

Why LID makes Economic Sense

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North Carolina
Coastal Federation
Working Together for a Healthy Coast

North Carolina Coastal Federation

- Nonprofit, 501(c) member supported organization founded in 1982.
- 30 staff and 30 board members.
- Cover 20 coastal counties.
- Three offices.
- Key goals -
 - Living Shorelines
 - Thriving Oysters
 - Clean Water Quality
 - Reduced Marine Debris
 - Effective Coastal Management



All connecting People, the Environment
and Economy



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The Economic Benefits of Low Impact Development

"Planning and designing in concert with nature not only builds for resilience, but also provides amenities for communities and value for investors in development."

Urban Land Institute



The Economic Benefits of Low Impact Development

LID is an increased reliance on approaches to development that restore hydrologic function by infiltrating runoff close to where it falls rather than conveying it downstream.

These techniques can provide less expensive, and more cost-effective, approaches to managing runoff.

Municipalities and developers may benefit from lower capital costs.



The Economic Benefits of Low Impact Development

Research shows that building green does not necessarily cost more, especially when strategies are integrated early into the development process *AND* when considering the economic benefits to developers, local governments, consumers and the environment collectively....



Analyzing the Costs and Realizing the Benefits

construction costs considers costs of construction.

life-cycle cost analysis includes planning, design, installation, operation and maintenance (O&M)

benefit-cost analysis, considers the full range of costs and benefits, including the long term life cycle costs of the construction, but also the economic benefits resulting from LID.

Environmental goods and services, such as clean air, clean water for swimming , or healthy fish populations, are not easily measured in monetary terms because they aren't traded in markets like consumer items such as houses, oil or timber. **non-market valuation**.

Ecosystem services are the benefits people get from ecosystems.

The Economic Value of LID to the:

- Developer
- Local Government
- Consumer/homeowner
- Environment



Economic Value of LID to the Developer

- Reduce land clearing and grading costs
- Potentially reduce infrastructure costs (streets, curbs, gutters, ponds)
- Reduce storm water management costs
- Potentially reduce impact fees and increase number of buildable lots
- Increase lot and community marketability, quicker and more profitable sale?



Economic Value of LID to the Developer

Example Benefit of LID Practice:

- Because a pervious parking system **doubles** as a stormwater management system, there is no need to purchase additional land for installing large retention ponds and other water-retention and filtering systems. That means developers and property owners can use land more efficiently and maximize the return on their investment.
- Installing traditional curbs, gutters, storm drain inlets, piping, and retention basins **can cost two to three times more** than low-impact strategies for handling water runoff, such as pervious concrete.



Economic Value of LID to the Developer

Poll Question:

Using permeable parking surfaces can provide needed parking space *and* stormwater management.



Economic Value of LID to the Developer

some LID materials might currently be more expensive than conventional versions, but because they reduce overall stormwater management needs, the total project construction costs can be reduced.



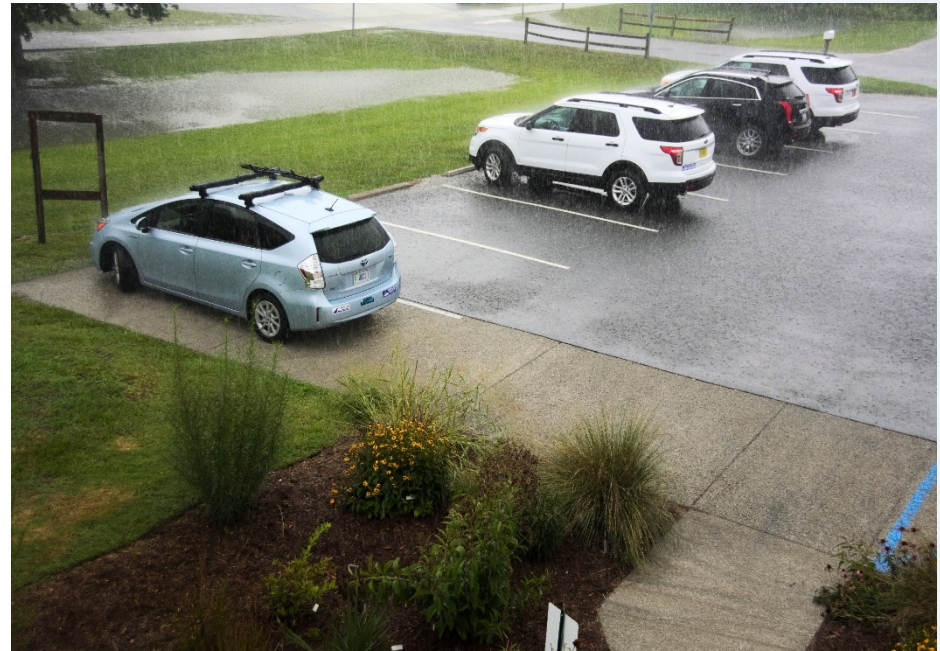
Economic Value of LID to the Developer

Example LID Practice Benefit:

Asphalt: costs between \$.50 and \$1 per square foot of installed pavement. This sounds quite cheap, but it does not include the costs of any storm water management system or drainage piping.

