Chapter 6 Environmental Protection Element

CHAPTER 6: ENVIRONMENTAL PROTECTION

Environmental Protection Element

Overview 600

The Environmental Protection Element addresses the protection, conservation, and management of Washington, DC's land, air, water, energy, and biological resources. This Element provides policies and actions for addressing important issues such as climate change, drinking water safety, the restoration of the tree canopy, energy conservation, air quality, watershed protection, pollution prevention, waste management, the remediation of contaminated sites, and environmental justice. The biological, chemical, and hydrologic integrity of the environment are key indicators of the quality of life in the District. Furthermore, environmental sustainability is linked to resilience, population health, and community prosperity. Good environmental management and pollution prevention are essential to sustain all living things and to safeguard the welfare of future generations.

The Environmental Protection Element is divided into the following sections:

- E-1: Adapting to and Mitigating Climate Change;
- E-2: Conserving Natural and Green Areas;
- E-3: Conserving Natural Resources;
- E-4: Promoting Environmental Sustainability;
- E-5: Reducing Environmental Hazards;
- E-6: The Link between Land Use, Transportation and Air Quality; and
- E-7 : Environment, Education, and the Economy. 600.1

The critical environmental issues facing Washington, DC are addressed in this element. These include:

- Reducing greenhouse gas (GHG) emissions and adapting to climate change;
- Restoring the District's tree canopy and expanding green infrastructure (GI);
- Improving rivers, streams, and stream valleys;
- Reducing erosion and stormwater run-off;
- Conserving and restoring wildlife habitat and plant communities;
- Conserving water and energy;
- Expanding recycling and composting;
- Encouraging green building techniques and facilitating compliance with green building mandates;
- Growing access to, and use of, clean, local energy;
- Reducing air pollution;
- Increasing the acreage of wetlands along the Anacostia and Potomac rivers;
- Eliminating the harmful effects of environmental hazards on all residents particularly vulnerable populations and to address environmental justice issues;
- Increasing resilience to flooding; and
- Increasing resilience to urban heat island effect. 600.2

Environmental protection has been part of planning in Washington, DC since the its inception. In 1791, the L'Enfant Plan used the natural landscape to guide the location of avenues and principal buildings. Later plans in the 19th and 20th centuries created some of the most memorable parks in the country and designated thousands of acres for resource protection. In the 1870s, Washington, DC planted 60,000 trees, leading Harper's Magazine to dub Washington, DC the "City of Trees." Today's images of Washington, DC still portray a city of blue skies, pristine waters, and lush greenery. 600.3

Washington, DC's legacy as America's greenest city has been seriously challenged over the centuries by urbanization. In recent years, Washington, DC has made great strides in incorporating sustainability measures; however, this momentum should be maintained in order to learn, and plan, and ultimately meet the District's goals. Although the region's air is cleaner than it has been in 20 years, the air quality does not meet federal standards for ozone, and the rivers and streams are polluted by raw sewage and runoff (oil, gas, dust, pesticides, trash, animal waste, and other pollutants). Ninety percent of Washington, DC's wetlands have disappeared since 1790. Some sites in the District face soil and groundwater contamination problems from former industrial uses and municipal waste disposal. 600.4

The District is tackling these challenges head-on. In 2005, legislation was passed creating a District Department of the Environment, now called the Department of Energy and Environment (DOEE). In 2012, the Sustainable DC Plan was developed, with the goal to make Washington, DC the healthiest, greenest, most livable city in the United States. After five years of implementation, 71 percent of the Sustainable DC Plan's 'actions are underway, and another 27 percent are complete. In 2019, the District released Sustainable DC 2.0, the comprehensive update to the plan. 600.5

Critical sustainability issues—including transportation, water quality, air pollution, and waste—are regional in scope. Washington, DC continues to work with the 24 jurisdictions that are part of Metropolitan Washington Council of Governments (MWCOG). Additionally, about 29 percent of Washington, DC (including most of the parks and open space) is controlled by the federal government, and 55 buildings in Washington, DC are managed directly by the U.S. General Services Administration (GSA), making the federal government a critical partner on sustainability. District government continues to work closely with the federal National Capital Planning Commission (NCPC), National Park Service (NPS), and GSA to maximize opportunities to meet the District's ambitious sustainability targets, including increased tree canopy coverage, habitat restoration, and stormwater management. 600.6

Washington, DC, along with hundreds of other cities around the world, has signed on to the Global Covenant of Mayors for Climate and Energy and has taken on climate change as the most pressing global environmental

challenge of this century. Washington, DC is committed to meeting or beating the GHG reduction target. In 2017, the District reaffirmed its commitment to the 2015 Paris Climate Accord and pledged to become carbon-neutral and climate resilient by 2050. Further, Washington, DC adopted Climate Ready DC in 2016, its plan to prepare for and adapt to the impacts of climate change; it is now also a member of 100 Resilient Cities, which is dedicated to helping cities around the world become more resilient to the physical, social, and economic challenges that are increasingly a part of the 21st century. In addition, Washington, DC has joined the C40 Cities network, which is comprised of the world's cities committed to addressing climate change. 600.7

Washington, DC's increased focus on environmental protection has begun to pay dividends. The District is a leader in green building and energy: Washington, DC leads the nation in LEED-certified square feet per resident, ENERGY STAR certified buildings per capita, and total District-wide green power usage. In 2017, the District was named the first Leadership in Environmental Energy and Design (LEED®) for Cities Platinum-certified city in the world. Washington, DC was the first city in the nation to pass a law, the Green Building Act of 2006, requiring green building certification for both the public and private sectors. In 2015, Washington, DC announced a 20-year Power Purchase Agreement (PPA) that will supply 35 percent of the District government's electricity with wind power. In 2018, the District government established the DC Green Bank as a key mechanism to accelerate the deployment of affordable private and public capital for clean energy projects. 600.8

In addition, the most ambitious tree planting, water quality improvement, and habitat restoration projects in decades are also underway, and great strides are being made to promote more sustainable growth. Integral to this effort are public-private partnerships that have aided the District in advancing many of its Sustainable DC goals, such as nearly reaching the 2032 tree canopy coverage target of 40 percent. 600.9

Washington, DC has become a model for innovative policies and practices, such as the Clean Energy DC Omnibus Act of 2018, which demonstrates how enhancing natural and built environments, investing in a diverse clean economy, and reducing disparities among residents can help move toward a more educated, equitable, and prosperous society. 600.10

The Environmental Protection Element builds on this momentum. It charts a course toward excellence in environmental quality, greater environmental resiliency, and improved environmental health. This element emphasizes that restoring the natural environment will support a healthier population, society, and workforce. Consistent with the notion of an Inclusive City, it strives for environmental justice so that all neighborhoods are provided with clean air, healthy rivers and streams, clean soils, healthy homes, and

Clean Energy DC Omnibus Act of 2018

Washington, DC's historic Clean Energy DC Omnibus Act of 2018 provides a road map to achieving the District's clean energy and climate action goals, including;

- Mandating that 100 percent of the electricity sold in Washington, DC come from renewable sources;
- Doubling the required amount of solar energy deployed in the District;
- Making significant improvements to the energy efficiency of existing buildings in Washington, DC;
- Providing energy bill assistance to support low- and moderate-income residents;
- Requiring all public transportation and privately owned fleet vehicles to become emissions-free by 2045; and
- Funding the DC Green Bank to attract private investment in clean energy projects. 600.10a

an abundance of trees and open spaces. It also takes ambitious steps to prioritize resiliency and connections between environmental stewardship and innovative solutions to some of its most pressing challenges, including sustainable growth and long-term community resilience in the face of a changing climate. 600.11

Sustainable DC and Sustainable DC 2.0

Between 2000 and 2015, Washington, DC's population grew by approximately 100,000 people, and all signs point to continued steady growth. As the population continues to expand, decisive actions are needed to ensure that all residents, and particularly the most vulnerable, benefit from a cleaner environment and access to nature and are prepared for any potential sudden shocks and chronic stresses posed by climate change. 600.11a

In 2013, the Office of Planning (OP) and DOEE launched Sustainable DC with the goal of making Washington, DC the healthiest, greenest, and most livable city in the nation. The District continues to make significant progress on the implementation of 143 actions designed to help reach that goal, including steps not only to protect natural resources, but also to begin preparing for and adapting to climate change. Sustainable DC 2.0, launched in 2017, is a collaborative District-wide effort to update Washington, DC's sustainability plan. The updated plan incorporates new programs and policies and changes in technology, and it better reflects the priorities of all residents. 600.11b

Sustainable DC was quickly followed by several other plans and initiatives. In 2013, Washington, DC's zoning regulations were amended to include the Green Area Ratio (GAR), a site-specific requirement designed to increase the environmental performance of the urban landscape (see a description of the GAR in Section 615 for more information). In 2016, Washington, DC released Climate Ready DC, the District's climate adaptation plan, which outlines the strategies to make Washington, DC more resilient to future climate challenges and crises, including rising temperatures and more heatwaves, increased heavy rainfall and flooding, sea level rise, and severe storm events. In 2018, this was followed by Clean Energy DC, which is Washington, DC's climate mitigation plan. This strategic plan outlines the necessary steps to achieve the Sustainable DC goal of a 50 percent GHG reduction by 2032. 600.11c

These plans and initiatives, among others, emphasize the importance and value of preserving and enhancing natural resources and improving the built environment to bolster resilience in Washington, DC. They provide the basis for new metrics to inform policies in several sectors for the next 15-30 years, including but are not limited to energy, waste, water, health, food, nature, transportation, and the built environment. The plans also set forth road maps with timelines for implementation. 600.11d

Environmental Protection Goal 601

The overarching goal for the Environmental Protection Element is to protect, restore, and enhance the natural and human-made environment in Washington, DC, taking steps to improve environmental quality and resilience, adapt to and mitigate climate change, prevent and reduce pollution, improve human health, increase access to clean and renewable energy, conserve the values and functions of Washington, DC's natural resources and ecosystems, and educate the public on ways to secure a sustainable future. 601.1

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Policies and Actions

E-1 Adapting to and Mitigating Climate Change 602

Climate change refers to long-term shifts in the climate, including global temperature, precipitation, and wind patterns. Washington, DC's climate is changing because the earth is heating. In urban areas, GHGs from human activities such as heating and cooling buildings and transportation are the most significant driver of observed climate change since the mid-20th century.[i] People have increased the amount of carbon dioxide in the air by 40 percent since the late 1700s. Other heat-trapping GHGs are also increasing. These gases have warmed Earth's surface and lower atmosphere by about one degree during the last 50 years. Evaporation increases as the atmosphere heats, which increases humidity, average rainfall, and the frequency of heavy rainstorms in many places—but contributes to drought in others. 602.1

The United Nations' Intergovernmental Panel on Climate Change (IPCC) stated that pledges made in Paris in 2015 by the world's governments to reduce GHGs will not be enough to keep global warming from rising nearly three degrees (°F) above pre-industrial temperatures. These global changes have serious consequences at the District level, as Washington, DC is already experiencing the impacts of human-made climate change. The region has warmed by more than two degrees (°F) in the last century. Hot days and heavy rainstorms and snowstorms are more frequent, and the tidal Potomac is rising about one inch every eight years due to rising sea levels and land subsidence. In the coming decades, climate change is likely to increase tidal flooding, cause more heavy precipitation events, and increase risks to human health and the built environment.[ii] The District will experience warmer average temperatures and two to three times as many dangerously hot days. 602.2

District government is approaching climate change on three tracks: mitigation locally, adaptation locally, and demonstrated leadership nationally and globally. Mitigation refers to reducing GHG emissions (carbon dioxide, methane, and nitrous oxide). Washington, DC is committed to becoming carbon-neutral and climate resilient by 2050. Progress toward this goal is measured by an annual inventory of the District's GHGs. From 2006 (when the District began tracking GHGs) through 2016, emissions have fallen by approximately 29 percent, on track to meet the interim goal of reducing emissions by 50 percent by 2032. 602.3

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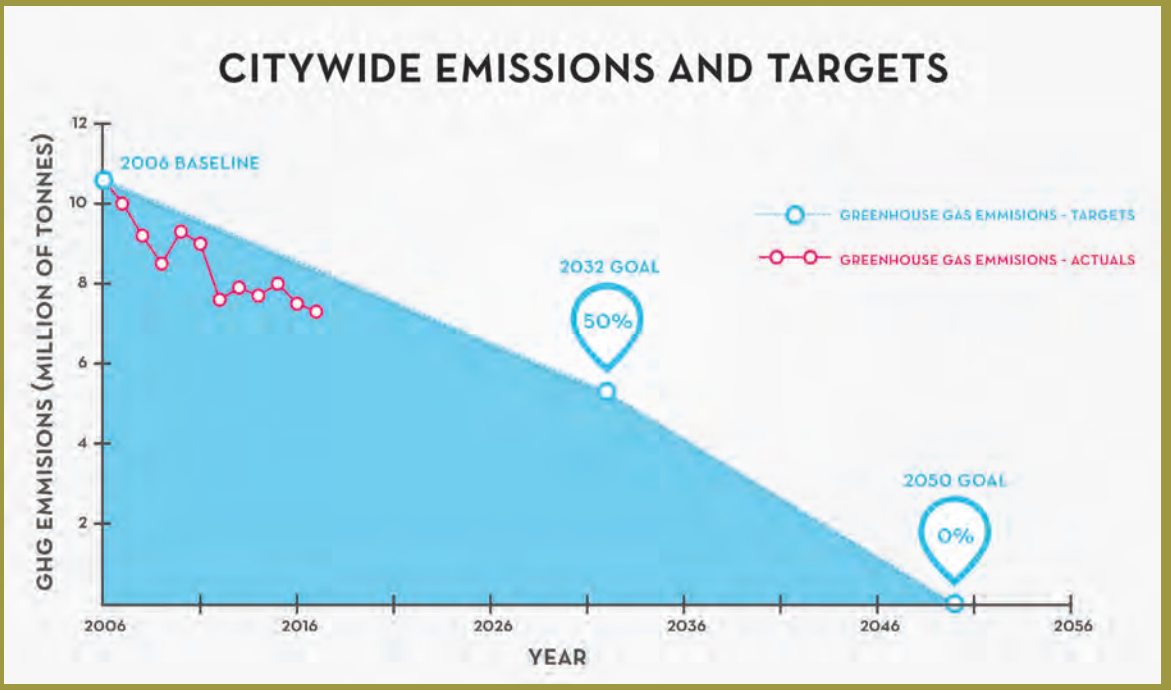
Figure 6.1:

District-wide Emissions and Targets 602.4

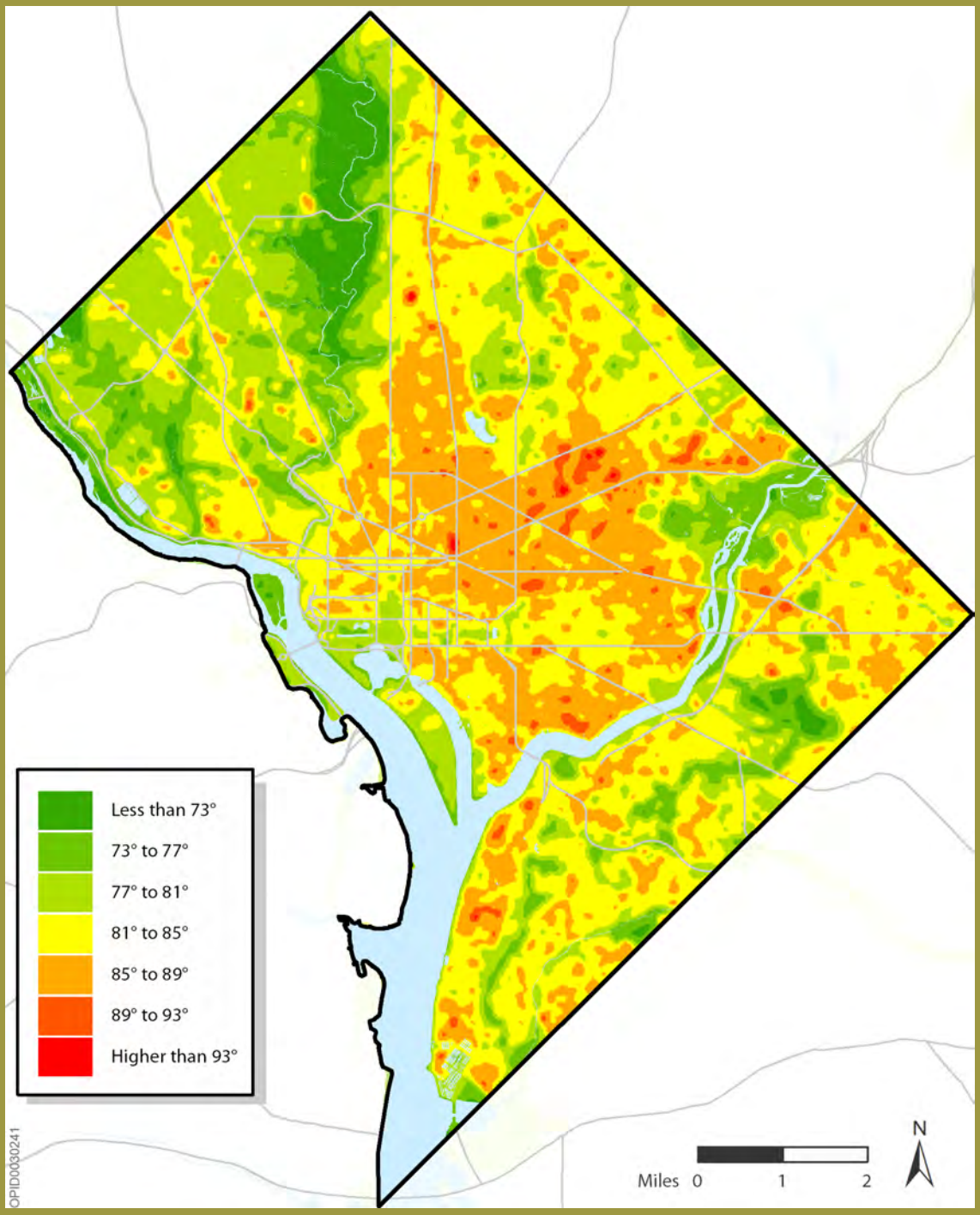


(Source: DOEE)

Adaptation means adjusting to the impacts of climate change and doing so in a way that supports wider efforts to make Washington, DC healthier and more livable. Washington, DC will prepare for potential shocks and stressors brought on by climate change through environmental and built environment approaches that provide multiple community benefits. These solutions include the conservation of the naturally protective features of environmental assets or ecosystem services, the expansion of GI, and the inclusion of non-structural land uses (e.g., parks) in hazardous, environmentally sensitive locations. It also means designing buildings to be more responsive to threats posed by flooding and urban heat. These

Map 6.1:

Average Land Surface Temperature 602.6



(Source: DOEE and the Environment July 2014-2018)

solutions should continue to be integrated with other community goals to improve quality of life through the promotion of environmental justice and sustainability, the preservation or restoration of natural resources, and the provision of additional trees, public parks, recreation areas, and open space. 602.5

E-1.1 Preparing for and Responding to Natural Hazards 603

In the coming decades, changing climate is likely to increase tidal flooding, cause more heavy rainstorms, and increase risks to human health. Portions of Washington, DC are within the Federal Emergency Management Agency (FEMA) designated 100-year flood plain and are subject to inundation during hurricanes and other severe storms, and as a result of sea level rise, some low-lying areas are subject to minor, recurrent flooding. Low-lying interior areas may experience more frequent and severe stormwater flooding events. It is important to use an equity lens to assess natural hazards and climate risks by race, income, and vulnerability to develop and implement strategies that result in equitable environmental outcomes. 603.1

Undeveloped floodplain areas can provide significant flood protection, allowing floods to pass through those areas while causing minimal harm. When development does occur in floodplain areas, floodplain regulations help ensure individuals living and doing business in those areas comply with safe building practices designed to prevent injury, loss of life, and property damage from flooding. Washington, DC's current floodplain regulations apply only to the FEMA-designated 100-year floodplain. 603.2

However, communities across the country are experiencing floods that reach beyond the extents of the 100-year floodplain with increasing regularity. What is now considered a 100-year rainfall event will become considerably more common in the years to come, and interior flooding events from significant storms may increase Given these trends, expanding the regulated floodplain areas in Washington, DC beyond the 100-year floodplain will be an important step in ensuring Washington, DC is resilient to increased flood risk. Additional flood adaptation measures include integrating new natural shorelines and buffers, reducing erosion, replacing undersized culverts, and keeping streambeds free of debris. 603.3

Furthermore, increasing urbanization that replaces vegetated space with concrete and pavement can result in heat islands, or spaces that reach higher temperatures and retain heat longer than the surrounding areas and can reduce local health quality and negatively impact air quality. 603.4

Policy E-1.1.1: Resilience to Climate Change as a Civic Priority

Advance the District's resilience to climate change as a major civic priority, to be supported through improved mitigation, adaptation, and human preparedness. 603.5

Policy E-1.1.2: Urban Heat Island Mitigation

Wherever possible, reduce the urban heat island effect with cool and green roofs, expanded green space, cool pavement, tree planting, and tree protection efforts, prioritizing hotspots and those areas with the greatest number of heat-vulnerable residents. Incorporate heat island mitigation into planning for GI, tree canopy, parks, and public space initiatives. 603.6

See Map 6.1 for Average Land Surface Temperature July 2014-2018.

Policy E-1.1.3: Natural Assets and Ecosystems for Hazard Mitigation

Expand and leverage the ability of natural landscape features, such as vegetated land cover and wetlands, and the beneficial ecosystem services they provide to mitigate natural hazards. This includes supporting and encouraging design and construction choices that conserve, restore, and enhance the protective functionality of natural assets to absorb, reduce, or resist the potentially damaging effects of wind, water, and other hazard forces. Such approaches, including natural shorelines, should be incorporated into all waterfront development projects, where possible. 603.7

Policy E-1.1.4: Non-Structural Land Uses

Incorporate non-structural uses within designated special flood hazard areas to help protect and enhance the natural and beneficial functions of floodplains, wetlands, and other undeveloped landscape features. These uses include but are not limited to parks, recreation areas, and permanently protected open spaces. 603.8

Policy E-1.1.5: Resilient Infrastructure

Design infrastructure, such as roads and parks, to withstand future climate impacts, and increase Washington, DC's' resilience by having roads and parks serve multiple purposes where possible, including flood risk reduction, urban heat island mitigation, and stormwater management. 603.9

See the Infrastructure Element for more information on resilient infrastructure.

