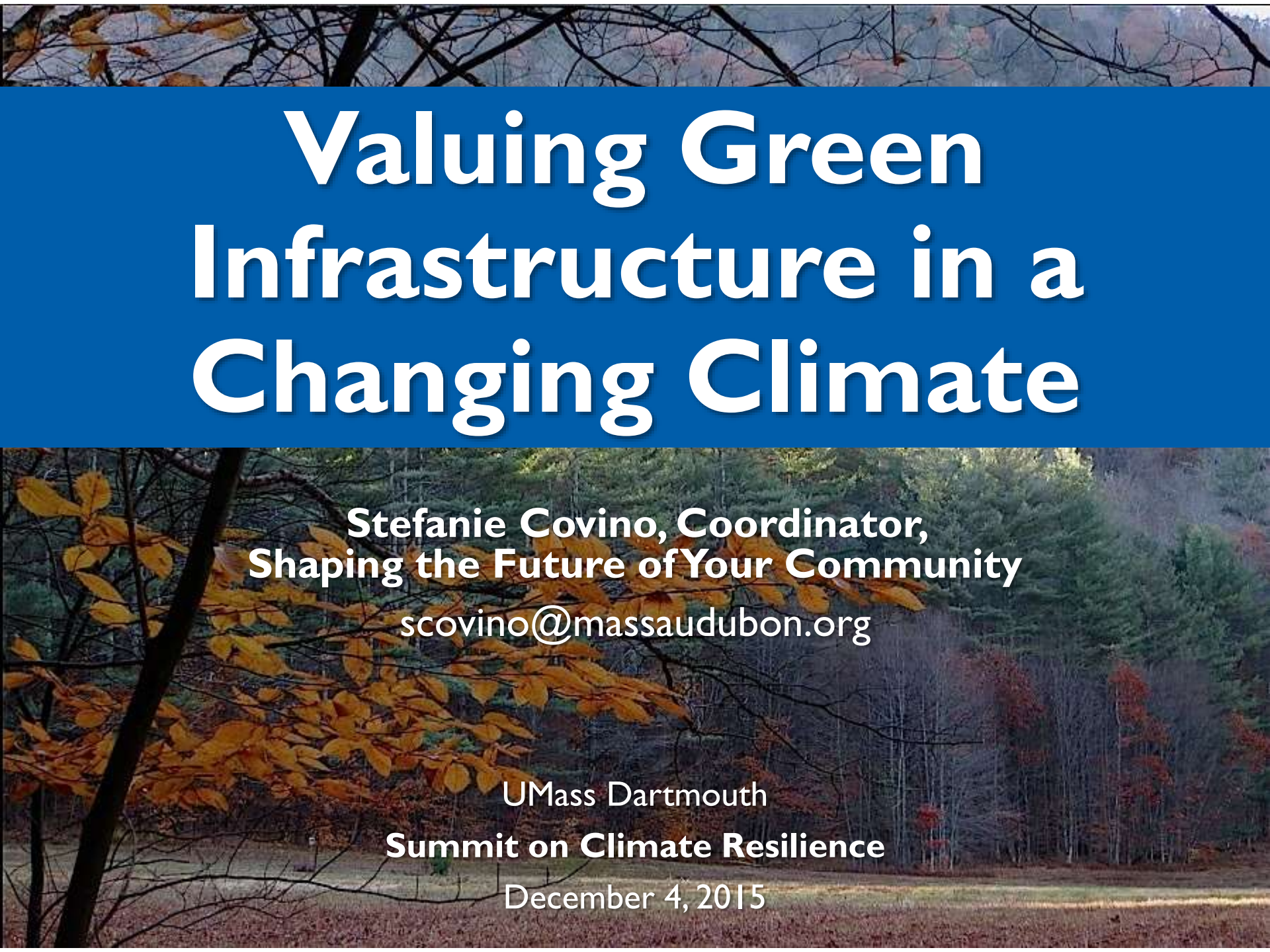
Valuing Green Infrastructure in a Changing Climate



