

GIVING GREEN STREETS THE GREEN LIGHT:

Improving Water Quality Through Capital Improvement Policies

June 2019



The Environmental Law Institute (ELI) makes law work for people, places, and the planet. Since 1969, ELI has played a pivotal role in shaping the fields of environmental law, policy, and management, domestically and abroad. Today, in our fifth decade, we are an internationally recognized, nonpartisan research and education center working to strengthen environmental protection by improving law and governance worldwide.

This publication is a project of the Environmental Law Institute (ELI). Funding for research was provided by a grant from the Chesapeake Bay Trust (CBT). ELI is solely responsible for the content of this report.

Cover Photo and Report Design by Evan Odoms.

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Acknowledgements

The Environmental Law Institute is solely responsible for the content of this report. Principal ELI staff members for the project are Cynthia R. Harris, Staff Attorney and Deputy Director of the Center for State, Tribal, and Local Environmental Programs and principal author, and Christina Libre, a Research Associate. Jim McElfish, Senior Attorney at ELI, provided essential expert review. This report benefited from the invaluable assistance of ELI Research and Publications interns Anthony D'Souza, Hannah Dale, Jessica Foster, Kathryn Goodwin, Ian Hardman, Brandon Holmes, Sahara Khan, Kieran Minor, Kieren Rudge, Simon Silverberg, Jessie Sugarman, and Well Witoonchart. Ashley Graves and Marisa Heiling, law clerks, each contributed significantly to research for this project.

ELI wishes to thank the following individuals, who generously shared insights into the process of developing and implementing green streets policies at the local level: Keith Linker at the City of Anaheim, CA; Jerry Hancock and Christie Alwin at the City of Ann Arbor, MI; Elaine Partridge and Thomas E. Deller at the City of Central Falls, RI; Joe Kickel and Richard Wong at the City of Cleveland Heights, OH; Kristin Hall and Shelton Coleman at the City of Cleveland, OH; Susan Alvarez at the City of Dallas, TX; Chad Millner and Andrew Scipioni at the City of Edina, MN; Jackson Fox and Andrew Ackerman at the City of Fairbanks, AK; Paige Alborg at the City of Little Canada, MN; Ajla Arnold, Luanne Cortesi, and Steve Love at the City of Maplewood, MN; Rebecca Dohn and Michael Briggs at the City of Nashville, TN; Tyler Antrup at the City of New Orleans, LA; Morgan Dawley at the City of North St. Paul, MN; Michael Thompson at the City of Plymouth, MN; Kristen Acock and Michele Juon at the City of Portland, OR; Erv T. Beckert, Brandon Key, and Caleb Hii at Prince George's County, MD; René Vidales at San Diego County, CA; Neal Shapiro at the City of Santa Monica, CA; Susan McLaughlin at the City of Seattle, WA; Gary Wittwer at the City of Tucson, AZ; and Ewelina Mutkowska at the City of Ventura, CA.

ELI additionally wishes to recognize the assistance of numerous subject matter experts: Cliff Aichinger at the Ramsey-Washington Metro Watershed District; Connie Anderson and James Dunbar at the District of Columbia Department of Energy and Environment; Katherine Antos at the District of Columbia; Jimmie Joe Carl at the Chemung County Stormwater Coalition; Paula Conolly at the Green Infrastructure Leadership Exchange; Joe Cosgrove at the City of San Diego Transportation and Storm Water Department; Michael Farrell at the Metro Washington Council of Governments; Jon Grosshans at the U.S. Environmental Protection Agency Region 5; Brian Hamilton at the U.S. Environmental Protection Agency Region 3; J.B. Hinds at Birchline Planning LLC; Jason Huang at the University of California, San Diego; Celine Lyman at the Minnesota Pollution Control Agency; John Morgan at the West Virginia Department of Environmental Protection; Mark Nolan at Landform Professional Services; Andrew Sauer at Burns & McDonnell; Maria Schumack at the Pennsylvania Department of Environmental Protection; Jeffrey Selengut at the Virginia Department of Environmental Quality; Sanjiv Sinha at Environmental Consulting & Technology, Inc.; Mary Lou Soscia, Columbia River Coordinator, U.S. Environmental Protection Agency Region 10; Ken Susilo at Geosyntec Consultants; and Laura Townley at the New York State Department of Environmental Conservation.

This report was funded by the Chesapeake Bay Trust under grant number 15987. This project has been funded wholly or in part by the United States Environmental Protection Agency under assistance agreement CB96336601 to Maryland Department of Natural Resources. The contents of this document do not necessarily reflect the views and policies of the Environmental Protection Agency, nor does the EPA endorse trade names or recommend the use of commercial products mentioned in this document. Program partners include United States Environmental Protection Agency Region 3, Chesapeake Bay Program, Maryland Department of Natural Resources, Baltimore City's Office of Sustainability, and the Chesapeake Bay Trust.

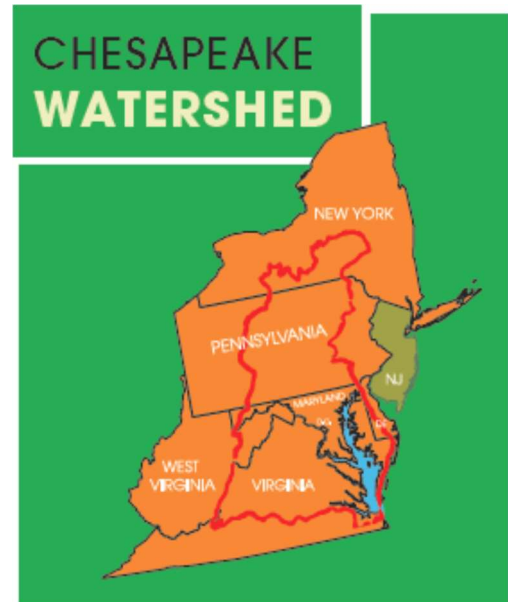


Executive Summary

The Chesapeake Bay watershed is recognized as a national treasure.¹ The watershed is home to 18 million people, extends over 64,000 square miles,² and is credited with a \$1 trillion economic value.³

