



# Casco Bay Community Guidebook

BUILDING A RESILIENT FUTURE

# FORWARD

Casco Bay is a natural asset with tremendous social, environmental and economic benefit. It is essential to our regional identity, maritime traditions our recreational pursuits. Throughout history, the bay has brought jobs, industry, creativity and prosperity to coastal communities. The bay is also home to over 850 species of marine life, including microscopic plants, pilot whales and over 150 types of waterbirds. Many organizations including [Casco Bay Estuary Partnership](#) and [Friends of Casco Bay](#) have documented and demonstrated the importance of protecting and enhancing this resource for our collective wellbeing and resilience.

To ensure continued health and prosperity moving forward, it is important to identify the key environmental threats, including climate change, stormwater runoff and habitat degradation, and work together towards enduring solutions. Local government action is essential because they engage in long-range planning efforts, set standards, regulations, taxes and fees, and build and maintain essential infrastructure. Yet with budgets stretched further each year, and less support and affordable training available, municipalities have fewer resources to independently find innovative solutions to these complex problems. Sharing information is more vital than ever and a well thought out, collaborative approach among multiple partners is an effective way to leverage expertise and build momentum towards common goals.

In 2012 the Greater Portland Council of Governments published [The Casco Bay Environmental Planning Assessment](#) to document the current level of environmental regulations among its ten member communities along Casco Bay: Cape Elizabeth, Chebeague Island, Cumberland, Falmouth, Freeport, Long Island, Portland, South Portland and Yarmouth. As a neighboring community in coastal Cumberland County, Scarborough was also included even though it abuts Saco Bay. The overarching goal of the report was to help communities develop stronger environmental planning regulations and practices surrounding issues such as water quality, habitat protection and sea level rise.

The 2012 inventory successfully cataloged the current level of environmental regulation and policy in each of the municipalities, identified inconsistencies between communities, and offered detailed community-specific next steps. The report also revealed that many municipalities have developed innovative tools to address these challenges, and sharing these success stories and best management practices from one community to the next would be inspiring and motivational.

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# MISSION

The Casco Bay Community Guidebook is an update to the 2012 assessment. In addition to measuring progress on specific actions over the past five years, this report builds and expands upon the data and information collected in the original report. The criteria for this assessment were organized around the goals and actions outlined in the [Casco Bay Plan](#), and the findings are based on individual community interviews conducted by GPCOG with municipal officials in each of the ten communities. This report focused on both qualitative and quantitative information, in an effort to identify the barriers local governments are facing. There is also additional emphasis on climate change impacts and non-regulatory tools, as well as case studies and best management practices.

The goal of this guidebook is to build an accessible resource for local officials, municipal staff and community members to learn from each other, share success stories and work together as a region towards a healthy and sustainable future. The report strives to recognize and appreciate that the project area covers a range of places, from the Portland peninsula to suburban neighborhoods and protected woodlands, and the solutions for one place are not necessarily appropriate or applicable to another. Yet, every city and town included in this report has a range of places and development, so lessons from one community will undoubtedly be applicable to portions of other communities. Also, having this diversity is essential to creating a sustainable, thriving region.

# ENVIRONMENTAL CHALLENGES

In order to ensure a thriving future for Casco Bay and our coastal communities, we must first recognize and understand our greatest environmental challenges. The region undoubtedly faces a range of social, economic and environmental challenges, but this report focuses on just three: climate change, stormwater runoff, and habitat degradation. All of these challenges are complex, interconnected and regional, but they are also directly influenced by the actions and policies of local governments.



## Stormwater Runoff

Stormwater refers to all of the water that flows along the ground after a rainfall or during a period of melting snow. As stormwater runs across impervious surfaces such as roads, roofs and parking lots, it picks up pollutants such as oil, pesticides, heavy metals and bacteria. Stormwater runoff is the leading source of pollution to rivers, lakes and coastal waters across the country. Within the Casco Bay watershed, these pollutants are washed into streams and sewers and eventually drain into Casco Bay, degrading water quality and reducing biological diversity.



## Climate Change

Across the globe, rising sea levels and temperatures have been observed for decades. In Maine coastal flooding and intense storm events have also become more frequent, and average temperatures have increased year-round. These environmental changes have already had an impact on the Casco Bay watershed. Larger and more erratic storms have led to increased stormwater polluting the waters we depend on for living, working and playing. Coastal flooding has put many communities at risk and warming temperatures have started to threaten the region's agricultural and recreational economy.



