The District of Columbia's Multimodal Long-Range Transportation Plan

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moveDC Vision
The District of Columbia will have a world-class transportation system serving the people who live, work, and visit the city. The transportation system will make the city more livable, sustainable, prosperous, and attractive. It will offer everyone in the District exceptional travel choices. As the transportation system evolves over time, the District will:

- Be more competitive and attractive locally, regionally, nationally, and internationally
- Have safer and more vibrant streets and neighborhoods
- Have cleaner air, streams, and rivers, and be more responsive to climate change
- Accommodate the travel needs of all residents, workers, and visitors regardless of age or ability
- Integrate the District’s transportation system with the region’s transportation network

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Well-designed streets can dramatically improve the livability of a city's neighborhoods.
Sustainability and Livability

I. Quality of Place

Washington, D.C. has a notable history of using public space to define the city and create memorable spaces in neighborhoods. From views of the Capitol along Pennsylvania Avenue, to the neighborhood networks of parks, playgrounds, and recreation centers, to commercial corridors and new developments—defining characteristics and sense of place are crafted through careful planning, regulation, and a tradition of enhancing the public right-of-way for District residents. Well-designed public spaces balance the mobility and access needs for all users and contribute to the efficiency of the city as well as its sense of place.

The District’s right-of-way—including streets and public spaces—is the city’s largest infrastructure resource. In addition to hosting transportation functions, it also supports livability by offering green space, promenades, and meeting places.

Streets are both an environmental challenge and opportunity. Streets are home to nearly 150,000 street trees in the District, as well as the “public parking” area, which is the area between buildings and sidewalks that is public right-of-way under the care of private owners. Collectively, public parking areas make up the largest public park in the District. Streets in the District also make up more than 6,500 acres of impervious surface and contribute to stormwater runoff and pollutants in the area’s water bodies. The District has and will continue to identify green design solutions and partnerships to help mitigate these impacts.

The Sustainability and Livability Element addresses sustainability and livability through three components:

- Urban forestry
- Stormwater management
- Public space management

It focuses on the relationship of the public right-of-way with the natural environments and quality of life for District residents. The Sustainability and Livability Element also addresses how the system should evolve over time to better serve the city’s growing population and better preserve its natural systems. The District’s right-of-way can—and should—continue to be developed and maintained through policies and projects that maximize sustainable stewardship of the environment and improve livability for District residents, workers, and visitors, and serve as a model for cities across the globe.
II. Existing Conditions

Urban Forestry
DDOT’s Urban Forestry Administration (UFA) has a mission to manage and increase the District’s urban canopy of street trees. Street trees contribute to improved air quality; increased ground water retention, minimizing runoff and flooding; temperature moderation; community aesthetics; and other community benefits. UFA, in coordination with other federal and local stakeholders, cares for and manages the urban tree canopy of the District of Columbia. Trees provide many economic, social, and health benefits that contribute to livability in urban municipalities. It is important that urban development be designed closely with urban forest health protection and management goals to maintain community livability.

Land ownership and geographic distribution play a critical role in maintaining and growing the urban canopy. The District’s land ownership is divided among the District government, the federal government, and private property owners, which presents unique constraints and opportunities for addressing maintenance and expansion of the District’s urban canopy, as DDOT only has direct control over the canopy within the transportation right-of-way.

Stormwater Management

Sustainable D.C., completed in 2013, sets long-range goals for making the District the greenest city in the nation. The plan calls for increasing green infrastructure in the public right-of-way and taking actions to improve the health of the city’s waterways.

The District’s stormwater regulations require stormwater volume retention on all major construction projects. Both public and private projects constructing in the right-of-way are required to retain stormwater to the maximum extent practicable. Designers must examine all uses of public space and place stormwater management where space and use allows.

DDOT is installing green infrastructure as part of construction projects and in retrofit projects to reduce stormwater runoff in more areas of the city. Green street and green alley projects use green infrastructure techniques and may be constructed where watershed and infrastructure improvements are prioritized. Green infrastructure practices for streets include:

- Bioretention (rain gardens)
- Street trees
- Landscape areas
- Permeable pavement
- Removing unnecessary paving

When implemented, green infrastructure creates living green streets that capture, store, and filter stormwater to treat it as a resource and improve the urban environment.

Public Space
Public space is one of the most critical components of an urban environment, defining how areas look and feel and providing the backdrop for public interactions. As the District continues to grow and develop, standards are needed to achieve the vision for a well-balanced urban environment and to help shape the identity of the city. A well-designed public space balances the mobility and access needs for users and unifies key elements in the public right-of-way including roadways, sidewalks, tree box areas, intersections, plazas, and open spaces.

