

A scenic landscape photograph of a lake at sunset. A large, dark tree trunk and its branches with green leaves frame the left and top of the image. The lake is calm, reflecting the orange and yellow light of the setting sun. A dense line of trees forms the far shore. The sky is a clear, pale blue.

# What Does Regional Resilience Look Like?

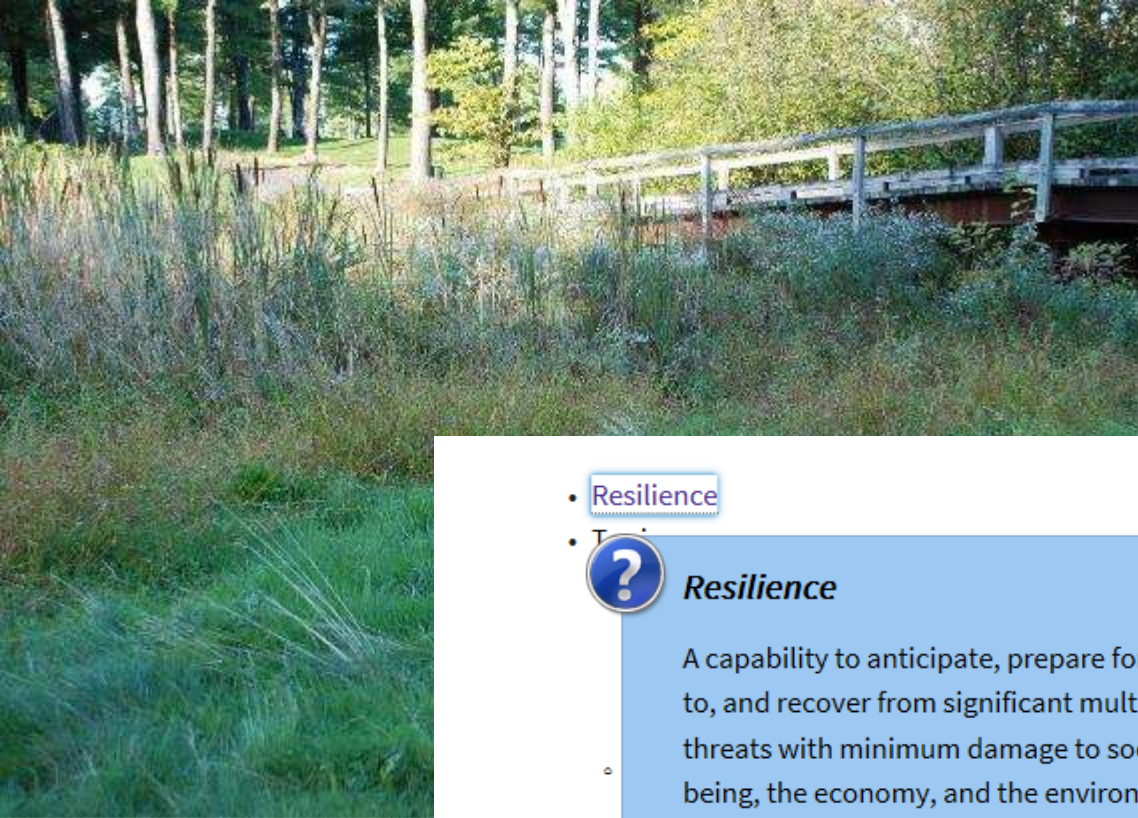
Regional Conservation Partnership Network Gathering  
Nashua, NH, November 16, 2017

Trish Garrigan, EPA and Stefanie Covino, Mass Audubon

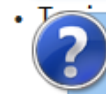
# Outline of Session

- **Part 1 – What and Why?**
  - Why do we need to be resilient?
  - What do we mean by “regional”?
  - What does regional resilience look like? – small groups
- **Part 2 – What’s Working**
  - Resilient Taunton Watershed Network
  - Learning from other RCP efforts
  - What is working?
- **Part 3 – Moving Forward**
  - Main barrier? – show of hands
  - Actions to move toward regional resilience – small groups by S,M,L
  - Role for RCPs?
  - What is next?





