

# Green Stormwater Infrastructure Programs, Policies, & Projects from Exemplar Cities

## INSTITUTIONAL AND GOVERNANCE FACTORS

- **Making major changes in city administrative structures to provide coordinated, comprehensive approaches to all aspects of water management, including stormwater**
  - *Integrating water management* – The Philadelphia Water Department manages all aspects of municipal water management: drinking water, sanitary sewers, and stormwater.
- **Identifying and addressing regulatory and other barriers to greater expansion of green stormwater strategies**
  - *Reviewing, revising, and updating building codes and subdivision and zoning ordinances* – Milwaukee and Portland reviewed their codes and ordinances for barriers or constraints on the use of green infrastructure and made appropriate changes.
- **Mandating developers to retain substantial stormwater on-site in each storm using approved green (and grey) stormwater control measures and approaches**
  - *Imposing on-site stormwater retention requirements on new developments and major redevelopments* – Philadelphia, Washington, DC, Portland, and Milwaukee require developers of new projects or major renovations to retain most or all stormwater on-site: the threshold for activating this requirement varies with Portland being the strictest (that is, kicking in at a very small scale of (re)development).

However, Portland’s guidelines offer a hierarchy of choices; developers must prove that green infrastructure won’t work before being allowed other options.

- **Providing detailed and explicit guidance on appropriate and approved green stormwater strategies to developers and large commercial and industrial property owners**

- *Developing comprehensive guidance for developers, builders, and large property owners* - Houston, Milwaukee, and Portland developed detailed manuals showing developers how to incorporate a wide variety of green infrastructure measures into their projects, indicating which measures met local, state, and regional standards for stormwater retention on-site.

## REVENUE SOURCES AND FINANCIAL INCENTIVES

- **Creating new or improving existing monthly stormwater fees for property owners, based on the percent of land on the property that will not absorb stormwater, that is, impervious cover**

- *Imposing new or higher stormwater fees* – Philadelphia, DC, Milwaukee, Houston, and Portland instituted monthly stormwater fees based the percent of impervious cover on the property. The funds support green and grey stormwater infrastructure and a variety of green stormwater education programs, rebates, and, subsidy programs.

- **Implementing or raising hook-up or development fees for new development or substantial redevelopment projects that seek to connect into the existing stormwater system**

- *Imposing system development charges* – Portland requires that almost all new developments with impervious areas pay a system development charge; residential properties face a fixed charged, while charges for non-residential properties are based upon impervious area.

- **Providing meaningful financial incentives for the use of green infrastructure approaches**

- *Lowering monthly stormwater fees for the use of green infrastructure* – DC, Houston, Portland, and Philadelphia offer reductions in monthly stormwater fees to property owners who install rain gardens, stormwater planters, or other green infrastructure on their property to reduce, slow, and treat runoff on-site.

- *Giving financial incentives to developers using green infrastructure approaches* – DC and Milwaukee offer a cash rebate of up to \$5 per square foot of green roof. Philadelphia offers developers a 25% cash rebate on the costs of installing a green roof on their properties, up to \$100,000.

Both Philadelphia and Portland also have many grant programs for developers who construct and operate green (and grey) strategies or facilities that manage stormwater runoff on-site.

Portland also offers a floor area ratio (FAR) bonus to commercial developments that build a rooftop garden or a green roof that covers at least 50 percent of the roof area of the building.

- *Subsidizing residential use of green stormwater infrastructure* – DC offers subsidies up to \$1,200 to homeowners who implement green stormwater measures on their property, such as rain gardens and permeable pavement.

Portland offers financial and technical assistance to homeowners who install green infrastructure and sign an Operations and Maintenance (O&M) agreement to ensure that the facilities will be cared for in good health.

- **Exploring a more active role for the private profit-making sector in green stormwater management**

- *Establishing ways for the market to help motivate the development of green infrastructure* – Washington, DC has created stormwater retention credits, leading to a market where properties exceeding minimum stormwater retention requirements can sell their excess capacity to developers who can meet the minimum requirements.