DDOT has management and oversight responsibility for the use and occupancy of the public space in the District. Public space is defined as all the publicly-owned property between the property lines on a street and includes the roadway, tree spaces, sidewalks, and alleys. In 2013, DDOT reviewed more than 39,000 public space permits to ensure that the interest of the public is protected, preserved, and enhanced. The moveDC plan puts forth recommendations for ensuring the District’s public spaces are safe, sustainable, and vibrant destinations. The implementation of these recommendations, in conjunction with proposed improvements from other moveDC Modal Elements has the potential to create a dramatically more sustainable and livable District.
A. CORE FACTS

Trees
D.C.’s urban tree canopy is currently approximately 14,600 acres and covers 37.2% of the District. More than 1.9 million total trees grow in the District, with 148,000 of those trees are growing in the city’s rights-of-way. The District’s trees:

- Remove 540 tons of pollution per year, valued at $2.5 million
- Store 526,000 tons of carbon, valued at $9.7 million
- Sequester 16,200 tons of carbon per year, valued at $9.7 million
- Reduce building energy usage by $2.6 million per year, which also results in $96,000 in avoided carbon emissions
- Provide $3.6 billion in structural value to the city

The most common tree species in the District are American beech, red maple, and boxelder.

Stormwater
43% of the District’s land area is impervious surface. A single storm dropping 1.2 inches of rain falling on this area produces about 525 million gallons of stormwater runoff.

Streetlights
There are currently 67,957 streetlights in the District.

Permits
The District’s public space under DDOT jurisdiction makes up approximately 26% of the city’s land area. DDOT issued 92,873 permits during the past 3 fiscal years (FY 2011, FY 2012, FY 2013) for everything from construction to sidewalk cafes to moving vans—that’s a 75% increase in permits issued from FY 2011 to FY 2013. These figures are sizeable, especially when compared to the amount of permits issued by similarly-sized cities: Baltimore issued 7,133 permits in FY 2012 while Denver issued 11,760.

Recent Sustainability and Livability Initiatives

**DDOT INITIATIVES**

- **Greening D.C. Streets (2014):** DDOT’s guide to green infrastructure in the District is intended to be used with DDOT’s *Green Infrastructure Standards* for projects in the District’s public right-of-way. Green infrastructure design solutions are intended to be sustainable, attractive and cost effective. This guide illuminates design tools and strategies for greening the public space, including permeable pavement, bioretention and tree space, and also offers context-sensitive solutions for different areas of the District.

- **DDOT Climate Adaptation Plan (2013):** DDOT’s capacity to adapt to the impacts of extreme weather conditions on the delivery of transportation services depends on its ability to respond to the physical needs of the system and to plan for future contingencies. Assets that are in a state of good repair are better able to withstand the strains caused by extreme weather events. Toward this effort, DDOT’s *Climate Change Adaptation Plan* identified and developed potential adaptation strategies to ensure DDOT’s transportation infrastructure can withstand climate change and to reduce the vulnerability of its assets to the effects of extreme weather conditions.

- **DDOT Sustainability Plan (2010):** DDOT’s agency-specific sustainability plan outlines actionable and measurable goals that deepen and refine DDOT’s dedication to sustainability. In the plan, DDOT identified eight priority areas which would enable the agency to help the District of Columbia remain healthy and prosperous city. Each priority area set goals and recommended actions. Many of the priorities are shared directly or indirectly with those in the moveDC plan.

- **DDOT Action Agenda (2010):** DDOT’s *Action Agenda* outlines a set of policies and corresponding plan to increase the livability of the city for the future while continuing to grow the District’s transportation network. It focuses on core values and functions including safety, sustainability, maintenance and investment in capital assets, and identifying prosperous places in order to develop and maintain a cohesive, sustainable transportation system.

- **DDOT Public Realm Design Handbook (2008):** This DDOT handbook provides an introduction to the District’s goals for public spaces as well as guidance on DDOT standards related to public realm materials and design components. It enables District agencies, developers, and the public to draft plans and evaluate proposals that are consistent with District policies and regulations. It also introduces a common vocabulary of design to be referenced for public realm improvements, helping enhance the development and overall quality of the public realm throughout the city.

- **DDOT Environmental Management System (EMS) Structure & Implementation Guide (2008):** This guide book was developed to initiate the implementation of an EMS at DDOT. This guide provides a general structure of the EMS that will be implemented at DDOT along with instructions for implementation. The guidance given in the document can be used to develop annual EMS goals for the department along with monitoring and evaluation methods.

