Birds of the Massachusetts Woodlands:

Climate change, smart development, and your community

Mass Audubon

Shaping the Future of Your Community

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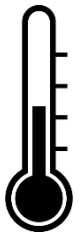
Outline

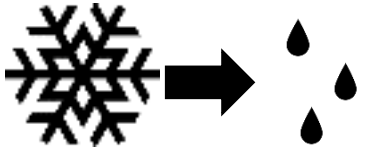
- Climate change & development
- Benefits of forests & nature based solutions
- Resources
- What you can do

Key Observed Climate Changes in MA

Temperature: ↑ **2.9°F** Since 1895

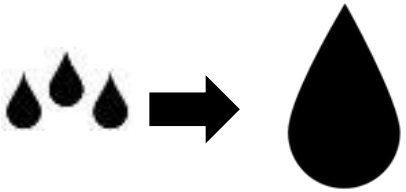


Growing Season: ↑ **11 Days** Since 1950



Sea Level Rise: ↑ **11 inches** Since 1922

Strong Storms: ↑ **55%** Since 1958



Recommended resource: massaudubon.org/climate

How Much More Precipitation?

Total annual precipitation has increased by:

15%

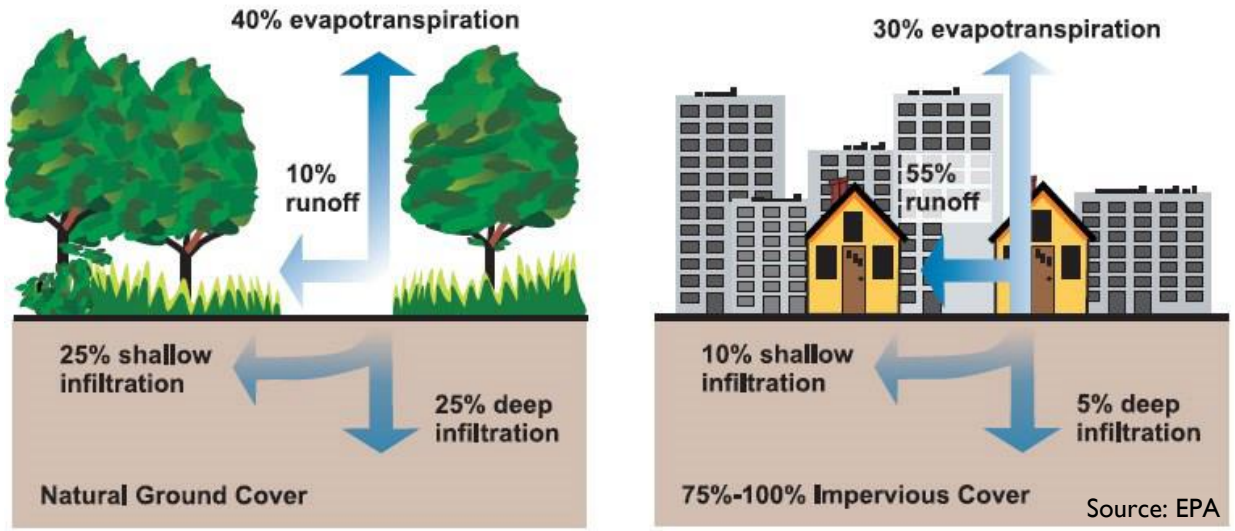
1.2 trillion more gallons **of water or equivalent snow falling on Massachusetts each year.**

~9,700 filled Prudential Towers

Changes are calculated from a linear regression of annual totals from 1895-2015, 1901-2000 reference period.

Source: NOAA

What's the problem?



Impervious surface → **Runoff** →

Climate change

Sprawling Development

increased precipitation

increased temperature

impervious surfaces

stormwater & WQ issues

flooding & infrastructure damage

heat stress people/wildlife

cooling centers, mitigation

There are real solutions.

One of the best adaptation practices is preserving natural areas.

