



PE7 Action: Green Infrastructure

1 – 14 Points

A. Why is this action important?

Green infrastructure (GI), sometimes referred to as Low Impact Development or Better Site Design, uses natural processes to capture stormwater or rain through retention, infiltration, or evapotranspiration. While some GI measures support the reuse of water, (landscaping, for example), the main objective for GI is to decrease flooding and combined sewer overflows (CSO). With the increase of heavy precipitation events, separated storm sewers often cannot accommodate these larger runoff volumes. Implementing GI practices can help maintain the capacity of storm sewers and thereby save the local government significant financial resources that would be required to address inadequate flow capacities. Effective GI measures reduce sewer overflows and flooding, improve water quality, recharge aquifers, help improve air quality, increase biological sequestration of carbon, reduce urban heat island effects, restore habitat, help improve aesthetics, and create more community green space.

Green infrastructure practices may include the following:

- Green walls
- Green roofs
- Rainwater harvesting and reuse (rain barrels and cisterns)
- Downspout disconnection (redirecting roof runoff to a vegetated, pervious area, cistern or rain barrel)
- Bioretention systems with appropriate vegetation, such as bioinfiltration areas, rain/recharge gardens, vegetated swales, stormwater planters, and stormwater street tree plantings (engineered tree pits, tree boxes, or trenches)
- Permeable pavements
- Stream daylighting (i.e., exposing formerly culverted or buried streams)

Green infrastructure projects should be implemented in strategic locations to mitigate water quantity or quality impacts from existing and new development. A watershed approach should be used to assess the most strategic sites or strategies to manage stormwater using green infrastructure.

Municipalities should also consider equity and environmental justice issues when planning green infrastructure projects. For example, siting green infrastructure near economically disenfranchised neighborhoods could lead to a phenomenon known as “green gentrification” (see Greening in Place Toolkit in section G).

[NY State Pollutant Discharge Elimination System \(SPDES\) permits](#) may require sewer separation or stormwater outfall removal projects which may make GI projects an attractive, low-cost solution. The NYS Small Municipal Separate Storm Sewer System (MS4) General Permit requires regulated municipal entities provide adequate oversight and approval of standard stormwater management practices and green infrastructure practices constructed under the SPDES General Permit for Stormwater Discharges Associated with Construction Activity. These regulated construction activities may require implementation of green infrastructure and include sites which have a land disturbance greater than 1 acre and that necessitate a stormwater runoff reduction volume to be managed.

B. How to implement this action

To implement this Climate Smart Communities (CSC) action, communities should consider the following steps:

1) **Update or create a community-wide plan for green infrastructure** projects as a stand-alone plan or part of a CSO Long

Term Control Plan, Hazard Mitigation Plan, or other relevant planning document. This step may be combined with the feasibility study outlined below, depending on the size and scope of the community.

- Outline goals related to green infrastructure, which may include reducing sewer overflows/volume and combating flooding, heat stress and other climate and social risks.
- Identify existing and potential future developed sites that are viable for onsite stormwater management using green infrastructure. Assess all municipally owned or operated properties or facilities for opportunities to install green infrastructure projects.
- Consider and identify targeted locations for implementation based on physically-conducive locations but also equity and environmental justice issues like “green gentrification.” Sites could include the following:
 - Alleys and streets
 - Parking lots
 - Municipally-owned land
 - Residential and commercial properties
- Identify the most strategic locations for green infrastructure within the community to holistically manage stormwater based on watersheds and combined or separated sewersheds. Consider upstream sources of localized or riverine flooding. Consider existing site conditions, including land use, soil types and depth to water table and bedrock.
- Outline policy changes and/or incentives that will be needed to achieve your community’s green infrastructure strategy and goals. These could address zoning, pilot projects, rights-of-way, financial incentives like a stormwater fund, and more.
- Outline general operating and maintenance goals for existing and future GI. Individual GI projects will require their own unique operating and maintenance plan; some of the resources in Section G below can help with this. Consider providing green jobs by supporting community members to become certified to maintain, inspect and install green infrastructure through the [National Green Infrastructure Certification Program](#). For example, see [PUSH Buffalo’s PUSH Blue program](#).
- Outline training strategy for regular training for local government staff, code enforcement officers, engineers, planning board members, and zoning board members in planning, siting, implementing, and maintaining green infrastructure; some of the resources in Section G below can help inform the design of trainings. Trainings should be at least two hours and completed at least every two years for relevant staff.

2) **Complete green infrastructure training** on a regular basis (as described above).

3) **Conduct a feasibility study** community-wide or for priority projects identified in the plan.

- Identify and work with landowners where permission may be needed to implement projects in strategic locations that could reduce flooding or improve water quality.
- Work with an engineer, landscape architect, or other qualified professional to complete a feasibility study for priority projects. Depending on project location, consult with the relevant entities, such as the New York State (NYS) Department of Transportation, County Department of Public Works, and other local fire departments/emergency services. The feasibility study should include the following:
 - A description of existing conditions to ensure that GI will work in the proposed location, reviewing site conditions such as ground water, soil types, depth to bedrock
 - A project description and conceptual site plan, including an estimate of the water quality volume to be managed
 - A list of all permit requirements, including state, local, and NYS Environmental Quality Review Act (SEQR), if applicable
 - A long-term operations and maintenance plan that covers the entire useful life of the practice
- Ensure that all aspects of selected strategy comply with NYS Department of Health regulations and building codes regarding rainwater harvesting and gray water recycling.
- Consider equity and environmental justice impacts of green infrastructure and avoid “green gentrification.”
- Detailed descriptions of the aspects that should be included in a feasibility study are available online from the following state agencies:
 - NYS Environmental Finance Corporation (EFC): Go to <https://www.efc.ny.gov/GIGPApply> and click the link for “GIGP Required Documentation Guidance.”
 - NYS Department of Environmental Conservation (DEC): Go to

https://www.dec.ny.gov/docs/water_pdf/wqipoverviewr16.pdf and see pages 17-24 and Appendix B-Nonpoint Source Green Infrastructure Required Documentation Guidance.