Porous Concrete: costs from \$2.00 to \$6.50, per square foot of installed pavement. Park on the pond

A More Accurate Cost Comparison: consider added costs of storm water management systems. This bumps up costs of the asphalt pavement to between \$9.50 and \$11.50 per square foot of installed pavement. *Paversearch.com*



EPA LID Cost Comparison Report 12/07

Project	Conventional	LID	Cost Difference	Percent Difference
Bellingham City Hall	\$27,600	\$5,600	\$22,000	80%
Auburn Hills	\$2,360,385	\$1,598,989	\$761,396	32%
Donovan Park	\$52,800	\$12,800	\$40,000	76%
Gap Creek	\$4,620,600	\$3,942,100	\$678,500	15%
Garden Valley	\$324,400	\$260,700	\$63,700	20%
Prairie Glen	\$1,004,848	\$599,536	\$405,312	40%
Somerset	\$2,456,843	\$1,671,461	\$785,382	32%

Poll Question: The EPA study cost savings

Economic Value of LID to the Developer:

Evaluating LID for a Development in the Lockwood Folly Watershed

Jason D. Wright, EI, William F. Hunt, Ph.D., PE, and Dwane L. Jones 2013

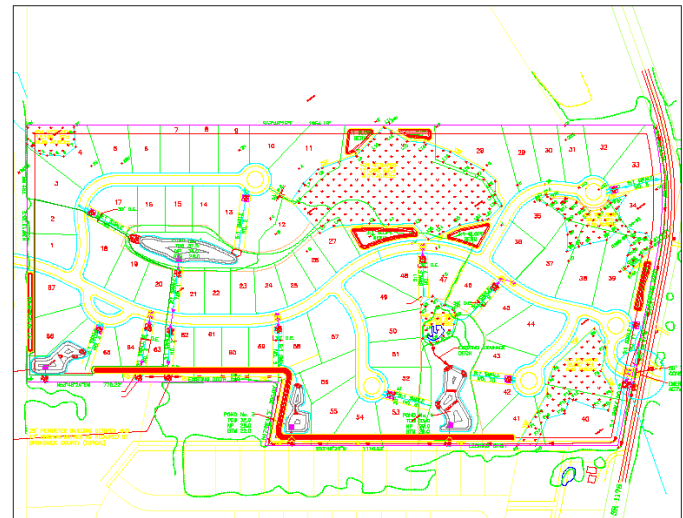
Study evaluated conventional neighborhood design and redesigned it with LID comparing the costs.

Findings: Cost savings with LID practices include:

- shrinking the pond
- narrowing the roads
- eliminating drop inlets and pipe
- eliminating curb and gutter

**By decreasing the surface area of the wet pond, room was created for another home on the lot.

This is perhaps the greatest benefit to the developer as comparable homes in the area have sold for approximately \$380,000.



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Economic Value of LID to the Developer

Imagine the savings if incorporated into the *initial* concept, design, permitting phase of the project.....

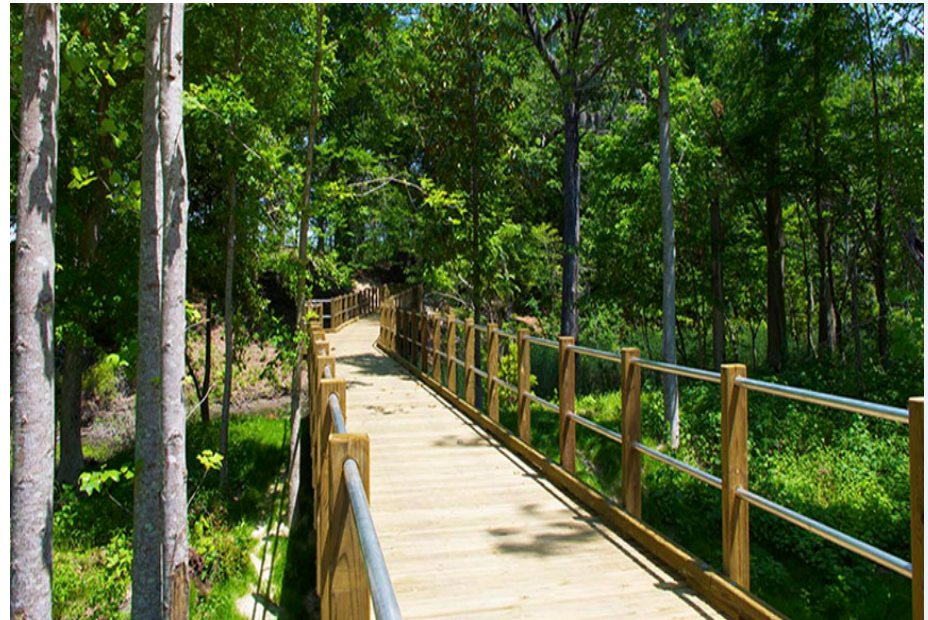


Economic Value of LID to the Developer



RIVER BLUFFS.

