

# ENVIRONMENT FOR EVERYONE

*Environmental Sustainability  
and Resilience: the Natural  
Resources Chapter of the City's  
Comprehensive Plan*

*Adopted  
Month xx, 2019*

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## Introduction: Context and Vision

### Environmental Leadership

The City of Falls Church considers environmental sustainability a community priority, and the 2040 Vision affirms that the City will strive to be a leader in sustainability. In many ways the City has matched or exceeded the accomplishments of jurisdictions many times its size. For example, it was named the first Tree City USA in Virginia and first Green Power Community in Virginia. It has been recognized as a SolSmart community and a Community Wildlife Habitat, and has achieved Platinum certification in the Virginia Municipal League Green Community Challenge. The City also often leads the state in recycling rates. These accomplishments are supported by hundreds of volunteers who contribute their time and energy to making the City a better place to live. They demonstrate the community's longstanding commitment to environmental protection and improvement.

However, as the City continues to develop and adapt to a rapidly changing environment, its environmental goals must go beyond protecting and improving its existing natural resources. The City must also integrate the intentional use of natural resources in development and transportation infrastructure systems. The use of "green infrastructure"<sup>1</sup> in development will help us to create a vibrant and healthy urban ecosystem that will enhance resilience and community quality of life.

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<sup>1</sup> Green infrastructure uses vegetation, soils and other elements and practices designed to protect, restore or mimic natural processes to manage and improve water and air quality. *US EPA & American Rivers.*



Figure 1: Tree canopy cover on commercial streets increases pedestrian traffic, commercial profitability and property values. It also provides shade, cooling, air pollution control, stormwater management and a host of other environmental benefits.



Figure 2: Community involvement and education are essential to the City's environmental protection and enhancement.

## Environment is Everywhere – Scope of the Chapter

This chapter of the comprehensive plan addresses:

- **Climate and Air:** climate change mitigation and adaptation, air quality, greenhouse gas emissions, energy, green buildings, sustainability and resilience
- **Water:** water resources, watersheds, floodplains and stormwater management
- **Urban Forest and Biodiversity:** the urban forest, including open space, streamside plantings and rain gardens, green roofs, and habitat
- **Consumption and Waste:** reducing and managing solid waste in industrial, construction, commercial and residential activities
- **Community:** engaging the community in protecting the City's natural resources

It also incorporates goals related to other chapters of the Comprehensive Plan such as transportation (Mobility for all Modes) and parks and open spaces (Parks for the People). Although it does not explicitly address economic and social sustainability and resilience, they are closely linked to and supported by environmental goals and initiatives.

## Adapting to Change – Population Growth

Falls Church is a small community in which increasing population and significant land redevelopment drive vibrant growth. Between now and 2045, the City's population is expected to increase by 42 percent (Demographics chapter of Comprehensive Plan). Increased

population can mean increased transportation needs and associated increases in noise, air and water pollution, and solid waste (trash) generation. And as the population grows, the cohesion and neighborliness that support environmental awareness and activism in Falls Church may also require more effort to maintain.

## Adapting to Change - Redevelopment

Between 2000 and 2015, commercial area redevelopment and retrofits affected a total of 34 acres, about 2.3 acres per year<sup>1</sup>. In addition, more than 187.2 acres of commercial land have been identified as possible redevelopment sites.

Redevelopment within the City also impacts residential areas. For the five-year period of 2013 to 2017, 129 single-family homes were constructed, affecting an estimated 5.5 acres of land per year<sup>2</sup>. An estimated 2,000 homes in the City are worth less than the land on which they are located, a situation that provides an incentive for redevelopment.

Redevelopment is a welcome process economically. It creates opportunities to update architecture to reduce energy use and stormwater runoff. However, land disturbance affects soils, vegetation, and water management. Failure to plan for the preservation and integration of green space in redeveloped areas

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<sup>1</sup> Memo "Pace of redevelopment" January 17, 2017 from Paul Stoddard and Shelley Mastran to Chair Wodiska and Members of the Planning Commission.

<sup>2</sup> Assuming a conforming lot size larger than R-1B (7,500 sq ft) and smaller R-1A (11,250 sq ft).

can result in the loss of tree canopy and its many environmental benefits. Loss of green space also increases stormwater runoff and associated water pollution, and loss of wildlife habitat and native plants.



**Figure 3:** The use of green infrastructure for stormwater management in redevelopment can make the area more attractive and commercially valuable.

## Adapting to Change - Climate

In addition to the changes within the City, there are ongoing changes outside its boundary. It is important to plan for and protect against the negative impacts of these changes, especially climate change. Gradually increasing average temperatures, higher temperature extremes, increased precipitation, and more frequent and severe storm events are anticipated. **Mitigation of the City's contribution to climate change can be achieved through reduced greenhouse gas emissions. Strategies to enhance sustainability and**

resiliency will also be needed, including the construction of more energy efficient and environmentally integrated buildings.



**Figure 4:** Planning for climate change means doing our best to prepare for the worst.

## Intergovernmental Cooperation & Legislative Advocacy

The City's capacity to achieve its environmental goals is greatly enhanced by working directly with neighboring jurisdictions and by participation in collaborative intergovernmental networks.

The City's environment is inextricably linked with that of adjoining jurisdictions. Our roads, stormwater system, urban forest, waste

management facilities and community are all also part of the same environmental systems in Arlington and Fairfax Counties. Formal cooperative working agreements and informal information and resource sharing help to manage interactions between neighbors.

The City participates in international and national organizations such as the Urban Sustainability Director's Network and Climate Mayors, and regional coalitions including the Metropolitan Washington Council of Governments, Virginia Municipal League, Virginia Energy Purchasing Governmental Association and the Northern Virginia Regional Commission. These cooperative ventures provide essential support to the City's environmental programs. For example, they provide regional data, assessments and plans that are locally adaptable. Technical assistance and grants are also available. The negotiating power of their purchasing cooperatives can help save taxpayer funds. As a small jurisdiction with minimal staffing, collaboration is vital to the successful attainment of ambitious environmental goals.

The City Council adopts a legislative program each year that includes environmental goals coordinated with the City's Environmental Sustainability Council. Council members and staff advocate for legislation that will enable the City to enact its own ordinances. Advocacy at the state level is particularly important because Virginia is a "Dillon Rule" state. Local governments have limited authority, and can pass ordinances only in areas where the General Assembly (which meets in the state capitol in Richmond) has granted clear authority.

## Vision Statement – Environmental Leadership

*Increase the resiliency and environmental sustainability of the City by protecting, enhancing and expanding the City’s natural resources; increasing the use of green infrastructure; reducing consumption and waste of both energy and materials; and using the latest building techniques to minimize environmental impacts and enhance community quality of life.*

The following goals, which should be integrated across all City programs, projects, and efforts concerned with environmental sustainability and resilience issues, are based on the vision statement above:

- **Climate and Air:** Enhance livability, sustainability and resilience. Protect the community from air pollution and the effects of climate change, while mitigating pollution and greenhouse gas emissions in the City.
- **Stormwater, Streams and Natural Springs:** Protect the water resources of the City and the Chesapeake Bay from the adverse effects of pollution and climate change, reduce flooding, and improve water quality.
- **Urban Forest and Biodiversity:** Protect and enhance the network of trees, green spaces and naturalized land on public and private property throughout the City, and the plants and wildlife it supports.
- **Consumption and Waste:** Avoid waste generation and reduce the harmful pollution and financial costs associated with waste management and disposal.
- **Community:** Inform, educate and engage the community in the protection, enhancement and better use of natural resources.



