

New England Landscape Futures Scenarios

Lucy Lee, Harvard Forest



A moment of reflection...

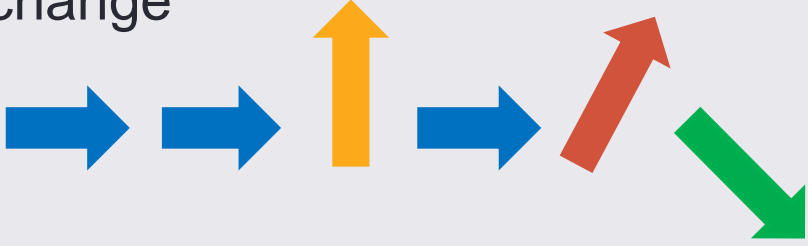
Scenario Planning

- Systematic way of thinking about the future that explicitly acknowledges sources of uncertainty and drivers of change
- Provides structures and processes to identify future challenges and opportunities that can inform decision-making
- There are different ways to have a scenario planning process
 - *The Art of the Long View: Planning for the Future in an Uncertain World* - Peter Schwartz

The Scenario-building Process

(1) 
Picture New England 50 years from now

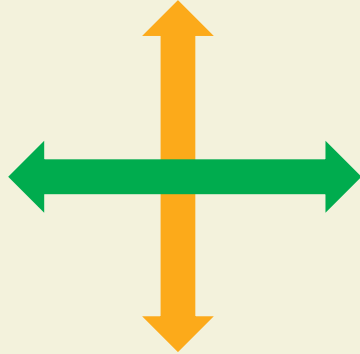
(2) Identify key drivers of change




(3) Rank drivers by impact & uncertainty

- high
- medium
- low


(4) Create scenario logic and matrix



(5) Develop scenario narratives



(6) Contrast scenario with recent land-use trends



The NELF Scenarios



HIGH

PLANNING & INNOVATION

LOCAL

SOCIO-ECONOMIC CONNECTEDNESS

GLOBAL

NATURAL RESOURCE

LOW

The NELF Scenarios

Compared to Recent Trends



The NELF Scenarios

Compared to Recent Trends



The NELF Scenarios

Compared to Recent Trends



The NELF Scenarios

Compared to Recent Trends



A caveat...

- Deviations from Recent Trends shown on previous slides are for all of New England
- Local outcomes may differ from the regional scenario outcomes



Scenario planning

An aerial illustration of a town nestled in a valley. The town features a mix of residential houses, a church with a steeple, and a larger industrial or commercial building complex. A river flows through the town, and there are several bridges. The surrounding landscape is lush with green fields and dense forests of trees with autumn-colored foliage in shades of yellow, orange, and red. In the background, rolling green hills and mountains are visible under a bright, slightly hazy sky.

Consider an issue, resource, value, or concern

Break into five groups (one group per scenario) and inhabit the scenario through maps & narratives

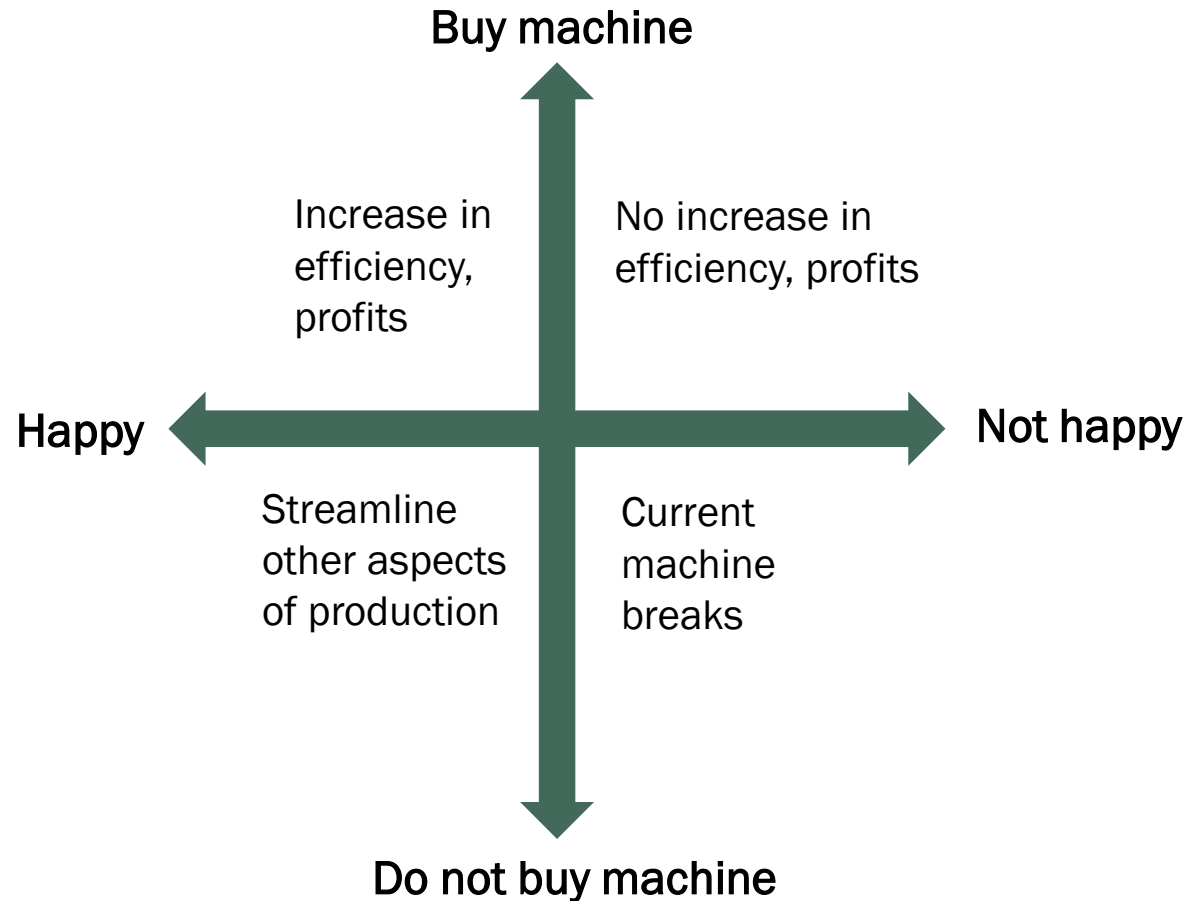
For each scenario:

- **What are the implications of that scenario for the issue, resource, value, or concern?**
- **What actions can be taken to achieve goals?**

Compare results from all scenarios – what actions achieve goals under all scenarios?

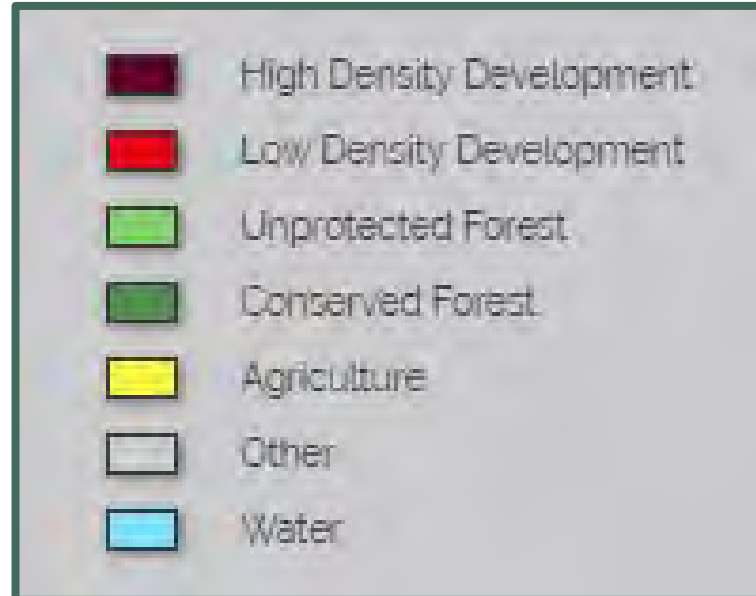
Mini-scenario planning

- Scenario planning can be done on many scales and in different ways
- **Our scenario:** you have some profits to spend but are unsure how to spend them.



Mapping stories, visualizing the future

- Most scenarios are purely conceptual narratives
- NELF scenarios go a step further and map the scenario stories through land-use

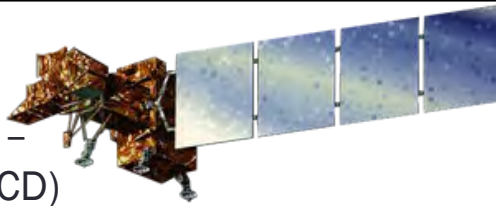


“Recent Trends” is based on historic rates and patterns from 1990 - 2010

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Data Sources

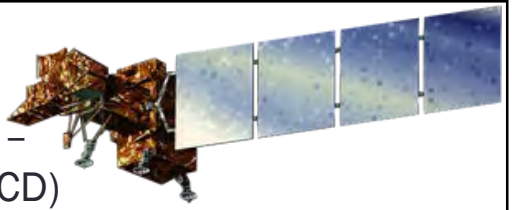
- Landcover Data
 - Continuous Change Detection and Classification (CCDC) – Olofsson et al. 2016, National Land Cover Database (NLCD) 30m classified pixels.
- Protected Open Space
 - TNC Secured Areas, NCED, PAD-US, State GIS, Land trusts, etc.



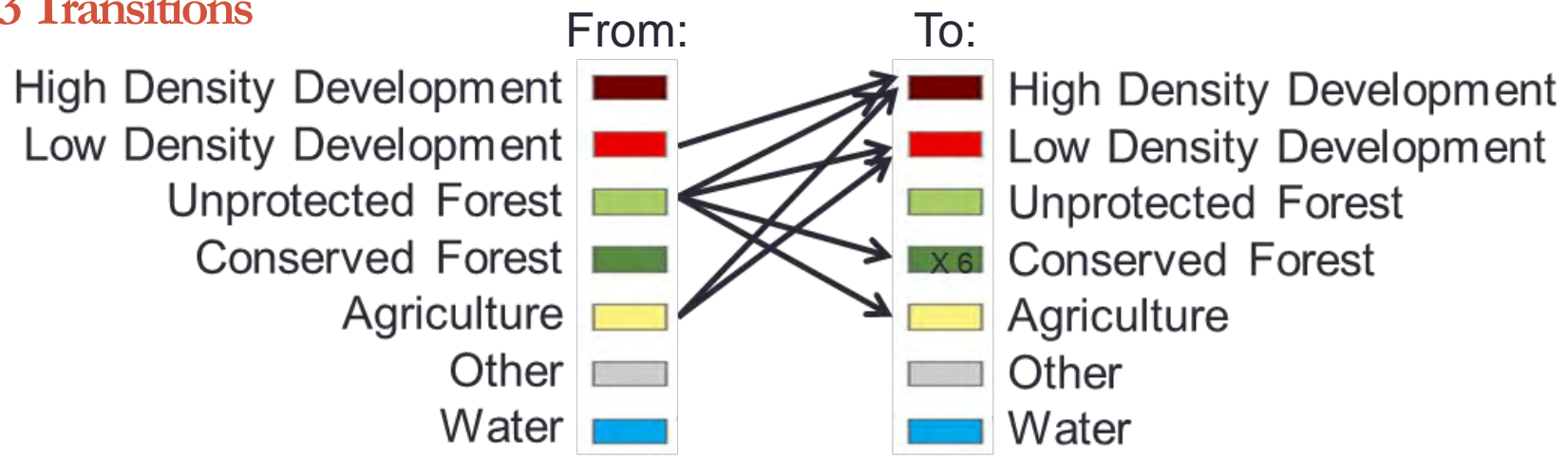
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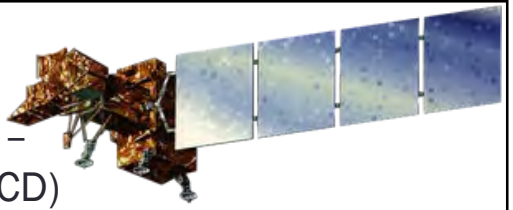
13 Transitions



