gas-inventory-fact-sheet.pdf.

COG's regional GHG emissions inventory is available at https://www.mwcog.org/documents/2016/04/22/greenhouse-gas-emissions-inventory-for-metropolitan-washington---2005-and-2012/.

Fairfax County's 2013 GHG inventory is available at www.fairfaxcounty.gov/living/environment/greenhousegas/greenhouse-gas-inventory.htm.



SECTION 5

ENVIRONMENTAL IMPROVEMENT PROGRAM: OBJECTIVES AND FUNDED PROJECTS

ENVIRONMENTAL IMPROVEMENT PROGRAM: OBJECTIVES AND FUNDED PROJECTS

Featured in this Section

SECTION 5

5.1 Introduction

The Environmental Improvement Program (EIP) was first developed in 2005 by the county's Environmental Coordinating Committee (ECC) in response to direction by the Board of Supervisors following the adoption of its Environmental Agenda on June 21, 2004. The ECC is a collaborative interagency management committee established to ensure an appropriate level of coordination and review of the county's environmental policies and initiatives.

The EIP provides the County Executive and board with environmental and energy action-oriented opportunities to support board-adopted environmental and energy policies and goals. The EIP currently includes a project solicitation and selection process and is updated annually. See www.fairfaxcounty.gov/living/environment/eip for further information regarding the EIP.

The Department of Management and Budget, with input from the county executive and his/her deputies, determines the appropriate level of funding that will be proposed for EIP projects in any given budget year. Since the EIP project funding is supported by the county's General Fund, the amount of funding available varies from year to year. See Section 2.4.2 in this report for more information regarding the EIP. This section describes the EIP projects solicitation, selection and funding process, and provides details on current projects and a listing of past projects.

5.2 Objectives

It is the county's overarching vision to attain a quality environment that provides for a high quality of life and is sustainable for future generations. No matter what income, age, gender, ethnicity, or address, everyone has a need and right to breathe clean air, to drink clean water, and to live and work in a quality environment. However, rapid growth and development that have characterized Fairfax County over the past half century have challenged the county's ability to maintain good environmental quality. Federal and state guidelines and regulations have demanded not only extra diligence in the development of concrete strategies for a healthy environment, but also inter-jurisdictional coordination to address pollution that knows no boundaries.

Stewardship and prudent management of our natural environment and resources are not merely "add-ons," or afterthoughts, but rather are essential and fundamental responsibilities that must be given fullest

consideration at all times. The environmental impact of every decision the county makes must be carefully and purposefully evaluated. It involves long-term strategic planning that minimizes any possibilities of such emergencies occurring. Clearly, cooperation among county residents, government leadership and agencies will be required to effect lasting solutions to the environmental challenges we face. The EIP serves as a primary mechanism through which such planning occurs.

Fairfax County has long recognized the need for proactive policies and initiatives to address its environmental challenges. Indeed, environmental considerations are embedded in the county's policy and regulatory documents, and the county has pursued a myriad of environmental initiatives that continue to grow in number and complexity. The county's dedication to meeting its environmental challenges is reflected in the numerous awards and recognitions it has earned, including designation by the Chesapeake Bay Program as a Gold Chesapeake Bay Partner Community. Other awards and recognitions are listed in Section 6. Nevertheless, both the board and county staff recognize the need for enhanced environmental efforts, in that environmental challenges are continuing and in many cases becoming more daunting.

5.3 FY 2018 EIP Projects

Fairfax County supports environmental initiatives in the board-adopted Environmental Excellence 20-year Vision (Environmental Vision) through several county agencies and funds. There are also many environmental initiatives and projects carried out by individuals and groups each year. Section 2.4 provides a broad discussion of funds used for environmental efforts.

This section focuses on environmental initiatives and projects that are supported through the EIP, which funds projects identified through a collaborative and coordinated process, and based on a rigorous project selection process.

5.3.1 The EIP Projects Selection Process

In its 2012 Annual Report on the Environment, the Environmental Quality Advisory Council (EQAC) recommended that the EIP project selection process be formalized. In response to this recommendation, an interagency staff committee developed a rigorous project selection process to support the board-adopted Environmental Vision. This process, which was reviewed and supported by EQAC, has resulted in funding for many high-quality environmental projects beginning with the FY 2014 adopted budget (July 1, 2013 - June 30, 2014).