- **DDOT Environmental Policy and Process Manual (2008):** This manual was developed to provide instruction and guidance for performing the requisite environmental consultation and review at each step in the transportation project process. It helps ensure that planners, engineers, and other professionals develop transportation projects that are compliant with both local and federal environmental laws and regulations, while also helping DDOT achieve environmental excellence.
DISTRICT-WIDE INITIATIVES

- Sustainable D.C. Plan (2013): Sustainable D.C. is a Districtwide initiative that aims to make the District of Columbia the healthiest, greenest, and most livable city in the United States over the course of 20 years. The plan lays out goals and targets for the year 2032. While transportation has a role to play in many of the Sustainable D.C. plan’s initiatives such as using the landscape to capture rainwater, it also set specific goals and targets for transportation, which were taken into consideration during the development of moveDC.

- District of Columbia Urban Tree Canopy Plan (2013): The District’s Urban Tree Canopy Plan is a framework for how residents, the private sector, and government agencies can work collectively toward achieving the District’s tree canopy goal of increase the District’s tree canopy cover from 35% to 40% by 2032. The plan provides historical context for the tree canopy goal, explains how a healthy tree canopy will benefit the District, and outlines planting targets for different landowner categories.

- District of Columbia Stormwater Management Guidebook (2014): The District of Columbia Stormwater Management Guidebook provides technical guidance required to comply with the District’s current stormwater management regulations, including the criteria and specifications engineers and planners use to plan, design, and construct regulated sites and stormwater best management practices (BMPs).

- District of Columbia Public Realm Design Manual (2011): The District’s Public Realm Design Manual is a reference manual is a comprehensive review of the District’s public space policies and regulations. It aims to help business owners, developers, and residents better understand the appropriate use of public space, and assist government agencies that evaluate requests and applications related to public space regulations.

- District of Columbia Municipal Separate Storm Sewer System Permit (2012): The District’s Municipal Separate Storm Sewer System (MS4) permit requires specific actions that are to be met that move the District towards the water quality target of fishable and swimmable streams and rivers. During the course of the current 5-year MS4 permit, DDOT is required to implement structural and non-structural practices that manage at least 1.5 million square feet of impervious area; sweep 641 acres of streets annually; and reduce the runoff of deicing, sand and salt to District water bodies.

Tree planting on H Street NE
B. NOTABLE SYSTEM ACHIEVEMENTS

Urban Forestry

In 2013, the District was named one of the 10 best United States cities for urban forests by American Forests. The District was noted in this award for its healthy, extensive, and diverse tree canopy; tree inventory and regulatory ordinance programs; urban forestry goals, Urban Forest Management plan; and Sustainable D.C. initiatives.

The District has increased the tree canopy 2.1% since 2006, including 1.5% in the last 5 years alone (as of 2013). The District’s urban tree canopy is currently 37.2%. In 2012, UFA planted more than 7,000 street trees and removed more than 3 acres of impervious surface near streets and schools, while responding to more than 14,700 service requests from residents.

In 2011, DDOT began keeping beehives and producing honey within the public right-of-way. There are currently nine hives throughout the District that produced 15 cups of honey in 2013. As production grows, DDOT will seek to partner with food banks and other organizations to utilize the honey.

Stormwater Management

DDOT’s Paving Removal Program began in 2010, removing paving and adding treeboxes and grass to select locations in the District, including wide sidewalks and medians to increase the permeable surface in the city. This helps stormwater find a place to drain, instead of pooling on transportation infrastructure like roads and sidewalks.

In 2012, DDOT implemented green street projects on Pennsylvania Avenue SE and Nanny Helen Burroughs Ave NE, which included the creation of bioretention areas, bioswales, vegetated filter strips, and adding street trees and permeable pavers to these corridors.

DDOT continued this trend with green alleys projects. Green alleys are designed to reduce the quantity and improve the quality of stormwater within the city’s right-of-way. Although alleys constitute a significant portion of impervious surface, most do not have stormwater controls, such as water quality features like bioretention areas and bioswales.

"Washington, D.C. recognizes that trees don’t just provide aesthetic value, they also help in a number of other ways, including increasing property values, reducing energy costs, and lowering medical costs by improving human health. For example, various studies have shown a correlation between trees and lower rates of crime, reduced levels of stress, and lower body mass. Washington’s trees also provide $3.6 billion in structural value to the city. The $2.6 million they save in energy costs each year reduce carbon emissions by $96,000 per year."