**Figure 5:** Restoring streams from buried piping to daylight reduces water pollution, flow rate and temperature, and creates opportunities to enhance open spaces and the urban forest.



**Figure 6:** Reducing waste through mindful consumption, reuse and recycling reduces the environmental and financial costs associated with its disposal.

## Chapter Organization

The remainder of this chapter describes the existing conditions, needs, and planned changes to protect the City’s natural resources, while supporting environmental sustainability and resilience. Each of the goals is addressed in turn, although, due to the overlap of environmental issues, the chapter sections are interlinked.

## How To Use This Plan

The Comprehensive Plan serves as the City’s official policy guide for shaping the future of the City. It establishes priorities for environmental sustainability and resilience and its natural resources in planning efforts and projects. This chapter also recognizes that implementation must remain flexible to adapt to changing conditions and priorities. Therefore, this chapter should be used as a “living document.”

This chapter should be used as a framework for scheduling projects and documenting completed projects. The project locations and elements described in this chapter are conceptual. Specific location and design decisions are intended to be worked out on a project-by-project basis during implementation.

Specific tasks in the Plan are scheduled in one of three time frames: short-term, medium term, and long term. Those terms refer to the following ranges:

Timeframe	Expected Completion
Short Term	2020 to 2022
Medium Term	2023 to 2025
Long Term	2026 or later

## Development Review

During development review, developers, staff, and boards and commissions should refer to the vision, goals, and strategies enumerated in this chapter as well as specific policies and projects. Additionally, implementation plans that are adopted pursuant to this chapter, as well as any implementation plans that are included in the chapter by reference, should also be considered. All of these referenced plans supplement and complement the City’s Comprehensive Plan and should be used to guide development of the City. A list of these plans is included in Appendix A.

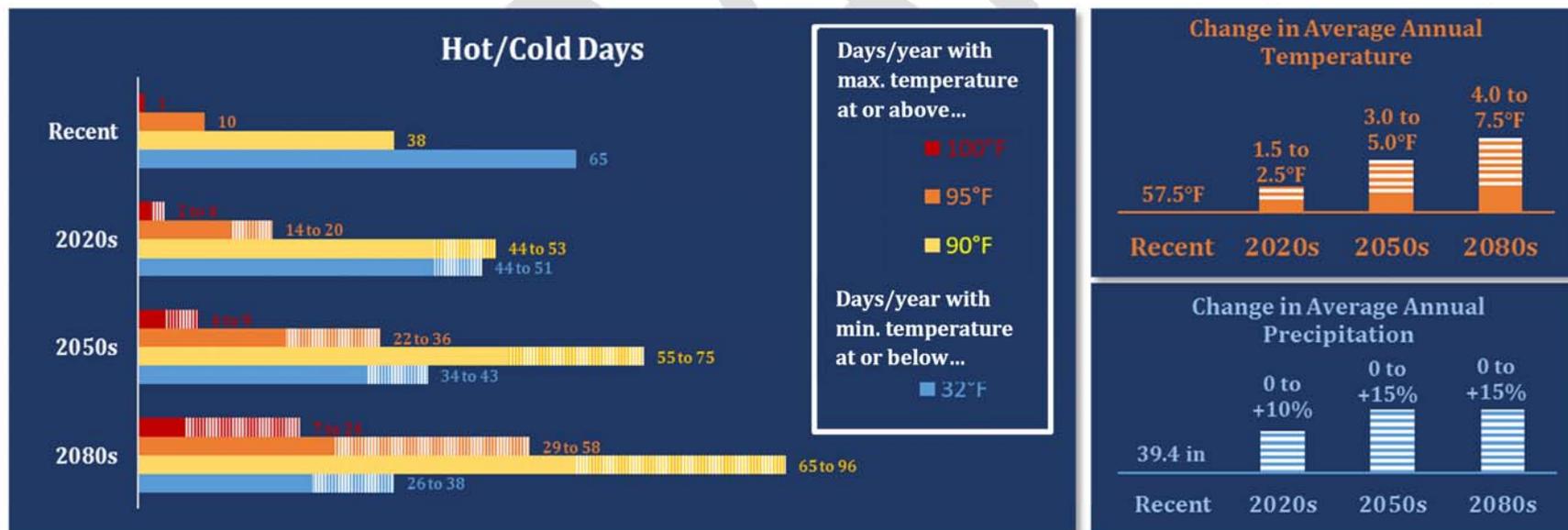
## Climate and Air

**Goal:** Enhance livability, sustainability and resilience. Protect the community from air pollution and the effects of climate change, while mitigating pollution and greenhouse gas emissions in the City.

The changing climate (see projections for the DC metropolitan area in Figure 7) jeopardizes human health and well-being. It also impacts economic stability. Severe storm events and increased precipitation can disrupt power supplies, transportation and commercial operations. Higher average temperatures and temperature extremes may overload building cooling systems and the electrical grid.

Air pollution is also increased when temperatures rise, threatening human health, especially for vulnerable populations such as children and the elderly. Although air quality in the area has improved significantly in the past 30 years, ground-level ozone, mainly a by-product of internal combustion vehicles and equipment, still exceeds federal health-based air quality standards.

Sustainability and resilience, the ability to maintain resources into the future and to cope with and recover from the economic and environmental impacts of disruptions such as extreme weather events, must be a key focus of infrastructure improvement and future community development. Clean energy generation and reduced energy use, in both transportation and buildings, are essential to achieve this goal.



**Figure 7:** Increasing average temperatures, higher temperature extremes, increased precipitation and more frequent and severe storm events are occurring and are predicted for the future in the D.C. metropolitan region as a result of global climate change. Graphic showing predictions for DC Metro area derived from NASA\_Washington\_Metro\_Area\_Climate\_Informaton\_Handout accessed 5:44 p.m. 6/8/2019 on <https://www.mwcoq.org/documents/2016/3/2/nasa-washington-metro-area-climate-information-handout-climate-change/>