At the same time, the Chesapeake Bay watershed is considered an impaired water body due to pollution,⁴ with nitrogen and phosphorus loadings, in particular, at excessive levels. Federal, state, and local governments are working collaboratively to address the problem. In 2010, the U.S. Environmental Protection Agency (EPA) established a Total Maximum Daily Load (TMDL)—a “pollution diet”—to meet pollution reduction goals for nitrogen, phosphorus, and sediment discharged into the Chesapeake Bay and its tributaries.⁵

These issues are not unique to the Chesapeake Bay watershed. In fact, the vast majority of assessed water bodies across the United States are designated as impaired.⁶



Developed areas are a significant source of water pollution because of the high quantity of runoff produced by impermeable surfaces, such as asphalt and concrete. The percentage of impervious cover is significantly higher in urban areas; the average urban impervious cover in the United States is estimated at 25 percent, and this can be higher in densely populated areas.⁷ The U.S. also features a high proportion of urban land use allocated to roads and surface car parks, as paved surfaces, compared to cities in other nations.⁸ In fact, the Federal Highway Administration (FHA) estimates that more than 20 percent of U.S. roads are in urban areas.⁹ In 2008, the EPA also estimated that urban roads—along with sidewalks and parking lots—constituted almost two-thirds of the total impervious cover and contributed a similar ratio of runoff.¹⁰ These surfaces prevent water from being absorbed into the ground and naturally filtered.¹¹ Unmanaged stormwater can cause erosion, more localized flooding, and greater amounts of pollutants entering into waterways, as stormwater—rain or snowmelt flowing over these hard surfaces—collects pollutants on its way to the storm sewer system.¹²

¹ Exec. Order No. 13,508, 75 Fed. Reg. 23,099 (May 12, 2009) (stating the Chesapeake Bay is a “national treasure”).

² Facts & Figures, CHESAPEAKE BAY PROGRAM, <https://www.chesapeakebay.net/discover/facts> (last visited June 5, 2019).

³ CHESAPEAKE BAY FOUNDATION. THE ECONOMIC ARGUMENT FOR CLEANING UP THE CHESAPEAKE BAY AND ITS RIVERS 1 (2012).

⁴ *What is Killing the Bay?* CHESAPEAKE BAY FOUNDATION, <https://www.cbf.org/how-we-save-the-bay/chesapeake-clean-water-blueprint/what-is-killing-the-bay.html> (last visited June 3, 2019).

⁵ *Addressing Nutrient Pollution in the Chesapeake Bay*, EPA, <https://www.epa.gov/nutrient-policy-data/addressing-nutrient-pollution-chesapeake-bay> (last visited June 3, 2019).

⁶ *National Summary of State Information*, EPA, https://ofmpub.epa.gov/waters10/attains_nation_cy.control#total_assessed_waters (last visited June 3, 2019).

⁷ David J. Nowak & Eric J. Greenfield, *Tree and Impervious Cover in the United States*, 107 LANDSCAPE & URB. PLAN. 21, 28 (2012).

⁸ John Black et al., *Mainstreaming Green Infrastructure Elements into the Design of Public Road Reserves: Challenges for Road Authorities*, 6 INT’L J. ENVTL. PROTECTION 1, 3 (2016) (explaining Chicago’s PROW represents 23% of the city’s land area and San Francisco’s PROW comprises 25% of the city’s land area).

⁹ EPA, EPA-833-F-08-009, MANAGING WET WEATHER WITH GREEN INFRASTRUCTURE. 1 (2008).

¹⁰ *Id.*

¹¹ *See Nonpoint Source: Urban Areas*, EPA, <https://www.epa.gov/nps/nonpoint-source-urban-areas> (last visited June 3, 2019).

¹² *Id.*

The conventional strategy for managing urban stormwater is through “gray infrastructure” practices, such as gutters, pipes, and basins, which are designed to efficiently convey stormwater to local water bodies.¹³ In a Municipal Separate Storm Sewer System (MS4), the stormwater is conveyed through dedicated storm sewers and discharged

to waterways without treatment. In a Combined Sewer System (CSS), stormwater is collected and conveyed together with wastewater from homes and businesses via combined sewer mains to a sewage treatment plant. Storm events can result in the sewer system and treatment plant exceeding their capacity, ultimately causing sewer overflows and discharges of untreated co-mingled stormwater and wastewater into the environment.¹⁴

Green Infrastructure Practices
Bioretention areas and vegetated swales
Direction of sheetflow to conservation areas
Dry wells
Enhanced filters
Green roofs
Infiltration trenches
Landscaped medians
Permeable paving materials
Preserving natural features, resources & drainageways
Reinforced turf
Disconnection of impervious surfaces
Parkways
Planter boxes
Rain gardens
Rainwater harvesting
Street trees
Submerged gravel wetlands
Underground detention

Many localities are turning to “green infrastructure” practices: conserving or mimicking green spaces and natural processes to retain and infiltrate stormwater where it is generated.¹⁵ The goal is to prevent runoff from entering MS4s or CSSs, or to slow the rate of runoff introduction into these systems. The benefits have been extensively studied and include reduced stormwater volume, pollution prevention, and groundwater replenishment.¹⁶

Green Streets, in particular, constitute one method for addressing polluted urban runoff, by directly mitigating the environmental impact of roadways. **Green streets are public rights-of-way that incorporate green infrastructure in order to improve water quality** by providing for reduction and on-site pretreatment of

stormwater prior to eventual release into local waterways. Green Streets reduce and mitigate the stormwater and other environmental impacts of surface transportation, and provide ancillary environmental, economic, and social benefits.¹⁷

A number of forward-thinking localities are implementing **Green Streets policies, or robust mandates to integrate infrastructure every time a municipality undertakes a capital project or significant maintenance work in the public right-of-way.** This establishes a programmatic method for transforming, over time, a substantial portion of transportation corridors into Green Streets.

