



Green Infrastructure Strategic Agenda 2013

U.S. Environmental Protection Agency

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Green infrastructure uses natural systems and/or engineered systems designed to mimic natural processes to more effectively manage urban stormwater and reduce receiving water impacts. These systems are often soil or vegetation-based and include planning approaches such as tree preservation and impervious cover reduction, as well as structural interventions such as rain gardens and permeable pavements. By maintaining or restoring the hydrologic function of urban areas, green infrastructure treats precipitation as a resource rather than waste, and can play a critical role in achieving community development as well as water quality goals.

EPA and its partner organizations have promoted the use of green infrastructure for many years as part of a comprehensive approach to achieving healthier waters. Green infrastructure reduces the volume of stormwater discharges by managing rainwater close to where it falls and removes many of the pollutants present in runoff, making it an effective strategy for addressing wet weather pollution and improving water quality. Green infrastructure can also provide a sustainable, local supply of water by harvesting or infiltrating precipitation.

Green infrastructure can be a cost-effective approach for improving water quality and can help communities to stretch their infrastructure investments further by providing multiple environmental, economic, and community benefits. This multi-benefit approach creates sustainable and resilient water infrastructure that supports and revitalizes urban communities. Creating more resilient systems will become increasingly important in the face of climate change. As more intense weather events or dwindling water supplies stress the performance of the nation's water infrastructure, green infrastructure offers an approach to increase resiliency and adaptability.

This strategy builds upon the previous 2008 and 2011 versions and outlines key objectives EPA will pursue to support community efforts to build green infrastructure. Through this strategy, EPA aims to increase national and local capacity to evaluate the role of green infrastructure and the benefits that green infrastructure can provide. The objectives of the strategy are organized within five major focus areas:

1. Federal coordination;
2. Clean Water Act regulatory support;
3. Research and information exchange;
4. Funding and financing; and
5. Capacity building.

All results and products of this Strategic Agenda will be posted to our website:
www.epa.gov/greeninfrastructure.

I. Federal Coordination

Green infrastructure is a distributed approach to water management that advances many community priorities – from air quality management to urban renewal. As a holistic approach that crosses traditional boundaries between federal programs, green infrastructure can most effectively be implemented by aligning the priorities and investments of relevant federal agencies.



Goal: Green infrastructure practices are embedded in federal agency programs.

Objective I.1 Leverage existing federal partnerships.

Description: Identify opportunities to align federal programs to support and finance green infrastructure. Utilize existing Urban Waters and Partnership for Sustainable Communities programs to engage federal agencies and coordinate efforts.

Objective I.2 Continue federal dialogue on critical barriers and knowledge gaps.

Description: Continue the discussion with the federal agency workgroup initiated at the September 2012 White House meeting on green infrastructure.

Objective I.3 Demonstrate commitment to green infrastructure through federal projects.

Description: Identify federal building projects that include green infrastructure, including projects designed to comply with EPA's Section 438 Guidance. Consider federal awards program to promote green infrastructure on federal properties.

Objective I.4 Develop information on large-scale green infrastructure systems as a component of community resiliency and disaster relief.

Description: Provide technical assistance to determine how green infrastructure can be used in recovery/rebuilding.

Objective I.5 Continue to integrate source water protection into stormwater management strategies.

Description: Provide additional information on best practices for green infrastructure approaches that protect the integrity of ground water supplies.

II. Clean Water Act Regulatory Support

Recent policy memos have clarified EPA's support for green infrastructure provisions in NPDES permits and water enforcement agreements, but many permitting and enforcement professionals and members of the regulated community may be unfamiliar with this approach. Lacking familiarity with the technology, its performance, and associated performance measures, state and local permitting and enforcement professionals may be reluctant to include green infrastructure in wet weather permits and control plans.



Goal: Green infrastructure language in permitting and enforcement actions is common practice.

Objective II.1: Bolster efforts to incorporate green infrastructure into municipal separate storm sewer system (MS4) programs.

Description: Provide technical assistance to states in the development of permits that promote green infrastructure and include innovative stormwater management strategies.

Objective II.2: Propose changes to the national stormwater program to facilitate the use of green infrastructure in new development and redevelopment projects.

Description: The revisions being considered for the national stormwater program will likely include performance standards for new development and redevelopment projects based on the retention of stormwater runoff, which would facilitate the use of green infrastructure.

Objective II.3: Continue to ensure all water enforcement actions consider the use of green infrastructure.