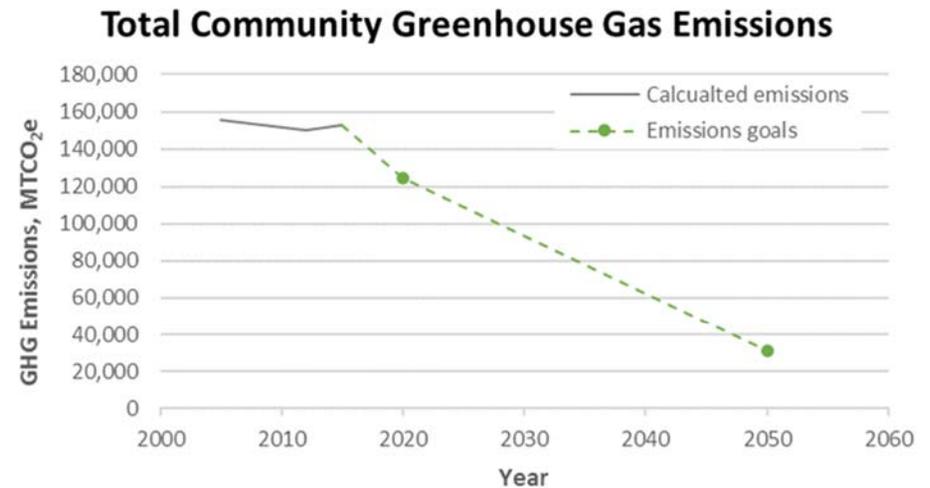
## Existing Policies, Programs, and Projects

**Air Pollution and Noise Ordinances:** The City of Falls Church has an air pollution ordinance to preserve, protect, and improve its air resources.<sup>3</sup> The ordinance incorporates by reference Virginia's state regulations and standards for the Control and Abatement of Air Pollution, which cover emissions from stationary sources such as power generation plants, waste incinerators and manufacturing facilities, as well as on-road mobile sources such as vehicles and off-road mobile sources such as construction equipment and lawn and garden equipment. The City also has a noise ordinance which limits the times at which trucks and small equipment are allowed to operate.

**Greenhouse Gas Emissions Reduction Resolution:** The City has adopted as its own (City Council Resolution 2017-12) the regional greenhouse gas reduction goals established by the Metropolitan Washington Council of Governments to mitigate impact on climate change by reducing emissions of greenhouse gases below 2005 levels by 20 percent by 2020 and 80 percent by 2050.

**Energy Transition Subcommittee:** Recognizing the need for specific action to address energy use and greenhouse gas emissions, the Energy Transition Subcommittee of the Environmental Sustainability Council was formed in 2016. The group's mission is to take actions to establish the City as a leader in community energy management in Virginia.

<sup>3</sup> City Code, Chapter 14.



**Figure 8:** The greenhouse gas emissions reduction goals established by MWCOC and adopted by the City are ambitious and cannot be achieved by our actions alone. However, the City can implement policies, programs, and projects that will contribute to their achievement, and can work with neighboring jurisdictions and other organizations to contribute to the reduction of emissions on a broader scale.

**Greenhouse Gas Emissions Inventory:** The Metropolitan Washington Council of Governments provides the City with data on community greenhouse gas emissions derived from their regional inventory. These data enable us to identify major sources of emissions and prioritize efforts to reduce them.

**Decreasing energy use:** The City has replaced all its traffic signals and some of its streetlights with lower energy use light-emitting diode (LED) lighting. Energy efficiency improvements are implemented in public buildings as failed or aging equipment is replaced. Home and business owners are encouraged to check for energy waste using thermal cameras available at the Library.

**Green Commercial Buildings:** The “Voluntary Concession” process in development planning and review has been used to encourage sustainable construction and US Green Buildings Council Leadership in Energy and Environmental Design (LEED) certification of new buildings and the inclusion of environmentally beneficial features such as green roofs and electric vehicle charging stations. There are now six LEED-certified commercial buildings in the City.

**Green Public Buildings:** The City has a green building policy for publicly owned non-school facilities, which aims for a minimum of LEED Silver certification.

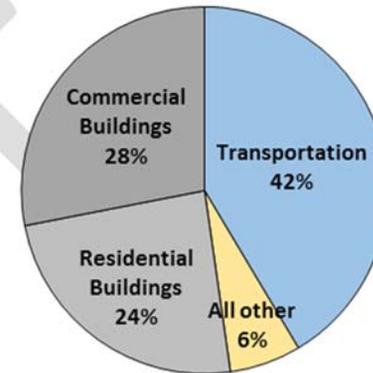
**Green Homes:** This City program encourages single-family homeowners to build to certified sustainability standards. Falls Church has at least 36 certified green homes.

**EPA Green Power:** Residents, businesses and government operations together offset two to three percent of the City’s grid electricity through the purchase of renewable energy certificates.

**Solsmart Silver:** The City has achieved Solsmart Silver designation through simplification of solar installation permit procedures and participation in Solarize NOVA. At least 25 homes and businesses in the City have solar installations, with a power generation capacity of more than 150kW.

## Evaluation of Needs

## 2015 City of Falls Church Community Greenhouse Gas Emissions Sources



**Figure 9:** Greenhouse gas emissions in the City of Falls Church come primarily from the electricity and natural gas used to power, heat and cool buildings. Transportation is also a big contributor – mostly cars and trucks, with air travel, trains and off-road equipment contributing less than 15% of transportation-related emissions.

Reducing greenhouse gas emissions in the City to mitigate climate change can be achieved by addressing their primary sources, building energy use and transportation-related fossil fuel consumption (see Figure 9). Improvements aimed at emissions reductions in these areas also improve environmental quality overall by reducing air and ground pollution. They also enhance the City’s sustainability and resilience.

Building energy use is a significant sustainability and resilience issue. It is also the largest contributor to greenhouse gas emissions in the City (see Figure 12). Buildings that use less energy typically have lower lifecycle costs. They are also cheaper to operate. These savings allow more resources to be dedicated to maintaining them

for long-term, sustainable use. They are also less impacted by weather extremes, enhancing their ability to continue to operate and provide support for continuing commerce and safe shelter. Adding renewable energy sources can also improve resilience and decrease greenhouse gas emissions.



**Figure 10:** Local generation of renewable energy increases community resilience and decreases greenhouse gas emissions.

In the public, commercial and residential sectors (except in specialist sectors such as food sales and service), building energy use is highest for heating, ventilation, air-conditioning (HVAC) and lighting. The key to energy use reduction in most buildings is therefore to use more efficient HVAC equipment and lighting, and to reduce losses by improving insulation and air sealing.

Transportation is the other major contributor to greenhouse gas emissions in the City, and is also a major source of air and ground pollution. Changing transportation use away from a reliance on automobiles to meet future travel demands is addressed in the Mobility for all Modes chapter of the Comprehensive Plan. Many of the actions proposed in that chapter, such as increasing walking, cycling and the use of transit options, and managing cut-through traffic, also support the goal of reducing local pollutant emissions.

In addition, switching to alternative cleaner modes of transport such as electric vehicles is a vitally important path to reducing pollution. Providing charging infrastructure attracts visitors to the City, which supports economic development.

Trees are an effective means to capture airborne pollutants. Their shade also creates localized cooling and reduces the generation of pollution from asphalt. Actions taken to preserve the City's urban forest will also help reduce local air pollution.

