

Building Community Resilience Through Local Regulations

Participant Guide to Massachusetts Bylaws & Best Practices



Module 7: State and Regional Guides & Resources

Context

This document is part of a comprehensive curriculum program, *Building Climate Resilience Through Local Regulations*, developed by Mass Audubon in collaboration with other nonprofit organizations and federal, state and regional agencies. The curriculum contains 8 modules, each of which guides the user through different components of improving community resilience through local regulations that support green designs and nature-based climate solutions. Each module includes a participant guide (e.g., this document) and a PowerPoint presentation.

The full curriculum, supplemental resources and additional information on bylaw review and best practices are available through: [Massachusetts Rivers Alliance](#) and [Mass Audubon](#). The [SNEP Network's website](#) provides additional resources including an interactive virtual storymap and webinar recordings.

Acknowledgements

This bylaw curriculum has been developed by SNEP Network Partners Mass Audubon, Cape Cod Commission, the Southeast Regional Planning and Economic Development District, and the Blackstone Watershed Collaborative in partnership with the Massachusetts Rivers Alliance and the Citizen Planner Training Collaborative, with financial support from the SNEP Network. The Barrett Planning Group, LLC assisted with planning content.



LOOKOUT
FOUNDATION



This product has been funded wholly or in part by the United States Environmental Protection Agency under Assistance Agreement SE- 00A00655-0 to the recipient. The contents of this document do not necessarily reflect the views and policies of the U.S. Environmental Protection Agency, nor does the U.S. EPA endorse trade names or recommend the use of any products, services or enterprises mentioned in this document. This project also received funding from the Lookout Foundation.

The Southeast New England Program (SNEP) Network brings together local environmental organizations, academic institutions, regional planners, and consultants who collaborate to provide municipalities, tribes and organizations in Rhode Island and Southeast Massachusetts access to free training and technical assistance to advance stormwater management, ecological restoration, and sustainable financing goals across the region. The SNEP Network is administered through EPA's partnership with the New England Environmental Finance Center, a non-profit technical assistance provider for EPA Region 1. The SNEP Network supports this bylaw review curriculum as a key resource for communities to update their local regulations for improved nature-based climate solution implementation. Find out more about the SNEP Network at www.snepnetwork.org.



Introduction

Whether a community is just starting out with its first Green Infrastructure (GI) projects or has already codified Low Impact Development (LID) requirements, there are many resources available to support these efforts. Open space zoning and LID measures are most successful when they are widely adopted across all projects, so that the cumulative benefits of localized projects can be felt community-wide. Educating home and business owners and municipal officials about these practices promotes community buy-in and supports implementation and maintenance. This module addresses state and regional guidance, resources, and funding mechanisms that support cities and towns as they work to review and update their land use rules and implement these techniques.

Objectives

At the conclusion of this module, participants will be able to answer the following questions:

- What resources on nature-based climate solutions and LID are available to help communities with adoption and implementation?
- What funding opportunities are available to assist communities in becoming more climate resilient?

Assessing Community Needs

Municipal Vulnerability Preparedness (MVP) Program

The [Municipal Vulnerability Preparedness \(MVP\) Program](#) helps communities statewide identify climate hazards and improve climate change resiliency by implementing projects that reduce risks and vulnerabilities. The MVP Planning Grants are available to communities interested in preparing for climate change impacts and becoming more adaptable. Once a community has completed the MVP planning process and invests in municipal improvements, they are eligible to apply to the MVP Action Grants Program to support proactive climate projects and assessments.

Toolkits are provided on critical areas of resilience concerns and applicable solutions, including Nature-Based Solutions, Environmental Justice and Equity, Public Health and Healthcare, and Virtual and Remote Engagement. The program also has regional staff who are available to provide advice and guidance.

The Program also maintains a [Working Funding Database \(Google Sheet\)](#) to help communities see what projects have been previously funded and what other financing options are available. The Worksheet lists the names and descriptions of programs, as well as the funding agency,