## Habitat Degradation

Habitats are places where plants and animals live, feed, find shelter, and reproduce. The Casco Bay watershed includes many productive habitat types, including upland forests, riparian areas and salt marshes. To protect the wealth of species that live in Casco Bay, it is necessary to conserve these natural environments. Habitat has been lost, fragmented or degraded by human activity, especially suburban and commercial development.

# STRATEGIES FOR LOCAL GOVERNMENTS

The coastal communities along Casco Bay all share a common goal of protecting our natural assets in order to remain a socially, economically and environmentally resilient region. To this end, there are a number of infrastructure-based solutions (often referred to as Green Infrastructure) that communities are implementing.

This guidebook explores these tools and highlights success stories and best management practices throughout the region. Since the challenges and consequences of climate change, stormwater runoff and habitat degradation are deeply interconnected, solutions are not distinguished based on any single environmental challenge it addresses. Instead, the strategies measured and discussed are organized based on four categories of legal tools available to local governments: Long-range planning, land use regulations, incentives and direct action.

# OVERVIEW

## ENVIRONMENTAL CHALLENGES



Stormwater Runoff



Climate Change



Habitat Degradation

## STRATEGIES FOR LOCAL GOVERNMENTS

### Long Range Planning

- Local findings (review criteria)
- Community spotlights (case studies)

### Land Use Regulations

- Local findings (review criteria)
- Community spotlights (case studies)

### Incentives

- Local findings (review criteria)
- Community spotlights (case studies)

### Direct Action

- Local findings (review criteria)
- Community spotlights (case studies)

## INTERVIEWS CONDUCTED:

Cape Elizabeth	Maureen O'Meara, Town Planner
Chebeague Island	Nick Adams, Code Enforcement Officer
Cumberland	Carla Nixon, Town Planner
Falmouth	Ethan Croce, Senior Planner and Kimberly Darling, Sustainability Coordinator
Freeport	Donna Larson, Town Planner
Long Island	Jim Nagle, Code Enforcement Officer
Portland	Christine Grimando, Senior Planner
Scarborough	Jay Chace, Senior Planner
South Portland	Steve Puleo, Senior Planner and Fred Dillon, Stormwater Coordinator
Yarmouth	Alex Jaegerman, Town Planner and Steve Johnson, Town Engineer

# Long-Range Planning

Comprehensive plans in Maine provide a legal foundation for land use ordinances and regulations. Having a state approved comprehensive plan that addresses important environmental challenges makes it more likely that these regulations, incentives and policies will be adopted and implemented by the community. Other long-range planning documents, including open space plans and hazard mitigation plans, can serve as a guiding document and the basis for future policy decisions.

	Cape Elizabeth	Chebeague Island	Cumberland	Falmouth	Freeport	Long Island	Portland	Scarborough	South Portland	Yarmouth
 <b>Comprehensive Plan:</b>										
State Approved	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Date	'07	'11	'11	'13	'11	'06	'05	'06	'12	'10
<b>Long range plan with:</b>										
 Open space or land conservation strategy	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
 High value habitat prioritization	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
 Hazard mitigation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
 Water resource management			✓	✓				✓	✓	✓
 Climate change vulnerability assessment	✓	✓	✓	✓	✓		✓	✓	✓	
 Climate change adaptation	✓						✓	✓		
 Stormwater										
 Climate Change										
 Habitat Degradation										

## COMMON BARRIERS:

- Staff resources
- Availability of information, particularly regarding habitat and climate change data
- Outdated state requirements for Comprehensive Plans
- Other community priorities

## KEYS TO SUCCESS:

- Community awareness and support
- Education and assistance from local non-profits
- Community champions

All ten communities have state approved comprehensive plans, with Portland, Cape Elizabeth and Scarborough currently in the process of updating. Although the level of detail varies greatly across communities, having this kind of broad overarching community plan has been extremely important for not just setting policy, but also for increasing public awareness and engagement. The State's Comprehensive Plan approval process has been quite successful in ensuring that most communities have a long-range planning document as a basis for their regulations and policies, however staff from many communities indicated that the outdated requirements for approval were limiting, as was the availability of necessary data regarding habitat and climate change in particular.

Many communities have chosen to create additional long range planning documents regarding specific environmental issues. Falmouth, Cape Elizabeth and Freeport have all dedicated a lot of resources to long-range land conservation strategies. These communities were able to do this because they had strong political and community support, as well as the necessary financial and staff resources.