## Strategies

The following strategies shall guide the City's efforts to reduce air and ground pollution and emissions of greenhouse gases:

1. Ensure that sustainability and resilience are addressed as a priority in all refurbishment, development and redevelopment planning, for public, commercial and residential buildings and all infrastructure.
2. Reduce energy consumption and increase energy efficiency, especially through building design and refurbishment.
3. Use renewable energy sources for public facilities, and install renewable energy generation facilities where possible. Support and encourage businesses and residents to do the same.
4. Actively promote and support changes in transportation use away from reliance on automobiles, to increased walking, cycling and transit options.
5. Reduce the use of fossil fuels in the City, especially in transportation, by creating infrastructure for electric vehicle charging, and supporting and promoting the use of electric cars.
6. Maintain and protect mature tree canopy coverage to lower air and ground temperatures and absorb some emissions.



Figure 11: The provision of electric vehicle charging infrastructure supports and encourages the use of quiet, near-zero emissions vehicles and attracts visitors to the city.

## Stormwater, Streams, and Natural Springs

**Goal:** *Protect the water resources of the City and the Chesapeake Bay from the adverse effects of pollution and climate change, reduce flooding and improve water quality.*

Impervious surfaces such as buildings, roads, parking lots, and driveways cover an estimated 45 percent of City land. **When it rains, impervious surfaces contribute to fast-moving, high-volume runoff water flows. Runoff carries sediment and other pollutants into the storm drain system. From there the contaminated water flows directly to City streams and ultimately into the Potomac River and the Chesapeake Bay. It is not treated or mechanically filtered.**

**As the climate changes, stormwater volumes and flow rates are expected to increase. Higher flow rates carry more sediment and pollutants, and damage stream function, infrastructure and biodiversity. Higher air temperatures lead to higher water temperatures, and still more pollution and damage to streams.**

Stormwater must be managed, not only to reduce flooding within the City, but also to protect streams. In compliance with Virginia's Watershed Implementation Plan for the Chesapeake Bay Total Maximum Daily Load, the City is mandated **under state and federal laws to reduce both chemical and sediment pollutant loads to its streams.**



**Figure 12:** Most of Tripps Run, one of the City's two main waterways, runs underground or in concrete channels. Natural processes of sedimentation and filtration cannot occur in these types of manmade water courses.

**Trees, green spaces, rain gardens and restored, open streams, are all forms of green infrastructure that can reduce runoff flow rates and volumes and remove some pollutants. They also have multiple other environmental benefits. Constructed water detention and filtration facilities ("grey infrastructure") can also reduce flow rates and remove pollutants, but typically are very costly to build and maintain, require significant ground disturbance and often do not contribute other environmental benefits.**

**Rainwater reuse on commercial and residential sites is another stormwater management option. Outdoors it can be used for exterior washing, irrigation, and water features. It can also be used indoors for fire suppression systems and bathroom flushing. State reimbursement is available for saving treated water. Reusing**

rainwater not only reduces runoff, but saves the energy and other costs required to prepare water to potable quality and pump it to end users.

The City has plentiful springs. They are also vulnerable to pollution, e.g., from fertilizers, weed/pest control chemicals, and lawn and garden equipment, which contributes to degraded water quality.

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## Existing Policies, Programs and Projects

**Stormwater Enterprise Fund:** In 2014, the City created a fund for stormwater management. Its revenues, generated by a fee based on impervious coverage, fund the stormwater program. Voluntary concessions from commercial and mixed-use developments in the City have provided payments to the stormwater fund to plant vegetation within the Four Mile Run and Tripp's Run watersheds.

**Stormwater Ordinance:** The City has a stormwater ordinance (Chapter 35 of the municipal code) that ensures land is used, developed and redeveloped in a manner that protects water quality. It prohibits illicit discharges and provides that adequate stormwater management and erosion and sediment control measures are taken before, during, and after land disturbance, development, and construction. The ordinance also limits the area of land disturbance to protect existing vegetation, which helps to prevent erosion. Through the redevelopment process, developers must meet the requirements of the latest Virginia Stormwater Act, which actually improves the quality of stormwater runoff and reduces the quantity of runoff.

**Municipal Separate Storm Sewer System (MS4):** The Virginia Department of Environmental Quality requires the City to operate under an MS4 permit, which requires that pollution discharged through the City's stormwater system is minimized. Pollution reduction targets for nitrogen, phosphorus, and sediment are mandated by the State.

**Stormwater Detention and Filtration:** The City has installed and maintains stormwater detention and filtration systems as well as several raingardens in parks and on the streets.

**Operations:** The Operations Department has a four-person crew that inspects and maintains stormwater conveyance infrastructure. Street sweeping conducted in five cycles per year collects between 200 and 250 tons of debris. Fall leaf collection also helps to keep excessive amounts of organic matter out of the drain system.

**Capital Improvement Program (CIP):** A program within the CIP has been established with local debt funding to allow rehabilitation and replacement of stormwater infrastructure. Seven million dollars are available from the year 2020 to 2024.

**RainSmart:** The City has contracted with the Village Preservation and Improvement Society to run RainSmart, an education, outreach and grant-funding program to support stormwater management on residential properties.

**Floodplain Districts:** These are defined and protected by the provisions of the Municipal Code (Chapter 48, Article IV, Division 14). The City participates in the National Flood Insurance Program and the associated Community Rating System Program.

**Chesapeake Bay Program:** The City participates in the Chesapeake Bay Program, which directs the restoration of the Chesapeake Bay. As part of this program, the City has identified Resource Protection Areas, which include 100-foot buffers on both sides of City streams and non-tidal wetlands. Development is strictly limited in these

areas. The rest of the City is designated as Resource Management Areas, where development is managed to protect water quality.

**Stream Restoration:** The City has restored several streams, including Coe Branch and Pearson Branch, and has identified others for future restoration and potential restructuring to create open streams, a process known as daylighting.

### Evaluation of Needs

The City's existing stormwater conveyance system is undersized. Flooding occurs frequently in parts of the City where the system is overwhelmed, especially by short-duration, high-intensity rainstorms. Recent storm-related flooding has posed severe risks to public safety and impacted commerce. Inflow to the sanitary sewer system from flooded streets contributed to sewage backups into homes, causing property damage and health risks.

Capital maintenance of the existing stormwater system is urgently required. Approximately 28 percent of the system is composed of corrugated metal piping, most of which has exceeded its service life. Pipe failures not only impact stormwater flow, but could also cause sinkholes, a public safety hazard and road maintenance risk.

As the climate changes, annual rainfall and the frequency and severity of storms are anticipated to increase. In order to ensure future sustainability and resilience, stormwater runoff speeds and volumes need to be reduced. The capacity of the drainage system will also need to be increased, within the limitations imposed by downstream infrastructure. The 2012 Stormwater Management

Plan focused on water quality improvements. Attention must now turn to decreasing runoff and increasing system capacity.

Redevelopment projects in commercial zones are required to keep stormwater runoff below existing rates, and some have achieved flow reductions. Redevelopment in residential zones needs to meet similar standards. Residential properties that are not being redeveloped also have the potential to retain and reduce run-off through tree planting, landscaping alterations, and other stormwater management practices.



**Figure 13:** Rain gardens, such as this one at the Thomas Jefferson Elementary School, detain and filter stormwater runoff. With appropriate signage, they can also be useful educational tools. Home-scale rain gardens can be constructed.