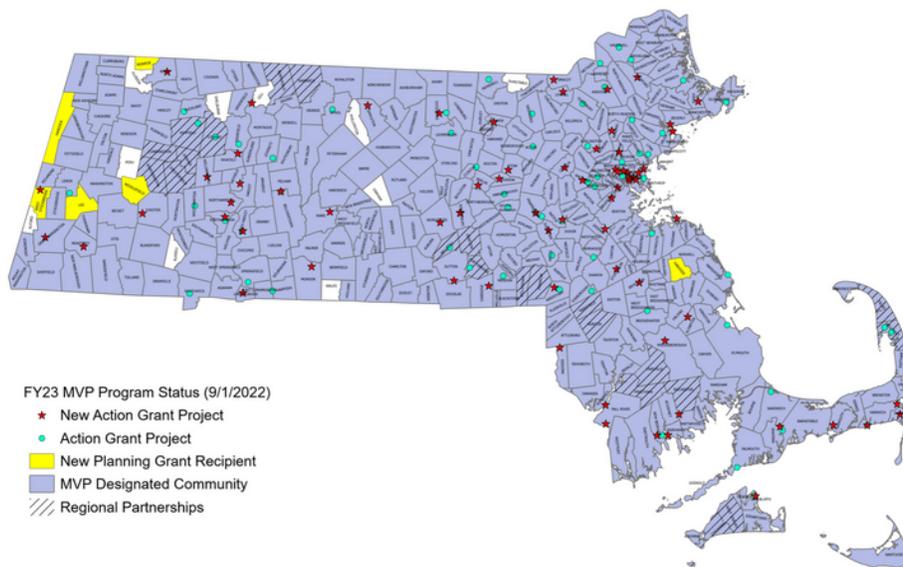


Figure 1. Map of MVP communities and grant recipients. *Source: The Commonwealth of MA.*

funding focus, grant award amount, and links for access. As of now, there are 97% of communities enrolled and over 300 action grant projects that support Massachusetts communities with improving resilience and adapting to climate change.

Mapping Land Protection Priorities and Valuing Nature

A critical first step in community planning for resilience is identifying lands that are the most important natural Green Infrastructure. These include key areas of forests, farmlands and wetlands that are of highest functional value for ecosystem services like water supply, prevention of flooding, carbon storage, biodiversity, and more. UMass has compiled many of the mapping tools and associated educational and planning resources available to assist with [Land Conservation Planning](#).

Mass Audubon offers many resources for local climate resilience planning. The [Losing Ground](#) report series analyzes changes to land use patterns in Massachusetts and provides policy background. It includes a map of a statewide natural Green Infrastructure Network. The Value of Nature fact sheets make information on the financial and other benefits of natural areas

accessible to general audiences. The Massachusetts Land Trust Coalition also has a set of educational resources on the [Value of Land Conservation](#).

The [BioMap](#) produced by MassWildlife has a wealth of information and an interactive mapping tool to identify lands of greatest importance for biodiversity at both the statewide and local levels.

THE VALUE of Nature
#6 OF 5

Urban Green Space
The value of green space and trees in cities should not be overlooked. Urban green space provides many ecosystem services, including improved health, and it is important to ensure that our most vulnerable communities have fair access to these benefits.

ECONOMIC & HEALTH
Marginalized and low-income urban communities are often farther away from green space and more negatively impacted by the urban heat island effect and air pollution.

50% REDUCTION IN INDOOR COARSE PARTICULATE MATTER concentrations observed in one study of roadside street trees' impacts on neighboring houses. Another study found that a single tree lowered concentrations behind it by 15%.

85% OR 10.5 MILLION GALLONS reduction in surface runoff entering Mashapaug Pond after three years thanks to Providence, RI's use of low impact development. Use below for more on LID. The practice also reduced phosphorus pollution, which contributes to algal blooms, by 95%.

37% Increase in electricity use for cooling following reduction in tree canopy cover by 30% in Worcester's Greendale neighborhood, prompted by an Asian longhorned beetle infestation.

3.06 °C AVERAGE MODELLED DECREASE IN NEAR-SURFACE AIR TEMPERATURE OVER THE ENTIRE CONTIGUOUS U.S., THANKS TO THE SHADING EFFECT OF URBAN TREES.*

670k INSTANCES OF ACUTE RESPIRATORY SYMPTOMS, AND 800 HUMAN DEATHS, PRESENTED EACH YEAR NATIONWIDE BY TREES' AND FORESTS' ABILITY TO ABSORB AIR POLLUTION. FOR AN ANNUAL VALUE OF \$7 BILLION.*

See our Forests fact sheet for more on their benefits.

Studies show a correlation between the proximity of communities to green space and lower levels of mental illness. In addition, to improve social cohesion, contact with nature helps children with attention deficit disorder better manage their symptoms.*

Community Spotlight
The Massachusetts Greening the Sidewalks program has planted 22,000 trees to date in urban residential areas within cities like Chelsea, focusing in part on environmental justice neighborhoods.*

Ecosystem Services: Nature provides countless benefits to people, along with intrinsic values. These components of nature are enjoyed, consumed, or used by humans to support our wellbeing.

Climate Resilience: The ability of a natural or human community to prepare for and respond to the impacts of climate change.