– American Forests Press Release
catch basins or grate inlets. Green alleys use sustainable design and low-impact development (LID) techniques to reduce the amount of stormwater and pollutants entering the sewer system by increasing water infiltration and treatment on site. In 2012, DDOT and DDOE unveiled the city's first three green alleys in the Watts Branch watershed in Ward 7. Gravel and impervious surfaces were replaced with permeable concrete to allow water absorption. DDOT completed four additional green alley projects in 2013, and has four projects planned for 2014.

**Public Space**

**Transportation Online Permitting System**
In 2013, DDOT redesigned its web-based permit application system, the *Transportation Online Permit System* (TOPS), which allows users to apply online for public space permits. The redesign offered public space permit applicants a more streamlined and easier-to-navigate experience while also allowing the agency to more efficiently process the influx of public space permits.

**Public Space Permit Locator GIS Mapping Tool**
DDOT's *Public Space Permit Locator* is an online application facilitated by DDOT's GIS system. This system gives the public the ability to view permits on an interactive map. A user can enter a specific address or area and pull up all the public space occupancy and construction permits issued for that location or within that area and see information including to whom the permits were issued and for how long. Pending permit applications and/or pending payments also can be viewed and exported into other formats.

**Placemaking**
DDOT has invested significantly in placemaking in public space. Many of the initiatives have been completed through successful partnerships among DDOT, other District agencies, and private partners such as Business Improvement Districts (BIDs). Recent successes in placemaking projects and partnerships are highlighted on the next page.

**LED Lighting**
DDOT is in the process of replacing all existing roadway and alley light fixtures with energy efficient light-emitting diode (LED) streetlight fixtures. There are currently 67,957 streetlights in the District, which are high-pressure sodium (HPS), traditional mercury vapor, or incandescent and metal halide. These streetlights are currently being converted to energy efficient LED streetlight fixtures. Sustainable energy solutions were recommended in the DDOT *Action Agenda*. 
Placemaking in the District

In addition to the transportation function of streets, medians, curbsides, edges, and sidewalks are an opportunity to make the city more vibrant and livable. Some existing public right-of-way is in excess of what is needed for explicit transportation purposes. This space may be found on wide boulevards, or in triangular spaces where the grid is intersected by diagonal streets. Currently, more than 200 small non-transportation areas of land exist within the public right-of-way, offering opportunities to create vibrant public spaces in the District. Washington, D.C. boast many successful placemaking projects and partnerships, including:

» Columbia Heights Civic Plaza. DDOT constructed a civic plaza in a section of excess right-of-way in Columbia Heights at the 14th Street NW/Kenyon Street intersection in 2009. The plaza—now a cherished community resources—was integral to the larger neighborhood plan that reconstructed streetscapes throughout the area and coordinated with substantial redevelopment in the neighborhood. The plaza plays an important role in the community: it is a highly-visible gathering place, a reference point in the neighborhood, an area where children can play, and a space for civic events.

» Old Market Square, Anacostia. In partnership with the community, DDOT undertook a significant project to restore Old Market Square in Anacostia, a public space on 14th Street SE between U and V Streets SE. Historically, the square was a gathering place for the neighborhood. Prior to the project, time and inattention brought the square to a significant state of disrepair. Completing the project involved repaving streets surrounding the square, installation of new crosswalks, street lighting, decorative walls, square walkways, seating areas, and significant landscaping.
**New York Avenue Art in the Median Partnership.** In 2010, DDOT worked with the Downtown BID to develop Phase I of an “art in the median” partnership. The partnership undertaken by DDOT, the National Museum of Women in the Arts (NMWA), and the Downtown BID focused redefining New York Avenue as a pedestrian-friendly corridor and strengthening its sense of place as an arts and cultural district. The physical project encompassed a reconstruction of the median of New York Avenue NW between 12th Street and 13th Street in order to provide the opportunity for enhanced landscaping, lighting, and sculpture installations.