All of the municipalities are participating in the [Cumberland County Hazard Mitigation Plan](#), updated in 2017 by the Cumberland County Emergency Management Agency (CCEMA). Local jurisdictions (municipal or county) across the country are required by FEMA to have a Hazard Mitigation Plan (HMP) in place and to update it every five years. Each municipality in Cumberland County is required to participate in the process and to endorse the final product in order to gain FEMA's approval of the updated Plan. With approval all municipalities are eligible to compete for mitigation grant funding. This plan is an excellent example of regional coordination, and has become a plan that many local governments value and depend upon.

“Our new Comprehensive Plan posits sustainability as a multifaceted topic that is related to our transit system, our fiscal health, and an equitable community.”

– Christine Grimando, Portland Senior Planner

“We are just starting to think about climate change adaptation as a community. This has not been a priority because the town council has a lot of other items that are considered more pressing. Schools, open space and too much development are our highest priorities”

–Maureen O’Meara, Cape Elizabeth Town Planner

Eight out of the ten communities have completed climate change vulnerability assessments in coordination with [GPCOG](#) and the [Maine Geological Survey](#), and three communities have taken it a step farther by incorporating climate change adaptation measures into long range planning efforts. Even though communities widely agree this is a priority, many planners in the region have found that it is challenging to gather sustained resources and support in the face of daily politics and development pressures.



# Community Spotlights



## THE GREENING OF FALMOUTH

Falmouth Maine has been dedicated to proactively protecting the Town's natural lands since the adoption of their first open space plan in 1989. Over the past several decades, Town officials, leaders and community members have worked to preserve approximately 15% of the Town's land area, primarily through direct land acquisition and partnership with the Falmouth Land Trust. In 2006 the Town adopted The Greening of Falmouth plan, which set a 100-year open space vision. This plan prioritized procurement and protection of key open space for habitat, recreation, and connectivity, laid out a financing strategy, and also called for incentives to encourage private landowners to keep their property undeveloped. Since 2006 Falmouth has procured nearly \$6 million for open space procurement and maintenance and protected over 3,000 acres. <http://www.falmouthme.org/land-management-acquisitions-committee>



## CHEBEAGUE ISLAND COASTAL RESILIENCE

In 2016, GPCOG staff worked with town officials to prepare a Sea Level Rise Vulnerability Assessment for the Town of Chebeague Island. The assessment discusses the latest science behind sea level rise and identifies risks to publicly-owned infrastructure, including ferry piers, roads, culverts, and buildings. It also highlights risks to environmental resources, such as coastal bluffs and groundwater resources. <http://www.gpcog.org/transportation-land-use/environmental-planning/coastal-resiliency/>



## PORTLAND BAYSIDE ADAPTS

Bayside Adapts is a City initiated process to address sea level rise, future storm surges, and increased intense rainfall events in the Bayside neighborhood. The main issue facing the neighborhood is frequent flooding that occurs when major storms coincide with king tides, which may become more frequent as climate change/sea level rise progresses. This process is especially notable for its extensive public engagement. Phase one of the project is a Design Challenge, funded through a grant from the National League of Cities. The results of the Design Challenge are intended to energize activism, generate creative ideas, and to inform City decision makers when creating goals for adaptation in the study area. <http://www.portlandmaine.gov/1890/Sustainability-Office>

# Community Spotlights



## YARMOUTH ROYAL RIVER CORRIDOR MASTER PLAN

Yarmouth's Royal River Master Plan, completed in 2009, is a comprehensive vision for the Town's most significant natural resources areas. The plan focuses on a corridor of 500 feet along both sides of the river from the Water District Building on East Elm Street to the sewer treatment plant at Yarmouth Harbor. As much of the land is already developed, the vision established by this plan focuses on balancing the development potential and vitality of this area with the need to protect the natural resources and valuable riparian habitat of the river. The idea is to create a "green necklace" that links the harbor to the village, creating a link of uniquely designed areas for appropriate and environmentally responsible development. <http://www.tjda.net/sites/default/files/publications/Royal%20River%20Corridor%20Master%20Plan.pdf>



























## CAPE ELIZABETH STORMWATER MANAGEMENT

With funding support from the Maine Coastal Program, Cape Elizabeth updated the stormwater plan for its town center in 2015. This plan update includes an inventory of current infrastructure, identifies needs, recommends stormwater improvements and provides guidance on how new development can be integrated into the Town Center stormwater management system. The stormwater recommendations in this plan explore how low impact development (LID) stormwater management techniques can be incorporated into Town Center stormwater infrastructure. Another exciting element of the Plan is the creation of a Tax Increment Financing (TIF) District in the Town Center. Revenues from the TIF District are intended to be used for the construction of sidewalks and stormwater Infrastructure. [https://www.capeelizabeth.com/government/rules\\_regs/masterplans/CE%20Town%20Center%20SW%20Plan%20Update,%2009-23-2015.pdf](https://www.capeelizabeth.com/government/rules_regs/masterplans/CE%20Town%20Center%20SW%20Plan%20Update,%2009-23-2015.pdf)

# Land Use Regulations

Regulatory tools are the primary way to ensure that action is taken to mitigate environmental concerns on private property. Ordinances including zoning, site plan, subdivision, stormwater regulations and Shoreland zoning provide set requirements and standards to ensure that habitat and waterways are protected, stormwater is accommodated, and sites are prepared for other impacts such as sea level rise.