Mass Audubon

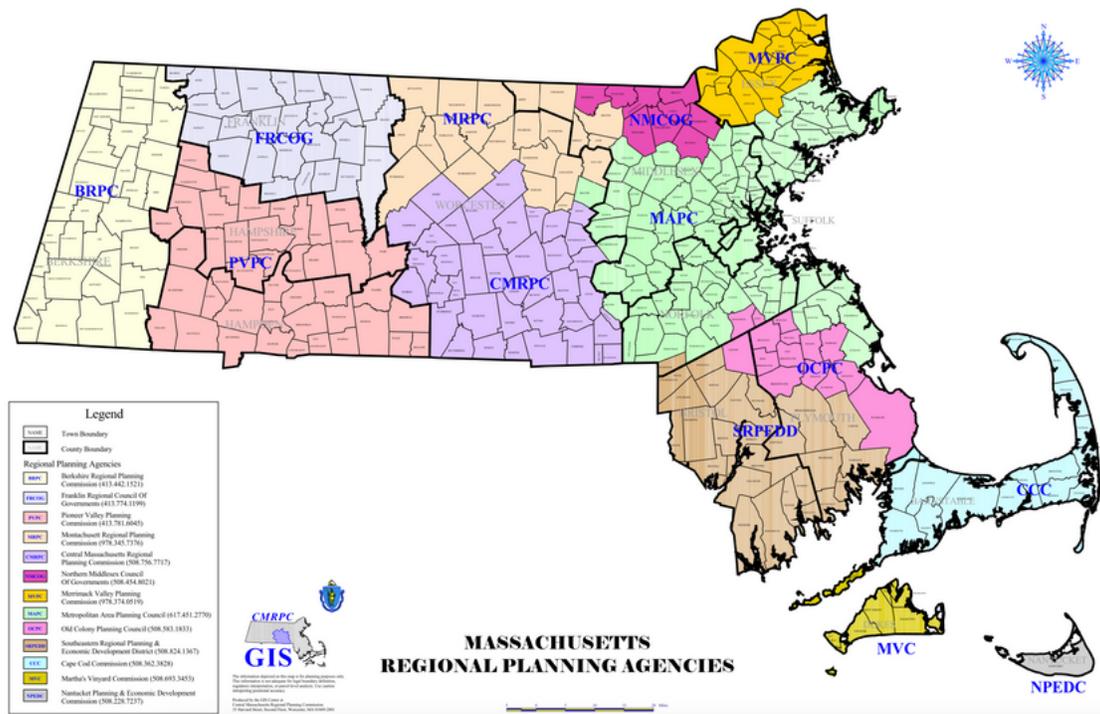


Figure 2. Massachusetts Regional Planning Commissions. *Source: Central Massachusetts Regional Planning Commission.* http://www.cmrpc.org/sites/default/files/download/margis/MA_RPAs.pdf

Regional Partners

Massachusetts Regional Planning Agencies (RPAs)

Across the Commonwealth, there are 13 regional planning agencies (RPAs) that support the local governments and needs of communities in their jurisdiction. These RPAs encompass a multi-jurisdictional regional community that may cross town, city, and county boundaries. RPAs represent a tremendous resource for communities of all sizes. The Massachusetts RPAs are shown below in Figure 2.

RPAs assist municipalities with a wide variety of planning topics, including Hazard Mitigation Plans, Master Plans, and Open Space and Recreation Plans; review and updating of local bylaws and regulations; and GIS mapping services. Many of the RPAs work with municipalities on MVP plans and action projects, and they can assist with projects where the resources or infrastructure of concern require intermunicipal cooperation. Many of the RPAs

provide their communities with resources and support for adopting LID standards, improving stormwater management, and climate resiliency.

EPA’s Southeast New England Program (SNEP) and SNEP Network

The EPA Region I Southeast New England Program serves coastal regions of Southern Massachusetts and Rhode Island, including Cape Cod and the Islands, Buzzards Bay, and Narragansett Bay. The SNEP Program has also created the SNEP Network to further support the program’s mission.

The Southeast New England Program Network is a collaborative group of 16 partner organizations municipalities on MVP plans and action projects, and they can assist with projects where the resources or infrastructure of concern require intermunicipal cooperation. Many of the RPAs provide their communities with resources and support for adopting LID standards, improving stormwater management, and climate resiliency.

Module 7: State and Regional Guides & Resources

EPA's Southeast New England Program (SNEP) and SNEP Network

The EPA Region I Southeast New England Program serves coastal regions of Southern Massachusetts and Rhode Island, including Cape Cod and the Islands, Buzzards Bay, and Narragansett Bay. The SNEP Program has also created the SNEP Network to further support the program's mission.

