Sustainable Communities: Strategies to Encourage Green Development

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HELPING PEOPLE HELP THE ENVIRONMENT

Purpose

- Stormwater and Community Design: Issues
- Local Codes, Ordinances, Laws
- Troubleshooting
- Case Study

Our Programs

- Sustainable Communities Program and Green Neighborhoods (multiple properties)
- Cooperative Sanctuary Program (single property)
- Signature Program (new design)

<u>Certification:</u>

1. **Assess**
2. **Plan**
3. **Report**
4. **Measure**

Sustainability Indicators: Focus Areas

1. Agriculture
2. Economic Development/Tourism
3. Education
4. Environmental issues
5. Governance
6. Public Health
7. Housing
8. Open Space and Land Use
9. Planning, Zoning, Building and Development
10. Population
11. Public Safety and Emergency Management
12. Recreation
13. Resource Use (water, energy, waste)
14. Volunteerism and Civic Engagement
15. Transportation

Three groupings

- Economic
- Social
- Environmental

Rural Stormwater Issues: Why?

- CSO! Old systems are costly to maintain and costly to redo
- Impacts from building out, retrofitting, and associated development can cause expensive disturbances
- Impervious surfaces lead to flooding, but that's the way most communities were planned
- Severely degraded water systems
- Two general "types" of communities- those that have the flexibility to build out, and those that have to find **cost-effective retrofit solutions**

Rural Water Issues

The Goal of Stormwater Management is to ensure that the quality and quantity of stormwater runoff after development are not substantially altered from pre-development conditions.

What is an MS4?

MS4 = Municipal Separate Storm Sewer System

- "A conveyance or system of conveyances owned by a State, City, Town, Village, or other public entity that discharges to the Waters of the United States and is:
- designed or used to collect or convey stormwater (includes gutters, pipes, ditches)
- NOT a combined sewer
- NOT part of a Publicly Owned Treatment Works (ie. sewage treatment plant)"

Regulatory Requirements and Guidance

EPA (6 Minimum Requirements for MS4)

. *While the benefits of green infrastructure are increasingly understood, incorporating green retrofits into municipal infrastructure has presented institutional and regulatory challenges. The solutions to overcome these barriers are often dependent upon the water quality objectives and technologies employed*

NYSDEC (state): techniques

- Naturalized areas: buffer zones, swales, conservation areas, tree areas
- Rooftop runoff control
- Rain gardens, barrels, and cisterns
- Green Roofs
- Stream flow (daylighting)
- Pervious surfaces
- Stormwater planters

Barriers- Rural Green Infrastructure

- Most counties/ regions are not legislatively authorized nor funded sufficiently to establish their own stormwater management commissions or agencies
- Lack of long-term performance data in diverse soils and northern climates during winter months
- More specific guidance needed on long-term BMP maintenance practices and costs
- Concern with groundwater contamination risks caused by stormwater infiltration
- Aesthetics of native plants in rain gardens/swales

University of Illinois at Chicago, 2010

Study on Municipal Codes: Barriers

- Permitting Fees and Processes
- Zoning
- Management: Aesthetics and Social Norms
- Planning: “Devil’s Density”; individual property rights
- Codes: protecting health/ safety seemingly at odds with green infrastructure
- *Misconceptions about Economic Development*

- 1982 –2001 34 million acres of open space converted to developed land
- 2030 projections –additional 26 million acres to be developed

Lower Construction Costs
Higher Lot Yield

	Conventional	Low Impact
Grading/Roads	$569,698	$426,575
Storm Drains	$225,721	$132,558
SWM Pond/Fees	$260,858	$ 10,530
Bioretention/Micro	—	$175,000
Total	$1,086,277	$744,663
Unit Cost	$14,679	$9,193
Lot Yield	74	81

Findings:

- States should adopt a set of flexible stormwater volume retention performance standards (e.g., requiring that the first inch or half-inch of stormwater be retained on-site) that varies according to conditions at a particular site
- Standards should be phased in
- Standards should apply to *public* as well as private development
- States should develop guidance for prioritizing and funding projects
- Costs of constructing should be borne by private landowners (same as with conventional collection and detention systems)
- Residual runoff should be managed by local governments using a fee/ credits system
- *Counties and regional entities should be given resources and tools to provide education and training*

Municipal To Do List

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1. Demonstration Site

2. Check Municipal Policies

Zoning Bylaw and Site Plan Review Standards:

- Dimensional Requirements
- Open Space Developments
- Parking Requirements
- Common Driveways
- Site Plan Requirements

Subdivision Rules and Regulations/Roadway Design Standards

- Street Location
- Street Cross Sections
- Site Work
- Dead Ends
- Board of Health Bylaw and Regulations
- Wetlands Bylaw and Regulations
- Department of Public Works/Building Inspector

3. Review Innovative Options & Regional Limitations

What are the options? State, regional, local funding & guidance

Stormwater Bylaws; Stormwater Utilities; Financial and Timeline Incentives

Site design credits act as an incentive to developers, designers, and builders to implement better site design and low impact development techniques that can reduce the volume of stormwater runoff, preserve natural areas, and minimize the pollutant loads from the site. Credits allow developers to reduce or eliminate requirements for Recharge, Water Quality, Channel Protection, and Flood Control in exchange for implementation of these non-structural site design elements.

