Green Streets Policy for the National Capital Region

I. Background

The National Capital Region Transportation Planning Board (TPB) supports a transportation system that enhances the region's natural environmental quality and the appearance of its communities, makes alternate travel modes such as walking and bicycling more attractive, and focuses economic development in walkable activity centers. These goals are embodied in COG's *Region Forward* (2010), the TPB *Vision* (1998), and the draft Regional Transportation Priorities Plan.

Stormwater runoff from impervious surfaces, including urban streets and roads is a major threat to water quality in the Washington region. Urban roads, along with sidewalks and parking lots, are estimated to constitute almost two-thirds of the total impervious surface cover and contribute a similar ratio of stormwater runoff.

On December 18, 2012, the Anacostia Watershed Restoration Partnership requested that the TPB develop and approve a regional policy on Green Streets, similar to the regional policy on Complete Streets. At the direction of the TPB Technical Committee, a stakeholder workshop was held on April 8th, 2013 to review current Green Streets policies and practices. Workshop participants concluded that Green Streets are often the most cost-effective response to stormwater runoff regulations, and that a directive from the top of a government can help ensure that various agencies within a government will cooperate to implement Green Streets.

Department of Transportation Planning and Department of Environmental Programs staff then drafted *Green Streets Policy, Guidance,* and *Resources* documents with input from the TPB Technical Committee and other stakeholders.

II. Definitions

(1) GREEN STREET

Green Streets are an alternative to conventional street drainage systems designed to more closely mimic the natural hydrology of a particular site by infiltrating all or a portion of local rainfall events. A green street uses trees, landscaping, and related environmental site design features to capture and filter stormwater runoff within the right of way, while cooling and enhancing the appearance of the street.

(2) GREEN STREETS POLICY—The term ‘‘green streets policy’’ means

A directive at the local, state, regional, or federal level that requires the use of green streets techniques to manage stormwater runoff from transportation facilities in a manner appropriate to the function and context of the relevant facility.

(3) GREEN STREETS PRINCIPLE —The term ‘‘green streets principle’’ means

A specific component of a Green Streets policy.

III. Policy Statement

The National Capital Region Transportation Planning Board endorses the concept of Green Streets and strongly encourages its member jurisdictions and agencies that do not already have a Green Streets policy, or who are revising an existing policy, to adopt a Green Streets policy that includes common elements that the TPB believes reflect current best practices, such as the attached *A: Green Streets Guidance* and *B: Green Streets Resources.*

IV. **Documentation and Reporting**

1. Within six months of the adoption of this policy, and every two years thereafter, Transportation Planning Board staff will conduct a survey of the TPB member jurisdictions and agencies regarding their adoption and implementation of Green Streets policies.

2. Within two years of the adoption of this policy, the TPB will create a regional information clearing house, which will provide access to state and local project web sites where detailed and timely information on the design of transportation projects can be found, so that the public may judge whether and how well such projects implement Green Streets principles.

V. Promotion

With six months of the adopting of this policy, the TPB will sponsor training on Green Streets best practices for personnel responsible for the design, construction, and maintenance of streets.

Within two months of the training event, the TPB will produce a summary and resource guide on Green Streets best practices as identified by the training speakers and participants.

Attachment A

Green Streets Policy Guidance

I. Elements of an Ideal Green Streets Policy

The following elements should be part of a comprehensive Green Streets policy. An ideal Green Streets policy:

- Includes a vision for how and why the community wants to green its streets.
- Covers all transportation facilities.
- Applies to both new and retrofit projects, including design, planning, maintenance, and operations for the entire right of way.
- Makes any exceptions specific and sets a clear procedure that requires high-level approval of exceptions.
- Directs the use of the latest and best design standards while recognizing the need for flexibility in balancing user needs.
- Directs that green streets solutions will complement the context of the community.
- Establishes performance standards with measurable outcomes.
- Includes specific next steps for implementation of policy, such as
  - Revising agency procedures and regulations to reflect the policy
  - Developing or adopting new design guides
  - Offering training for staff responsible for implementing the policy
  - Gathering data on how well streets are serving the goals of the policy

II. Sample Policy Statement

Beginning on the effective date of this policy, all (insert jurisdiction or agency) financed and approved transportation projects in (insert Jurisdiction or Agency) shall, where practicable, use trees, landscaping and related environmental site design features to capture and filter stormwater runoff within the right of way, in a manner appropriate to the function and context of the facility.

Attachment B: Green Streets Resources

METROPOLITAN WASHINGTON Council of Governments

Rain garden: District of Columbia

What is a Green Street?

Green streets incorporate trees, landscaping features, and related site design elements to capture and filter stormwater runoff within the right of way, while cooling and enhancing the appearance of the street.