The Southeast New England Program Network is a collaborative group of 16 partner organizations with expertise in financing and implementing stormwater and watershed management efforts. The mission of the SNEP Network is to empower communities to achieve healthy watersheds, sustainable financing and long-term climate resilience through management of stormwater and restoration projects. A project of the New England Environmental Finance Center, The Network provides free training and technical assistance to strengthen the capacity of municipalities, organizations, and tribes within Rhode Island and Southeastern Massachusetts. The Network is currently working on a multitude of projects and regional initiatives that have a broad application throughout the region. To learn more about or request network services, SNEP communities can visit the [SNEP Network website](#).

Although the SNEP Network's direct technical assistance services are limited to areas within the SNEP region, the educational materials the Network produces are available to anyone. This includes extensive information about the Bylaw Review Tool including recorded webinars, downloadable copies of presentations, and a story map. Other related resources on the SNEP Network website include a Stormwater Retrofit Manual and a Buffer Restoration Guide.

Available Tools for Assessing Local Regulations

In addition to the Mass Audubon Bylaw Review Tool introduced in Module 6, there are many other resources available for determining whether a community's regulations advance community resilience and sustainability. Though not exhaustive, this section will highlight some of the most pertinent online tools.

Massachusetts Executive Office of Energy and Environmental Affairs' (EEA) Smart Growth/Smart Energy Toolkit

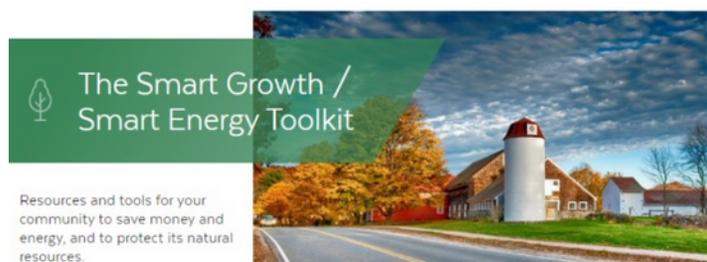
The Commonwealth of Massachusetts produces guidance documents and model bylaws on many topics related to smart growth and smart energy development. As of 2022, EEA includes 19 educational modules in its [Smart Growth/Smart Energy Toolkit](#). Modules outlined in the Toolkit are listed below. While many of the modules are relevant to updating bylaws, those that are bolded are specifically related to the techniques and strategies discussed in this bylaws training.

- Business Improvement Districts (BID)
- Chapter 40R (and Chapter 40S)
- District Improvement Financing (DIF)/Tax
- Increment Financing (TIF)
- Environmental Justice
- Form-Based Codes (FBCs)
- Inclusionary Zoning
- **Low Impact Development (LID)**
- Mill Revitalization Districts (MRD)
- **Open Space Design (OSD)/Natural Resource Protection Zoning (NRPZ)**



Module 7: State and Regional Guides & Resources

- **Outreach and Education**
- Smart Energy
- **Smart Parking**
- **Traditional Neighborhood Development (TND)**
- **Transfer of Development Rights (TDR)**
- Transit Oriented Development (TOD)



The Toolkit's [LID Module](#) includes both general and technical PowerPoint presentations that are applicable to the general public and more specialized professionals, like developers and individuals that serve on Planning Boards. Case studies and examples from a variety of communities (urban, suburban and rural) illustrate ways cities and towns apply these LID principles to address the needs of their specific communities. The Toolkit also offers model LID bylaws, with and without regulations.

While LID bylaws are a direct approach to incorporating natural and built Green Infrastructure in development projects, there are additional regulatory mechanisms available to municipalities that can enhance LID techniques. The [OSRD/NRPZ](#) and [Smart Parking](#) Modules are two examples of this, and the Toolkit includes useful PowerPoints, case studies and examples, and model bylaws for reference. OSRD/NRPZ bylaws facilitate clustered development and conservation design that protects the most important natural features on a site; the Smart Parking bylaw is intended to reduce parking requirements or impose parking maximums which directly limit areas of impervious cover.

Note: The objectives behind these bylaws are aligned with LID principles; bylaws can ultimately be tailored to suit community needs.

Lastly, the [Outreach and Education](#) Module provides guidance for and examples of successful public engagement with updating bylaws and implementing projects. These resources can be instructive for bolstering community support of new or revised policies, which are imperative for their adoption. For further information on this module, please refer to Module 8 of this bylaw training.

Metropolitan Area Planning Council's (MAPC) Climate Resilient Land Use Strategies Toolkit

The Metropolitan Area Planning Council (MAPC), the largest of Massachusetts' RPAs, is the regional agency for the metro Boston area and serves over 100 cities and towns. Its professional staff provide many online tools and resources that can be used by communities statewide in addition to the direct assistance MAPC provides to communities in its region.