Stefanie Covino, Coordinator,
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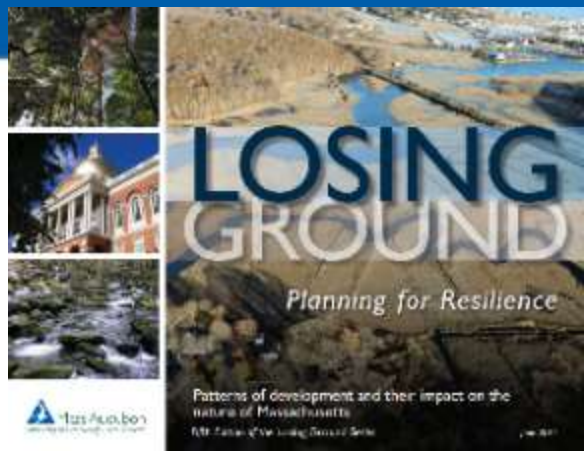
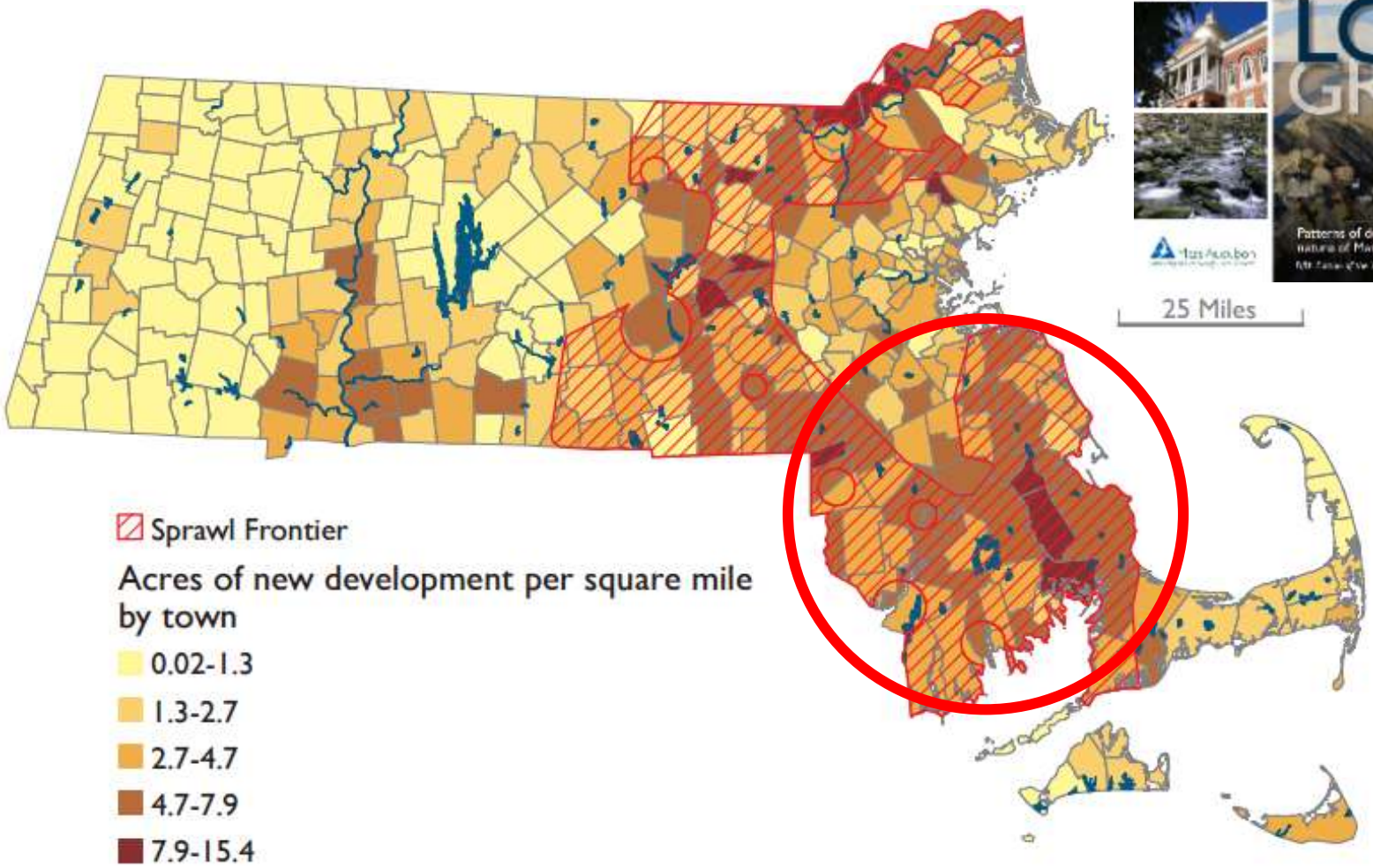
UMass Dartmouth
Summit on Climate Resilience
December 4, 2015