- **Resilience**



### *Resilience*

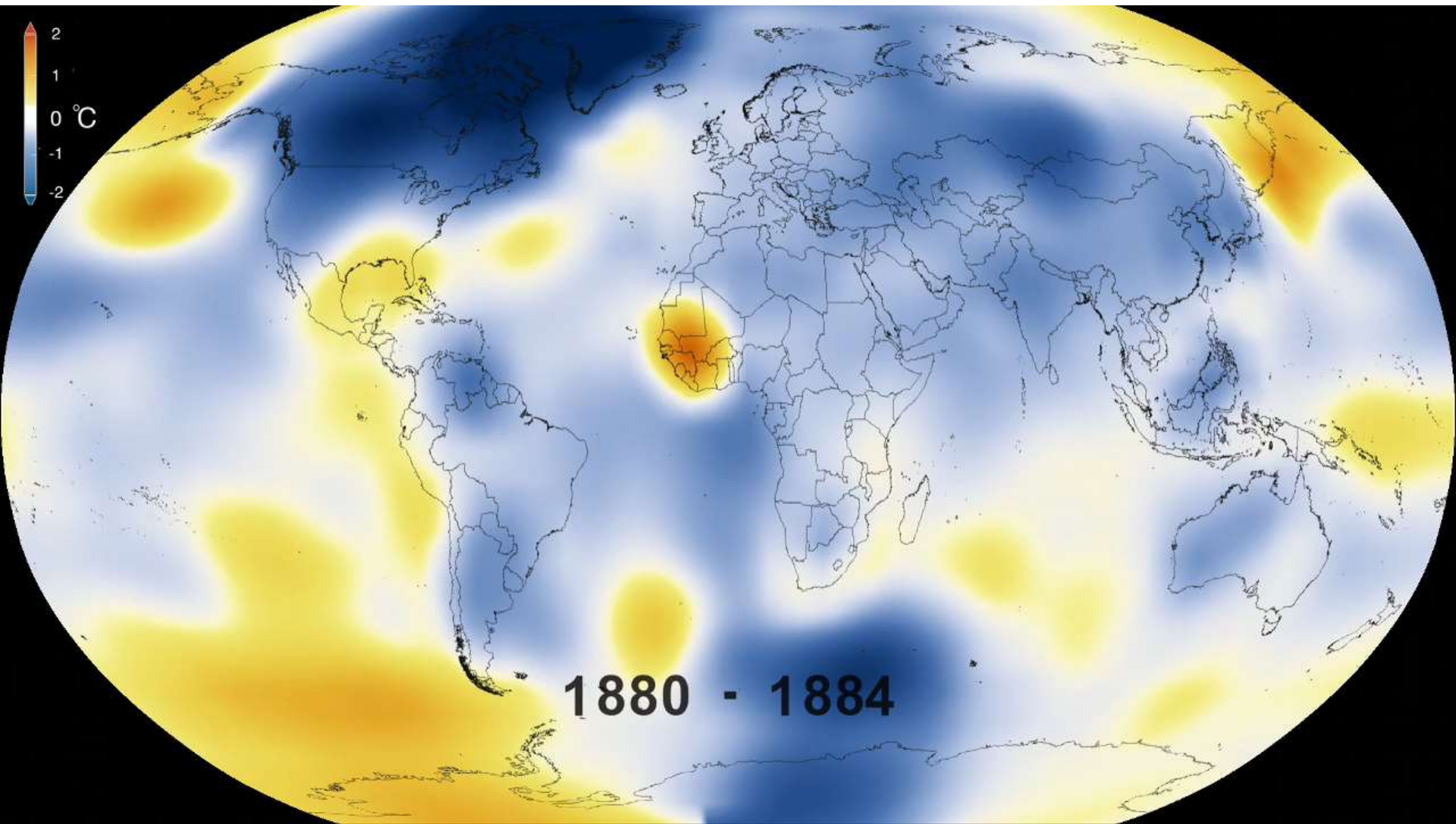


A capability to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy, and the environment.





# Observed Change: Temperature

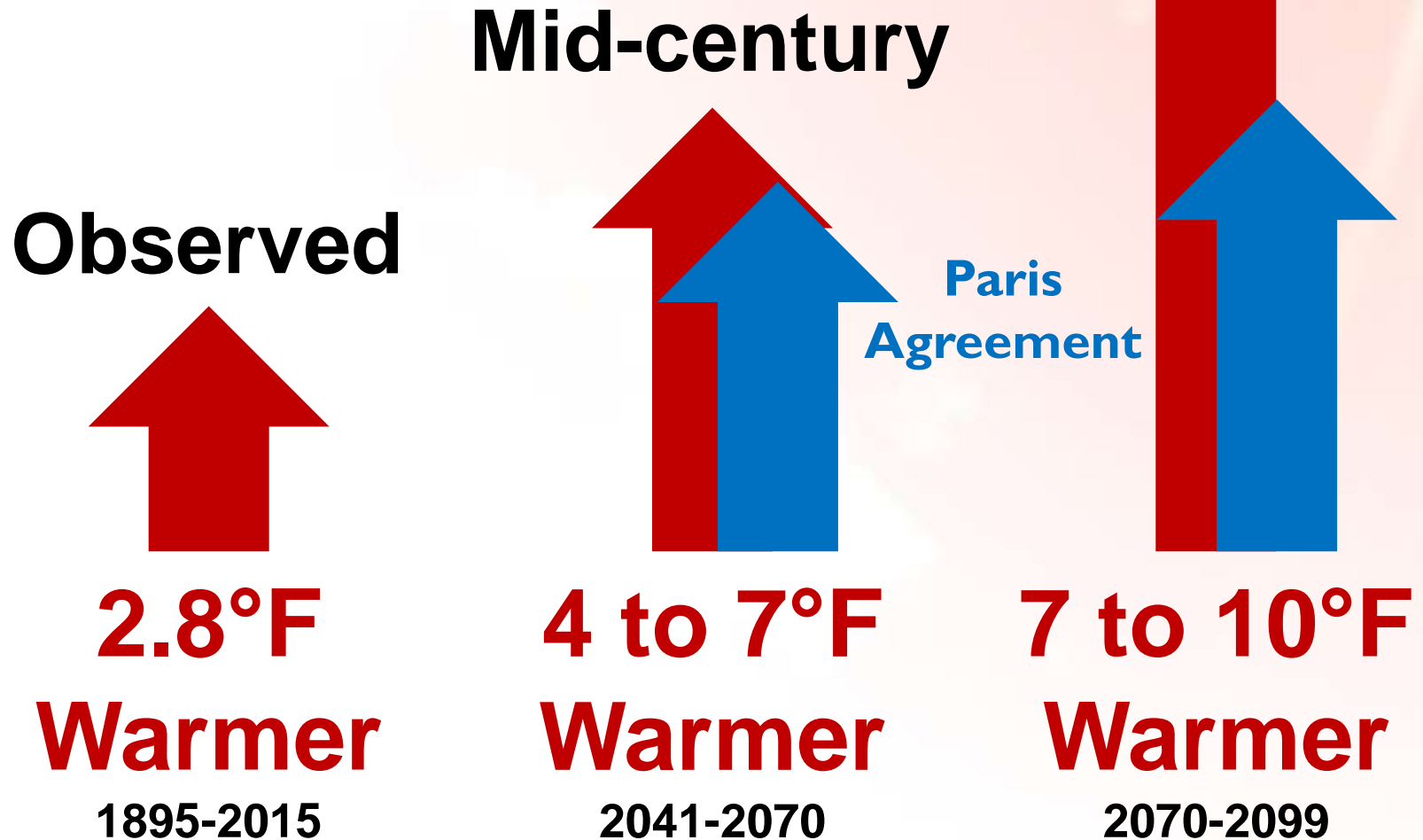


# What's in a degree?

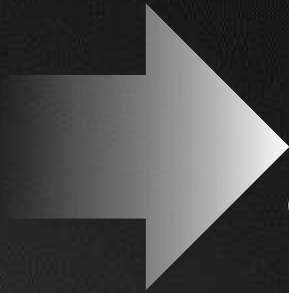


During the last ice age, temperatures were 9°F cooler than today.