“We saved about \$2 million in development cost on 100 lots by not installing curbing and by using natural areas as infiltration basins and not having to excavate for wet ponds. Other than that, all the other costs were about the same. I also think the trees we were able to save by not clearing for ponds and drainage was an added plus.” *Burrows Smith, developer*



Economic Value of LID to the Developer

"The added benefit of responsible, low impact development is that it creates a neighborhood that fits in with what was here before and consumers see that, respect that and generally speaking, are willing to pay a premium for that".

John Lennon

Director of Sales and Marketing

River Bluffs Development Corp.



RIVER BLUFFS.

Economic Value of LID to the Developer



RIVER BLUFFS.

In marketing, River Bluffs Promotes A Commitment to the River and LID.

It is being developed on a philosophy of sustainability and environmental preservation.

Minimal paved roads & driveways.

Preserved mature trees, natural vegetation & green spaces

No retention ponds.

Winding streets.

Energy efficient home building.



Economic Value of LID to Local Governments:

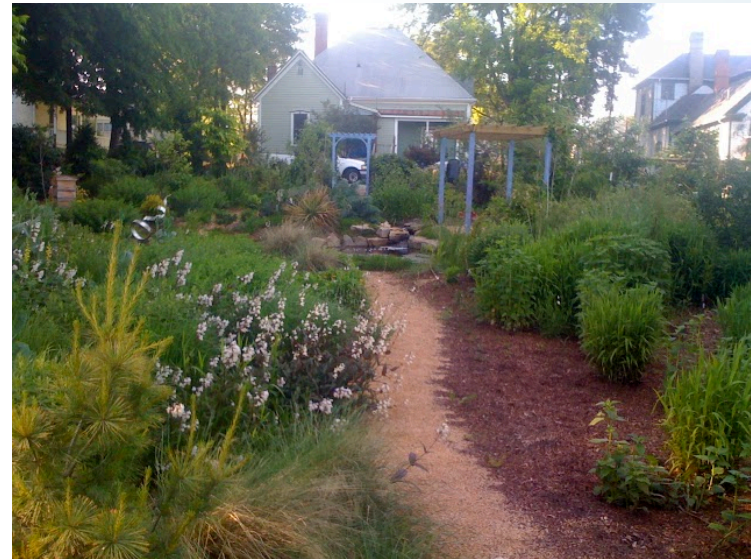
- Protecting water quality helps protect real estate values, which protects tax revenues
- On-site stormwater volume control can downsize or eliminate stormwater conveyance infrastructure
- Reduced public expenditures on stormwater infrastructure maintenance
- Reduce hazardous flooding



Economic Value of LID to the Consumer

- Increased amenity and property values
- Water quality improvements can increase market value of adjacent properties
- Reduced stormwater fees
- Lots in conservation subdivisions sold in about half the time as lots in conventional subdivisions

landchoices.org



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Economic Value of LID to the Consumer

"When designed correctly, most homeowners perceive these systems as value added builder amenities and provide for their maintenance."

National Association of Home Builders Research Center



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Economic Value of LID to Environment

- Clean water quality results in waters that are swimmable and fishable
- Reduced nuisance flooding
- Groundwater recharge



Walk The Loop Virtual Tour



Walk The Loop Virtual Tour

Street-side swales and small earthen dams.

A swale is a water storing ditch built into the landscape. The swales and dams slow down polluted stormwater so it can soak into the ground and not reach nearby swimming and fishing waters of Lee's Cut.



Walk The Loop Virtual Tour

This rain garden collects and absorbs stormwater that previously flowed into street drains and straight through pipes and into the adjacent estuary. This area is planted with native plants and turf that soak up rainwater and prevent polluted runoff.



Walk The Loop Virtual Tour

With a slight change to the landscaping and the addition of two curb cuts and a raised drain, runoff is directed from Causeway Drive into the grassy median where it soaks slowly into the ground and pollutants are filtered out by soil bacteria. This prevents polluted road runoff from reaching the storm drains and the nearby waters of Motts Channel.



Walk The Loop Virtual Tour

These are reversed stormwater inlets that divert polluted roadway runoff to soak into the grassed area between Causeway Drive and the Arboretum instead of flowing through pipes into Motts Channel.



Walk The Loop Virtual Tour

Under the fire dept. building, five 3,000-gallon cisterns capture and reuse stormwater from the roof. The overflow from these cisterns fills a 10,000-gallon cistern located across the street near the baseball fields. Together, this water is reused to water landscaping and public ballfields and wash fire and police department vehicles.



Walk The Loop Virtual Tour

Here, two 40' x 40' asphalt areas around each parking lot drain were removed and replaced with sections of pervious pavement. These small areas now absorb polluted runoff from the parking lot during an average rain event. This approach protects the nearby creeks and streams from this pollution, and costs much less than repaving the entire parking lot.

