



TOOL 5: PRIVATE STAKEHOLDERS GUIDE

Greater Baltimore Wilderness Regional Resilience Green Infrastructure Network Local Implementation Toolkit



American Planning Association

Making Great Communities Happen

The Greater Baltimore Wilderness Coalition Coastal Resilience Project

The [Greater Baltimore Wilderness Coalition](#) is a voluntary alliance of public agencies, non-governmental organizations, professional associations, and conservation coalitions. The region it spans includes the area from the Chesapeake Bay on the east to the Piedmont in the west, and from Pennsylvania in the north to the suburbs of Washington, D.C., in the south. It includes the counties of Anne Arundel, Baltimore, Carroll, Harford, Howard, Montgomery, and Prince George's and the cities of Annapolis, Baltimore, Bowie, and others.

The goal of the resilience project is to develop a regional vision for climate resilience which will identify key green infrastructure investments across the Patapsco, Patuxent, and Gunpowder River watersheds. [The Conservation Fund](#) is leading the project team, with assistance from the [American Planning Association](#) (APA). Other team members include the [U.S. Geological Survey, Center for Chesapeake Communities](#), and [Chesapeake Conservancy](#).

About This Toolkit

This five-part toolkit is a companion to the Greater Baltimore Wilderness Region [Green Infrastructure Identification and Ranking](#) portal. The first tool presents a series of checklists to help planners and local officials evaluate the consistency of local plans and plan implementation methods with the opportunities for green infrastructure protection or enhancement highlighted in the portal. The second, third, and fourth tools provide guidance to help them begin the process of articulating policies and laying groundwork for action through locally adopted plans, land-use and development regulations, and public investments, respectively. The fifth, and final, tool briefly describes how three key private stakeholder groups can contribute to the implementation of the Greater Baltimore Wilderness Coalition's Regional Resilience Green Infrastructure Network.

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GREEN INFRASTRUCTURE IDENTIFICATION AND RANKING PORTAL

The Greater Baltimore Wilderness Region [Green Infrastructure Identification and Ranking](#) contains multiple data layers that collectively represent a Regional Resilience Green Infrastructure Network. This network is rooted in five green infrastructure strategies to maintain and increase regional resilience to coastal storms and other climate change impacts:

- **Protect Natural Resources:** Preserve, restore or enhance valuable and vulnerable land and water resources providing hazard mitigation and other co-benefits, including floodplains, wetlands, forest, stream systems, steep slopes, hydric and highly erodible soils, and important habitat areas.
- **Enhance and Restore Tree Canopy:** Maintain, enhance, and restore tree canopy in urban and suburban communities to reduce stormwater runoff, ameliorate the urban heat island effect, and improve air quality.
- **Implement Multi-Benefit Green Stormwater Infrastructure:** Retrofit developed areas to reduce impervious surface and incorporate best management practices such as bioretention areas, green streets, and green roofs in order to reduce vulnerability to flooding and associated pollution.
- **Protect Critical Infrastructure:** Use green infrastructure to buffer critical infrastructure from extreme weather impacts, including key transportation corridors, power production and transmission facilities, hospitals, and emergency management centers, water supply reservoirs, and wastewater treatment facilities.
- **Defend the Coast:** Preserve, restore or enhance natural habitat and introduce nature-based practices (e.g., living shorelines) to buffer coastal areas from impacts of coastal flooding, storm surge, and sea-level rise.

While some parts of this network are on public lands, the majority of the priority areas identified in each map layer are privately owned. Consequently, without the cooperation of private property owners, real estate developers, and nongovernmental community-based organizations, the implementation of this network will not be possible. The following sections briefly describe how these three key private stakeholder groups can contribute to the implementation of the Greater Baltimore Wilderness Coalition's Regional Resilience Green Infrastructure Network.