Policy E-1.1.6: Floodplains, Waterfronts, and Other Low-Lying Areas

Consistent with the Federal Elements of the Comprehensive Plan, prohibit activities within floodplains, waterfronts, and other low-lying areas that could pose public health or safety hazards in the event of a flood. Regulation of land uses in floodplains, waterfronts, and other low-lying areas should consider the long-term effects of climate change—including sea level rise, increasingly heavy rain events, and more severe coastal storms—on flood hazards. 603.10

Flood Elevations

In new or substantially renovated buildings, design flood elevation is the minimum height at which residential units may be constructed and utilities like the boiler, the water heater, and electrical equipment may be located. It also sets the minimum height for dry or wet flood-proofing measures for buildings generally. The margin between this and the base flood elevation is called *freeboard*. 600.16a

Action E-1.1.A: Update Regulations for Resilience

Continue to monitor and update Washington, DC's regulations to promote flood risk reduction, heat island mitigation, stormwater management, renewable energy, and energy resilience, among other practices, where appropriate. 603.11

Action E-1.1.B: Development in Floodplains

Evaluate expanding restrictions and/or require adaptive design for development in areas that will be at increased risk of flooding due to climate change. Analyses should weigh the requirement to account for climate risks with the needs of a growing District. 603.12

Action E-1.1.C: Waterfront Setbacks

Ensure that waterfront setbacks and buffers account for future sea level rise, changes in precipitation patterns, and greater use of nature-based and adaptive flood defenses. 603.13

Action E-1.1.D: Covenant for Climate and Energy

Implement policies recommended by Clean Energy DC and Climate Ready DC to achieve Washington, DC's goal of reducing GHG emissions by 50 percent below 2006 levels by 2032, and achieving carbon neutrality by 2050 while preparing for the impacts of climate change. Maintain compliance with the Global Covenant of Mayors for Climate & Energy, signed by Washington, DC in 2015, which commits Washington, DC to measure and reduce GHG emissions and address climate risks. 603.14

Action E-1.1.E: Update Floodplain Regulations

Update flood hazard rules to reflect the increased risk of flooding due to climate-related sea level rise, increasingly frequent and severe precipitation events, and coastal storms. 603.15

Action E-1.1.F: Comprehensive and Integrated Flood Modeling

Develop, and regularly update, Washington, DC's floodplain models, maps, and other tools to account for climate change, including projections for increased precipitation and sea level rise, to ensure any future building in the floodplain is done sustainably. Integrate existing, and develop new, floodplain models to better understand the interplay between coastal, riverine, and interior flooding and potential climate impacts. Consider revising the regulatory flood hazard areas for Washington, DC's Flood Hazard Rules. 603.16

Action E-1.1.G: Design Guidelines for Resilience

Develop guidelines for new development and substantial land improvements that consider the threat of naturally occurring stressors and hazards (e.g., flooding, extreme heat, and wind), determine potential impacts to assets over the expected life cycle of the asset, and identify cost-effective risk-reduction options. Use updated and integrated flood risk models to determine potential

flood extents and depths for riparian, coastal, and interior flood events and to inform design flood elevations for a development in flood hazard areas. 603.17

Action E-1.1.H: Update Climate Vulnerability and Risk Assessment

Update the vulnerability and risk assessment completed for Climate Ready DC as new data on potential climate impacts becomes available. Regularly assess the vulnerability of infrastructure, critical facilities (including hospitals and emergency shelters), vulnerable populations, and large developments to climate-related hazards. 603.18

Action-1.1.I: Resiliency Evaluation

Review projects including Washington, DC capital projects and large-scale developments, for potential climate risks and adaptation strategies. 603.19

Action:-1.1.J: Resiliency Incentives

Expand existing incentives and regulations to include thermal safety and urban heat island mitigation measures, such as green and cool roofs, solar shading, shade trees, alternatives to concrete, and other innovative building design strategies. 603.20

Action:-1.1.K: Interagency Temperature Management Strategy

Develop an interagency heat management strategy to minimize the adverse health impacts associated with extreme cold and heat temperature days. The District government will work to ensure that residents can prepare for these events by more broadly communicating extreme heat and cold response plans that clearly define specific roles and responsibilities of government and nongovernmental organizations before and during these events. Plans should identify local populations at high risk for extreme temperature-related illness and death, and determine the strategies that will be used to support such individuals during emergencies, particularly in underserved communities. Furthermore, explore strategies, including the use of technology, to help build communities' adaptive capacity before, during, and after extreme temperature days. 603.21

E-2 Conserving Natural and Green Areas 604

Washington, DC's natural landscape is characterized by two tidal rivers; a complex network of parkland, streams, and valleys; and undulating hills and terraces. This landscape provides ecological diversity, ranging from mixed oak and tulip poplar forests to magnolia bogs and wetlands. 604.1

Washington, DC provides valuable habitats for all types of wildlife, from tiny crustaceans to the bald eagle. Through careful planning and development that respects and preserves natural resources, Washington, DC continues to make strides in wildlife conservation and habitat restoration. To conserve threatened species and keep habitats healthy, Washington, DC developed the District of

Columbia Wildlife Action Plan in 2006 (with a comprehensive update in 2015) as a blueprint for wildlife conservation. Additionally, the Fisheries and Wildlife Omnibus Amendment Act of 2016 designated critical areas, or areas containing species of local importance, for conservation: critical aquifer recharge areas, fish and wildlife habitat conservation areas, frequently flooded areas, and wetlands. 604.2

GI refers to the interconnected network of land and water that supports plant and animal life, maintains natural ecology, and contributes to the health and quality of life in communities. 604.3

E-2.1 Conserving and Expanding Washington, DC's Urban Forests 605

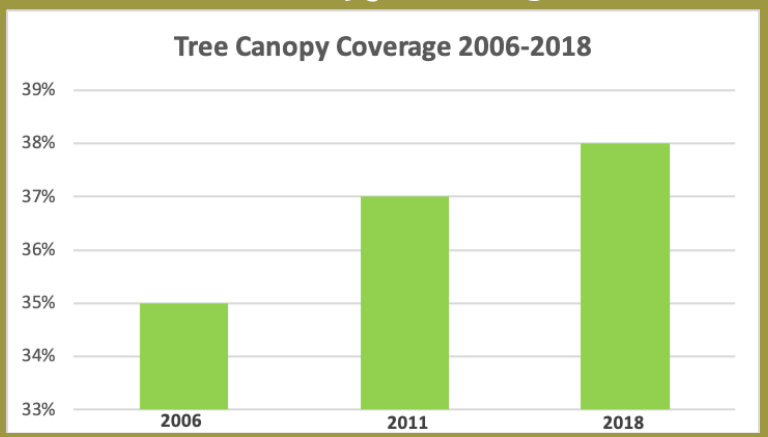
The benefits of a healthy urban forests, are well documented. Street trees, trees in parks and natural areas, and trees on private lands add beauty, improve mental health, provide shade, reduce water pollution, absorb noise, produce oxygen, absorb GHGs, and provide habitat for birds and small animals. They also add economic value to neighborhoods and contribute to community identity and pride. Trees also play an increasingly important role in helping Washington, DC adapt to a changing climate that will bring hotter temperatures and more heavy rain events. 605.1

Trees currently cover about 38 percent of Washington, DC's land area (see Figure 6.2). However, there are significant geographic disparities in tree cover, ranging from 60 percent of the land area in Ward 3 to 23 percent in Ward 1. Public awareness of the importance of trees has sparked tree planting and re-greening activities across Washington, DC. 605.2

Tree cover in Washington, DC as of 2016 is shown in Map 6.2 605.3

Figure 6.2:

District Tree Canopy Coverage 605.4



(Source: Sustainable DC)

Policy E-2.1.1: Trees in the Public Lands

Plant and maintain trees in the public lands in all parts of Washington, DC, particularly in areas with low canopy cover and areas in greater need of trees, such as those with high urban heat island effects, at high risk for flooding, or with high particulate matter levels. 605.5

Policy E-2.1.2: Tree Requirements in New Development

Use planning, zoning, and building regulations to promote tree retention and planting, as well as the removal and replacement of dying trees when new development occurs. Tree planting and landscaping required as a condition of permit approval should include provisions for ongoing maintenance. 605.6

Policy E-2.1.3: Sustainable Landscaping Practices

Encourage the use of sustainable landscaping practices to beautify the District, enhance streets and public spaces, reduce stormwater runoff, and create a stronger sense of character and identity. District government, private developers, and community institutions should coordinate to significantly increase the use of these practices, including planting and maintaining mostly native trees and other plants on District-owned land outside the right-of-ways in schools, parks, and housing authority lands. 605.7

Policy E-2.1.4: Engaging the Community

Promote partnerships between Washington, DC, community groups, and nonprofit advocacy groups to undertake tree surveys and planting campaigns, volunteer training and education, and resident stewardship of Washington, DC's urban forest. Leverage the Urban Forestry Advisory Council's (UFAC) diverse membership of District and federal government agencies, nonprofit partners, public utilities, and community members to promote existing policies and develop new initiatives to expand Washington, DC's urban tree canopy. Support public-private partnerships that fund tree planting efforts on both public and private land, which can vary in scale from small parcel-level projects to large open spaces. 605.8

Policy E-2.1.5: Tree Planting on Private Lands

Encourage tree planting on private lands through incentive programs and outreach and education. Methods should include using GI, native plantings, pollinator gardens, and other habitat as a community benefit in planned unit developments and forming voluntary partnerships with major institutions such as universities, embassies, and hospitals. 605.9

Policy E-2.1.6: Urban Tree Canopy Goals

Determine the extent of Washington, DC's tree canopy at a sufficient level of detail to establish tree canopy goals for neighborhoods across the District. Continue working toward a District-wide goal of 40 percent tree canopy cover by 2032. Encourage tree plantings in neighborhoods with lower

The DC Tree Bill

The Urban Forest Preservation Act of 2002, better known as the Tree Bill, established a tree preservation program, strengthened the community notice requirements for tree removal on public land, and revised the penalties for injuring trees on public space and private property. The Tree Bill was approved in December 2002 and requires an annual program for tree planting and care, preparation of a tree master plan, and the development of maintenance standards for trees on public space.605.15a

The Tree Canopy Protection Amendment Act of 2016 was enacted to build upon the previous Tree Bill and increase Washington, DC's tree canopy. By reducing the circumference of special trees from 55 inches to 44 inches, and creating a designation of heritage trees—which are over 100 inches in circumference and cannot be cut down unless deemed hazardous by a Washington, DC arborist—the older tree canopy is better protected. The bill also assesses permits for removal of special trees and fines for damage to, and illicit removal of, special and heritage trees. 605.15b

canopy levels. Components of this program should include the removal of dead and dying trees and their replacement with suitable species, and the pruning and maintenance of trees to eliminate hazards and increase their rate of survival. 605.10

Action E-2.1.A: Tree Replacement Program

Continue working toward a goal of planting 10,500 trees on public and private open space each year. 605.11

Action E-2.1.B: Street Tree Standards

Continue to formalize the planting, pruning, removal, and construction guidelines in use by the District's Urban Forestry Division. These standards provide further direction for tree selection based on such factors as traffic volumes, street width, shade and sunlight conditions, soil conditions, disease and drought resistance, and the space available for tree wells. They also include provisions to increase the size of tree boxes to improve tree health and longevity, and standards for soils and planting, as well improve upon existing tree boxes through impervious surface removal, increasing soil volumes, undergrounding power lines, and installing bio-retention tree boxes. 605.12

Action E-2.1.C: Tree Inventories

Continue partnership agreements with the federal government, Casey Trees, and other groups to maintain the live, publicly available database and management system for Washington, DC's trees using Geographic Information System (GIS) mapping. Efforts should be made to inventory trees on all District lands outside the right-of-ways, as well as along its streets. 605.13

Action E-2.1.D: Operating Procedures for Utility and Roadwork

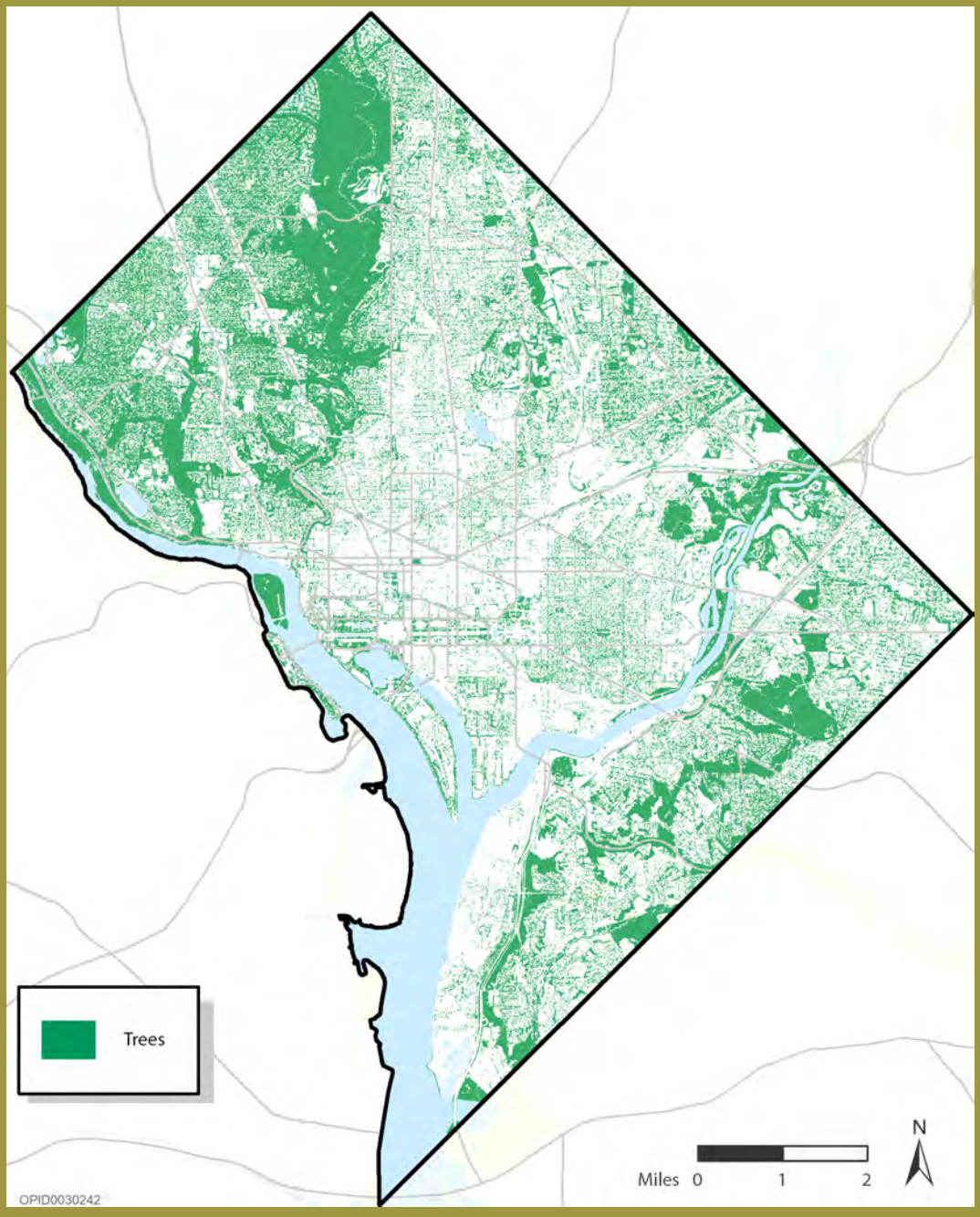
Develop standard operating procedures to minimize tree damage by public utility and road crews. All activities that involve invasive work around street trees should be reviewed by Urban Forestry Administration personnel. Promote the expansion of the urban tree canopy, while planting the right tree in the right place in consideration with overhead utility lines. 605.14

Action E-2.1.E: Urban Forest Management

Consistent with Washington, DC's 2002 and 2016 Tree Bills, continue to protect, maintain, and restore trees and native woodlands across Washington, DC. Use the Mayor's UFAC and new and existing District agency partnerships to coordinate urban forest management activities on all public lands managed by the District (e.g., street trees, parks, public school grounds). These partnerships and initiatives should also promote coordination with federal agencies and other large landowners and include comprehensive strategies to manage insects and diseases. 605.15

Map 6.2:

Existing Tree Cover in Washington, DC and Surrounding Region 605.16



(Source: OP, 2018)

Anacostia River Restoration

A clean river is the foundation for the Anacostia River revitalization and makes all other objectives and investments in the waterfront possible. Once dubbed the District's forgotten river because of heavy pollution, lack of accessibility, and neglect of its banks, the Anacostia River is on its way to becoming fully fishable and swimmable. While photos from a decade ago show a river covered in floating trash, today the Anacostia River is experiencing an environmental rebirth characterized by improved water quality, wildlife repopulation, and more accessible natural shorelines. To transform the Anacostia River into a fishable and swimmable river, in 2014 Washington, DC launched a long-term project to address contaminated sediments called A Cleaner Anacostia River. This project is the most comprehensive approach to restoration in the river's history, and Washington, DC allocated $45 million to support clean up efforts. 606.3a

Improved Water Quality

The restoration of five streams (Pope Branch, Watts Branch, Nash Run, Alger Park, and Springhouse Run) that flow into the Anacostia has diminished sediment, sewage, and trash that pollute the river's waters. Legal requirements paved the way for the local water and sewer utility, DC Water, to initiate the biggest infrastructure project in Washington, DC since the building of the Metrorail system: the DC Clean Rivers Project, a $2.7 billion sewer tunnel system and greening program to decrease the amount of untreated sewage spills into the river by 98 percent. The greening program includes strategies to promote rainwater detention and infiltration into the soil and techniques such as rain gardens, porous pavements, green roofs, and other technologies within targeted sewersheds. 606.3b

In addition to the ongoing remediation of several polluted sites, including at Kenilworth and Boathouse Row, A Cleaner Anacostia River will lead to an enforceable clean up strategy for the riverbed itself. The redevelopment of old and highly polluting industrial areas on the riverfront has stemmed industrial runoff. Washington, DC and its partners have also worked to reduce trash pollution in the river through trash traps installed on various tributaries, anti-littering education, illegal dumping enforcement programs, and volunteer clean up events, preventing millions of pounds of trash from entering the Anacostia River each year. Washington, DC's stormwater regulations and incentive programs (e.g., the RiverSmart programs and Stormwater Retention Credit Price Lock Program) are driving the installation of GI across the District to reduce pollution and erosion from stormwater runoff. 606.3c

E-2.2 Conservation of Rivers, Wetlands, and Riparian Areas 606

Washington, DC is situated at the confluence of two great rivers: the Anacostia and the Potomac. Both rivers have been altered over the centuries to accommodate development, highways, railroads, airports, military bases, parkland, federal monuments, and other vestiges of life in the nation's capital. Throughout the 20th century, the Potomac fared better than the Anacostia in this regard—much of its shoreline is publicly accessible and has been conserved as parkland. For years, the Anacostia suffered the fate of being Washington, DC's lesser known and less maintained river. As its natural beauty yielded to industry, its waters became polluted and the river became a divide that separated lower-income, predominantly Black neighborhoods from the rest of the District. 606.1

In the first years of the 21st century, a major initiative, the Anacostia Waterfront Initiative (AWI), was launched to restore the Anacostia River. While the initiative is perhaps best known for its efforts to reclaim the shoreline for recreation and bring new life to underused sites, its programs to improve the natural environment are equally important. A range of environmental initiatives is now being implemented to restore wetlands (land consisting of marshes or swamps) and estuarine habitat (partially enclosed bodies of brackish water), improve water quality, and increase environmental education about the river. Today, the turnaround of the Anacostia waterfront is a national model for

urban rivers in terms of environmental restoration, public access, economic development, and inclusive growth. 606.2

Foremost among the recent initiatives is the Clean Rivers Project, DC Water's ongoing program to reduce combined sewer overflows into Washington, DC's waterways: the Anacostia and Potomac rivers and Rock Creek. The project is a massive infrastructure and support program designed to capture and clean wastewater during rainfalls before it ever reaches the rivers. 606.3

Since 2012, Washington, DC has restored over two miles of streams, including Pope Branch, Nash Run, Alger Park, Springhouse Run, Linnean Park, and Broad Branch. Sustainable DC 2.0 calls for additional stream restoration efforts, toward a goal of 10 total miles. Stream restoration employs a set of techniques to help improve the environmental health of a stream, ranging from simply removing a disturbance that inhibits natural stream function, to stabilizing stream banks or installing stormwater management facilities such as wetlands. 606.4

When completed, these initiatives will greatly reduce sewage overflows and pollutant discharges, reduce stream bank erosion, improve water quality, slow down stormwater flows, uncover long-buried tributary streams, and bring native plant and animal species back to the river. It will also improve access to once-polluted, now restored natural resources to adjoining communities. Improving the health of the Anacostia River will help achieve broader national goals for a healthier Chesapeake Bay. Map 6.3 indicates the location of rivers and streams in Washington, DC. 606.5

See the Infrastructure Element for more information about the Clean Rivers Project and other initiatives.