Under this process, each fiscal year, county agencies have the opportunity to submit proposed projects for review, scoring and consideration. An agency must include technical analysis, including cost/benefit information, as part of its submission. After the submission period closes, a staff committee conducts agency interviews for each project, then evaluates and prioritizes all proposals. A final matrix of prioritized projects is submitted to the Department of Management and Budget and the Deputy County Executive for consideration in the County Executive's advertised budget.

Staff-developed submission criteria provide guidance to the agencies as they identify and develop their project proposals. Selection criteria guide committee members as they evaluate and prioritize the projects. Both the submission and selection criteria are derived from the board's 2017 Environmental Vision and the seven core service areas it addresses: Land Use; Transportation; Water; Waste Management; Parks and Ecological Resources; Climate and Energy; and Environmental Stewardship.

The EIP selection process occurs over a period of months, as shown by this timeline:

- July: Memo sent to agencies soliciting submission of EIP proposal(s) for funding consideration.
- August: EIP Project Selection Committee (PSC) screens proposals to confirm compliance with submission criteria. Additional information may be requested from agencies, if necessary.
- September: PSC conducts preliminary scoring of proposals and schedules interviews.
- October: Agencies present proposal(s) to PSC and address questions. PSC concludes final scoring based on preliminary score and presentations, and presents its final list of prioritized EIP projects to the Deputy County Executive.
- November: Deputy County Executive presents final prioritized list of EIP projects to the County Executive.

5.3.2 FY 2018 Funding and Projects

The Board of Supervisors fiscal year 2018 Adopted Budget included $535,000 for EIP projects. The specific projects are detailed below.

Invasive Management Area Program – An amount of $200,000 was included to continue the Invasive Plant Removal Program. The Park Authority manages this volunteer program, as well as other invasive removal initiatives. These programs restore hundreds of acres of important

natural areas, protect tree canopy, and reach thousands of volunteers. Currently more than 12,000 trained volunteer leaders have contributed 52,700 hours of service since the program's inception in 2005, improving over 1,000 acres of parkland.

Green Purchasing Program – An amount of $5,000 was included for the Green Purchasing Program. This program is designed to support limited term staff to assist in clearly specifying environmental attributes during the county's procurement process. Fairfax County has a current inventory of over 2,400 contracts, 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.

An amount of $6,600 is included for the award-winning spring outreach programs. These programs reach thousands of people in the county and has a deep impact on many youth and adults. Programs include classroom presentations, outdoor learning experiences, outreach events and festivals, high school Envirothon competition, rain barrel workshops, Seedling Sale, high school science fair project judging, stream monitoring, Enviroscape trainings, storm drain marking, the Sustainable Garden Tour and more.

Watershed Protection and Energy Conservation Matching Grant Program – An amount of $75,000 was included for the Watershed Protection and Energy Conservation Matching Grant Program. This program is intended to support the Energy Education and Outreach initiatives and promote community engagement around sustainability and conservation issues. Specifically, the Watershed Protection and Energy Conservation matching grant program provides financial incentives to empower 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 $75,000 program funding level will provide for: printing and materials; matching grants of $500 – $5,000 up to $37,500 total for all grants; and one limited term full-time position to support the program, conduct outreach and education, site assessments, inspections and other responsibilities.

An amount of $126,000 is included to install real-time water leak and freeze detection controls at county RECenter and historic sites. The water leak system is the most effective method of monitoring property water usage in real time and is designed to inform, alert and conserve water. Water sensors monitor pulses from water meters in real time. After a spike in water usage is detected the system goes into alarm mode and sends alerts via text to a mobile device and email accounts. Water usage and trends can also be monitored on the systems dashboard. If a plumbing failure occurs while no one is in the building, the sensors will automatically tell the system to shut off the buildings main water supply and an alert will be sent out through the buildings security system. The same will be true if the temperature sensor detects temperatures approaching freezing.

