

# Low Impact Development (LID)

## In a Nutshell

Low Impact Development is as simple as trying to develop in a manner that maintains stormwater as close to its original source as possible while also working with natural environmental systems to do so. In general LID uses [green infrastructure](#) approaches to stormwater management. The fundamental philosophy is that public infrastructure should be designed to treat stormwater as an asset and resource instead of a waste product. Many of the other One STL sustainability tools address LID, such as bioswales, rain gardens, rain barrels, cisterns, rainscaping, green roofs, and impervious concrete.

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## The “How To”

### *What is LID and How Does it Differ from Traditional Design?*

The EPA provides a [clearinghouse overview](#) of Low Impact Development strategies and programs at the federal level. They also provide a [series of videos](#) showcasing national success stories. A non-profit in Virginia concerned with preserving a river there offers an [introductory video and toolkit](#). Massachusetts offers a Smart Growth - Smart Energy [clearinghouse on LID](#) that includes [slideshows on implementation examples](#), [case studies](#), and [model bylaws/code language](#). The Boston area's council of governments provides a [slideshow presentation](#) that introduces cities to LID.

Prince George's County in Maryland offers a [LID Design Strategies manual](#), recommended by the EPA as a best practice, which approaches LID design through five components:

- Site Planning
- Public Outreach
- Hydrologic Analysis
- Erosion & Sediment Control
- Integrated Management Practices

The LID approach also outlines the following goals (from the manual):

- Provide an improved technology for environmental protection of receiving waters.
- Provide economic incentives that encourage environmentally sensitive development.
- Develop the full potential of environmentally sensitive site planning and design.
- Encourage public education and participation in environmental protection.
- Help build communities based on environmental stewardship.
- Reduce construction and maintenance costs of the stormwater infrastructure.
- Introduce new concepts, technologies, and objectives for stormwater management.
- Encourage flexibility in regulations that allows innovative engineering and site planning to promote smart growth principles.
- Encourage debate on the economic, environmental, and technical viability and applicability of current stormwater practices and alternative approaches.

### *How Do We Implement it in Projects?*

Low Impact Development (LID) is a holistic approach to designing and building our communities - it is not

one single tool you can deploy. However, many of the tools in the One STL toolkit address components of good low-impact design:

- [Bioswales](#)
- [Cisterns](#)
- [Complete Streets](#)
- [Great Streets](#)
- [Green Roofs](#)
- [Native Landscaping](#)
- [Parking Requirement Reduction](#)
- [Pervious Pavement](#)
- [Rain Barrels](#)
- [Rain Gardens](#)
- [Rainscaping](#)
- [Retention Ponds](#)
- [Riparian Buffers](#)
- [Stormwater Trash Separators](#)
- [Streamwater & Wetland Mitigation Banking](#)
- [Street Trees](#)
- [Two Stage Ditch Design](#)
- [Wetland Preservation](#)

## Planning & Zoning

### *Local Government Codes*

Low Impact Development needs to be permitted by local codes. The Metropolitan Area Planning Council offers a [Low Impact Development Toolkit](#) that specifically provides a [checklist](#) that evaluates your agency's site plan review, zoning codes, open space requirements, parking requirements, and other regulations. Those links include resources to revise your local code language. MAPC also provides resources on [stormwater management](#) including assessments of local communities in the Boston area. Those [assessments](#) include targeted recommendations on how to [update their codes for LID](#) and [provide model language](#).

The EPA also provides a [Water Quality Scorecard](#) for [analyzing your community's stormwater](#) and identifying programs to improve its quality.

## Dollars & Cents

### *The Big Picture Cost Savings*

Low Impact Development designs save virtually everyone money. They save the developer initial construction costs, they save the local government agency infrastructure, operations, and long-term maintenance costs, and they save property and home owners stormwater management utility bills. These are all just the bare minimum, most direct cost savings. The EPA provides a [series of factsheets](#) that outline all of the impacts from using LID including [cost savings](#). The EPA offers a second report that dives further into the [detail of costs](#), including long-term operations and maintenance (O&M) cost.

## *Cost to Local Governments*

The direct impact to a local government varies with the complexity of the project. As for updating codes and making changes to the city's regulatory or stormwater management programs, little more than staff time will be involved. However, depending on where your city is starting and how LID is addressed in new language, such code reform could be a major project for existing staff. This can be a really impactful investment in community expected to experience a lot of new construction growth.

For stormwater management projects, although the costs can be considerable, using LID can actually save your jurisdiction money. An EPA study found that the cost of such projects and installations were 15% to as much as 80% cheaper when [LID methods were used](#). Therefore, the larger the project costs potentially the higher the savings.

## **Measuring Success**

The EPA provides a [detailed report on cities and counties](#) successfully using LID that includes twelve (12) case studies, stretching from Oregon to Chicago and Florida to Kansas. The report provides a breakdown of what policies and code approaches were most successful - and what blend of LID solutions provided the most effective success for each community. The EPA also provides a library of [cost-benefit analysis examples](#), [case studies](#), and other resources to evaluate program success (or to model off of successful programs) in their [Green Infrastructure](#) resource section.

Also be sure to review the links to other One STL tools in "Discover More" that can offer implementation strategies and success criteria for more than a dozen other tools, all related to green infrastructure and Low Impact Development.

## **Discover More**

The EPA website offers a [library of links](#) that addresses LID used in a wide variety of settings, anywhere from [big box retail](#) centers to a [green values stormwater](#) project in Chicago.

### *One STL Resources*

Low Impact Development is at the heart of the One STL toolkit. Be sure to review all of the related resources available to using LID design in your community:

- [Bioswales](#)
- [Cisterns](#)
- [Complete Streets](#)
- [Great Streets](#)
- [Green Roofs](#)
- [Native Landscaping](#)
- [Parking Requirement Reduction](#)
- [Pervious Pavement](#)
- [Rain Barrels](#)
- [Rain Gardens](#)
- [Rainscaping](#)

- [Retention Ponds](#)
- [Riparian Buffers](#)
- [Stormwater Trash Separators](#)
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