

Action Plan 4. Improving Land Use Management and Promoting Smart Growth

Problem

As noted in the Promoting LID action plan, past building and development practices, coupled with poorly planned local zoning and development requirements have resulted in sprawl, increased pollution discharges, and many other unintentional effects that have been injurious to the environment. Whereas LID focuses principally on stormwater management and restoring the natural hydrology of sites, "Smart Growth" and similar growth management principals address the protection of open space, preserving natural landscapes, encouraging village centers, and promoting clustering of development. Implementation of these practices will not only benefit the environment, but save government infrastructure construction and maintenance, and ultimately benefit the public with reduced government tax burdens.

Goal

Goal 4.1. To improve land use management through the use of smart growth strategies in the Buzzards Bay watershed to maintain and improve the natural resources and ecology of Buzzards Bay.

Objectives

Objective 4.1. To encourage smart growth techniques in less developed Buzzards Bay watershed communities to preserve open space, revitalize urban and village centers, focus development on growth centers, and protect natural resources and the environment.

Objective 4.2. To improve local zoning, subdivision, health and wetlands regulations to manage future growth in a way that protects the environment of Buzzards Bay and its watershed.

Objective 4.3. Promote sustainable agriculture that does not impact water quality.

Solutions

Municipalities have the greatest capacity and responsibility for regulating and managing the impacts of future growth to minimize potential environmental impacts from that growth. Other levels of government need to support municipalities through technical and financial assistance programs. Where appropriate, state and federal government must also change regulations and laws governing new growth and redevelopment to both support smart growth principals, and to lead by example.

The biggest challenge facing municipalities is to better define what kind of new development and redevelopment the town wants. Rules to encourage clustering of development, parking space regulations, and zoning are just some of the local regulations that need to be re-

thought to better define the future character of communities to minimize impacts from new development.

Regulatory strategies may include revisions to zoning bylaws, general bylaws, and local wetland regulations. However, a vision of smart growth strategies and goals must be included in long-term planning in documents like municipal master plans, open space plans, and municipal stormwater plans³⁷.

Each municipality must decide which smart growth techniques work best for them, and implement those that best protect their critical resource areas and minimize growth impacts on water quality and habitat special to their community. Certain techniques, like cluster zoning, should be universally adopted. Others are more town specific. Transfer of Development Rights (TDRs) is underutilized and should be more widely embraced by rural municipalities. For the TDR process to work as desired, municipalities must identify sensitive resource areas (sending areas) and growth centers (receiving areas). Defining these areas is informed by science but must also incorporate political and economic concerns.

Regional planning and regulatory agencies, the Buzzards Bay NEP, and state agencies all have important roles to play through training, education, and in the review of projects that meet certain state and regional thresholds.

Costs and Financing

Many of the necessary regulatory changes to implement this action plan have negligible cost to government. More importantly, some smart growth approaches (like clustering of development) also reduce costs to developers and tax burdens to residents because of lesser infrastructure maintenance costs.

Measuring Success

To measure the success of this action plan involves tracking the implementation of programmatic measures such as adoption of laws and regulations that achieve the goals of this action plan. Because this action plan attempts to lessen impacts of new development, no environmental outcomes can be tracked directly.

³⁷ All Buzzards Bay municipalities have been issued a stormwater management permit by the U.S. EPA that requires the development and implementation of 5-year stormwater management plans as part of the NPDES MS4 stormwater discharge permit. See Action Plan 3, Managing Stormwater Discharges.

Background

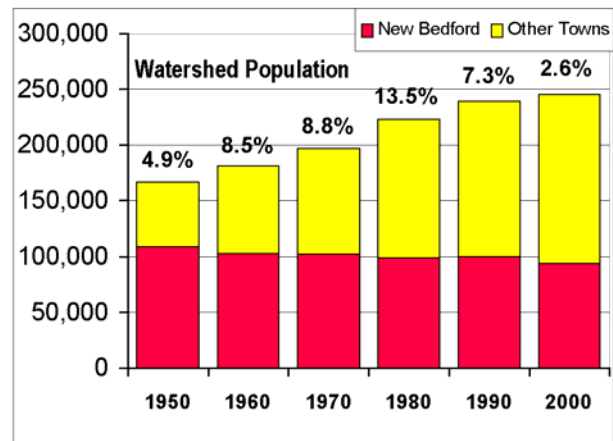
Land Use in Buzzards Bay

The central Buzzards Bay ecosystem is relatively healthy. With the exception of waters around New Bedford, and around some of the more eutrophic embayments, the water quality and living resources in the central bay have not yet experienced the degree of stress associated with other coastal areas such as Chesapeake Bay, Narragansett Bay, and Long Island Sound. However, the ability of the Buzzards Bay environment to sustain its many beneficial uses is threatened as growth in the area continues to accelerate.

Population in the watershed has increased from approximately 150,000 to 250,000 in the past fifty years (Figure 53). During this period population declined in urban areas (such as New Bedford), with continued sprawl into the country-side, requiring longer commutes to jobs and schools. Buildout analyses in the member communities demonstrate the potential for continued growth. A study by the Woods Hole Research Center of growth patterns in southeastern Massachusetts concluded that adoption of Smart Growth principles could appreciably reduce the loss of natural landscapes due to development over the next thirty years (Figure 54).