# Rising Temperatures in Massachusetts



**More  
evaporation**



**More  
fuel for storms**



**More  
precipitation**

**More  
Heat**





# More Precipitation

**Total annual precipitation  
has increased by:**

**15%**

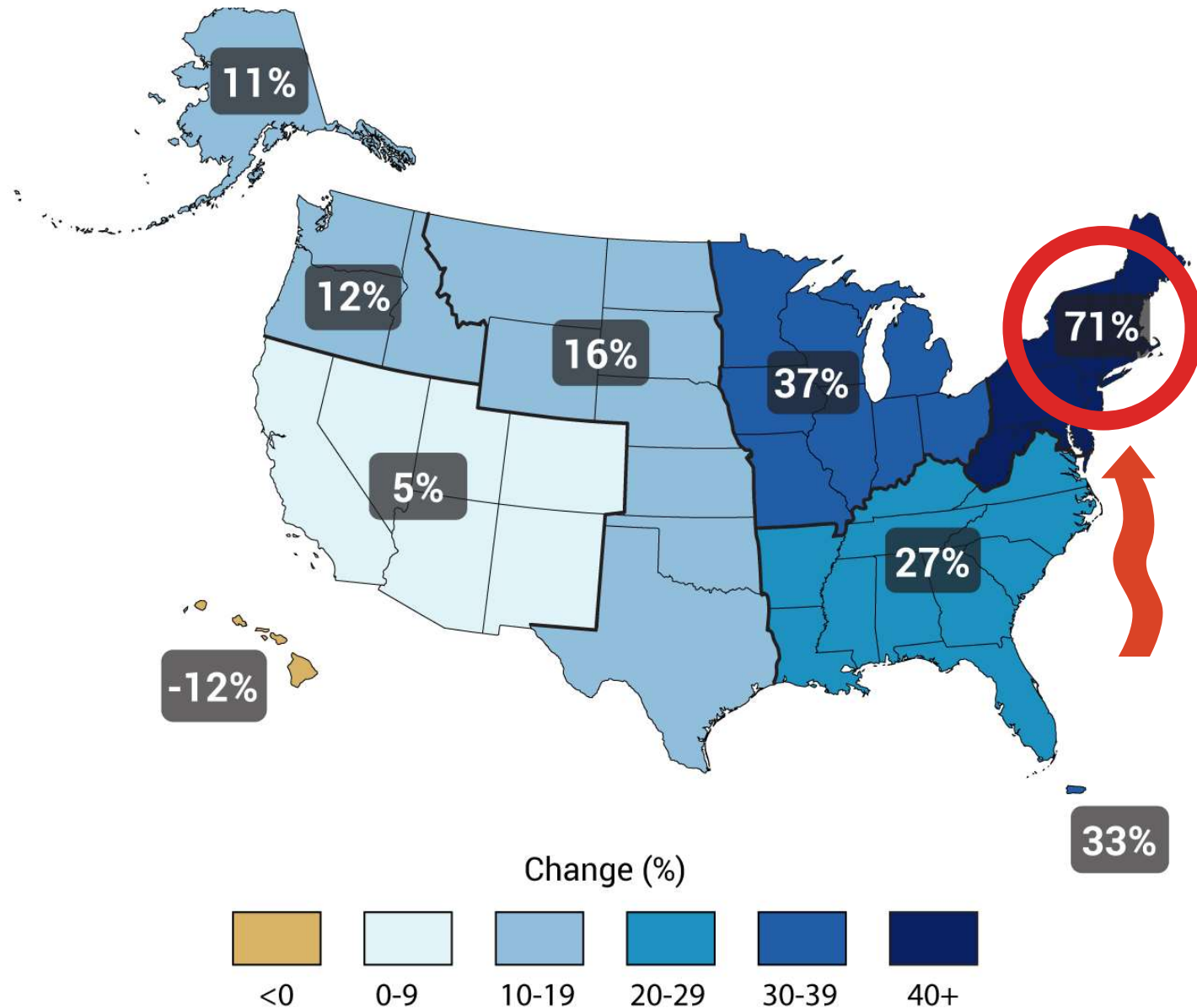
***1.2 trillion more gallons of  
water or equivalent snow falling  
on Massachusetts each year.***

***~9,700 filled Prudential Towers***





# Increase in Extreme Precipitation 1958-2011





**Route 107,  
Stockbridge, VT  
August 29, 2011**







**Edward Augustus, Jr. Worcester City Manager,  
Quinapoxet Reservoir  
September 6, 2016 (Boston Globe)**



# Devastating floods in recent years



Source: U.S. Army National Guard photo by 1st Sgt. Don Veitch,  
Massachusetts National Guard Public Affairs



Coastal flooding in  
Scituate, MA after winter  
storm Juno, Jan 2015



Taunton River flood in  
Taunton MA, March 2010

Floodwaters in Shelburne,  
MA after hurricane Irene,  
Aug 2011

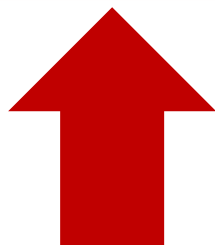


Source: <http://solutionaries.net/>



# Key **Observed** Climate Changes in MA

Temperature:

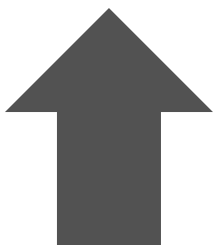


**2.8°F**

Since 1895

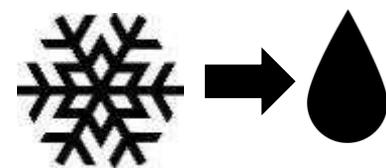


Growing Season:

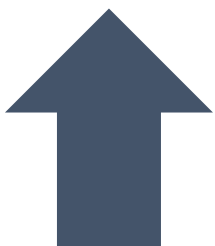


**10 Days**

Since 1950

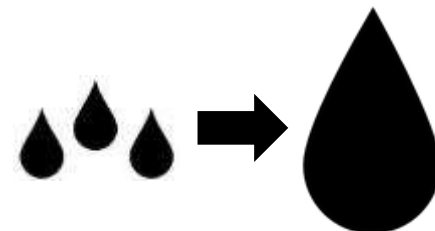


Strong Storms:



**71%**

Since 1958



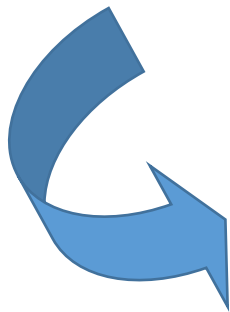
**How is this for  
adaptation...**

do

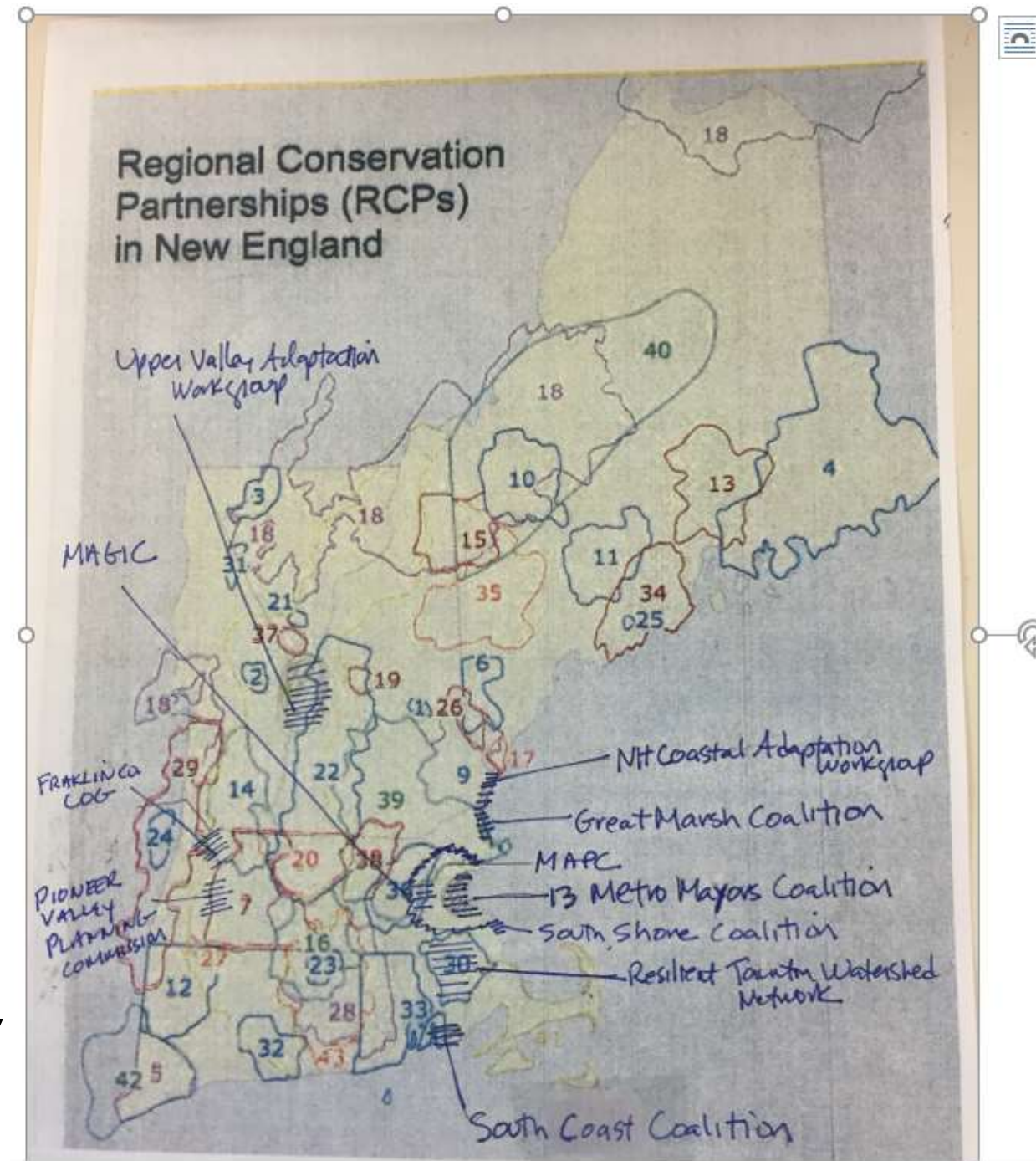
what you can

with

what you've got



**And  
probably  
many  
more....**





The best way to predict the future,  
is to create it.

- Peter Drucker



**What does regional resilience look like?**

**Can we paint the picture?**

**What do you see?**

**How are people interacting?**

**How are decisions made?**

**What is different?**

**What is happening?**



# Part 2: What's Working

- Resilient Taunton Watershed Network
- Learning from other RCP efforts
- What is working?



# A Recipe for Effective Collaboration and Resilience

## What are the key ingredients, the special sauce ?

- Listen and learn attitude
- Cultivate and build relationships
- Take time to understand and communicate
- Respect differences and build trust
- Manage expectations
- Leverage resources
- Shared goal or common vision
- Seeking win-win-win solutions



A collaborative process involves a synthesis of different perspectives to better understand complex problems.  
We need good collaboration now more than ever!



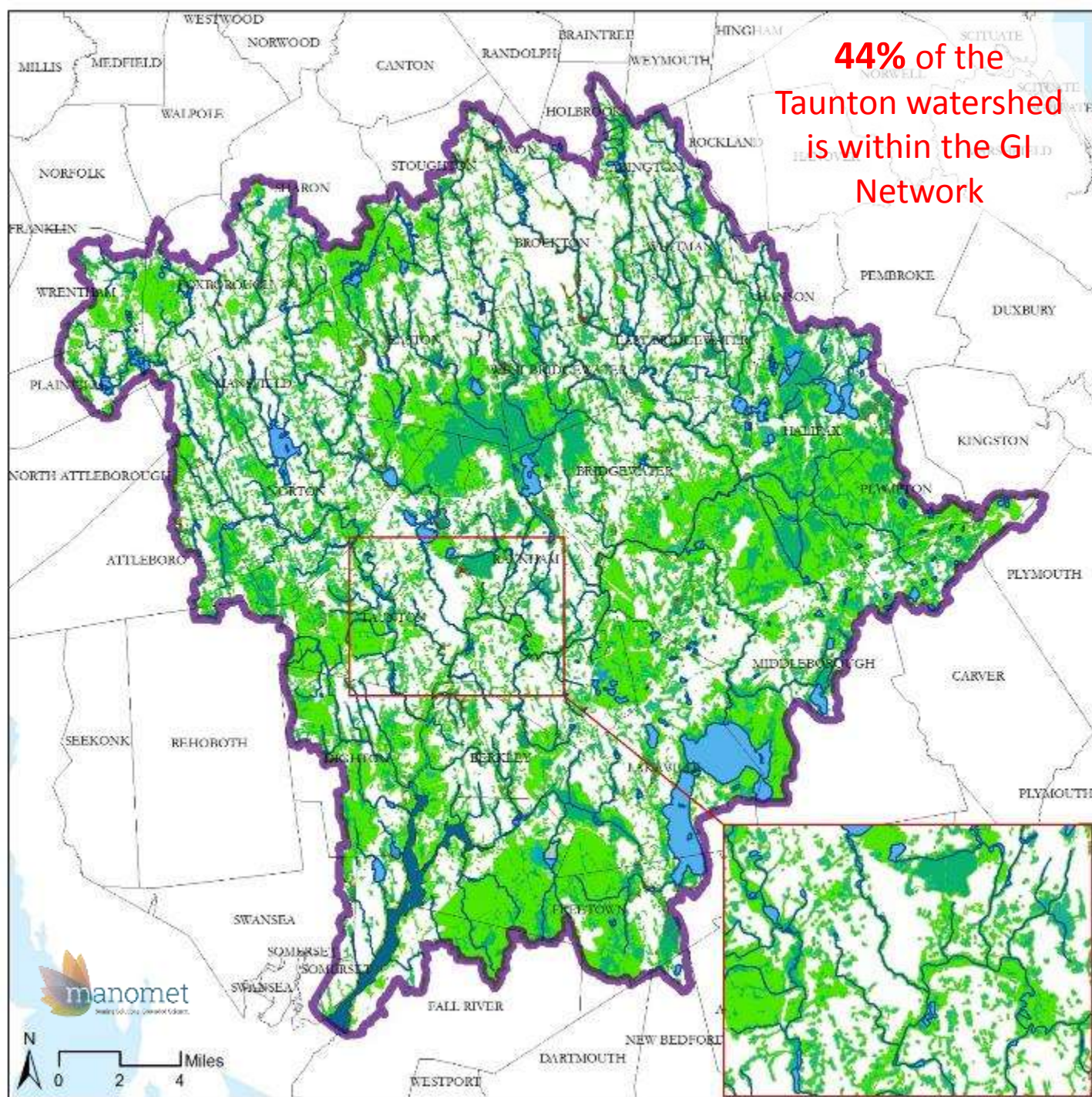
# Taunton Watershed Green Infrastructure Network