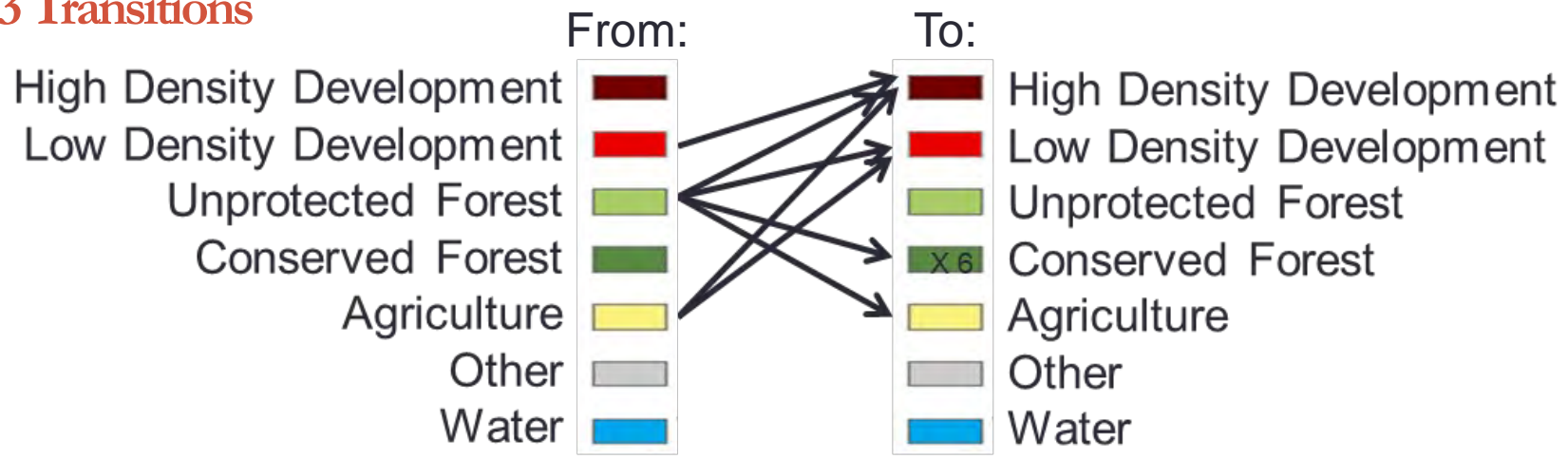
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13 Transitions



7 Driver Variables

- Distance to Cities
- Distance to Development
- Ownership
- Population Density
- Distance to Roads
- Slope
- Wetlands/Non-wetlands

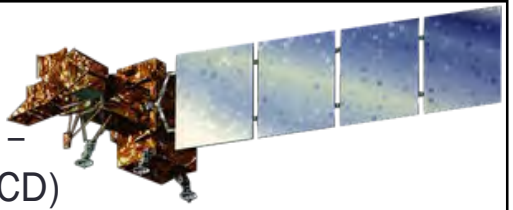


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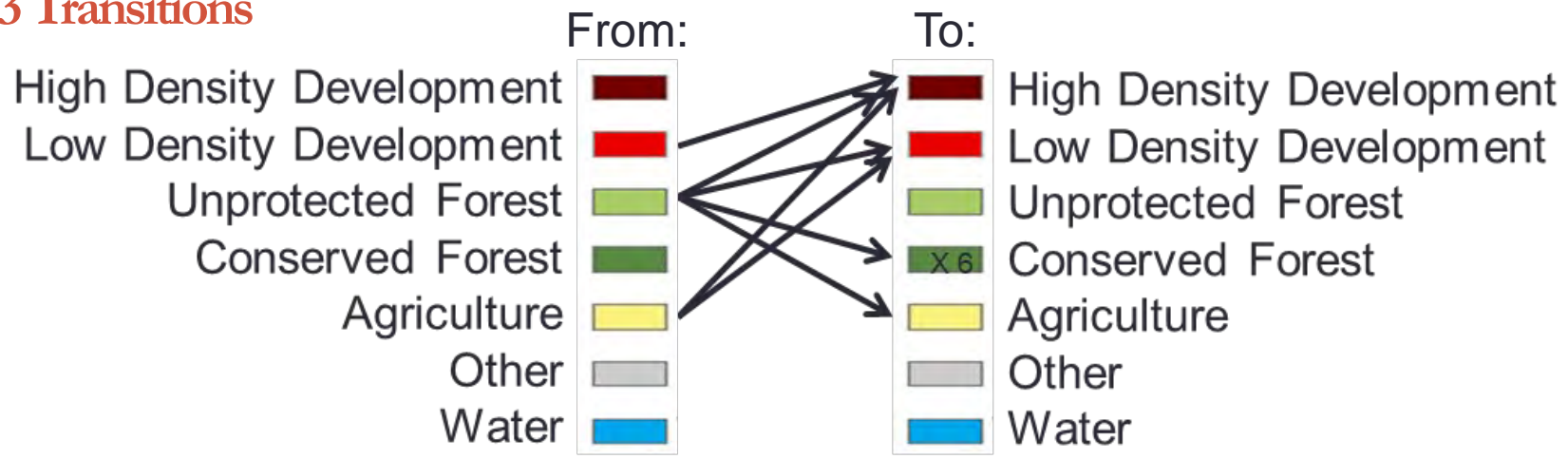
32 Sub-regions

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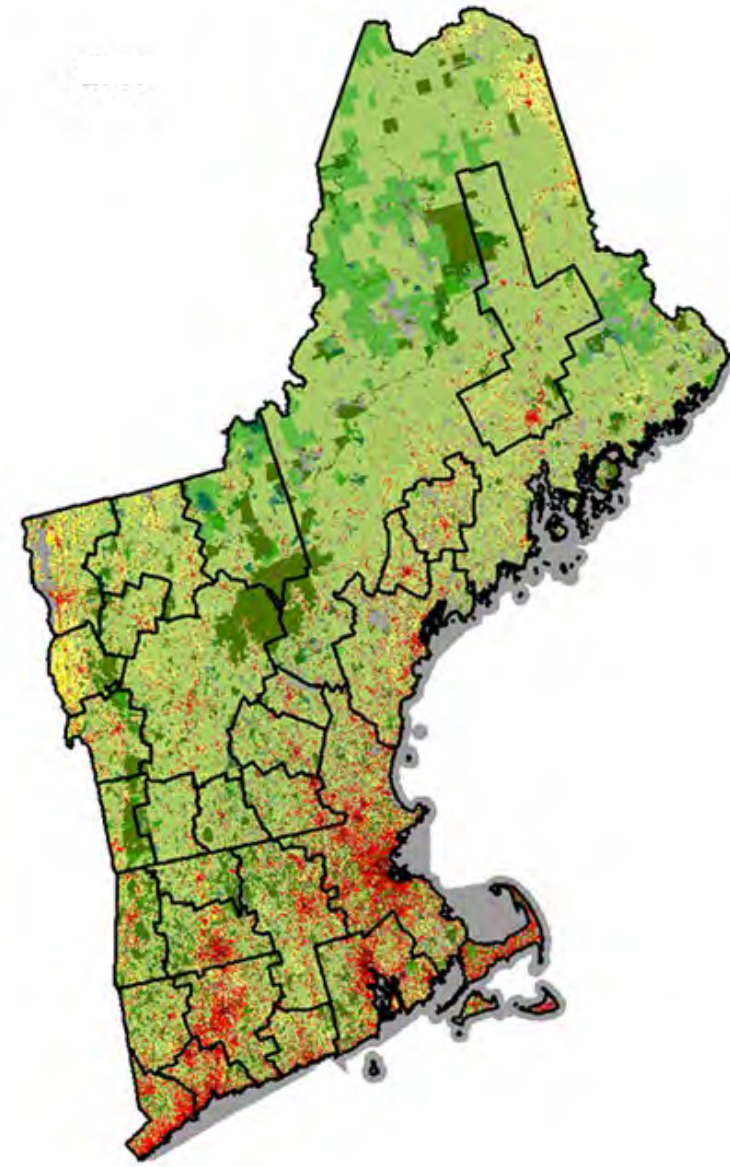