This relationship between development and population increase reflects the development of land programmed for subdivision by the Buzzards Bay communities through their zoning bylaws. Expansion of the second-home market and the increasing willingness of home buyers to pay higher prices to live near the coast are creating economic pressure to convert rural or agricultural land to residential development. In addition, seasonal seaside homes are now commonly converted to year-round residences. These trends are demonstrated in by land use statistics for Massachusetts which show that between 1950 and 1990, population in Massachusetts increased by 28%, but developed land increased by 188%³⁸.

In the Buzzards Bay watershed, changes in subsequent years are more nuanced because of population declines in New Bedford, and dramatic increases in population in more rural communities after 1985, as illustrated by Figure 55. Between 1970 and 1985, the rate of population growth paralleled increases in land development. However, between 1985 and 1999, a period of a great development boom, the rate of land development far outpaced population growth. Between 1971 and 1985, every new person in the watershed resulted in 5,500 sq. ft of new residential development, whereas between 1985 and 1999, every new person added to the watershed



Data from U.S. Census.

Figure 53. Watershed population changes - City of New Bedford versus watershed towns.

resulted in the creation of 11,300 square feet of residential area. For the entire period, population increased 40%, whereas the area covered by residential land use increased nearly 60%.

These more recently less densely developed areas of the watershed are contributing a disproportionately high pollutant load to the Buzzards Bay ecosystem because the road area per house also increases in sprawl areas. These loads are the result of not only increased runoff from roads, but larger lawns, driveways, and other sources. These increased pollutant loads impact coastal ecosystems by increasing discharges of bacteria, viruses, heavy metals, hydrocarbons, and nutrients through pathways to the bay.

The Alliance for the Chesapeake Bay (1989), in its white paper on growth management, reinforced the need for greater control and predicted that growth management would become the watchword of the 90s. The Alliance further indicated that managing growth is essential to protecting natural resources and that regulations, financial resources, and pollution-control devices are of limited value. More recently, the U.S. EPA and the Commonwealth of Massachusetts have become proponents of "Smart Growth" as the planning tool for this first decade of the new millennium, and beyond.

"Smart Growth" is well-planned development that benefits the community, protects open space and farmland, keeps housing affordable, provides more transportation choices and preserves the natural environment.

Smart growth provides an opportunity to foster quality development that provides both economic and environmental benefits to a community and a region. It directs growth into village centers that have appropriate wastewater treatment infrastructure, broader transportation choices and more diverse (and affordable) housing opportunities. It also preserves and protects critical environmental resources, agricultural areas and open space.

³⁸ EEA smartgrowth website at: <http://commpres.env.state.ma.us/content/whatis.asp>, last accessed March 30, 2010.

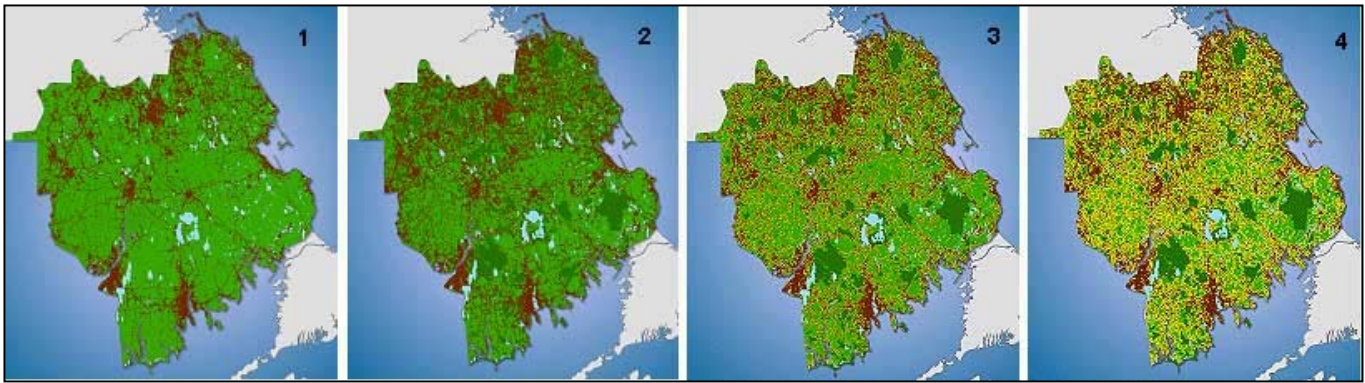


Figure 54. Expected development patterns in Southeastern Massachusetts, with and without Smart Growth techniques adopted. The above panels show (1) development as of 1971, (2) development as of 1999 Land (3) development over 30 years with a Smart Growth scenario, and (4) development with unmanaged growth after 30 years. In the Smart Growth scenario, land altered by development increases by 20%, whereas in the unmanaged development scenario, developed areas expand by 34%. Graphics and data taken from a Woods Hole Research Center study posted at www.whrc.org/new_english/SE_Mass/landcover.htm (last accessed 3/20/2010).

Other action plans in this Buzzards Bay CCMP address specific types of pollution sources or sensitive habitats, or contain specific recommendations for reducing pollutant loads and protecting areas of special concern. These individual action plan recommendations alone are not sufficiently protective; inherent in each set of recommendations is an understanding that a holistic approach to water quality protection is needed. The cornerstone of such an approach is land use planning for growth management and more specifically, smart growth.