An amount of $42,400 is included to design and plant a pollinator meadow at the Alban Maintenance facility located at 7245 Fullerton Road, Springfield. The proposed landscaping improvement project at Alban complies with the state required storm water permit, shows commitment to federal clean water regulations, reduces maintenance costs, supports the Fairfax County Natural Landscaping Policy and exemplifies another step in the larger, multi-agency plan to save pollinators. The proposed project will treat runoff from the impervious services on the site by making landscaping improvements that incorporate pollinator friendly practices.

The result will be one meadow that will attract and feed insects such as bees and butterflies that pollinate plants. In addition, storm water runoff will be treated before running into Accotink creek.

An amount of $50,000 is included to support a Honey Bee Initiative Pollinator Program (HIPP) at the I-95 landfill property located at 9850 Lorton Road in Lorton, VA. The HIPP is a project to install hives of honeybees (Apis mellifera) and pollinator habitat to provide educational opportunities for students and the community and increase sustainability and diversity of desirable plant species in the county while lowering maintenance costs at the landfill complex. The project will serve to transform the vista of the landfill to provide spring, summer and fall blooming plants to enhance the natural beauty of Fairfax County. As the plant species become established communities of perennially-blooming plants, this plant propagation will use nutrients available in the soil and will act to prevent nutrient runoff, protecting water quality and assisting in compliance with the county's MS4 permit.

An amount of $30,000 is included for the purchase of two alternative fueled propane ride-on mowers for Park Authority mowing operations. Propane can burn up to 35 percent cleaner than gas lawn mower while reducing carbon emissions by 50 to 70 percent. This project is important for conserving energy and reducing environmental impacts while supporting the county's commitment to reduce carbon emissions.

In addition, an amount of $58,140 has been provided in Fund 10030, Contributory Fund, to continue partnering with two nonprofit agencies to support tree planting efforts throughout the county.

5.4 EIP Delivered Projects History

EIP projects were first funded as part of the FY 2004 Carryover Review (September 2004). To date, the total EIP project funding, including the current FY 2018 Adopted Budget Plan, is roughly $8.76 million. These initiatives generally support the Board of Supervisors Environmental Vision.

The projects listed below have been supported by the county's General Fund; however other environmental projects have been supported by the Energy Efficiency and Conservation Block Grant (as part of the American Recovery and Reinvestment Act of 2009) and by the county's Contributory Fund (the latter of which funded tree planting partnerships with three nonprofit organizations). In addition, as discussed in Section 2.4, several important environmental program areas and initiatives are supported through funding sources outside of the EIP and General Fund.

Projects funded through the EIP to date include:

- Purchase of wind energy.
- Air quality education and Clean Air Partners (media sponsorship to continue public outreach to improve air quality).
- Conversion of 163 Fairfax Connector buses to ultra-low sulfur fuel and addition of particulate traps to reduce emissions.
- Community cleanup/revitalization/blight abatement projects.
- Toxicity reduction public outreach program.
- Expansion of the business recycling program.
- Pedestrian improvements in the Richmond Highway corridor.
- Riparian buffer restoration.
- Cleanup of unauthorized dumpsites.
- Park Authority stewardship education.
- GIS-data green infrastructure for park natural resource management.
- Low impact development demonstration projects.
- Park trails mapping (comprehensive mapping program to allow the Park Authority to better manage and plan the trail system).
- Invasive Management Area program.
- Landfill gas utilization project at the I-66 and I-95 Landfills.
- Remote household hazardous waste collection events.
- Tree canopy campaign at county facilities.
- Energy efficiency/renewable energy at county facilities.
- Litter campaign.

- Lighting retrofits and upgrades at Fairfax County Park Authority facilities.
- Energy education and outreach.
- Green Purchasing Program.
- Water conservation and efficiency measures at park golf courses and facilities.
- Watershed Protection and Energy Conservation Matching Grant Program.
- Water Conservation Measures at park facilities.
- Energy Efficiency Measures at RECenter pools.
- Protected Bike Lane Demonstration Project.