Green Streets Features

Bioretention: Arlington Co.

Tree Plantings: MDSHA

Bioswale, tree planters & permeable pavement: Fairfax Co.

Permeable pavement: District of Columbia

Bioretention in median: Prince George's Co.

Raingarden: Montgomery Co.

Benefits of Green Streets

- Managing stormwater - may be more cost effective than traditional stormwater approaches
- Enhancing aesthetics
- Improving local air quality - absorbing and intercepting air pollution
- Enhancing economic development and property values
- Improving the road user experience
- Reducing urban heat island effect and associated health and energy costs
- Linking green spaces to improve ecological resilience; can include native plants

Green Streets may also incorporate energy efficient lighting, recycled materials, signage, and other sustainable transportation and environmental features.

Adapted from Water Environment Research Foundation

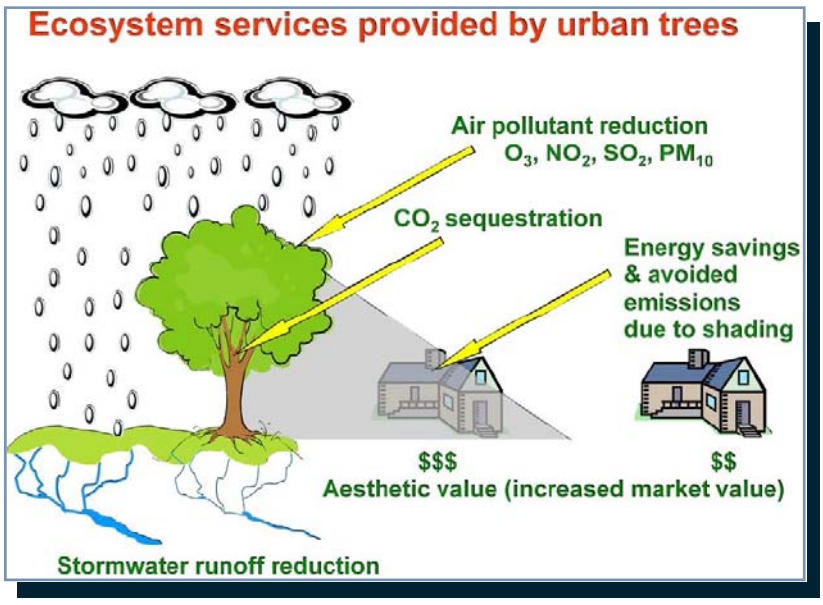

Figure 1. Trees & vegetation perform a variety of ecological services. iTreetools.org.

Green Streets Resources

Green Streets Policies

Prince George's County, Maryland *Complete and Green Streets Policy*

> The County requires road, sidewalk, trail and transit related construction/reconstruction projects to include environmental site design where practicable.

District of Columbia *Green Streets Policy*

> The District of Columbia's stormwater rules and the Department of Transportation's Low Impact Development Action Plan inform the city's Green Streets Policy.

Maryland *Stormwater Management Act*

> Maryland requires all new and reconstructed state and federal projects to implement environmental site design to the maximum extent practicable.

Cleveland, Ohio *Complete and Green Streets Ordinance*

> "The City of Cleveland is committed to the creation of a network of Complete and Green Streets that will improve the economic, environmental and social well-being."

Portland, Oregon *Green Streets Policy*

> "Goal: City of Portland will promote and incorporate the use of green street facilities in public and private development."

Tucson, Arizona *Green Streets Policy*

> Tucson's Green Streets Policy requires stormwater-harvesting features to be integrated into all publicly-funded roadway development and re-development projects.

Green Streets Guidebooks, Standards and Manuals

Charles River Watershed Association Green Streets manual, PowerPoint presentation

City of Portland's Green Streets Construction Guide

City of Seattle's Right of Way Improvements Manual: Green Streets

City of Philadelphia's Green City Clean Waters: Green Streets Design Manual, p. 55

Environmental Protection Agency's (EPA) Municipal Handbook Managing Wet Weather with Green Infrastructure: Green Streets

EPA's Conceptual Guide to Green Streets Design Standards

Great Lakes Green Streets Guidebook

Maryland Stormwater Design Manual, Volume 1 & 2

Water Environment Research Foundation's Green Streets Basics and Design

Additional Resources

EPA's Green Highway's Partnership aims to achieve environmental stewardship goals through collaboration, voluntary participation and public/private partnerships.

National Complete Streets Coalition "...a Complete Streets policy ensures that transportation planners and engineers consistently design and operate the entire roadway with all users in mind – including bicyclists, public transportation vehicles and riders, and pedestrians of all ages and abilities."