	Cape Elizabeth	Chebeague Island	Cumberland	Falmouth	Freeport	Long Island	Portland	Scarborough	South Portland	Yarmouth
<b>Land use regulation with:</b>										
 Stormwater regulations beyond state's	✓		✓	✓			✓	✓	✓	✓
 Consideration of habitat data	✓	✓		✓	✓	✓		✓	✓	✓
   Shoreland zoning regulations beyond state's	✓			✓				✓	✓	
 Vernal pool protection beyond state's	✓			✓						✓
   Wetland protection beyond state's	✓			✓				✓	✓	✓
   Protection for environmentally sensitive areas	✓			✓	✓		✓	✓		✓
 Floodplain requirements beyond state's									✓	
 Septic system regulations exceed state's	✓				✓	✓		✓		✓
   Aquifer protection regulations		✓	✓		✓		✓	✓		
   Shellfish protection regulations	✓	✓	✓		✓			✓		✓
 LID requirements	✓			✓	✓	✓	✓	✓	✓	

 Stormwater     
  Climate Change     
  Habitat Degradation

## COMMON BARRIERS:

- Competing political priorities
- Lack of information
- Inconsistent implementation
- Staff resources
- Lack of regional coordination

## KEYS TO SUCCESS:

- Community support
- Education and awareness
- Knowledgeable staff and elected officials
- Valued natural resources in the community

The majority of communities interviewed have many environmental land use regulations exceeding state requirements. However, there is a constant balance between property rights, economic development, and environment protection. Many communities also mentioned that sometimes denser urbanized areas are perceived as having a negative impact on the natural environment by both residents and environmental non-profits, when in reality concentrated growth has a significantly lower impact per capita, in addition to other social and economic benefits. In many cases, efforts to limit impervious surface per lot are counterproductive and encourage sprawl. Many planners also noted that their growth areas are determined by historic development patterns and existing infrastructure, and even if this growth is in an impaired watershed, it still may be the best option, particularly if modern and innovative stormwater techniques are used.

Seven out of ten communities have stormwater regulations beyond the state's requirements. However, each community has a very different approach to addressing stormwater at a smaller scale. Guidelines for how to best mitigate stormwater for small commercial and residential sites would help ensure local regulations are as effective as possible. Regional consistency amongst these regulations would also simplify the permitting process for developers, put all communities on a level playing field, and help ensure that regulations are as effective as possible.

**“In our regulations we promote and encourage LID, but it is not required. For every project we always ask, and we have had a lot of success. I look at every project and say to myself how can I improve the receiving water?”**

**–Steve Johnson, Yarmouth Town Engineer**

partners to develop future strategies to insure consistent enforcement of these regulations, and use up to date data to correctly map these zones.

**“I try to add flexibility to our regulations because this prevents the political pendulum from swinging too far in either direction. Everyone appreciates having options as opposed to hard-and-fast rules. You can't accomplish everything, so it is important to choose wisely.”**

**–Donna Larson, Freeport Town Planner**

Four of the communities interviewed reported having shoreland zoning standards more restrictive than the state requirements. Strict standards are more likely to protect environmental resources if enforced, but less restrictive policies or enforcement among neighboring municipalities may counteract some of this benefit. Since shoreland regulations are mandated by state statute, they ensure somewhat consistent environmental regulations among neighboring municipalities, while still allowing for more restrictive regulations in more environmentally sensitive areas. Communities should continue to work with state and regional

**“Developing more comprehensive stormwater regulations is on staff’s wish list of things to do and right now it has been a matter of resources, staff time and other priorities.”**

**–Jay Chace, Scarborough Senior Planner**

As permitted by the shoreland zoning statute, urban areas in Portland, Scarborough and South Portland are less restrictive in commercial zones where intense development already exists. For these urban areas, stormwater requirements and Low Impact Development (LID) techniques may be a more desirable and possibly more efficient way to treat wastewater on site and protect natural resources.