13 Transitions



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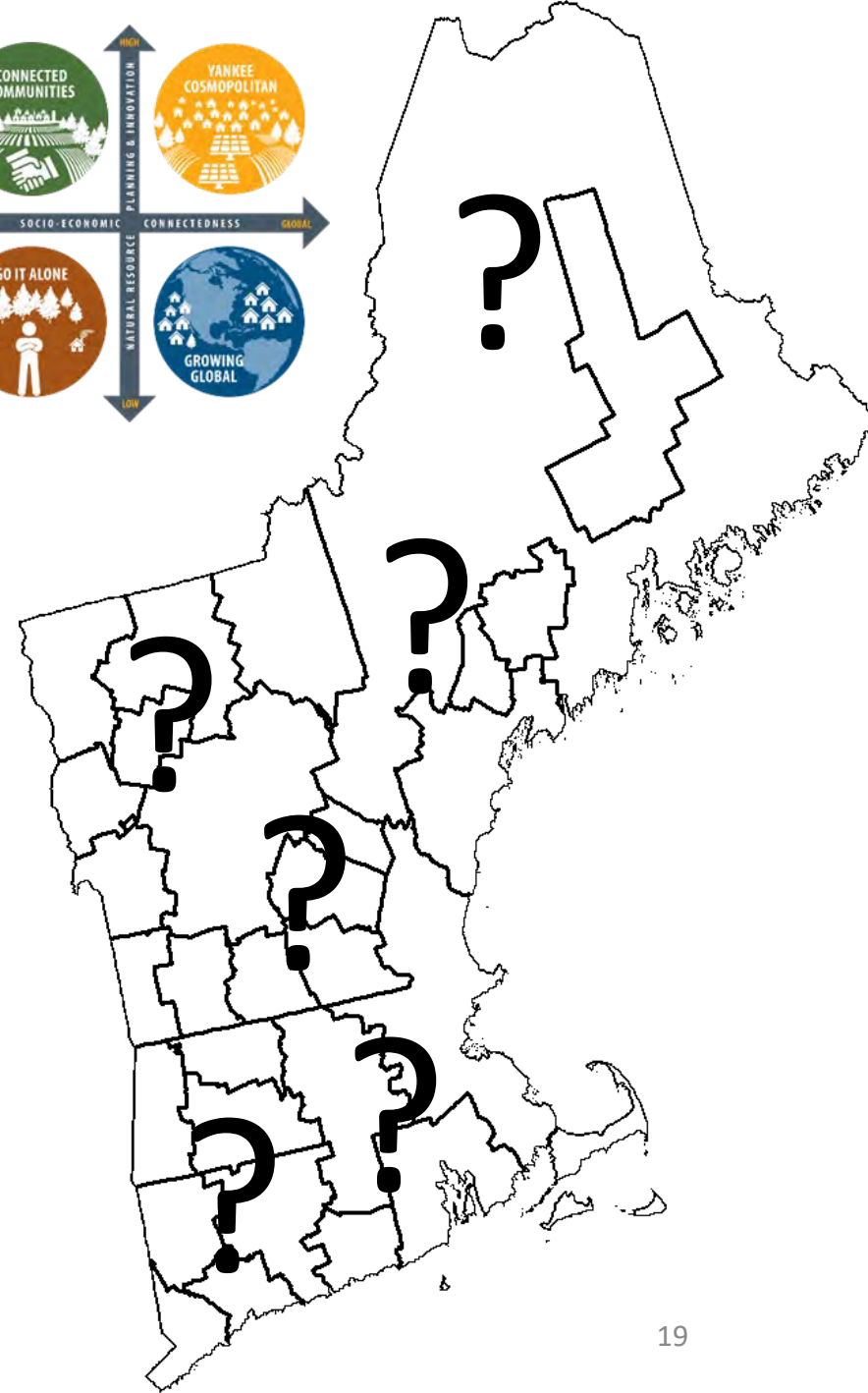
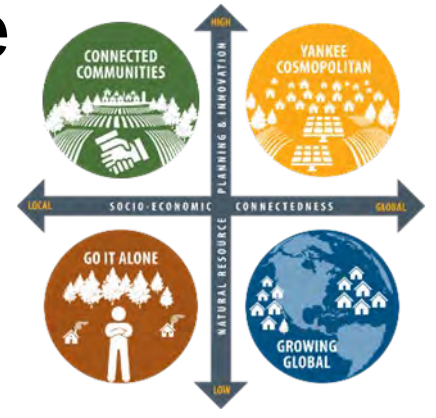
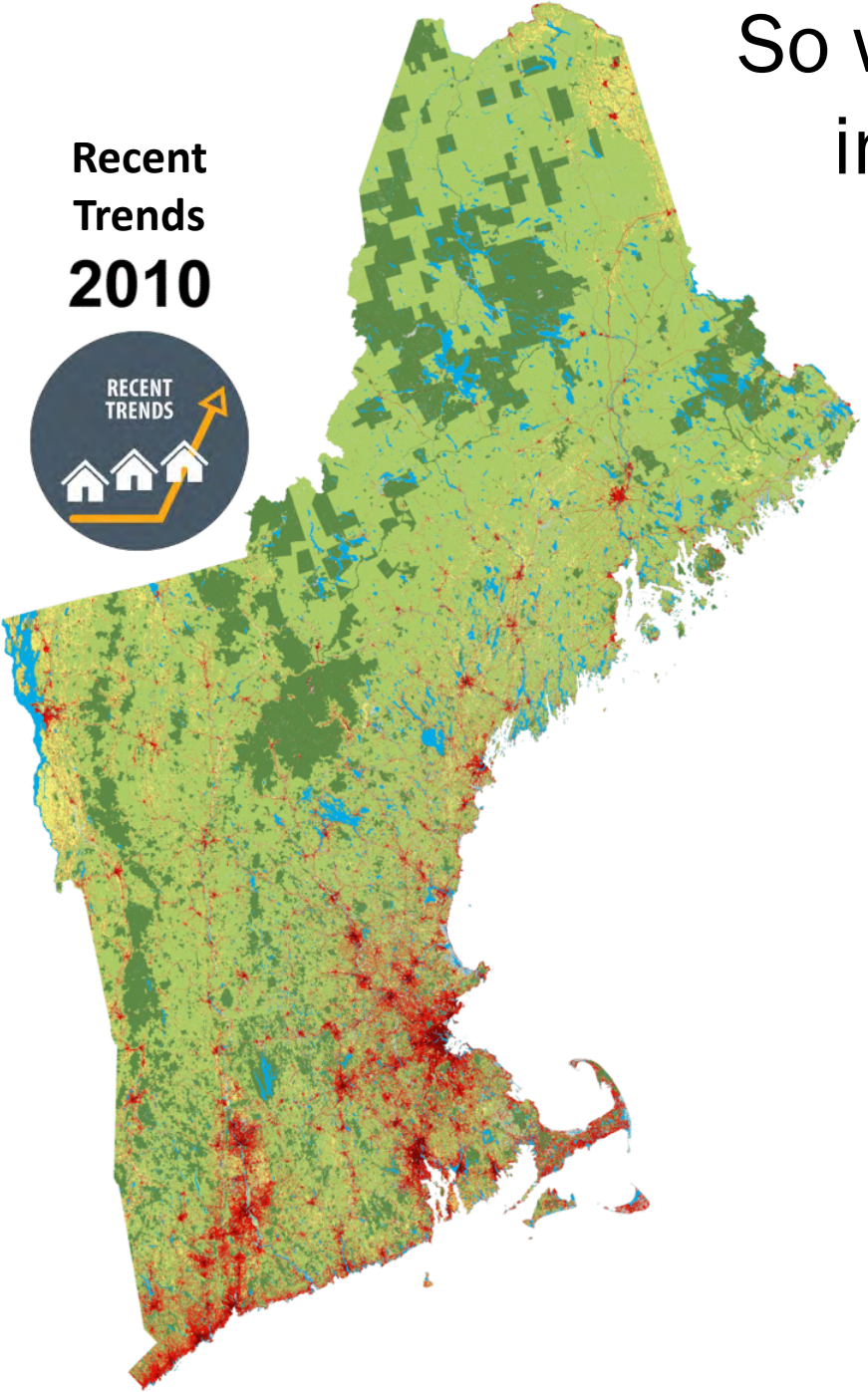
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5 Ten Year Time Steps
From 2010-2060

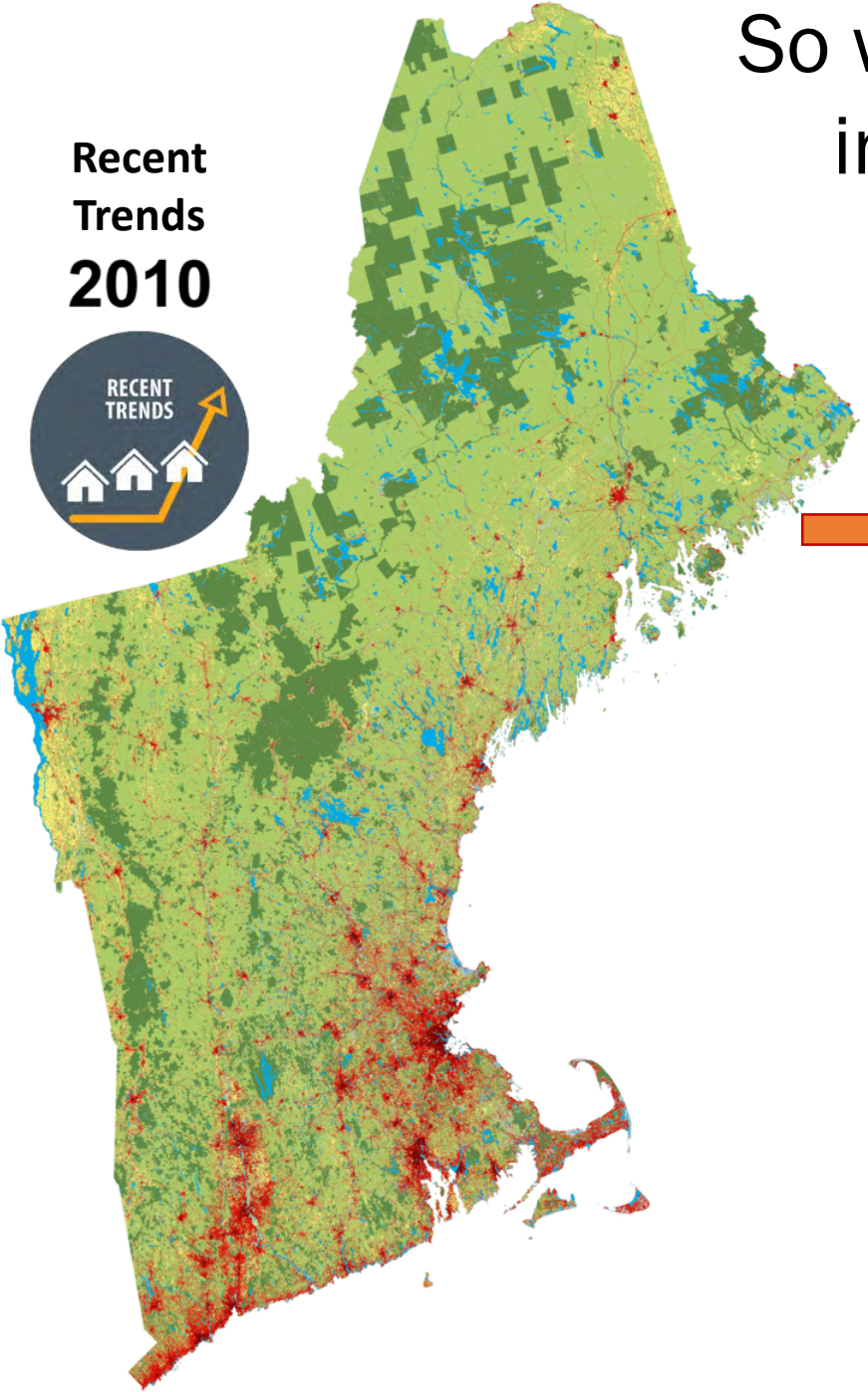
So what do we change in the scenarios?

Recent Trends 2010



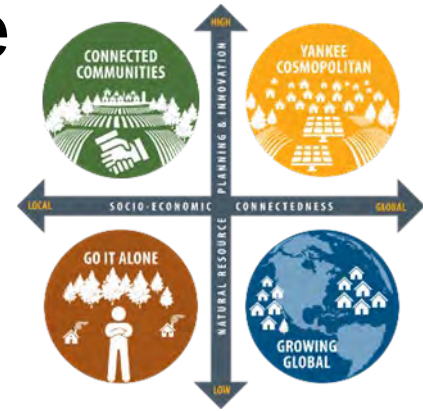
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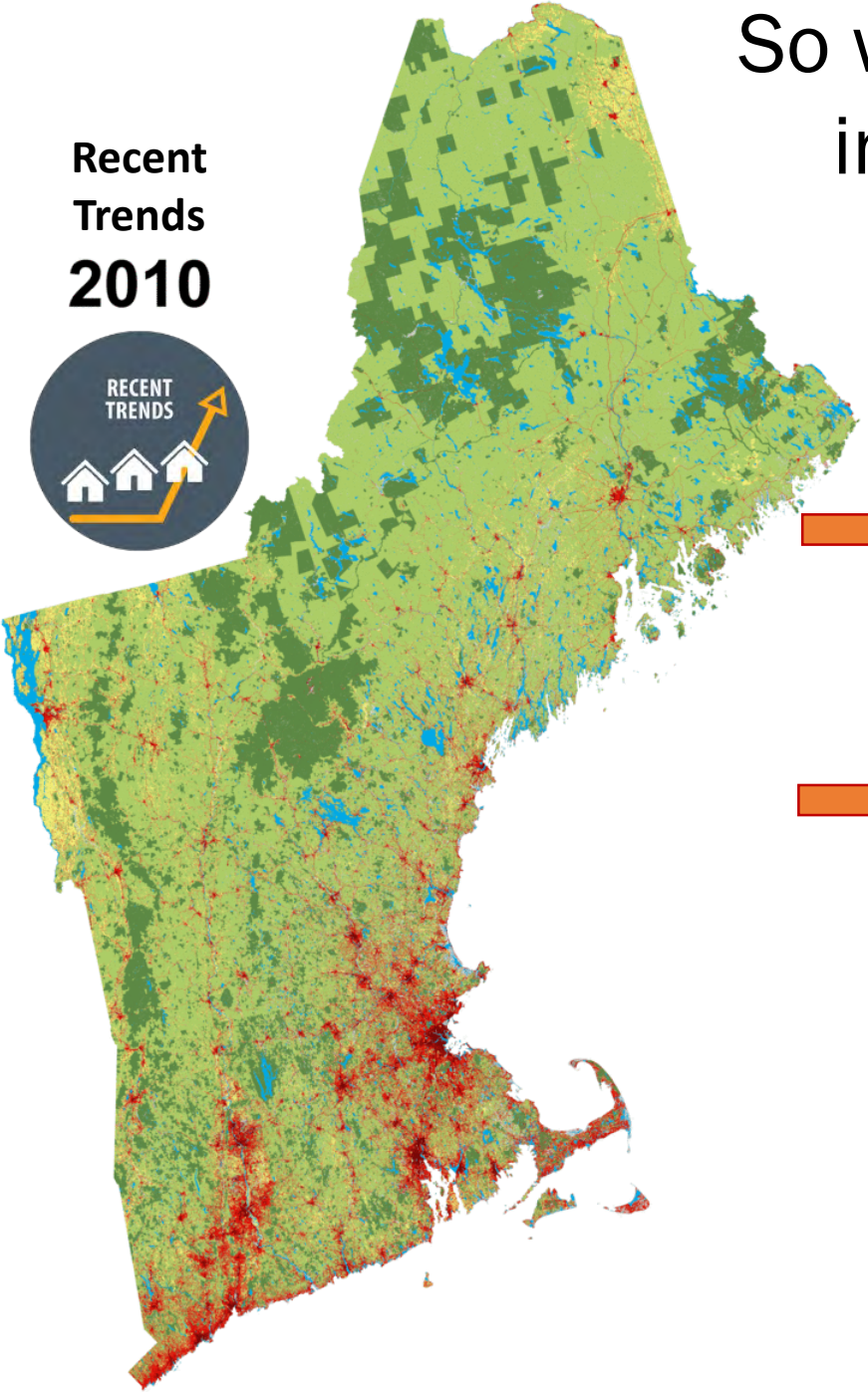
Rate

- Increase Rates
- Decrease Rates
- Ramp / Fluctuate Rates



So what do we change in the scenarios?