The City's two main streams, Four Mile Run and Tripp's Run, are partially channelized, eroded, polluted, and overgrown with invasive species. Both streams, as well as other smaller branches, need restoration to better manage flow and reduce pollution. Large portions of Tripp's Run are underground. Daylighting the stream

would provide water quality and community benefits as well as potentially increased flow capacity.

Additional Capital Improvement Program funding will be needed to meet mandated Chesapeake Bay pollutant reduction targets. Compliance with state and federal mandates to reduce sediment, nitrogen, and phosphorus from stormwater runoff will be a challenge. Even if funding were available, there is insufficient public land available to construct the facilities needed to adequately manage the City's stormwater.

## Strategies

The following strategies shall guide the City's efforts to provide adequate flood control and the safe management of water runoff for the City's residents, and protect the water resources of the City and the Chesapeake Bay from the adverse effects of pollution and climate change.

1. Reduce stormwater runoff flow velocity and volume, including anticipated climate-related volume increases.
2. Reduce pollution entering the stormwater system.
3. Protect the City's two main streams and other water resources, and restore or daylight streams where possible.
4. Expand green spaces and develop greenways, including waterways, to connect them.
5. Use green infrastructure (such as trees, rain gardens and other green landscaping) rather than grey infrastructure (pipes, detention ponds, filtration structures) for stormwater management.

6. Monitor the Stormwater Utility Fee to support the Capital Improvement Program requests.
7. Convert floodplain properties to parks and buffer zones.
8. Educate, engage and incentivize residents to manage stormwater and reduce impervious area on their properties.
9. Increase water-efficient landscaping, including tree canopy cover, on residential, commercial, and public properties.
10. Build infiltration and retention systems for flow control and pollution reduction where space is available.
11. Repair and rehabilitate stormwater conveyance infrastructure.



**Figure 14:** Grey infrastructure such as underground pipes, detention tanks and filters can be used for stormwater management. It can be very expensive to build and maintain, and lacks the other environmental, aesthetic and community benefits of more natural, green infrastructure such as restored streams.

## Urban Forest and Biodiversity

**Goal:** *Protect and enhance the network of trees, green spaces and naturalized land on public and private property throughout the City, and the plants and wildlife it supports.[...]*

The urban forest—the network of trees and green spaces on public and private property throughout the City—is a critical part of the City’s economic and civic well-being. It provides many environmental benefits, including carbon capture, oxygen emission, filtration and capture of air pollution, reduced energy use through shading and shelter, stormwater flow management and filtration, improved soil condition, diverse wildlife habitat, beauty, and increased human health. The urban forest also contributes to real estate values and to the appeal and walkability of City business districts.

Falls Church has a 46 percent tree canopy cover based on 2013 data.<sup>4</sup> Native trees are still prevalent on public and private property throughout the City, providing a forest habitat for wildlife. City-owned natural areas comprise about 20 acres, primarily in Crossman, Howard E. Herman, Cavalier Trail, and Cherry Hill Parks. Much of this land has been cleared of invasive plants and replanted with native species.

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<sup>4</sup> “A Report on Greater Fairfax County’s Existing and Possible Tree Canopy,” Draft Report, University of Vermont Spatial Analysis Laboratory, 2013.



**Figure 15:** Trees on residential streets provide environmental and aesthetic benefits and increase real estate values.

## Existing Policies, Programs and Projects

**Tree City USA:** Falls Church was the first community in Virginia to celebrate Arbor Day and the first Tree City USA in the Commonwealth.

**Specimen Trees Program:** The City has about 50 Specimen Trees, which have special protection against damage or removal.

**Urban Forestry Staff:** The City has an Arborist and an Urban Forester, responsible for managing all City-owned trees and overseeing urban forest-related permits and enforcement.

**Urban Forestry Commission:** The City's five-member Urban Forestry Commission makes recommendations on relevant legislation, plans, policies, and programs. It also advises the City Arborist, City Council, and City Manager on tree-related matters.

**Tree Inventory:** The City has a complete inventory of City-owned or -regulated trees. The original dataset was generated in 2004, and the tree inventory has been updated on a continual basis since 2015.

**Tree Ordinance:** The City's tree ordinance regulates tree removal and tree contractors. **Other City codes require single-family residential developments to preserve/replant trees to achieve 20 percent canopy coverage within 10 years.**

**Community Wildlife Habitat:** The City has been designated a Community Wildlife Habitat by the National Wildlife Federation.

This all-volunteer program tracks individual Certified Wildlife Habitats in the City and links residents with educational resources.

**Neighborhood Tree Program:** The City partners with the Village Preservation and Improvement Society on the Neighborhood Tree Program, to plant shade trees in street rights-of-way and on private property within 15 feet of public streets.

## Evaluation of Needs

The City needs to protect and expand its tree canopy coverage to ensure environmental sustainability and resiliency, city character, and adequate wildlife habitat. Although current coverage is relatively good, the pace of residential redevelopment is resulting in a loss of mature trees. **Commercial and mixed-use development projects are not replacing all removed trees. This raises growing concerns for stormwater management and higher local temperatures where the shade and evaporative cooling effects of trees have been lost. Removing trees also results in missed opportunities to create a unique sense of place in the City of Falls Church.**

**Developing an Urban Forest Management Plan would improve program efficiency and accountability by defining responsibilities and prioritizing urban forestry staff resources and goals.**

**Increasing City support for urban forestry volunteer programs could help engage more residents, and could help existing programs at times of leadership transitions.**

A recognition program for local historical landscapes could increase public interest and support for those features of the urban forest, and help property owners raise private funds for their maintenance.

## Strategies

The following strategies shall guide the City's efforts to protect and enhance the network of trees, green spaces, and naturalized land on public and private property and the native plants and wildlife they support.

1. Protect the City's tree canopy cover and increase overall tree coverage to 50 percent.
2. Preserve mature trees during residential redevelopment.
3. **Implement green space requirements on all mixed use and commercial development projects.**
4. Increase street tree plantings.
5. Continue to expand space for tree plantings and stormwater control in public areas, through increased street trees, greenways, park space, or other green infrastructure.
6. Restore and protect the natural vegetation in stream corridors and other natural areas.
7. Initiate an urban agriculture program.