Climate Hazards

Nature-based solutions

Open space preservation

Ecosystem restoration

Low Impact Development

Local benefits

Avoided Costs

Enhanced Safety

Environmental Services

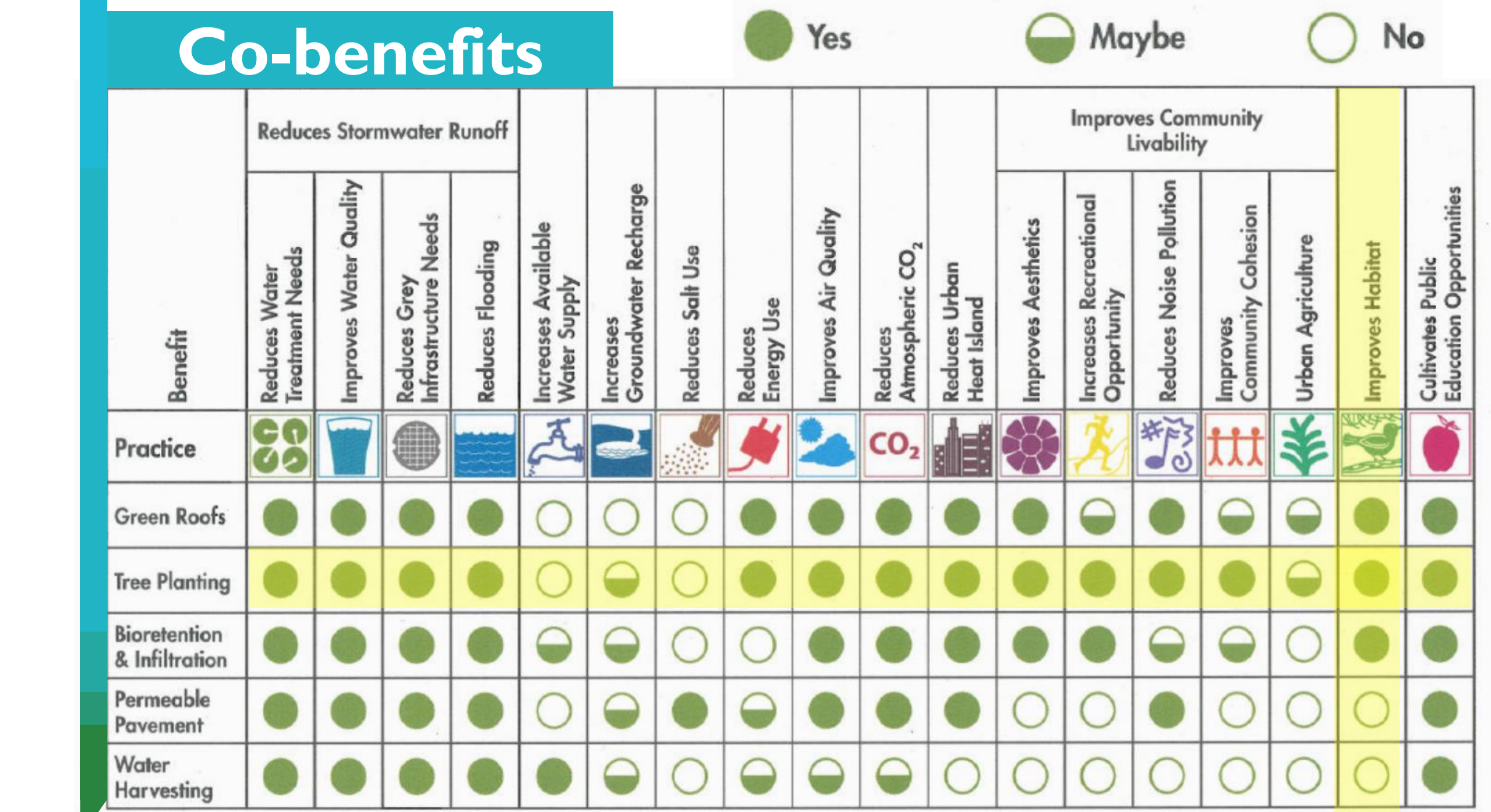
Nature-Based Solutions

Nature-Based Solutions *use* natural systems, *mimic* natural processes, or *work in tandem with* traditional approaches to address natural hazards like flooding, erosion, drought, and heat islands.