Defining Green Infrastructure and Climate Resilience

Green infrastructure is our natural life support system—an interconnected network of forests, wetlands, waterways, floodplains, and other natural areas; parks, greenways, and other conservation lands; forests, ranches, and farms; and other open spaces that support native species, maintain natural ecological processes, sustain air and water resources, and contribute to people's health and quality of life. At broad scales, it includes large blocks of forest, wetlands, stream networks, and other natural systems. Meanwhile, at local scales, smaller patches may be included, and at the site scale, green infrastructure may focus on natural or semi-natural solutions to reduce stormwater runoff or heat.

For purposes of this project, we use the term *climate resilience* to refer to the ability to resist or mitigate the negative impacts of the changing climate in Maryland's coastal zone, including watersheds that empty into the Chesapeake Bay. The negative effects primarily examined include rising sea levels, increased precipitation and corresponding increased stream flows and greater stormwater runoff, and coastal storm damage from wave erosion and storm surge. In looking to what services could be provided by green infrastructure—that is, natural features such as forests and wetlands as well bioengineered approaches, such as bioswales, rain gardens, and green streets—the project team focused on how green infrastructure could buffer or mitigate physical damage to communities, built infrastructure such as roads and hospitals, and ecosystem features themselves. These mitigating services are examples of *climate resilience*. The term *resilience* is also used to refer to social and economic factors that can determine how well specific populations or neighborhoods can weather and recover from significant climate-caused impacts. While some social and economic factors were included in our green infrastructure analysis, these aspects were not the primary focus of the project.

INDIVIDUAL PROPERTY OWNERS

Many individual property owners throughout Greater Baltimore have opportunities to protect or expand green infrastructure in ways that will enhance regional resilience. Some of these opportunities would have minimal impact on how those owners can use their property in the future. Others would greatly limit future use options.

Conservation Easements

Do you own a large, mostly undeveloped property? If so, turn on the Protect Natural Resources layer in the Identification and Ranking portal, and zoom in to your property. If you see green, this indicates that your land has a high potential value to enhance resilience through natural resource protection. For these property owners, the single most meaningful action you could take would be to protect your land for future generations with a conservation easement.

A conservation easement is a voluntary legal agreement between a property owner and a land trust or public agency that permanently limits use of the land in order to protect its natural resource (or other conservation) value. The primary benefit of a conservation easement is the assurance that your property will continue to offer natural resource protection benefits long after you sell the property or pass it on to others. While property owners typically donate conservation easements, the state of Maryland and many of the counties in Greater Baltimore have programs that may provide compensation or tax benefits to eligible owners. And most donated conservation easements qualify as tax-deductible charitable donations under the federal tax code. If you are interested in learning more about conservation easements, contact the [Maryland Environmental Trust](#) or your local planning office.



A rain garden at a home in Annapolis, Maryland. (Credit: Ted Weber, The Conservation Fund)

Green Stormwater Infrastructure

Green stormwater infrastructure refers to any stormwater management technique that mimics natural hydrology or otherwise attempts to minimize the rate and volume of stormwater flows into storm-sewer systems or neighboring properties. At the individual property level, some of the most common techniques are rain gardens, green roofs, and rain barrels. Most owners have opportunities to add some form of green stormwater infrastructure to their property, but some properties are especially well positioned to enhance regional resilience by adding green stormwater infrastructure.

Turn on the Implement Multi-Benefit Green Stormwater Infrastructure layer in the Identification and Ranking portal, and zoom in to your property. If you see green, this indicates that your property has a high potential to enhance resilience by adding green stormwater infrastructure. In many cases, adding green stormwater infrastructure can reduce the risk of flooding on your and your neighbors' property, and when many property owners participate, these benefits can have a meaningful impact at the regional scale. Because different green infrastructure techniques are appropriate for different property conditions, it is important to consult with your local planning office before initiating any green stormwater project. Your local planners are also a good point of contact to learn about any technical assistance opportunities or incentives for installing green stormwater infrastructure.