Policy E-2.2.1: River Conservation

Improve environmental conditions along the Anacostia and Potomac rivers and other water bodies, including shorelines, wetlands, islands, tributaries, and the rivers themselves. Particular attention should be given to eliminating toxic sediments, improving river edges to restore vegetation and reduce erosion, enhancing wetlands and wildlife habitats, creating new wetlands, and reducing litter. Particular focus on the Anacostia is important to address its history of neglect and pollution and to improve conditions for adjoining neighborhoods. 606.6

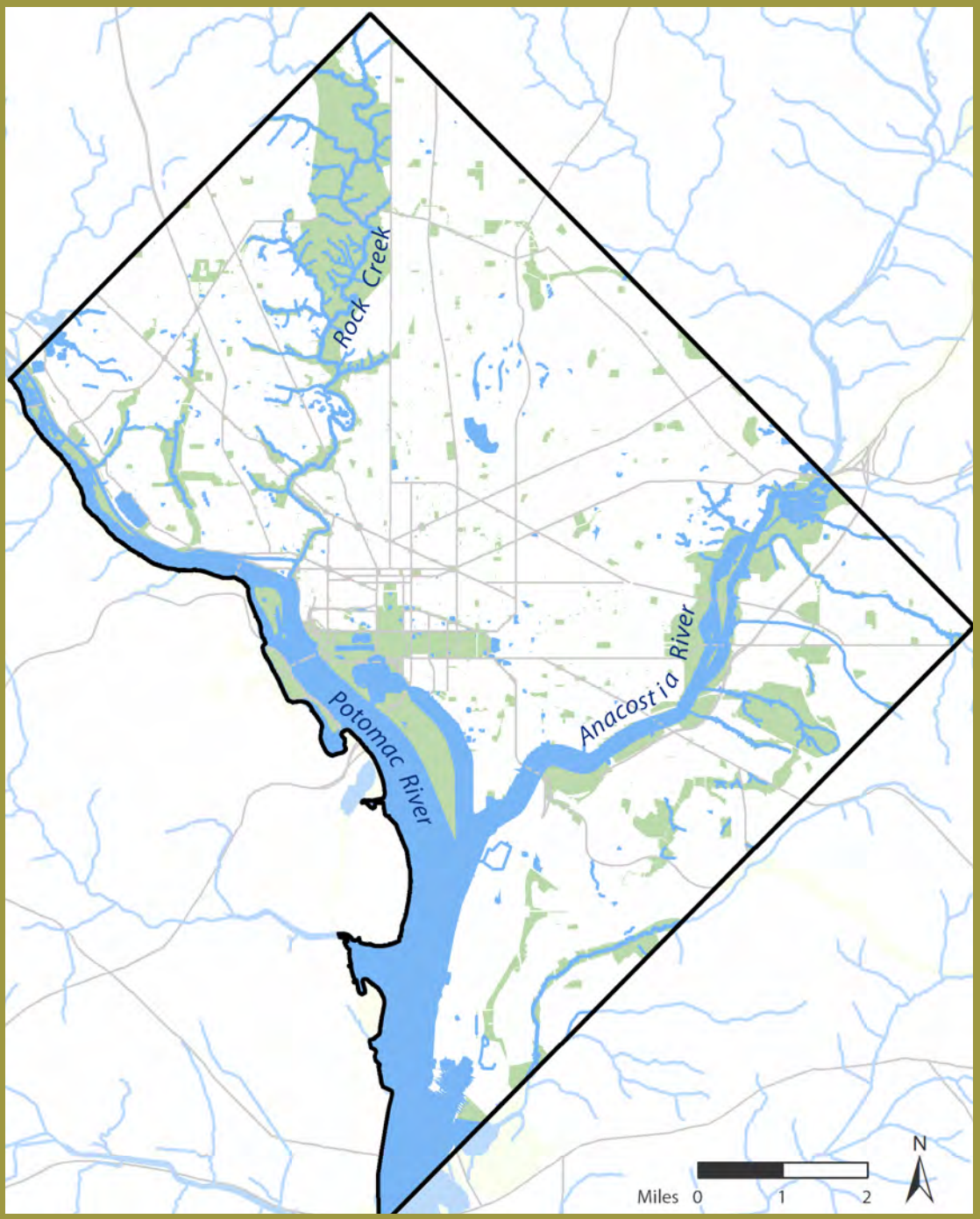
Policy E-2.2.2: Waterfront Habitat Restoration

Undertake a range of environmental initiatives along the Anacostia and Potomac rivers to eliminate combined sewer overflows, reduce urban stormwater runoff, restore wetlands and tributary streams, install natural shorelines when possible, increase oxygen levels in the water, remediate toxins in the riverbed, remove seawalls when possible, clean and redevelop contaminated brownfield sites, and enhance natural habitat. 606.7

6

Map 6.3:

Waterways in Washington, DC 606.9



(Source: DOEE and DC GIS, 2018)

Policy E-2.2.3: Retention of Environmentally Sensitive Areas as Open Space

Retain environmentally fragile areas such as wetlands and riparian areas along the Anacostia and Potomac rivers as critical areas. In areas under federal jurisdiction, such as Rock Creek Park and some portions of the Anacostia waterfront, work with NPS to conserve and carefully manage such areas, and to implement an effective no-net-loss policy. 606.8

Policy E-2.2.4: Identification, Protection, and Restoration of Wetlands

Identify and protect wetlands and riparian habitat on private and public land. Require official surveys when development is proposed in areas where wetlands are believed to be present to ensure that wetlands are preserved. Implement the Wetland Conservation Plan to achieve the objective of no net loss and eventual net gain of wetlands. Work collaboratively with stakeholders to undertake wetlands restoration, enhancement, and creation projects on public and private lands to mitigate the impacts of stormwater runoff, sea level rise, and storm events, and to improve habitats. 606.10

Policy E-2.2.5: Wetland Buffers

Maintain natural buffers around existing and restored wetlands to reduce the likelihood of environmental degradation from runoff and human activities. 606.11

Action E-2.2.A: Potomac and Anacostia River Habitat Improvements

Work collaboratively with federal agencies, upstream jurisdictions, and environmental advocacy groups to implement conservation measures for Washington, DC's waterways by:

- Restoring tidal wetlands while maintaining access along the Anacostia River and infilled areas that were historically tidal wetlands, consistent with the 2015 District of Columbia Wildlife Action Plan;
- Installing stormwater management best practices upland of tributary streams;
- Creating new stormwater wetlands along tributary streams;
- Restoring degraded streams in Washington, DC and, where possible, daylighting streams by removing them from pipes to let them flow uncovered;
- Removing bulkheads and seawalls and replacing them with natural shoreline and fringe wetlands, where possible, to provide protection from flooding and erosion;
- Restoring degraded gullies downstream of stormwater outfalls;
- Preventing litter and trash from entering waterways and removing it when it is present;
- Encouraging natural buffers compatible with the recommendations of the AWI Framework Plan; and

- Preventing the net loss of parkland and improving access to the waterfront and river trails. 606.12

Action E-2.2.B: Wetland Setback Standards

Establish clear regulations to conserve and preserve wetlands, streams, and their buffers during development and ensure compliance with these regulations during plan review, permitting, and inspections. 606.13

Action E-2.2.C: Wetland Planting and Maintenance

Plant and maintain wetlands to achieve the objective of no net loss and eventual net gain of wetlands. Focus efforts in areas of the District that offer the best opportunity and potential for conservation, as identified in Washington, DC's 2015 Wildlife Action Plan. 606.14

Action E-2.2.D: Anacostia River Sedimentation Project

Develop and implement an Anacostia River remediation work plan that restores fish and wildlife habitats while improving public access to the river. 606.15

See the Water Quality section of this element for additional recommendations for the Anacostia River watershed.

E-2.3 Conserving Soil and Reducing Erosion 607

Soils in Washington, DC affect the suitability of land for buildings, roads and infrastructure, community gardening, and tree planting. Even in a built-out city like Washington, DC, soil and underlying geologic characteristics must be considered when designing foundations, basements, and other structures. Good soil management also involves the control of erosion resulting from natural forces like rain and wind. Erosion can undermine foundations, destabilize hillsides, and lead to sedimentation of streams. Measures to reduce erosion are particularly important during construction, when soil is disturbed and exposed to the elements. 607.1

Policy E-2.3.1: Preventing Erosion

Public and private construction activities should not result in soil erosion or the creation of unstable soil conditions. Support the use of retaining walls and other best management practices on new and existing properties that reduce erosion hazards. Erosion requirements should be implemented through building permit and plan reviews and enforced through the permitting and regulatory processes. 607.2

Policy E-2.3.2: Grading and Vegetation Removal

Encourage the retention of natural vegetation and topography on new development sites. Prevent or require mitigation of construction practices that result in unstable soil and hillside conditions. Grading of hillside sites should be minimized, and graded slopes should be quickly revegetated for stabilization. 607.3

Policy E-2.3.3: Reducing Sedimentation

Prevent sedimentation of rivers and streams by implementing comprehensive stormwater management measures, including regular maintenance of storm drains and catch basins and the use of sedimentation ponds where appropriate. 607.4

Policy E-2.3.4: Restoring Eroded Areas

Abate soil erosion problems in developed areas, particularly where erosion has resulted from poor site design, aging streets and alleys, or deferred maintenance. 607.5

Along some stream valleys illegal dumping remains a problem. In some places the streams themselves have been buried or diverted into stormwater culverts.

E-2.4 Preserving Steep Slopes and Stream Valleys 608

Wooded hillsides and stream valleys provide beauty and visual relief in Washington, DC, particularly in Upper Northwest and in neighborhoods in Wards 7 and 8. Many of Washington, DC's stream valleys have been preserved by NPS, protecting local waterways and providing corridors for wildlife and recreation. But preservation alone has not fully safeguarded these areas. Development and tree removal on private properties can reduce their natural, unspoiled character and cause erosion and water quality problems. Along some stream valleys, illegal dumping remains a problem. In some places, the streams themselves have been buried or diverted into stormwater culverts; streams have been restored to their natural condition at Alger Park, Springhouse Run, and Watts Branch. 608.1

A similar set of challenges is present on steep slopes, generally defined as slopes with a grade of 25 percent or more. As Map 6.4 indicates, such slopes are concentrated in protected areas like Rock Creek Park and the Potomac Palisades. But they are also present in neighborhoods like Forest Hills and Woodland-Normanstone, and on large sites like the St. Elizabeths Campus. 608.2

Policy E-2.4.1: Conservation of Steep Slopes

Strongly discourage development on steep slopes (i.e., greater than 25 percent or with highly erodible soil), such as those found along stream valleys in Upper Northwest and Southeast DC. Planning and building regulations should require that any construction on such slopes is sensitively designed and includes slope stabilization measures. 608.3

Policy E-2.4.2: Management of Uplands Along Stream Valleys

Protect stream valley parks by limiting construction, requiring sensitive design, and retaining vegetation on adjacent upland properties. Development of land draining to stream valleys shall be managed as needed to protect flora, fauna, and water quality; prevent erosion and siltation of streams; minimize intrusion of views from the parks; and retain a natural gradient green buffer between the built environment and these natural areas. 608.4

Policy E-2.4.3: Open Space Protection Along Stream Valleys

Preserve publicly-owned land adjacent to streams, ravines, and contiguous tracts of habitat as densely vegetated open space. Natural drainage channels and buffer zones in these areas should be protected from the adverse effects of nearby urban uses. 608.5

Policy E-2.4.4: Channelization of Streams

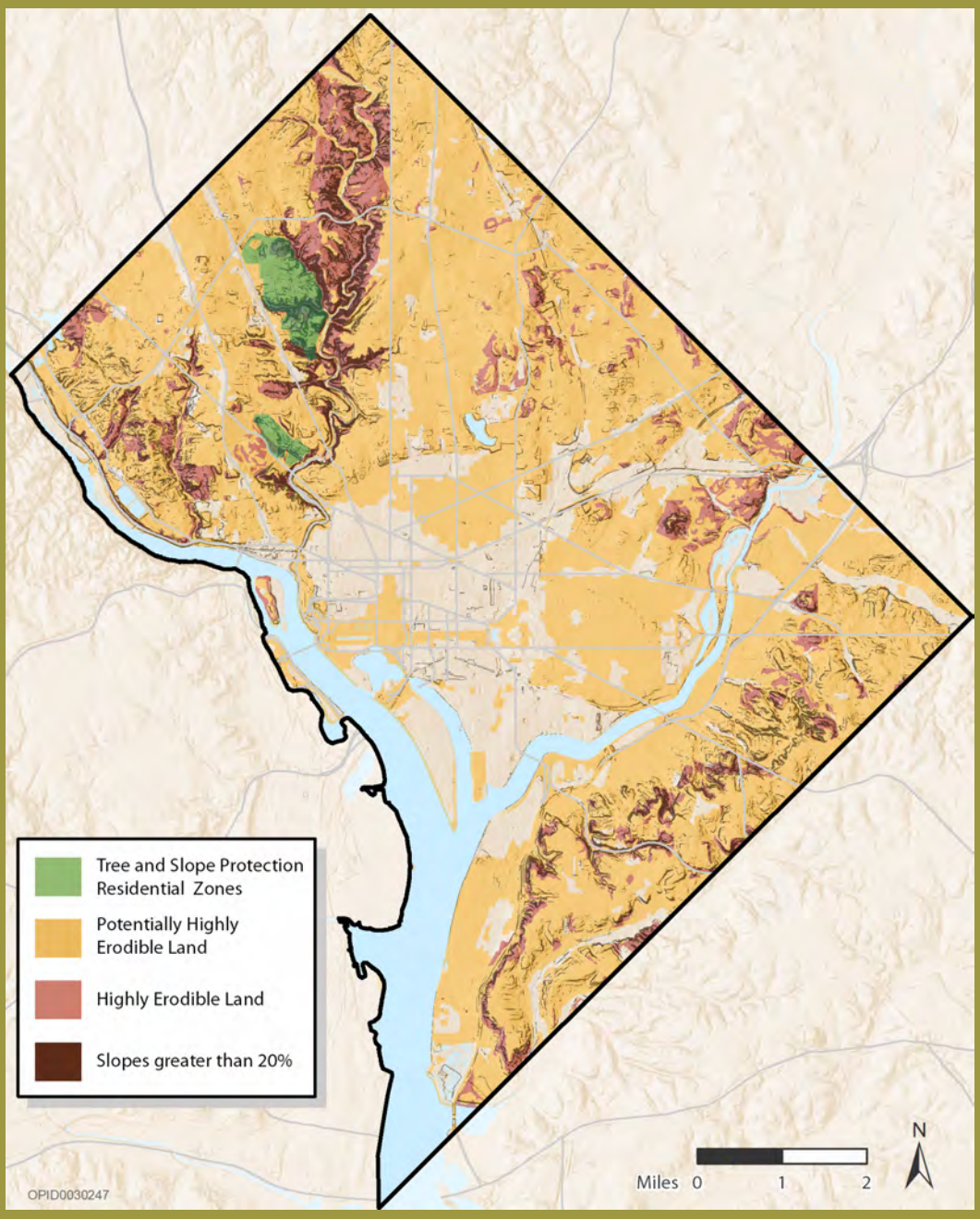
Retain streams and ravines in their natural condition rather than constructing human-made channels. Where possible, restore channelized streams to more natural conditions. Where alteration is necessary, encourage design solutions that retain or re-create natural ecological values. 608.6

Action E-2.4.A: Expand Tree and Slope Protection

Work with neighborhood and community groups, homeowners and other landowners, and Advisory Neighborhood Commissions (ANCs) to identify additional areas to which the Tree and Slope Protection (TSP) should be extended. Such areas should generally abut streams or public open spaces and should have steep slopes, significant natural tree cover, and some potential for future development. Particular attention should be given to extending the TSP to lands in Wards 7 and 8. 608.7

Map 6.4:

TSP Areas, Steep Slopes, and Areas with Erodible Soils 608.8



(Source: OP, 2018)

Action E-2.4.B: Hillside Conservation Easements

Explore land trusts, conservation easements, and other tools for preserving steep slopes and hillside areas. 608.9

E-2.5 Sustaining Wildlife 609

At the time of initial European settlement, Washington, DC was home to species as diverse as buffalo, bear, sturgeon, cranes, rattlesnakes, wolves, and bobcats. While these animals were killed off or driven from the local landscape decades ago, Washington, DC continues to provide habitat for hundreds of species of birds, mammals, amphibians, reptiles, fish, and invertebrates. Raccoon, red foxes, rabbits, white-tailed deer, cardinals, and mockingbirds have adapted to human activities and are not uncommon. Much of Washington, DC's biodiversity can be attributed to undeveloped natural areas along Rock Creek, the two rivers, and the Civil War defenses of Washington, also known as the Fort Circle Parks. The District's parks, street trees, institutional lands, and backyards are important to sustaining wildlife diversity. Many commercial and residential neighborhoods, as well as the Potomac and Anacostia rivers, are located adjacent to permanently protected natural areas. The close proximity between developed areas and undeveloped habitats creates a dynamic between wildlife and habitat conservation and human activity. 609.1

District government is committed to protecting Washington, DC's natural areas while also providing all residents with convenient access to nature and green places. Pursuant to federal law, DOEE's Fisheries and Wildlife Division prepared a Wildlife Action Plan in 2005, with a comprehensive update in 2015. The plan—which was prepared in partnership with public and local wildlife agencies and organizations to identify priority actions for conserving wildlife and wildlife habitats over the next 10 years—lists the animal wildlife in the District with the greatest conservation needs and describes specific terrestrial and aquatic threats. As an urban area, Washington, DC bears a high degree of responsibility for conserving urban species. 609.2

In 2016, Washington, DC adopted the Fisheries and Wildlife Omnibus Amendment Act to help protect critical wildlife habitats and better manage invasive species. The District's State Wildlife Action Plan, last updated in 2015, is a comprehensive, 10-year road map for sustaining, conserving, and preserving Washington, DC's wildlife and habitats. 609.3

Policy E-2.5.1: Habitat Restoration

Encourage interagency efforts to restore native habitat in Washington, DC's rivers, streams, forests, meadows, wetlands, parklands, and developed lands, and encourage public-private partnerships and partnerships with nongovernmental organizations to re-create native habitats within the

District. Where appropriate, designate critical areas for protection within Washington, DC. 609.4

Policy E-2.5.2: Protected Species

As required by the federal Endangered Species Act of 1973, protect endangered, threatened, and other special status species from the adverse effects of human activities. 609.5

Policy E-2.5.3: Habitat Management on Private Land

Encourage environmentally sound landscaping and gardening techniques by District homeowners and institutional landowners, and on federal lands to maximize the habitat value of privately owned and federal land. Such techniques should include reduction of herbicide and pesticide use; the selection of disease-resistant, drought-resistant, and native species; the removal of invasive plants; the use of rain gardens to reduce runoff; and landscaping that provides food and cover for wildlife. 609.6

Policy E-2.5.4: Conserve Critical Areas

Preserve, conserve, or enhance the environmental function and value of critical areas—including areas containing species of local importance, critical aquifer recharge areas, fish and wildlife habitat conservation areas, frequently flooded areas, and wetlands—while balancing the needs of a growing District. 609.7

Policy E-2.5.5: Manage Invasive Species

Support approaches that limit the spread of invasive plants, animals, and other organisms that threaten wildlife and wildlife habitats. 609.8

Policy E-2.5.6 Ecosystem Services and Nature-Based Design

Support and encourage ecosystem services and nature-based design related to air and water quality, noise reduction, flood risk reduction, native habitat re-creation, and food supply, among others. 609.9

Policy E-2.5.7: Meadow Habitats

Create meadow habitats by converting large, contiguous mowed areas to native meadows and/or shrub habitats where feasible. Reduce mowed grassy areas in road and highway rights-of-way and on District-owned property by converting those areas to meadows with native plants and small trees. The design of these areas should balance habitat enhancement with public safety, including vehicle and pedestrian sightlines. 609.10

Action E-2.5.A: Implementation of the Wildlife Action Plan

Implement the 2015 Wildlife Management Plan, including programs to increase meadow habitats in the District, restore tidal wetlands, propagate native plants, and create vernal pools, artificial nesting structures, wildlife crossings and corridors, and resident science projects. 609.11

Ecosystem Services and Nature-Based Design

Ecosystem services are the benefits that humans freely gain from the natural environment and from properly functioning ecosystems. Such ecosystems include agroecosystems, forest ecosystems, grassland ecosystems, and aquatic ecosystems. Collectively, these benefits are known as ecosystem services and are often integral to the provisioning of clean drinking water, the decomposition of waste, and the natural pollination of crops and other plants. 609.9a

Nature-based design elements can include a visual connection with nature, the presence of water, the use of natural materials, and incorporation of dynamic and diffuse light. These elements can provide humans with physical health and mental health benefits, as well as other benefits. 609.9b

Project examples include but are not limited to green roofs or farms, green facades (e.g., vertical gardens), GI projects, net-zero or net-positive energy-use buildings, and use of alternative energy sources. 609.9c

Biophilic Design

Biophilic design is incorporating nature—plants, water, light, etc.—into the built environment, including homes and offices. Biophilic elements have measurable benefits relative to human productivity, emotional well-being, stress reduction, learning, and healing. Biophilic features can also foster increased appreciation and stewardship of the natural environment. By providing guidance on how to incorporate natural elements into the built environment, District government will help to promote well-being and also be a resource for other entities. 609.14a

For further examples of biophilic principles, see the Urban Design; Parks, Recreation, and Open Space; and Community Services and Facilities elements.

Action E-2.5.B: Data Improvements

Improve the collection and monitoring of data on plant and animal life within Washington, DC, particularly data on rare, endangered, threatened, and candidate species, and species of greatest conservation need. 609.12

Action E-2.5.C: Pollinator Pathways

Create pollinator pathways and other contiguous habitat paths that allow the migration of species into natural habitats and that support the goals of the Wildlife Action Plan. Incorporate biodiversity and the use of native plants in GI along roads and sidewalks. 609.13

Action E-2.5.D: Landscape Practices

Encourage the use of landscape practices compatible with industry best practices and certifications, including water-efficient landscape design using native species and GI. Incorporate biophilic design elements to enhance health and well-being by providing a connection between people and nature. 609.14

E-3 Conserving Natural Resources 610

This section of the Environmental Protection Element addresses the conservation of water and energy resources and the reduction of solid waste. Water and energy are both limited resources, subject to growing demand, constrained supply, and aging infrastructure. Using more renewable sources of energy and reducing the use of fossil fuels have become critical to maintaining Washington, DC's sustainability. The District has enacted several laws to increase energy efficiency and renewable energy, notably the Clean and Affordable Energy Act and the Renewable Energy Portfolio Standard Act. Washington, DC also released a plan with a long-term road map for drastically cutting greenhouse emissions: Clean Energy DC (see text box on Clean Energy DC for more information). 610.1

Similarly, reducing solid waste that is incinerated or disposed of in landfills can have beneficial environmental and economic impacts—both on the local and the regional scale. Recycling and composting programs, which are mandated by District law, can effectively reduce natural resource consumption, expand the local economy, and reduce the need for trash transfer facilities in Washington, DC. 610.2

Washington, DC's Clean and Affordable Energy Act of 2008, effective October 22, 2008 (D.C. Law 17-250; D.C. Official Code § 8-1773.01), fosters more energy efficiency and conservation, energy diversification through the production of clean and renewable energy, and energy security through a distributive energy infrastructure system. 610.3

E-3.1 Conserving Water 611

Washington, DC's drinking water is sourced from the Potomac River. While there have not been any water supply issues, severe drought conditions could stress the Potomac River. With competing demands in the watershed during the next 20 years, the District should explore opportunities for water security in close coordination with DC Water. 611.1

DC Water encourages customers to use water wisely and has a number of programs aimed at changing consumer behavior and improving service reliability. Looking to the future, a sustained effort by DC Water and other District agencies will be necessary to reduce water waste and maximize conservation, particularly because water treatment is energy-intensive and contributes to GHG emissions. DC Water's High Water Usage Alert (HUNA) system notifies residents when water usage is higher than normal and helps them track and stay informed about their water usage. 611.2

See the Infrastructure Element for more information on water supply.