Benefits of Green Streets Policies
<ul style="list-style-type: none"> • Effective targeting for stormwater runoff control • Drives the overall adoption of green infrastructure in a systematic manner • Reduces the inconvenience of installing green infrastructure separately, by taking advantage of planned construction projects • Renders moot the problem of underground utilities (by upgrading those at the same time) • Cost savings (incorporation of green infrastructure features during reconstruction at a lower marginal cost than building those features alone)

The Environmental Law Institute’s (ELI) goal in developing this white paper was to **determine best practices for local governments considering adopting policies to incorporate green infrastructure into all public right-of-way construction/reconstruction projects**, where feasible. ELI synthesized its findings into a **model ordinance** that is customizable—taking into consideration different local priorities and capacities—and that local governments can use as a pragmatic resource.

¹³ See *Benefits of Green Infrastructure*, EPA, <https://www.epa.gov/green-infrastructure/benefits-green-infrastructure> (last visited June 3, 2019).

¹⁴ See *National Pollutant Discharge Elimination System (NPDES): Combined Sewer Overflows (CSOs)*, EPA, <https://www.epa.gov/npdes/combined-sewer-overflows-csos> (last visited June 14, 2019); see also 40 C.F.R. § 122.2 (2018).

¹⁵ Green infrastructure is also referred to as “environmental site design,” “low impact development,” and “non-structural best management practices.”

¹⁶ *Benefits of Green Infrastructure*, *supra* note 13.

¹⁷ *Id.*

ELI developed a clear definition of what constitutes a Green Streets policy in order to frame the analysis and offer guidance for Chesapeake Bay jurisdictions. There are four key elements:

1. The policy must be formally **adopted by a local government** and connected with its capital improvement program. The **type of instrument** (ordinance, resolution, executive order, non-binding policy, guidance) and its formal name (“Green Streets,” “Living Streets,” “Green and Complete Streets,” etc.) is less important than the content of the policy. Jurisdictions apply a variety of names and titles to their policies.
2. The policy must include a **trigger**, such that whenever construction/reconstruction occurs in the **existing** public right-of-way, green infrastructure elements are integrated. The policy *must* apply to preexisting roads and streets in order to have a measurable impact on water quality; ELI eliminated several jurisdictions from its review because their policies were limited to new roadway construction only.
3. The policy specifies green infrastructure is being integrated explicitly for the purpose of **better managing stormwater and mitigating water pollution**. A number of jurisdictions adopted “Complete Streets” policies—pertaining to multi-modal transportation corridors—which merely reference generic sustainability considerations.
4. The policy should be **systematic** in nature, creating a framework whereby **green infrastructure elements are incorporated whenever triggered**, and not on a piecemeal project basis—for example, when an agency receives one-time funding for green infrastructure.

ELI next canvassed local governments, directly contacting over 200 jurisdictions nationwide and over 500 jurisdictions in the Chesapeake Bay watershed alone. The nationwide review focused on the 100 most populous cities and the 100 most populous counties, in addition to a targeted search for any locality reputed to have adopted a Green Streets policy. The threshold population for the Chesapeake Bay watershed localities was 15,000 or more.

ELI ultimately identified **fourteen jurisdictions** of representative localities currently implementing Green Streets policies meeting the stringent definition. While only one jurisdiction in the Chesapeake Bay watershed—Prince George’s County—met ELI’s criteria, all localities in the watershed can benefit from the experiences of the other 13 municipalities from across the nation.

ELI then distributed a **survey** (Appendix B) to all 14 Green Streets jurisdictions and prepared **case studies** based on information gathered from the surveys, telephone interviews, and independent research.

Green Streets Jurisdictions
Ann Arbor, MI
Central Falls, RI
Cleveland, OH
Cleveland Heights, OH
Dallas, TX
Edina, MN
Fairbanks, AK
Kansas City, MO
Maplewood, MN
Nashville, TN
North St. Paul, MN
Portland, OR
Prince George’s County, MD
Tucson, AZ

ELI’s analysis produced the following set of **thirteen recommendations** for crafting a robust and effective Green Streets policy, which ELI incorporated into the Model Ordinance (Appendix A). This white paper discusses each recommendation in detail, notes how each Green Streets jurisdiction performs in applying that recommendation, and provides specific examples.

Thirteen Green Street Policy Recommendations

- 1. Statement of intent**
Clearly express the rationale for adopting the policy, and vision for carrying it out.
- 2. Clear definitions of key terminology**
Provide precise, unambiguous definitions of key terms, such as Green Streets, green infrastructure, maintenance, and public right-of-way.
- 3. Straightforward guidelines for applicability**
Set an explicit threshold for the types of projects that trigger the policy.
- 4. Narrowly-defined exemptions, providing for transparent decision-making process and oversight**
Provide decision-makers with clear guidelines on what project categories may be excluded. The decision-making process should be transparent, well-documented, and subject to oversight by agency/executive leadership or the legislature.
- 5. Sustainable funding source**
Identify long-term funding sources for both capital and maintenance costs.
- 6. Guidelines for inter-departmental and inter-agency coordination**
Lay out protocols for coordinating Green Streets projects among all municipal bureaus and departments. Partner with watershed districts and neighboring jurisdictions to meet multiple water-quality goals on a regional basis by collaborating on projects and leveraging joint funding. Address potential conflicts with utilities and promote collaboration with other agencies sharing interests in the public right-of-way.
- 7. Robust accountability (implementation and monitoring)**
Require key benchmarks and performance measures, specific indicators, monitoring protocols, and regular reporting.
- 8. Maintenance guidelines**
Develop a maintenance plan, adopt clear protocols for grading the condition of Green Streets facilities, provide appropriate training, and ensure sufficient oversight and quality control/assurance.
- 9. Reliance on/reference to Green Streets/green infrastructure design guidelines and best practices**
Either develop Green Streets design guidelines or refer to existing manuals of best practices and best available design standards that are respected by the industry and customizable to local conditions.
- 10. Incorporate Green Streets into relevant City/County planning, design standards, and other documents**
Examples include the municipal code, Capital Improvement Program, transportation, land use, and other plans, manuals, internal policies and guidelines, checklists, decision trees, rules, regulations, and programs. Consider how various planning documents relate to each other.
- 11. Deploy pilot projects**
Successful examples build support for Green Streets among City leadership, agency staff, and residents/ratepayers.
- 12. Professional staff development and training (capital and maintenance)**
Training in designing, building, and maintaining Green Streets facilities ensures they are sited and designed appropriately and function properly.
- 13. Public education, engagement, and outreach**
Legitimize adoption of a Green Streets policy to ratepayers by engaging both neighborhoods affected by specific projects and the community at large.