Developing a Local Land-Use Plan

The underlying assumption of growth management is that there are limits to the amount of unmanaged growth that an area can withstand without serious harm

to public health, safety, regional economy, or the environment. Environmental systems, and specifically coastal embayments, reach limits at which they can no longer absorb the impacts from additional development without degradation or impairment of uses. This is known as the “carrying capacity.” Of specific concern in Buzzards Bay are the localized embayments where the greatest amount of human activity (swimming, fishing, and boating) takes place. Aggressive land use management and planning can ensure that the water quality of an embayment is protected, particularly when drainage basins contain appreciable amounts of developable land.

A key component of local land use planning is the identification of critical areas for protection. Escalating growth patterns place stress on these critical resource areas, and the stress is often proportional to growth.

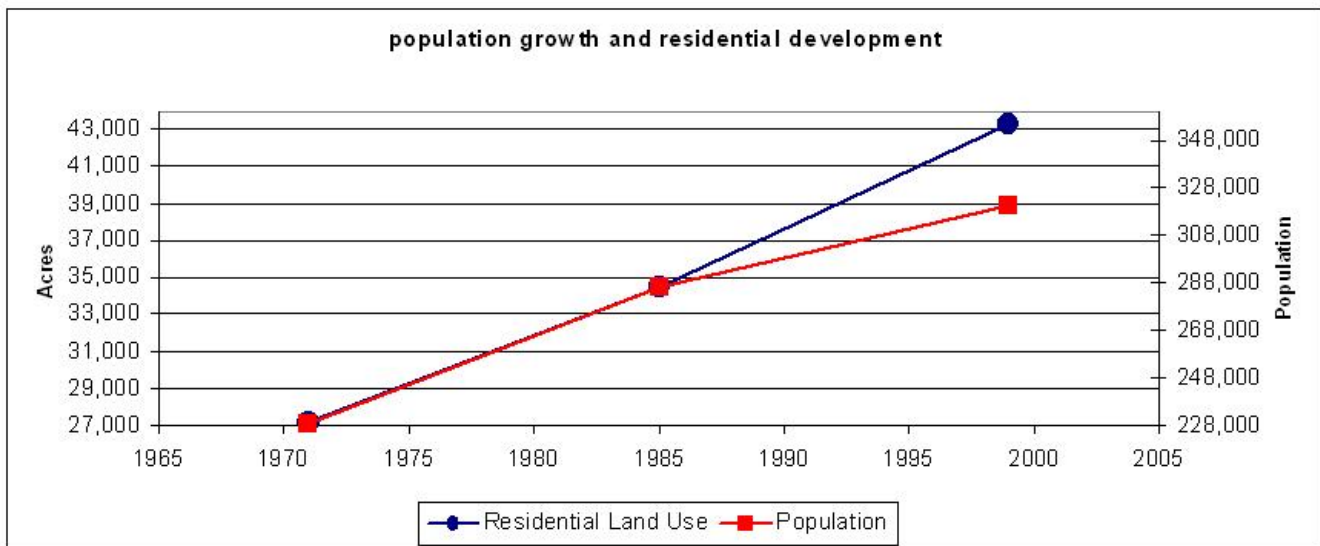


Figure 55. Population trends in key Buzzards Bay watershed municipalities versus changes in residential land use. Land use data from MassGIS (residential land use categories only) and population data only for principal municipalities within the watershed (entire town). Prepared by the BBNEP.

Identification of these areas will provide communities with a planning tool to begin answering questions of where to allow development, how best to design development, how much of it can occur, and how best to regulate potentially detrimental future land uses.

Equally important is the identification of growth centers, areas that can accommodate growth, where appropriate infrastructure (including wastewater treatment) and environmentally sensitive design standards can be provided. These growth centers can then absorb the vested rights of landowners in the region by re-directing (or transferring) them from more critically sensitive areas. They can also provide better diversity of housing types (including affordable), a range of transportation options (transit, cycling and pedestrian) and a good quality lifestyle. The resulting form of development (more compact village centers surrounded by protected open spaces) can also provide opportunities for the reduction of carbon emissions, leading to minimization of the “greenhouse” affects and sea level rise.

Important agriculture areas must also be delineated. Cranberry and other agriculture have been an important part of the landscape in southeastern Massachusetts and Cape Cod for well over one hundred years. This unique environment plays an increasingly important role in the preservation of open space, in providing opportunities for water conservation and in providing wildlife habitat.

Although, 12,700 acres are in actual production, cranberry growers own and manage nearly 62,000 acres of related ponds, bogs, wetlands and upland forest. As the region becomes more developed, this land takes on more and more importance. For example, A.D. Makepeace Company, a large cranberry grower and the largest private landowner in Massachusetts, is poised to develop a sizeable portion of their land. The development of this area will change much of the landscape in the upper watershed, and should utilize some of the planning and design methods described below to minimize the impacts of the development on water quality and quantity, and habitat and the environment. This project is in the planning stages, and Buzzards Bay NEP expects it will continue to take shape on paper and on the ground over the next several years.

Tools & Techniques

The validity of local government regulation is predicated on the broad concept of police power: the power of government to regulate for the advancement and protection of the health, safety, economy, and welfare of the inhabitants of the community. In the Buzzards Bay area, this broad authority has typically been limited to zoning techniques such as dimensional requirements including lot size, setbacks, and lot coverage.

A handful of communities have expanded their zoning regulations to focus on the protection of water quality, and a smaller number have given the protection of

Buzzards Bay water quality a high priority in their zoning codes and subdivision and health rules.