Recent Trends 2010

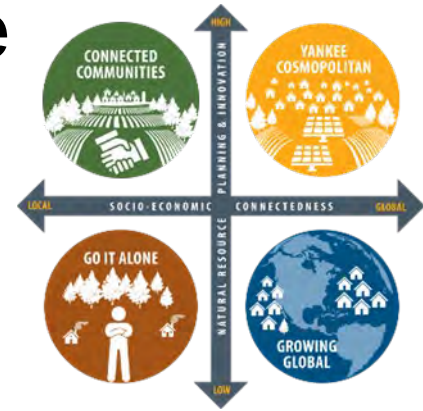


Rate

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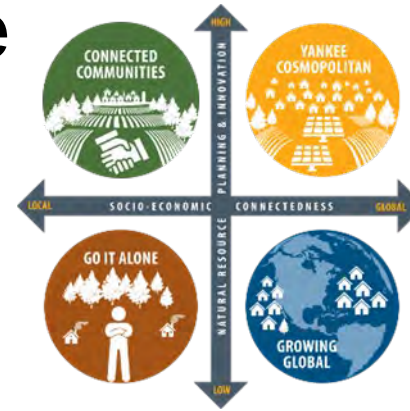
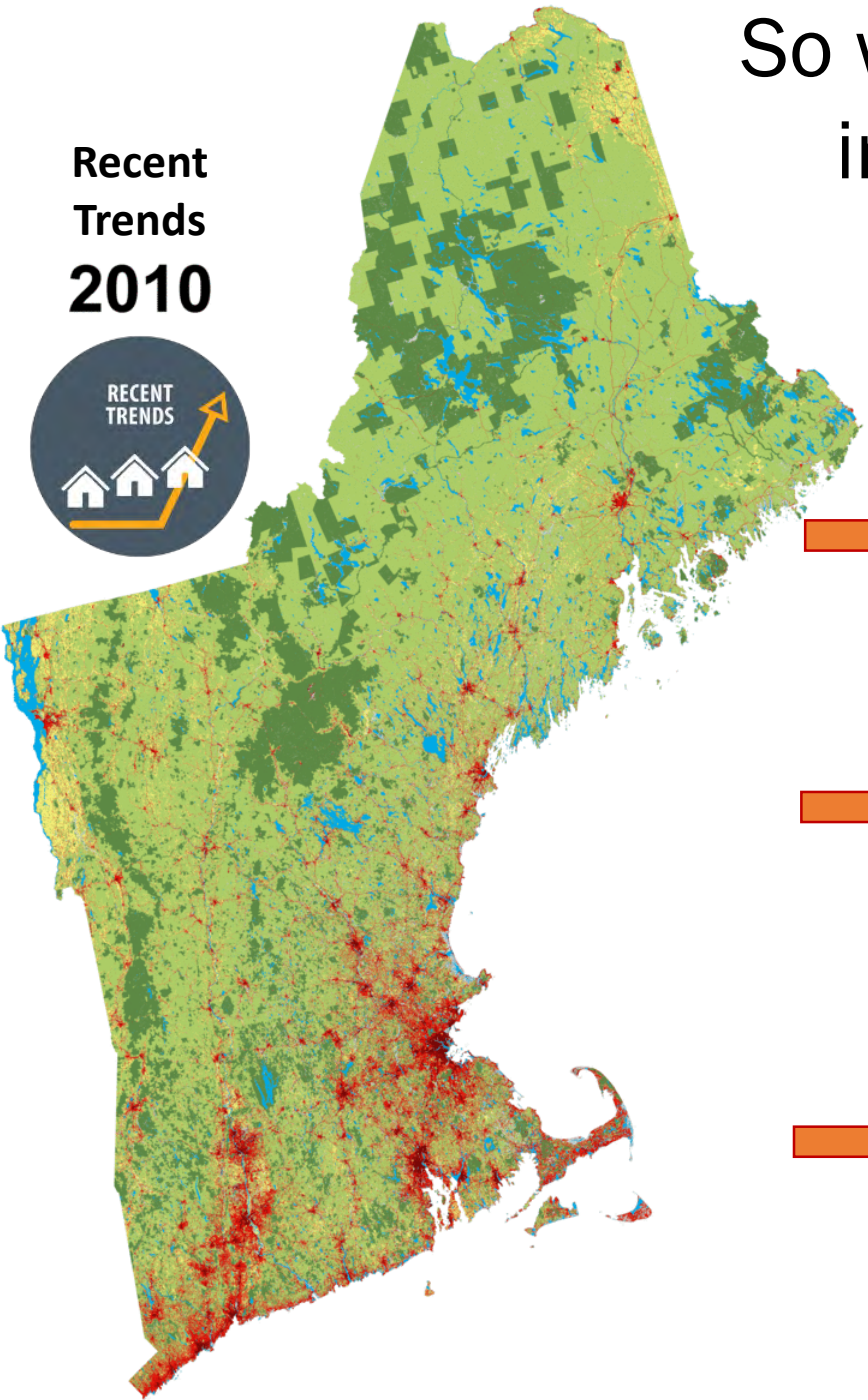
Patch Statistics

- Mean size
- Variance
- Isometry



So what do we change in the scenarios?

Recent Trends
2010



Rate

- Increase Rates
- Decrease Rates
- Ramp / Fluctuate Rates

Patch Statistics

- Mean size
- Variance
- Isometry

Probabilities

- Increase Probability
- Decrease Probability



Connected Communities

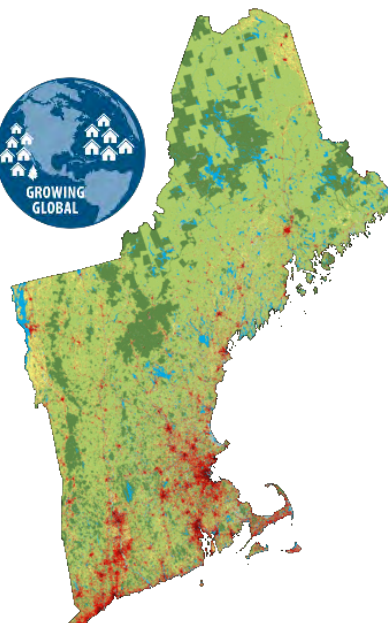
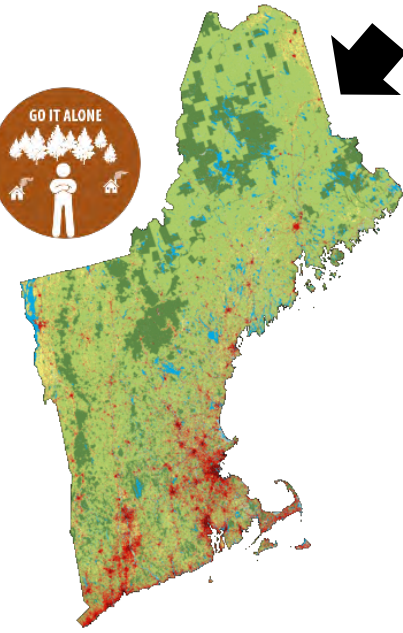
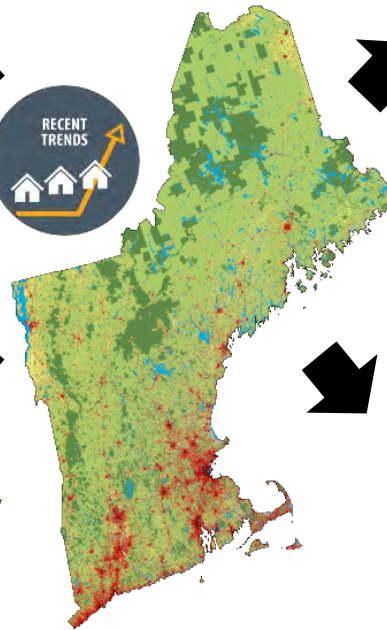
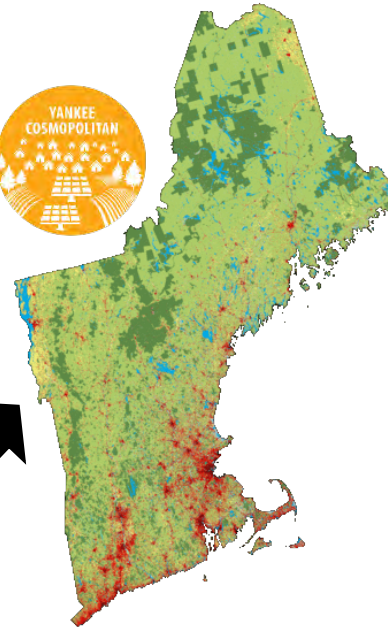
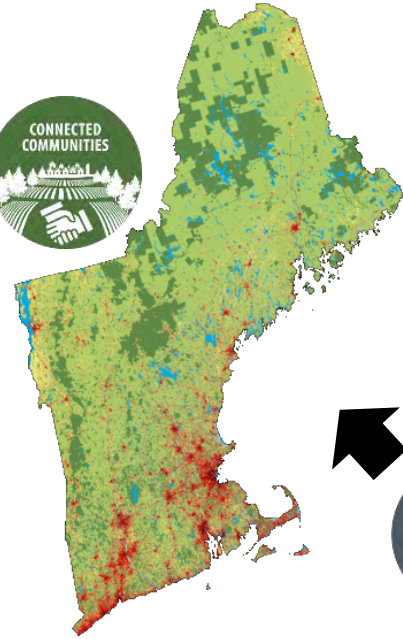
Yankee Cosmopolitan