SECTION 6

AWARDS AND RECOGNITIONS

AWARDS AND RECOGNITIONS

Featured in this Section

SECTION 6

6.1 Selected Awards and Recognitions

2016 *Public Technology Institute (PTI) Sustainability Solutions Winner Award* – Smart Irrigation Systems. Fairfax County Park Authority (FCPA) replaced the existing irrigation controllers with a smart irrigation control system that is web based and works off of local weather data to automatically adjust watering times. The system is beneficial for several reasons:

- The system saves water consumption due to the fact that it will only water when needed, if it is cloudy for several days and there is not much evaporation, the system will dial back watering times or postpone watering completely.
- The system is able to learn flow for each particular zone, if it notices a spike in flow (i.e., a broken head), it will shut off that zone and send an email or text alerting that there is a problem. If the system senses flow and the system is not scheduled to water (i.e., main line break), it will shut the water off completely and send an email or text.
- The system is Web based and has a smart phone app, if a problem is reported to FCPA, it has the ability to shut off the water from anywhere at any time. The manufacturer reports that smart irrigation technology can save 20% - 40% on water consumption.

2016 *Utility of the Future Recognition* – the Fairfax County Wastewater Management Program, a division of the county's Department of Public Works and Environmental Services (DPWES), has been named a Utility of the Future Today along with 61 other utilities from the U.S., Canada, and Denmark.

A partnership of water sector organizations including the National Association of Clean Water Agencies (NACWA), the Water Environment Federation, the Water Environment & Reuse Foundation (WE&RF) and the Water Reuse Association, with input from the U.S. Environmental Protection Agency, announced the recipients of the inaugural Utility of the Future Today Recognition Program on August 9, 2016.

2015 *Public Technology Institute (PTI) Sustainability Solutions Significant Achievement Award* – Athletic Courts Lighting Control. FCPA installed Push Button Strobe Control Units for all tennis, basketball and volley ball courts lighting systems. The system is beneficial for several reasons:

- The system saves electricity consumption due to the fact that it will only turn on the lights when needed. The lighting for each set of the courts is controlled separately.
- The push button strobe lighting controls allow players to activate the courts lighting only when needed, and automatically shut off the lights when a predetermined amount of time has expired, or an OFF button is pressed.
- Astronomical time clocks is part of the system to ensure the push button controls are only active during hours specified by Fairfax County park authority, so daylight saving is considered in this system.
- With less use of the lighting system, energy cost and also maintenance cost will be lower.

2015 *National Association of Counties (NACO) Best in Category Achievement Award in the category of Children and Youth.* The NACO award honored the Stream Crime Investigation laboratory that teaches high school students about stormwater, watersheds and water quality monitoring. The lab exercise replicates how stormwater professionals identify and track the sources of pollutants in a storm drainage network.

2014 *Best Urban Best Management Practice (BMP) in the Bay Award (BUBBA) in Habitat Creation.* The Brookfield Park wet pond rehabilitation project won second place in the best habitat creation category in the award contest sponsored by the Chesapeake Stormwater Network. Several divisions of DPWES and FCPA worked together to restore the dam in the Brookfield Park and plant native vegetation for habitat.

2014 *National Association of Counties (NACO) Best in Category Achievement Award in the category of Environmental Protection and Energy.* NACO awarded the Stormwater Planning Division of DPWES for developing “A Field Guide to Fairfax County’s Plants and Wildlife”. The field guide was developed collaboratively with stormwater staff and Fairfax County Public Schools as part of the fifth grade science curriculum to highlight the links between ecology and our watersheds.

2013 and 2014 *National Association of Clean Water Agencies (NACWA) Platinum Peak Performance Award.* Platinum Awards recognize outstanding compliance with National Pollutant Discharge Elimination System (NPDES) permit limits for five or more consecutive years. At the time of the 2014 award, Fairfax County’s Noman M. Cole Jr. Pollution

Control Plant had achieved 100 percent NPDES compliance for 16 consecutive years – one of only nine municipal water treatment plants across the nation to do so.

2013 *National Association of Counties (NACO) Best in Category Achievement Award in the category of Environmental Protection and Energy.* The NACO award honored the county's Government Center stream restoration project, an innovative water quality project that included a stream restoration and pond retrofits on county property. NACO Achievement Awards recognize innovative county government programs in one of 21 different categories.

2013 *The Coalition for Smarter Growth Sanders-Henn Community Hero Award.* The non-profit group honored county staff in the areas of planning, revitalization, transportation, housing, parks and public services for their on-going efforts to make Tysons a green, walkable urban center.