Development is Sprawling



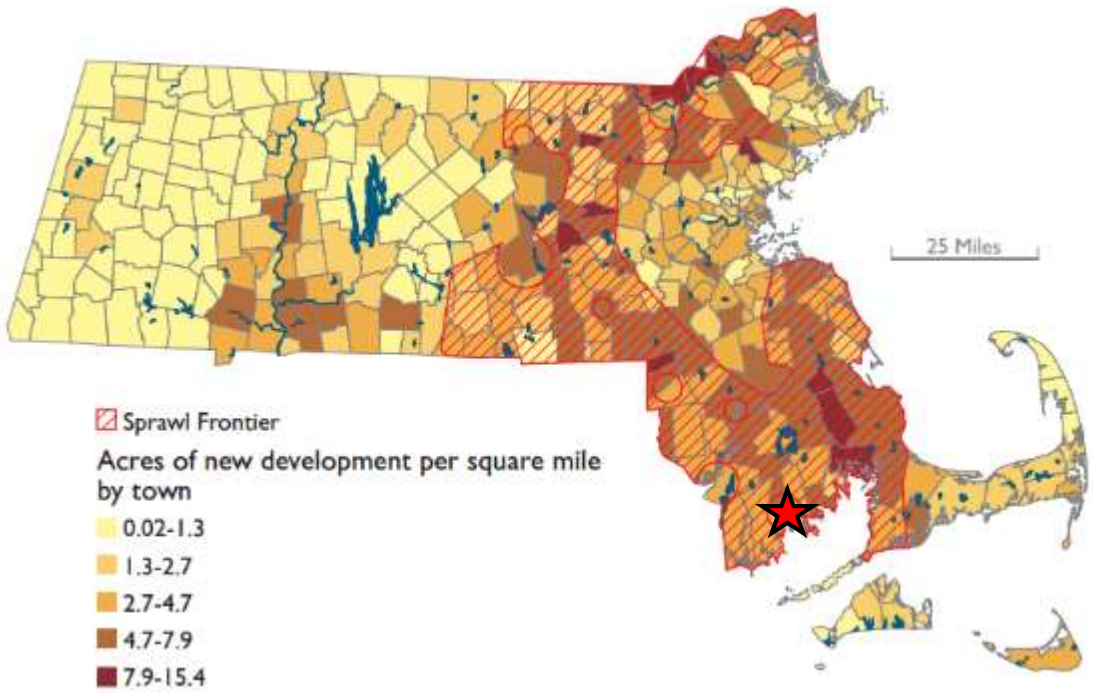


Shaping the Future of Your Community

- Works with communities in fastest developing areas of MA to chart a more sustainable future