LID is an approach to managing stormwater that utilizes natural site characteristics to treat

stormwater on site. LID employs principles such as preserving and creating natural landscape features to manage site drainage, reducing impervious surface, and treating stormwater as a resource rather than a waste product. About half of the communities stated that they require some degree of low impact development techniques incorporated into development projects. However, it is clear that both building codes and land use regulations across all communities could be amended to include language supporting more innovative LID techniques, particularly for smaller scale projects.

Although Cumberland, Falmouth, Freeport and Scarborough have had their vernal pools surveyed, only Cape Elizabeth, Falmouth, and Yarmouth specifically mention and regulate vernal pools in their ordinance language. Model ordinance language and assistance with local mapping efforts at the state and regional level could be initial steps to help assist local vernal pool preservation efforts.

In 1968, Congress created the National Flood Insurance Program (NFIP) to help provide a means for property owners to financially protect themselves. Although a community may decide to make its floodplain ordinance

more rigorous, the law requires that it must at least meet the requirements of the state and federal floodplain laws. There is little, if any coordination among the communities regarding the level of freeboard (feet above a flood level for the purposes of floodplain management) in various zones. As the impacts of climate change and storm surges become more visible to the general public, there is more opportunity for local governments to coordinate with the [Maine Coastal Program](#) and take advantage of their Flood Resilience Checklist.

The communities with shellfish ordinances include Chebeague, Cumberland, Freeport, Scarborough, and Yarmouth. A major barrier to expanding shellfish areas is non-point source pollution. Examples of such pollution include oil, grease and toxic chemicals from urban runoff, fertilizer and pesticides from farms, erosion from construction sites, bacteria and nutrients from livestock and pets, and poorly maintained septic systems. Although local, state and federal governments have worked together to remove point source pollution, such as combined sewer overflows and overboard discharges to the Bay, these non-point sources still cross town lines and add to the elevated pollution levels contributing to the shellfish bed restrictions and closures.

**“There is not a great deal of development here, so residents have never had to face any negative environmental impacts.”**

**–Jim Nagle, Long Island CEO**

# Community Spotlights



## CAPE ELIZABETH SHORELAND ZONING

Cape Elizabeth rewrote its shoreland zoning ordinance in 2014. Rather than relying on a visual inspection of tidal landmarks to determine the “normal high water line” of coastal waters, the new regulation adds 3 vertical feet over the Highest Astronomical Tide to take into account future sea level rise. The shoreland zoning ordinance governs residential development within 250 feet of the ocean shoreline. It takes into account both environmental and aesthetic factors. Houses must be 75 feet from the water. Impervious surfaces such as driveways, decks, and the footprint of a house may cover no more than 20 percent of a given lot. In addition to adding extra protection to vulnerable areas, this regulation removes ambiguity from the process, and protects the town from litigation. [http://www.capeelizabeth.com/government/rules\\_regs/ordinances/zoning/zoning.pdf](http://www.capeelizabeth.com/government/rules_regs/ordinances/zoning/zoning.pdf)













## SOUTH PORTLAND PESTICIDE ORDINANCE

In 2016 South Portland was the first community in the region to pass a comprehensive pesticide use ordinance. Under the ordinance, which will be phased in over three years, only pesticides approved for use under the USDA’s National Organic Program or classified as “minimum risk” by the USEPA will be allowed. Since residents are not accustomed to this type of regulation, there will be a strong education and outreach campaign to help the community understand and comply with the new requirements. Reports of violations will be directed to the city’s sustainability coordinator rather than the police in order to educate alleged violators, bring them into compliance and keep a public record of how complaints are resolved. This environmentally progressive ordinance could serve as a model for other communities. [http://www.southportland.org/files/2914/7492/6224/CH\\_32\\_-\\_Pesticides.pdf](http://www.southportland.org/files/2914/7492/6224/CH_32_-_Pesticides.pdf)

# Incentives

Both financial and development incentives are important tools. Financial incentives such as taxation, subsidies, grants, and rebates can make the initial capital costs associated with infrastructure improvements more feasible to private property owners and they can help ensure that practices are continued on private property after development is complete. Development incentives such as allowing increased density in exchange for more extensive stormwater treatment, offer developers options and flexibility which can be mutually beneficial to the community and the property owner.