Weather/ Climate Restrictions, Aesthetics, Commonly held beliefs about Health and Economic Impacts

4. Update Local Regulations

- To Protect Critical Resource Areas: conservation easements & land acquisitions, conservation overlay districts
- To Ensure Innovative Land Use: environmental characteristics zoning, requiring or providing incentives for cluster or conservation developments, specific minimum site design standards, update master plan, fast track innovative projects
- To Encourage Retrofits: use other incentive tools (taxes, fees) for homeowners and businesses, sponsorship

1. CASE STUDY: Demonstration Site

Benefits: education, technology trial, central physical location for encouraging partners and resources

Examples: Rain Garden, pervious parking spaces, All weather Cistern, eco-swale, no-mow zone

2. CASE STUDY: Policies

- Establish criteria for the design of roadside swales to ensure adequate Stormwater treatment and conveyance capacity.
- Permit placement of utilities under the paved section of the right of way or immediately adjacent to the road edge (so that the land adjacent to the roadway can be used for swales.)
- Permit use of permeable paving for road shoulders/parking lanes in residential neighborhoods, with use of conventional paving for travel lanes only.
- Permit the use of permeable paving for sidewalks.
- Permit sidewalk placement on one side of the street only in low-density residential neighborhoods.

3. CASE STUDY: Troubleshooting

"We can't do that in Michigan because of the weather!"

"There will be rats and snakes that eat my kids."

"I can barely pay my mortgage, and now you want me to do what?!"

EDUCATION!

The only way to combat limitations with green design techniques is through education!

3. CASE STUDY: Troubleshooting

Weather/ Cold Climates:

- Bioretention Area
- Rain Barrels and Cisterns
- Permeable Paving
- Roadway and Parking Lot Design
- Vegetated Swales

3. CASE STUDY: Troubleshooting

Health Concerns:

- Standing Water
- Naturalized Areas
- Impeding EMTs, Firetrucks
- Driving Conditions
- Drinking Water
- Personal Health Hazards (getting hurt on even surfaces)
- Handicap accessibility

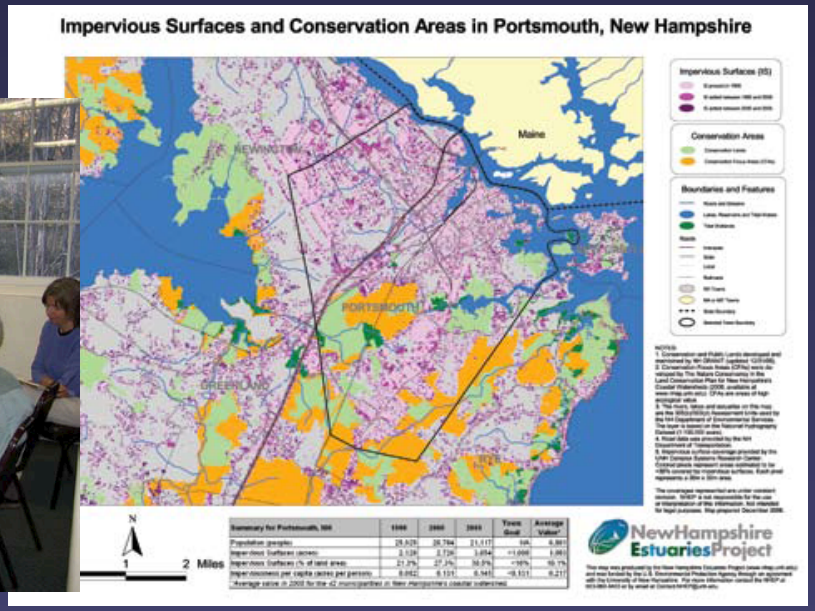
3. CASE STUDY: Troubleshooting

Economics:

- Process for developers is too costly
- Process for municipalities is too costly: public works departments, building inspectors, new municipal facilities
- Hindering economic development by stringent regulations
- Requiring retrofits could hurt small businesses or push larger ones out
- Homeowners can't afford it

4. CASE STUDY- Updating Plans and Codes

- Start small, build complexity
- Map it out
- Reflect community values and direct growth patterns
- Policies to affect policies



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