Protecting and Planting Trees

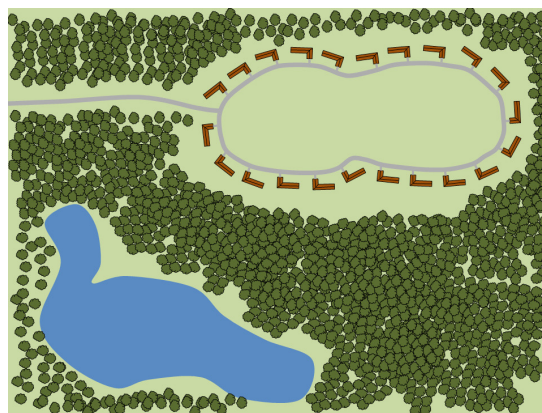
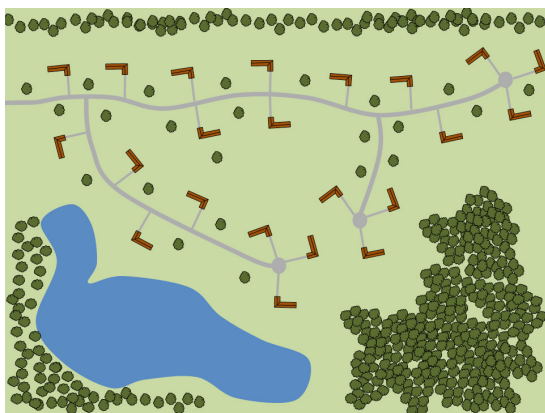
As with green stormwater infrastructure, most owners have opportunities to plant trees on their property. In virtually all cases, adding trees provides a host of benefits to residents and tenants, including beautification, shade, and improved stormwater infiltration, and when many property owners plant trees, these benefits can help enhance regional resilience. Contact your local planning department to learn about any technical assistance opportunities or incentives that may be available to help you plant trees on your property.

Additional Information for Property Owners

- [Homeowner Guide for a More Bay Friendly Property](#). 2014. Baltimore: Chesapeake Stormwater Network.
- Kays, Jonathan, Adam Downing, and James Finley. 2011. ["The Woods in Your Backyard: Creating Natural Areas from Existing Lawns and Pasture."](#) University of Maryland Extension Information Sheet.
- Maryland Environmental Trust. 2013. ["Maryland's Preservation Programs."](#)
- [The Homeowner's Guide to Stormwater: How to Develop and Implement a Stormwater Management Plan for Your Property](#). 2012. Lancaster, Pennsylvania: Lancaster County Conservation District.

REAL ESTATE DEVELOPERS

Real estate developers throughout Greater Baltimore typically act at a larger scale than individual property owners, but they have many of the same opportunities to protect or expand green infrastructure in ways that will enhance regional resilience. In some instances green infrastructure protection or enhancement may be a central focus of the site development plan. In other cases, developers may use targeted green infrastructure interventions to enhance resilience.



Conventional (left) versus conservation (right) subdivision design. (Credit: American Planning Association)

Conservation Design

If you are planning a development project on a site that is currently undeveloped (or developed at a very low density), you may be able to take advantage of conservation design principles to meet multiple goals. Conservation design is a site design method that lays out new streets and lots in a way that protects environmentally sensitive features (e.g., forests, wetlands, floodplains, steep slopes, wildlife habitat) and maximizes the amount of site area retained as permanent open space. While this approach clearly supports natural resource protection, homes in conservation subdivisions often sell for higher prices than comparable homes in conventional subdivisions.

Turn on the Protect Natural Resources and Defend the Coast layers in the Identification and Ranking portal, and zoom in to a potential development site. If you see green, this indicates that the site has a high potential value to enhance resilience through natural resource protection or by providing coastal defense. Some cities and counties in Greater Baltimore incentivize conservation design by permitting smaller individual lot sizes and sometimes a greater number of total lots than would otherwise be permitted under conventional subdivision design standards. To learn more about the conservation design approach or any local incentives for using conservation design, contact your local planning department.

