

Encouraging Low Impact Development in Dover, MA: A bylaw review analysis



Overview

The following analysis was prepared by Mass Audubon as part of a technical assistance project providing training and technical assistance to communities in Massachusetts to apply cost-effective Low Impact Development (LID) techniques. Specifically, this report evaluates selected land use regulations in relation to models and examples from the Commonwealth of Massachusetts' Smart Growth/Smart Energy Toolkit and other sources in relation to the use of LID and Green Infrastructure (GI) techniques in development. The focus is primarily on residential development.

Best practices minimize the alteration of natural green infrastructure such as forests; minimize creation of impervious surfaces; support retention of substantial naturally vegetated buffers along wetlands and waterways; minimize grading and alterations to natural flow patterns; and support the use of LID techniques as the preferred, most easily permitted methods for managing stormwater.

Key Areas of Analysis

1. Overall site design: Open Space Residential Design (OSRD) vs. conventional subdivisions
2. Project design and layout standards in relation to LID: road layout and width, curbing, drainage, sidewalks, parking, landscaping
3. Maintenance and operations, mechanisms for enforcement: Who is responsible for maintaining drainage/LID (municipal or homeowner); easements, homeowner association option; municipal inspection and administration systems (regardless of who is responsible this is needed)

Open Space Residential Design (OSRD) Overview Analysis

Dover does not yet have an open space residential design or other cluster bylaw to review. By adopting an OSRD bylaw, Dover could encourage more sustainably designed subdivisions that encourage preserving the natural landscape features and benefits of intact green infrastructure as well as encouraging the use of LID in the site design.

Zoning, Subdivision, Site Plan Review, and Stormwater Analysis

There are opportunities for improvements with each of the zoning bylaw, site plan review (SPR), stormwater bylaw, and subdivision rules and regulations to use plain language that acknowledges the importance of natural green infrastructure and prioritizes its protection. Making the requirements more flexible will help Dover decrease the amount of impervious surfaces and increase infiltration through the use of LID measures. These include reducing dimensional requirements, allowing common drives, flexible street location placement that works with the natural landscape, reduced road width standards, and requiring minimized clearing and grubbing.

In other areas, LID can be clearly described as the preferred method, such as the use of roadside swales, requiring roof runoff to be directed into vegetated areas (assuming soils allow for infiltration), and allowing or requiring LID in parking areas.

Both SPR and Subdivision rules could also be clarified in terms of reducing clearing and grading needs as well as using native plantings. While Chapter 239 on Multifamily Zoning discusses the use of swales and allowing natural draining and avoiding large trees and natural features, these requirements are not reflected within the general subdivision rules and regulations or zoning bylaws. These priorities are not reflected in other components of Dover's regulations and bylaws.

While Dover's stormwater bylaw does not at all address the option of LID, let alone require it, the Rules and Regulations of the Wetlands Protection bylaw clearly states the importance of forested buffers and other naturally vegetated areas to protect local waterways. It also indicates that "the development of large parcels of land, whether wetland, upland, or mixed, even if in technical compliance with the other provisions and performance standards of this chapter, has an adverse effect on neighboring resource areas." It also gives the Conservation Commission the ability to review any subdivision and/or any parcel of five acres or more to be in compliance with section K of the regulations to protect the natural landscape features and using native plantings. It would be useful to ensure that all regulations share similar priorities.

Creating an LID bylaw may also help Dover create a simple standard as to what qualifies as LID and review the benefits and how it may be used. This will decrease the need to explain LID throughout each of the zoning, SPR, and subdivision rules and regulations and reduce the potential for any conflict between regulations and bylaws. Having a central LID bylaw will also allow the PB to easily adjust the standards in the future instead of altering each regulation or bylaw as needs and knowledge changes. LID may also be added as a definition in the stormwater bylaw and defined within it.

The attached chart gives a more detailed analysis of Natick's zoning bylaw, site plan review, stormwater bylaw, and subdivision rules and regulations.

Additional Notes and Recommendations

Stormwater Calculations

Ensure your regulations reference the most updated data on storm intensities from the Northeast Climate Center.

Landscaping and Recommended Trees

Ensure your local landscaping regulations require native, pollinator friendly species such as those here: http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_015043.pdf

Other Considerations

Funding and Maintenance:

- Ensure sufficient funding for DPW to perform maintenance of stormwater management facilities, whether conventional or LID.
- Consider reduced costs of paving, plowing, salt when comparing LID maintenance costs with conventional designs
- Create mechanisms for enforcement of maintenance agreements; establish regulations/fines for property owners who fail to maintain stormwater facilities. (Draft stormwater regulations include this for Major Land Disturbance Permits.)

Training:

- Provide opportunities for and encourage municipal staff and committee/board members to participate in LID workshops or conferences.

Nonpotable uses of clean stormwater:

- Local plumbing codes should allow the use of clean (e.g. rooftop) rainwater for landscape irrigation and interior non-potable uses such as toilet flushing.

Demonstration projects/public education

- Implement LID demonstration programs at city or town hall, schools, DPW, etc.

Common Acronyms

BoA	Board of Appeals
BoH	Board of Health
BMP	Best Management Practice
CC	Conservation Commission
CR	Conservation Restriction pursuant to MGL 184, S.31-33
DPW	Department of Public Works
GI	Green Infrastructure
HA	Homeowner's Association
LID	Low Impact Development
MS4	Municipal Separate Storm Sewer System
NRPZ	Natural Resource Protection Zoning
OS	Open Space
OSRD	Open Space Residential Design
PB	Planning Board

ROW	Right of Way
RS	Residential Single – divided into RSA, RSB, RSC
RG	Residential General
SP	Special Permit
SPGA	Special Permit Granting Authority

Resources and Model Bylaws/Regulations

For additional information on best practices, model LID and OSRD bylaws and regulations, case studies, and other related resources see the following websites:

- Massachusetts Smart Growth/Smart Energy Toolkit, including case studies and model bylaws: www.mass.gov/envir/smart_growth_toolkit/
- Massachusetts Smart Growth Model Open Space Design/Natural Resource Protection Zoning: www.mass.gov/envir/smart_growth_toolkit/bylaws/model-osd-nrpz-zoning-final.pdf
- Metropolitan Area Planning Council's (MAPC) LID Toolkit www.mapc.org/low-impact-dev-toolkit
- MA-APA *Neighborhood Road Design Guidebook* <http://www.apa-ma.org/resources/publications/nrb-guidebook>
- MAPC's Environmental Planning Services: www.mapc.org/environment
- Shaping the Future of Your Community Program: www.massaudubon.org/shapingthefuture

Acknowledgements and Disclaimer

The OSRD best practices chart is based on the Massachusetts Executive Office of Energy and Environmental Affairs' Model Open Space Design/Natural Resource Protection Zoning. The zoning, subdivision, site plan, and stormwater regulatory analysis chart is based on a checklist from the MAPC LID Toolkit.

This report was prepared by Mass Audubon as part of a technical assistance project, *Empowering MetroWest Communities to Manage Land and Water Resources for a Sustainable Future*. The project also included other outreach and information provided in collaboration with the Charles River Watershed Association (CRWA) and the Massachusetts Rivers Alliance. For more information and resources on this topic, see www.massaudubon.org/LIDCost.

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Contact Us

For questions regarding this analysis or how to implement recommended changes, please feel free to contact us:

Stefanie Covino
Shaping the Future of Your Community Project Coordinator
Mass Audubon
scovino@massaudubon.org
(508) 640-5618