Public officials and agency staff provided invaluable information about “**lessons learned**” from their jurisdictions’ experience implementing their respective policies. Five such lessons in particular stand out, along with three additional **takeaways** ELI identified in conducting its research and analysis of Green Streets policies and implementation:

Five “Lessons Learned” in Adopting Green Streets Policies

- 1. Determine the best method for promoting the policy**
Green Streets advocates must gain the support of three key stakeholder groups: Public officials, agency staff, and the community, or ratepayers. This requires articulating and quantifying the benefits of green infrastructure. The stated goal may be to meet regulatory mandates under a TMDL, MS4 Permit, Combined Sewer Overflow (CSO) Control Plan, or a

consent decree. If there is no such mandate, promoters can illustrate the need by effectively leveraging data on how stormwater runoff, contributed by the public right-of-way, impacts local water quality. The more environmentally conscious the community, the more straightforward this effort will be. Some localities credited successful pilot projects with garnering support, by providing a visual example. One local official advised starting with an internal working group at the staff level to identify and address potential technical challenges before making a proposal to local officials and stakeholder organizations.

2. Ensure sufficient flexibility in implementing and updating the policy based on experience

A locality needs to decide whether the best strategy is to make its policy legally binding, such as by incorporating it into the municipal code. Some Green Streets jurisdictions found it simpler to gain political and public support by structuring their policy as a set of nonbinding guidelines. A valuable tactic available to regional planning and transportation agencies that award grants to local jurisdictions is to incentivize integration of green infrastructure into public right-of-way projects when awarding funding.

A number of localities stressed the importance of taking into account the local physical context of each jurisdiction. The policy should accommodate the infiltration capacity of local soils and provide for exemptions when integrating green infrastructure is impracticable for technical or financial reasons. However, the policy should require exemptions be justified, documented, and reported, so that they do not swallow the rule. The process should be clear and transparent and require agency staff to develop alternative approaches for meeting stormwater runoff requirements when on-site conditions do not allow for installing green infrastructure. For example, the policy could require stormwater runoff mitigation off-site or contributing funding to regional efforts aimed at improving water quality.

Localities benefiting from several years' experience in implementing their policies advised reevaluating Green Streets policies and plans as living documents. This permits course-corrections. For example, a locality may shift from an early strategy of incorporating green infrastructure whenever possible, to a more holistic, regional approach or to evaluating individual projects to determine when Green Streets are the best "tool" for accomplishing stormwater and watershed goals.

3. Designate a reliable funding source

Localities reported greater adherence to the spirit and letter of their Green Streets policies when they could rely on a sustainable source of funding. The most reliable option is an established stormwater utility, often to repay general obligation bonds. Nearly as critical is identifying a reliable source of funding for maintenance to ensure green infrastructure facilities are sustainable over the long-term. When implementing a combined Complete and Green Streets policy, it is vital to allocate funding specific to the green infrastructure elements.

4. Coordinate across all agencies with an interest in the PROW

Responsibility for public right-of-way capital projects and operations/maintenance may fall under the jurisdiction of multiple City agencies. Localities should outline a clear project design, planning, construction, and post-construction process to ensure incorporation of green infrastructure at every step of capital development and during the subsequent operation and maintenance period. Design work should be a combined effort of project engineers, hydrologists, and landscape architects. Localities should also align their goals and strategies with the governing watershed district, and find opportunities to meet multiple goals by partnering on projects.

5. Recognize the importance of public engagement

Several Green Streets jurisdictions stressed the importance of investing sufficient time, effort, and resources into community education in order to win public support for the policy and for proposed projects. Localities should engage with the public as early as possible on projects and take a context-sensitive approach in designing projects, looking at site conditions, neighborhood characteristics, and community values. For example, residents may react negatively to projects that narrow streets and eliminate parking. This means being flexible and willing to adjust projects in order to obtain community buy-in. While the resulting project may not include all desired Green Streets elements, every component included in the final project provides a benefit.

Three Additional Takeaways on Green Streets Policies

1. **Substantial discretion to issue exceptions and lack of a dedicated funding source sometimes resulted in Green Street elements being value engineered out of projects**

Limit agency discretion to issue exceptions to the policy in order to preserve the priority of Green Streets elements.

2. **Few jurisdictions considered, early on, methods for tracking progress in implementing their policies and in attaining water quality goals**

Green Streets policies should require agency staff to measure quantifiable outputs and outcomes, and issue annual reports. Performance measures should track success in incorporating green infrastructure elements into the public right-of-way over time, changes in water quality indicators, and progress in meeting mandates under MS4 Permits, CSO Long Term Control Plans (LTCPs), consent decrees, and TMDLs. This information should be publicly available and easily accessible, such as on a website.

These efforts should also track the costs and benefits of Green Streets. Most jurisdictions ELI contacted could not provide specific data on green infrastructure components of Green Streets projects; for example, project costs associated with green infrastructure. Helpful information includes both capital and maintenance costs, and the cost-savings, over time, associated with Green Streets compared with costs associated with gray infrastructure and traditional street infrastructure, as well as with meeting water quality improvement goals.

Accountability to ratepayers and to meeting the policy's long-term goals also requires sufficient oversight by City leadership over the long-term—across successive administrations and legislatures—to ensure City agencies implement the policy systematically and according to its intent.

3. **Combining Green Streets and Complete Streets policies may place the “green” components at risk of being excluded from projects**

It may be more efficient to address both issues when upgrading the public right-of-way: simultaneously providing for multi-modal use while addressing stormwater runoff and other environmental problems. However, in some instances the Complete Streets component overshadowed the Green Streets component. Drafters should structure any combined policy so as to explicitly address and mandate both elements.