4) **Implement green infrastructure projects** in targeted areas:

- Ensure compliance with all applicable codes, including the design criteria found in Chapters 5 and 6 of the [NYS Stormwater Management Design Manual](#) for green infrastructure practices.
- Inspect and maintain green infrastructure. Support a regular maintenance schedule (at least every two years) with proper equipment and adequate staffing.

5) **Provide green jobs by supporting community members to become certified through the [National Green Infrastructure Certification Program](#)**. For this CSC action, demonstrate support for the National Green Infrastructure Certification Program (NGICP) by showing that NGICP-certified community members were used in implementing a project and/or by submitting maintenance plans that require the use of NGICP-certified community members for installation, inspection, and/or maintenance.

C. Timeframe, project costs, and resource needs

The timeframe to implement this measure depends on the number and scale of specific green infrastructure projects a community is looking to implement. In general, a community should be able to complete this action within one or two years. In many cases, additional funding or staffing resources may be needed to implement this action.

D. Which local governments implement this action? Which departments within the local government are most likely to have responsibility for this action?

This action is applicable to all types of local governments. The departments or people with the responsibility for leading the Municipal Separated Storm Sewer System (MS4) program, planning and zoning, engineering and building codes, the designated Floodplain Administrator, will most likely be responsible for this action. For this effort to be successful, cross-department involvement and support are recommended. Municipal committees, such as CSC task forces, conservation advisory councils, and environmental conservation committees and neighboring municipalities may also be involved. Soil and Water Conservation Districts, Watershed groups, regional groups and county agencies may be able to contribute valuable information and expertise.

E. How to obtain points for this action

Points for this action are tiered based on completion of the components described below. All must have occurred within ten years prior to the application date.

	<i>POSSIBLE POINTS</i>
Update or create a community-wide plan for green infrastructure	2
Implement one or more policy changes and/or incentives (e.g., zoning, rights-of-way, financial incentives)	4
Complete at least two hours of green infrastructure training for 50% or more of community's code enforcement officers, MS4 stormwater officers, engineers, and zoning and planning board members	1
Complete a feasibility study for green infrastructure for one or more priority locations	2
Implement green infrastructure projects. Points are based on the estimated amount of water treated or captured per storm event: Up to 4,999 cubic feet	2
5,000 cubic feet or more	4

F. What to submit

This action has seven different tiers of points (as above); clearly describe the tiers for which the local government is applying.

For plans, policy changes, and/or feasibility studies, submit copies of them (or the web addresses where they can be found online).

If trainings were completed, submit the names and titles of the staff that attended and documentation describing the scope, date, and length of the training.

For implementation of green infrastructure projects, provide before and after photos, evidence of project design, and the maintenance plan. In addition, submit the estimated amount of water treated or captured per storm event (in cubic feet); in other words, provide an estimate of the effective capacity of the project(s).

For NGICP support, show that NGICP-certified community members were used in implementing a project and/or submit maintenance plans that require the use of NGICP-certified community members for installation, inspection, and/or maintenance.

All CSC action documentation is available for public viewing after an action is approved. Action submittals should not include any information or documents that are not intended to be viewed by the public.

G. Links to additional resources or examples

Green infrastructure and stormwater resources

- [DEC What is Stormwater?](#)
- [DEC NYS Stormwater Management Design Manual](#)
- [DEC State Pollutant Discharge Elimination System \(SPDES\) Permit Program](#)
- [DEC Erosion and Sediment Control Training](#)
- [DEC Maintenance Guide for Stormwater Management practices \(PDF\)](#)
- [EFC Green Innovation Grant Program](#)
- [Georgetown Climate Center Green Infrastructure Toolkit](#)
- [University of New Hampshire Stormwater Center](#)
- [Low Impact Development Center](#)
- [US EPA: Storm Smart Cities - Integrating Green Infrastructure into Local Hazard Mitigation Plans](#)
- [US EPA Green Infrastructure](#)
- [US EPA National Menu of Stormwater Best Management Practices](#)
- [US EPA Low Impact Development Resources](#)
- [US EPA Operation and Maintenance Considerations for Green Infrastructure](#)

Equity and training resources

- [National Green Infrastructure Certification Program](#)
- [PUSH Buffalo PUSH Blue program](#)
- [Planning for Equity in Parks with Green Infrastructure](#)
- [Resource Guide for Planning, Designing and Implementing Green Infrastructure in Parks with spotlight on Equity](#)
- [ESRI Introduction to Green Infrastructure](#)
- [Lower Hudson Coalition of Conservation Districts' Reviewing Stormwater Management in Site Design: A Guide for Planning Board Members \(PDF\)](#)
- [Audubon Greening in Place Toolkit](#)

Green infrastructure case studies

- [Wetlands Watch Green Infrastructure Plan examples](#)
- [DEC Hudson River Estuary Program Green Infrastructure Examples for Stormwater Management in the Hudson Valley](#)
- [City of Newburgh Green Infrastructure Feasibility Report \(PDF\)](#)
- ["Rain Check" Buffalo Sewer Authority's Green Infrastructure Master Plan \(PDF\)](#)
- [Buffalo, NY, Long Term Control Plan \(PDF\)](#)
- [Hoboken, NJ, Green Infrastructure Strategic Plan](#)
- [City of Rochester, NY, Green Infrastructure retrofit manual](#)
- [New York City, NY Green Infrastructure Plan](#)

H. Recertification Requirements

The recertification requirements are the same as the initial certification requirements.