2013 *National Association of Government Communicators (NAGC) Best in Show Award.* The Best in Show Award, selected by the NAGC Board of Directors from all first-place Blue Pencil & Gold Screen winners, was presented to FCPA for its invasive plant control program, "Take Back the Forest." This program, which involves a partnership between county government, county schools, and REI, Inc., brings more than 500 volunteers into parks over a 30-day period to remove non-native invasive plants and replace them with native plants.

2013 *Virginia Recreation and Park Society Award.* FCPA was recognized for its Huntley Meadows Wetland Restoration in the Best New Renovation/ Addition – Parks, Playgrounds, Blueways, Greenways and Trails category for populations of greater than 100,000.

2012 *NACO Best in Category Achievement Award* for the "Stormy the Raindrop" public education campaign. The campaign, which was developed by the Stormwater Division of DPWES, centered on a child-friendly character named Stormy the Raindrop.

2012 *NACWA Excellence in Management Award.* This award acknowledges significant achievements in the utility management arena. It honors agencies that have implemented and sustained, for a continuous three-year period, successful programs that address the range of management challenges faced by public clean water utilities in today's competitive environment.

2011 *American Planning Association Daniel Burnham Award.* This award, which recognizes advancement of the science and art of planning, is granted to only one urban plan in the nation each year. The APA honored

the Comprehensive Plan for the Tysons Corner Urban Center. Plan elements include a tiered approach to density that is focused around four transit stations, a long-term goal of reducing the jobs-to-household ratio from 13:1 to a more balanced 4:1, incentives to reserve 20 percent of new housing units for moderate-income households, and innovative stormwater management facilities designed to retain at least the first inch of rainfall on site.

2011 *The Governor's COVITS (Commonwealth of Virginia IT Symposium) Award for Innovation in Local Government.* The county was honored for its introduction of mobile applications that provide 24/7 access to government information and services for users of iPhone/iPad, Android and BlackBerry devices.

2011 *Governor's Environmental Excellence Bronze Award, Government Category,* for stormwater outreach. The Governor's Environmental Excellence Awards recognize the significant contributions of environmental and conservation leaders in the areas of sustainability and land conservation.

2010 *National Recreation and Park Association (NRPA) Gold Medal Award, Class 1 Category* (population 250,000 and over). FCPA was awarded the NRPA Gold Medal for demonstrating excellence in long-range planning, resource management, and agency recognition.

2010 *Virginia Mosquito Control Association (VMCA) Outstanding Service Award.* The VMCA recognized the Health Department's Disease Carrying Insects Program for its consistent contributions to mosquito control awareness and education throughout Virginia, for its on-going commitment to serving county residents, and to its provision of educational opportunities to partner organizations.

2009 *NACO Achievement Award* for the Herrity Building Garage Vegetative Roof.

2008 *MarCom Platinum Winner and Communicator Award of Excellence.* The award was presented to FCPA for its Non-Native Invasive Plant Identification and Control Handbook. The MarCom awards, sponsored by the Association of Marketing and Communication Professionals, honor excellence in marketing and communication.

2008 *Public Technology Institute Solutions Award, Sustainability Category,* for the county's plug-in electric hybrid vehicle fleet trial program. Solutions Awards recognize the members' use of technology to solve specific problems, improve community services and internal operations and reduce costs.

2007 *U.S. Environmental Protection Agency Green Power Partner.* Fairfax County was recognized for its efforts to reduce the risk of climate change through green power purchasing.

2007 *U.S. Environmental Protection Agency EnergyStar partner.* Partners team with EnergyStar to save energy through energy-efficient products and practices.

2007 *Solid Waste Association of North America (SWANA) Bronze Excellence Award, Integrated Solid Waste Management Program category.* The Excellence Awards recognize outstanding solid waste programs and facilities that are environmentally and fiscally responsible, advance worker and community health and safety, and implement successful public education and outreach programs.

2006 *Businesses for the Bay Environmental Excellence Award for Outstanding Achievement for Nutrient Reduction by a Local Government.* The award recognized the county's achievement in reducing phosphorous and nitrogen discharges from its wastewater treatment plant significantly below legally-allowable levels. The discharge reductions benefit more than 3,600 species of plants, fish and shellfish in the Chesapeake Bay, one of the nation's most biologically diverse estuaries.