Green Infrastructure

Low Impact Development (LID)

Co-benefits



Source: Center for Neighborhood Technology's The Value of Green Infrastructure

Nature based solutions at every scale
Rural, suburban, or urban

Conserve available open space providing ecosystem services

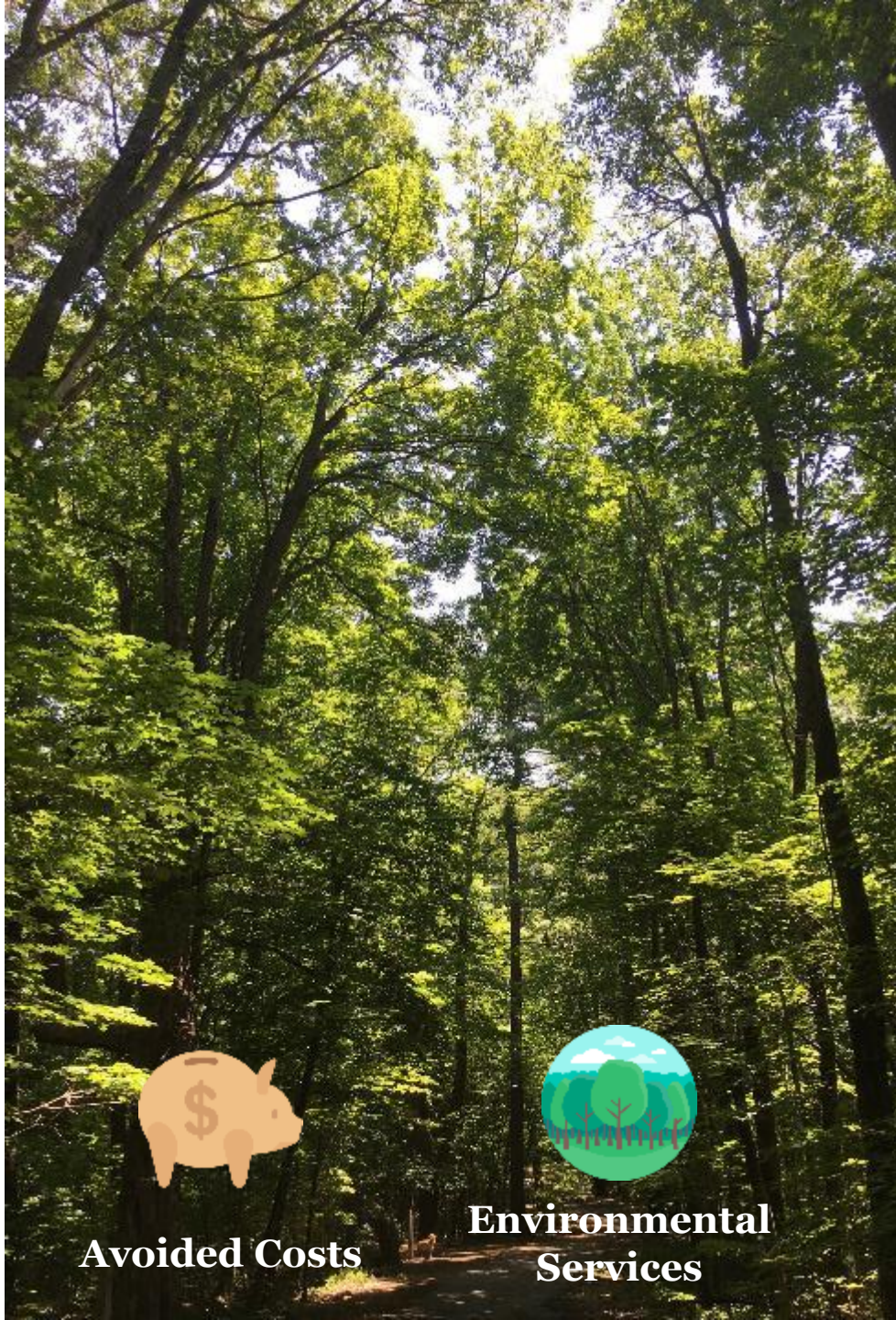
Integrate low impact development (LID) designs into new development at neighborhood scales

Restore resilience in urban areas at site specific scale

Return on Investment Studies in MA: Trust for Public Land

- Outdoor recreation generates:
  - $10 billion in consumer spending
  - $739 million in state and local tax revenue
  - 90,000 jobs
  - $3.5 billion in annual wages and salaries
- Agriculture, forestry, commercial fishing, and related activities generate:
  - $13 billion in output
  - 147,000 MA Jobs