Smart growth provides a new approach to land use planning that recognizes vested land values and development rights of current landowners, and re-directs (and re-designs) this growth in patterns that are more sensitive to environmental constraints. The following regulatory and non-regulatory techniques represent a sampling of those methods that the Buzzards Bay watershed communities could adopt to provide added protection from the pressures of growth and development by offering alternative designs and techniques.

Regulatory Techniques

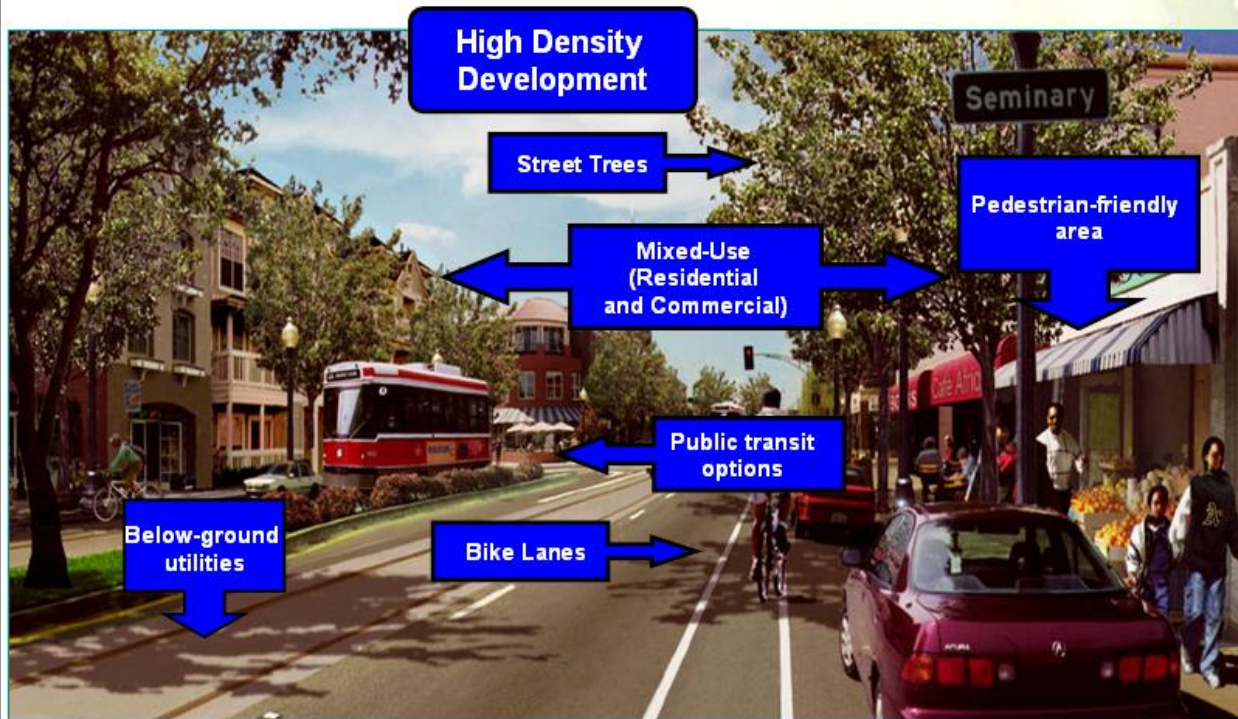
Overlay Ground/Surface Water Protection Districts

An overlay ground or surface water protection district clearly identifies and recognizes critical water resources and protects these resources through regulatory restrictions. These ordinances (cities) and bylaws (towns), while varying in their approach toward resource protection (i.e., prohibition of various uses versus special permitting and/or performance criteria), are similar in their goals of defining a resource by mapping boundaries and enacting specific legislation for land uses and development within these boundaries. Whenever possible, stormwater should be contained and treated on-site.

Overlay Smart Growth Zoning District

Many communities in the Buzzards Bay watershed and throughout Massachusetts are faced with a shortage of affordable housing units. Communities that do not meet the minimum requirements for availability of affordable housing can be faced with proposed affordable housing projects that are allowed to bypass certain local zoning regulations through a comprehensive permit application process, under M.G.L. Chapter 40B. As a result, high-density projects can be proposed in areas that may not be best suited for this level of development. One mechanism to pre-plan and provide incentives for creation of affordable housing and open-market housing is to develop a Smart Growth Overlay Zoning District (authorized by MGL Chapter 40R). Within the district, development must meet a set of design standards created by the municipality, but development can occur by right, easing the comprehensive permitting requirements for the developer in comparison to Chapter 40B developments (which are often contentious and end up in court). Chapter 40R allows a municipality to designate areas where mixed use and residential growth should occur in the town, in accordance with a land use plan, and then provide an incentive in the form of a simpler permit process. Such a district can relieve development pressures in more environmentally constrained areas through a transfer of development rights process (described below).

Sprawl Versus Smart Growth Streetscapes



Smart Growth / Smart Energy Toolkit

Source: Smart Growth America, Urban Advantage

Downloaded from <http://commpres.env.state.ma.us/content/whatis.asp> (last accessed (3/29/2010)).

Figure 56. Slide from a presentation Smart Growth presentation developed by the Massachusetts EEA.

In addition, and perhaps its biggest selling point to the general public, state approval of a Chapter 40R Overlay District results in an incentive payment to the community general fund commensurate with the number of units the district allows, and then additional payments of \$3,000/unit as the residential units receive building permits, as long as one unit is built within three years. This program has only been employed by a handful of communities in the Buzzards Bay watershed to date; Plymouth recently passed a Chapter 40R district in the area of Cordage Park (outside the Buzzards Bay watershed).