Description: Continue to consider green infrastructure approaches in the development of orders and settlements related to SSOs, CSOs and MS4s and incorporate green infrastructure as part of injunctive relief where appropriate.

Objective II.4: Continue to work with stakeholders and municipalities to implement the integrated planning framework.

Description: Continue outreach efforts to communities interested in developing integrated wet weather plans and discuss opportunities to utilize green infrastructure solutions. Provide technical assistance to selected communities.

III. Research and Information Exchange

Knowledge gaps persist in the performance of watershed-scale systems of green infrastructure. Ongoing research and dissemination of information is necessary to broaden the number of communities adopting green infrastructure practices.



Goal: Data on the design, performance, costs, and benefits of green infrastructure is known and readily available.

Objective III.1: Conduct research on planning and evaluating green infrastructure systems.

Description: Compile, analyze, and maintain data and modeling tools related to green infrastructure effectiveness, costs and additional benefits. Develop information on options to quantify benefits, reduce risk, and generate more certainty. Develop further information on urban soils and vacant parcels, and suitability of these soils for infiltration practices. Develop studies and tools to assess the aggregate impacts of green infrastructure on watershed hydrologic response, water quality, and aquatic biota. Identify key research gaps and promote research to meet the highest priority needs.

Objective III.2: Widely share emerging information on green infrastructure performance, implementation, and maintenance.

Description: Work with partners to share information on the state of the art for design, operation and maintenance of green infrastructure techniques. Conduct webinars and develop reports to communicate design, cost, and O&M information.

IV. Funding and Financing

Funding wet weather programs presents many challenges for local communities. Green infrastructure provides opportunities to develop comprehensive and sustainable financing programs that draw from diverse sources and sectors.



Goal: Decrease the financial burden to communities of installing and maintaining green infrastructure.

Objective IV.1: Leverage Clean Water Act State Revolving Fund (CWSRF) to finance green infrastructure projects for stormwater management.

Description: Develop a white paper describing green infrastructure projects that are eligible for CWSRF funding and providing case studies.

Objective IV.2: Identify opportunities to reduce the cost of implementing green infrastructure.

Description: Identify and highlight through case studies opportunities for private investment in green infrastructure and public-private partnerships. Work with interested stakeholders to develop model partnership arrangements that allow cities to collaborate with the private sector in installing and maintaining green infrastructure.

Objective IV.3: Promote stormwater utilities as a sustainable funding source.

Description: Conduct pilot stormwater utility feasibility study to assess the impacts and benefits of fee programs to support green infrastructure and enhance stormwater management.

V. Partnerships & Capacity Building

Early adopters have demonstrated the viability of green infrastructure approaches for wet weather management. Many other communities are interested in green infrastructure but still require additional technical and institutional information to integrate green infrastructure into their current approach.



Goal: Communities across the country are networking and exchanging information on the best green infrastructure approaches.

Objective V.1: Support mentorships and peer-to-peer exchange among community partners.

Description: Match more experienced partners across EPA's 10 regions (including the 2011 model partner communities) with communities that are just starting to develop their programs.

Objective V.2: Provide targeted technical support where appropriate, highlighting green infrastructure's role in revitalizing underserved communities.

Description: Continue providing contractor and grant support through the green infrastructure technical assistance program and other relevant EPA programs.

Objective V.3: Collaborate with external partners to design and implement local green infrastructure projects.

Description: Use partnerships and leverage Agency programs to create opportunities for communities to build green infrastructure projects and develop integrated green programs. Implementing vehicles include Urban Waters, Partnership for Sustainable Communities, Brownfields program, the Great Lakes Restoration Initiative, and National Estuary Program.

Objective V.4: Increase awareness and understanding of green infrastructure among emerging engineering and design professionals.

Description: Foster the use of green infrastructure practices among the engineering and design community by supporting competitions for college and university students and for practicing professionals.

Objective V.5: Provide outreach support targeted at small-scale green infrastructure applications and homeowners.

Description: Continue developing materials for use by local governments that provide information for homeowners to evaluate the most practical practices and approaches.

Objective V.6: Develop and support fit-for-use integrated water management approaches.

Description: Share information about diversifying the water supply portfolio and recognize rainwater as a resource. Explore opportunities to decrease potable water use, increase water supply and availability, and reduce associated energy costs.



Photos: Pg 2-3, 7, Nancy Arazan, EPA; Pg 4-7, Abby Hall, EPA; Pg 7, Emily Ashton, ORISE.