Policy E-3.1.1: Promoting Water Conservation

Promote water conservation efforts in Washington, DC. This conservation will be necessary to keep current overall consumption levels as the District continues to grow. 611.3

Action E-3.1.A: Leak Detection and Repair Program

Continue DC Water's efforts to reduce water loss from leaking mains, including reducing the backlog of deferred maintenance, using audits and monitoring equipment to identify leaks, performing expeditious repairs of leaks, and instructing customers on procedures for detecting and reporting leaks. Incorporate smart infrastructure that provides automatic feedback to identify irregularities in the system, leading to greater leak detection and swifter repair. 611.4

Action E-3.1.B: Building Code Review

Support efforts by the Construction Code Coordinating Board and the Green Building Advisory Council (GBAC) to strengthen building, plumbing, and landscaping standards and codes in order to identify possible new water conservation measures. 611.5

Action E-3.1.C: Water Conservation Education

Work collaboratively with DC Water and other partners to launch a large-scale marketing and educational campaign, bringing greater awareness to the need for water conservation and to the savings achievable through conservation and use of efficient technology, and to achieve a reduction in the daily per capita consumption of water resources. This per capita

In most years, there is ample rainfall in the Potomac Basin to meet the city's water needs, but a plentiful supply is not always guaranteed. With competing demands for land and water in the watershed during the next 20 years, the District cannot afford to overlook opportunities for conservation.

Grey and Black Water

Both greywater and blackwater are types of wastewater. Greywater is water that may contain chemicals or contaminants that may be harmful to humans. Greywater can come from shower, sink, and dishwasher drains. Blackwater is contaminated water from flood and sewage waters. Blackwater can come from a flooded river or a backed-up toilet or sewage line. Blackwater can contain harmful contaminants like bacteria, mold, and viruses that can be extremely harmful to humans. 611.2a

reduction is needed to maintain Washington, DC's total water consumption level as the District grows. Special efforts should be made to reach low-income customers and institutional users. 611.6

Action E-3.1.D: Water Conservation Financial Incentive Program

Explore mechanisms to create a water conservation financial incentive program. Similar to energy efficiency and renewable energy incentives, consider a program that creates stronger incentives for residents, small businesses, and private development to use less water in daily operations. The program should include both landscaping and building efficiency. 611.7

Action E-3.1.E: Distributed Rainwater Harvesting and Greywater Recycling

Explore the use of distributed rainwater harvesting and greywater recycling to reduce demand on potable water systems during shortages or disruptions. 611.8

E-3.2 Conserving Energy and Reducing GHG Emissions 612

Greater energy efficiency results in a cleaner District, better air quality, and lower energy bills for District residents. More than $2.3 billion a year is spent on energy by District residents, employees, businesses, visitors, and government. Pursuant to the Clean Energy DC Act, the District will establish building energy performance standards (BEPS) to gradually improve the efficiency of the District's existing building stock, reducing Washington, DC's greatest source of GHG emissions. The energy used to power, heat, and cool buildings remains by far the largest contributor to the District's GHG emissions, accounting for nearly 75 percent of total emissions in 2013. It may be possible to slow the growth of these costs in the future, even as Washington, DC grows with new people and jobs. Conserving energy is the cheapest and fastest way to cut GHG emissions and will be essential to achieving the District's climate goals. Energy conservation and efficiency measures can help reduce dependency on outside energy sources, reduce energy costs for the District's residents most in need, and improve environmental quality. 612.1

While energy conservation efforts in America started in part due to concerns about supply shortages, declining demand and increased supply have reduced these risks. Due to energy-efficiency efforts, District-wide energy use declined between 2006 and 2016, despite a rapidly growing population. Today, the prime energy challenges the District faces are energy costs and the environmental impacts of energy use—most critically, energy use that produces GHGs. The most common GHGs include carbon dioxide, methane, and nitrous oxide. The use of fossil fuels such as coal and natural gas to generate electricity, natural gas for heating and hot water, and gasoline and diesel in vehicles are the prime contributors in the District to increasing

concentrations of GHG emissions in the atmosphere, which cause climate change. Rising global temperatures will severely harm societies and ecosystems around the world and in the District, specifically. Washington, DC has joined the global effort to reduce GHGs and is committed to reducing its GHG footprint by 50 percent by 2032 and achieve carbon neutrality by 2050. Living up to these commitments requires both reducing energy use and increasing the use of renewable, carbon-free energy sources. 612.2

Policy E-3.2.1: Carbon Neutrality

Support land use policies that move Washington, DC toward achieving District-wide carbon neutrality by 2050. This means that the District will eliminate GHG emissions, or offset any remaining emissions, by supporting initiatives that will reduce emissions, such as tree planting, renewable energy generation, and land conservation. In the short term, the District government will develop a detailed implementation plan with clear milestones in order to achieve carbon neutrality by 2050. 612.3

Policy E-3.2.2 Net-Zero Buildings

Provide incentives for new buildings to meet net-zero energy design standards, as called for in Clean Energy DC and Sustainable DC 2.0. Establish a path to the phased adoption of net-zero codes between 2022 and 2026. The District's building energy codes should be updated again by 2026 to require that all new buildings achieve net-zero energy use or better. Prior to 2026, the District should provide incentives to projects that voluntarily seek to achieve net-zero energy use. 612.4

Policy E-3.2.3: Renewable Energy

Promote the efficient use of energy, additional use of renewable energy, and a reduction of unnecessary energy expenses. The overarching objective should be to achieve reductions in per capita energy consumption. 612.5

Policy E-3.2.4: Energy Availability

Improve energy availability and buffer District consumers from fluctuations in energy supply and prices. This should be achieved through the District's energy purchasing policies, financial assistance programs for lower-income customers, incentives for green power, and regulatory changes that ensure that local energy markets are operating efficiently. 612.6

Net-Zero Energy Buildings

Net-zero energy buildings combine energy efficiency and renewable energy generation to consume only as much energy as can be produced on- and offsite through renewable resources each year. Achieving net-zero energy is an ambitious yet increasingly achievable goal that is gaining momentum across geographic regions and markets. Clean Energy DC and Sustainable DC 2.0 include targets designed to ensure the highest standards of building performance and operation for all new construction, including moving toward a net-zero energy building code by 2026, while advancing health and overall livability. 612.2a

Energy supply and demand should continue to be carefully managed, and efficiency should be improved in all sectors. The related text box (entitled Clean Energy DC Omnibus Act of 2018) provides an overview of Clean Energy DC, the District's official guide for meeting future energy needs. With the Clean Energy DC Omnibus Amendment Act of 2018, by 2032, 100 percent of the District's electric generation mix is to be renewable energy, with 10 percent of that energy derived from District-generated solar resources by 2041. Further, if Washington, DC is to eliminate all carbon emissions by 2050, new net-zero energy buildings will play a critical role. To facilitate the construction of systems that will support these goals, policies should be updated to reflect market conditions in the region and be designed to do more than simply facilitate growth of particular technologies. Amended distributed energy resource laws govern issues such as storage, efficiency, and demand management, and should create favorable conditions for the continued adoption of carbon-neutral and resilient energy generation solutions. 612.2b

Policy E-3.2.5: Reducing Home Heating and Cooling Costs

Encourage the use of energy-efficient systems and methods for home insulation, heating, and cooling, both to conserve natural resources and also to reduce energy costs for those residents who are least able to afford them. 612.7

Policy E-3.2.6: Alternative Sustainable and Innovative Energy Sources

Support the development and application of renewable energy technologies, such as active, passive, and photovoltaic solar energy; fuel cells; and other sustainable sources such as shared solar facilities in neighborhoods and low- or zero-carbon thermal sources, such as geothermal energy or wastewater heat exchange. Such technology should be used to reduce GHGs and imported energy, provide opportunities for economic and community development, and benefit environmental quality. A key goal is the continued availability and access to unobstructed, direct sunlight for distributed-energy generators and passive solar homes relying on the sun as a primary energy source. 612.8

Policy E-3.2.7: Energy-Efficient Building and Site Planning

Include provisions for energy efficiency and for the use of alternative energy sources in the District's planning, zoning, and building standards. Encourage new development to exceed minimum code requirements and contribute to energy efficiency and clean energy goals. 612.9

Policy E-3.2.8: Locally Generated Electricity

Support locally generated electricity from renewable sources, including both commercial and residential renewable energy projects. Policies could support the option to share a solar project among several neighbors (i.e., community solar), financial incentives, research and education, and maximizing existing programs to help install solar panels and solar thermal systems throughout the District. 612.10

DC Green Bank

The DC Green Bank is an innovative policy tool that will use public purpose funding to attract and accelerate private investment. The DC Green Bank can be used by residents or businesses to finance sustainable projects and will offer loans, leases, credit enhancements, and other financing services to close funding gaps for clean energy projects and energy efficiency improvements. 612.10a

Fossil Fuel Use in Washington, DC

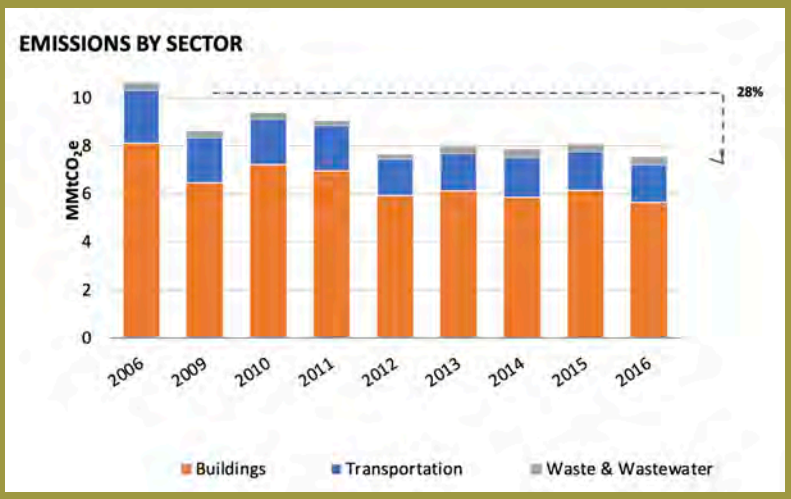
Along with increasing energy efficiency and conservation, reducing the carbon content in electricity and fuels is also critically important. Fossil fuels remain the dominant source of energy for electricity, for heating buildings through natural gas or fuel oils, and for motor vehicles. Over the long term, phasing fossil fuels out of the District's energy supply will be essential to achieving the District's climate commitments. In fact, 96 percent of the emissions in the District are attributable to using energy, and nearly 75 percent of those emissions come from the energy used to heat, cool, and power buildings. Energy generation from fossil fuels also hurts regional air quality. One of the biggest challenges facing the District is how to reduce costs, reduce energy use overall, and shift the power supply to renewable sources like solar and wind—all while the District's population and economy continue to grow. Figure 6.3 displays regional sources of GHG emissions. 612.10a1

Washington, DC's goal is to reduce GHG emissions by 50 percent by 2032 through increasing clean energy and reducing dirty energy—meaning the District government will help businesses, residents, and municipal operations improve energy efficiency and increase their access to renewable energy. Clean energy is energy generated with no pollution or carbon emissions, in contrast to dirty fuels (such as coal and oil). Washington, DC already has some significant tools: The DC Sustainable Energy Utility (DCSEU) was created to help residents and businesses use less energy and save money, while Property Assessed Clean Energy (PACE) financing and the newly established Green Bank provide innovative financing for energy efficiency and clean energy upgrades. 612.10a2

Washington, DC is seeking to remove barriers to electricity infrastructure modernization, including neighborhood-scale energy systems, which allow neighborhoods to cut costs, help the environment, and recover quickly from power outages or prevent them completely. Neighborhood-scale energy systems benefit from the efficiencies of coordinating across several properties. Individual buildings see these benefits in the form of cost savings, system reliability, and other economic and environmental gains that come from centralizing energy production and managing a shared distribution network. The community can benefit from these systems because they help reduce GHG, can use renewable energy, and can align with other community and environmental efforts. 612.10a3

Figure 6.3:

Metropolitan Washington Emissions Inventory, 2006-2016 612.11



(Source: DOEE, 2016)

Policy E-3.2.9: Energy Efficiency for Major Employers

Continue efforts that enable major employers in Washington, DC—including the government, institutions, schools, and the private sector—to implement energy conservation measures. 612.12

Policy E-3.2.10: Consumer Education on Energy

Promote resident awareness concerning energy issues through educational and demonstration initiatives and other programs. 612.13

Policy E-3.2.11: Conserving Energy Through Rate Structure

Continue to propose rate changes that encourage the efficient use of energy resources. Economic incentives and disincentives should vary based on the different classes of rate payers, and should contribute to the economic viability of energy sources. 612.14

Policy E-3.2.12: Resilient Energy Systems

Increase the resilience of Washington, DC's energy systems through partnerships that enable the District to respond to energy emergencies and interruptions in supply to achieve a secure and reliable energy infrastructure that is also resilient and able to respond to and restore services rapidly in the event of an outage. Participate in regional efforts to plan for such emergencies, including those organized by MWCOG. 612.15

Policy E-3.2.13: Coordinating Energy Policies to Reduce GHGs

New and existing energy policies should reduce GHG emissions and increase resiliency and innovation for the District. 612.16

Policy E-3.2.14: Clean Energy DC Plan

Per the goals and actions outlined in the Clean Energy DC Plan, develop building codes and policies that require renewable energy, either for purchase or on-site installation, to make up a portion of every building's energy usage. 612.17

Policy E-3.2.15: Neighborhood-Scale Energy

Reduce regulatory, political, and physical barriers to modernizing electricity infrastructure to enable the deployment of neighborhood- or campus-scale energy systems and distributed energy resources. 612.18

Action E-3.2.A: Energy Conservation Measures

Pursuant to the District's Clean Energy DC Plan, implement energy conservation programs for the residential, commercial, and institutional sectors. These programs include financial incentives, technical assistance, building and site design standards, public outreach, and other measures to reduce energy consumption and improve efficiency. 612.19

Action E-3.2.B: Assistance Programs for Lower-Income Households

Implement Clean Energy DC Plan programs to reduce energy costs for lower-income households, including the Low Income Home Energy Assistance Program (LIHEAP) and additional measures to reduce monthly energy. 612.20

Action E-3.2.C: Consumer Education on Energy

Increase education and public awareness around energy issues, including school curricula, awards programs, demonstration projects, websites, and multimedia production. 612.21

Action E-3.2.D: Energy Regulatory Reforms

Enact legislative and regulatory reforms, including but not limited to building and zoning codes as well as utility regulations aimed at improving energy efficiency and expanded clean, distributed energy generation in Washington, DC to reduce energy costs and improve reliability and resilience. Permitting agencies should have technological expertise in clean energy solutions. Permitting times and costs should conduce toward rapid adaptation of clean energy solutions. 612.22

Action E-3.2.E: Energy Assurance Plan

Regularly amend the District's Energy Assurance Plan and collaborate with regional partners such as MWCOG and the National Association of

State Energy Officials (NASEO). Regularly scheduled training for energy emergencies should be provided to appropriate District personnel. 612.23

Action E-3.2.F: Energy Conservation Area

Explore the establishment of neighborhood-based energy conservation areas or districts to incentivize energy efficiency, distributed generation, storage, and demand response. This is an opportunity for consumers to play a significant role in the operation of the electric grid by reducing or shifting their electricity usage during peak periods in response to time-based rates or other forms of financial incentives, which will contribute to and achieve the District-wide energy performance outcomes as defined by Clean Energy DC. 612.24

Action E-3.2.G: Energy Supply

Explore and adopt policies that allow for every District resident to have a cost-competitive option for the purchase of a 100 percent clean and renewable energy supply. 612.25

Action E-3.2.H: Solar Easements

Continue to review and modify, as needed, zoning regulations and other relevant District regulations. 612.26

Action E-3.2.I Building Energy Performance Standard

Develop and implement a BEPS, as described in Clean Energy DC, which would establish regular energy check-ups of buildings and require the owners of poorly performing buildings to improve the energy efficiency of their buildings. 612.27

Action E-3.2.J: Neighborhood-Scale Energy

By 2021, complete a neighborhood-scale clean energy system development plan to target high-load growth areas and at-risk communities and begin implementation. Encourage large projects or aggregated projects driven by energy consumers to contribute to the District's resilience goals through neighborhood-scale clean energy strategies. 612.28

E-3.3 Reducing Solid Waste Disposal Needs 613

Sustainable materials management practices and policies consider the entire life cycle of products, from materials extraction, manufacturing, distribution, and usage through end-of-life management, including solid waste disposal and recovery. This systematic approach is supported by the U.S. Environmental Protection Agency (EPA) with the goals of reducing environmental impact, conserving natural resources, and reducing costs. Sustainable materials managing programs implemented in the District include sustainable purchasing guidelines, product stewardship programs, and waste diversion and resource recovery activities. 613.1

In 1988, the District passed legislation requiring recycling in commercial buildings and setting targets for residential recycling. The legislation also contained provisions for the District's government to increase the use of recycled products through its procurement practices. Despite these mandates, recycling efforts were sporadic during the 1990s, and it was not until the early 2000s that most of the current programs were initiated. Washington, DC still lags behind many U.S. cities in the percentage of waste it diverts from landfills; however, recent improvements have been significant. 613.2

Sustainable DC included the goal of reducing the waste generated and disposed of in Washington, DC. This led to the creation of the Sustainable Solid Waste Management Amendment Act in 2014, which called for the District to achieve 80 percent waste diversion District-wide without the use of landfills, waste-to-energy, or incineration by 2032. Accomplishing this goal requires the collaboration of District agencies, business, nonprofits, residents, and neighboring jurisdictions. 613.3

Waste diversion is the process of diverting waste from landfills. Source reduction is the elimination of waste before it is created. Solid waste can be diverted from landfills through source reduction, reuse, recycling, composting, and anaerobic digestion. Additional waste diversion can be achieved through public education, recycling of construction and demolition debris, and expanded recycling in schools, offices, and other places of employment. Among the many benefits of recycling is the fact that it reduces demand on the Washington, DC's trash transfer stations, with attendant benefits to nearby neighborhoods. 613.4

Zero Waste DC

Zero Waste DC is an initiative that enables the District to speak with one voice in developing and providing resources that help residents, businesses, and visitors move toward zero waste. Zero Waste DC brings together government agencies and programs responsible for developing and implementing cost-effective strategies for converting waste to resources, improving human and environmental health, reducing GHG emissions, creating inclusive economic opportunity, and conserving natural resources. 613.3a

Sustainable Solid Waste Management

The District's Sustainable Solid Waste Management Amendment Act sets a bold vision to divert 80 percent of all solid waste generated in the District through source reduction, reuse, recycling, composting, and anaerobic digestion. This law applies to residential, commercial, and industrial waste and requires that waste is source separated at the point of discard. 613.4a

To support this goal, the Office of Waste Diversion was established in 2015 in the Department of Public Works (DPW). This office is charged with supervising and coordinating the implementation of the District's waste diversion policies and programs. 613.4b

The Sustainable Solid Waste Management Amendment Act established a sustainable solid waste management hierarchy with the following in order of priority:

1. Source reduction and reuse

2. Recycling or composting of solid waste, or conversion of compostable solid waste into biofuel

3. Landfill or waste-to-energy 613.4c

Managing Organic Waste

The District and surrounding Maryland and Virginia counties lack sufficient capacity/infrastructure to process large volumes of organic materials. A 2017 compost feasibility study concluded that a facility located in the District would be the most cost-effective and sustainable means of extracting the full value from organic materials. The facility would process organics via composting, anaerobic digestion, co-digestion preprocessing, or a combination of multiple options. Sustainable DC 2.0 calls for the creation of a new composting facility within the District by 2032. 613.9a

See the Infrastructure Element for more information on solid waste disposal

Policy E-3.3.1: Solid Waste Source Reduction and Recycling

Actively promote the reduction of the solid waste stream through reduction, reuse, recycling, recovery, composting, and other measures. Use appropriate regulatory, management, and marketing strategies to inform residents and businesses about recycling and composting opportunities and best practices for reducing waste requiring landfill disposal or incineration. 613.5

Policy E-3.3.2: Construction and Demolition Recycling

Support the recycling of construction and demolition debris as a key strategy for reducing the volume of waste requiring landfill disposal. To carry out this policy, encourage the deconstruction of obsolete buildings rather than traditional demolition. Deconstruction dismantles buildings piece by piece and makes the components available for resale and reuse. 613.6

Policy E-3.3.3: Organic Waste Diversion

Support policies and programs that will reduce the amount of organic material sent to waste disposal facilities and landfills by encouraging source reduction, food donation, composting, and/or anaerobic digestion of food and yard waste. 613.7

Policy E-3.3.4: Regional Approach to Plastic Waste Reduction

Work with surrounding jurisdictions to develop and implement a regional approach to reducing plastic waste. Goods (including items that eventually become plastic waste) flow freely into and out of the District, carried not only by waterways but also by residents, commuters, and visitors. Regional cooperation is required to align the policies and practices of neighboring jurisdictions. 613.8

Policy E-3.3.5: Promote Product Stewardship

Promote product stewardship as a product-centered approach to environmental protection. Also known as extended product responsibility (EPR), product stewardship calls on those in the product life cycle—manufacturers, retailers, users, and disposers—to share responsibility for reducing the environmental impacts of products. Washington, DC's product stewardship program requires manufacturers to develop and pay for systems to reuse, recycle, or properly dispose of electronics and paint in a manner that is safe for people and the environment. 613.9

Action E-3.3.A: Expanding District Recycling Programs

Expand implementation of District-wide recycling initiatives, with the long-term goal of diverting 80 percent of all waste generated in the District by 2032. Special efforts should be made to (i) expand workplace recycling through a combined education and inspection/enforcement campaign, (ii) conduct studies of successful recycling programs in other jurisdictions and

import effective practices, and (iii) plan for the composting of yard waste. 613.10

Action E-3.3.B: Expand Recycling Efforts in District Institutions

Work with DC Public Schools (DCPS) and public charter schools to expand school recycling programs and activities. Encourage private schools, universities, colleges, hospitals, and other large institutional employers to do likewise. 613.11

Action E-3.3.C: Revisions to Planning and Building Standards for Solid Waste

Review building code standards for solid waste collection to ensure that new structures are designed to encourage and accommodate recycling and convenient trash pickup. 613.12

Action EE-3.3.D: Installation of Sidewalk Recycling Receptacles

Install receptacles for sidewalk recycling in neighborhood commercial centers with high pedestrian volume as a way of increasing waste diversion and publicly reaffirming the District's commitment to recycling. 613.13

Action E-3.3.E: E-Cycling Program

Continue to operate drop-off e-cycling programs and other measures to promote the recycling of computers and other electronic products in an environmentally sound manner. 613.14