	Cape Elizabeth	Chebeague Island	Cumberland	Falmouth	Freeport	Long Island	Portland	Scarborough	South Portland	Yarmouth
<b>Financial Incentives</b>										
 Stormwater utility fee							✓			
 Watershed management plan (MS4)	✓				✓		✓		✓	✓
 Shopping bag fee/ban	✓			✓	✓		✓		✓	✓
<b>Development Incentives</b>										
 Low Impact development							✓		✓	
 Transfer of Development Rights	✓							✓	✓	
 Compact Growth	✓		✓	✓	✓		✓	✓	✓	✓
 Stormwater / impervious surface							✓		✓	
 Stormwater	 Climate Change	 Habitat Degradation								

## COMMON BARRIERS:

- Competing political priorities
- Community support for new fees
- Hard to implement for small towns
- Staff resources

## KEYS TO SUCCESS:

- Community support
- Education and awareness
- Knowledgeable staff and elected officials
- Valued natural resources in the community

Compared to other tools, incentives are not as broadly used by the ten communities interviewed. Portland is the first community to implement a stormwater utility fee, and a few other communities have considered implementing similar programs but haven't yet taken action. Some staff indicated that financial incentives haven't been applied because there is not yet the support for added costs and many community members do not believe that the municipalities need the revenue they might generate. As environmental awareness grows generally, there has been increasing support for shopping bag fees and/or bans, which many communities in the study area have implemented.

While a few communities have development incentives for LID and limiting impervious surface, these approaches have not been widely adopted by communities to date. Staff interviews indicated that development incentives are more complex than more straightforward regulations. Some Casco Bay municipalities have Transfer of Development Rights (TDR). TDR is a land use incentive that allows communities to encourage development in places they have targeted as growth areas, called receiving areas, and to discourage development in places they wish to protect, such as environmentally sensitive areas, called sending areas. With TDR, the owners of environmentally sensitive land, farmland and other important sending areas, receive compensation by selling their transferable development rights, or TDRs, in return for voluntarily restricting the future development of their properties. Even though this tool has a lot of potential, it has not been widely used by any of the communities in the study area. Staff have found that the tool is not very practical at such a small scale and other tools to increase density have been more effective.

The development incentive most commonly used by communities surveyed is compact growth, generally in the form of a conservation subdivision. The specifics vary significantly between communities, but generally speaking, compact growth incentives are a part of subdivision regulations and allow smaller lots with greater coverage in exchange for conserving a portion of the land. These regulations have generally been well received by residents because they protect valuable habitat and provide open space to the community.

**“Transfer of Development Rights only works in super-heated real estate markets. In a small community, the stars have to align perfectly for it to be used. But it is available and if it is used once to save a property then that is a good thing.  
–Maureen O’Meara, Cape Elizabeth Town Planner**



# Community Spotlights



## PORTLAND STORMWATER SERVICE CHARGE

In 2016, Portland was the first community to implement a stormwater service charge. The stormwater charge is a way to more fairly and equitably distribute the cost of providing sewage and stormwater services to the users of those systems. The stormwater service charge will be used to raise revenue needed to fund the city's stormwater management program while the sewer user charges will be used to raise revenue to fund the city's sewer program. The charge is a fee for runoff discharged from a property, not the amount of rain falling on a property. Property owners can control the level of development on their property and install LID features to mitigate stormwater runoff, both of which will decrease the service charge. <http://www.portlandmaine.gov/1559/Stormwater-Service-Charge>









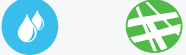






## FREEPORT PLASTIC BAG BAN

In 2016 Freeport enacted an ordinance to ban plastic bags and charge a five cent fee on paper bags. While the town council was in the process of considering banning plastic bags, a citizen's initiative put a binding referendum question on the June 14, 2016 ballot. This proposal passed 804 to 501 and went into effect on September 12, 2016. The ban on plastic bags will reduce the number of discarded plastic bags that eventually end up in the ocean and harm wildlife. Since plastics do not biodegrade, they break down into smaller and smaller pieces, absorb toxins from the ocean, and are then eaten by wildlife. [www.freeportmaine.com/inc/scripts/file.php?file\\_id=8602](http://www.freeportmaine.com/inc/scripts/file.php?file_id=8602)

# Direct Action

Local governments have direct discretion and control over municipal operations on public property. Implementing policies and procedures for public projects including street design standards, land conservation and low impact development practices can have a large impact on the community. Additionally, local governments have the ability to do community outreach and education.