This report includes sections focusing on the impacts of impervious surface area on watersheds, the financing and financial benefits of Green Streets, and a review of the Americans with Disabilities Act and its regulations as an analogous example of systematically requiring local governments to integrate additional improvements when upgrading public facilities. Notably, the still-nascent literature on Green Streets finds that localities can realize cost-savings by programmatically incorporating green infrastructure with other planned infrastructure improvements. Studies anticipate that the initial upfront costs will be largely offset over time by both reducing costs associated with otherwise necessary, additional stormwater infrastructure, and the costs of complying with regulatory requirements, such as those under the Clean Water Act.

Finally, this report includes a comprehensive discussion of the relevant regulatory context governing stormwater management. This encompasses the federal regulatory framework, stormwater management in each of the seven Chesapeake Bay watershed districts, and tribal “treatment as a state” provisions under the Clean Water Act.

ELI anticipates that this report and model ordinance will contribute to the conversation, only now beginning, about Green Streets policies: their benefits, costs, and associated best practices—both within the Chesapeake Bay watershed and across the United States. Much work remains to be accomplished, including developing more robust data on Green Streets costs—including up-front capital and life-cycle maintenance—contrasted with gray infrastructure and the costs of complying with regulatory mandates. Future discussions may also include public engagement and outreach, and training agency personnel in best practices associated with designing, planning, installing, and maintaining green infrastructure facilities. The goal—protecting and enhancing our watersheds and their economic, social, cultural, and community benefits—is certainly one worthy of the effort.

Model Ordinance

ORDINANCE NO. [####]

WHEREAS [...]

[Provide contextual information for the locality implementing the Green Streets policy. Include past action, reasons for adopting the policy, and specific goals. This is separate from the INTENT section, which is part of the operative text and succinctly states the purpose of the policy itself in clear terms.]

NOW, THEREFORE be it ordained by the [GOVERNING BODY] of the [JURISDICTION] that [APPLICABLE SECTION OF MUNICIPAL CODE ADDRESSING THE PUBLIC RIGHT-OF-WAY] is hereby amended by adding [SECTION], "Green Streets," as follows:

Section [####] GREEN STREETS

Section 1. INTENT

The goal of this Section is to systematically transform [JURISDICTION] roadways into Green Streets in order to infiltrate stormwater runoff and improve [JURISDICTION] and regional water quality, while furthering [JURISDICTION's] ability to meet its requirements under the [MUNICIPAL SEPARATE STORM SEWER PERMIT/CSO LONG TERM CONTROL PLAN/TMDL WIP/CONSENT DECREE]. Additional goals are to minimize flooding, reduce air pollution, increase resiliency, green space, and recreational opportunities, and to enhance property values while promoting economic development, neighborhood aesthetics, and community quality-of-life. Green Streets will aid [JURISDICTION] in meeting these goals by systematically integrating Green Infrastructure facilities into all capital improvement projects in the public right-of-way, whenever practicable.

Section 2. DEFINITIONS

The following words and phrases are hereby defined with respect to their use in this Ordinance:

[If the local code already defines any of these terms, reference them and consider updating them. Alternately, specify that the definitions below pertain to those terms only as used in this Ordinance.]

- (a) **[AGENCY NAME]** means the [AGENCY RESPONSIBLE FOR IMPLEMENTING GREEN STREETS POLICY]. Where this Ordinance applies to a capital improvement project undertaken by a [JURISDICTION] agency not the [AGENCY NAME], public company, utility, or private developer, [AGENCY's] duties under this Ordinance apply instead to the [JURISDICTION] agency, public agency, public company, utility, or private developer, except for where this Ordinance makes explicitly distinct requirements.
- (b) **Capital improvement projects** include new roadway construction, reconstruction of existing facilities, rehabilitation and resurfacing projects, streetscape enhancements, utility installation and replacement projects (including water, sewer, communication, gas, and other utility lines, and undergrounding of overhead utilities), and road repair (except for maintenance activities).
- (c) **Disproportionate cost** exists when compliance with Section 3 constitutes a minimum of [NUMBER] percent of the total capital improvement project cost.
- (d) **Green Infrastructure** comprises products, technologies, and practices that use natural systems, or engineered systems that mimic natural processes, to treat and infiltrate stormwater on-site where it is generated, in order to improve water quality and reduce the volume and rate at which stormwater leaves the site. Specific examples include: preservation of natural features, resources, and drainageways,

permeable paving materials, bioretention areas and vegetated swales, rain gardens, infiltration trenches, landscaped medians and parkways, underground detention, planter boxes, and street trees.

- (e) **Green Streets** are public rights-of-way that incorporate Green Infrastructure in order to improve water quality by providing for reduction and on-site pretreatment of stormwater prior to eventual release into local waterways. Green Streets reduce and mitigate the stormwater and other environmental impacts of surface transportation, and provide ancillary environmental, economic, and social benefits.
- (f) **Maintenance activities**, in regard to the public right-of-way, include actions that are intended to preserve the system, retard future deterioration, and maintain the functional condition of the roadway without increasing the structural capacity. These activities include, but are not limited to, joint repair, pavement patching (filling potholes), shoulder repair, signing, striping, minor signal upgrades, and repairs to drainage systems.¹⁸ In regard to Green Street facilities, maintenance activities include actions intended to keep the assets in serviceable condition. These activities include moving, replanting, cleaning, sweeping, and repairing.
- (g) **Maximum Extent Practicable** is the extent to which [AGENCY NAME] is required to implement Green Infrastructure as the primary method for managing stormwater in the public right-of-way. This standard is met once [AGENCY NAME] takes all practicable, technically feasible measures, which do not result in a disproportionate cost, to incorporate Green Infrastructure into a capital improvement project subject to this Ordinance. This is an iterative standard that evolves over time, as knowledge and techniques for managing urban stormwater runoff improve.
- (h) **Public Right-of-Way (PROW)** comprise public streets, roads, alleys, sidewalks, bridges, pedestrian paths, greenways, and similar surface transportation infrastructure.