Surface Water Buffer

Stormwater runoff is a major component of non-point-source pollution in surface water and contains pathogens, nutrients, and contaminants associated with road runoff. Studies have shown that undisturbed lands are generally more permeable and, as a result, allow higher levels of stormwater percolation and natural treatment of associated contaminants. Municipalities can require that undisturbed vegetative upland buffers be maintained adjacent to and within a defined buffer area

(e.g., 100 feet or more) of surface waters in order to promote natural stormwater treatment.

Performance Standards

Performance standards are based on the assumption that any given resource has a critical limit (carrying capacity) beyond which the resource deteriorates to unacceptable levels. Performance controls assume that most uses are allowable within a designated area, provided that the use or uses will not overload natural or man-made resources. To apply this concept to Buzzards Bay, the critical limits of nitrogen-sensitive embayments must be determined. Once determined, each development project within the drainage basin would be allowed to contribute a defined percentage of nitrogen, relative to the capacity of the embayment.

This approach may provide the only comprehensive mechanism for equitably protecting Buzzards Bay from increasing additions of nitrogen. The bay's ability to assimilate nitrogen is limited, but establishing a program that is based upon performance regulations is an exciting and imaginative mechanism for ensuring the bay's long-term viability.

Cluster Design

Cluster zoning is an alternative to the standard grid-style subdivision. In a cluster development, smaller building lots are allowed, with resulting land savings set aside in contiguous areas of open space. Clustering can be done at the same density that could be obtained in a grid system or with greater density “bonuses”. Typically, cluster development allows shorter streets, reduced construction and maintenance costs. It provides tremendous flexibility for both the developer and municipality, and often allows for greater creativity in the division of large land parcels. Among other benefits, large open spaces may serve as buffers.

Open Space Residential Design

Open Space Residential Design (OSRD) is similar to cluster design, but generally is a partnership process between the developer and the town. It requires a larger portion of land to be set aside as open space, offers more flexible incentives, and establishes a design process to be followed. OSRD design process starts with identifying areas of the site with conservation value, such as water resources, wetlands and habitat areas, placing residential units on the site to avoid these areas and to provide residents with the best vantage to enjoy these resource areas, then placing roads and walkways on the site that align with the natural topography of the site, and finally drawing lot lines around the units. The conservation value of the open space conserved through this technique is often greater than through traditional cluster subdivisions.

Transfer of Development Rights

Transfer of Development Rights ([TDR](#)) is a regulatory strategy that harnesses private market forces to accomplish two [smart growth](#) objectives. First, [open space](#) is permanently protected for water supply, agricultural, [habitat](#), recreational, or other purposes via the transfer of some or all of the development that would otherwise have occurred in these sensitive places to more suitable locations. Second, other locations, such as city and town centers or vacant and underutilized properties, become more vibrant and successful as the development potential from the protected resource areas is transferred to them. In essence, [development rights](#) are “transferred” from one district (the “[sending district](#)”) to another (the “[receiving district](#)”). Communities using TDR are shifting development densities within the community to achieve both [open space](#) and economic goals.

Traditional Neighborhood Development

Traditional Neighborhood Development (TND), also known as “new urbanism”, “neo-traditional” or village-style development, includes a variety of housing types, a mix of [land uses](#), an active center, a walkable design, and often a transit option within a [compact](#) neighborhood scale area either as infill in an existing developed area or as a district scale project.



Image from travelguideofamerica.com.

Figure 57. Onset Village, is a traditional Buzzards Bay watershed village center.

Transit Oriented Development

Transit Oriented Development (TOD) creates mixed-use, higher [density](#) communities that encourage people to live, work and shop near transit services and decrease their dependence on driving.

Low Impact Development

[Low Impact Development](#) (LID) is a more [sustainable](#) land development pattern that results from a [site planning](#) process that first identifies critical natural resources, and then determines appropriate building envelopes. LID also incorporates a range of best management practices (BMPs) that preserve the natural hydrology of the land. LID is described in much more detail in Action Plan 3. LID techniques can be incorporated in a variety of smart growth approaches listed here.

Subdivision Control

Subdivision regulations, as described in Massachusetts General Laws Chapter 41 (the “Subdivision Control Law”), differ from zoning bylaws in that they focus less on land use and more on engineering concerns such as street design (grade, width, intersection angles), utility placement and traffic patterns of individual subdivisions. Protecting water resources via subdivision control can help limit the degree of imperviousness of the watershed, thereby controlling stormwater runoff.

Stormwater Management Requirements

Stormwater from subdivisions and commercial developments can be regulated through the use of local stormwater bylaws, as well as through local stormwater performance standards and design criteria that can be incorporated into the local subdivision regulations, local wetlands protection bylaw or site plan review process. A model stormwater bylaw has been developed for the Towns of Duxbury, Marshfield and Plymouth using Massachusetts CZM grant funding.

Nitrogen Management Overlay Districts

Overlay districts such as the Buttermilk Bay Overlay District adopted separately in Bourne, Plymouth and Wareham can be used to regulate the nitrogen impacts from development on coastal and groundwater resources. It is possible, for example, to determine the water quality impact of a 20-lot subdivision by calculating the nitrogen contribution from road and lawn runoff and septic systems. Planning boards can use this information to regulate subdivisions by limiting development size and placing restrictions and requirements on lawn size, fertilizer use, and wastewater treatment so that water quality will not be compromised. In cases where the project is located in an already-impaired subwatershed, positive-impact development can be required where off-site mitigation must be provided in exchange for development permits.