  - ✓Customized workshops
  - ✓Planning advice
  - ✓Technical assistance

SHAPING the Future of YOUR COMMUNITY



Traditional, sprawling development =

Less open space

=

Conservation and development working together

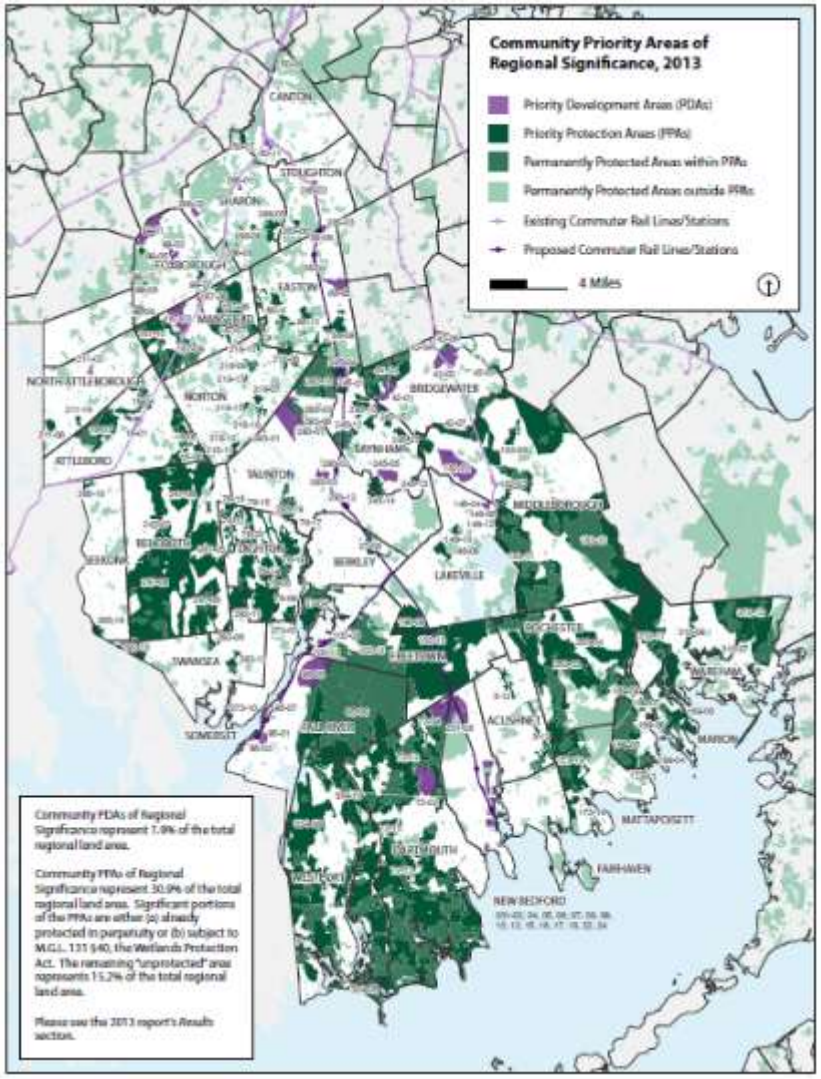
Areas of both

Priority Protection:

Important habitat and Green Infrastructure

Priority Development:

Concentrate near infrastructure and away from important natural resources



We need to change course

Sprawling development

Reduced green space

- Water quality impairment
- Infrastructure damage
- Urban heat island effect
- Increased stormwater
- Habitat loss