## Legend

- Green
- Infrastructure Network
- 100-yr and High Risk Coastal Flood Areas
- Town Boundaries
- Taunton Watershed Boundary
- Major Streams

## Surface Waters & Wetlands

- Freshwater Pond, Lake, or Stream
- Freshwater Wetland
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Other





# Taunton Watershed Undeveloped & Unprotected Green Infrastructure Network

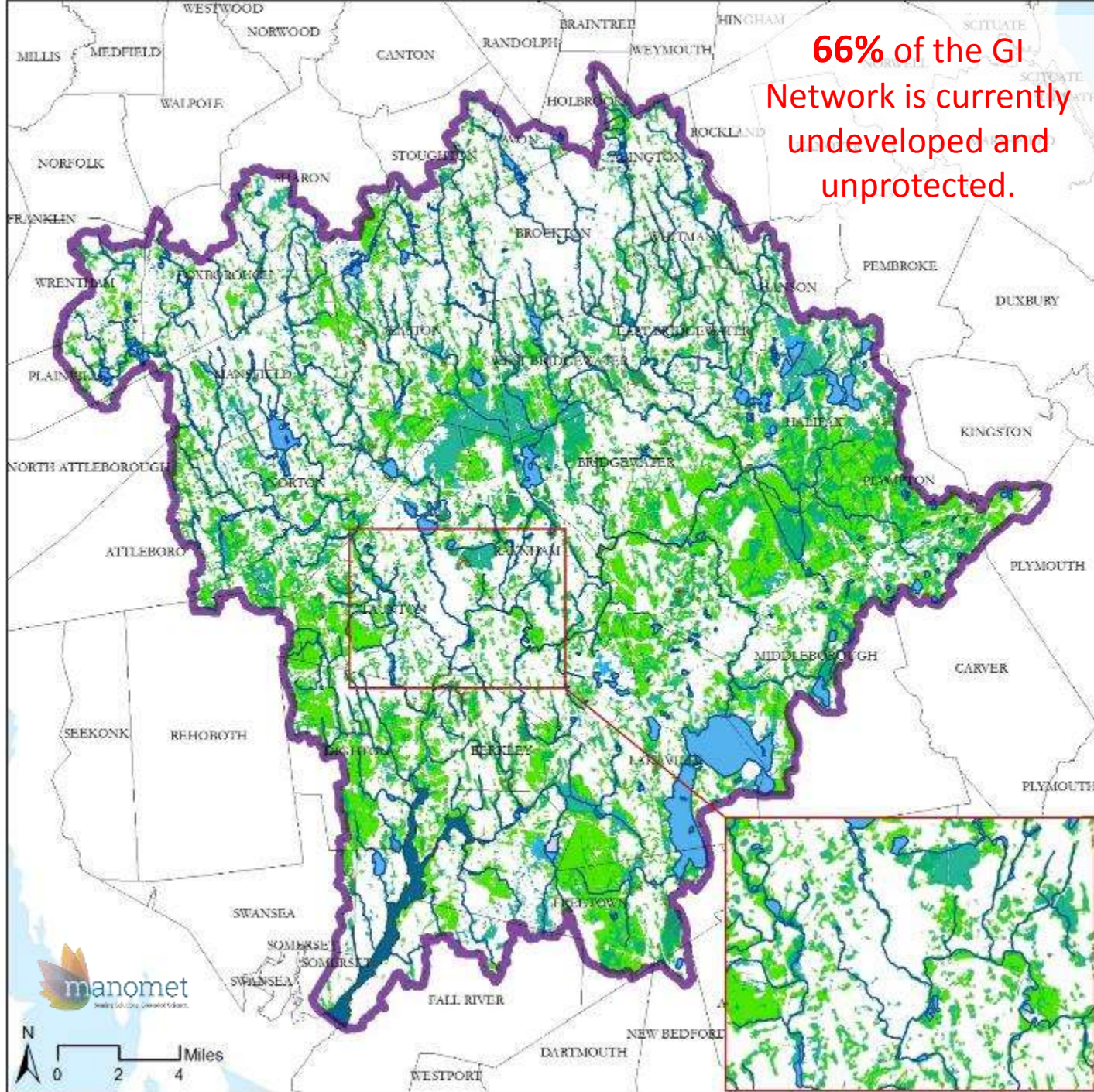
**66% of the GI  
Network is currently  
undeveloped and  
unprotected.**

## Legend

- Undeveloped and Unprotected Green Infrastructure Network
- 100-yr and High Risk Coastal Flood Areas
- Town Boundaries
- Taunton Watershed Boundary
- Major Streams