Re:Streets is a partnership that "explore[s] the future of streets and what America's roadways would be like if they were designed for living, instead of just driving."

Inventory of Greet Streets Policies in the Washington Region

Federal Government-- Federal Highway Administration

Federal regulations

- All FHWA actions must follow the National Environmental Policy Act procedures set forth in CEQ regulations and 23 CFR 771.
- Federal highway-related activities, like all federal projects, must also comply with other environmental regulations such as the Endangered Species Act and Coastal Zone Management Act.

State and Local Requirements and Compliance

- Permits for discharges are required from USCE, state agency, or municipal separate storm sewers for large or medium (over 100,000) populations.
- Projects must be consistent with state Non-Point Source Pollution Management Program (Section 319).
- Water quality certification is required from State Water Resource Agency (Section 401).
- Transportation plans, programs, and projects must conform with State Implementation Plan (SIPs) that provide for attainment of the national ambient air quality standards.
- At least 0.25% of funds expended on a landscaping project on the Federal-aid highway system must be used to plant native wildflowers.
- 20% of asphalt funded with Federal-Aid in each State is required to include recycled rubber by 1997.

Green Highways Partnership

Green Highways Partnership is a voluntary, public/private network focusing on effective, green transportation partnering, innovation and collaboration. *Green highways* reflects a new paradigm, one that bridges the gap between the environmental and transportation communities. This bridge is the result of an unprecedented collaboration between the Environmental Protection Agency and the Federal Highway Administration.

District of Columbia

The Green Streets program is part of several programs including the Low Impact Development (LID) Action Plan for SW management, Great Streets, and Sustainable DC Plan.

The Complete Streets Policy includes Green Streets principles such as creating more green space in transportation, improving pedestrian environment, and environmental enhancement.

Maryland

State Stormwater Management Requirements for State and Federal Projects[1]:

1. New

At a minimum, runoff from 1 inch of rainfall must be treated with environmental site design.

2. Reconstructed

Environmental site design (ESD) must be implemented to the *maximum extent practicable* to provide water quality treatment for the first one inch of rainfall for a minimum of 50 percent of the existing impervious area within the limit of disturbance.

Additional Information

- The Stormwater Management Act of 2007 defines ESD as "…using small-scale stormwater management practices, nonstructural techniques, and better site planning to mimic natural hydrologic runoff characteristics and minimize the impact of land development on water resources."
- Maryland State Highways Administration (MD SHA) is a leading partner in the Green Highways Partnership. MD SHA is involved in a number of demonstration projects promoting innovative stormwater management practices, including low impact development strategies and water quality banking.

Jurisdiction	Summary of policies related to Green Streets
Charles County	Implemented Stormwater Management Retrofits incorporated dry swales, bioretention systems, and shallow wetlands. Developed LID/ESD Design Manual and state required stormwater ordinance.
City of Bowie	Plans and objectives include: Increased tree canopy coverage, more trees planted on streets (150 annually), and LID stormwater management. Environmental Infrastructure Action Plan states that the city adopted a resolution that supports conservation landscaping and LID.
City of Frederick	The 2009 Sustainable Practice Action Plan calls for exploring an LID stormwater management policy employing bioretention facilities, filter/buffer strips, and grassed swales. ESD Treatment Practices were approved in 2010 to follow ESD to the maximum extent practicable. Urban Forestry Master Plan describes stormwater benefits of street trees.
City of Gaithersburg	Gaithersburg Master Plan describes enhancement strategies for green infrastructure, LID, street trees, and increased street light efficiency. The city's ESD stormwater policies include bio-retention swales and curb inlets, enlarged sidewalk tree boxes, and green roofs and façades.
City of Rockville	Implemented a Street Tree Master Plan. Sediment Control and Stormwater Management code complies with Maryland requirements.

[1] These requirements presumably apply to state highways. In Maryland, local roads fall under local authority.

College Park	Letter of support for Green Infrastructure Master Plan Coordination and Implementation for the Anacostia River Watershed. Energy-efficient street lights are among the Green Initiatives.
Frederick County	The Green Infrastructure Plan outlines a framework to revitalize natural resource gaps, support development patterns, and meet water quality standards. The plan includes Storm Water Action Items, with a goal to 'Incorporate the use of non-structural stormwater management, including vegetated swales and bio-retention.'
Montgomery County	Very extensive LID program including bioretention, bioswales, curb extensions, tree boxes, rain gardens, and pervious sidewalks. Numerous implemented projects throughout the county.
Prince George's County	Adopted a Complete and Green Streets Policy in 2012. Countywide Green Infrastructure Functional Master Plan supports street planters, curb extensions, tree box filters, bioswales and bioretention.
Takoma Park	At least one Green Street project in progress.