Action E-3.3.F: Commercial and Industrial Waste Reduction

Work with the commercial and industrial sectors to foster appropriate source reduction and waste minimization activities, such as the environmentally sound recycling and disposal of mercury-containing fluorescent lamps and electronic equipment. 613.15

Action E-3.3.G Zero Waste Plan

Develop a comprehensive Zero Waste plan, as required by the Sustainable Solid Waste Management Amendment Act of 2014, with the objective of decreasing all District-wide waste streams and achieving source reduction goals. The development of such a plan would tie together existing activities and inform the development and evaluation metrics of new policies, so that Washington, DC can strategically achieve zero waste, which is defined as 80 percent diversion of all solid waste from landfills and waste-to-energy. 613.16

Action E-3.3.H: Product Stewardship Requirements

Expand product stewardship requirements to create additional waste-stream-specific programs (e.g., pharmaceuticals, textiles, plastic bottles, durable goods) to accompany the current electronics and paint programs. 613.17

Sustainable DC Waste Vision

Washington, DC envisions a District that generates zero waste. This means reducing the amount of waste created and reusing or recycling waste that is produced. The District will recapture the value of waste through urban agriculture or composting, recycling, material reuse, and (potentially) energy production, creating a closed-loop waste management system. 613.15a

Action 3.3.I: Increase Residential Recycling and Composting

Design and launch new incentive programs to encourage residents to increase their recycling and composting rates, which is necessary to achieve the District's 80 percent diversion goal. 613.18

Action 3.3.J: Reduce Organic Waste

Develop and launch a curbside composting program for residential customers, and require commercial customers to separate and compost food and other organic waste. 613.19

Action 3.3.K: Organics Processing Facility

Explore creating a new organics processing facility (composting, anaerobic digestion, or co-digestion preprocessing) in the District to capture food and other organic waste. 613.20

Action 3.3.L: Reduce Residential Construction and Demolition Waste

Create an accessible recycling and product reuse pathway for residential construction and demolition waste, including construction waste management requirements, contractor education, and a market for recycled and salvaged construction materials. Assess existing regulatory barriers to reusing these materials. 613.21

Action 3.3.M: Source Reduction

Explore innovative source reduction programs and policies to find ways to keep items out of the waste stream. 613.22

E-4 Promoting Environmental Sustainability 614

The term sustainability has many definitions. At its core, it refers to managing resources so that they are not permanently depleted or lost for future generations. On a local level, this principle suggests that care is taken to protect Washington, DC's natural features for future residents and visitors to enjoy. On a global level, it suggests that the consumption of natural resources is reduced while the goal of advancing equity and being a more inclusive District is pursued. 614.1

Five principal tactics for growing more sustainably are described here:

- Encourage GI that retains stormwater, thereby protecting local waterways from pollution while allowing flexibility for developers to install GI on-site or in an off-site location where GI has a larger water quality benefit;
- Promote green buildings, which are buildings that are designed through an integrated process that considers site planning, architecture, engineering, the environment, and aspects of the

natural world that contribute to human health and productivity, and that incorporate recycled materials, advanced energy and water conservation systems, and minimal use of toxic or hazardous materials;

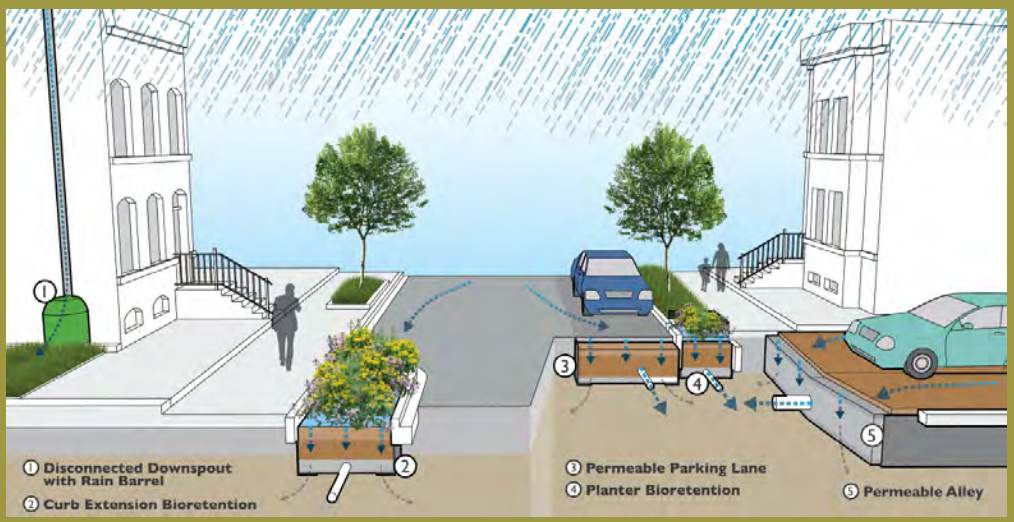
- Provide opportunities for food production and urban gardening;
- Monitor and mitigate the environmental impacts of development and human activities; and
- Expand workforce development programs to further develop the District's green economy. 614.2

E-4.1 Green Infrastructure GI 615

GI can include a variety of construction and design techniques that conserve the natural hydrology of development or redevelopment sites. It includes small-scale practices that allow water to infiltrate, evaporate, or transpire on-site rather than flowing off and entering local storm drains and waterways. In urban areas like Washington, DC, typical GI measures include green roofs (which absorb rainwater and also reduce energy costs), porous pavement, limits on impervious surface cover, rain barrels, and rain gardens. See Figure 6.4 for more information on GI. 615.1

Figure 6.4:

Green Infrastructure 615.2



(Source: : DC Water)

Green Area Ratio

In 2013, the District adopted the GAR, an environmental sustainability zoning regulation that sets standards for landscape and site design for all new multi-family, commercial, and industrial development to help reduce stormwater runoff, improve air quality, and keep Washington, DC cooler. The purposes of the GAR regulations are to implement a points-based system of requirements for environmental site design that provides flexibility in meeting environmental performance standards, and to promote attractive and environmentally functional landscapes. 615.2a

Policy E-4.1.1: Maximizing Permeable Surfaces

Encourage the use of permeable materials for parking lots, driveways, walkways, and other paved surfaces as a way to absorb stormwater and reduce runoff. 615.3

Policy E-4.1.2: Using Landscaping and Green Roofs to Reduce Runoff

Promote an increase in tree planting and vegetated spaces to reduce stormwater runoff and mitigate the urban heat island, including the expanded use of green roofs in new construction and adaptive reuse, and the application of tree and landscaping standards for parking lots and other large paved surfaces. 615.4

Policy E-4.1.3: GI and Engineering

Promote GI and engineering practices for rainwater reclamation and wastewater reuse systems. GI practices include green roofs, bioretention facilities, permeable pavement, and rainwater harvesting. Green engineering practices include emerging wastewater treatment technologies, constructed wetlands, and purple pipe systems or other design techniques, operational methods, and technology to reduce environmental damage and the toxicity of waste generated. 615.5

Action E-4.1.A: GI Criteria

Support continued refinement of GI provisions for new development, such as the GAR. Explore provisions for expanded use of elements such as porous pavement, bioretention facilities, and green roofs. 615.6

Action E-4.1.B: GI Demonstration Projects

Continue to install retrofit demonstration projects that educate developers, engineers, designers, and the public to illustrate use of current and new GI technologies, and make the project standards and specifications available for application to other projects in Washington, DC. Such demonstration projects should be coordinated to maximize environmental benefits, monitored to evaluate their impacts, and expanded as time and money allow. 615.7

Action E-4.1.C: Road Construction Standards

Use District Department of Transportation's (DDOT) GI standards on all roadway reconstruction projects, with the goal of reducing stormwater pollution from roadways by minimizing impervious surface areas, expanding the use of porous pavements, and installing bioretention tree boxes and bump-outs. 615.8

E-4.2 Promoting Green Building 616

Green building standards are well-established as a means of growing more sustainably. The LEED rating system, established by the Green Building Council, establishes varying levels of certification for green buildings based on the degree to which they mitigate the pollution created during building construction, as well as the long-term effects resulting from building operation. Building Research Establishment Environmental Assessment Method (BREEAM®) is another internationally recognized certification system for sustainable performance in planning, design, construction, operation, and refurbishment; several other certifications also exist. Typical green building strategies include the use of light-colored paving materials to reduce heat build-up, recycled building materials, and energy-conserving windows and insulation methods. Green buildings are also designed to avoid indoor air quality problems and to encourage pedestrian and bicycle accessibility. Improving the performance of the District's older building stock through green retrofits is a fundamental component of the Sustainable DC Plan. 616.1

The District's GBAC was established in 2007. The GBAC is comprised of both public agency and private sector members. It monitors the District's compliance with relevant green building requirements and makes recommendations on green building policies. 616.2

Policy E-4.2.1: Support for Green Building

Broaden the requirements for the use of green building methods in new construction and rehabilitation projects to include all building typologies, and develop green building standards for minimum performance or continued improvement of energy use through improved operation and maintenance activities. 616.3

Policy E-4.2.2: Green Building Education and Awareness

Support programs that educate the public, business, and building and real estate communities on the benefits and techniques of green building, including utility cost savings and environmental and health benefits. 616.4

Action E-4.2.A: Building Code Revisions

Periodically review regulatory obstacles to green building construction in the District, and work to reduce or eliminate such obstacles if they exist. Adopt amendments to the District's green building codes as necessary to promote green building methods and materials, and to encourage such actions as stormwater harvesting, structural insulated panels, and high-quality windows. 616.5

Community gardens not only provide a place to grow fruits, vegetables, and flowers, they also provide an environmental, recreational, cultural, and educational asset in the neighborhoods they serve.

Action E-4.2.B: Green Building Incentives

Continue green building incentive programs to encourage green new construction and the rehabilitation of existing structures that go beyond the baseline code requirements. 616.6

See also Action E-7.1.A on green building requirements for District projects and projects receiving municipal funds.

E-4.3 Enhancing Urban Food Production and Community Gardening 617

With more than 60 percent of District residents living in multi-family housing with limited access to private open space, community gardens provide an important opportunity for green community space and for residents to supplement their food budget. There are more than 34 such gardens in Washington, DC, each independently operated. Community gardens not only provide a place to grow fruits, vegetables, and flowers, they also provide an environmental, recreational, cultural, and educational asset in the neighborhoods they serve. In addition, urban farms are small businesses that contribute to their surrounding communities by growing fruits, vegetables, and other products and offer environmental, cultural, and educational opportunities. The Department of Parks and Recreation (DPR) plays an integral part in promoting urban food production and community gardening in the District. It helps to manage all 34 community gardens and works with six partner urban farms across Washington, DC, which are all 501(c)(3) organizations that manage farms on DPR properties, focusing on offering gardening and nutrition programs while increasing access to healthy and affordable food to District communities. 617.1

Additionally, the University of the District of Columbia (UDC), through the College of Agriculture and Urban Sustainability and Environmental Sciences (CAUSES) and its Land Grant University status, expands academic and public knowledge of sustainable farming techniques that improve food and water security, health, and wellness by providing research, education, and gardening techniques to residents and organizations in Washington, DC. 617.2

Policy E-4.3.1: Promotion of Community Gardens, Urban Farms, and Educational Growing Spaces

Continue to encourage and support the development of community gardens, urban farms, rooftop farms, and educational growing spaces on public and private land across Washington, DC, with the Sustainable DC 2.0 plan, by identifying public and private land suitable for urban agriculture and streamlining the permitting process for gardeners and farmers. 617.3

Policy E-4.3.2: Capacity Building for Community Gardening

Enhance the capacity of private, public, and nonprofit community gardening organizations to develop and operate community gardens. This should include working with the private sector and local foundations to mobilize financial support. 617.4

Policy E-4.3.3: Domestic Gardening and Urban Farming

Provide technical and educational support to District residents who wish to plant backyard and rooftop gardens or start urban farming businesses. This could include measures such as partnerships with local gardening groups; education through conferences, websites, and publications; tool lending programs; integrated pest management; and information on composting and best practices in gardening. 617.5

Policy E-4.3.4: Use of Fertilizer

Educate District homeowners, businesses, and commercial applicators on the proper use of fertilizer, and encourage native species plants and landscaping that do not require fertilizer. 617.6

Policy E-4.3.5: Schoolyard Greening

Work with DCPS and public charter schools to make appropriate portions of buildings and grounds, including rooftops, available for GI and community and school gardens, and to use buildings and grounds for instructional programs in environmental science, urban farming, and gardening classes. Encourage private schools to do likewise. 617.7

Policy E-4.3.6: Produce and Farmers Markets

Support the creation, maintenance of, and outreach for farmers markets in all quadrants of the District to provide outlets for urban farms and community gardens to sell healthy, locally grown produce to District residents. 617.8

Policy E-4.3.7: Composting Programs and Community Gardens

Support composting programs at community gardens (through the DPR Compost Cooperatives), food waste drop-off locations at farmers markets (through the DPW Food Waste Drop-Off Program), composting in schoolyard gardening programs, and residential composting. Residents composting in common spaces and at their homes should be properly trained, as required in the Residential Composting Incentives Amendment Act of 2018. 617.9

Action E-4.3.A: Community Gardens and Urban Farms in Wards 7 and 8

To activate community spaces, increase sustainability, and help address the lack of healthy food retail options in Wards 7 and 8, work with community leaders and gardening advocates to identify and establish property for new

gardens or urban farms in this area. The District should assist in this effort by providing an inventory of publicly and privately owned tracts of land that are suitable for community gardens and urban farms, and then work with local advocacy groups to make such sites available. This action should supplement, but not replace, efforts to increase retail options in this part of the District. 617.10

Action E-4.3.B: Support for UDC Cooperative Extension

Enhance the capability of the Cooperative Extension of the UDC to provide technical assistance and research, including educational materials and programs to support resident gardening, tree planting efforts, urban farming, food entrepreneurship, and nutrition education. 617.11

Action E-4.3.C: Support for Sustainable Agriculture

Continue to support sustainable agriculture with the goal of producing healthy, abundant crops, preserving environmental services, improving neighborhood health, and creating new entrepreneurial opportunities. Implement the Urban Farming and Food Security Act and expedite the process to make public and private lands available for a variety of urban agriculture uses. 617.12

E-4.4 Reducing the Environmental Impacts of Development 618

The District of Columbia Environmental Policy Act (DCEPA), modeled after the National Environmental Policy Act (NEPA), requires all District agencies to analyze and disclose the environmental effects of their major actions, including the permitting of new development. Environmental Impact Statements are required for projects that are likely to have substantial negative impacts on the environment. 618.1

To determine if a project meets this threshold, applicants must complete a checklist called an Environmental Impact Screening Form (EISF). Unlike NEPA's Environmental Assessment, the EISF contains simple yes/no questions and requires no narrative or analysis. The policies and actions below call for a more rigorous analysis of impacts in the future, with more substantive documentation of environmental effects. 618.2

Policy E-4.4.1: Mitigating Development Impacts

Future development should mitigate impacts on the natural environment and anticipate the impacts of climate change, resulting in environmental improvements wherever feasible. Construction practices that would permanently degrade natural resources without mitigation should not be allowed. 618.3

Policy E-4.4.2: Transparency of Environmental Decision-Making

Discussions and decisions regarding environmental impacts and mitigation measures should occur through a transparent process in which the public is kept informed and given a meaningful opportunity to participate. 618.4

Policy E-4.4.3: Environmental Assessments

Ensure full and meaningful compliance with the District of Columbia Environmental Policy Act of 1989, effective October 18, 1989 (DC Law 8-36; DC Official Code § 8-109.01 et seq.), including the use of procedures to assess the environmental impacts of major development projects comparable to the regulations developed by the Council on Environmental Quality for the National Environmental Policy Act of 1969, approved January 1, 1970 (83 Stat. 852; 42 U.S.C. 4321 et seq.). The environmental review should include all pertinent information about the effects of the project on the human environment, including information about existing conditions, projected impacts, and mitigation measures. Carbon dioxide and other GHG emissions impacts should be included in the environmental impact assessments. The process should ensure that such information is available when a development is proposed and is available to the public and decision-makers before any decision is made. 618.5

Policy E-4.4.4: Monitoring of Operational and Construction Impacts

Strengthen District government programs that monitor and resolve air pollution, water pollution, noise, soil contamination, dust, vibration, and other environmental impacts resulting from commercial uses, industrial uses, trucking, construction activities, and other activities around Washington, DC that could potentially degrade environmental quality. 618.6

Action E-4.4.A: District-wide Natural Resource Inventory

Compile and maintain a District-wide natural resources inventory that catalogs and monitors the location and condition of Washington, DC's natural resources. The inventory should be used as a benchmark to evaluate the success of environmental programs and the impacts of land use and development decisions. 618.7

Action E-4.4.B: Environmental Enforcement

Continue interagency efforts to improve compliance with the District's existing environmental laws and regulations. This effort should include public education, compliance assistance, and continued support for Metropolitan Police Department (MPD) and DPW's partnership to address environmental crimes. 618.8

Vehicle Emissions

In two related settlements, German automaker Volkswagen AG (VW) has agreed to spend nearly $25 billion to settle allegations of cheating on vehicle emissions tests and deceiving customers. VW's use of a defeat device in its diesel vehicles enabled the vehicles to emit levels of oxides of nitrogen (NOx) significantly in excess of the limits set by the EPA. NOx is a precursor to ozone formation and is hazardous to human health. The automaker will spend $2.925 billion to mitigate the pollution from these diesel cars, $2 billion to invest in clean vehicle technology, and $10 billion in the vehicle recall program. 620.3a

Washington, DC is expected to receive $8.125 million from the VW settlement and must develop a Mitigation Plan outlining the use of the funds for eligible projects, with the main goal of reducing NOx emissions. The District plans to spend the $8.125 million of VW settlement funds in three project areas: locomotive switcher engine replacement, incentives for replacement of diesel transit buses and trash trucks, and rebates for tailpipe pollution reduction retrofits. 620.3b

E-5 Reducing Environmental Hazards 619

Environmental hazards in Washington, DC that may be related to land use include a variety of sudden shocks and chronic stressors, such as air and water pollution, contaminated soils, hazardous materials, noise, disease vectors, flooding, light pollution, electromagnetic fields, and earthquakes. The overall purpose of Comprehensive Plan policies on these topics is to minimize the potential for damage, disease, and injury resulting from these hazards. Environmental hazards define basic constraints to land use that have to be reflected in how and where development takes place. The severity of these hazards also helps define the priority for future remediation and abatement programs. 619.1

The presence of environmental hazards in Washington, DC also means that up-to-date emergency response planning is essential. As indicated in the Community Services and Facilities Element, the District's Homeland Security and Emergency Management Agency (HSEMA) is charged with preparing and implementing these plans and ensuring that District agencies, residents, and businesses are informed and prepared in the event of a disaster or other emergency. Other agencies, including the Health Emergency Preparedness Response Administration(HERPA) and the District Department of Transportation DDOT, are also actively involved in emergency planning and response. 619.2

E-5.1 Reducing Air Pollution 620

Air quality has improved tremendously over the decades thanks to successful air pollution control programs and technology improvements. Washington, DC residents continue to experience occasional smoggy summer days that can be harmful to human health. Effects range from minor problems like watery eyes and headaches to serious respiratory problems and heart ailments. Those with lung or heart disease, children, and older adults are particularly vulnerable and these conditions are disproportionately experienced by communities of color and low-income residents. 620.1

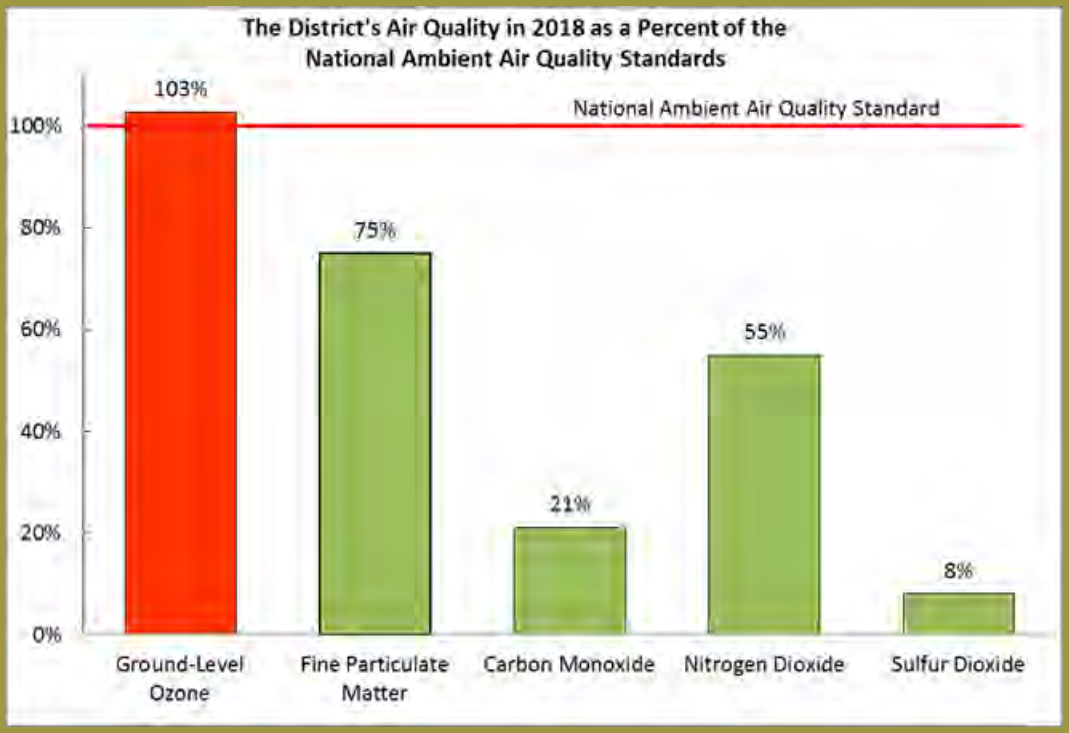
Air pollution is comprised of carbon monoxide, lead, nitrogen oxides, ground-level ozone, particle pollution (often referred to as particulate matter), and sulfur oxides, as well as other hazardous air pollutants. The greatest contributor to air pollution in the Washington metropolitan region is motor vehicle emissions. Emissions from local smokestacks and other stationary sources are fairly limited, although the District is subject to such pollution from upwind states. While cleaner-burning gasoline and federal engine standards have helped reduce pollution to some degree, urban sprawl and accompanying congestion have countered this gain. Clearly, reducing motor vehicle emissions is not something the District can do on its own,

though the District is undertaking numerous efforts to make Washington, DC less dependent on automobiles. Numerous multi-state organizations and regional committees exist to address the issue, all working toward compliance with federal Clean Air Act standards. These entities focus not only on reducing vehicle emissions, but also on curbing other sources of pollution, ranging from power plants, locomotives, and jet fuel to consumer products such as paints, lawnmowers, gas-fired leaf-blowers, and home fireplaces and barbecues. 620.2

