

# Integrating Green Infrastructure into Public Projects



Olive Street,  
Greenfield

## Potential Benefits of Green Infrastructure in Public Projects:

- ◆ Improved water quality
- ◆ Reduced flooding and erosion
- ◆ Improved streetscapes and neighborhood aesthetics
- ◆ Reduced urban temperatures
- ◆ Reduced municipal water use
- ◆ Reduced energy use
- ◆ Improved public health from reduced air pollution and increased physical activity
- ◆ Increased/improved wildlife habitat
- ◆ Increased property values

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Stormwater runoff from roads, lawns, and other surfaces is a major source of water pollution. Green infrastructure (GI) utilizes low impact development (LID) techniques such as rain gardens, green roofs and permeable pavements to keep rain close to where it falls, improving on-site infiltration and cleaning water before it enters nearby rivers or streams. Green infrastructure treats stormwater as a resource rather than a waste product, and can complement or replace traditional pipe and pond, or “gray,” stormwater infrastructure, which utilizes extensive underground systems.

In many communities, existing stormwater infrastructure is aging, expensive to maintain, and inadequate to handle heavier rainfalls our region is experiencing due to climate change. This leads to localized flooding and negative impacts to water quality. At the same time, many local roads and other public facilities are in need of upgrades. Integrating green infrastructure into public projects now and in the future can result in cost savings and provide a host of other public benefits.

Adopting a town policy will ensure that green infrastructure is considered in all public projects, including parks, roads, schools, and buildings - and provide a leading example for private developers to do the same.



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Franklin Regional  
Council of  
Governments  
frcog.org



Millers River  
Watershed Council  
millerswatershed.org

# Green Streets

Roads make up the majority of impervious surfaces in most communities. Green streets integrate green infrastructure into the public right-of-way to better manage and clean stormwater runoff from roads. Rain gardens, bio-retention areas, tree box filters or trenches, bio-swales, permeable pavement, and street trees are common practices. New roads can be designed as green streets, and existing roads can be retrofitted to include green street practices.

Green streets reduce the burden on the traditional stormwater infrastructure, complementing rather than replacing this infrastructure. Green street practices may reduce the cost of a project by using less concrete or pavement than is typical, or by reducing the size of the “gray” infrastructure needed. Long term costs may also be less since most stormwater systems are on the surface, not underground, making maintenance easier.

Green streets improve the pedestrian environment and encourage walking by providing more shade, slowing traffic, and improving air quality and streetscape aesthetics. Green streets go hand in hand with Complete Streets, where all users of the right of way - pedestrians, bicyclists, and automobiles - are safely accommodated.

## Portland, OR Green Streets Program

The City of Portland, Oregon is a leader in green streets development. According to the City’s Green Streets Policy, elected officials and staff will:

- ◆ Incorporate green street facilities into all City-funded development, redevelopment, or enhancement projects;
- ◆ Foster communication and coordination among City Bureaus to consider watershed health and improved water quality through use of green street facilities; and
- ◆ Seek opportunities to leverage the work and associated funding of projects across City Bureaus to create green street opportunities.

Portland utilizes a stewards program to enlist neighborhood volunteers to help maintain green street facilities, and a construction guide for contractors to ensure facilities are designed and implemented correctly. For more information:

<https://www.portlandoregon.gov/bes/44407>



A Portland, OR green street facility at work. Source: *The Green Street Stewards Maintenance Guide.*

# Green Infrastructure Public Projects in Franklin County



Above: A view of the Millers River and the public boat ramp at the Riverfront Park; a close-up of the permeable pavement; an informational sign describing the redevelopment of the park and the LID features.



Left: Unity Park rain garden, which also serves as the drainage area for the park's popular water spray element.



Right: Unity Park rain garden with a view of the Connecticut River in the background.



Left: A bioretention area in the tree belt on Olive Street complements the traditional storm drain.



Right: One of the bioretention areas at the Chapman and Davis Street Parking Lot after a morning of steady rain.

## Orange Riverfront Park

Franklin County's first LID pilot project, the Orange Riverfront Park, began as a brownfield site next to the Millers River in downtown Orange. A combination of MA Division of Conservation Services PARC grant and MA Department of Environmental Protection s.319 grant funding was used in 2005 to turn the cleaned-up site into a park and public boat ramp that features rain gardens, permeable pavers, and native plantings to help protect the Millers River from pollutants.

## Unity Park, Turners Falls

In 2012 and 2013, the playground, ballfields, and parking lots at Unity Park were refurbished using Community Development Block Grant funds. A rain garden was added at each parking lot. The reason for adding LID elements was three-fold, according to Jon Dobosz, Montague Director of Parks and Recreation: including sustainable elements was a goal of the project; the project's location next to the Connecticut River required mitigation by the Rivers Protection Act; and the third was aesthetics - *"Who wouldn't like a flowering garden in a park?"*

## Olive Street and Chapman and Davis Parking Lot, Greenfield

In 2014, the 2-acre Chapman and Davis Street Parking Lot was reconstructed and includes new trees and bioretention areas to treat stormwater runoff that previously flowed directly into the buried Maple Brook culvert, which drains to the Green River. A second project added a bioretention area in the tree belt on Olive Street as part of a larger traffic calming and pedestrian improvement project. The projects were paid in part by a MA DEP s.319 grant and a Massachusetts Environmental Trust (MET) grant.

# Next Steps and Resources

## ◆ **Adopt a Green Infrastructure Policy**

A green infrastructure policy promotes the use of green infrastructure in all publicly-funded projects to the extent feasible. Policies should also emphasize communication and collaboration among municipal departments and staff during project planning to ensure green infrastructure opportunities are considered for all projects.

## ◆ **Train and educate staff, volunteers, and the community**

Take advantage of trainings and workshops offered by watershed coalitions, regional planning agencies, and colleges and universities. Establish a webpage on the town website with information on the benefits of green infrastructure, projects the town is working on, and what residents and businesses can do on their own properties.

## ◆ **Establish an Operations and Maintenance Plan**

Ensure best performance from green infrastructure projects through proper maintenance. Organize neighborhood volunteers to help maintain stormwater features near their homes or workplaces.

## What are Green Infrastructure and Low Impact Development (LID)?

The terms “green infrastructure” and “low impact development” are often used interchangeably, and definitions for both terms are evolving over time. Green infrastructure generally refers to the stormwater management techniques used to help implement LID. LID encompasses these techniques as well as broader land management principles that seek to reduce the impact of development on the natural hydrology of a site, region, or watershed, through conscientious site planning and development practices.

## RESOURCES:

United States Environmental Protection Agency (EPA) Green Infrastructure website: <http://water.epa.gov/infrastructure/greeninfrastructure/>

Center for Neighborhood Technology, *Green Values Stormwater Toolbox*: <http://www.cnt.org/tools/green-values-stormwater-toolbox>. Helps to evaluate the long-term costs and effectiveness of green infrastructure approaches.

University of New Hampshire (UNH) Stormwater Center: <http://www.unh.edu/unhsc/>. Includes information on research of stormwater technologies, workshops, and economic benefits.

Pioneer Valley Planning Commission, *Pioneer Valley Sustainability Toolkit*: <http://www.pvpc.org/content/pioneer-valley-sustainability-toolkit>. Includes a section on Green Infrastructure with fact sheets on different techniques and a model Green Streets policy.