2010



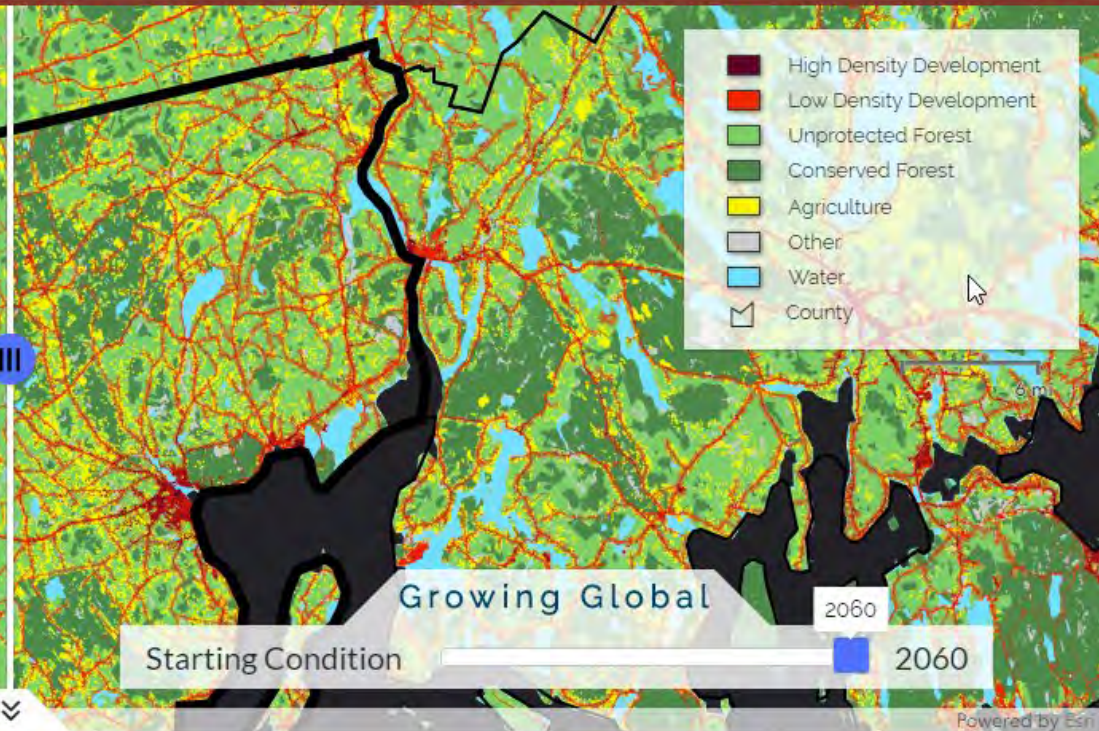
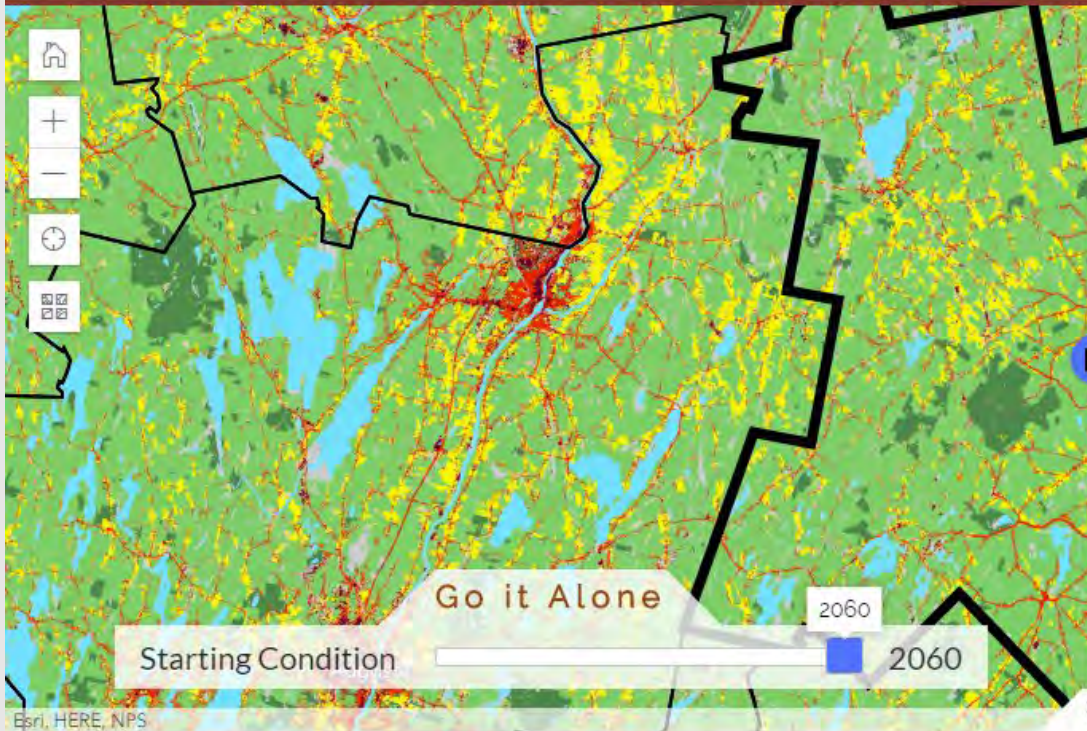
Go it Alone

Growing Global

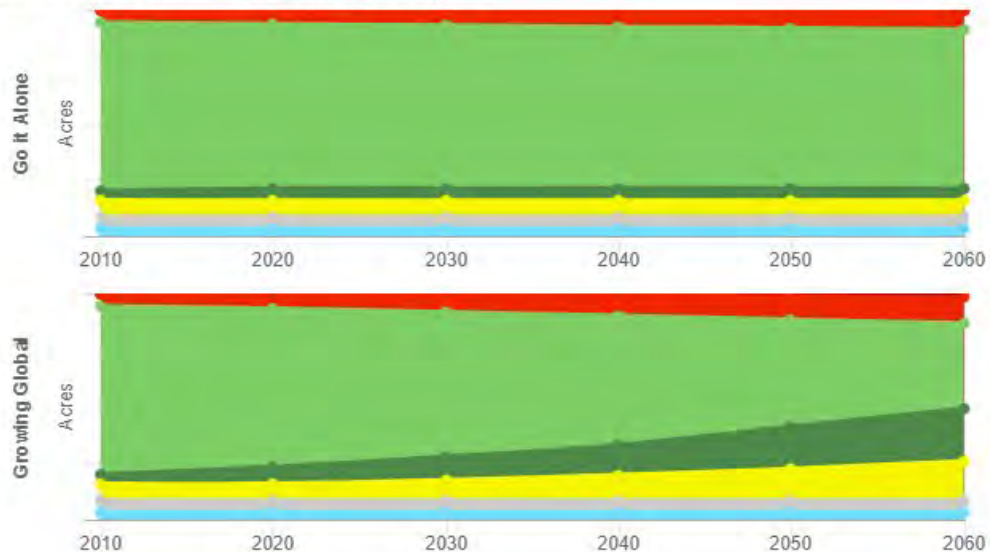




New England Landscape Futures Explorer



Land uses over time for Waldo County, ME



Impacts on within Waldo County, ME

Conserved forest land increases

Go it Alone: 987 acres | Growing Global: 10,194 acres
 By 2060 in Waldo County, ME, conserved forest land in wetlands **increases** in the Growing Global scenario compared to the Go it Alone scenario.

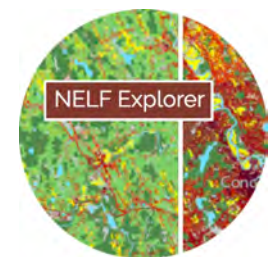
Developed land increases

Go it Alone: 7 acres | Growing Global: 581 acres
 By 2060 in Waldo County, ME, developed land in wetlands **increases** in the Growing Global scenario compared to the Go it Alone scenario.

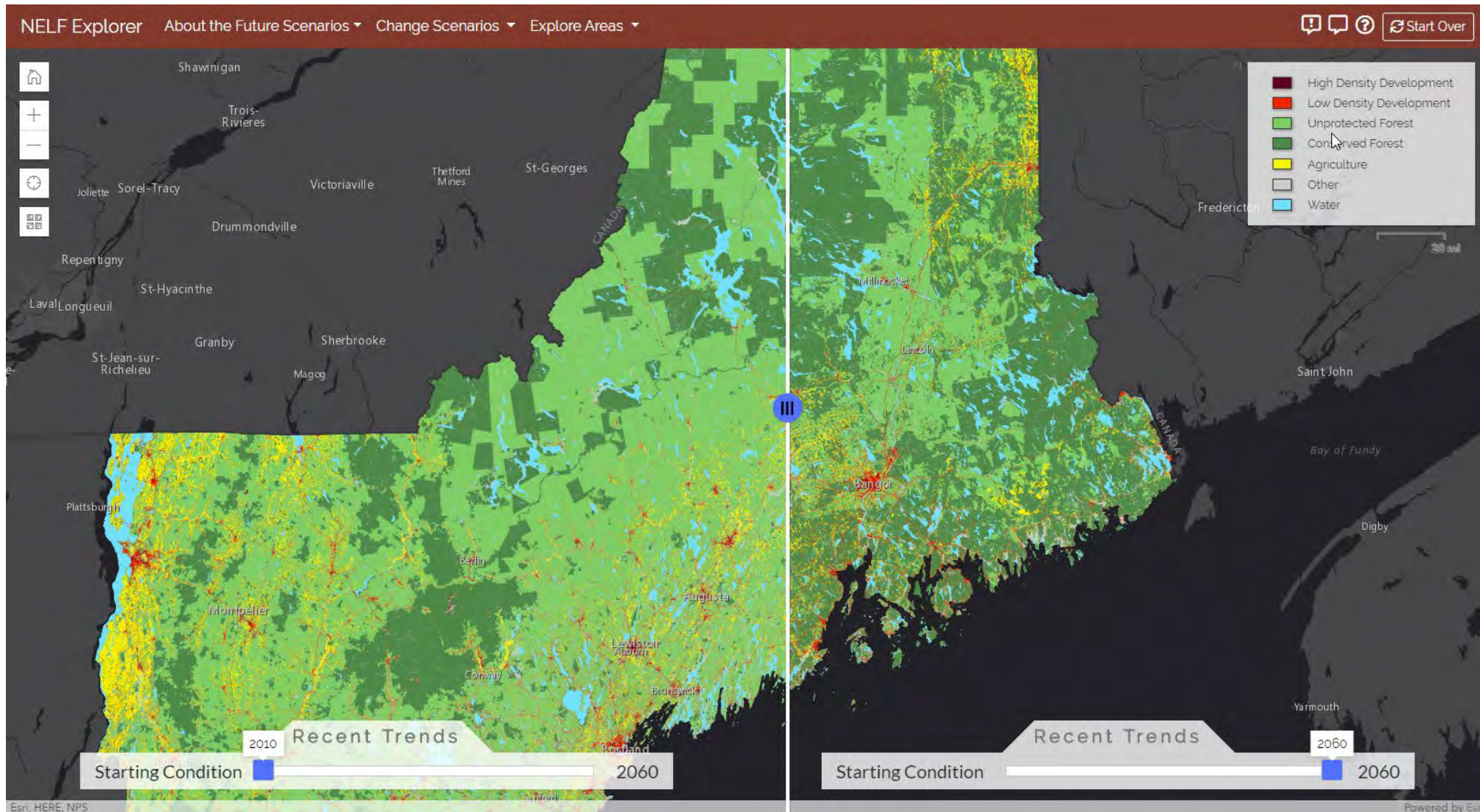
About Wetlands:

Wetlands are defined as all areas in the U.S. Fish & Wildlife Service's National Wetlands Inventory. These include forested swamps, freshwater herbaceous marshes, and saltwater marshes.