Open Space Dedications

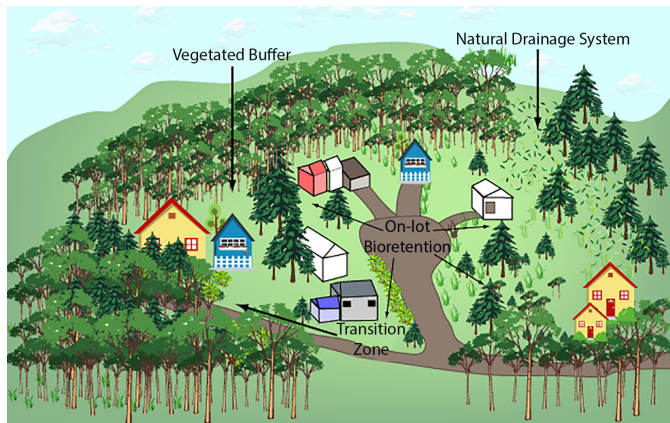
Some cities and counties in Greater Baltimore encourage or require developers to dedicate open space for recreational or resource conservation purposes. Typically, these dedications are either tied to the presence of specific environmentally sensitive features or representative of a percentage of the overall site area or an amount of space per dwelling unit. While open space dedications clearly have potential to support natural resource protection, it is also true that homes in close proximity to dedicated open spaces often sell for higher prices than comparable homes farther away from open spaces.

Turn on the Protect Natural Resources and Defend the Coast layers in the Identification and Ranking portal, and zoom in to a potential development site. If you see green, this indicates that the site has a high potential value to enhance resilience through natural resource protection or by providing coastal defense. For these sites, consider dedicating a portion of the development site as permanent open space, either by deed restriction or donation to a land trust or local park system. To learn more about open space dedication requirements or options, contact your local planning department.

Protecting and Planting Trees

Under Maryland's Forest Conservation Act, development projects on properties of 40,000 square feet or greater must prepare forest conservation plans consistent with state preservation and afforestation/reforestation priorities. Some cities and counties in Greater Baltimore have adopted additional provisions that protect existing trees along public rights-of-way and on smaller lots. Regardless of these potential tree protection requirements, there many good reasons to protect existing trees or plant new trees on your development site. Trees provide shade, capture and filter stormwater, improve mental health, and increase property values.

Turn on the Enhance and Restore Tree Canopy layer in the Identification and Ranking portal, and zoom in to a potential development site. If you see green, this indicates that protecting existing trees or planting new ones on this site has a high potential to enhance resilience. To learn more about requirements or incentives for tree protection or planting, contact your local planning department.



Environmental site design. (Credit: Figure by MIT OpenCourseWare (CC BY-NC-SA 2.0))

Green Stormwater Infrastructure

Under Maryland's Stormwater Management Act, all new development projects must use environmental site design (ESD) to the "maximum extent practicable." ESD consists of site planning and stormwater management practices that mimic natural hydrology or otherwise attempt to minimize the rate and volume of stormwater flows into storm-sewer systems or neighboring properties. For site development projects, some of the most common techniques are native landscaping, constructed wetlands, bioswales or rain gardens, and street and parking area designs that minimize impervious cover. While all development projects have opportunities to include green stormwater infrastructure, some development sites are especially well positioned to enhance regional resilience by adding green stormwater infrastructure.

Turn on the Implement Multi-Benefit Green Stormwater Infrastructure layer in the Identification and Ranking portal, and zoom in to a potential development site. If you see green, this indicates that adding green stormwater infrastructure to this site has a high potential to enhance resilience. Because different green infrastructure techniques are appropriate for different property conditions, it is important to consult with your local planning office before initiating any green stormwater project. Your local planners are also a good point of contact to learn about any technical assistance opportunities or incentives for installing green stormwater infrastructure.