The MAPC's [Climate Resilient Land Use Strategies Toolkit](#) provides regulatory language and policy examples on climate change planning and adaptation. Climate resilience techniques often focus on flood prevention, storm surge and damage mitigation, and extreme heat preparedness. As discussed in Module 1 and throughout this guide, Green Infrastructure and LID can significantly bolster a community's climate resilience. As communities develop and redevelop, land use policies can serve to protect natural and built resources.

Module 7: State and Regional Guides & Resources



The background section of this Toolkit works to answer the question: “[Why address climate resilience through land use planning?](#)” states that land use tools, regulations and other policies can:

- Shift development and people out of harm’s way (i.e. the flood zone);
- Protect natural systems and open space that provide resilience benefits;
- Strengthen and protect built infrastructure (such as homes and businesses) from damage and property loss;
- Enable and encourage the use of Green Infrastructure to address climate impacts; and
- Require and incentivize resilient building and design practices in new construction and substantial retrofits.

As more communities experience the impacts of climate change, many are looking to update land use policies and tools through the lens of climate resilience in order to protect public health, safety, and welfare. This includes planning for land use impacts (ie. Recognizing an expanding flood plain area, depth, and frequency of flood events), as well as providing guidance and incentives to enhance resilience benefits.¹

The MAPC’s Toolkit also outlines major state and federal regulations that impact local land use authority, with sections for:

The MAPC’s Toolkit also outlines major state and federal regulations that impact local land use authority, with sections for:

- Authority to Zone (established under Massachusetts General Law 40A) and State Building Code Considerations;
- National Flood Insurance Program; and
- Massachusetts Wetlands Protection Act (introduced in Module 3 of this training).



Additionally, it provides resources like [resilience checklists](#); and training presentation [slides](#) and videos. The [Climate Impacts Overview](#) provides information on the three major climate risks, listed below, that many communities are considering as they update their land use regulations:

- Sea level rise and coastal flooding;
- Changing precipitation patterns and inland flooding; and
- Rising temperatures and extreme heat.

These overviews help frame technical climate issues as part of a larger community conversation by introducing concerns that communities seek to address in their bylaws and regulations.





Figure 3. Image of MAPC’s Toolkit for Enhancing Stormwater Regulations. *Source: MAPC Climate Resilient Land Use, 2021.*

The [Examples of Climate Resilient Regulatory Language](#) part of the Toolkit serves as a repository of existing bylaws in Massachusetts communities that address:

- [Floodplain Overlay Districts](#);
- [Floodplain Zoning Relief](#);
- [Other Zoning Districts](#);
- [Stormwater Regulations](#);
- [Local Wetlands Bylaws and Ordinances Site Plan Review](#);
- [Water Conservation Regulations](#);
- [Tree Protection Regulations](#); and
- [Design Standards and Guidelines](#).

Each section offers a brief introduction of the structure and function of the bylaw addressed. Upon scrolling down the page, readers will find strategies and case studies for addressing concerns in land use regulations. An example image is provided above in Figure 3.

Metropolitan Area Planning Council’s (MAPC) LID Toolkit

The MAPC LID Toolkit builds upon the EEA Smart Growth/Smart Energy Toolkit by focusing specifically on LID techniques. The Toolkit

includes LID FAQs, visual and technical fact sheets for many of the technologies and methods this guide has discussed. It also contains a PowerPoint presentation that addresses questions such as:

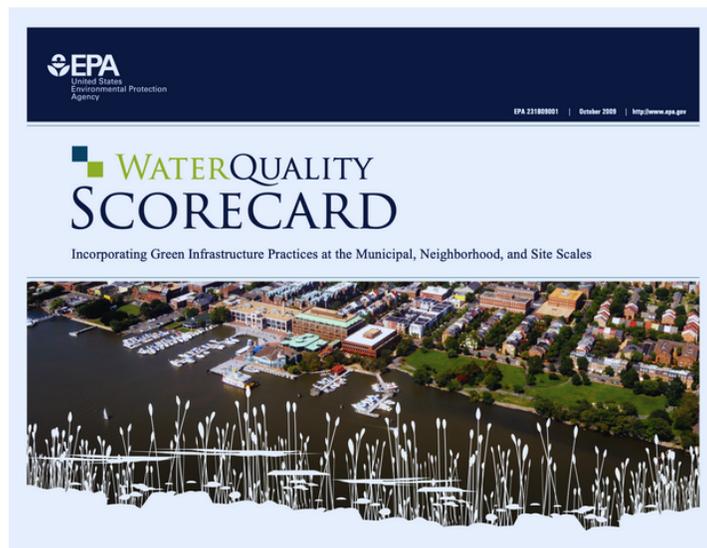
- What is Low Impact Development?
- Why do we need LID?
- Low Impact Development Principles
- Low Impact Development Techniques
- Benefits of LID
- Local Implementation & Considerations

The LID Toolkit also provides a checklist for regulatory review that is a useful companion to the Mass Audubon Bylaw Review Tool. While it is a general checklist, it highlights additional regulatory considerations related to LID standards, such as Board of Health regulations and capacity funding of a municipal Department of Public Works or Building Inspector. While not all line items are relevant to every community, its broad applicability underscores other connections to consider related to LID.