## Surface Waters & Wetlands

- Freshwater Pond, Lake, or Stream
- Freshwater Wetland
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- Other

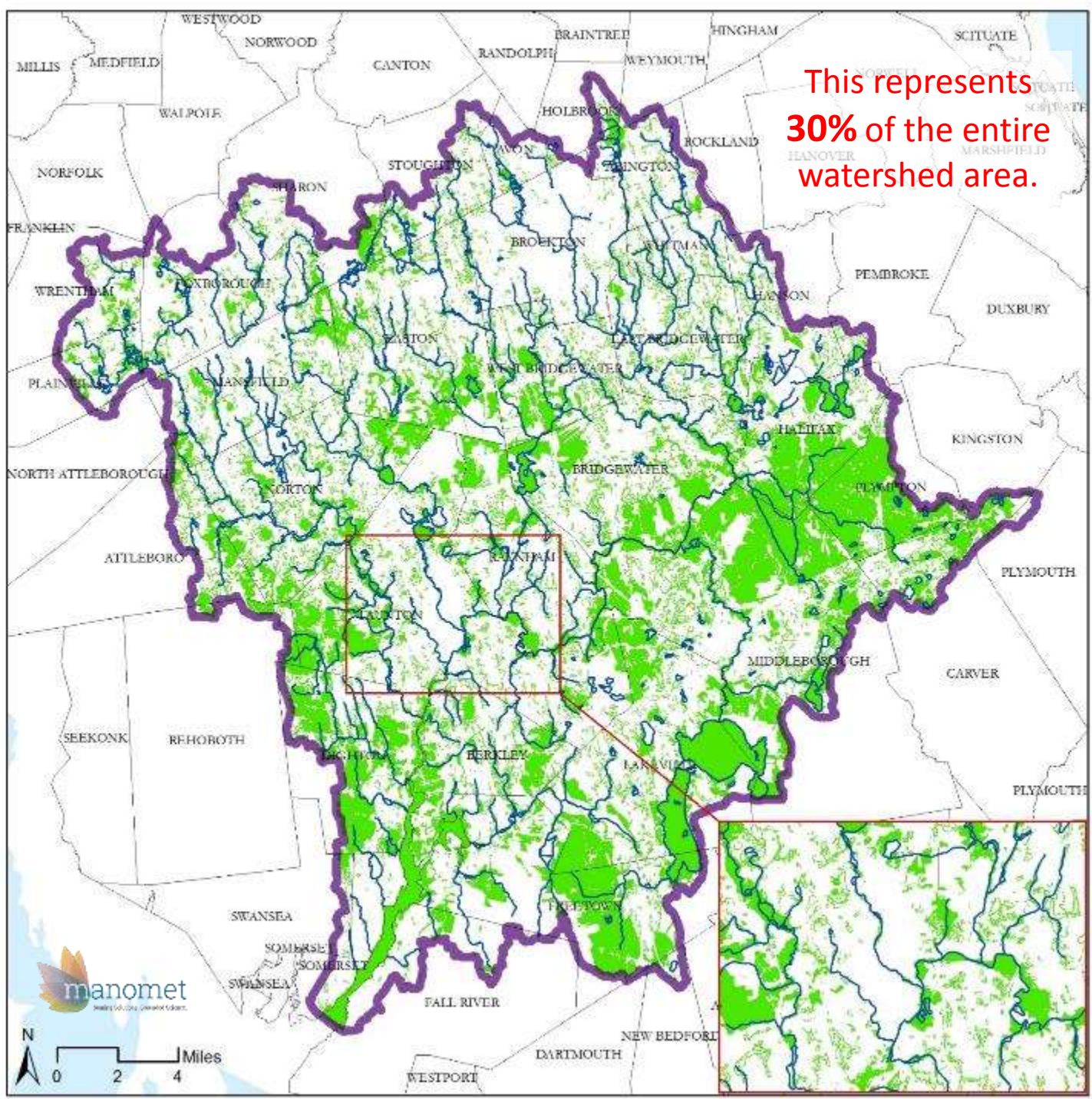




# Taunton Watershed Undeveloped & Unprotected Green Infrastructure Network

This represents  
**30%** of the entire  
watershed area.

- Legend**
- Undeveloped and Unprotected Green Infrastructure Network
  - Town Boundaries
  - Taunton Watershed Boundary
  - Major Streams



# Resilient Taunton Watershed Network (RTWN) Project Partners





# RTWN: Who we are & our goals

Formed in 2014, we're a **collaboration** of local, non-profit, regional organizations, and state and federal government representatives who care about the future health and resilience of the Taunton River Watershed **and believe that ecological and economic resilience go hand in hand.**

- ✓ **Promote environmental, economic, and social resiliency**
- ✓ **Provide education and resources to local officials and residents**

[srpedd.org/rtnw](http://srpedd.org/rtnw)

# RTWN Members

Bridgewater State University

Horsley Witten Group

Manomet Inc.

MA Department of Environmental  
Protection (DEP)

MA Division of Ecological Restoration  
(DER)

MA Executive Office of Energy and  
Environmental Affairs (EEA)

Mass Audubon

Metropolitan Area Planning Council  
(MAPC)

Narragansett Bay Estuary Program

The Nature Conservancy (TNC)

Old Colony Planning Council (OCPC)

Save the Bay

Southeastern Regional Planning and  
Economic Development District  
(SRPEDD)

Taunton River Watershed Alliance  
(TRWA)

Tighe & Bond

US Environmental Protection Agency (EPA)