2006 *NACO Achievement Award for Environmental Excellence*. The award recognized the county's 2005-2006 Environmental Improvement Program, which is designed to integrate and link environmental goals and objectives into all levels of county decision-making and to provide a strategic approach to prioritizing environmental actions for implementation.

2006 *U.S. Environmental Protection Agency Landfill Methane Outreach Program (LMOP) Community Partner of the Year.* The LMOP helps to reduce methane emissions from landfills by encouraging the recovery and beneficial use of landfill gas (LFG) as an energy resource. The LMOP honored Fairfax County as a Community Partner of the Year for its use of LFG to produce electricity, dry sludge at its wastewater treatment plant, and heat the county's facilities using infrared heaters.

2005 *NACO Achievement Award, Environmental Protection and Energy Category,* for Fairfax County's air quality protection strategy, "Improving Air Quality in the Washington Metropolitan Area: A Commitment to Air Quality Excellence."

2004 *Chesapeake Bay Program, Gold Chesapeake Bay Partner Community.* Launched in 1997, the Bay Partner Community Program recognizes local governments in the Chesapeake Bay watershed for their commitment to protecting and restoring the Bay and its tributaries. Fairfax

County was first designated as a Gold Chesapeake Bay Partner Community in 1997 and recertified in 2004.

2004 *NACO Achievement Award* for watershed management planning.

2004 *National Association of Clean Water Agencies Excellence in Management Award.* The award honors member agencies who have implemented successful programs that address the range of management challenges faced by public wastewater utilities, including environmental quality, system capacity and reliability, operations and maintenance, asset management, use of technology, finances, rate management, and customer relations.

2003 *NACWA Excellence in Management Award* for significant achievements in the utility management arena.

APPENDIX

APPENDIX I

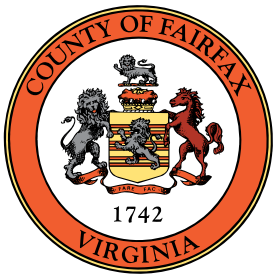
Featured in this Section

APPENDIX I

TTY 711 for all phone numbers	
Type of Incident	**Phone Number**
RELEASE OF HAZARDOUS MATERIALS INTO THE ENVIRONMENT To report the dumping of any materials into a stream, manhole, storm sewer or onto the ground, call 9-1-1. When calling, be prepared to provide specific information about the location of the incident. County inspectors will investigate complaints within the county; Cities of Fairfax and Falls Church; and the Towns of Clifton, Herndon and Vienna.	**911**
ILLEGAL DUMPING While any of a number of county and/or state agencies may ultimately have authority over dump sites, depending on circumstances, the Department of Code Compliance is an intake center for complaints (call or visit www.fairfaxcounty.gov/code).	**703-324-1300**
LAND CLEARING;TREE REMOVAL; DUMPING OF FILL To report the suspected illegal removal of trees, clearing of land, digging or dumping of fill dirt, contact the Department of Code Compliance, or visit www.fairfaxcounty.gov/code.	**703-324-1300**
SOIL EROSION To report soil erosion from private properties or construction sites, contact the Site Development and Inspection Division of the Department of Public Works and Environmental Services.	**703-324-1720**
GENERATION OF DUST FROM CONSTRUCTION, GRADING OR LAND CLEARING Contact the Virginia Department of Environmental Quality. This phone number is for the Northern Regional Office.	**703-583-3800**
TRASH/DEBRIS ON CONSTRUCTION SITES Contact the Site Development and Inspection Division of Land Development Services	**703-324-1720**
CONSTRUCTION NOISE To report construction noise outside between 9 p.m. and 7 a.m. on Sunday through Thursday, or between 9 p.m. and 9 a.m. on Fridays, Saturdays, and the day before federal holidays, contact the following: • If the construction activity is occurring at the time of the complaint, call the Fairfax County Police non-emergency number. • Otherwise, if the construction activity is ongoing or recurring, call Department of Code Compliance, or visit www.fairfaxcounty.gov/code.	 **703-691-2131** **703-324-1300**