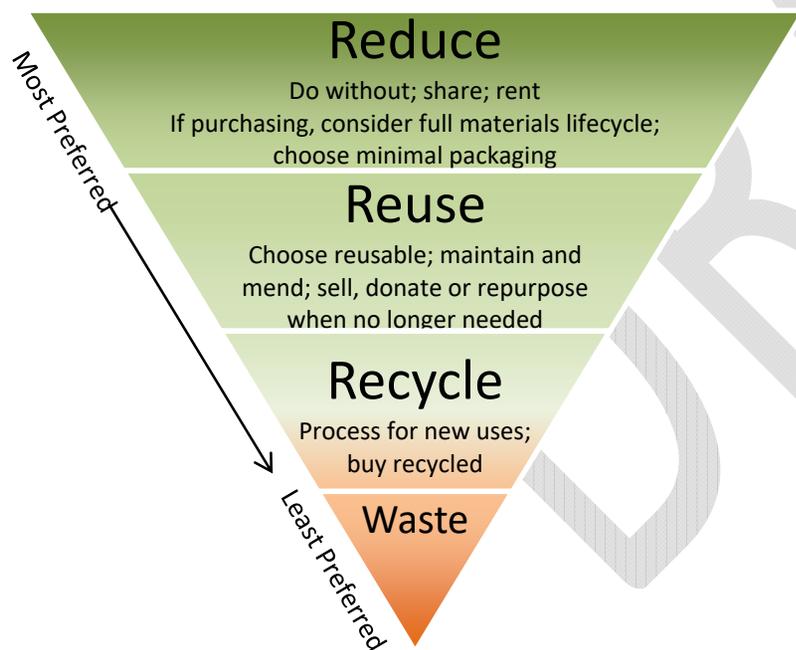


**Figure 16:** Habitat restoration, such as this volunteer project in Crossman Park, helps to stabilize the landscape, control invasive species and provide native plants to support local wildlife. It also brings community members together in a healthy and beautiful outdoor environment.

## Consumption and Waste

**Goal:** Avoid waste generation and reduce the harmful pollution and financial costs associated with waste management and disposal.

Material resources, all of the things used, bought, worn, or eaten by people in their work or daily lives are environmentally costly. Rather than thinking of these things as disposable, one of the key tenets of environmental sustainability is to avoid waste. The familiar slogan for sustainable waste management, “Reduce-Reuse-Recycle”, is expressed in order of preference – *reduction* of material use is the best way to avoid waste; *reuse* is the next best approach; *recycling* is less desirable because it generally requires the input of energy.



Waste disposal, which inevitably generates pollution, should be avoided whenever possible.

City residents and businesses discard an estimated 12,000 tons of materials every year. More than half goes to mixed-use recycling facilities. Most of the remainder is burned in a waste-to-energy incinerator. Even without the City’s anticipated population growth and rapid redevelopment, waste disposal poses significant challenges.

Waste avoidance not only preserves material resources, but also reduces the pollution and costs associated with waste management and disposal.

### Existing Policies, Programs and Projects

**Waste Removal:** The City has a contract with a waste hauling company for removal of trash, recyclables and yard waste from just over 3,000 single-family homes and townhouses. Businesses and multi-family homes (apartments and condos) arrange private contracts for trash and recycling disposal.

**Pay As You Throw:** The City charges a small supplement for excess residential trash and yard waste. A fee is also charged for pick-up of bulky items such as furniture and appliances.

**Recycling:** Recyclable materials from residents, City offices and recycling cans in streets and parks are delivered to a mixed-use

Figure 17: Waste avoidance is an important consideration when making decisions about the purchase and use of material goods  
Environment for Everyone Draft 33 (August 21, 2019)

recycling facility for sorting and resale or disposal. A simple app, RecycleCoach, provides waste disposal information customized for City residents. **The City also has a recycling center where residents and businesses can drop off separated metal, glass, plastics, cardboard and paper, and used textiles.**

**Composting Program:** The City’s comprehensive composting program includes subsidized residential curbside compost pick-up, a drop-off facility open to residents and businesses, and free classes in backyard composting.



**Figure 18:** About 30% of America’s food supply goes to waste. Composting redirects food from the waste stream, makes better use of the embodied nutrients and reduces greenhouse gas emissions and pollution from waste transportation and rotting food.

**Community Clean-Up Days:** The City conducts two annual **volunteer-led** Community Clean-up Days and one household Hazardous Waste and Recycling Extravaganza.

**Equipment and Supply Resale:** The City participates with other governments in **the resale of used equipment and supplies.**

**Construction Material Recycling:** Asphalt roads in the City are maintained using a process which mills and reuses existing surfacing materials on-site. Broken concrete from City operations is delivered to a specialized recycling facility.



**Figure 19:** The recycling center on Gordon Road offers free drop-off of sorted recyclable materials for businesses and residents.

## Evaluation of Needs

Many communities globally and across the US are adopting “Zero Waste” goals. This concept does not literally mean achieving no waste at all. The term is used to embody “the conservation of [all] resources by means of responsible production, consumption, reuse, and recovery of products, packaging, and materials...”,<sup>5</sup> with the overall goal of getting waste as close to zero as possible. Because the City is a center of consumption, not production, the ideal approach to waste management in our community would therefore focus directly on consumption reduction.

The City has no direct control over what City businesses and residents choose to consume or waste. Program options for Zero Waste are limited to managing the City’s own procurement and operations processes, and conducting education and outreach to the community. However, policies regarding commercial and residential redevelopment could incentivize “Zero Waste” goals for construction materials.

Opportunities to reuse materials could be expanded. The City resells its own unwanted goods in a local inter-government auction. Several businesses in the City buy and sell used consumer goods, from cars to clothing. Our annual Recycling Extravaganza also collects items for reuse. There may be more potential for businesses

<sup>5</sup> <https://www.epa.gov/transforming-waste-tool/how-communities-have-defined-zero-waste> Zero Waste Alliance International definition, December 2018.

and charitable organizations to make use of unwanted materials and goods from City businesses and residents.

Global markets for recyclable materials have recently shifted dramatically. Our ability to recycle materials from business and household waste is increasingly limited. Only cardboard, some types of plastic, aluminum and other metal cans currently have value as recyclable commodities. Glass is recyclable locally only if it is collected separately. As part of mixed recyclable materials collection, it is a contaminant that is difficult to handle and remove.

The City serves single-family homes, but does not provide support for waste collection from commercial enterprises or multi-family homes. Changing this approach might offer the opportunity to consolidate and organize waste pick-up to reduce the costs, inefficiencies and pollution associated with multiple independent contractors operating across the City.



Figure 20: The City may have to consider separate drop-off containers or dual stream curbside pick-up for glass. Both options are costly and potentially environmentally detrimental.

## Strategies

The following strategies shall guide the City's efforts to reduce waste generation and the pollution and financial costs associated with waste management and disposal:

1. Provide comprehensive waste disposal services for City residents.
2. Educate businesses and building owners about solid waste management and support and incentivize efforts to improve. Consider providing waste management services to businesses and multi-family dwellings.
3. Support and incentivize reuse programs, including businesses, organizations and expanded City programs.
4. Incorporate waste reduction management specifications in development requirements.
5. Expand the composting program to enable full community participation.
6. Implement education and outreach initiatives on "Zero Waste" principles and how they can be achieved.



**Figure 21:** Bikes for the World, who participate in the City's Recycling Extravaganza, repair donated bikes and ship them to developing countries, where having a bicycle can transform a life. Reuse opportunities across the City include commercial ventures such as the auction house, antique and clothing resale stores and automobile trading; on-line exchange and sales networks such as Craigslist and NextDoor, charitable organizations such as Homestretch and VPIS's "Treasures from the Attic", and home yard sales.

## Community

**Goal:** Inform, educate and engage the community in the protection, enhancement and better use of natural resources.

The actions of community members have a significant influence on the quality of the environment within the City. Each individual, whether they live or work in the City, or are here as a visitor, affects our environment, whether consciously or inadvertently. Community members lead some of the City's most effective environmental programs, and hundreds of volunteers participate in environmental action in the City every year. Information sharing, education and engagement with the community are essential to realize the goals of this chapter.