This is a compounding issue exacerbated by climate change

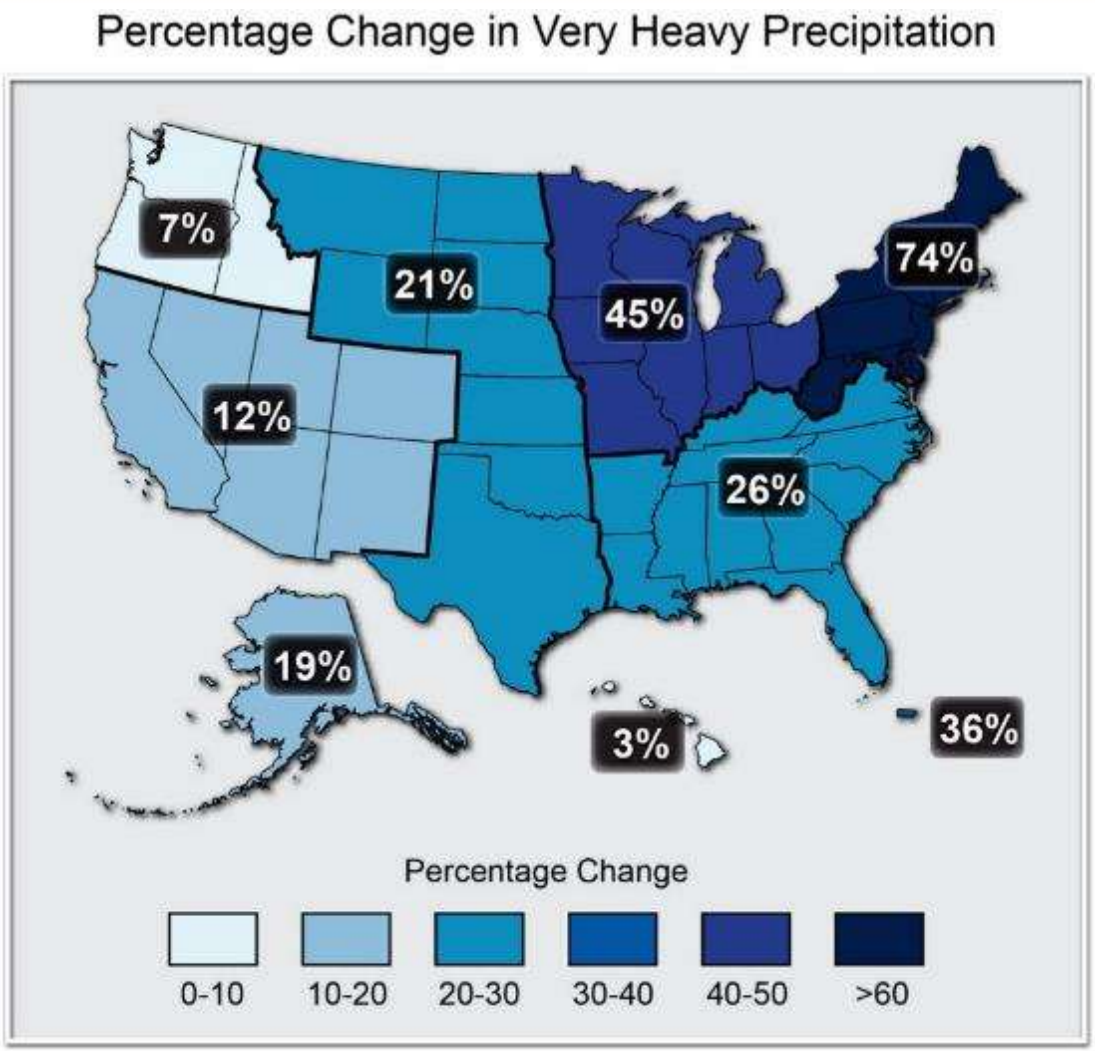
climate change

increased precipitation

increased stormwater

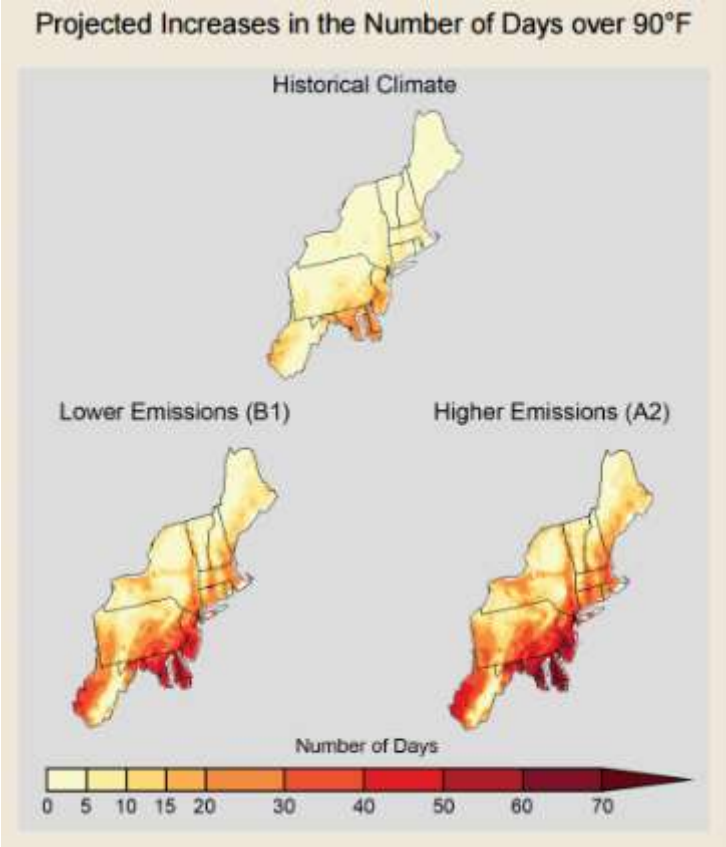
increased flooding