Type of Incident	Phone Number
NOISE IN A RESIDENTIAL AREA To make a complaint about noise from animals, amplified sound, vehicles or people, contact the following: • If the noise is currently occurring during non-business hours in a residential area, call the Fairfax County Police non-emergency number. • Otherwise, if the noise is ongoing or recurring, call the Department of Code Compliance, or visit www.fairfaxcounty.gov/code.	**703-691-2131** **703-324-1300**
TRASH COLLECTION BETWEEN 9:00 P.M. AND 6:00 A.M. Call the Department of Public Works and Environmental Services. If possible, provide descriptive information about the truck, such as name of company, color, truck number, and license plate number.	**703-324-5230**
OTHER SOLID WASTE COMPLAINTS ASSOCIATED WITH WASTE COLLECTORS/HAULERS Call the Department of Public Works and Environmental Services. If possible, provide descriptive information about the truck, such as name of company, color, truck number, and license plate number.	**703-324-5230**
SIGNS ON ROADS AND MEDIANS If a sign on a road or median poses a safety hazard, you may call the Virginia Department of Transportation. Fairfax County performs monthly collections of illegal roadway signs on certain designated roads. More information at www.fairfaxcounty.gov/code/signs.	**1-800-367-7623**
SIGNS ON PRIVATE PROPERTY There are restrictions for signs on private property. To report a complaint, contact the Department of Code Compliance, or visit www.fairfaxcounty.gov/code.	**703-324-1300**
POORLY MAINTAINED HOMES OR OTHER BLIGHTED PROPERTIES To report problems including broken windows and gutters, junk or debris in yards and tall, uncut grass, contact the Department of Code Compliance, or visit www.fairfaxcounty.gov/code.	**703-324-1300**
ABANDONED VEHICLES (FIVE OR FEWER) Contact the Fairfax County Police Department's Traffic Division Impound Section; e-mail: FCPDJunkVehicle@fairfaxcounty.gov.	**703-280-0716**
ABANDONED VEHICLES (SIX OR MORE) Contact the Department of Code Compliance, or visit www.fairfaxcounty.gov/code.	**703-324-1300**

Type of Incident	Phone Number
OUTDOOR LIGHTING CONCERNS To report problems with glare, overlighting or other issues, contact the Department of Code Compliance, or visit www.fairfaxcounty.gov/code.	**703-324-1300**
AIR POLLUTANTS Air pollutants are emitted by stationary sources, such as power plants, gasoline service stations, and dry cleaners, as well as by mobile and area sources, such as from automobiles, trucks and other highway activities. This phone number is for the Virginia Department of Environmental Quality Northern Regional Office.	**703-583-3800** **After hours, call 1-800-468-8892**
NO RECYCLING IN SCHOOLS Section IX of the Fairfax County School Board's Policy 8542 states that "Schools and centers will have mandatory recycling programs for paper products, cans, and bottles. Construction waste materials will be separated and recycled." To report schools that are not recycling in accordance with this policy, contact the Fairfax County Public Schools Office of Facilities Management, Plant Operations Section. An FCPS recycling site is available at: https://www.fcps.edu/node/27868	**703-764-2459**
BUSINESS OR RESIDENTIAL RECYCLING To report a suspected violation of recycling requirements (whether residential or business), contact the Department of Public Works and Environmental Services—Solid Waste at the phone number provided or through the Online Complaint/Comment Form at: https://www.fairfaxcounty.gov/dpwes/trash/dispcompform.htm	**703-324-5230**
HEALTH HAZARDS For information and guidance on a suspected environmental hazard that may pose a public health risk, call the Health Department's Division of Environmental Health. These hazards include unburied dead animals; rat infestations; and mosquito breeding sites.	**703-246-2444**
MEDICAL WASTE Improper storage or disposal of medical waste should be reported to the Virginia Department of Environmental Quality. This phone number is for the Northern Regional Office.	**703-583-3800** **After hours, call 1-800-468-8892**
WILDLIFE/ANIMAL CONTROL ISSUES Contact the Police Department's non-emergency dispatch number or animalcontrol@fairfaxcounty.gov	**703-691-2131**



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12000 Government Center Parkway
Fairfax, VA 22035
703-324-7329 TTY 711
http://www.fairfaxcounty.gov