The model bylaw in the MAPC LID Toolkit is a stormwater bylaw. This model bylaw provides an overarching approach to implementing LID

Module 7: State and Regional Guides & Resources

through a community's stormwater management practices and infrastructure. The umbrella approach of this bylaw as well as other models shows that instead of redefining language and spreading LID and stormwater standards across zoning and subdivision rules and regulations, it can be incorporated into stormwater bylaws. This approach eliminates redundancy and any potential conflicts in language and specifications between bylaws and regulations.



Environmental Protection Agency (EPA) Water Quality Scorecard

The [Water Quality Scorecard](#) from the EPA helps communities manage how development impacts water quality at the local level through the implementation of green infrastructure (GI). The factors highlighted in this Scorecard include:

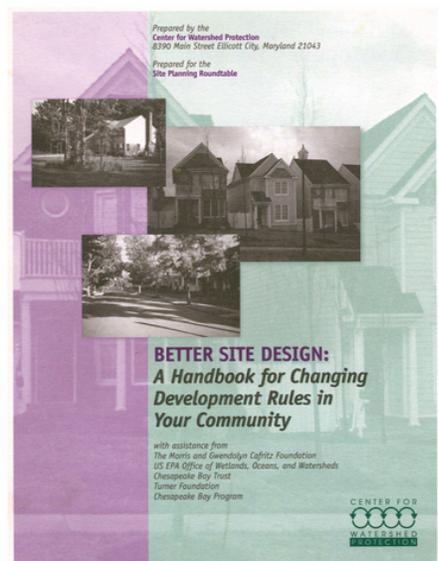
- Protection of natural resources (including trees) and open space;
- Promotion of efficient, compact development patterns and infill;
- Design of complete, smart streets that reduce overall imperviousness;
- Encouragement of efficient provision of parking; and
- Adoption of green infrastructure stormwater management provisions.

The Scorecard is intended to be used by local governments to identify areas where Green Infrastructure can be incorporated in regulations to better protect water quality and community health. The Mass Audubon Bylaw Review Tool organizes best practices within the categories identified in this Scorecard.

Center for Watershed Protection's Better Site Design Handbook and Code & Ordinance Worksheet (COW)

The [Better Site Design Handbook](#) was originally published in 1998 to promote "environmentally sensitive, economically viable, and locally appropriate development" through twenty-two model development principles.² As with the other toolkits presented in this module, its objective is to help communities advance sustainable development practices through LID. The 2017 update of the [Code & Ordinance Worksheet \(COW\)](#) asks 94 questions addressing the 22 principles listed below (and three additional principles for runoff reduction):

- Residential streets and parking lots (including 10 principles on this topic);
- Lot development (6 principles);
- Natural areas (6 principles); and
- Runoff reduction.



Module 7: State and Regional Guides & Resources

Regulatory documents that can help answer the COW are:

- Zoning Ordinance;
- Subdivision Ordinance;
- Street Standards or Road Design Manual;
- Parking Requirements;
- Building Code;
- Stormwater Management, Rainwater or Drainage Ordinance;
- Stormwater Management Design Manual;
- Buffer or Floodplain Regulations;
- Environmental Regulations;
- Tree Protection or Landscaping Ordinance;
- Erosion and Sediment Control Ordinances;
- Fire Code;
- Grading Ordinance; and
- Health Codes.

The COW allows communities to receive a score that indicates the status of their bylaws and regulations. A municipality scores under 80% of possible points, the community should thus consider a systematic review and update of its regulations – particularly those that govern development and redevelopment in the community.

Guides

American Planning Association – Massachusetts Chapter’s (APA-MA) Sustainable Neighborhood Road Design Guidebook

Developed by planners and homebuilders from the Massachusetts Chapter of the American Planning Association, the [Sustainable Neighborhood Road Design Guidebook](#) is a reference resource for communities interested in narrowing their neighborhood roads according to LID principles. The Guidebook is intended to

supplement existing road design publications at the neighborhood and subdivision levels. Recommendations of the Guidebook can help communities plan for the future, like addressing expected traffic volumes or the suitable size and placement of vegetated strips and swales in relation to roads, bike lanes, and ADA-accessible sidewalks. Communities sometimes shy away from narrowed road surfaces because of the turning radii required by emergency vehicles; this comprehensive guide addresses those concerns. Though the guide is focused on road design, it also discusses how to incorporate LID features into neighborhood design, including those in already built landscapes. This guidebook is a good companion to the Bylaw Review tool, since it provides more detailed descriptions and diagrams of many of the design concepts that are best practices in bylaws and regulations.