Section 3. SCOPE OF APPLICABILITY

- (a) [AGENCY] shall incorporate, to the maximum extent practicable, Green Infrastructure into all [CITY/TOWN/COUNTY/BOROUGH]-funded capital improvement projects in the public right-of-way, which:
 1. Construct, reconstruct, or otherwise disturb [NUMBER] or more square feet of impervious surface; and
[the number of square feet may be customized to be consistent with the locality's available and projected resources].
 2. Do not constitute maintenance activities.

[Option for requirement to meet/calculate infiltration rate/standard for project area, and provide site condition factors]¹⁹

- (b) Notwithstanding (a), [AGENCY] may consider and implement alternative methods and facilities for managing stormwater, if [AGENCY] determines that:
 1. The alternative approach more effectively, and cost-effectively, manages stormwater; and
 2. The alternative approach provides environmental and social benefits, in addition to stormwater management, that are equivalent to, or greater than would be attained by utilizing Green Infrastructure.

[AGENCY] shall record its rationale for selecting the alternative approach and make that information publicly available and easily accessible, including placing that information on [AGENCY's] website.

- (c) When a capital improvement project falls outside the scope of (a), [AGENCY] does not take an alternative approach under (b), or only partial stormwater management is achieved, then [AGENCY] shall provide for off-site mitigation or pay a fee into the Green Streets Project Fund.
 1. Projects disturbing [NUMBER] or fewer square feet are excepted from this provision.

¹⁸ *Questions and Answers about ADA/Section 504, supra* note **Error! Bookmark not defined.** at 18 (using the U.S. Dept. of Transportation's definition regarding ADA requirements applicable to alternations to existing public facilities).

¹⁹ *See, e.g.,* CITY OF ANN ARBOR, MICH., POLICY STATEMENT: STORMWATER MANAGEMENT GUIDELINES FOR PUBLIC STREET CONSTRUCTION AND RECONSTRUCTION (2014) (naming site conditions used in determining the infiltration standard include whether the site is located within a floodplain, slope is greater or less than 20 percent, and soil infiltration rate).

2. [List of specific types of projects] are excepted from this provision.²⁰
 3. If [AGENCY] pays a fee into the Green Streets Project Fund, [AGENCY] shall contribute an amount that is [NUMBER] percent of the total construction costs for the project.
- (d) This Ordinance, including the requirements under (a-c) of this Section, applies to privately constructed streets and parking lots.
- (e) This Ordinance applies to all capital improvement projects, including those implemented by a [JURISDICTION] agency not the [AGENCY], public agencies, public companies, utilities, and private developers.

Section 4. EXEMPTIONS

- (a) [AGENCY], a [JURISDICTION] agency not the [AGENCY], public agency, public company, utility, or developer may propose a capital improvement project be exempted from the requirements of Section 3 when incorporation of Green Infrastructure into the public right-of-way:
1. Is likely to result in threats to public safety, health, or welfare;
 2. Is prohibited by law;
 3. Imposes a disproportionate cost;
 4. Faces severe constraints due to concerns about topography, historical and cultural sites, natural resources, insufficient right-of-way, unresolvable utility conflicts, flood hazard areas, groundwater contamination, or slope or grade of the project site, or is otherwise technically infeasible; or
 5. Is not needed and will have no beneficial impact on water quality.
- (b) Every proposed exemption must undergo the following process:
1. The Director of [AGENCY] may issue a recommendation that a capital improvement project be exempted under (a).
 - i. If a capital improvement project is implemented by a [JURISDICTION] agency not the [AGENCY], then the director of that agency may issue the recommendation after consulting with the Director of [AGENCY].
 - ii. If a capital improvement project is implemented by a public agency, public company, utility, or developer, then the public agency, public company, utility, or developer may submit an application for a waiver that the capital improvement project be exempted for any of the reasons listed in (a).
 2. The [PUBLIC BODY: CITY/COUNTY COUNCIL, PLANNING/TRANSPORTATION COMMISSION] shall review every recommendation or application for a waiver and shall either approve or disapprove each recommendation or application.
 3. A public agency, public company, utility, or developer, whose waiver is denied, may appeal the decision to [PUBLIC BODY].
 4. Notwithstanding (1) and (2), the Director of [PUBLIC SAFETY AGENCY] may issue an exemption if the Director of [PUBLIC SAFETY AGENCY] determines (a)(1) applies, with notice given to the [PUBLIC BODY] within [NUMBER] days [*if business days, reference definition elsewhere in Municipal Code*].
 5. [AGENCY], the [JURISDICTION] agency not the [AGENCY], public agency, public company, utility, or developer shall, when the [PUBLIC BODY] exempts a capital improvement project under this Section:
 - i. Provide for off-site mitigation or pay a fee into the Green Streets Project Fund;
 - ii. Provide notice of the exemption to the [CITY COUNCIL MEMBER/ALDERMAN/SUPERVISOR] whose [WARD/DISTRICT] includes the project; and
 - iii. Maintain a record of the exemption, including the rationale for exempting the project and supporting documentation.

²⁰ See CITY OF PORTLAND, OR., GREEN STREETS POLICY 1(b) (2007) (listing emergency maintenance and repair projects, repair and replacement of sidewalks and driveways, pedestrian and trail replacement, tree planting, utility pole installation, street poles, traffic signal poles, traffic control signs, fire hydrants, where this use of funds would violate contracted or legal restrictions).

1. In the case of a capital improvement project implemented by [AGENCY], the agency shall make the record of the exemption publicly available and easily accessible, including placing that information on [AGENCY's] website.
2. In the case of a capital improvement project implemented by a [JURISDICTION] agency not the [AGENCY], that agency shall provide this record to [AGENCY]. Both that agency and [AGENCY] shall make this record publicly available and easily accessible, including placing that information on both agencies' websites.
3. In the case of a capital improvement project implemented by a public agency, public company, utility, or developer, the public agency, public company, utility, or developer shall provide this record to [AGENCY]. [AGENCY] shall make this record publicly available and easily accessible, including placing that information on [AGENCY's] website.