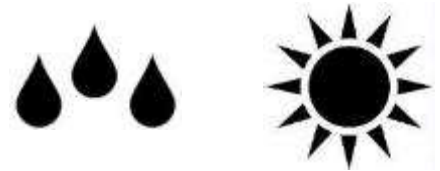
National Park Service

Wildlands Trust



# Goal: Maximize the benefits provided by intact, healthy ecosystems

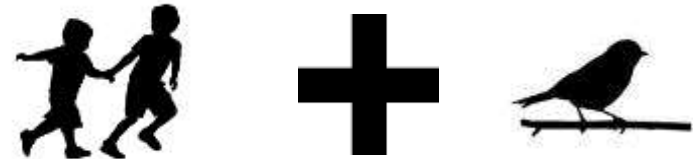
- Climate change resiliency



- Control of tax burden and infrastructure costs



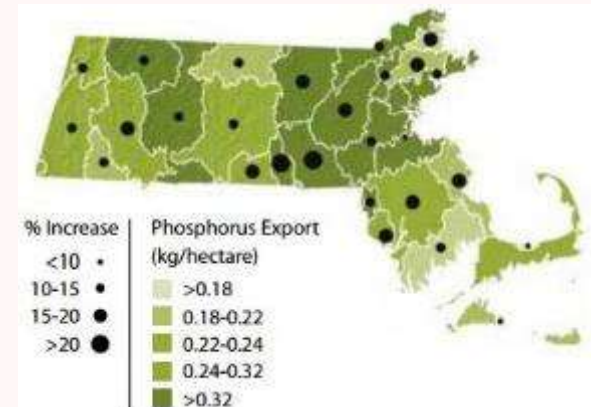
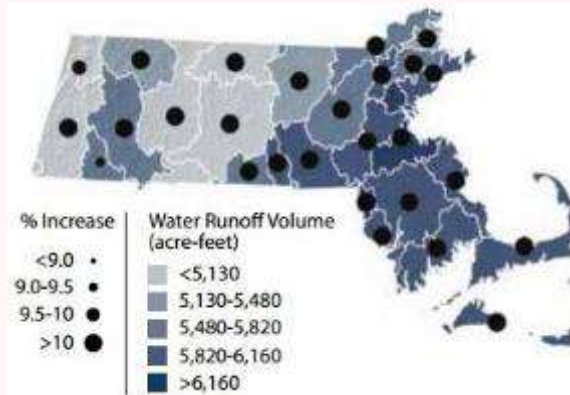
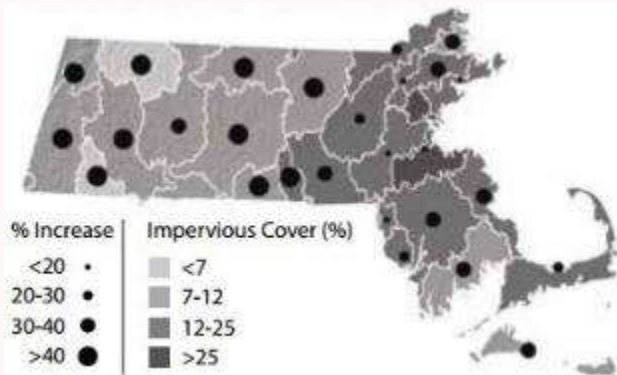
- Improve health and safety, quality of life



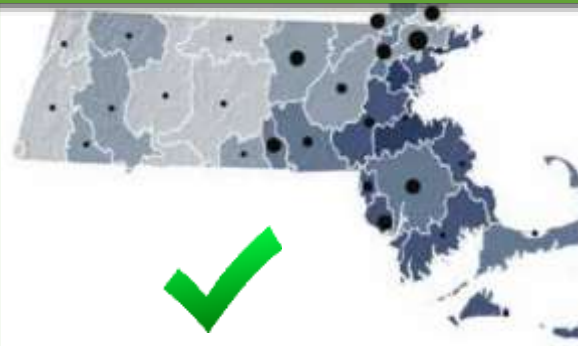
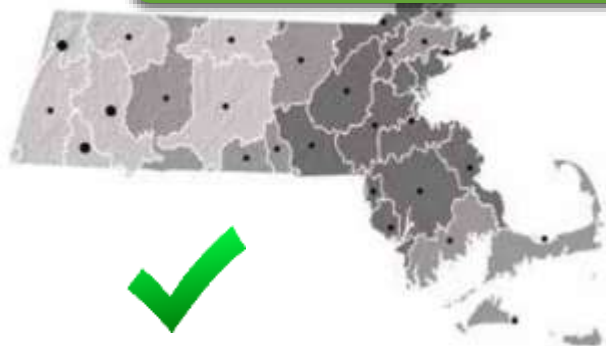
# The value of green: impervious, runoff, nutrients

Source: Harvard Forest Changes to the Land 2014

If we continue to follow opportunistic growth, in 2060:



These allow for nearly the **same amount of development**,  
but 2/3 of it is **clustered** development





# A different direction: Greening your community

Sustainable  
development



Increased  
infiltration



Reduced  
runoff & more  
groundwater



Water quality  
& quantity

Intact  
infrastructure



Regulations met  
Money saved



# Five things you can do now to improve community resilience

1. Take Advantage of Nature
2. Be Smart with Regulations and Bylaws
3. Think Ahead and Plan
4. Be Opportunistic & Work Together
5. Look Around for Easy Fixes





# Part 3: Moving Forward

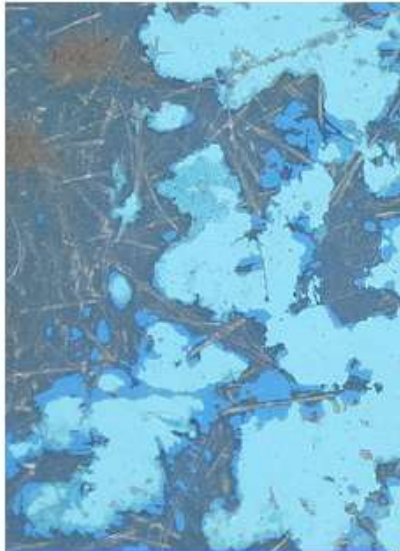
- Identifying common barriers
- Actions to move toward regional resilience – small groups (S, M, L)
- Role for RCPs?
- What's next?