Board of Health Review

Section 81-U of the Subdivision Control Law requires that boards of health review all subdivision plans to ensure that they do not pose any public health concerns. When used appropriately, board of health review under Section 81-U can ensure that threats to water quality are minimized. Planning boards are constrained from approving subdivision plans that the board of health stipulates are not suitable for construction due to public health issues. This review authority vests considerable power in the board of health, but also has the effect of encouraging planning boards to work cooperatively with local health boards to ensure adequate protection of public health.

Board of Health Regulations

The development of health regulations, as provided for in Massachusetts General Laws, Chapter 111, can be an extremely effective method of land use management. Although zoning bylaws and subdivision rules and regulations have limited ability to protect water resources, regulations adopted by boards of health can be powerful protective mechanisms. This is due in part to the fact that health regulations can be adopted very quickly, only requiring a majority vote of the board of health.

Because of the extensive protection afforded to land owners through zoning, many communities have opted for regulatory programs administered by boards of health. The urgency of adopting growth controls and the impressive powers that boards of health possess make these boards probably the most effective local institution upon which to base a strategy for land use management. The courts have consistently upheld these powers when they have been challenged, as long as the process is well conceived, logical in its approach, and does not totally deny the use of property. Several examples of effective board of health regulations are discussed below.

Dennis:

State law currently governs the siting and operation of septic systems, requiring setbacks from environmentally sensitive areas. Concerned about the rising number of variances being granted from these regulations, the Dennis Board of Health has defined environmentally sensitive areas to include:

- Land area (whether developed or not) that borders on and is within 100 ft of marshlands, tidal flats, coastal dunes, barrier beaches, coastal banks, coastal beaches and surface water.
- Land area containing subsurface water that is 6 ft or less below natural ground surface elevation.
- Existing or known future water supplies.
- Terrestrial and/or threatened or endangered species.

In environmentally sensitive areas, the Dennis Board of Health rarely grants variances from these septic system regulations.

Brewster:

Brewster requires a water quality report to be submitted to the board of health for all developments that will discharge greater than 2000 gallons per day (GPD) of wastewater. This regulation attempts to address large projects with heavy wastewater discharge flows that will not meet the state review threshold of greater than 15,000 GPD. Proposed projects with a density of less than one unit per two acres are exempt.

Information submitted to the Brewster Board of Health must demonstrate that no significant impact to water resources will occur as a result of the project. Also, it must be demonstrated that the nutrient contribution of the proposed project, when added to the existing and potential nutrient level of other developments and acreage within the specific recharge or drainage area, will not result in nutrient levels that exceed the receiving water's critical eutrophic level.

Variances may be granted by the board of health, but the applicant must prove that sewage disposal will not adversely affect, among other uses, any shellfish or recreational waters. The information required is extensive and amounts to a local environmental impact report.

Bourne:

The Bourne Board of Health prohibits the construction of septic systems in areas of shifting sands (coastal beaches, coastal dunes, barrier beaches, coastal banks). This is to prevent systems from being torn loose during storms and becoming health and safety hazards. In addition, in an attempt to discourage septic systems highly "mounded" above natural ground level in coastal areas, the board of health requires greater than 6 ft of separation between the original ground elevation and groundwater.

A duplicate regulation administered by the Sandwich Board of Health was recently challenged in court. The Superior Court of Barnstable found that the restrictions are a valid exercise of the town's police power to prevent the use of property in a manner that is detrimental to the public's interest. The court also found that the regulations were promulgated in response to identifiable local concerns regarding (1) the installation of septic systems as affecting the public health, and (2) maintenance and preservation of coastal areas.

Non-Regulatory Techniques:

District Improvement Financing/Tax Increment Financing

[District Improvement Financing](#) (DIF) and [Tax Increment Financing](#) (TIF) are economic tools that promote redevelopment by use of public/private partnerships. TIF offers tax breaks to developers, while DIF channels tax dollars into targeted redevelopment districts. Both of these programs can indirectly help to preserve open space and reduce the pattern of sprawl.

Donations of Land

Landowners can donate a piece of land (as part of a development project or an entire developable parcel) either to the community or a nonprofit land-holding organization. Donating the land for preservation is advantageous to land owners because of a variety of tax savings. Donations eliminate estate or capital gains taxes and avoid real-estate taxes, insurance, and maintenance costs. The entire value of the donation can be deducted, over time, from federal income tax obligations.

Purchase of Land

Many communities are committed to the acquisition of selected parcels of land deemed so significant to the town's future that it may be willing to purchase them outright at market prices. These acquisition priorities include large tracts of undeveloped land, land within defined water resource areas, land containing unique or rare and endangered wildlife, and land with unique ecological character. There are four variations:

- Sale at fair market value: Sale at the price a buyer is willing to pay a seller to purchase a piece of property.
- Bargain sale: The sale of property below fair market value to a conservation organization or municipality. The difference between fair market value and the reduced price may qualify as a charitable deduction from income taxes.
- Installment sale: Sale that allows the seller to spread the income from the sale of property over several years, thus deferring and, in some cases, reducing income taxes. This allows the buyer greater flexibility in raising funds for acquisition.

- Sale with a reserved life estate: The transfer of property upon the death of the individual landowner. This option allows landowners to sell or donate now, but continue to use the property during their lifetimes or the lifetimes of other members of their immediate families. It also allows the use of tax benefits now and avoids inheritance tax requirements that can lead to the sale of property later.