## Existing Policies, Programs and Projects

**Environmental Sustainability Council:** The nine-member Environmental Sustainability Council serves as an advisory body to the City Council on areas of environmental concern. Its three subcommittees implement action plans on energy use, habitat restoration and education.

**Village Preservation and Improvement Society:** The Village Preservation and Improvement Society (VPIS), founded in 1885, is an active nonprofit citizen volunteer organization in the City of Falls Church. The Society works to preserve the City's natural and built environment, historic structures and landmarks, and promotes cultural activities. VPIS works closely with the City on programs



**Figure 22:** Direct interaction between government and the public through pop-up displays and public meetings stimulates community conversations and informs decision-making.

including the Neighborhood Tree Program, Rainsmart and Operation EarthWatch.

**Volunteer-Led Programs:** Volunteers organize and lead the City's Community Clean-up Days, and help with the Recycling Extravaganza. The City's Neighborhood Tree Planting program, Habitat Restoration Team, Community Wildlife Habitat certification program and Operation EarthWatch are also volunteer-led programs. High school students and their teachers help with water quality monitoring and other citizen science projects.

## Evaluation of Needs

As the City's population grows, broader and more varied ways of communicating will be needed. Connecting the community through a network of community environmental volunteers could help City government engage more closely with residents and businesses. The goal would be to connect directly with fellow community members to share information, provide educational forums and encourage environmentally responsible action.

Volunteer leadership and participation greatly enhances the capacity to implement environmental programs in the City. Resources and support from the City for these programs should be sustained and enhanced to ensure they can continue.

## Strategies

The following strategies shall guide the City's efforts to inform, educate and engage the community in environmental protection.

1. Support, enhance and expand community-led environmental programs in the City.
2. Create a community-wide communications network to stimulate and enable neighbor-to-neighbor conversations, information-sharing and education.
3. Encourage and support environmental education programs in City schools.
4. Integrate equity and health considerations into environmental policies and programs. Consider impacts on vulnerable populations.



Figure 23: We all share responsibility for our future. p. 27 of 38

## **Implementation**

This Plan sets out a long-term vision for the City’s environmental resources and resiliency. **Achieving the vision and goals of this plan will require the implementation of numerous policy actions programs and projects.**

### **Policy Actions and Project Priorities**

Some of the policy actions and projects will be decades in the making. This section **details proposed policy actions and projects and indicates the general timeframes in which they should be implemented** to ensure the City addresses the highest priority needs first. Policy and project timeframes were determined through the public engagement process and by estimating staffing and funding availability.

The timeframes are split into three levels – **Short term** (2020 to 2022), **Medium term** (2023 to 2025), and **Long term** (2026 or later). Item numbers are provided for ease of reference only, and do not indicate priority. Policy actions shown in **red** and marked with an asterisk (\*) are mandated by federal and/or state law for update within the next year.

A separate table lists programs that will support these actions, whether ongoing or planned.

### **Developing Priorities**

These priorities reflect the interests expressed during the planning process. Many channels of input were utilized, including community

meetings, **market pop-ups**, work sessions with City Boards and Commissions, and news releases in the *Falls Church News Press*.

### **Flexibility and Opportunities**

This plan serves as a guide for implementation, but is also flexible and responsive to opportunities. For example, private development projects, new grant programs, and new partnerships all provide opportunities to advance projects. The City should pursue these opportunities even if it means advancing something outside the schedule shown here.

### **Funding Limitations**

The total project costs required to implement this plan are significant. Many of these projects will not be feasible without cost sharing, such as joint ventures between jurisdictions, public/private partnerships, and grant funding. This priority schedule assumes that cost sharing for capital projects is required.

### **Plan Is a Guide, Not a Budget**

As noted in the previous paragraphs, the City needs to remain flexible and respond to opportunities. Also, current funding levels are insufficient to accomplish all of the projects identified in this plan. Therefore, this plan provides guidance on which policies and projects to pursue. It is not a budget document that commits the City to funding these efforts.

## Proposed Policy Actions

ITEM #	PROPOSED POLICY ACTION	GOALS ADDRESSED					TIMEFRAME
1	<b>Update the Stormwater Management Plan</b> to reflect changing needs and the possible effects of climate change. Include stream restoration where possible. Consider expanding designated RPAs.						S*
2	<b>Update the Chesapeake Bay Preservation Ordinance</b> to meet state requirements.						S*
3	<b>Update the Solid Waste Management Plan</b> to address new challenges in recycling, using the EPA “Managing and Transforming Waste Streams” <sup>6</sup> tool to chart a path toward “Zero Waste” in the City.						S*
4	<b>Implement a Commercial Property Assessed Clean Energy (CPACE) program</b> to lower the cost of financing energy and water supply improvements for private building owners.						S
5	<b>Expand the tree canopy fund</b> of payments in lieu of plantings to include commercial properties.						S
6	<b>Establish a green procurement policy for City government</b> including replacement of existing public vehicles with electric vehicles, use of electric powered maintenance equipment, and low lifecycle emissions products of all kinds. Prioritize energy efficiency and low emissions in building design, HVAC systems, lighting, and emergency generators. Incorporate Zero waste principles.						S
7	<b>Evaluate options for organizational change</b> to better coordinate environmental action in City government.						S
8	<b>Develop a standard tree maintenance agreement</b> for non-residential properties.						S

<sup>6</sup> <https://www.epa.gov/transforming-waste-tool>

ITEM #	PROPOSED POLICY ACTION	GOALS ADDRESSED					TIMEFRAME
9	<b>Establish a program to acquire floodplain property or easements</b> , whether through a fund or transfer of development rights, so that such properties could be converted to riparian buffers and wetlands.						S
10	<b>Develop a climate risk assessment<sup>7</sup> and a climate resilience plan for the City</b> , to better understand the risks to the City from climate change and make appropriate risk management decisions for buildings, infrastructure and emergency planning.						M
11	<b>Incorporate resiliency goals into the City's development regulations</b> , including special exceptions, site plans, subdivision plans and grading plans.						M
12	<b>Establish a green building policy and incentive program for private residential and commercial development and redevelopment in the City</b> such that developers, builders and property owners pursue the highest sustainability standards for energy use reduction and energy efficiency. Include incentives for stormwater runoff reduction practices, increased green space, preservation of existing trees, provisions for contributions to the Stormwater Fund when tree or planting requirements cannot be met, and requirements for waste management during construction and operation.						M
13	<b>Develop an Urban Forest Management Plan</b> to include short-term and long-term tree-canopy goals and forest management policies for public lands.						M
14	<b>Develop policies and regulations and explore zoning changes and incentives to preserve more mature trees</b> during commercial and residential redevelopment.						M
15	<b>Re-zone parks and paper streets to be consistent with their uses.</b> Provide signage to indicate public rights-of-way.						M
16	<b>Develop a green infrastructure plan</b> that identifies opportunities to install trees and green infrastructure features across the City, including in Capital Improvement Program projects (consider Envision certification).						M
17	<b>Assess waste policies &amp; practices and generate baseline data</b> to develop a Zero Waste Plan.						M

<sup>7</sup>Building on the Northern Virginia Regional Commission assessment, *Climate Resiliency in the Metropolitan Washington Region*, November 2016.