The 1970 Clean Air Act established standards for six criteria pollutants. These are carbon monoxide, lead, nitrogen oxide, ozone, particulate matter, and sulfur dioxide. Areas where these standards are not met are designated as nonattainment by the EPA. As of 2015, the Washington metropolitan region is classified as a marginal non-attainment area for the federal eight-hour ozone standard (see Figure 6.5, 2018 Ambient Air Quality Trends). Because of this status, the District (along with Maryland and Virginia) must prepare State Implementation Plans (SIPs)to track the progress toward attaining federal air quality standards. 620.3

Figure 6.5:

2018 Ambient Air Quality Trends 620.4

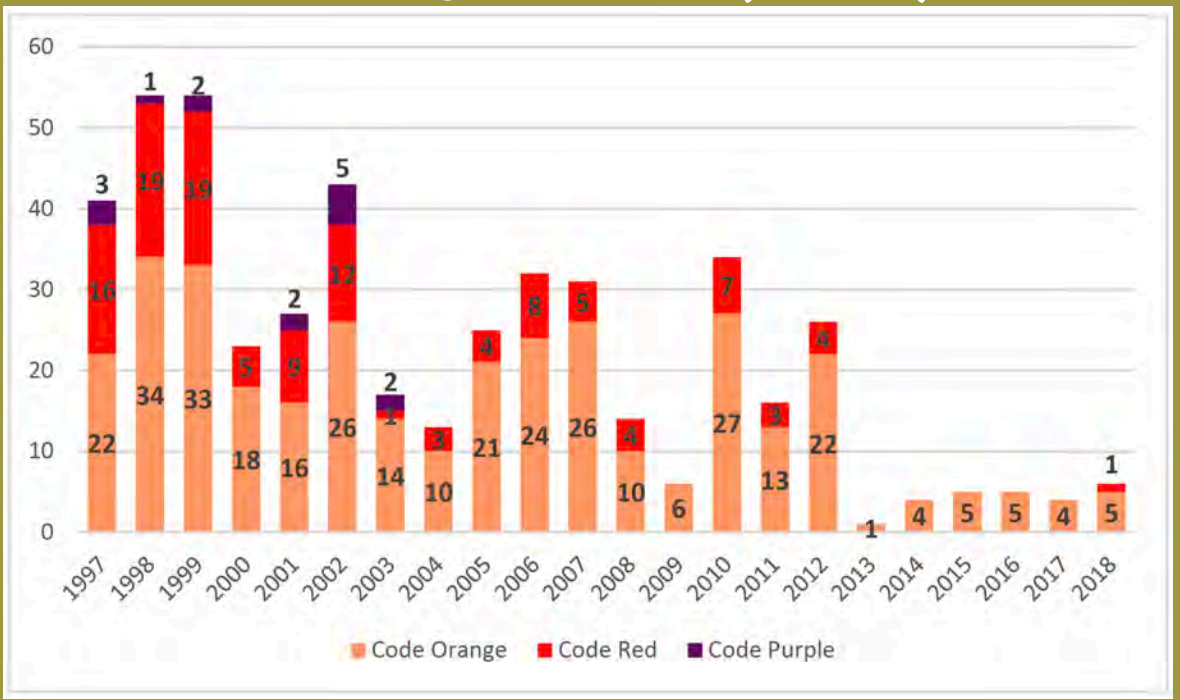


(Source: : DOEE and the Environment, 2018)

Air quality trends data demonstrates that despite population increases and other related activities in the District, ambient concentrations of all criteria pollutants and pollution emissions have dropped during the assessment period. However, ozone continues to be the biggest air pollution challenge the region faces. Figure 6.6 shows the number of days the federal eight-hour ozone standard was exceeded at three monitoring locations in the District between 1997 and 2018. The second chart, Figure 6.7, shows the statistical three-year average of pollutant concentrations in the air per year over the same time period from each monitor in Washington, DC. The third chart, Figure 6.8, shows that levels of fine particulate matter (PM2.5) pollution, or soot, have also declined at each monitor over time. In 2014, the District officially was designated as being in attainment of all federal standards for fine particulate matter. 620.5

Figure 6.6:

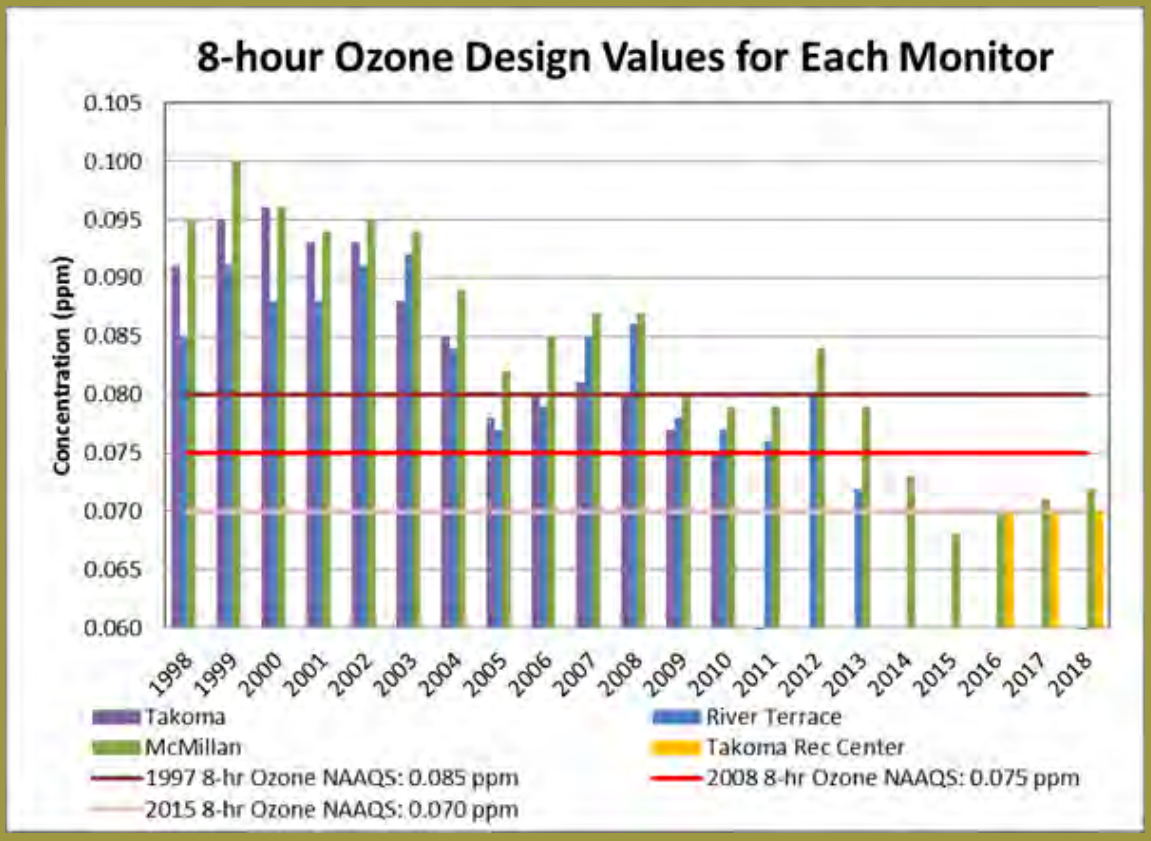
Number of Exceedance Days in the District Compared to the 2015 Eight-hour Ozone National Ambient Air Quality Standards (NAAQS) 620.6



(Source: DOEE 2019)

Figure 6.7:

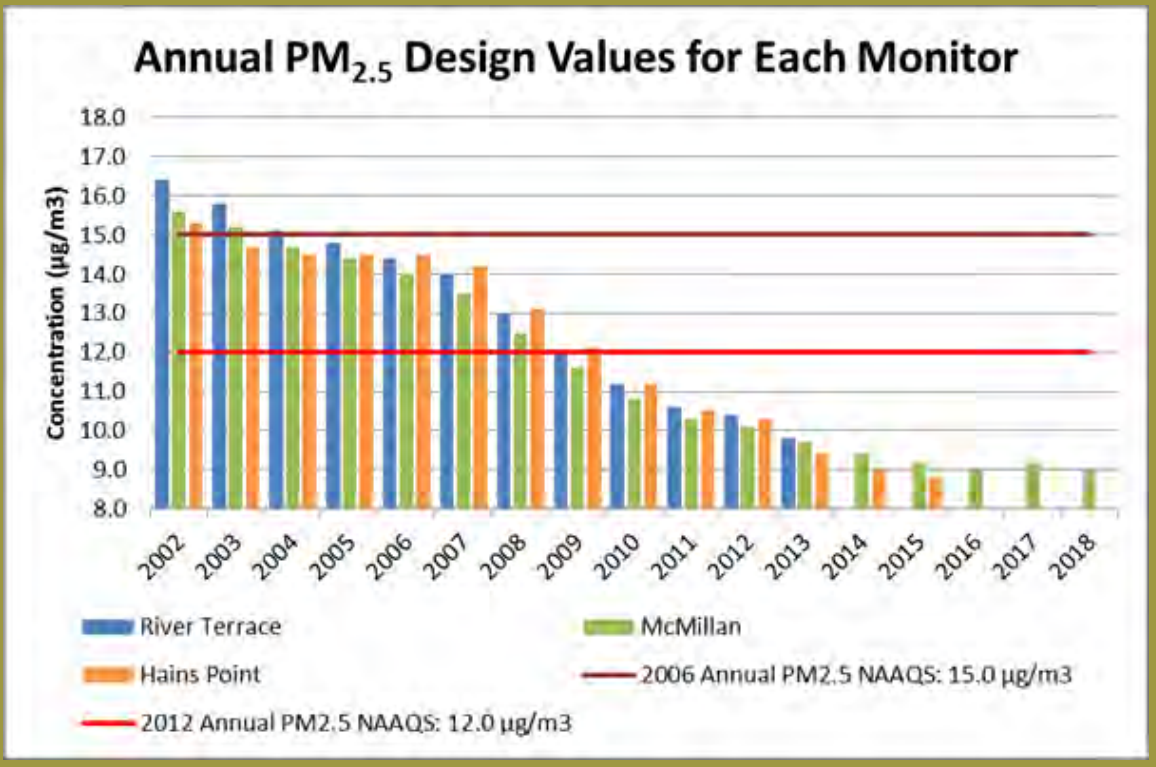
Eight-Hour Ozone Design Concentration Values for Each Monitor 620.7



(Source: DOEE 2019)

Figure 6.8:

Annual Particulate Matter (PM2.5) Design Concentration Values for Each Monitor 620.8



(Source: DOEE 2019)

Through implementation of the GAR, District-wide tree planting efforts, and other GI initiatives, the District is supporting the use of landscaping and tree planting to absorb ozone and other pollutants. 620.9

See Section 615 for more information about the GAR.

Policy E-5.1.1: Attaining Air Quality Standards

Continue to undertake programs and initiatives that move the region closer to attaining and maintaining federal air quality standards. Expand these programs as feasible to incorporate new technology and to reflect best practices around the country. 620.10

Policy E-5.1.2: Regional Planning

Recognize that air quality is a regional issue that requires multi-jurisdictional strategies and solutions. Accordingly, work with surrounding cities, counties, states, the federal government, and appropriate regional organizations to more effectively conduct air quality planning. 620.11

Policy E-5.1.3: Evaluating Development Impacts On Air Quality

Evaluate potential air emissions from new and expanded development, including transportation improvements and municipal facilities, and take measures to mitigate any possible adverse impacts, particularly to any adjoining residential uses. These measures should include construction controls to reduce airborne dust and transportation emissions. 620.12

Policy E-5.1.4: Stationary Sources

Maintain controls on gaseous and particulate emissions from stationary sources of air pollution in Washington, DC, such as boilers and generators. Particular attention should be given to achieving compliance of local industrial/commercial/institutional boilers, which are the largest stationary sources of air pollution in the District. 620.13

Policy E-5.1.5: Improving Air Quality Through Transportation Efficiency

Efficiency Promote strategies that reduce motor vehicle emissions in the District and surrounding region. As outlined in the Land Use and Transportation Elements of this Comprehensive Plan, this includes the development of a fully integrated regional system of buses, streetcars, rail transit, bicycles, taxis, and pedestrian facilities to make it easier and more convenient to travel without an automobile. It also includes the promotion of trip reduction measures, such as video conference facilities, telecommuting, flextime, and carpooling. Strategies to reduce congestion and idling time, such as improved signal timing and reversible commute lanes, also should contribute to air quality improvement. 620.14

Policy E-5.1.6: Clean Fuels

Encourage the use of clean fuel vehicles and enhance efforts to place refueling and recharging equipment at facilities accessible for public use. When feasible, provide financial incentives for District residents and businesses to use clean vehicles, such as reduced motor vehicle tax and license fees. Support proliferation of EVs through innovative rate designs. 620.15

Policy E-5.1.7: Energy Efficiency and Air Quality

Encourage making energy-efficiency upgrades to provide the co-benefit of improving air quality. 620.16

Policy E-5.1.8: Air Quality Education

Support increased public awareness of air quality issues through Air Quality Action Day programs, publication of air quality data, and distribution of educational materials that outline steps residents and businesses can take to help maintain clean air. For the regulated community, continue outreach about air quality requirements and compliance assistance. Increase use of innovative technological outreach, such as a bench monitoring station. 620.17

Policy E-5.1.9: Zero-Emission Vehicles

Encourage the use of electric and zero-emissions vehicles. When feasible, provide financial incentives for District residents and businesses to use electric and zero-emissions vehicles, such as reduced motor vehicle tax and license fees. Support expansion of electric vehicle (EV) charging infrastructure, including innovative designs that encourage off-peak charging and enhance efforts to place refueling and recharging equipment at facilities accessible for public use. 620.18

Action E-5.1.A: SIP

Cooperate with appropriate state, regional, and federal agencies to carry out the federally mandated SIP in order to attain federal standards for ground level ozone by the end of 2021. 620.19

Action E-5.1.B: Control of Bus and Truck Emissions

Collaborate with Washington Metropolitan Transit Authority (WMATA) and local motor coach operators to reduce diesel bus emissions through the acquisition and use of clean fuel and electric transit vehicles. Additionally, encourage natural gas-powered, electric-powered, and hybrid commercial trucks to reduce emissions and improve air quality. 620.20

Action E-5.1.C: Motor Vehicle Inspection Programs

Regularly update the District's motor vehicle inspection and maintenance programs to ensure that they are employing the latest monitoring technologies. Consider expanding requirements for heavy vehicle emission inspections. 620.21

Action E-5.1.D: Air Quality Monitoring

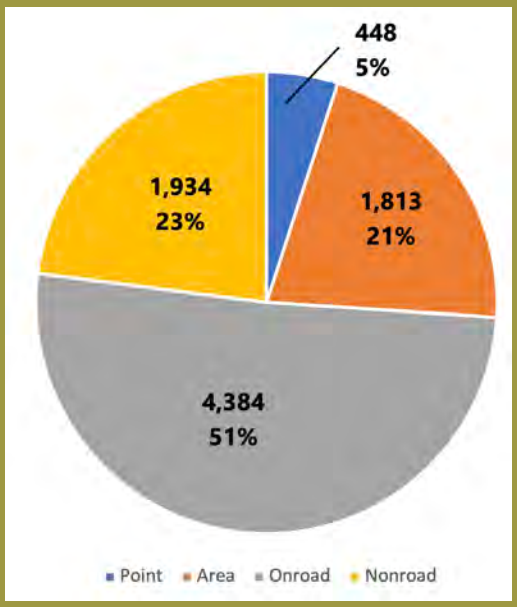
Continue to operate a system of air quality monitors around the District, and take corrective actions in the event the monitors detect emissions or pollution that exceeds federal standards. 620.22

E-6 The Link Between Land Use, Transportation, and Air Quality [621]

Land use and transportation policies work in tandem to affect the region's air quality. Fifty-one percent of nitrogen oxide emissions and 31 percent of volatile organic compounds emissions—the two precursors to ground-level ozone formation—come from transportation, making it the second-largest source (see Figure 6.9 and Figure 6.10, respectively), and as noted earlier, transportation is the largest overall contributor to air pollution. In general, the more vehicle miles" Washington, DC-region residents must travel to reach home, work, shopping, and services, the worse the air quality becomes. Longer commutes are compounded by traffic congestion, which results in additional emissions from idling cars. Despite the use of cleaner-burning fuels and newer vehicles with tighter emissions standards, attaining federal air quality standards will be difficult until the adoption and implementation of new approaches to rethink how the region handles its growth. New approaches include supporting smart city data, applications, and technology to help people and goods move more quickly, cheaply, and efficiently—all of which will also contribute to further reductions in air pollution. [621.1]

Figure 6.9:

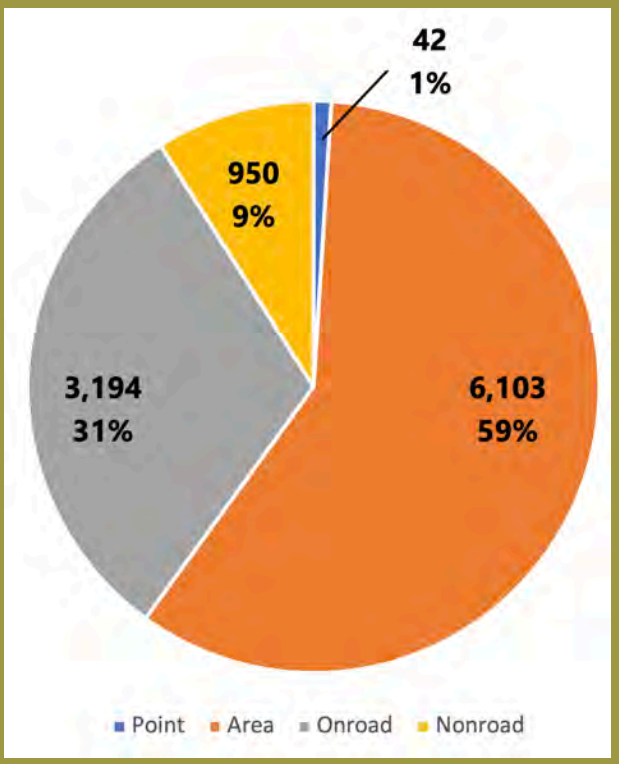
District Nitrogen Oxide Emissions by Sector in 2014 [621.2]



(Source: DOEE)

Figure 6.10:

District Volatile Organic Compounds Emissions by Sector in 2014 [621.3]



(Source: DOEE)

Fortunately, Washington, DC is already implementing sustainable approaches to land use and urban form, resulting in lower vehicle emissions even as the District's population continues to grow. These approaches are at the District, neighborhood, and site level, and together they will help Washington, DC maintain attainment of air quality standards. For example, the District's land use development patterns mean that jobs, housing, and recreation are in proximity to each other. As the Land Use and Transportation Elements of this Comprehensive Plan note, clustering higher-density development along major corridors, bus routes, and near Metrorail stations means shorter and fewer car and truck trips, thus

reducing vehicle miles traveled (VMT) and motor vehicle emissions, which improves air quality for residents. At the same time, historic land use patterns segregated residents by race and income with the result that these residents frequently have longer trips, often by car, to reach jobs, education, shopping and services. Equitable development patterns have the potential to improve or mitigate air quality problems by providing and promoting alternatives to vehicular travel, such as mass transit, biking, or walking. However, the rise of ridesharing services provided by transportation network companies (TNCs) is a countervailing trend that must be considered; likewise, autonomous vehicles may encourage more people to live farther from their work. 621.4

At the site level, several District policies contribute to a further reduction in vehicle emissions. Washington, DC continues to support the proliferation of EV charging and bikeshare stations throughout the District. In addition, the District continues to work with private businesses to develop a suite of incentives that can be offered to employees to encourage clean commuting, such as including facilities for showering after biking and walking, as well as providing transit subsidies. 621.5

The District is fortunate to have one of the best transit systems in the country and many options for traveling without a car. The District, however, is not an island. The air is polluted from the suburbs and by power plant emissions from places as far away as the Ohio Valley. Washington, DC will continue to work with regional partners through MWCOG to support transportation policies resulting in lower air emissions. Recent data shows a reduction in regional emissions is due not only to a cleaner electric grid, but also because of cleaner cars and less driving per person. In addition, the continued development of a safe and convenient regional and District-wide bicycle lane and trail network contributes to a reduction in VMT. 621.6

> *See the Transportation Element for additional policies on improving mass transit, pedestrian, and bicycle circulation, and transportation management.*

E-6.1 Reducing Water Pollution 622

Like cities across the United States, Washington, DC faces the challenge of combating the pollution of its rivers, streams, and groundwater. The problem dates to colonial days when the District disposed of sewage and agricultural waste in its rivers. While the days of open sewers and unregulated dumping are in the past, Washington, DC's waterways are still significantly impaired. Although there is still work to do, given the progress made as a result of DC Water's Clean Rivers Project, the District is significantly closer to achieving the Sustainable DC goal of fishable and swimmable rivers. 622.1

Most of the pollutants entering Washington, DC's waters cannot be traced to specific points. Oil, gas, dust, pesticides, trash, animal waste, and other pollutants are carried to rivers and streams each time it rains. Vegetated and unpaved areas absorb some of these pollutants, while paved surfaces do not. Industrial uses like power plants and military bases also impact water quality. Toxins from these uses have contaminated the groundwater in certain areas and have settled into riverbeds, creating the danger that they will be re-released if the sediment is disturbed. In addition, runoff carries high volumes of fast-moving water to local streams, scouring natural channels and stripping away the resources necessary to support local fish and wildlife. 622.2

As noted in the Infrastructure Element, the combined storm sewers system serves the dual purpose of conveying sewage as well as stormwater in about one-third of the District. During major storms or snow melts, stormwater and sanitary sewage flows exceed the capacity of the conveyance system, causing raw sewage and stormwater to be released into the Anacostia and Potomac rivers, Rock Creek, and tributary streams. Millions of gallons of sewage may be dumped into the river during such events, lowering oxygen levels and damaging aquatic life. When fully completed in 2030, the 18-mile Clean Rivers Project will result in a 96 percent system-wide reduction in combined sewer overflow volume. 622.3

The federal Clean Water Act required the District to take steps to control stormwater pollution and eventually meet clean water standards. The Long-Term Control Plan for sanitary and storm sewer separation is one of these steps. Another is the Municipal Separate Storm Sewer System (MS4) permit, which includes specific requirements for the two-thirds of Washington, DC where storm and sanitary sewers are already separated. The MS4 Program, which is managed by the DOEE, authorizes the discharge from industrial and construction sites and other critical source facilities, monitoring of these discharges, enforcement activities for violators, and annual reporting. In 2001, the District passed legislation authorizing the collection of fees to fund these activities. 622.4

As with air quality, water quality improvements cannot be tackled by the District alone. The Anacostia watershed includes 176 square miles, and over 80 percent of this area is in Maryland. The Potomac watershed is larger still—over 14,600 square miles—and extends as far as West Virginia and Pennsylvania. A number of interstate and multi-agency initiatives have been launched to address water quality problems. These must be sustained and expanded in the future. 622.5

Policy E-6.1.1: Improving Water Quality

Improve the quality of water in the District's rivers and streams to meet public health and water quality standards, and maintain the physical,

chemical, and biological integrity of these watercourses for multiple uses, including recreation and aquatic life. 622.6

Policy E-6.1.2: Wastewater Treatment

Continue sustained capital investment in the District's wastewater treatment system in order to reduce overflows of untreated sewage and improve the quality of effluent discharged to surface waters. Maintain and upgrade the Blue Plains treatment plant as needed to meet capacity needs and to incorporate technological advances in wastewater treatment. 622.7

See the Infrastructure Element for more details on wastewater treatment.