User	Responsibilities
Transportation Planner	<ul style="list-style-type: none"> ✓ Establish community vision and goals for local transportation. ✓ Work with citizens to improve existing transportation network. ✓ Develop and evaluate concepts and local standards using this guidebook and other resources.
Transportation/Civil Engineer	<ul style="list-style-type: none"> ✓ Prepare and certify residential land division concepts, drawings, and road designs. ✓ Identify context, design controls and parameters, constraints and parameters of proposed road design. ✓ Work with interdisciplinary teams to resolve design obstacles. ✓ Prepare and review preliminary and final engineering plans.
Land Use Planner/Planning Director	<ul style="list-style-type: none"> ✓ Develop long-range plans (Master Plans) that include land use and transportation elements. ✓ Provide objective advice and leadership to interdisciplinary review teams.
Other Design Professionals: <ul style="list-style-type: none"> • Architect • Urban Designer • Landscape Architect 	<ul style="list-style-type: none"> ✓ Authority to apply local standards and alternative proposals. ✓ Maintain quality of life and safety of new and existing neighborhoods.
Stakeholders <ul style="list-style-type: none"> • Developers and Applicants • Elected Officials • Planning Boards • Zoning Board of Appeals • Local, regional and state agencies • Citizens and Abutters 	<ul style="list-style-type: none"> ✓ Compliance with local zoning and road standards in new residential development. ✓ Request road design standards based on those presented in this guidebook. ✓ Legislative authority to amend municipal regulations. ✓ Authority to apply local standards and alternative proposals. ✓ Maintain quality of life and safety of new and existing neighborhoods.

Source: Adapted from ITE Context Sensitive Solutions

Figure 4. Uses and users of the APA-MA Sustainable Neighborhood Road Design Guidebook. Source: [APA-MA Sustainable Neighborhood Road Design Guidebook](#)

Module 7: State and Regional Guides & Resources

Massachusetts Stormwater Handbook and Stormwater Standards

The [Massachusetts Stormwater Handbook](#) is a multi-volume guidance document from the Massachusetts Department of Environmental Protection (MassDEP) to assist communities in adhering to the state's stormwater regulations. Since a new version is in development at this time, this module summarizes the Handbook's most recent version.

The Stormwater Handbook is outlined in Volumes. **Volume 1** comprises the Stormwater Management Standards (Chapter 1 of Volume 1 is reproduced in Module 4 of this guide) and lays out the legal and regulatory framework for the Handbook. **Volume 2** has 5 chapters and an appendix, describing the components of stormwater management and best management practices including LID. **Volume 3** of the Stormwater Handbook guides communities in preparing Stormwater Reports, necessary under certain conditions for developments to comply with the Wetlands Protection Act.

Many communities are also subject to the [EPA Municipal Separate Storm Sewer \(MS4\)](#) permit, which includes requirements for municipalities to update their bylaws and ordinances. The Bylaw Review Tool includes provisions that can assist communities in prioritizing local bylaw and

regulatory updates to achieve compliance. EPA also has many other resources on stormwater and LID.



Funding

Costs are commonly cited barriers to LID implementation. Since many communities are unsure how to amend their regulations, they often contract with a third-party to perform bylaw and regulation review and analysis – which is expensive. However, there are various low-cost financing options available to communities in Massachusetts. Some of the lowest cost options were collected by the [SNEP Network](#) – see their website for a [list of federal and state grants](#).

As noted above, the MVP Program has compiled a [Working Funding Database \(Google Sheet\)](#) to help communities identify funding and financing options. The MVP program and the Executive [Office of Energy and Environmental Affairs](#) also provide grants to communities for local bylaw updates consistent with the Bylaw Review tool.

For a widespread look at GI financing options, the EPA produced a booklet entitled "[Getting to Green: Paying for Green Infrastructure – Financing Options and Resources for Local Decision-Makers](#)." The introduction includes a table detailing various methods for financing and funding GI. Each potential source of funding is explored in greater depth throughout the document, including case studies and examples that highlight the benefits, drawbacks, and limitations of utilizing that funding mechanism. This chart is reproduced on the following pages in Table 1.