ITEM #	PROPOSED POLICY ACTION	GOALS ADDRESSED					TIMEFRAME
18	Strengthen the City's green building policy for all publicly owned facilities to achieve higher required standards for sustainability in construction and renovation and address climate resilience.						M

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## Proposed Programs and Projects

ITEM #	PROPOSED PROGRAM/PROJECT	GOALS ADDRESSED					TIMEFRAME
1	<b>Track and publicly disclose sustainability measures</b> such as energy consumption in public buildings and progress against policy and program actions.						S
2	<b>Continue Solarize and support Power Purchase Agreements</b> to promote renewable energy technology and storage installation on homes and businesses.						S
3	<b>Develop new mechanisms</b> to deal with collected leaves and wood waste.						S
4	<b>Implement incentives and education programs for public employees</b> on energy conservation and sustainability practices.						S
5	<b>Create a right-of-way and easement ownership data set</b> to support green space maintenance and planting decisions.						S
6	<b>Promote, incentivize and enforce anti-idling</b> for public and commercial vehicles and construction equipment.						S
7	<b>Develop attractively landscaped City entrances</b> on streets and W&OD Trail crossings.						S
8	<b>Establish a Community Environment Network</b> to provide environmental outreach and educational programs to inform and engage the community and encourage environmentally responsible action.						M
9	<b>Create a one-stop community resource</b> to enable developers, businesses and residents to easily find information related to environmental programs in the City.						M
10	<b>Conduct energy audits and energy use reduction plans</b> for public buildings.						M
11	<b>Promote energy-efficiency incentives and programs from federal and state governments and utilities, and provide local incentives</b> to residents and businesses. Ensure opportunities are accessible by vulnerable populations.						M
12	<b>Establish and implement a plan for electric vehicle adoption</b> by government and community members, including charging infrastructure installation and possible incentives for electric vehicle use.						M
13	<b>Adopt a comprehensive green fleet policy</b> including low emissions and electric vehicles, vehicle sharing and other transportation modes for government fleet.						M

ITEM #	PROPOSED PROGRAM/PROJECT	GOALS ADDRESSED				TIMEFRAME
14	Prepare and track greenhouse gas emission inventories and reduction plans for government operations.					M
15	Promote incentives for renewable energy and energy storage deployment and use to residents and businesses.					M
16	Support and expand programs that implement energy efficiency improvements for affordable housing.					M
17	Develop a plan of outreach and support to businesses and multifamily homes to reduce and better manage waste.					M
18	Expand the City's composting programs and devise a more accessible solution for commercial and multi-family property participation.					M
19	Develop and implement Zero Waste goals across all public facilities.					M
20	Conduct a cost/benefit analysis on installing closed-circuit television monitoring for the entire stormwater system.					M
21	Establish an Urban Agriculture program with goals of promoting urban agriculture through ongoing programming and partnerships; providing education and incentives for urban agriculture; adopting urban agriculture friendly zoning regulations; and establishing sites for community gardens and urban farms on public and private property.					M
22	Develop a Historical Landscapes Recognition Program.					M
23	Encourage WELL Certification for commercial and institutional buildings. The program evaluates the impacts of building design on human health and well-being.					M
24	Install renewable energy generation and storage facilities on City buildings and schools.					L
25	Deploy high-efficiency, low energy use lighting City-wide					L
26	Purchase renewable energy to offset local emissions and maintain EPA Green Power partnership status, including possibility investing with other jurisdictions in solar farms (Large Off-site Renewable Energy).					L

ITEM #	PROPOSED PROGRAM/PROJECT	GOALS ADDRESSED					TIMEFRAME
27	<b>Study the risks and opportunities of Autonomous Electric Vehicle</b> use in the City						L
28	<b>Continue to expand space for tree plantings and stormwater control in public areas</b> , through increased street trees, greenways, park space, or other green infrastructure.						L
29	<b>Establish environmental forums</b> to enhance citizens' knowledge about the local planning process and environmental decision-making. Provide information on how to access data, technical assistance and other resources.						L

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## **Appendix A: Related Plans**

The City's Comprehensive Plan is a family of documents. The Comprehensive Plan includes specific elements, like this chapter on parks, recreation and open space. It also includes specific functional plans. The table below is a list of the plans that inform this chapter of the Comprehensive Plan.

<b>Planning Document</b>	<b>Adoption Year</b>
North Washington Street Small Area Plan	2012
South Washington Street Small Area Plan	2013
Mobility for All Modes, Transportation Chapter of Comprehensive Plan	2014
Downtown Small Area Plan	2014
Parks for People, Parks and Recreation Chapter of Comprehensive Plan	2015
Watershed Management Plan	2015
Bicycle Master Plan	2015
West Broad Street Small Area Plan	2016
Metropolitan Washington Council of Governments: Regional Climate and Energy Action Plan (2017 -2020)	2017
Solid Waste Management Plan	2004, updated 2010 and 2015

**Appendix B: Natural Resource Base**

See attachment.

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## Appendix C: Planning Process and Public Engagement

This chapter was developed with significant public input and collaboration. Announcements regarding the planning effort were posted to the City's eFocus tool, on the City's website and social media accounts, and in *The Falls Church News-Press*. The plan was developed and refined with community input during the public meetings listed in table below.

<b>Date</b>	<b>Groups</b>	<b>Event</b>
May 7, 2018	Planning Commission (PC)	Project Launch
May 16, 2018	Tree Commission (TC)	Regular Meeting
May 17, 2018	Environmental Sustainability Council (ESC)	Regular Meeting
June 18, 2018	City Council (CC)	Work Session
June 20, 2018	TC	Work Session
June 21, 2018	ESC	Work Session
August 18, 2018	General Public	Community Meeting
August/September 2018	Other Events	Farmers Market
April 15, 2019	PC	Work Session
April 18, 2019	Arts & Humanities Council	Regular Meeting
May 1, 2019	Recreation & Parks Board	Regular Meeting
May 5, 2019	Citizens Advisory Commission on Transportation	Regular Meeting
May 9, 2019	Village Preservation & Improvement Society	Regular Meeting
May 16, 2019	Chamber of Commerce	Regular Meeting
May 20, 2019	CC	Work Session
May 23, 2019	Historical Architectural Review Board/Historical Commission	Regular Meeting
June 4, 2019	Economic Development Authority	Regular Meeting
June 5, 2019	Architectural Advisory Board	Regular Meeting
June 10, 2019	TC	Regular Meeting
June 17, 2019	CC	Work Session
July 15, 2019	CC	Work Session
July 15, 2019	PC	Work Session
September 16, 2019	CC	Work Session
October 2019	General Public	Survey
October 2019	General Public	Community Meeting
November 2019	PC	Action
November 2019	CC	Action

**Bibliography**

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