**Connecticut Avenue/Rhode Island Avenue/M Street NW Rain Garden.** In 2012, the Golden Triangle BID coordinated with DDOT and the District Department of the Environment (DDOE) to design and construct a rain garden at the intersection of Rhode Island Avenue and M Street NW. This project built on the successful landscape median project (3,000 square feet of green space) on Connecticut Avenue in 2011. The rain garden replaced a formerly concrete island at the intersection of Connecticut Avenue, M Street NW, and Rhode Island Avenue. It is intended to be a demonstration of how public space can be used effectively in treating stormwater and also an aesthetic enhancement for the neighborhood.
C. OPPORTUNITIES FOR IMPROVEMENT
While DDOT has made great strides in promoting sustainability and livability measures throughout the transportation system, opportunities for improvement remain:

- The public rights-of-way offer the opportunity to restore stormwater hydrology to a predevelopment condition and reduce water borne pollutant loads so that the District’s receiving waters return to the Clean Water Act’s goal of fishable and swimmable.
- As outlined in the One City Action Plan (July 2012), the Mayor’s goal is that within 20 years “all District waterways [are] fishable and swimmable.” Additionally, up to 75 percent of the District’s landscape will be able to naturally filter or capture rainwater for reuse.
- The One City Action Agenda specifically calls out stormwater management and low impact development (LID) as a means to more effectively manage infrastructure.
- Continue and expand DDOT’s green streets program to address stormwater volume reduction and water quality treatment, to further implement LID, green infrastructure projects, and energy-efficient lighting, in coordination with existing plans, policies and guidelines.
- DDOT currently serves as an agency partner in the RiverSmart Washington initiative. This initiative is designed to measure whether installing attractive, low-cost, eco-friendly landscaping and innovative streetscaping in selected District neighborhoods can reduce polluted stormwater runoff into Rock Creek Park. If successful, techniques may be expanded throughout the District to benefit all streams and rivers.
- Repurposing public space traditionally thought of as part of the transportation network to other public uses and amenities can help create a greater sense of place, encourage all day use, generate pedestrian activity, and create vibrancy. These outcomes can improve public safety, strengthen neighborhoods, and contribute to economic prosperity at many different levels.

III. Recommendations

A. INFRASTRUCTURE INVESTMENTS

Recommendation A.1: Continue and expand existing UFA services and programs.
UFA currently operates numerous services and programs to achieve its mission of keeping the District’s street canopy healthy, safe, and growing. Some of these services include permitting, offering grants, planting and removal, maintenance, and enforcing regulations. Proper maintenance of the urban tree canopy reduces damage to power lines and other assets from weather-related events, and maximizes the lifespan of street trees. The District should continue to commit appropriate financial resources to UFA’s tree canopy enhancement, management, and maintenance programs in order to maintain and expand the District’s tree canopy.

Recommendation A.2: Increase the tree canopy and diversity of tree species in the District.
DDOT should increase the number of trees in public rights-of-way and the diversity of species. The District has estimated that it will need to plant approximately 8,600 new trees per year until 2032 to achieve the Sustainable D.C. goal of 40% tree cover within the city. UFA should work with public and private parties to continue identifying planting sites citywide to meet and exceed this goal. Increasing the tree canopy in the District also can lead to a reduction in the urban heat island effect, which is a rise in temperatures in areas with high concentrations of dry, exposed urban surfaces such as roofs or pavement. Reduction in the urban heat island effect can lead to lower energy usage and improved human health and comfort. Figure S.1 shows the existing tree cover in the District. New plantings should comply with UFA’s list of approved tree species.

Recommendation A.3: Increase permeable surfaces in public space.
Highways, streets, and parking lots are sources of water pollution due to substances such as oil, grease, and other chemicals being leaked onto their surface or existing within their structure. During rainfall, pollutants that lie on the surface or have absorbed into the pavement wash into adjacent soil, rivers, and streams. The transmission of these pollutants damages water quality and affects wildlife and people.
This figure shows the existing tree canopy in the District. Sustainable D.C. set a goal of 40% tree cover in the District. Increasing the tree cover will require multiple strategies because the District only owns and maintains approximately one-third of the existing canopy. The remainder is owned and maintained by private landowners and the federal government.
Infrastructure that uses permeable materials, bioswales/ biofiltration, dense tree plantings, and other low impact development techniques can capture pollutants before they reach bodies of water and natural areas. Using infrastructure that improves water quality within and adjacent to public rights-of-way including streets, alleys, and sidewalks will help reduce damage caused by polluted stormwater runoff. New paving technologies continue to allow durable and accessible materials to also allow water percolation.

**Recommendation A.4: Reduce connected impervious area.**

Impervious areas prevent infiltration and increase stormwater runoff. Disconnecting impervious areas so that stormwater runs over vegetated and infiltrating areas can reduce the volume of runoff, particularly in areas where the total impervious area is less than 30%. This threshold may not be realistically attainable in many portions of the urban right-of-way, but DDOT should identify opportunities where feasible. DDOT should look to expand the applicability of this approach in coordination with policies that promote the use of adjacent lands. DDOT should work actively with landowners to develop guidance, standards, and incentives for mitigation techniques. DDOT also should identify options for reducing total impervious cover, including:

- **Installing green traffic calming measures.**
  Bulb-outs, curbing, and special paving can calm traffic and provide stormwater management. DDOT should use bulb-outs containing vegetated infiltration areas as well as permeable pavement and pavers for on-street and off-street parking.