Policy E-6.1.3: Control of Runoff

Continue to implement water pollution control and management practices aimed at reducing runoff and pollution, including the flow of sediment and nutrients into streams, rivers, and wetlands. 622.8

Policy E-5.2.4: Riverbed Sediment

Reduce the concentration of chemicals with identified ecological and human health risks in Anacostia and Washington Channel sediments. Remediation measures should restore wetlands and riparian habitats, address ongoing sources, and minimize the possibility of media (e.g., water, sediment, or biota) contamination resulting from dredging or disturbances of the river bottom. 622.9

Policy E-6.1.5: Groundwater Protection

Protect Washington's groundwater from the adverse effects of construction processes and urban land uses. Contaminated groundwater should be investigated to determine whether long-term monitoring or treatment is necessary or feasible. Future land uses and activities should be managed to minimize public exposure to groundwater hazards and reduce the likelihood of future contamination. 622.10

Policy E-6.16: Control of Illicit Discharges

Provide public outreach and education, and maintain inspection and enforcement to identify and eliminate illicit discharges to Washington, DC's stormwater system and District waters. 622.11

Policy E-6.1.7: Regional Coordination

Promote planning at the watershed level, particularly cooperative efforts with Maryland, to address existing pollution loads in the Anacostia River basin. Undertake similar efforts with jurisdictions in the Potomac watershed to address water quality in the Potomac River. 622.12

Action E-6.1A: Stormwater Management Program

As required by the EPA, Washington, DC creates a Stormwater Management Plan every five years, covering such topics as runoff-reducing GI, maintenance of GI infrastructure, education, surface regulations, fees, and water quality education. The plan should include measures that achieve specific water quality standards, reevaluate and clarify stormwater standards to eliminate confusion, and propose fee levels that are sufficient to maintain an effective stormwater management program and encourage residents and businesses to reduce stormwater pollution. 622.13

Action E-6.1.B: Funding

Continue funding for water quality improvements, including abatement of combined sewer overflow, removal of toxins, and Anacostia River clean up. Set incentive-based fee structures for District residents and commercial property owners. Evaluate opportunities to adjust stormwater fees to accelerate the restoration of local waters as required by the District's federally issued MS4 permit. 622.14

Action E-6.1.C: Monitoring and Enforcement

Maintain a District water pollution control program that enforces water quality standards, regulates land-disturbing activities (to reduce sediment), inspects and controls sources of pollution in the District, and comprehensively monitors District waters to identify and eliminate sources of pollution. This program should be adequately staffed to carry out its mission and to implement innovative stormwater management programs. Other environmental programs—including underground storage tank (UST) regulation, contaminated site remediation, and pesticide control programs—must take groundwater impacts into account in their regulatory and enforcement activities. 622.15

Action E-6.1.D: Clean Water Education

Working with DC Water, DOEE, DCPS, the Office of the State Superintendent of Education (OSSE), and local universities, increase public information, education, and outreach efforts on stormwater pollution. These efforts could include such measures as community clean ups, storm drain marking, school curricula, demonstration projects, signage, and advertisement and media campaigns. 622.16

Action E-6.1.E: Total Maximum Daily Load Implementation

A Total Maximum Daily Load (TMDL) sets the quantity of a pollutant that may be introduced into a water body. As a critical step in implementing these requirements, waste load allocations for individual sources or discharges (including District entities) into the municipal stormwater system should be assigned, and the technologies and management practices to control stormwater should be identified. Continue to work with stakeholders to update

and execute Washington, DC's 2016 Consolidated TMDL Implementation Plan, which details actions to reduce pollution from the MS4 as necessary to achieve water quality objectives. Remove TMDLs for tributaries where the water is not being polluted. Update the District's Watershed Implementation Plan for the Chesapeake Bay, and continue to implement through two-year milestones as part of Chesapeake Bay Program efforts to have all practices in place by 2025 to meet the Chesapeake Bay TMDL. 622.17

Action E-6.1.F: Houseboat Regulations

Improve regulation of houseboats and other floating structures in the Washington Channel, Anacostia River, and Potomac River to reduce water pollution. 622.18

Action E-6.1.G: Clean Marinas

Promote the Clean Marinas Program, encouraging boat clubs and marinas to voluntarily change their operating procedures to reduce pollution to District waters. 622.19

Action E-6.1.H: Rainwater and Greywater

Explore the capture and reuse of rainwater and greywater for potable and non-potable indoor uses, including the creation of new policies and guidance that would allow for captured and recycled water for clothes washers, toilets, showers, dishwashers, and other domestic uses. 622.20

Reducing exposure to noise requires strategies that address both noise "sources" like freeways and airports and noise "receptors" like homes, schools, and hospitals. It also involves the enforcement of ordinances regulating the hours of operation for noise-generating activities, like construction and machinery use.

6

E-6.2 Controlling Noise 623

Noise affects the general health and well-being of District residents. High noise levels can create a host of problems, ranging from stress to hearing loss. Noise can also impact urban wildlife. In the noisiest parts of Washington, DC, the sounds of cars, trucks, buses, helicopters, and sirens may seem almost constant. Even in relatively quiet parts of Washington, DC, household noise sources like car alarms and leaf blowers can be a source of annoyance. While the maintenance of peace and quiet is a basic expectation in most of Washington, DC's neighborhoods, it must be balanced with the realities of living in a vibrant and growing District. 623.1

Reducing exposure to noise requires strategies that address both noise sources (e.g., freeways and airports) and noise receptors (e.g., homes, schools, and hospitals). It also involves the enforcement of ordinances regulating the hours of operation for noise-generating activities, such as construction and machinery use. The Department of Consumer and Regulatory Affairs (DCRA) enforces Chapter 27 of the DC Municipal Regulations Title 20, which formally declares the "policy of the District that every person is entitled to ambient noise levels that are not detrimental to life, health, and enjoyment of his or her property," and further that

"excessive or unnecessary noises within the District are a menace to the welfare and prosperity of the residents and businesses of the District." 623.2

Noise reduction measures also address highways and aviation. The District has a noise abatement and barrier policy for highways, in compliance with Federal Highway Act requirements, that focuses on highway traffic noise and construction noise. Airport noise reduction measures—including regulations on flight paths, hours of operation, aircraft type and model, and helicopters—are coordinated through MWCOG. 623.3

Policy E-6.2.1: Interior Noise Standards

Ensure that interior noise levels in new buildings and major renovation projects comply with federal noise standards and guidelines. Support the retrofitting of existing structures to meet noise standards where they are currently exceeded. 623.4

Policy E-6.2.2: Reduction of Vehicle Noise

Provide regulatory, mitigation, and monitoring measures to minimize exposure to noise from vehicular traffic, including buses, trucks, cars, and trains. Encourage the use of landscaping and sound barriers to reduce exposure to noise along freeways, rail lines, and other transportation corridors. 623.5

Policy E-6.2.3: Household Noise Control

Strengthen enforcement of local ordinances and regulations that limit sources of household noise in Washington, DC, including noise originating from car alarms, construction activities, mechanical equipment and machinery, and similar sources. 623.6

Policy E-6.2.4: Airport Noise Control

Work with appropriate federal and regional agencies to continue aircraft noise reduction programs related to Washington Reagan National Airport, especially in neighborhoods along the Potomac and Anacostia rivers. 623.7

Policy E-6.2.5: Noise and Land Use Compatibility

Avoid locating new land uses that generate excessive noise adjacent to sensitive uses such as housing, hospitals, and schools. Conversely, avoid locating new noise-sensitive uses within areas where noise levels exceed federal and District guidelines for those uses. 623.8

Action E-6.2.A: Evaluation of Noise Control Measures

Continue to evaluate the District's noise control measures to identify possible regulatory and programmatic improvements, including increased education and outreach on noise standards and requirements. 623.9

Action E-6.2.B: Enforcement of Noise Regulations

Pursuant to District municipal regulations, continue to enforce laws governing maximum daytime and nighttime levels for commercial, industrial, and residential land uses; motor vehicle operation; solid waste collection and hauling equipment; and the operation of construction equipment and other noise-generating activities. 623.10

Action E-6.2.C: Aviation Improvements to Reduce Noise

Actively participate in the MWCOG Aviation Policy Committee to reduce noise levels associated with take-offs and landings at Washington Reagan National Airport. Particular emphasis should be placed on limiting nighttime operations, reducing the use of older and noisier aircraft, maintaining noise monitoring stations within the District, and following flight path and thrust management measures that minimize noise over District neighborhoods. 623.11

Action E-6.2.D: Reduction of Helicopter Noise

Encourage the federal government to reduce noise from the operation of helicopters, especially over residential areas along the Potomac and Anacostia rivers during nighttime and early morning hours. 623.12

Action E-6.2.E: Measuring Noise Impacts

Require evaluations of noise impacts and noise exposure when large-scale development is proposed, and when capital improvements and transportation facility changes are proposed. 623.13

Action E-6.2.F: I-295 Freeway Noise Buffering

Consistent with DDOT's noise abatement policy, continue to pursue the development of sound barriers and landscaping to shield neighborhoods abutting the I-295 (Anacostia) Freeway, Kenilworth Avenue, and I-395 (SE/SW Freeway) from noise levels that exceed acceptable standards. 623.14

Ensure that the necessary steps are taken to remediate soil and groundwater contamination in the city, both in areas where future development is likely and in areas that are already fully developed.

E-6.3 Managing Hazardous Substances and Materials 624

Hazardous substances include materials that may pose a threat to human health or the environment when they are improperly handled, stored, or disposed of. The use of hazardous substances is common in households and businesses across Washington, DC, from the perchloroethylene used by dry cleaners, to the pesticides and herbicides used in lawn care, to common cleansers and solvents used in District households. Hazardous building materials such as asbestos, lead, and mercury may be present in many of Washington, DC's older structures. Naturally occurring hazards such as radon, and biological contaminants such as mold, also may be present. 624.1

Hazardous materials are also transported through the District on trucks and in rail cars. Even if all handling, transport, and storage regulations are properly followed, such substances may pose a risk in the event of an accidental spill or act of terrorism. 624.2

A complex set of federal and District regulations govern hazardous substance handling. Many of these regulations are implemented through District programs designed to reduce public health hazards and conserve the environment. These include UST regulation, clean up programs for contaminated sites, toxic substance investigations, and household hazardous waste disposal programs. The level of investigation and clean up required at any given site depends on the degree of contamination, existing land uses, and the particular land use that is planned there in the future. Looking forward, pollution-prevention practices (including hazardous waste minimization and toxic chemical source reduction), stronger environmental review procedures, and continued remediation measures can reduce the likelihood of exposure to hazardous materials and protect public safety and ecological resources. 624.3

Vigilance must be taken to enforce regulations regarding the transport of hazardous materials through Washington, DC. This continues to be a high priority of the District's Emergency Management Agency, both to protect the security of District residents, workers, and visitors, and to respond swiftly and effectively in the event of an emergency. 624.4

Policy E-6.3.1: Hazardous Materials Management

Strengthen and enforce programs to manage the use, handling, transportation, storage, and disposal of harmful chemical, biological, and radioactive materials, including expanded enforcement of local regulations and the establishment of training programs on hazardous materials and emergency planning. 624.5

Policy E-6.3.2: Hazardous Building Materials and Conditions

Protect public health and safety by testing for and, where appropriate, removing lead, radon gas, asbestos, and other hazardous materials from the built environment. When these hazards are abated, require full compliance with all applicable licensing and inspection standards. 624.6

Policy E-6.3.3: Accidental Spills and Releases

Comply with District laws relating to the notification and reporting of accidental spills and releases of hazardous materials. Improve public education and awareness of these requirements as part of a broader effort to improve emergency planning, preparedness, and response in Washington, DC. 624.7

Policy E-6.3.4: Toxic Chemical Source Reduction and Disposal

Encourage the substitution of nontoxic or less toxic chemicals and products for toxic chemicals and products in small businesses and households. Provide options for the disposal of hazardous waste generated by households and small businesses to minimize illegal and harmful dumping. Maintain penalties and fines for the illegal dumping of materials such as used oil and batteries. 624.8

Policy E-6.3.5: Clean Up of Contaminated Sites

Necessary steps shall be taken to remediate soil and groundwater contamination in Washington, DC, both in areas where future development is likely and in areas that are already fully developed. In addition, require soil and groundwater evaluations for any development that is proposed on a site where contamination may be possible due to past activities. Depending on the site, it may also be necessary to investigate the effects of contamination on air quality, surface water, or river sediments, or to conduct an ecological risk assessment. If contamination is found to be above acceptable levels, require remediation and, where necessary, long-term monitoring and institutional controls. 624.9

Policy E-6.3.6: Hazardous Substances and Land Use

Ensure that land use planning and development decisions minimize the exposure of residents, workers, and visitors to hazardous substances. New residences, schools, and similarly sensitive land uses should not be sited in areas where significant quantities of hazardous substances are handled, stored, or disposed. Likewise, new municipal or industrial facilities that use toxic materials or produce hazardous waste should not be sited in residential or environmentally sensitive areas. 624.10

Policy E-6.3.7: Design Considerations

For uses where hazardous substances are handled, require design and construction practices that minimize the possibility of hazardous spills, accidents, leaks, or security breaches, and encourage other measures as necessary to prevent injury and disease and to protect property and natural resources. 624.11

Policy E-6.3.8: Hazardous Materials Transport

Regulate and guide the transport of hazardous materials through the District to minimize risks to human health, property, and the environment. 624.12

See the Land Use Element for additional policies on conflicts between industrial and residential uses. See the Community Services and Facilities Element for further information on emergency preparedness.

Action E-6.3.A: Household Hazardous Waste Disposal

Expand the District's education and outreach programs on the dangers of household hazardous wastes, and continue to sponsor and publicize household hazardous waste collection events. Provide additional sites and regularly scheduled events for the safe collection and disposal of such wastes. Explore options for addressing the collection and disposal of hazardous waste from businesses that are classified as conditionally exempt small quantity generators. 624.13

Action E-6.3.B: Compliance with Hazardous Substance Regulations

Maintain regulatory and inspection programs to ensure that all non-household entities that store, distribute, or dispose of hazardous materials comply with all applicable health, safety, and environmental requirements. These requirements range from used oil collection facilities at automotive repair shops to disposal of medical waste from area hospitals and clinics. 624.14

Action E-6.3.C: Reducing Exposure to Hazardous Building Materials

Implement programs to reduce exposure to hazardous building materials and conditions, including the existing radon gas testing program, the asbestos program, and the childhood lead poisoning prevention and lead-based paint management programs. The latter programs are designed to eliminate childhood lead poisoning District-wide and to regulate the lead abatement industry to ensure the use of safe work practices. District programs should provide technical and financial support to the owners of residential properties, and particularly resident homeowners, for the abatement of these hazards. 624.15

Action E-6.3.D: UST Management

Maintain and implement regulations to monitor USTs that store gasoline, petroleum products, and hazardous substances. Prevent future releases from USTs to soil and groundwater, abate leaking tanks and other hazardous conditions, remediate contaminated sites, and provide public education on UST hazards. 624.16

Action E-6.3.E: Reductions in Pesticide Use

Maintain a pesticide management program that complies with the District's Municipal Regulations for pesticide registration, operator/applicator certification, and handling/use. Implement new programs to promote integrated pest management by the public and private sectors, and discourage the use of harmful pesticides by District residents, institutions, and businesses. Encourage household practices that limit mosquito breeding areas by draining standing water in such places as clogged drain pipes, flower pot trays, and discarded tires. 624.17

Action E-6.3.F: Hazardous Substance Response and Water Pollution Control Plans

Complete the hazardous substance response plan required under the District's Brownfields Act, and update the water pollution control contingency plan, as required under the District's Water Pollution Control Act. 624.18

Action E-6.3.G: Water Pollution Control Contingency Plan

Update the Water Pollution Control Contingency Plan, which includes specific notification and response strategies for major and minor spills/releases and effective containment/clean up methods. Incorporate changes in organizational structures, laws, and regulations, and in programmatic needs. 624.19

E-6.4 Drinking Water Safety 625

Drinking water quality in the District is impacted by land use in the Potomac Basin and by the condition of Washington, DC's water distribution system. Runoff from upstream development, dairy and hog farms, and other agricultural and mining uses presents an ongoing threat to the water supply. Even if the water supply were pristine, however, the pipes used to transport water from treatment facilities to individual customers would affect water quality. Some of these pipes are more than 100 years old and are in poor condition. Problems with old, leaky water pipes are compounded by dead ends where water does not adequately circulate. DC Water is addressing this issue by creating open loops to allow for improved water circulation through the system. 625.1

Water Pollution Control Contingency Plan

In 2011, MWCOG developed a Water Pollution Control Contingency Plan on behalf of the District. The plan is intended to provide guidance to the District agencies and departments that respond to hazardous substance, oil, and sewage spills that may threaten or taint ground or surface waters or natural resources within the boundaries of Washington, DC. To ensure that this plan remains current, it will be updated and revised every five years. 624.18a

Protecting Drinking Water

DC Water is working with the Washington Aqueduct Division of the U.S. Army Corps of Engineers (USACE) to minimize lead release from pipes throughout the District by controlling corrosion, monitoring for lead at the tap, replacing lead service pipes, educating customers on the health impacts of lead, and helping them identify and remove lead sources on their property. Protecting drinking water from lead sources is the shared responsibility of DC Water and the property owner. 625.2a

Advancements in technology, like DC Water's interactive map that helps property owners identify their water service line material, increase transparency and strengthen residents' confidence in their drinking water. 625.2b

A related water supply issue is exposure to lead. Water is lead-free when it leaves the treatment plant, but lead can be released when water comes in contact with pipes and plumbing fixtures that contain lead. Lead service lines between the distribution system and individual homes are relatively common in Washington, DC. There are about 11,300 known lead service lines in public spaces, and 7,500 known lead service lines on private property. Considering most pipes on private property are unknown, the District estimates there are 48,000 lead service lines on private property. Lead sources and lead levels vary between buildings, so it is important to identify and remove any lead sources in and to each building. While the risk of lead poisoning is very low for most, it can be more significant for infants and children. Tests conducted in 2004 showed elevated levels of lead in tap water, prompting a collaborative effort by DC Water, the EPA, and the District Department of Health (DC Health) to accelerate service-line replacement, increase monitoring, and enact corrosion-control measures. DC Water's efforts to replace water service lines are partially supported through a new meter-based fee established in 2016. 625.2

Policy E-6.4.1: Drinking Water Safety

Ensure the safety of Washington, DC's drinking water supply and distribution system. Maintain sustained efforts to reduce health hazards associated with lead and other contaminants. 625.3

Policy E-6.4.2: Affordable Water Access

Ensure affordable access to safe drinking water through continued support for DC Water's programs that discount the amount of water needed for residents' basic needs. 625.4

Action E-6.4.A: Lead Pipe Testing and Replacement

Aggressively implement programs to test for lead, replace lead feeder pipes, and educate the community on safe drinking water issues and stagnant water control. 625.5

Action E-6.4.B: Source Water Conservation

Implement measures to protect natural systems and abate pollution sources in the Potomac Basin that could potentially harm the District's drinking water quality. 625.6

Action E-6.4.C: Interagency Working Group

Create an interagency working group on safe drinking water to address drinking water emergencies. Coordinate with DC Water and DC Health to expand public education on water supply. 625.7

E-6.5 Sanitation, Litter, and Environmental Health 626

Among the many aspects of environmental health in the District are the maintenance of sanitary conditions, the reduction of litter, and the control of disease-carrying pests. DC Health maintains numerous programs to reduce foodborne illness, ensure compliance with hygiene standards, provide for animal and welfare control, and reduce exposure to animal-transmitted diseases like rabies and West Nile Virus. 626.1

Litter and trash are probably the most visible and pervasive forms of pollution in Washington, DC. Policies and programs have been developed to address issues with litter and trash, including establishment of a $0.05 fee on disposable plastic and paper retail bags; a ban on the use of polystyrene foam take-out containers, straws, and other food service ware that is not recyclable or compostable from any entity that serves or sells food in the District; implementation of a robust street-sweeping program; stringent enforcement against littering and illegal dumping; operation of a skimmer boat fleet in the lower Anacostia River; installation of litter traps in the Anacostia River; robust rat control programs that involve cleaning up litter and trash; implementation of education and outreach programs; and funding for the Mayor's Office of the Clean City, which provides leadership on these issues. 626.2

Policy E-6.5.1: Vector Control

Continue and strengthen efforts to control rats, mice, mosquitoes, and other disease vectors and pests. A variety of related strategies should be used to support these programs, including public outreach and education, garbage control and containment, adequate trash and refuse collection services, ongoing maintenance of public space, enforcement of littering and dumping regulations, clean up of construction and demolition debris, structural controls and integrated pest management, and a reduction in the number of vacant and abandoned buildings. 626.3

Policy E-6.5.2: Clean City Programs

Improve environmental quality through programs that promote efficient trash removal, neighborhood clean ups, and levying of fines and penalties for the abandonment of personal property (including cars) and illegal dumping. 626.4

Policy E-6.5.3: Discouraging Illegal Dumping

Develop and maintain effective public education and enforcement tools to curb littering and illegal dumping, and to promote the safe disposal of solid waste (including hazardous waste, medical waste, construction debris, used oil, and scrap tires), and bulky items. 626.5

Policy E-6.5.4: Environmental Health Activities

Maintain and improve existing District programs to ensure community hygiene, food and restaurant safety, animal welfare and control, and the control of disease vectors. Promote continuous coordination among District agencies to ensure healthful and sanitary conditions throughout the District. 626.6

Action E-6.5.A: Expanded Trash Collection and Street Sweeping

Evaluate and implement new programs to ensure the cleanliness of vacant properties, roadsides, public spaces, parks, and District-owned lands. Continue implementation of environmental street sweeping in hot spots for trash. 626.7

Action E-6.5.B: Trash Collection in District Waterbodies

Continue to install and maintain trash traps in the District's waterbodies. Explore opportunities to partner with Virginia and Maryland on capturing trash that is deposited in rivers and streams upstream of the District. Continue to implement the District's skimmer boat fleet in the lower Anacostia River. 626.8

Action E-6.5.C: Neighborhood Clean Ups

Co-sponsor and participate in neighborhood and District-wide clean up activities, such as those currently held along the Potomac and Anacostia rivers and around schoolyards and District parks. Encourage ANCs, local institutions, businesses, and other community groups to develop and announce clean up campaigns in conjunction with the District's bulk trash removal schedule. 626.9

Action E-6.5.D: Strengthening and Enforcing Dumping Laws

Take measures to strengthen and enforce the District's littering, rodent and disease vector control, and illegal dumping laws. These measures should include:

- Providing adequate funding to carry out anti-littering programs;
- Empowering the community to report illegal dumping activities;
- Increasing public education on dumping laws, including posting of signs where appropriate; and
- Expanding surveying and enforcement activities. 626.10

Action E-6.5.E: Publicizing and Expanding Bulk Waste Disposal and Recycling Options

Continue to sponsor and publicize options for bulk waste disposal and recycling, including information on the Fort Totten transfer station and the District's schedule for curbside bulk trash waste removal. Increase the types of materials that can be dropped off by residents, including hard-to-recycle items. 626.11

Action E-6.5.F: Single-Use Bottles

Discourage the purchase of single-use bottles, which often end up in parks and streams, by encouraging persons to carry refillable water bottles and by encouraging institutions to have working water fountains and bottle-filling stations. Consider mandating manufacturer take-back programs for beverage containers and other packaging. 626.12

Action E-6.5.G: Vacant and Underused Properties

Continue investigating and classifying vacant and underused properties. Continue pursuing enforcement of violations on these properties to protect the health, safety, and welfare of the general public. 626.13

Portions of the District are within the FEMA-designated 100-year flood plain and are subject to inundation during hurricanes and other severe storms.

