Encouraging LID:
A bylaw review analysis

Dover Planning Board
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FOUNDATION FOR METROWEST

Mass Audubon
Protecting the Nature of Massachusetts

SHAPING your Future of Community
Agenda

• Grant information
• Background of issue and goals
• Overview of recommendations
• Next steps
• Questions
Thank You
LID is an approach to land development (or re-development) that works with nature to manage stormwater as close to its source as possible. LID employs principles such as preserving and recreating natural landscape features, minimizing effective imperviousness to create functional and appealing site drainage that treat stormwater as a resource rather than a waste product. - EPA
What’s the Problem?

Development is sprawling
What's The Problem?

Impervious surface → Runoff

- 40% evapotranspiration
- 10% runoff
- 25% shallow infiltration
- 25% deep infiltration
- Natural Ground Cover

- 30% evapotranspiration
- 55% runoff
- 10% shallow infiltration
- 5% deep infiltration
- 75%-100% Impervious Cover

Source: EPA
Impacts of Stormwater Runoff
We Need to Change Course

Traditional development

Impervious surfaces

Stormwater runoff

Water quality impairment

Infrastructure impacts

Financial and regulatory burden
The Value of Green: Impervious, Runoff, Nutrients

If we continue to follow opportunistic growth, in 2060:

These allow for nearly the same amount of development, but 2/3 of it is clustered development.
A Different Direction: Greening Your Community

Sustainable development → Increased infiltration → Reduced runoff & more groundwater → Improved water quality → Intact infrastructure → Regulations met → Money saved
### Benefits of LID Practices

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Reduces Stormwater Runoff</th>
<th>Improves Water Quality</th>
<th>Reduces Grey Infrastructure Needs</th>
<th>Reduces Flooding</th>
<th>Increases Available Water Supply</th>
<th>Reduces Groundwater Recharge</th>
<th>Reduces Salt Use</th>
<th>Reduces Energy Use</th>
<th>Improves Air Quality</th>
<th>Reduces Atmospheric CO₂</th>
<th>Reduces Urban Heat Island</th>
<th>Improves Community Livability</th>
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<tbody>
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<td>Practice</td>
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![Yes] Yes  ![Maybe] Maybe  ![No] No

Source: Center for Neighborhood Technology's The Value of Green Infrastructure
Conserve the natural green infrastructure already providing free ecosystem services
Incorporate LID and green infrastructure design into development
Restore the resiliency of urban landscapes through LID in redevelopment

conserve  restore  protect  save money
Conserve the natural green infrastructure already providing free ecosystem services

Integrate LID and green infrastructure designs into current development

Restore the resiliency of urban landscapes through LID in
Integrate LID and green infrastructure designs into current development projects

Conserve the natural green infrastructure already providing free ecosystem services

Restore the resiliency of urban landscapes through LID in redevelopment
**Restore**

**Conserve** the natural green infrastructure already providing free ecosystem services

**Integrate** LID and green infrastructure designs into current development projects

**Restore** the resiliency of urban landscapes through LID in redevelopment

North Street, Pittsfield, MA
Free Ecosystem Services:
Free services provided by the natural landscape

- **Flooding**: Floodplains provide flood protection and reduce infrastructure damage

- **Public Health**: Managing stormwater and reducing retention ponds reduces creation of mosquito habitat

- **Air Quality & Public Health**: Trees reduce the urban heat island effect, reducing smog creation and resulting asthma occurrences as well as reducing nitrogen dioxide and particulate matter

- **Water Quality**: Streamside vegetation filters pollutants and reduces erosion

- **Water Quantity**: Forests and wetlands store water, improve water quality, and recharge groundwater

- **Recreation**: Clean, flowing waters support recreation, including boating, fishing, and swimming while open space provides areas for hiking and biking

- **Quality of Life**: Open space and street trees create a more enjoyable walking environment, benefiting community connection, health, and economic benefit in downtowns and commercial areas

Every $1 invested in land conservation offers a **$4 Return on Investment** in terms of these ecosystem service values.
Land Protection = Water Protection

- Quabbin & Wachusett Reservoirs serve 2.5 million
- Over 20 years, Massachusetts Water Resources Authority spent $130M to protect 22,000 acres of watershed lands
- Avoided ratepayer cost of $250M on a filtration plant and
The Power of a Bylaw: Westford

- Adopted a Conservation Subdivision bylaw in 1978
- Requires developers to submit both conservation and conventional & Planning Board chooses preferred
- 48 developments protected over 1,700 acres
The Power of a Bylaw: Westford

- Preserved local habitat
- Protected water resources
- Created 13 miles of hiking trails & public recreation
- Town didn’t have to purchase the land themselves, saving millions of dollars
Open Space Residential Development Zoning

- Adopt state’s four-step OSRD best practice model in order to encourage sustainable development practices that consider the natural landscape and conserve key green infrastructure areas.
Zoning

• Dimensional standards can be reduced to allow flexibility
• Limiting clearing and grading
• Specifically address and encourage LID
• Match Wetlands Protection Regulations that recognize importance of forested buffers and other vegetated areas
Subdivision Rules & Regs

• Encourage LID BMPs
• Allow common drives (currently not permitted)
• Specifically encourage minimizing clearing and grading and encourage tree retention
• Narrow roadways (currently 52-60’ ROW)
Site Plan Review

Currently does not address any of factors reviewed in analysis

- Limit clearing, grading; retain vegetation and limit soil removal
- Allow easy siting of LID features such as bioswales
- Limit impervious surfaces
- Allow rooftop runoff into swales/other infiltration
Stormwater/LID Bylaw

Address:
- Minimize impervious areas
- Manage soils
- Native planting
- Minimize clearing, grubbing
- LID

Update stormwater bylaw

Adopt LID bylaw for ease of reference in other areas or define in stormwater bylaw
• Development of large parcels adversely affects resource areas
• ConComm may review subdivisions/parcels over five acres to protect natural landscape features and allow native plantings
Next Steps

• Decide which changes are right for you
  • Politically feasible
  • Administrative changes that are supported (subdivision)
  • Long term strategy for changes requiring TM
• Take steps to meet MS4 regulations
• Increase community outreach & public awareness
Stay in Touch!

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Learn more at
massaudubon.org/lidcost
mapc.org