Tax Deferments

One factor that often pressures individuals into selling their land is the property tax, because it taxes land based on the market price for development, regardless of the land's present use. All New England states currently provide for some degree of reduction in real-estate tax for lands used for conservation. In Massachusetts, open space for forest, agricultural, or recreational uses can receive from 75% to 90% reduction in real-estate taxes. Inheritance tax generally is 50% of value. In land-rich, cash-poor situations, this can lead to the need to sell property at the highest value to settle an estate.

Conservation Easements

An easement is a limited right to use or restrict land owned by someone else. Easements are either positive (rights-of-way) or negative (conservation, scenic) and may take a variety of forms. Negative easements can effectively assist a community in protecting land from development by restricting all or a portion of the property to open-space or limited development uses. The granting of a conservation easement does not involve the transfer of ownership of the land; instead it means giving up certain development rights of the property. For example, a conservation restriction may limit the number of houses to be built upon a parcel, restrict development to specified types, or specify that portions of the parcel within sensitive areas will remain undeveloped in perpetuity.

Conservation Commission Policies

Local conservation commissions, in their role of implementing the Wetlands Protection Act, have significant land use responsibility. For example, they have the authority to protect critical wetland areas through local initiatives that assert their jurisdiction within the 100 ft buffer zone around wetlands. Conservation commissions can protect sensitive coastal wetlands by requiring strict standards within buffer areas. A buffer zone is extremely important for the protection of both wetland functions and wildlife habitat.

Neither state nor federal government has a setback requirement in its wetland regulations, but towns are permitted to adopt construction setbacks from wetlands. Some towns have adopted wetland setbacks of 25-50 feet and, in the case of Areas of Critical Environmental Concern, 100 ft. Others, such as Falmouth, have adopted regulations requiring new construction to provide at least 25 feet of vegetated buffer to the wetland. Most towns

on Buzzards Bay do not, however, have standard wetland setbacks, and thus must negotiate buffer zones on a case-by-case basis, and no automatic protection buffer exists.

Major Issues

The biggest challenge municipalities need to overcome is to rewrite laws and rules to better define what kind of new development and redevelopment the town wants, not to just define what is not allowed. Fundamental requirements like minimum road widths, parking space regulations, cluster development, transfer of development rights (TDRs), and changes in zoning need to be rethought to redefine the future character of communities to minimize per capita impacts associated with each new residential unit.

Among these, TDRs face the most obstacles, yet it also one of the most powerful tools because it offers opportunities to link to and solve other problems such as managing nitrogen loading through trading.

A nice summary of the obstacles and challenges offered by TDRs is provided by Hanley-Forde et al.³⁹ The authors note, "A TDR program, with its inherent goal of compensating landowners, is naturally more politically palatable than typical command and control zoning regulations. However, any kind of land use restriction generates controversy. Municipalities must build community support for the projects..... Successful TDR programs cannot be created by the will of an agency. Political legitimacy must be built over time. "

Management Approaches

Municipalities have the greatest capacity and responsibility for regulating and managing the impacts of future growth to minimize potential environmental impacts from that growth. Other levels of government need to support municipalities with technical and financial assistance programs, and where appropriate, must also change regulations and laws regulating new growth and redevelopment to both support smart growth principals, and to lead by example.

Regulatory strategies may include revisions to zoning bylaws, general bylaws, and local wetland regulations. However, a vision of smart growth strategies and goals must be included in long-term planning in documents like municipal master plans, open space plans, and municipal stormwater plans⁴⁰. Municipalities, together

with their partners need to educate the public of the benefits of smart growth techniques to help them encourage these ideas. Outreach should target developers as well.

Each municipality must decide which Smart Growth techniques work best for them, and implement those that best protect their critical resource areas and minimize growth impacts on water quality and habitat special to their community. Certain techniques, like cluster zoning, should be universally adopted. Others are more town specific. These efforts must involve the citizenry because they must often vote to support these changes. Where resources cross municipal boundaries (e.g., water supply areas), municipalities must think of creative ways of collaborating with neighboring towns.

Transfer of Development Rights (TDRs) and cluster development approaches need to be more widely embraced by municipalities. These approaches should not be cobbled together with density bonus incentives that negate the benefits of the TDR process. For the TDR process to work as desired, municipalities must identify sensitive resource areas (sending areas) and growth centers (receiving areas). Defining these areas is informed by science but must also incorporate political and economic concerns. The TDR approach can be adopted through both zoning and general bylaws. This process should include the identification of village growth center boundaries, revisions to zoning, and planning for appropriate wastewater infrastructure. Receiving areas should be able to accommodate sewerage and wastewater treatment goals and recommendations in Action Plan 6: Managing On-Site Wastewater Disposal Systems and Action Plan 7: Managing Sewage Treatment Facilities.

When properly managed, agricultural lands can have less impact on the environment than the same land used for residential or commercial development. For these reasons, existing farms in areas with good agricultural soils should be preserved. Government can help preserve existing farms for continued agricultural uses through tax policies and regulations, and in those areas with prime farmland soils, or soils of statewide importance (determined by USDA-NRCS), these can also be protected by the property owner for future generations through the state's Agricultural Preservation Restriction program. This approach is important because areas with good agricultural soils are in limited supply, and it would be unwise to direct growth to these areas through TDRs or other smart growth approaches. Maps of prime farmland soils should be included in municipal open space plans. Towns and the USDA should work with farmers to enact APRs on these properties.