infrastructure damage



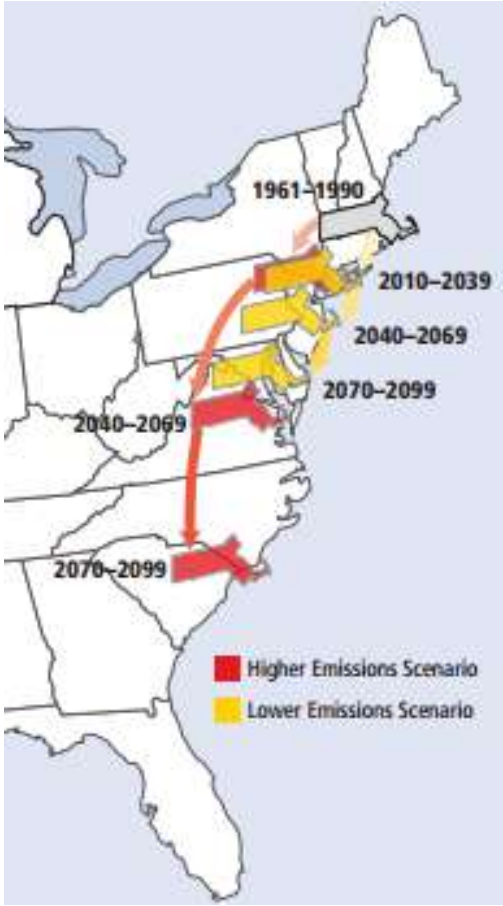
It's getting hotter – especially in our cities

Northeast



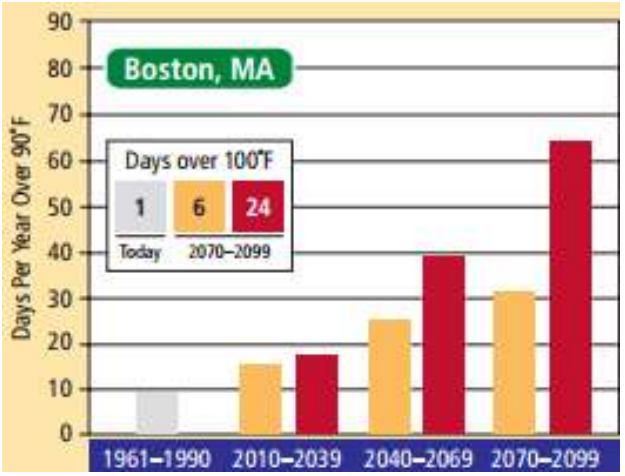
Source: Northeast National Climate Assessment, NOAA