Section 5. SOURCE OF FUNDS

- (a) Funding available to implement the capital costs of implementing this Ordinance [MAY/MUST] be allocated from the [STORMWATER UTILITY FUND], [ENTERPRISE FUND], [REVOLVING STATE FUND AND OTHER FEDERAL AND STATE REVOLVING LOANS], [REGIONAL TRANSPORTATION FUNDING], [GAS TAX REVENUE], the Green Streets Projects Fund, grants, and other public and private funds. Funding derived from general obligation and other bonds [MUST/MAY] be repaid by monies from the [STORMWATER UTILITY FUND].
- (b) Funding available to operate and maintain Green Infrastructure facilities designed and constructed under this Ordinance [MAY/MUST] be allocated from the [STORMWATER UTILITY FUND/GENERAL FUND], and may be supplemented by grants and donations.
- (c) There is established within the [AGENCY/CAPITAL IMPROVEMENT PROGRAM BUDGET] a Green Streets Project Fund. The Director shall allocate monies from the Green Streets Project Fund to carry out activities that fulfill the intent of this policy.
- (d) [JURISDICTION] will actively seek additional sources of appropriate funding to implement this Ordinance.

Section 6. INTER-DEPARTMENTAL AND INTER-AGENCY COORDINATION

- (a) [AGENCY] shall, in conjunction with other [JURISDICTION] agencies and bureaus with interest occurring in the public right-of-way, develop a protocol for coordinating Green Streets projects.
 1. [AGENCY] shall complete this protocol before [DATE] and review it for potential revisions every [NUMBER] years; and
 2. The protocol must, at minimum:
 - i. Ensure the intent of this Ordinance is carried out throughout the design, planning, construction, and post-construction phases of capital improvement projects that are subject to the requirement to incorporate Green Infrastructure;
 - ii. Clarify specific roles and responsibilities in carrying out the intent of this Section, including designating [AGENCY] staff in charge of coordinating Green Street activities;
 - iii. Require Green Street and Green Infrastructure performance measures specific to each project;
 - iv. Address potential conflicts with utilities; and
 - v. Consider the long-term costs and activities associated with maintaining Green Streets facilities.
- (b) [AGENCY] shall coordinate and foster partnerships with [THE STATE], [COUNTIES/CITIES], [REGIONAL WATERSHED DISTRICT], public transportation providers, regional transportation agencies, and neighboring jurisdictions to ensure that streets, roads, sidewalks, and all other transportation corridors connecting to other jurisdictions comply with the intent of this Ordinance. School districts, [IMPROVEMENT DISTRICTS BIDS/NIDS], [REDEVELOPMENT DISTRICTS], and other special taxing districts shall ensure that streets, roads, sidewalks, and all other transportation corridors not owned by the [CITY/TOWN/COUNTY/BOROUGH], but which are within its jurisdictional limits, comply with the intent of this Ordinance.

Section 7. MAINTENANCE

- (a) [AGENCY] shall determine the maintenance requirements and estimated costs for each Green Streets project and facility during the design and planning phase of capital improvement projects.
- (b) [AGENCY] shall develop, before [DATE], a plan for maintaining Green Streets facilities in a functional condition that achieves the performance goal for each facility and that furthers the intent of this Ordinance. [AGENCY] will review and revise this plan, as appropriate, every [NUMBER] years. At a minimum, the maintenance plan must include:
 - 1. A protocol for regularly inspecting Green Streets facilities, at a minimum of [NUMBER/YEAR in TIMES OF YEAR] and maintaining Green Streets facilities, at a minimum of [NUMBER/YEAR in TIMES OF YEAR];
 - 2. A system for grading the condition of Green Streets facilities; and
 - 3. Guidelines for ensuring quality control and assurance.
- (c) [AGENCY] shall ensure all maintenance [CREWS/PERSONNEL/CONTRACTORS] responsible for Green Streets facilities are trained on implementation of the maintenance plan, and on best practices particular to inspecting and maintaining Green Infrastructure facilities.

Section 8. GREEN STREETS TRAINING AND EDUCATION

- (a) Every [NUMBER] years, [AGENCY] shall provide staff [*optional*: NUMBER hours of] professional development and training on the latest and best practices in Green Street infrastructure through participation in conferences, classes, seminars, or workshops, or combination thereof.
- (b) Every [NUMBER] years, [AGENCY] shall provide [*optional*: NUMBER hours of] training to [maintenance CREWS/PERSONNEL/CONTRACTORS] on best practices in maintaining Green Streets facilities.
- (c) [AGENCY] shall seek all current and potential future sources of funding for staff professional development and training on Green Streets planning, design, engineering, construction, and maintenance.

Section 9. PUBLIC EDUCATION, ENGAGEMENT, AND OUTREACH

- (a) [AGENCY] shall propose a Green Streets public education, engagement, and outreach plan, including a proposed budget, to [GOVERNING BODY] before [DATE].
- (b) [AGENCY] shall consider, but not limit itself to, the following outreach activities in developing the Green Streets public education, engagement, and outreach plan:
 - a. Media relations goals and strategies;
 - b. Online, telephone, and in-person surveys;
 - c. Open houses;
 - d. Door-hangers;
 - e. Tours;
 - f. Community events;
 - g. Green Streets facility site markers;
 - h. Town hall meetings;
 - i. Exhibits;
 - j. Lectures;
 - k. School visits and field trips;
 - l. Newsletters;
 - m. Publicity materials;
 - n. Art and other competitions;
 - o. Recognition of community, education, business, and youth leaders;
 - p. Postal mail; and
 - q. Social media.
- (c) The public education, engagement, and outreach plan must contain a protocol for measuring significant changes in public opinion pertaining to Green Streets and to implementation of this Ordinance.

- (d) The public education, engagement, and outreach plan must include a strategy to identify and engage underrepresented communities.
- (e) [AGENCY] shall implement the Green Streets public education, engagement, and outreach plan developed under this Section.