Module 7: State and Regional Guides & Resources

Table 1. Finance options and resources for communities. *Source: EPA’s “Getting to Green: Paying for Green Infrastructure – Financing Options and Resources for Local Decision-Makers.”*

Funding Source	Description	Advantages	Disadvantages
Taxes/General Funds	Funds raised through taxes on property, income, and sales that are paid into a general fund.	<ul style="list-style-type: none"> ● Consistent from year-to-year ● Utilizes an existing funding system 	<ul style="list-style-type: none"> ● Competition for funds ● Tax-exempt properties do not contribute ● System is not equitable (does not fully reflect contribution of stormwater runoff)
Fees	Funds raised through charges for services such as inspections and permits. Funds raised through developer impact fees are one-time charges linked with new development.	<ul style="list-style-type: none"> ● Specific permit and inspection fees allow for more direct allocation of costs for services provided ● Addresses potential stormwater impacts related to new construction 	<ul style="list-style-type: none"> ● Funding not available for larger projects or system-wide improvements ● Developer impact fees may be an unreliable source when development slows (due to market downturns/contractions) ● Requires administrative framework to assess and manage
Stormwater Utility	A stormwater utility generates its revenue through user fees. Revenue from stormwater charges goes into a separate fund that might be used only for stormwater services.	<ul style="list-style-type: none"> ● Dedicated funding source ● Directly related to stormwater impacts ● Sustainable, stable revenue ● Shared cost ● Improved watershed stewardship ● Addresses existing stormwater issues 	<ul style="list-style-type: none"> ● Feasibility study required for implementation, fee structure, and administration of utility ● Approval by vote of the local legislative body ● Perception by the public of a “tax on rain”

Module 7: State and Regional Guides & Resources

<p>Grants</p>	<p>State and federal grants provide additional funding for water quality improvements.</p>	<ul style="list-style-type: none"> ● Existing sources available for stormwater-related funding ● Does not require repayment 	<ul style="list-style-type: none"> ● Competitive ● Typically one-time, project-specific, or time-constrained funds ● Often requires a funding match
<p>Bonds</p>	<p>Bonds are not a true revenue source, but are a means of borrowing money. “Green” bonds are a new source of funding dedicated to environmentally friendly projects, including clean water projects.</p>	<ul style="list-style-type: none"> ● Existing sources available for stormwater-related funding ● Can support construction-ready projects ● Can provide steady funding stream over the period of the bond 	<ul style="list-style-type: none"> ● One-time source of funds ● Requires individual approval for each issuance ● Requires full repayment ● Possible interest charges ● Requires dedicated repayment revenue stream ● May require design-level documents to be prepared in advance ● Likely requires voter approval ● Can have high transaction costs relative to requested amount ● May require significant administrative preparation to issue
<p>Loans</p>	<p>Low-interest loans may be secured, but are generally used for planning and capital projects.</p>	<ul style="list-style-type: none"> ● Existing sources available for stormwater-related funding ● Offers low- or no-interest financing 	<ul style="list-style-type: none"> ● One-time source of funds ● Requires full repayment

Module 7: State and Regional Guides & Resources

Public-Private Partnerships	Contractual agreement between a public agency and a private sector entity that allows for private sector participation in the financing, planning, design, construction, and maintenance of stormwater facilities.	<ul style="list-style-type: none">● Can reduce costs to government● Significantly leverages public funding and government resources● Ensures adequate, dedicated funding● Improved O&M● Shared risk	<ul style="list-style-type: none">● Perceived loss of public control● Assumption that private financing is more expensive and belief that contract negotiations are difficult
-----------------------------	--	---	--

Conclusion

Adopting and implementing local climate resiliency plans and bylaws that support LID techniques can be challenging. This module introduced some of the state and regional guides and resources that can help communities identify what issues to fix, how to fix them, and how to finance them. LID techniques are one component of greening a community that can build resilience in cities and towns across the Commonwealth. Many of the resources summarized in this chapter go into greater depth on additional measures that may supplement these actions.

The resources listed in this module are not comprehensive; there are many resources and guides available to help communities with sustainable long-term planning. As climate change highlights the importance and urgency of taking action on a local level, more guides are being produced and more funds are becoming available to make climate action feasible. These materials provide you with the tools to get started, and we encourage you to be creative as you explore the options that best suit your community's needs.

End Notes

1. Metropolitan Area Planning Council, "Climate Resilient Land Use Background," accessed September, 2021, <https://www.mapc.org/resource-library/climate-resilient-land-use-background/>.
 2. Center for Watershed Protection. "Better Site Design: A Handbook for Changing Development Rules in Your Community (Part 1)." <https://owl.cwp.org/mdocs-posts/better-site-design-part-1/>.
-