- *Investigating the potential for private market green infrastructure provision* – Philadelphia (with the assistance of The Nature Conservancy) and Washington, DC evaluated ways to encourage private profit-making ventures to provide needed green stormwater methods for individual property owners.

- **Implementing innovative stormwater infrastructure financing methods**

- *Imposing environmental fees* – Washington, DC charges 5 cents for each plastic bag used at groceries, convenience stores, *etc.* which helps fund many green infrastructure projects in the District.

## MAJOR PUBLIC GREEN INFRASTRUCTURE PROGRAMS

- **Developing large scale *green street* and *green community* programs, often leveraging non-profit, private, and neighborhood resources**

- *Addressing neighborhoods in a comprehensive green way* – Portland’s *Tabor to the River* program targets a 2.3 sq. mile neighborhood with a combination of green and grey infrastructure, including 500 green streets and 100 stormwater facilities on private property.

Milwaukee’s 6<sup>th</sup> *Street Green Corridor* is a partnership of local businesses and organizations that so far has created 16 acres of largely green stormwater retrofits on the 3 miles corridor.

- *Establishing ecoroofs and raingardens on publicly owned buildings and land* – Portland requires that 70% of new rooftop area or re-roofing projects on city owned buildings have ecoroofs. Philadelphia is targeting publically owned land such as streets and city rooftops for comprehensive green infrastructure treatments.
- *Developing tree planting programs* – Philadelphia is increasing the tree canopy in the city, planting over 500 trees in neighborhoods that lack and want them. Portland’s *Tabor to the River* program is planting 3,500 trees in the targeted neighborhood.
- *Leveraging volunteer resources* – Portland’s volunteer maintenance program offers training and guidance to citizens interested in caring for and maintaining trees and planters on public streets and alleys.

- **Purchasing land or easements to create multi-use stormwater retention facilities**

- *Combining recreation and stormwater retention* – In Houston many organizations and public agencies are cooperatively creating 4,000 acres of green spaces and 300 miles of continuous trails along existing flood control channels.

The City of Houston’s *Bayou Greenways 2020* plan, with a voter approved tax, will buy land and easements to connect 150 miles of parks and trails along bayous to aid in stormwater retention and flood control as well as providing recreational space.

Milwaukee's *Green Seams* program purchases land/easements along waterways and in wetlands to preserve open space for natural retention of stormwater and recreation.

- *Wetlands and Stream Mitigation Banking* – The Houston County Flood Control District operates a 1,400-acre wetland preservation, conservation, and restoration effort that treats runoff from a nearby highway. The fees charged to Houston developers for obtaining mandatory wetlands credits from a mitigation bank are used to maintain, expand, and monitor wetland and stream mitigation efforts.

## PUBLIC EDUCATION AND OUTREACH

- **Creating K-12 programs in which students both learn about and also become actively involved in developing green infrastructure projects on their school site**

- *Working with individual schools to green their campuses* – Portland, Philadelphia, Milwaukee, DC, and Houston partner with public schools to convert spaces such as parking lots into rain gardens. These facilities double as outdoor classrooms for science classes.
- *Using rain barrel promotion programs to get families involved* – Milwaukee sponsors contests for the best decorated rain barrels; winners are raffled off. The program brings attention to stormwater management and gets families interested in more effective stormwater approaches.

- **Organizing major green infrastructure public education programs**

- *Creating a consistent public message* – Portland, Milwaukee, and Philadelphia stress consistent messaging about green stormwater to galvanize citizens towards a common goal.
- *Marking storm drains* – Philadelphia marks storm drains to make citizens aware of stormwater issues and to educate them not to throw waste and materials into stormwater drains.
- *Encouraging homeowners to disconnect downspouts* – Milwaukee and Portland launched successful – and cost-effective—downspout disconnection programs. Milwaukee disconnected 985 downspouts in one neighborhood alone, which contributed to a substantial decrease in basement backups after rainfalls.