See the Hazardous Materials section of this chapter for additional actions relating to hazardous waste disposal.

E-6.6 Other Hazards and Pollutants 627

Two other environmental hazards are addressed in this Comprehensive Plan. The first, light pollution, has been raised in the past around the Naval Observatory in the northwest quadrant. In some instances, brighter lighting may be desirable to enhance public safety or illuminate civic buildings and monuments. In other instances dark skies are more desirable. Where lighting is required or desired, steps can be taken to use the correct number of lights, coloring, and brightness of lighting for the desired purpose; direct the lighting appropriately; employ energy-efficient lighting devices; and design and install quality lighting that reduces sharp contrast, glare, and halo effects. Electromagnetic fields (EMF) are the second hazard, which can be attributed to communication antennas and electric power facilities. Maintain compliance with all Federal Communications Commission (FCC) siting standards for communication antennas and electric power facilities. 627.1

Policy E-6.6.1: Prudent Avoidance of EMF Impacts

Incorporate prudent avoidance in decisions regarding the approval, location or routing, and intensity of facilities that generate EMF, such as power lines and communication antennas in accordance with FCC guidelines. Such facilities should be located only when and where necessary, based on local service needs, and should be designed using methods to mitigate involuntary public exposure to potential adverse effects. 627.2

Policy E-6.6.2: Co-Location of Antennas

Consider the joint use and co-location of communication antennas to reduce the number of towers necessary, thereby reducing aesthetic impacts and limiting the area of radiofrequency exposure. 627.3

Policy E-6.6.3: Light Pollution

Consistent with the goals of Sustainable DC, maintain regulations for outdoor lighting to reduce light pollution, conserve energy, and reduce impact on wildlife, particularly migratory birds. Particular attention should be given to preventing glare and nighttime light trespass near the Naval Observatory, so that its operational needs are respected. 627.4

Action E-6.6.4: Managing Backlight, Uplight, and Glare

Work to reduce backlight, uplight, and glare and identify programmatic improvements such as increased education and outreach on light standards and requirements. 627.5

E-6.7 Achieving Environmental Justice 628

Environmental justice refers to the fair treatment of people of all races, cultures, national origins, and incomes, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. A just community is one in which all people experience protection from environmental and health hazards and have equal access to the decision-making process for having a healthy environment. 628.1

These are particularly important principles to abide by when the goal of the Comprehensive Plan is to grow an inclusive city. Some District neighborhoods have been adversely impacted by pollution-generating uses and other forms of environmental degradation, particularly in Wards 5, 6, 7, and 8. Power stations, public works facilities, rail and highway infrastructure, and a variety of industrial uses have all been concentrated in these areas. Many were historically located in communities of color and low-income neighborhoods that lacked the resources to fight these uses. The legacy of these uses includes the pollution of the Anacostia River, contaminated sites, and continuing noise, air pollution, and hazardous cargo on roads and rail that disproportionately impact often overlapping vulnerable populations, including the young, the old, those with existing health conditions, lower income residents and communities of color. It is critical to identify and remove or mitigate these existing environmental conditions. Low-income and minority communities must not face disproportionate environmental burdens and must enjoy clean and safe places to live, work, play, and learn. As Washington, DC grows and changes, it is important to continue to focus on environmental justice through an equity lens in order to mitigate and prevent harm to current and future residents. Furthermore, all residents must have a fair and meaningful opportunity to participate in environmental decisions. 628.2

Policies and actions found throughout the Comprehensive Plan, particularly those focused on improving equity and resilience, comprise a forward-

looking approach to environmental justice. It is the District government's charge to improve the environment of vulnerable communities that continue to face significant barriers to overall health, livelihood, and sustainability. 628.3

Policy E-6.7.1: Addressing Environmental Injustice

Continue to develop and refine solutions to avoid or mitigate the adverse effects of industrial, transportation, municipal, construction and other high impact uses, particularly when proximate to residential areas, and specifically identify and address impacts to vulnerable populations. These solutions include enhanced buffering; sound walls; operational improvements; truck routing; regular air, soil, and water quality assessments; and regulating specific uses that result in land use conflicts. 628.4

Policy E-6.7.2: Expanded Outreach to Underserved Communities

Identify and understand the needs of the entire community, particularly vulnerable populations, lower-income residents, communities of color, or people with characteristics such as age-related and health conditions that make them more susceptible to pollutant exposures. Incorporate these needs into plans, programs, and investments. Expand local efforts to involve and enable the equitable participation of economically disadvantaged communities—particularly those communities that historically have been impacted by power plants, trash transfer stations, and other municipal or industrial uses—in the planning and development processes. 628.5

Rising temperatures may also increase the length and severity of the pollen season for plants such as ragweed. Lengthened pollen seasons have already been observed in other regions. The risk of some diseases may also increase. West Nile virus, transmitted by mosquitoes, could become more common due to rising temperatures, which speed up the mosquito life cycle and increase biting rates, as well as dry periods that benefit the type of mosquito that transmits West Nile. The effects are still uncertain and likely to vary by region. Increased flooding from more intense storms could lead to more indoor dampness and mold, which contribute to asthma, allergies, and respiratory infections. 628.6

The Environment and Health

Environmental factors such as air and water quality are fundamental determinants of people's health and well-being. These factors can also lead to disease and health disparities when the places where people live, work, learn, and play are burdened by social inequities. These social inequities, often referred to as *social determinants of health*, include differences in individual behaviors, socio-cultural influences, access to health services, economic status, and literacy levels. Environmental health disparities exist when communities exposed to a combination of poor environmental quality and social inequities have more sickness and disease than higher-income, less polluted communities. 628.3a

Rising Temperatures

Hot days can be unhealthy—even dangerous. Rising temperatures will increase the frequency of hot days and warm nights. High air temperatures can cause heat stroke and dehydration and affect people's cardiovascular and nervous systems. Warm nights are especially dangerous because they prevent the human body from cooling off after a hot day. Certain people are vulnerable, including children, the elderly, the sick, and low-income residents. Because Washington, DC is warmer than surrounding areas and does not cool off as quickly at night, Washingtonians—particularly those without air conditioning—face a greater risk of heat-related illnesses. Furthermore, high air temperatures can increase the formation of ground-level ozone, a component of smog that can contribute to respiratory problems. 628.5a

Policy E-6.7.3: Capital Facilities

Consider factors supporting environmental justice when updating the capital improvement program for existing public facilities and the development of new facilities. Plan for the equitable distribution of infrastructure improvements and public facilities and services, considering both number/size and access/distance to facilities. 628.7

See the Community Services and Facilities Element and the Infrastructure Element for further information about capital facilities.

Policy E-6.7.4 Health Impacts of Municipal and Industrial Uses

Inform public policy decisions on the siting of municipal and industrial facilities using environmental justice principles, recognizing links between public health and the location of municipal and industrial uses such as power plants and waste treatment facilities. 628.8

See the Land Use Element regarding industrial uses and mitigation of impacts.

Action E-6.7.A: Clean and Reuse Contaminated Properties

Clean up brownfields and Superfund sites to improve the environment and the health of surrounding neighborhoods, and so that these sites can be reused for commercial and industrial activities, housing, parks, and other community facilities that can boost local economies and improve quality of life. 628.9

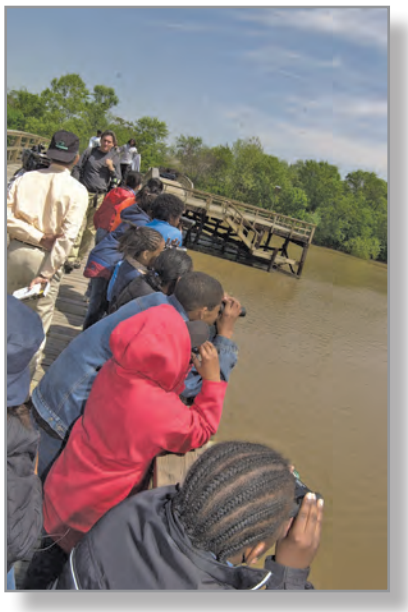
Action E-6.7.B: Environmental Health Threats in Affordable Housing

Audit and eliminate environmental health threats (e.g., mold, lead, and carbon monoxide) in the District's affordable housing. Work with the DC Housing Authority to reduce these threats, as well as threats from other contaminants, including lead in drinking water, in all District affordable housing. 628.10

E-7 Environment, Education, and the Economy 629

The final section of this Element presents policies and actions that tie environmental quality to strategic decisions about government operations, economic growth, and education in Washington, DC. These policies take the Environmental Protection Element beyond its traditional focus to a new level that recognizes the link between environmental quality and the broader goals set by the Vision for Growing an Inclusive City. The basic premise is that environmental protection should not be seen as a regulatory burden or an added expense, but rather as a measure of stewardship, respect for the earth, and respect for communities that have borne the brunt of

previous decision-making affecting the environment. Environmental protection can ultimately reduce the cost of doing business by reducing accidents, disease, and waste. It can create jobs for District residents, strengthen tourism and hospitality, improve the educational experience for District students, and make the District a more attractive and healthy place for all those who live and work there. 629.1



Aquatic and wildlife education programs instill appreciation of natural resources in our youth and provide them with knowledge and skills that they may use later in life. Environmental education activities should continue with adult programs, professional development for teachers, and outreach to the business community on environmental quality issues.

E-7.1 Greening the Government 630

The District needs to set high standards for its own operations if it expects others in the community to follow suit. It should be a role model in energy efficiency, renewable energy production, green building construction, GI, sustainable transportation and vehicles, environmentally sound landscaping, and adhering to green meeting standards. It should lead the way in sustainable materials management, sustainable procurement, reducing waste generation, reusing materials whenever possible, and recycling and composting what is left. It should also ensure its buildings and infrastructure are resilient to a changing climate. 630.1

District government will continue to adopt as appropriate the latest green construction codes for all new construction and major renovations. The International Green Construction Code (IgCC) and Energy Conservation Code are international standards for the most innovative practices in green building. District government will continue to integrate the most recent version of the IgCC in the District's construction codes for all new construction and major renovations, which will apply to both public and private buildings of over 10,000 square feet. 630.2

In 2003, a Mayor's Order established a Greening the Government subcommittee comprised of directors from almost 20 District agencies. The subcommittee was charged with setting priorities and measurable goals to further energy efficiency and environmental health in District government workplaces. It was asked to implement energy efficiency measures,

Environmental Education

Washington, DC partners with environmental nonprofits and advocacy groups to promote environmental education throughout the District, with the goal of raising awareness about the intersections among human activities and the built and natural environments. These partnerships provide a variety of programs, including educational boat tours, wetland restoration planting projects, river clean ups, classroom fish hatching and restoration projects, and Meaningful Watershed Educational Experiences. The District also organizes special annual environmental education events with its partners, such as the Anacostia Environmental Youth Summit, Family & Youth Casting Call, and DC EV Grand Prix. In addition, the DC Infrastructure Academy (DCIA) coordinates, trains, screens, and recruits residents to fulfill the needs of the infrastructure industry and infrastructure jobs with leading companies, including in the renewable energy sector. Further, Solar Works DC, a low-income solar installation and job training program, aims to increase access to clean energy and create a long-term pipeline for green jobs. 629.1a

educate the District workforce, and bring green building practices into District buildings. The subcommittee produced a Strategic Plan in 2004. An additional Mayor's Order on Greening the Government was promulgated in 2013 to build on the initial order. Key elements of the plan are summarized in the policies and actions below. 630.3

Policy E-7.1.1: GI and Green Building Methods for the District

Strongly encourage the use of GI best management practices and green building design methods and materials in new construction and major rehabilitation projects undertaken by District government. 630.4

Policy E-7.1.2: Environmentally Friendly Government Operations

Promote energy-efficient and environmentally friendly District government operations, the purchase of recycled and recyclable products, procurement of green power for District operations where feasible, the use of energy-saving equipment, and contracting practices that include incentives for sustainable technology. 630.5

Policy E-7.1.3: Sustainable Landscaping

Require sustainable practices for landscaping projects, GI, and restoration projects on District properties that reduce the need for watering and mowing, control the spread of invasive species, increase the use of landscaping for stormwater management, provide habitats, and reduce the use of pesticides and herbicides. Consider using industry best practices and certifications to guide this policy. 630.6

Action E-7.1.A: Green Building Legislation

Update legislation to increase green standards for projects constructed by the District or receiving funding assistance from the District. Strive for higher levels of energy efficiency, renewable energy requirements, net-zero standards for new construction, and broader sustainability metrics for public projects, using 2019 as the baseline year. 630.7

Action E-7.1.B: Energy Management Plans

Require the submittal and periodic updating of Energy Management Plans by District agencies. These plans should be developed in coordination with Clean Energy DC to ensure that they have baselines, goals, and strategies that are compatible with, and support the goals and objectives of, Clean Energy DC and Climate Ready DC. 630.8

Action E-7.1.C: Sustainable DC

By 2032, fully implement Washington, DC's sustainability plan, Sustainable DC, to address the District's built environment, energy, food, nature, transportation, waste, and water. Dedicate District government staff and funding to implement the Sustainable DC Plan, track progress, and make the results publicly available. 630.9

Action E-7.1.D: Sustainable DC Innovation Challenge

Fully launch the Sustainable DC Innovation Challenge to help District agencies test new innovations and technology with the goal of increasing the use of renewable energy. 630.10

Action E-7.1.E: Reduce Energy Use in District Government-Owned Buildings

Retrofit and maintain District government-owned buildings to minimize energy use. Install renewable energy technology to minimize energy use. 630.11

Action E-7.1.F: Environmental Partnerships

Continue to leverage the local business and environmental advocacy communities by collaborating on sustainability initiatives. 630.12

Action E-7.1.G: Environmental Audits

Evaluate existing and proposed new District government facilities to guide decisions about retrofits and other conservation measures. Audits should include analysis with regard to resilience and energy efficiency and also be required any time the District leases space for government use. Resilience audits should support Washington, DC's capacity to thrive amidst challenging conditions by preparing and planning to absorb, recover from, and more successfully adapt to adverse events. 630.13

Public-Private Coordination

Coalitions of stakeholders and government representatives—including the Food Policy Council (FPC), GBAC, and UFAC—regularly convene to evaluate and make recommendations regarding the effectiveness of the District's sustainability policies. These coalitions analyze the impact of existing and proposed policies on the District's environmental health, including the potential impact of policies on the specific environmental challenges facing Washington, DC. 630.12a

E-7.2 Sustainability Education and Stewardship 631

A key element of the District's environmental strategy is increased environmental education. This should begin with collaborative efforts between local nonprofits, the private sector, District and federal governments, and K-12 schools. The District's Sustainable DC Plan, Environmental Literacy Plan, and regional 2014 Chesapeake Bay Plan provide road maps for environmental education implementation. Aquatic and wildlife education programs instill appreciation of natural resources in youth and provide them with knowledge and skills that they may use

later in life. Environmental education activities should continue with adult programs, professional development for teachers, and outreach to the business community on environmental quality issues. These programs should move Washington, DC beyond environmental awareness to increased stewardship and informed action. Furthermore, demonstration projects, such as those funded through the Sustainable DC Innovation Grant program, provide the means to introduce and experience innovative ideas and approaches and prepare the way for replication and upscaling. 631.1

Policy E-7.2.1: Sustainability Education in District Schools

Expand programs to educate youth from preschool to high school about the importance of sustainability. 631.2

Policy E-7.2.2: Continuing Education on the Environment

Encourage greater participation by residents, business owners, institutions, and public agencies in reaching environmental goals. This should be achieved through public education, community engagement, compliance assistance, and environmental enforcement programs. 631.3

Policy E-7.2.3: Interpretive Centers

Support the continued development of environmental education and nature centers in the District, particularly in recovering habitat areas such as the Anacostia River shoreline. 631.4

Policy E-7.2.4: Demonstration Projects

Encourage best practice guides, demonstration projects, tours, and other tools to create a culture where the green choice (i.e., the choice that results in greater energy efficiency, resiliency, sustainability, innovation, and better environmental health) is the preferred choice for energy, transportation, construction, and design decisions. 631.5

Policy E-7.2.5: Sustainable Purchasing

Strengthen the District's Sustainable Purchasing Program through the addition of guidance in new product categories, making the resources more accessible, training more District employees on the use of the product specifications, and making Environmentally Preferable Products and Services (EPPS) the default through District purchasing systems. 631.6

See also Parks, Recreation, and Open Space Policy PROS-2.2.8 on Stewardship of public space.

Action E-7.2.A: Partnerships for Environmental Education

Develop partnerships with environmental nonprofits and advocacy groups to promote environmental education in the District. Examples of such programs include the Earth Conservation Corps effort to employ youth in environmental restoration along the Anacostia River; the Anacostia Watershed Society's tree planting, clean up, and riverboat tour events; and the NPS summer programs for high school students at Kenilworth Park. 631.7

Action E-7.2.B: Production of Green Guide

Continue to update guidance aimed at homeowners, builders, contractors, and the community-at-large with guidelines and information on green building and GI. 631.8

Action E-7.2.C: Sustainability in Schools, Recreation Centers, and Libraries

When modernizing all public school buildings, recreation centers, and libraries, reduce their environmental footprint and integrate sustainable and healthy practices into their operations. Continue to support District-wide schoolyard greening efforts and related programs and encourage public and charter schools to participate in schoolyard greening efforts. 631.9

E-7.3 Environment and the Economy 632

Environmental and economic development goals intersect with respect to the redevelopment of brownfield sites. Brownfields include industrial, commercial, institutional, or government sites that are abandoned or underused, in part due to environmental contamination or perceived contamination. Their redevelopment provides the opportunity to revitalize underserved communities, increase property tax revenue, and create new jobs. In the District, a Voluntary Clean up Program has been initiated to provide incentives to clean up brownfields and put them back into active use. 632.1

Linked to the redevelopment of brownfields is the idea of growing the environmental sector of the District's economy. A number of Washington, DC-based organizations have pioneered the idea of building a green-collar workforce to demonstrate how employment and natural resource conservation can sustain one another. Training programs have been established to help District youth find jobs in green construction, horticulture, parks and recreation, landscaping, recycling, renewable energy, and similar professions. The District can contribute to these programs through initiatives to attract green businesses to Washington, DC. Such efforts can help diversify the economy and provide new jobs while advancing the sustainability goals of the Comprehensive Plan. 632.2

Policy E-7.3.1: Brownfield Remediation

Clean up and redevelop contaminated brownfield sites, providing new business and job opportunities and expanding land resources for equitable development, as appropriate, housing and affordable housing, as appropriate, open space, and other purposes. Expand financial incentives for the remediation and redevelopment of these sites. 632.3

Policy E-7.3.2: Job Training

Continue to train more District residents to be competitive for livable-wage jobs in growing industries such as sustainability, the environment, and resilience. Connect underemployed residents to training programs and any necessary social services. 632.4

Policy E-7.3.3: Incentives for Green Business

Support economic incentives that encourage environmentally sustainable businesses to locate in the District. 632.5

Action E-7.3.A: Voluntary Clean Up Program

Continue the District's Voluntary Clean Up Program. The program is designed to encourage the investigation and remediation of contamination on any site that is not on the EPA's National Priority List and that is not the subject of a current clean-up effort. 632.6

Action E-7.3.B: Sustainable Business Program

Develop a more robust, voluntary sustainable business program that partners with businesses to help them operate sustainably. 632.7

Action E-7.3.C: Green-Collar Job Corps

Continue to implement green-collar job training programs focused on GI installation and maintenance, solar installations, and lead abatement in order to educate and train unemployed or underemployed District residents. Efforts should be made to connect trainees with employers in the green fields upon the completion of their training programs. 632.8

E-7.4 Environmental Program Management [633]

The final section of this chapter addresses the administration of environmental policies and programs in Washington, DC. [633.1]

Policy E-7.4.1: Adequacy of Funding

Provide for adequate funding and coordination of environmental protection activities and ensure that the environmental impacts of public actions and decisions are fully evaluated. [633.2]

Action E-7.4.A: DOEE

Provide the necessary staff resources, funding, and regulatory authority for the DOEE to achieve its mission and successfully implement the District's key environmental protection programs. [633.3]

[i] www.ipcc.ch/report/ar5/wg1.

[ii] https://doee.dc.gov/node/1110407