Virginia

State Requirements for Stormwater Management for Roads and Highways:[2]

1. New

Technology approach: Determine the required best management practice to treat the entire post construction impervious area within the right of way plus permanent easement area per outfall.

2. Reconstructed

Performance approach: Design the best management practice for a water quality volume based on net increase in impervious area plus 10% of pre-construction impervious area. The goal is to determine the best management practice that would remove pounds of phosphorus to 10% less than existing loading

Additional Information

Currently DCR does not have published credits for using LID practices to meet water quality requirements. However, such practices are being requested as a means to improve water quality. Language in the VDOT Subdivision Street Acceptance Policies is encouraging LID practices, even to the allowance of such inside VDOT right of way. For those items inside the right of way, maintenance provisions are agreed upon either through VDOT or the Locality.

VDOT holds a Municipal Separate Storm Sewer System (MS4) permit for facilities located in 13 urbanized areas in Virginia. VDOT's Watershed Implementation Plan includes a provision to encourage LID where appropriate.

[2] In Northern Virginia, most roads are built and maintained by the state. However this group does not include those roads within the Cities, some Towns, some private subdivision streets, and the secondary roads in Arlington County. Local governments can partner with the state in some cases on Secondary Roadways to implement stormwater management in state rights of way with execution of maintenance agreement as per VDOT's Subdivision Street Acceptance Requirements (SSAR).

Jurisdiction	Summary of policies related to Green Streets
Arlington County	Transportation Master Plan Streets Element emphasizes environmental sustainability and stormwater management. Green Streets website and several projects in progress and implemented. Green streets FAQ page. Efficient streetlight program.
City of Alexandria	Alexandria's Eco-City Charter and Environmental Action Plan incorporate green street principles. Environmental elements such as trees are included in City Master Plan and associated small area plans; and Transportation Master Plan. Implemented several green infrastructure and Low Impact Development (LID) projects, including a pervious trail.
City of Falls Church	The city has several green infrastructure projects. The Watershed Management Plan describes proposed changes to support LID implementation in street design. Department of Environmental Services implements LID projects.
City of Manassas	Urban tree canopy plan and sustainability best practices for stormwater management are part of sustainability plan. Green infrastructure included in the Old Town street plan.
Fairfax County	Comprehensive Plan contains several ecological and water resources objectives and policies that support stormwater treatment through Low Impact Development. Environmentally-sensitive streetscaping concepts were implemented in several neighborhood stormwater improvement projects and incorporated in design guidelines for Tysons Corner.
Loudoun County	The General Plan's Green Infrastructure chapter includes green stormwater management. Stormwater Management Plan details BMPs.
Prince William County	The County's stormwater management program lists Low Impact Development among its methods. The County's Comprehensive Plan's Environment chapter encourages street tree space and LID use in site plans.

Acronyms

BMPs **Best Management Practices-**

Stormwater facilities such as rain gardens (a small depressed area with amended soils and native plants designed to capture and filter runoff), grassed swales, infiltration trenches, permeable pavement, stormwater planters, tree box filters, and vegetated roofs. (http://www.epa.gov/oaintrnt/stormwater/best_practices.htm)

ESD **Environmental Site Design-** Same as Low Impact Development.

LID **Low Impact Development-**

An approach to land development (or re-development) that works with nature to manage stormwater as close to its source as possible. LID employs principles such as preserving and recreating natural landscape features, minimizing effective imperviousness to create functional and appealing site drainage that treat stormwater as a resource rather than a waste product. LID incorporates practices such as bioretention facilities, rain gardens, vegetated rooftops, rain barrels, and permeable pavements. Applied on a broad scale, LID can maintain or restore a watershed's hydrologic and ecological functions. (http://water.epa.gov/polwaste/green/)

Note: ESD and LID are contrasted with **Traditional Stormwater Management design** which focused on collecting stormwater in piped networks and transporting it off site as quickly as possible, either directly to a stream or river, to a large stormwater management facility (basin), or to a combined sewer system flowing to a wastewater treatment plant. (http://www.epa.gov/oaintrnt/stormwater/)

MS4 **Municipal Separate Storm Sewer System-**

An MS4 is a conveyance or system of conveyances that is:

- Owned by a state, city, town, village, or other public entity that discharges to waters of the U.S.;
- Designed or used to collect or convey stormwater (including storm drains, pipes, ditches, etc.);
- Not a combined sewer; and
- Not part of a Publicly Owned Treatment Works (sewage treatment plant).

MS4 jurisdictions must complete a permit and develop a stormwater management plan under Clean Water Act regulations.