	Cape Elizabeth	Chebeague Island	Cumberland	Falmouth	Freeport	Long Island	Portland	Scarborough	South Portland	Yarmouth
<b>Public Infrastructure</b>										
 Complete streets policy	✓			✓			✓	✓	✓	✓
 Public sewer (% of community)	40%		30%	30%	20%		90%	50%	95%	77%
 Combined sewer overflow (number)	1						11		6	
 Stormwater flow improvements	✓	✓	✓	✓	✓		✓	✓	✓	✓
 Conservation of public open space	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
 LID for municipal projects	✓						✓	✓		✓
<b>Education / Outreach</b>										
 Sea level rise outreach / education					✓		✓	✓	✓	
 Stormwater outreach / education	✓		✓	✓	✓		✓	✓	✓	✓
 Water quality outreach / education		✓					✓	✓	✓	✓
 Habitat outreach / education				✓			✓			✓

 Stormwater
  Climate Change
  Habitat Degradation

## COMMON BARRIERS:

- Competing political priorities
- Lack of information
- Inconsistent implementation
- Staff resources
- Lack of regional coordination

## KEYS TO SUCCESS:

- Community support
- Available capital
- Knowledgeable staff and elected officials
- Proactive policies and procedures

Municipalities often have control over a significant portion of land, as well as other community infrastructure, including roads. A lot of communities surveyed indicated that the actions they take on municipal property can set an example for private development. It is an opportunity for local governments to lead by example, and save money over the lifespan of the project. Some of these actions are hard to quantify though, because often there is no official policy or procedure in place, and municipal projects are handled on a case-by-case basis. For example, almost all communities have used LID techniques for municipal projects, but very few have additional local requirements to do so. Policies like complete streets, which limit road widths and reduce energy consumption by accommodating walking and biking are often more visible. Yet, many communities without official complete streets policies are still implementing these same principles, and none of the ten communities surveyed have implemented a “green streets” policy, which is more focused on mitigating stormwater runoff.

**“Our new harbormaster building is going to have a site plan with LID. If we are going to talk to the talk, we better walk the walk. We also go through our own planning board process and obtain the same permits we require from others.” –Steve Johnson, Yarmouth Town Engineer**

Several communities surrounding Casco Bay have combined sewer overflows that are most commonly used during and after storm events or excessive snow melt. These CSO’s discharge untreated wastewater from municipal sewerage systems and carry a mixture of sanitary sewage, stormwater, and sometimes industrial wastes. The number of CSOs discharging water into Casco Bay has been reduced significantly. Originally in 1989 there were 60 communities

in Maine with CSO. As of 2011 there were 32, with 163 discharge points. These CSOs threaten water quality, affecting our states major economic resources such as beaches and shellfish beds. DEP permits these CSOs as long as municipalities submit a detailed plan and timeline outlining how and when they will eliminate their CSOs. Currently, all three communities are on schedule with abatement.

All of the communities surveyed stated they have conserved open space. To implement open space goals, a community must purchase land with bond money, rely on a local land trust to purchase the land, ask voters to approve a purchase of land directly, or negotiate a conservation easement. According to the survey, only Cape Elizabeth, Chebeague, Falmouth, Portland and Scarborough have acquired land and placed it under a conservation easement. Conversely, Cumberland, Freeport and Long Island stated they do not hold any conservation easements. However, with the exception of Cumberland, those same communities also stated they often coordinate with the local land trust to acquire and manage conservation properties. Long Island has several areas protected as state-owned land, including Little Chebeague, Cow Island, and Vail Island. Falmouth, Cape Elizabeth, Portland, Scarborough, and Yarmouth have all approved municipal bonds to purchase open space parcels and are still actively using that money to acquire additional open space. Having money set aside ahead of time allows communities to be ready as opportunities to purchase land are presented.

Another direct action tool available to local governments is education and outreach. Each community has a very different approach. Some municipalities have very active committees, such as conservation commissions or shellfish committees that do a lot of outreach, while others are less active. Eight of the communities surveyed have stormwater outreach/education which is conducted by the [Cumberland County Soil and Water Conservation District](#) as a part of the MS4 program requirements.

# Community Spotlights



## **SOUTH PORTLAND LID MANUAL**

The City established Stormwater Management Performance Standards in April 2009 and more recently was awarded funding from Casco Bay Estuary Partnership to develop a web-based Stormwater Management Manual. This manual is intended to serve as a helpful resource for new development or redevelopment projects on smaller parcels. It includes an introduction to stormwater, why it is so important to South Portland, what permit requirements small projects face, and detailed guidelines on how to meet those requirements while effectively protecting South Portland's valuable water resources. This manual is a resource to South Portland and the region for how to address stormwater. <http://www.southportland.org/departments/water-resource-protection/stormwater-management/>