- **Removing and reducing impervious area.**
  DDOT should promote permeable surfaces to the maximum extent practicable (MEP). Permeable surfaces or “cool pavements” can reduce high surface temperatures. Vegetate or gravel topping can be used on medians, at streetcar sites, and in other non-traffic area.

**Recommendation A.5: Reduce and prevent pollution.**

DDOT should seek to reduce and prevent stormwater pollution through the use of stormwater pollution prevention plans, site inspections, maintenance, and improvements in technology and materials, including the following:

- **Trap pollutants on site.** Capture sediments, trash, salt and deicers before they run off site.

  - Install practices that trap sediments within the right-of-way such as filter strips or forebays in bioretention facilities.
  - Include materials that retard the migration of infiltrating salt and use salt tolerant plantings.
  - Maintain systems that trap pollutants before the pollutant loads exceed the water quality BMP holding capacity.

- **Reduce salt, sand, and deicer applications.** Continually update deicer application and collection practices based on the latest body of knowledge:

  - Use the latest weather technology to better time weather-related applications.
  - Sweep roads after application events to collect salt and sand.
  - Apply permeable surfaces that promote infiltration of snow melt thus reducing subsequent ice formation when temperatures drop below freezing.
  - Install practices to capture sand and sediments on site and remove captured materials as needed.
  - Use public outreach to promote land owner removal of snow promptly from sidewalks, driveways, parking lots, and other surfaces, and to reduce the use of salt, sand, and deicers.

**Recommendation A.6: Implement stormwater treatment measures.**

DDOT should require and implement stormwater treatment measures in the District’s right-of-way. They should be of sufficient capacity to provide a high level of storage and pollutant retention. This will help achieve the Sustainable D.C. goal of making 100% of the District’s waterways fishable and swimmable. Examples of these treatments include:

- **On-site treatment of stormwater.** Capture and treat all stormwater on-site even if the drainage area expands beyond the right-of-way.

  - Compensate for areas with limited storage by increasing subsurface retention to exceed minimum requirements where practicable.
• Partner with adjacent parcels to treat local runoff to the MEP

• **Promote vegetated systems.** Promote vegetated systems that reduce impervious area, heat island effects, air pollutants, volume of runoff, water pollutants, aesthetics and environmental justice such as
  - Filter strips. Sidewalks can be bordered by vegetated filters like grass, bioretention areas, or low meadows. Runoff can be directed toward green space such as parkland and stream buffers.
  - Tree cover

• **Treatment types.** Implement stormwater treatment measures that address the broad range of environmental impacts with an emphasis on the technical ability of the treatments to improve stormwater runoff to predevelopment conditions and with demonstrated operation and maintenance practices that retain the treatment design capabilities. Permeable pavement and pavers can be used along sidewalks, parking lots, roadside parking lots, and side streets. These locations must be accessible for vacuum treatment and other maintenance.

• **Treatment within the right-of-way outside of the road.** Systems under roads can be harder to maintain, require higher weight-bearing requirements, and conflict with more underground utilities than systems installed within the sidewalk and roadside buffers and medians.
  - Use existing green space (medians, turnabouts, triangular ends of roads, etc.).
  - Consider treatment trains to meet broad goals: filter strips to pretreat runoff, rapid filters to manage large runoff volumes in limited space, biological treatment systems to enhance pollutant removal, and infiltrating measures to reduce the volume of runoff

**Recommendation A.7: Protect the physical environment through LID.**
DDOT should incorporate LID into streets to be consistent with the efforts of DDOE, which seeks to reduce stormwater runoff pollution and has in place a vigorous stormwater program and stringent citywide regulations. Major initiatives include significantly reducing stormwater pollution flowing into the area’s water bodies by making the land “spongier” and creating financial incentives for the installation of stormwater retrofits.