Applications



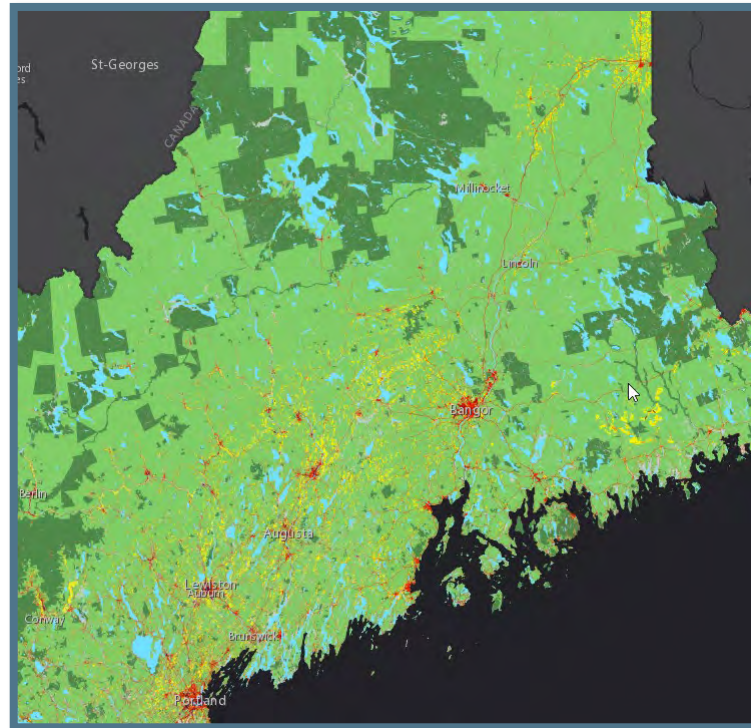
Understanding Recent Trends



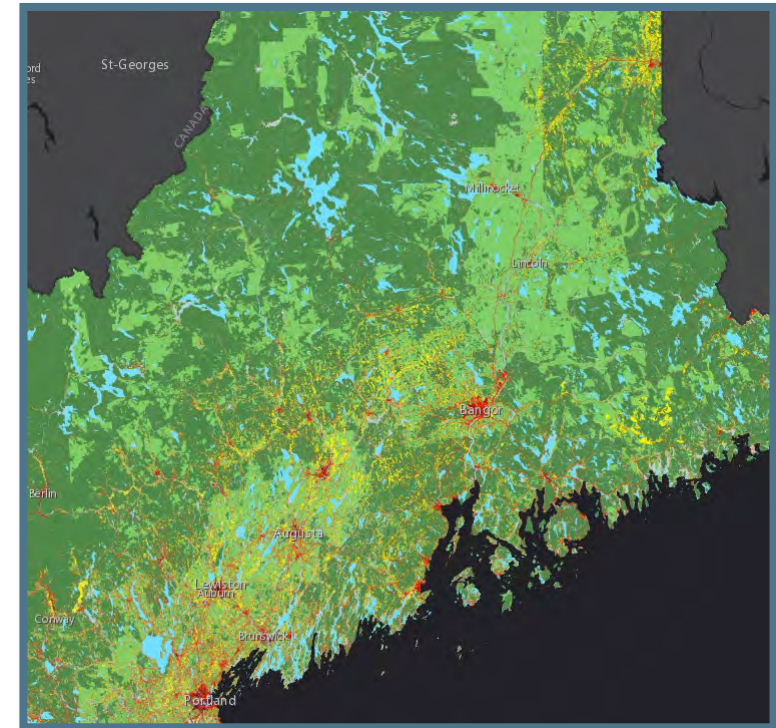
Understanding Recent Trends

- Not much change in development
- Conservation in the North Woods and Downeast / coastal Maine

2010



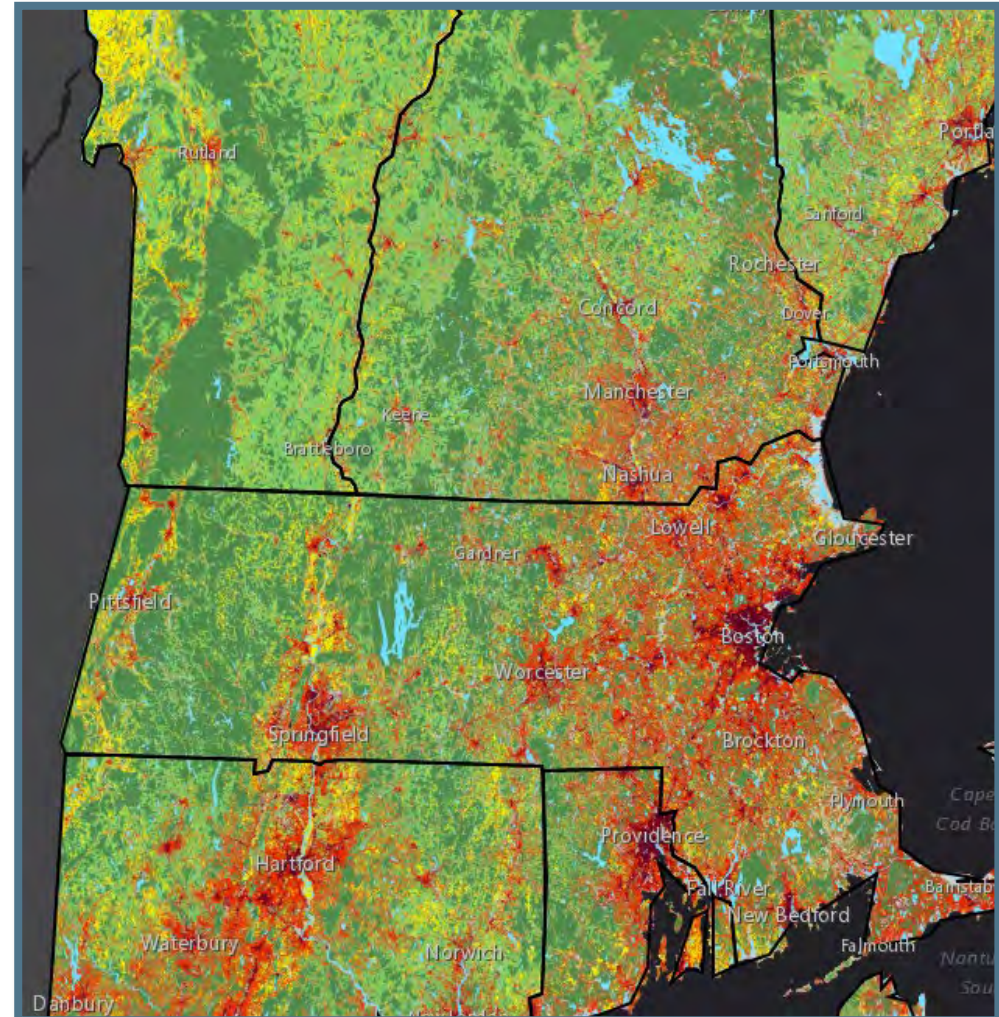
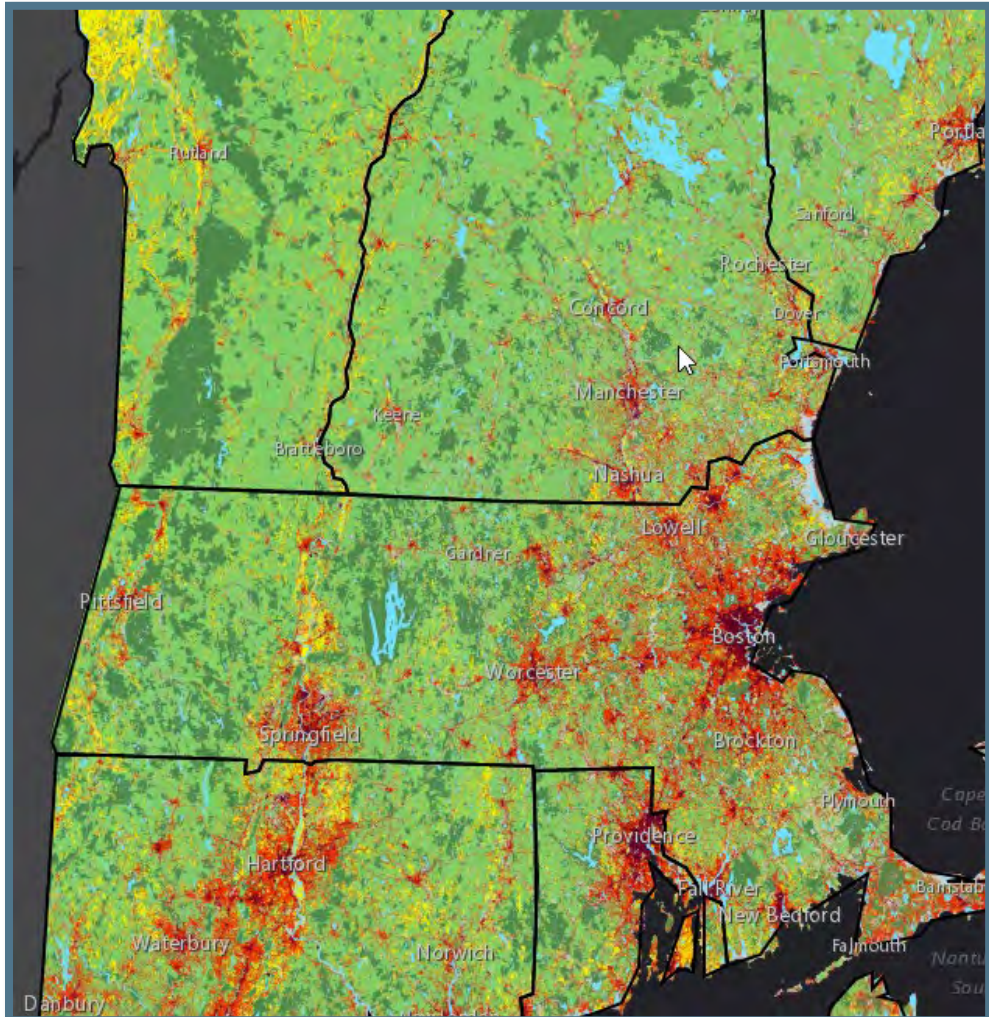
2060