Section 10. MONITORING AND REPORTING

- (a) [AGENCY] shall, before [DATE], establish and present to [GOVERNING BODY/COMMISSION] benchmarks and performance-measures that track [JURISDICTION's] progress in meeting the intent of this Ordinance. At a minimum, these benchmarks and performance-measures must quantify and measure:
 1. Progress integrating Green Infrastructure into new and existing public-right-of-way, including: *[List suggests options for quantifiable outputs]*
 - i. Number of Green Streets assets and facilities;
 - ii. Amount of impervious area restored;
 - iii. Total acreage drained;
 - iv. Miles of public right-of-way incorporating Green Infrastructure facilities;
 - v. Percent of impervious area, in total, and percent of impervious area constituting the public right-of-way;
 - vi. Number of street trees;
 - vii. Volume of stormwater runoff managed; *[E.g., indicating the first ½" of rainfall falling on the public right-of-way is retained. May include for each Green Street asset.]*
 - viii. Number of Green Streets capital projects completed and in progress;
 - ix. The costs associated with each Green Streets project implemented under this Ordinance;
 - x. The costs of the maintenance and operations activities carried out in association with Green Streets facilities;
 - xi. The cost savings associated with implementing this policy; and
 - xii. Exemptions made under Section 4, including the total number of exemptions, the number of exemptions by exemption category, the rationale for recommending and approving each exemption, and associated off-site mitigation projects and contributions into the Green Streets Project Fund.
 2. Progress toward improving water quality, including: *[List suggests options for quantifiable outcomes]*
 - i. Contaminants, as measured at selected [MS4/CSO] outfalls;
 - ii. Progress to meeting wasteload allocations [e.g., removal of sediment measured in tons and phosphorus measured in pounds];
 - iii. Number of days per year water advisories are posted, by water body;
 - iv. Flood events; and
 - v. *[For CSS: Number of sanitary sewer overflows].*
 3. Green Streets training and education activities, including:
 - i. Number of [JURISDICTION] staff who participated in training and education activities on the subject of Green Streets;
 - ii. Number of [JURISDICTION] staff who participated in activities in each of the following categories: Green Streets planning, design, engineering, construction, and best practices in maintaining Green Streets facilities; and
 - iii. Number of total hours [JURISDICTION] staff participated in training and education activities, and the average number of hours per person.
 4. Public outreach and education activities, including: *[List suggests options for quantifiable outputs and outcomes]*
 - i. Progress in implementing the Green Streets public outreach and education plan developed under Section 9;
 - ii. Number, by category, of public outreach and education activities;
 - iii. Number, by category, of attendees and participants at, and recipients of, public outreach and education activities;

- iv. Efforts to engage underrepresented communities, consideration of their suggestions, and documentation of improvements that resulted from their input; and
 - v. Any measurable and significant changes in public opinion pertaining to Green Streets and implementation of this Ordinance.
- (b) [AGENCY] shall review the benchmarks and performance-measures developed in (a) every [NUMBER] years, and make any revisions that promote the intent of this Ordinance. [AGENCY] shall submit any revisions to [GOVERNING BODY/COMMISSION].
 - (c) [AGENCY] shall develop and present to [GOVERNMENT BODY/COMMISSION], before [DATE], a protocol for monitoring, measuring, and documenting each of the performance measures developed under (a).
 - (d) [AGENCY] shall track [JURISDICTION's] progress in meeting the intent of this Ordinance, against the benchmarks developed in (a), as modified under (b), and using the protocol developed under (c), on at least an annual basis.
 - (e) [AGENCY] shall, before [DATE] of each year, submit to the [GOVERNING BODY] an annual report summarizing [JURISDICTION's] progress in meeting the intent of this Ordinance. The annual report must document each of the performance measures and compare them against the benchmarks developed in this Section. [AGENCY] shall make the report publicly available, including placing the report on [the CITY/COUNTY/TOWN/BOROUGHS or AGENCY's] website.

Section 11. DESIGN STANDARDS

[OPTION 1] Rely on the jurisdiction's own design standards: In designing and constructing Green Streets facilities under this Ordinance [CITY/COUNTY/TOWN/BOROUGH] shall follow the practices, guidelines and requirements under the [JURISDICTION's stormwater and Green Infrastructure standards and guidelines], as it may be from time to time amended.

[OPTION 2] Develop the jurisdiction's own design standards: [AGENCY] shall develop a Green Streets Manual ["Manual"] before [DATE], and shall follow the practices, guidelines and requirements contained in the Manual, as it may be from time to time amended, in designing and constructing Green Streets facilities under this Ordinance. [AGENCY] shall review and revise the Manual every [NUMBER] years.

[OPTION 3] Rely on other/more than one design standard(s): In designing and constructing Green Streets facilities under this Ordinance, [CITY/COUNTY/TOWN/BOROUGH] shall follow accepted or adopted design standards and use the best and latest design standards available. These standards include, but are not limited to: [STATE/FEDERAL/INDUSTRY stormwater and Green Infrastructure standards and guidelines], [JURISDICTION's design standards, if available], as they may be from time to time amended, and other standards and guidelines that may be developed.

Section 12. INCORPORATION OF GREEN STREETS INTO RELEVANT INSTRUMENTS, PLANS, AND GUIDELINES, AND PROCESSES

- (a) [AGENCY] and other relevant departments, agencies, bureaus, commissions, boards, and committees shall incorporate Green Streets principles into all applicable and existing plans, manuals, guidebooks, design standards, guidelines, checklists, decision trees, internal policies, and programs, including, but not limited to, the Capital Improvement Program and land use plans, before [DATE]. [AGENCY] shall revise these plans, manuals, guidebooks, design standards, guidelines, checklists, decision trees, internal policies, and programs in order to align with the requirements and intent of this Ordinance.
- (b) [AGENCY] shall review the [MUNICIPAL/CITY/COUNTY CODE] and [MUNICIPAL/CITY/COUNTY REGULATIONS], to identify specific amendments necessary to provide references to and ensure consistency with the requirements and intent of this Ordinance. [AGENCY] shall propose revisions to [GOVERNING BODY] [MUNICIPAL/COUNTY CODE] before [DATE].

Section 13. POLICY REVIEW

[AGENCY] shall review this Ordinance every [NUMBER] years, and propose to [GOVERNING BODY] any amendments that promote the intent of this Ordinance or that reflect evolving technologies and design standards.

Section 14. SEVERABILITY

[Insert severability clause language used by the locality]

Section 15. BE IT FURTHER ORDAINED

that this Ordinance shall take effect on [DATE].