Massachusetts



Source: The Changing Northeast Climate, Union Concerned Scientists

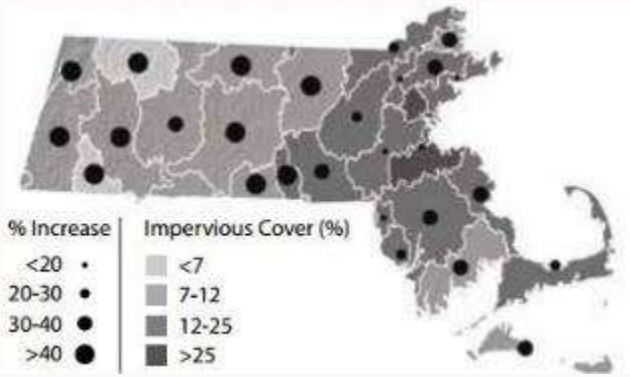
Boston: Urban heat island effect

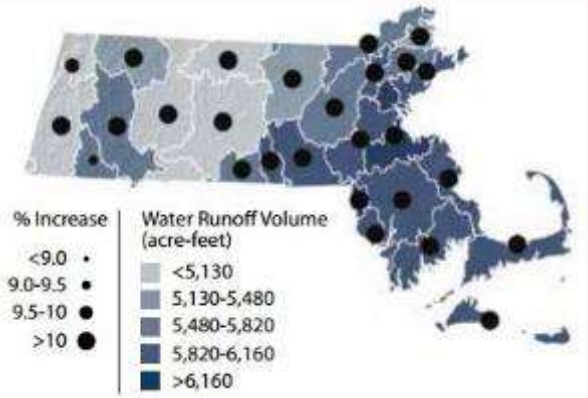


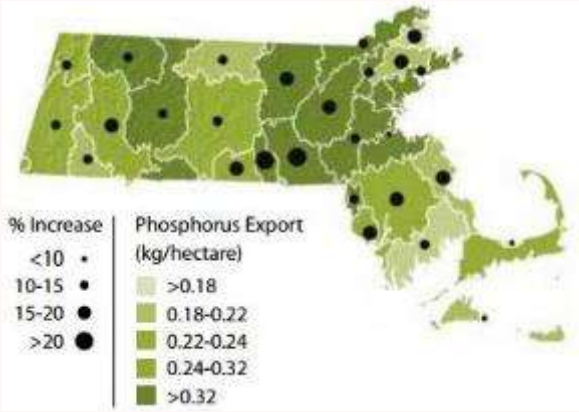
Source: The Changing Northeast Climate, Union Concerned Scientists

We can change our priorities

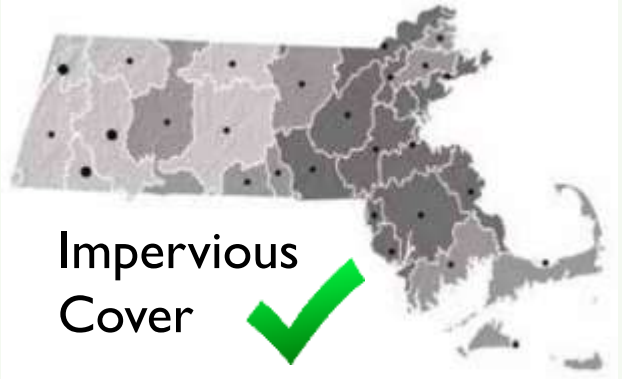
If we continue to follow opportunistic growth, in 2060:







If we value forests as infrastructure, in 2060:



Source: Harvard Forest *Changes to the Land* 2014

A different direction: Greening Your Community

Sustainable development

Green infrastructure maintained

- Improved water quality
- Improved public safety
- Reduced energy use
- Recreation and habitat
- Cost savings

Preserving MA Forests Mitigates 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