**Recommendation A.8: Prioritize and separate utility and stormwater management corridors within the right-of-way.**
LID and stormwater management features can be limited in depth or type of treatment feasible due to the presence of underground utilities. DDOT should prioritize corridors for either utilities or stormwater management to avoid unproductive conflicts. This practice also should avoid the need for excavation of stormwater management facilities for utility repairs.
**Recommendation A.9: Reduce light pollution in the public realm.**
The District should continue to convert all alley and street lighting in the District—aside from those fixtures covered by Federal Highway Administration (FHWA) or historic preservation guidance—to high-efficiency LED fixtures. To reduce light pollution, existing lighting retrofit projects should be updated to require the use of full cut-off light fixtures for 75% of public lighting fixtures. Cut-off fixtures provide more controlled illumination within a specific area in keeping with guidance from the International Dark-Sky Association.

**B. POLICIES**

**Recommendation B.1: Support biodiversity and remove invasive plant species.**
To conserve biodiversity and remove invasive species, the District should require the use of native and approved tree and plant varieties for all landscaping and plantings in the District’s right-of-way, including parks and public spaces. The use of native species helps reduce the need for irrigation since native species are better adapted to the District’s climate conditions. DDOT should also coordinate with the Department of General Services (DGS), DDOE, and the Department of Parks and Recreation (DPR) to expand this approach to other District-owned lands.

**Recommendation B.2: Ensure coordination with utility companies to protect and preserve the tree canopy.**
Construction and maintenance work associated with utility projects in the District often impact streets and frequently, street trees. UFA should require utility companies to protect and preserve existing healthy street trees whenever possible. In the event that an existing tree cannot be suitably protected during construction or as a result of the outcome of construction, the utility company should appropriately replace the tree (or trees) with an approved tree of the appropriate species and size.

**Recommendation B.3: Continue to promote and identify opportunities for innovative stormwater design.**
The District has 360 miles of alleys, most of which are covered by hard, impermeable surfaces that produce large volumes of stormwater runoff. Green alleys, on the other hand, use LID techniques to keep stormwater and pollutants from entering the sewer system, streams, and rivers. DDOT should continue to promote and identify opportunities throughout the District for innovative stormwater design solutions.

**Recommendation B.4: Support existing policies that capture and prevent stormwater discharge.**
Existing policies such as RiverSmart, right-of-way standards, Green Streets, and tree planting are aimed at capturing and mitigating stormwater discharge into the District’s right-of-way. DDOT should promote and support these policies so that they are implemented across the District, working towards more swimmable and fishable waterways.

**Recommendation B.5: Promote and incentivize public-private partnerships (PPPs or P3s) for stormwater management.**
DDOT should work with District agency partners to promote and incentivize P3s for the development of stormwater management facilities. A prime example of opportunities for P3 stormwater management initiatives are redevelopment projects.

**Recommendation B.6: Improve accessibility to public spaces, amenities, and facilities in the public right-of-way.**
To ensure that community spaces are providing the greatest benefit to the District, it is important that people of all ages and ability levels be able to access them. Amenities and facilities should be identified as high-priority destinations for multimodal access, so that the greatest range of residents can access them.

**Recommendation B.7: Encourage and manage temporary use of public space.**
Managed appropriately, public open space has the potential to flexibly accommodate many different uses and users under a wide range of circumstances. Some spaces that carry moving vehicles and people can often be partially or fully closed to accommodate special events. Similarly, space that stores vehicles (parking lots, on-street parking), can often be re-purposed for short periods of time to allow its use for other appropriate uses.
Recommendation B.8: Improve attractiveness of public space.
Creating public places for people takes more than simply providing the space; it requires making it attractive, functional, and safe so that people are drawn in and comfortable spending time staying there. Well-designed spaces often become highly used and can meaningfully strengthen neighborhood character, safety, and economics. Where appropriate, DDOT should incorporate light, greenery, art, and human-scale design into public space to help it become a place that people are excited to use and proud to have in their neighborhood.

Recommendation B.9: Reevaluate value of underutilized right-of-way.
Streets and public right-of-way make up a significant portion of open space in the District. In some locations, these spaces are underutilized, unfriendly to pedestrians, and unsupportive of surrounding businesses and destinations. DDOT should identify and evaluate innovative opportunities to reclaim or transform underused rights-of-way through studies, public participation, and demonstration projects to create inviting public spaces in the District that support a multimodal transportation network. Examples of underused rights-of-way in the urban environment that have been transformed in other cities include slip lanes, service roads, curb cuts, and traffic islands.

Recommendation B.10: Incorporate considerations of health impacts into transportation investments.
Transportation is a key aspect of how a community moves, which can impact both individual and aggregate health outcomes. DDOT should incorporate considerations of health impacts into transportation investments.