## **PORTLAND BAYSIDE PROMENADE**

The City of Portland and Trust for Public Land partnered to build a multi-use, paved trail through the center of the Bayside neighborhood. The Bayside trail connects to the Back Cove and Eastern Promenade trails, and there are plans to eventually connect the Bayside trail to the Fore River Trail through Deering Oaks. The trail helps preserve green space in the middle of an urban commercial/residential neighborhood with many large parking lots. The trail also incorporates green infrastructure drainage features and rain gardens. <https://www.tpl.org/our-work/portland-bayside-trail#sm.0001ey9hg2y4ze7gquz21judsnbvw>



## **SOUTH PORTLAND LONG CREEK**

In 2009 Maine DOT reconstructed a section of the Maine Mall Road using porous pavement. The total project area covered 7.21 acres. Traditional roads and other forms of impervious cover contribute to stormwater runoff because they block rain and melted snow from filtering through the ground. This runoff will then carry trash and pollutants into surface waters. The porous pavement will eliminate the stormwater runoff problem by allowing rain and melted snow to infiltrate through the pavement and filter through the ground. <http://www.restorelongcreek.org/>

# ADDITIONAL RESOURCES

## LOCAL ORGANIZATIONS

### [Casco Bay Estuary Partnership](#)

As 1 of 28 National Estuary Programs, CBEP is a collaborative effort of people and organizations interested in protecting and restoring Casco Bay. Their partners include local, state and federal government organizations; non-profits; local businesses; citizens; universities and more.

### [Cumberland County Soil and Water Conservation District](#)

The District addresses the soil and water conservation needs of rural and urban landscapes, focusing on lessening the impact of pollution from stormwater. They accomplish their mission through public outreach; education; and directly working with individuals, watershed groups, municipalities, and many others.

### [Friends of Casco Bay](#)

Friends of Casco Bay is an environmental organization working to improve and protect the environmental health of Casco Bay. Their work involves education, advocacy, water quality monitoring programs, and collaborative partnerships.

### [Island Institute](#)

The Island Institute works to sustain Maine's island and coastal communities and exchanges ideas and experiences to further the sustainability of communities here and elsewhere. Their core program areas include economic development, education, community energy, and marine resources.

### [Maine Coastal Program](#)

The Maine Coastal Program is a partnership among local, regional, and state agencies administered by the State Department of Agriculture, Conservation and Forestry. They manage Maine's coastal resources for the public benefit with the shared goal of a healthy coast and vibrant coastal communities.

### [Maine Geological Survey](#)

The Maine Geological Survey is a part of the State Department of Agriculture, Conservation and Forestry. They provide the people and businesses of Maine with essential geologic information, presented in thousands of free web pages, and maps and publications.

### [New England Environmental Finance Center](#)

The NE/EFC was established to advance the shared goal of the US EPA and the Edmund S. Muskie School of Public Service at University of Southern Maine to research, publish, and extend creative approaches to environmental policy, protection, and management, especially the associated questions of how-to-pay for needed environmental improvements.

# ADDITIONAL RESOURCES

## MAPPING TOOLS

### [Coastal Flood Exposure Mapper](#)

An online visualization tool from NOAA for assessing coastal hazard risks and vulnerabilities that enables users to explore and create a collection of user-defined, savable and downloadable maps showing people, infrastructure, and natural resources exposed to coastal flood hazards.

### [StreamStats](#)

A GIS-based web application developed by the U.S. Geological Survey for calculating drainage basin characteristics and streamflow statistics for user-selected sites on rivers and streams in Maine. It provides an assortment of analytical tools for water-resources planning and management and engineering and design purposes for rivers, streams, and watersheds.

### [Beginning With Habitat Map Viewers](#)

Beginning with Habitat, a collaborative program of federal, state and local agencies and non-governmental organizations, is a habitat-based approach to conserving wildlife and plant habitat on a landscape scale. The goal of the program is to maintain sufficient habitat to support all native plant and animal species currently breeding in Maine.

### [Maine Futures Community Mapper](#)

The Maine Futures Community Mapper (MFCM) is a web-based tool developed by the Maine Alternative Futures Project of the Maine Sustainability Solutions Initiative to help Mainers: 1. Identify locations that are most suitable for future development, conservation, agricultural uses, or forestry; 2. Identify potential conflicts and compatibilities between different land uses; and 3. Envision their future landscape under different possible scenarios of change.

### [Maine Geological Survey Geology Web Maps](#)

The Maine Geological Survey now has georeferenced PDF maps available in an interactive web map. Maps are currently available for bedrock and surficial geology at a number of different scales, aquifers, groundwater resources, and bedrock wells.

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