Understanding Recent Trends

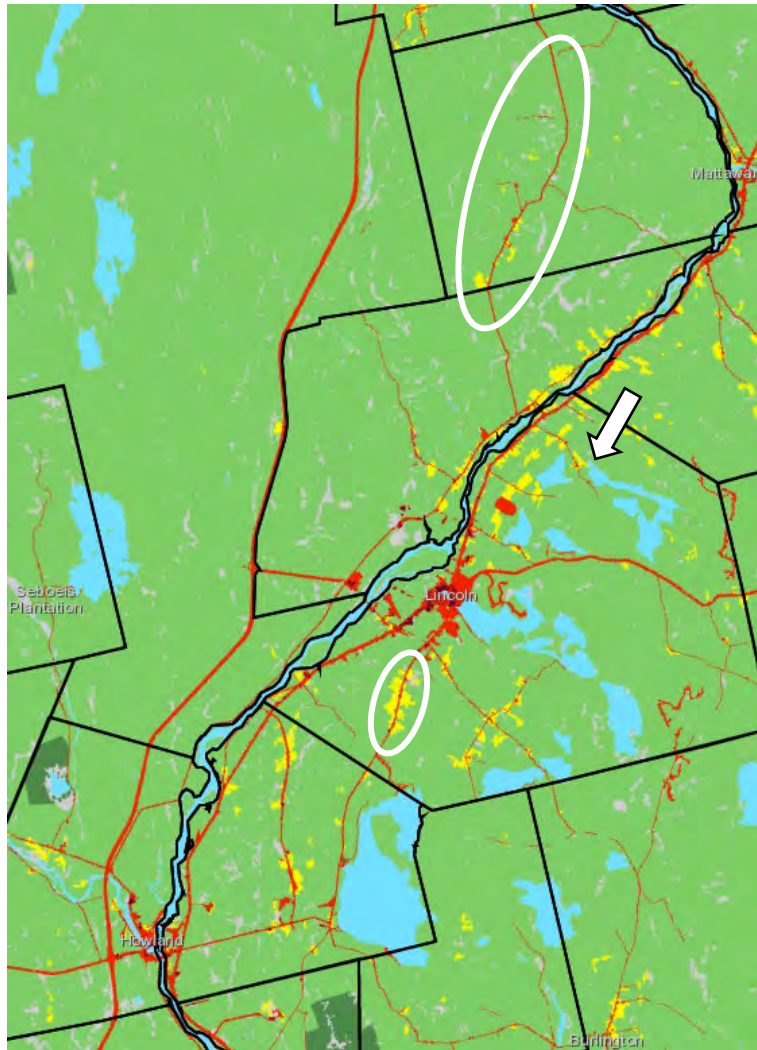
2010

2060

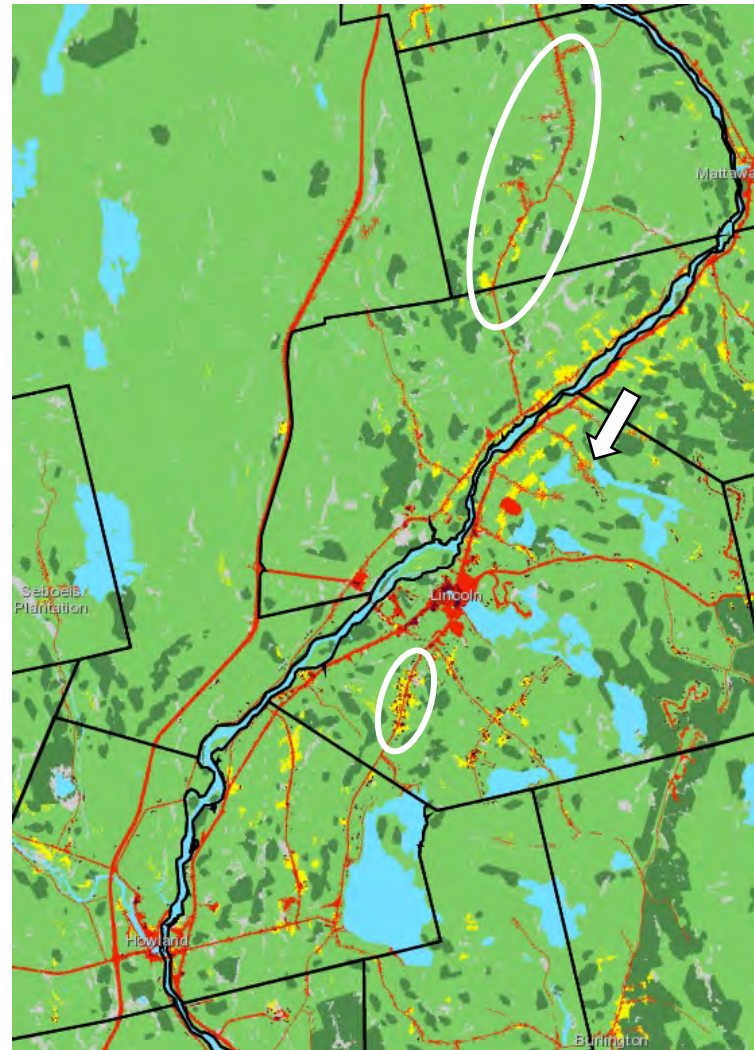


Identifying areas of likely development

Current conditions in Lincoln / Enfield

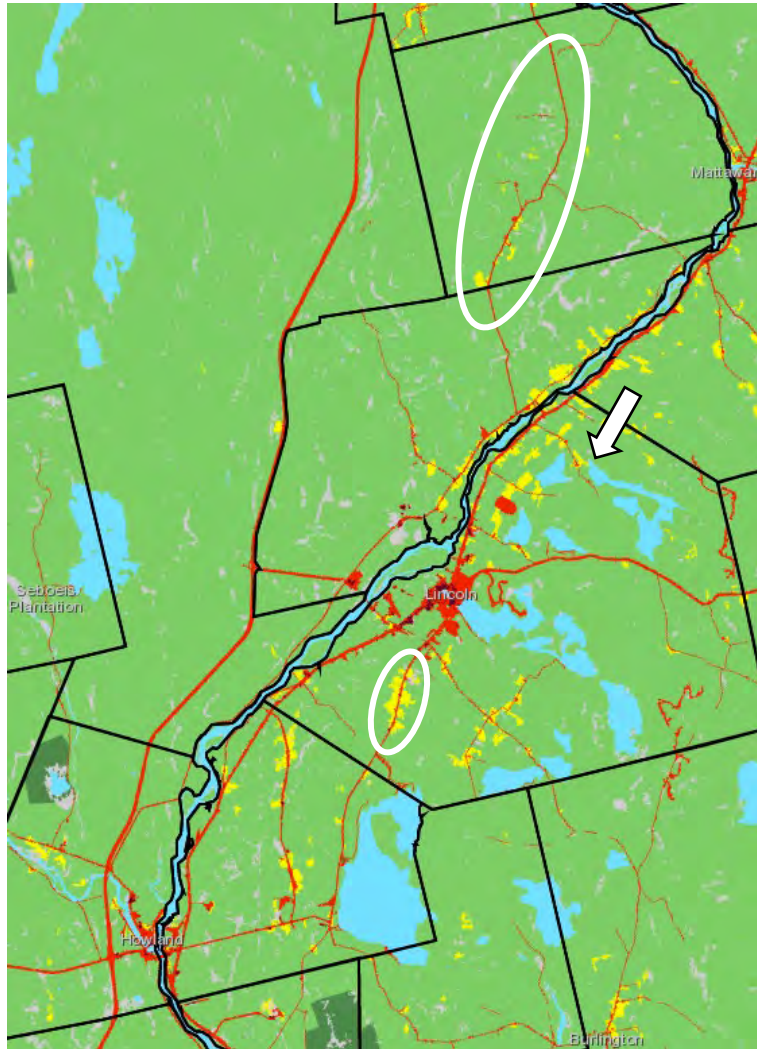


Recent Trends 2060

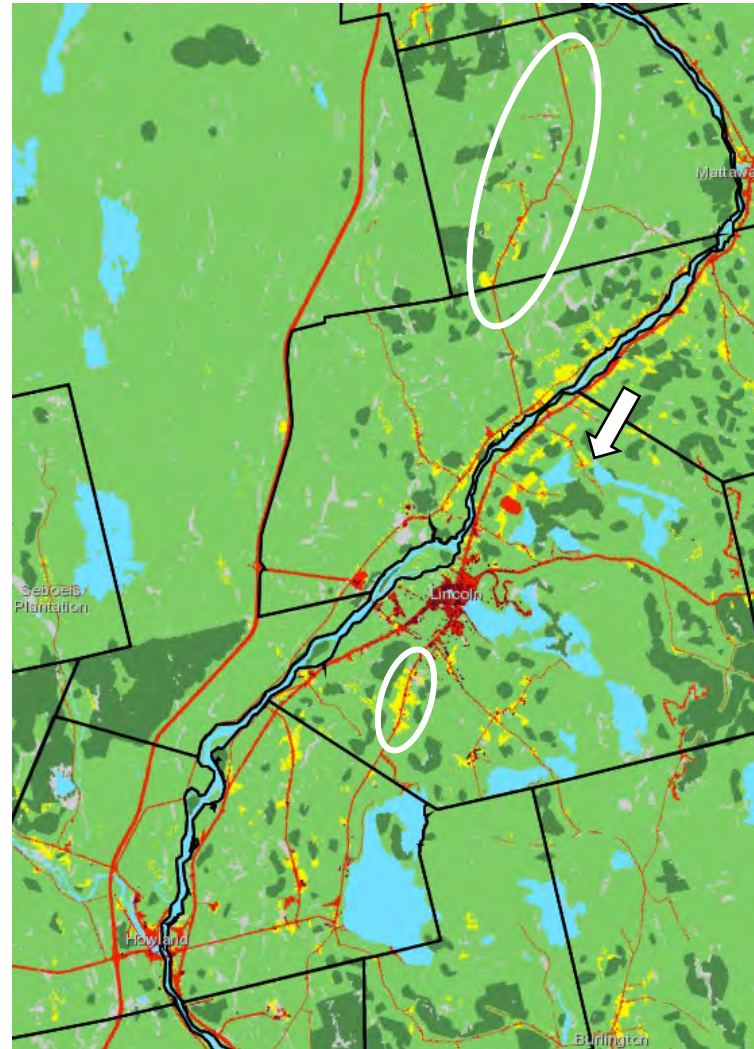


Identifying areas of likely development

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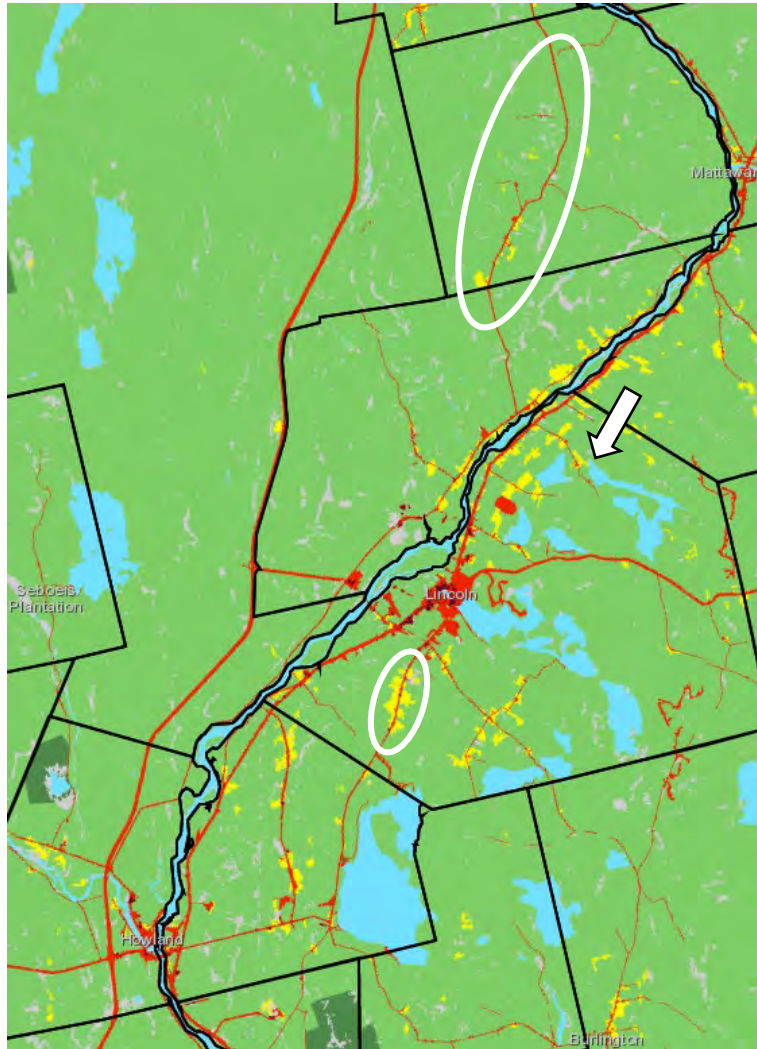