Conservation Projects Return $4 : $1 spent



Preserve Services

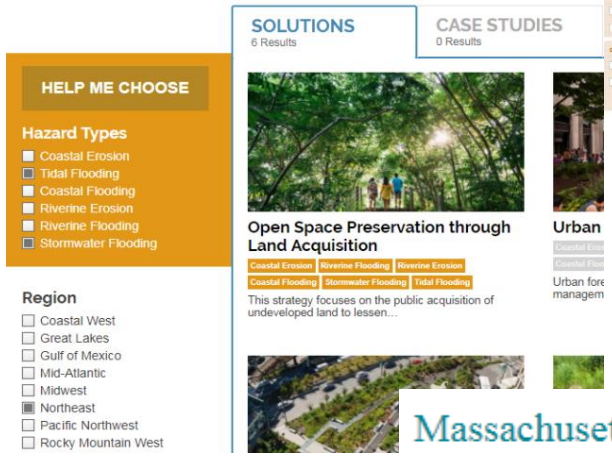
Massachusetts Forests Mitigate Climate Change

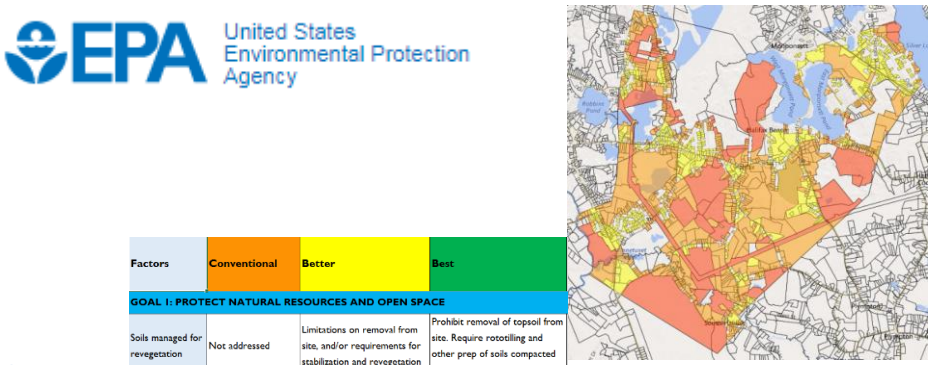
- MA forests **sequester 14%** of the state's gross annual carbon emissions
- Average acre stores **85 tons carbon**
- Capacity **increases** over time as forests mature

Environmental Services

Six Resources for Nature-Based Solutions

1. **Forest Resilience:** [Increasing Forest Resiliency]
2. **Solutions and case studies:** [Naturally Resilient Communities]
3. **Wildlife & climate:** [Climate Action Tool]
4. **Compare cost & benefits:** [EPA's GI cost/benefit]
5. **ID Local conservation priorities:** [Mapping and Prioritizing Parcels for Resilience (MAPPR)]
6. **Encourage NBS in local regulations:** [Supporting LID in Local Land Use Regulations]