Municipalities can further protect agricultural lands with buffer zones using mandatory (OSRD) zoning or

³⁹ J. Hanly-Forde, G. Homsy, K. Lieberknecht, R.Stone, (no date) Transfer of Development Rights Programs. Using the Market for Compensation and Preservation (no date). at <http://government.cce.cornell.edu/doc/html/Transfer%20of%20Development%20Rights%20Programs.htm>. Last access 18 July 2011.

⁴⁰ All Buzzards Bay municipalities have been issued a stormwater management permit by the U.S. EPA that requires the development and implementation of 5-year stormwater management plans

as part of the NPDES MS4 stormwater discharge permit. See Action Plan 3, managing stormwater discharges.

other appropriate land use techniques, including a required setback for residential structures of 200 feet from active cranberry bogs. These buffer zones protect residential areas from impacts of agricultural lands (e.g. human exposure from pesticide spray applications), and conversely minimize discharge of pollutants from development onto agricultural lands (e.g. runoff of pollutants).

The Commonwealth of Massachusetts should continue to provide assistance in the implementation of smart growth techniques by local government, and the adoption of those techniques by developers. EEA should be the lead, and the agency needs a continued commitment to this effort. For example, the agency's online Smart Growth Toolkit needs to be updated and better promoted, and training workshops should be held as has been done in the past. Populations have been leaving most cities to build new residences in neighboring towns, causing sprawl. EEA should fund projects through programs like PARCs⁴¹ to both make cities more desirable and livable while at the same time mitigating existing environmental impacts. DEP can implement similar efforts on a statewide basis, and CZM can have parallel elements that focus on issues of development along-shore.

Regional planning or regulatory agencies (SRPEDD and the Cape Cod Commission respectively) should provide technical assistance to communities in promoting smart growth incentives and assist communities in the development of regulatory amendments. In the past, both agencies promoted model bylaw and performance standards, such as how to limit impervious area and nitrogen-loading. These regional agencies should encourage towns to work together to develop inter-municipal resource management plans when watersheds or resources span municipal boundaries. Both regional agencies can provide important leadership and direction to the communities when they review state projects or development of regional impact, and it is important that comments on projects filed with the state MEPA office, include the protection of critical resource areas.

Both regional entities should help towns identify where growth centers should be located so that they are of sufficient size and density to make sewerage and wastewater treatment with municipal or package wastewater treatment facilities economical over onsite wastewater systems. As a regulatory agency, the Cape Cod Commission is in a better position to work with municipalities to encourage the use of such "growth incentive zones" to establish village centers and TDR programs.

The Buzzards Bay NEP should work with municipalities to develop and implement model bylaws and

local plans that incorporate smart growth techniques, such as transit oriented development and traditional neighborhood design as part of TDRs, nitrogen management overlay districts, and transfer of development rights. Specifically NEP staff can work with municipal staff and boards to develop policies, regulations, and bylaws for town meeting or board meetings where applicable. The BBNEP can prepare some of the necessary outreach materials and maps for municipalities and other partners.

The Buzzards Bay Action Committee can be a forum for the exchange of smart growth approaches, through meetings and workshops. Citizen groups must help educate the public and mobilize town meeting support for appropriate local legislation and regulations.

Only one Buzzards Bay town (Bourne) has a state-designated Area of Critical Environmental Concern (ACEC). The Town of Bourne could develop a management plan for the Back River and Pocasset River ACECs, and in that management plan, incorporate LID principals, or use the watershed as a sending areas for a TDR process. The state could support such an effort through grants, and by mandating local and regional ACEC management plans as required by existing regulations.

The Buzzards Bay Coalition can play an important role in promoting smart growth through public outreach and education to residents about smart growth techniques, and by providing continuing credit courses for town officials.

Industry groups, like the Massachusetts and Cape Cod Homebuilders Associations should also promote Smart Growth techniques through training and other education programs. These associations appreciate and understand the benefits of LID and smart growth techniques, including potential financial savings they provide. They need to more actively promote these concepts to their membership and in support of local law and regulation change.

Financial Solutions

Many of the necessary regulatory changes to implement this action plan have negligible cost to government. More importantly, many smart growth approaches also reduce costs to developers and in the end, reduce tax burdens to residents because of lesser infrastructure costs.

Modest technical assistance and outreach programs by the state will cost a few hundred thousand dollars. State grants could assist with the development of open space and municipal master plans. The greatest cost, and one largely hidden, is the cost to hire professionals to review the large and complex projects to ensure conformance with state and local laws. Often municipal boards already have authority to pass these costs on to the de-

⁴¹ The Parkland Acquisitions and Renovations for Communities grant program (\$6.7 million in 2010) and the Gateway City Parks Program (\$2.0 million in 2010) are two EEA grant programs focused on urban centers that can be used to leverage local action.

veloper, but are often reticent to request the additional review for political reasons.

Monitoring progress

Measuring the success of this action plan involves tracking the implementation of programmatic measures such as adoption of laws and regulations that achieve the goals of this action plan. Because this action plan attempts to lessen impacts of new development, no environmental outcomes can be tracked to define success.

This is because broad measures would be needed to evaluate whether environmental degradation is occurring at a slower rate than without smart growth measures in place, and these environmental measures would need to separate out the effects of environmental restorations projects that may be occurring in the same watershed. Answering these questions are beyond the capabilities of current ecological models and approaches.