Additional Information for Developers

- Capiella, Karen, Tom Schueler, and Tiffany Wright. 2006. [Urban Watershed Forestry Manual Part 2: Conserving and Planting Trees at Development Sites](#). Newtown Square, Pennsylvania: U.S. Forest Service Northeastern Area.
- [Conservation Design in the Chesapeake Bay Watershed](#). 2000. Media, Pennsylvania: Natural Lands Trust.
- Prince George's (Maryland) Department of Environmental Resources, County of. 1999. [Low-Impact Development Design Strategies](#).
- U.S. Forest Service. 2016. ["i-Tree: Tools for Assessing and Managing Forests & Community Trees"](#).

COMMUNITY-BASED ORGANIZATIONS

There are numerous community-based environmental, development, and civic organizations across Greater Baltimore that have opportunities to help enhance regional resilience by taking or coordinating actions that lead to the protection or expansion of green infrastructure in strategic locations. For some environmental advocacy or stewardship organizations, green infrastructure protection or expansion may already be a core function. For other community-based organizations, green infrastructure efforts can be one piece of a larger strategy to improve neighborhoods or strengthen local economies. While some community based-organizations have opportunities to integrate green infrastructure protection or enhancement into their real estate development projects, others can participate most effectively by providing leadership and resources to their constituents or members.



*A volunteer greening project at an Annapolis, Maryland, public housing site.
(Credit: Ted Weber, The Conservation Fund)*

Volunteer Planting or Restoration Projects

In Maryland (and other parts of the country) community-based organizations often work in partnership with local and state government to coordinate volunteer tree planting or ecological restoration projects. These projects may focus on planting new trees in a neighborhood or regional park, restoring a vegetative buffer along a stream, removing invasive plants, or improving coastal habitat in tidal areas. Community-based organizations coordinate these projects because they can help improve local environmental conditions and build environmental awareness and social capital among constituents or members. While all of these efforts confer benefits on local communities, in certain instances they can also enhance regional resilience.

Turn on the Natural Resource Protection, Tree Canopy Enhancement, and Coastal Defense layers in the Identification and Ranking portal, and zoom in to a potential project site. If you see green, this indicates that coordinating a tree planting or ecological restoration project on this site would have a high potential to enhance regional resilience.

Green Infrastructure Information and Assistance

Many community-based environmental organizations share their green infrastructure expertise with community members through publications or formal technical assistance initiatives. Likewise, other community-based organizations often convene their constituents to share information about specific topics, and in some cases, they provide direct financial assistance to help residents or business owners make property improvements. For example, a community development corporation or financial institution may offer small grants or low-interest loans to help community members plant trees or install green stormwater infrastructure. While all of these educational, outreach, and assistance efforts confer benefits on local communities, in certain instances they can also enhance regional resilience.

If your organization provides information about or assistance with protecting or enhancing green infrastructure, zoom in on your service area in the Identification and Ranking portal. Turn on each resilience strategy layer. Any area or site where you see green is a place where your information and assistance efforts are likely to have a high potential to enhance regional resilience.

Additional Information for Community-Based Organizations

- Arbor Day Foundation. 2016. [“Organizing a Tree Planting Project.”](#)
- Baltimore (Maryland) Department of Planning, City of. 2015. [Green Pattern Book: Using Vacant Land to Create Greener Neighborhoods in Baltimore](#). NRS-INF-32-15. Newtown Square, Pennsylvania: U.S. Forest Service Northern Research Station.
- [A Citizen’s Guide to the Forest Conservation Act in Maryland](#). 2004. Annapolis, Maryland: Chesapeake Bay Foundation.
- Cunningham, Amanda. 2002. [A Guide to Greening Neighborhoods: Creating and Caring for Community Open Space](#). Baltimore: Parks & People Foundation.
- [National River Cleanup Organizer’s Handbook](#). 2014. Washington, D.C.: American Rivers.

Local Planning Offices

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