Using sustainable modes of transportation such as walking, biking, carpooling, and public transportation helps to reduce negative impacts to air quality. DDOT should continue to promote these modes through supporting events such as “Bike to Work Day” and programs such as “Live Near Your Work.” Low- and zero-emissions vehicles are cleaner and result in significantly reduced levels of noxious gases expulsions into the atmosphere. DDOT should consider implementing incentives for drivers of low-emitting vehicles such as designated parking areas.
C. EDUCATION, PROMOTION, AND ENFORCEMENT

Recommendation C.1: Enforce soil volume requirements.
DDOT should enforce soil volume requirements for the planting of new trees in the District. Soil volume requirements for urban trees help ensure root growth and prevent soil compaction. It also protects adjacent sidewalks and roadways from impacts due to root growth. Soil volumes can impact the longevity of a tree, as well as the likelihood that tree roots will be able to adequately access air and water in a constrained urban condition.

UFA has established the following soil volumes for street trees in the District:
- Large Trees. 1,500 cubic feet of soil within a 27-foot radius
- Medium Trees. 1,000 cubic feet of soil within a 22-foot radius
- Small Trees. 600 cubic feet of soil within a 16-foot radius

Recommendation C.2: Increase citizen stewardship of public trees through Canopy Keepers or other outreach activities programs.
DDOT should expand its outreach for Canopy Keepers and grant programs such as the Green Grant Initiative, which provides funding to organizations seeking to improve the District’s urban canopy. The Canopy Keeper Program allows residents and businesses to adopt new trees. In agreeing to adopt a tree, a sponsor is then responsible for watering and maintaining the tree for 2 years after it is planted.

DDOT’s UFA has set a goal to have 50% of the new trees planted annually adopted. Currently, of 7,000 trees planted each year, approximately 1,300 are adopted. Expansion of the program has the potential lead to greater engagement and awareness of District residents about sustainability initiatives and reduce tree maintenance costs for UFA.

Recommendation C.3: Increase participation in urban forestry advocacy.
DDOT should increase its participation in advocacy for protection, maintenance, enhancement, and expansion of its urban tree canopy. The District of Columbia Grove (DCGrove.org) is part of The American Grove, a national online community created to engage and encourage citizen to plant trees and protect the urban tree canopy. Additionally, UFA should use its existing partnership with Casey Trees, an active non-profit dedicated to restore, enhance, and protect the tree canopy of the District, to expand tree advocacy and education programs.

Recommendation C.4: Develop a Placemaking in Public Space program.
DDOT should encourage and actively promote opportunities for enhancement in ineffective and under-used spaces citywide. Any enhancements within the public realm should prioritize safety and functionality of the space and carefully consider the impacts of the change to the space prior to any modifications being made. Examples of placemaking include:
- Green infrastructure
- Public art
- Beautification projects
- Public plazas
- Café seating
- Parklets
IV. Shared Goals for the District’s Future

The District’s Sustainable D.C. Plan outlines goals, targets, and actions for creating a sustainable city that addresses the economic, social, and environmental needs of the city. Transportation plays a significant role in how the District will be able to meet these needs, now and in the future. The moveDC plan will work cooperatively with Sustainable D.C. to achieve the District’s citywide goals. moveDC is a blueprint for investments and policies to create a transportation system that will make the District more livable, sustainable, prosperous, and attractive for today’s generation and future generations.

The recommendations of the moveDC Plan build on and augment the Sustainable D.C. Plan’s goals and actions. Together, the moveDC plan and Sustainable D.C. Plan set the course for a sustainable transportation future in the District. Continuous monitoring and regular updates will be needed for both plans to achieve their visions.

**Sustainable D.C. Plan Transportation Goals**

- **Improve connectivity and accessibility through efficient, integrated, and affordable transit systems.** Target: By 2032 increase use of public transit to 50% of all commuter trips.

- **Expand provision of safe, secure infrastructure for cyclists and pedestrians.** Target: By 2032 increase biking and walking to 25% of all commuter trips.

- **Reduce traffic congestion to improve mobility.** Target: By 2032, reduce commuter trips made by car or taxi to 25%

- **Improve air quality among major transportation routes.** Target: By 2032, eliminate all “unhealthy” air quality index days, including “unhealthy for sensitive groups.”

**moveDC Plan Recommendations**

- See the **Transit and TDM Elements** for more detail

- See the **Pedestrian, Bicycle, and TDM Elements** for more detail

- See the **Vehicle, TDM, and Parking and Curbside Management Elements** for more detail

- See this element (Sustainability and Livability), as well as the **Freight and Vehicle Elements** for more detail