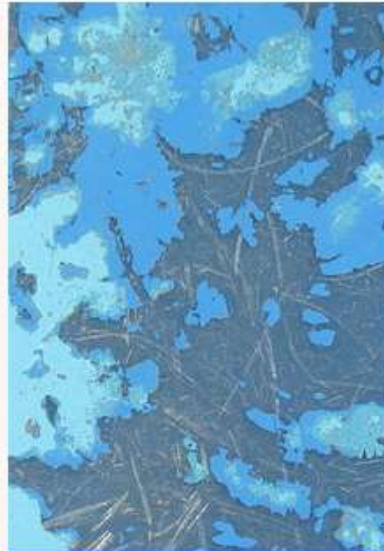
# Resources



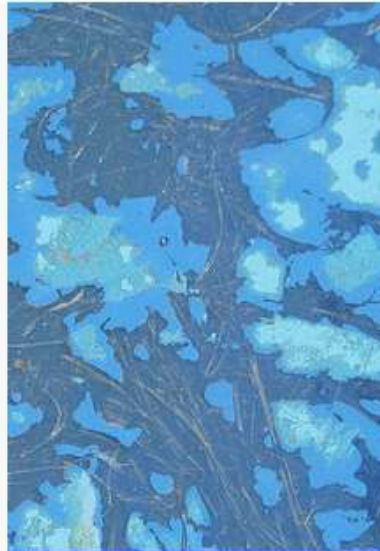




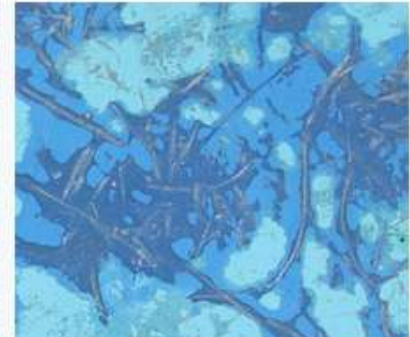
Guide



Coaching



Origins



Reports

[Communityresiliencebuilding.com](http://Communityresiliencebuilding.com)



Community Resilience Building is a unique, “anywhere at any scale”, community-driven process, rich with information, experience, and dialogue, where participants identify top hazards, current challenges, strengths, and priority actions to improve community resilience to all hazards today, and in the future.

[www.CommunityResilienceBuilding.org](http://www.CommunityResilienceBuilding.org)

# Climate Change: Resilience and Adaptation in New England (RAINE)

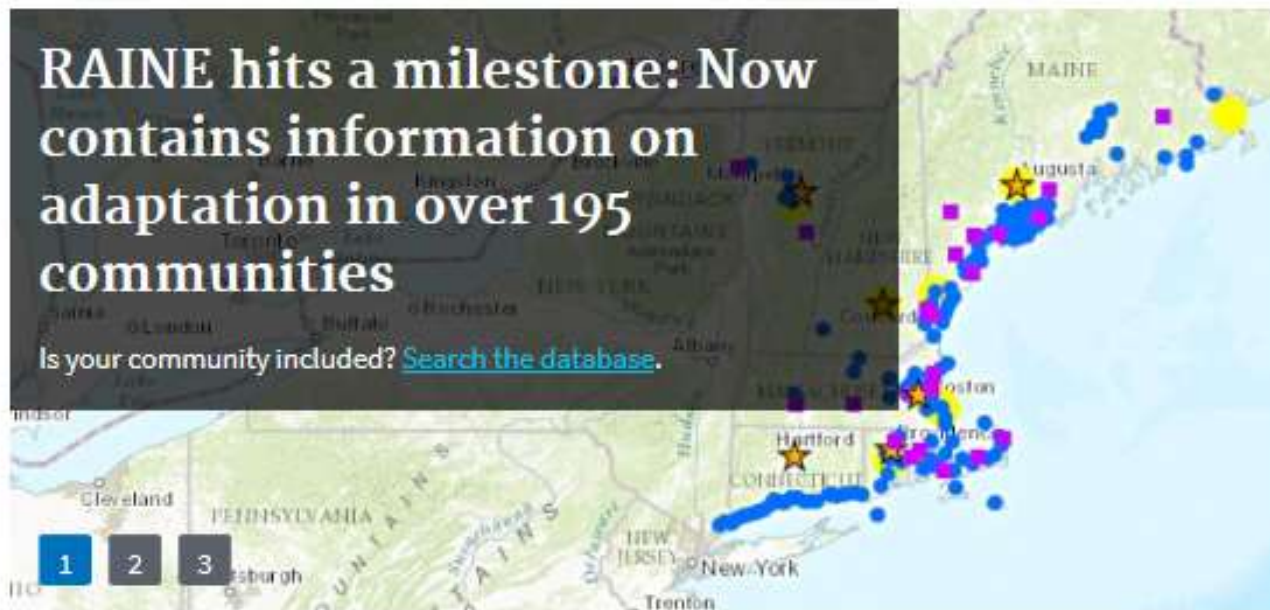
CONTACT US

SHARE



**RAINE hits a milestone: Now contains information on adaptation in over 195 communities**

Is your community included? [Search the database.](#)



Learn how New England communities prepare for climate change through resilience and adaptation

The Resilience and Adaptation in New England (RAINE) database is a collection of vulnerability, resilience and adaptation reports, plans and webpages at the state, regional and community level.

**Learn About RAINE**

**Search**

**Stay Connected**

• [Subscribe to RAINE updates](#)

**Green Infrastructure Wizard – A tool to find a tool**

<https://cfpub.epa.gov/giwiz>





# NATURAL & NATURE-BASED SOLUTIONS FOR VULNERABILITY REDUCTION & RESILIENCE



# Resources for Nature-Based Solutions

## Guidance/Case Studies

- [Naturally Resilient Communities](#) successful project case studies from across the country to help communities learn and identify nature-based solutions
- [EPA's Soak Up the Rain](#) stormwater outreach tools, how-to guides and resources
- [EPA's RAINE](#) database of vulnerability, resilience and adaptation reports, plans and webpages at the state, regional and community level.
- [Climate Action Tool](#) explore adaptation strategies and actions to help maintain healthy, resilient wildlife communities in the face of climate change.

## Mapping/Planning

- [Living Shorelines in New England: State of the Practice](#) and [Profile Pages for Solutions](#) are case studies, siting criteria, and regulatory challenges for coastal resilience in New England.
- [Mapping and Prioritizing Parcels for Resilience \(MAPPR\)](#) identify the priority parcels for protection and climate change resilience
- [Low Impact Development Fact Sheets](#) cover valuing green infrastructure, conservation design, development techniques, regulations, urban waters, and cost calculations.

## Cost-Benefit

- [EPA's Green Infrastructure cost/cost-benefit/tools](#) Database of tools for comparing costs between solutions
- [Massachusetts Division of Ecological Restoration's](#) economic benefits of aquatic restoration based on Massachusetts case studies

## Bylaws and Ordinances

- [EEA's Smart Growth Toolkit](#) access to information on planning, zoning, subdivision, site design, and building construction techniques
- [Guide for Supporting LID in Local Land Use Regulations](#) provides a framework for communities to review their zoning, rules, and regulations for a number of factors.



[www.srpedd.org/rtnw](http://www.srpedd.org/rtnw)

Thank you! Please remember that both RTWN and Mass Audubon are resources available to you – both in and out of the watershed and state.



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