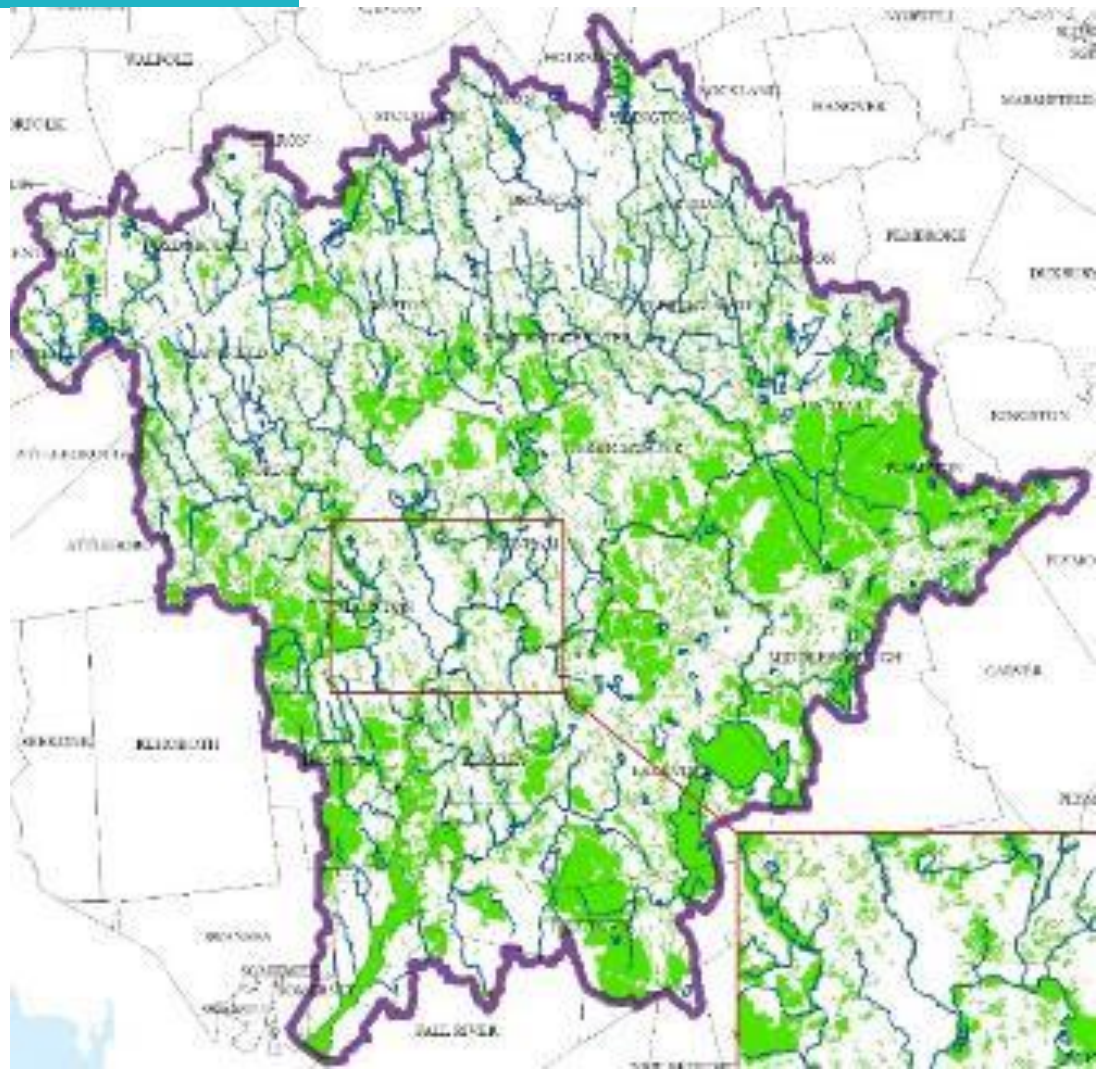


Factors	Conventional	Better	Best
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE			
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed or general qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards
Require native vegetation and trees	Require or recommend invasives	Not addressed, or mixture of required plantings of native and nonnative	Require at least 75% native plantings

Linking Priorities: Local & Regional Conservation

http://www.srpedd.org/rtwn

- Tools
  - MAPPR
  - GI Network in Taunton watershed
  - Planning documents: comprehensive plan, open space plan, OS residential development
- Consider
  - Climate change resilience
  - Bird & wildlife habitat
  - Community impacts



Municipal Vulnerability Preparedness (MVP)

"...strategies that conserve and sustainably employ the natural resources of the Commonwealth to enhance climate adaptation, build resilience and mitigate climate change..."

1. Engage Community
2. Identify CC impacts and hazards
3. Assess vulnerabilities & strengths
4. Develop and prioritize actions
5. Take Action

www.mass.gov/municipal-vulnerability-preparedness-program

5 things you can do

1. **Be an** MVP community & participate in the stakeholder process

2. **Talk about** climate change and nature based solutions

3. **Join** Mass ECAN's community of practice on ecosystems & climate adaptation

4. Consider regional priorities, climate change, and co-benefits of stewardship & conservation

5. **Vote** in local, state, and federal elections to promote candidates that support climate smart solutions and funding

Thank you!

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