They also provide free ecosystem services

- Shade
- Windblock
- Shelter
- Sponge
- Carbon
- Filter

MA forests provide over **$3.8 billion** each year in free ecosystem services

Green Space = Resilience

The more **land we lose**
to sprawling development

The more **resilience we lose**
in our communities

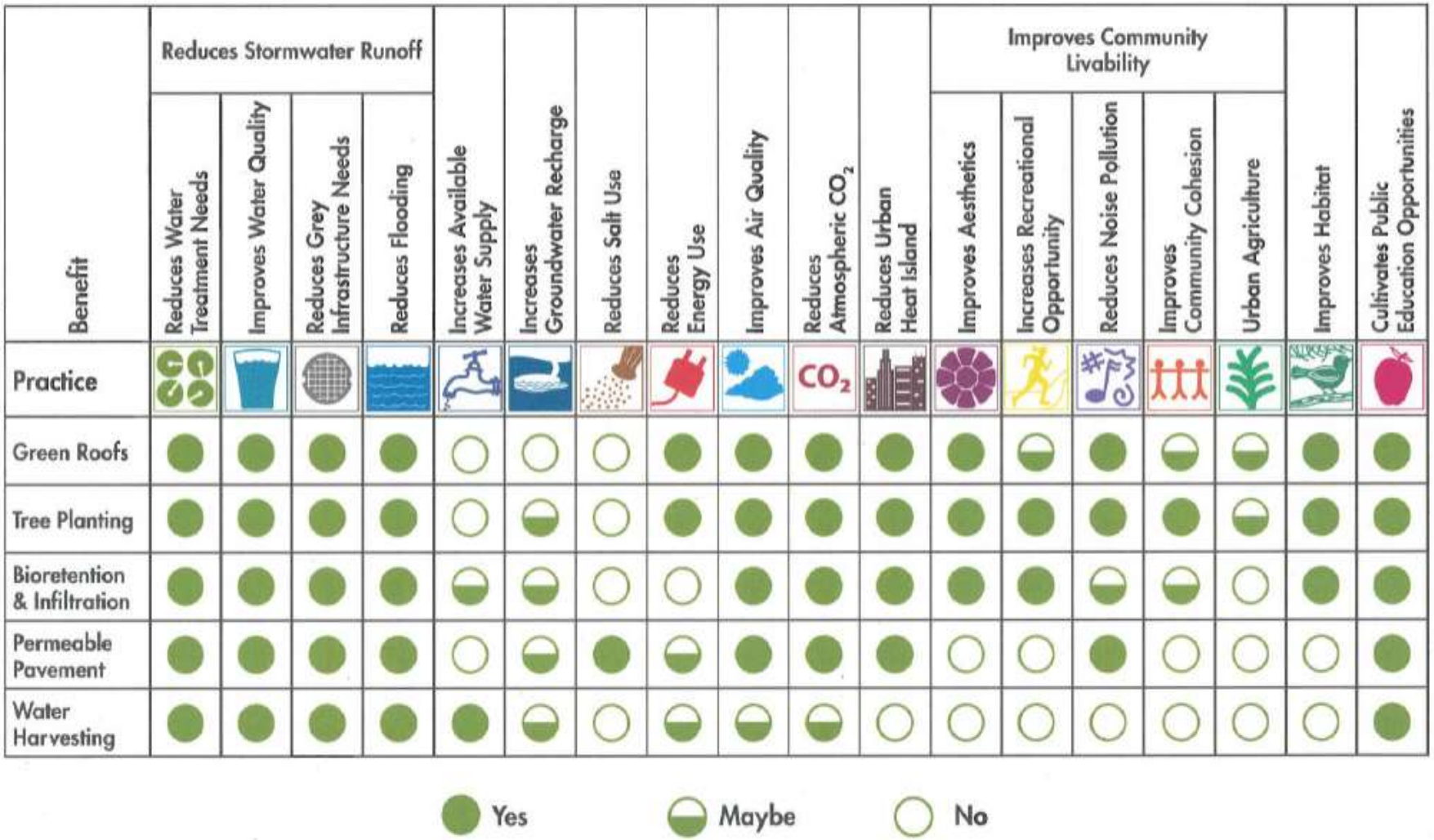
LID & GI

“LID is an approach to land development (or re-development) that **works with nature…** LID employs principles such as **preserving and recreating natural landscape features** and minimizing effective imperviousness…”

- EPA

Source: Whole Buildings Design Guide

Techniques and benefits of LID Practices



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

Start Here.

Conserve the natural green infrastructure already providing free ecosystem services

Incorporate LID and green infrastructure design into development

Restore the resiliency of urban landscapes through LID in redevelopment

Conserve

Conserve the natural green infrastructure already providing free ecosystem services

Integrate LID and green infrastructure designs into current development projects

Restore the resiliency of urban landscapes through LID in redevelopment

Integrate

Conserve the natural green infrastructure already providing free ecosystem services

Integrate LID and green infrastructure designs into current development projects

Restore the resiliency of urban landscapes through LID in redevelopment

Restore

Conserve the natural green infrastructure already providing free ecosystem services
Integrate LID and green infrastructure designs into current development projects
Restore the resiliency of urban landscapes through LID in redevelopment

Sustainable Development = Cost Savings

- A 20-unit development with two-acre lots requires 40 acres to be cleared and graded.
- Conservation subdivisions that preserve 50% of land save $200,000-300,000, while maintaining the same amount of development.

The more **land** you save, the more **money** you save.

Climate change is multi-faceted

massadapt.org

We need a **comprehensive climate resiliency plan**

Take Home Messages

We can't continue on our current, business as usual path.

- Regional **development is sprawling** and issues are exacerbated by climate change
  - **Conserving** forests and floodplains is the first line of defense
    - LID & GI are **mimic nature** and benefit people and nature
      - Climate change is a complicated issue and requires a **comprehensive approach**


Thank you!