Connected Communities 2060

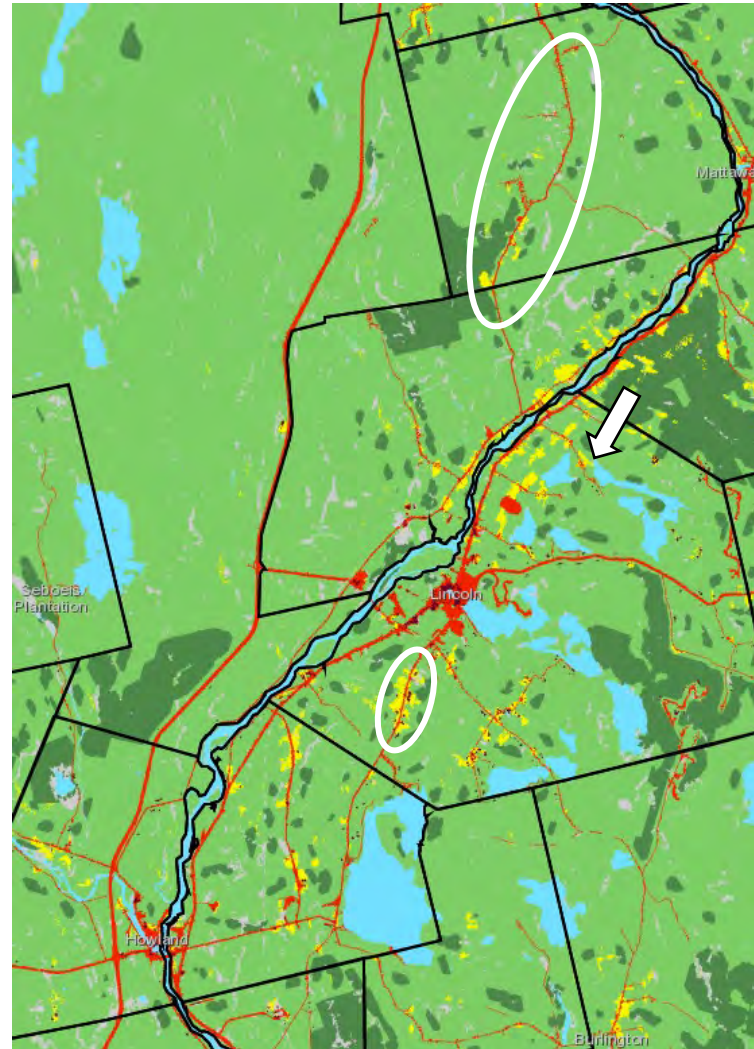


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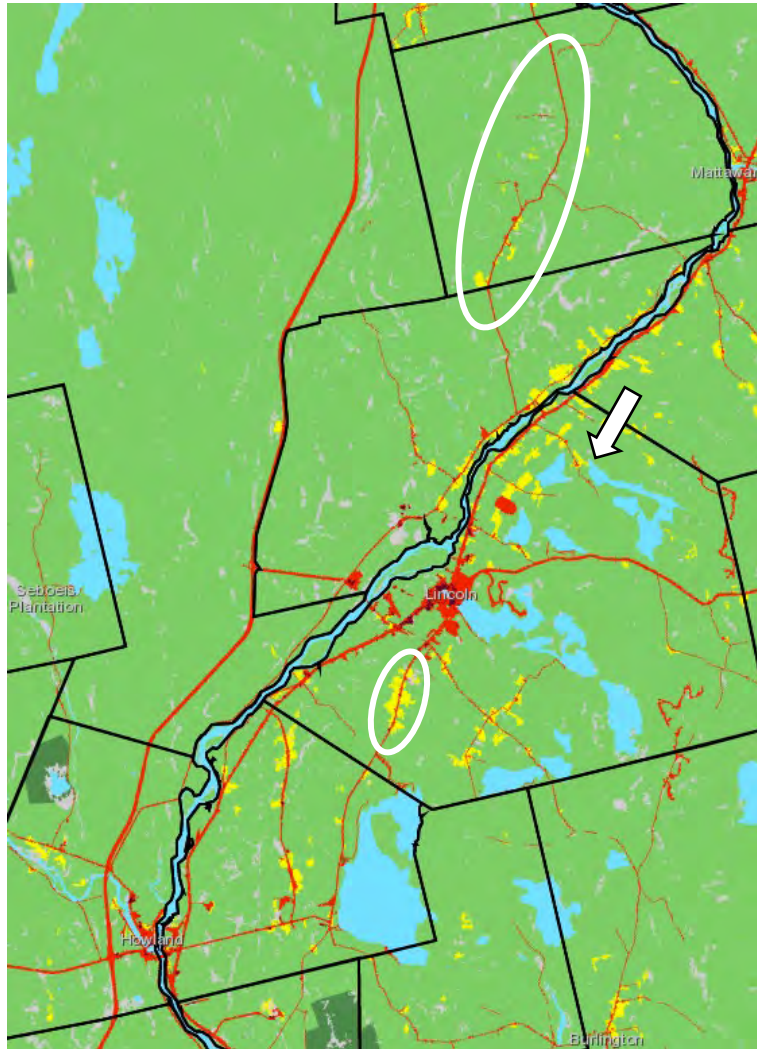


Yankee Cosmopolitan 2060

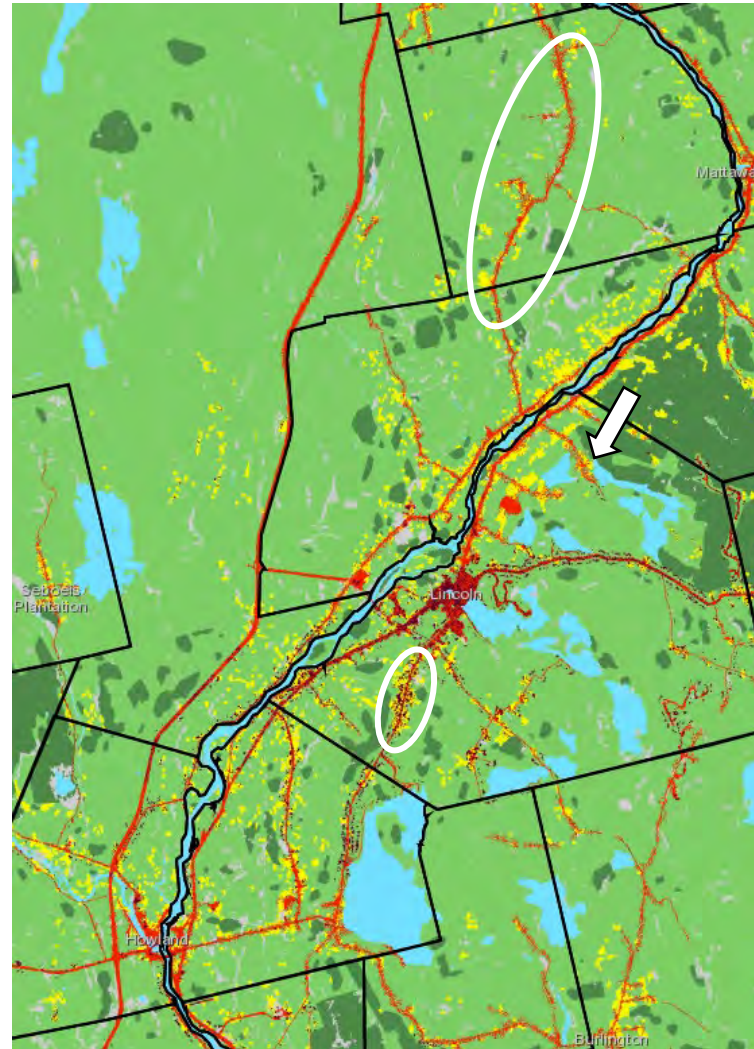


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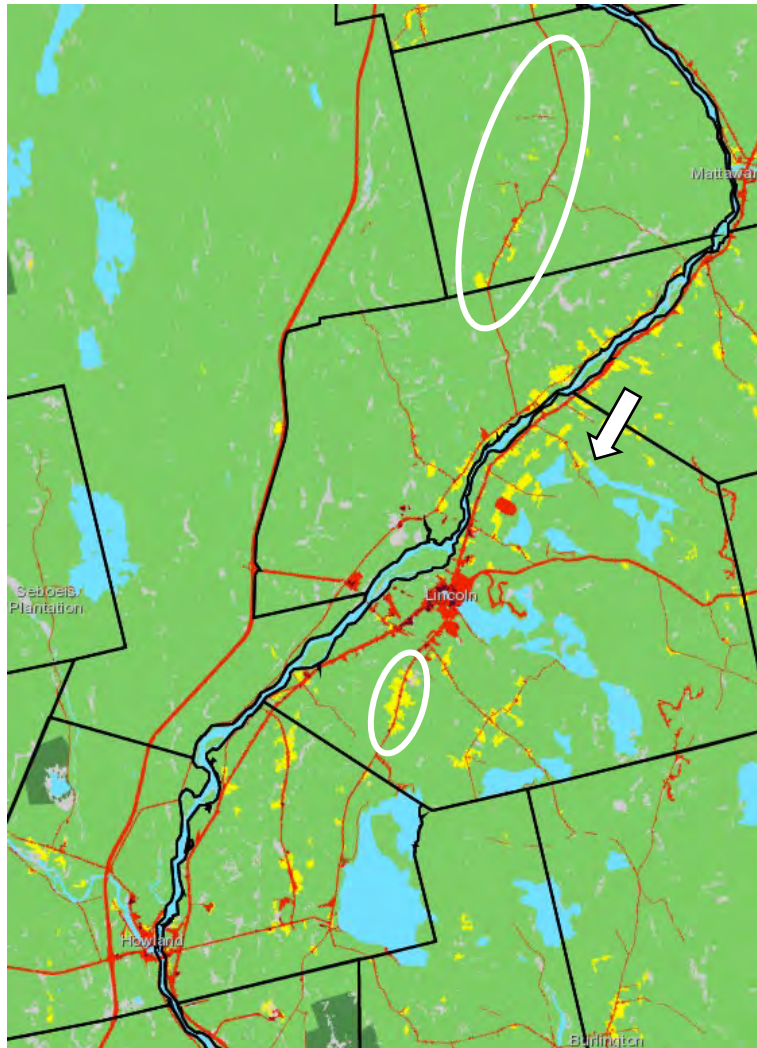


Growing Global 2060

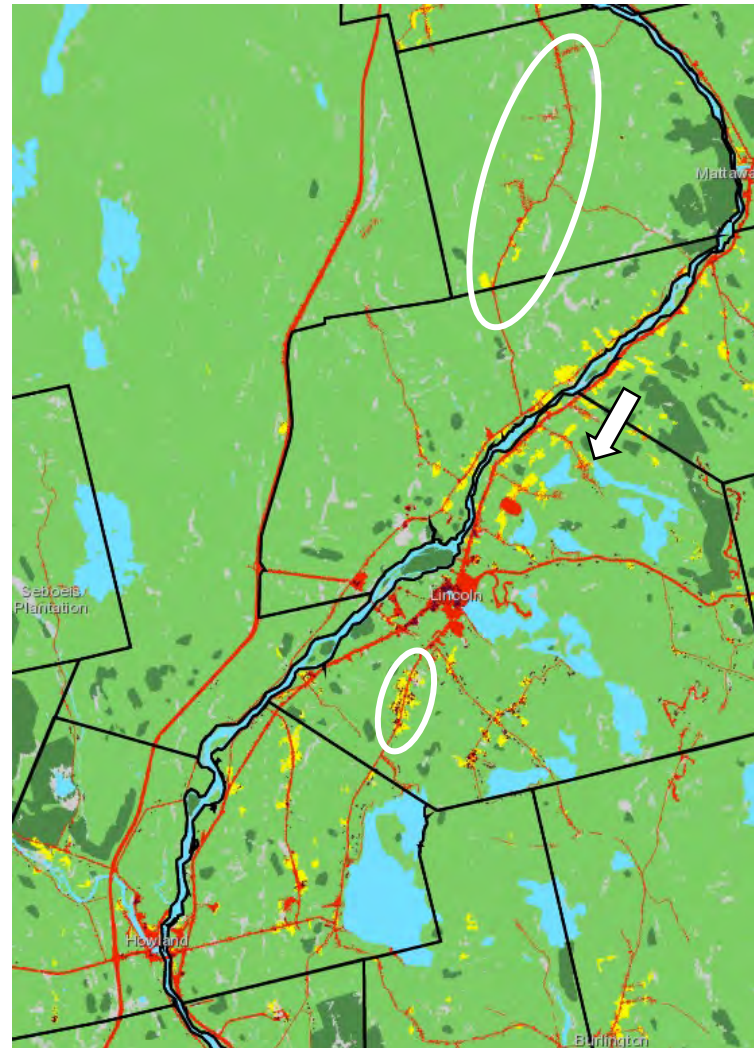


Identifying areas of likely development

Current conditions in Lincoln / Enfield

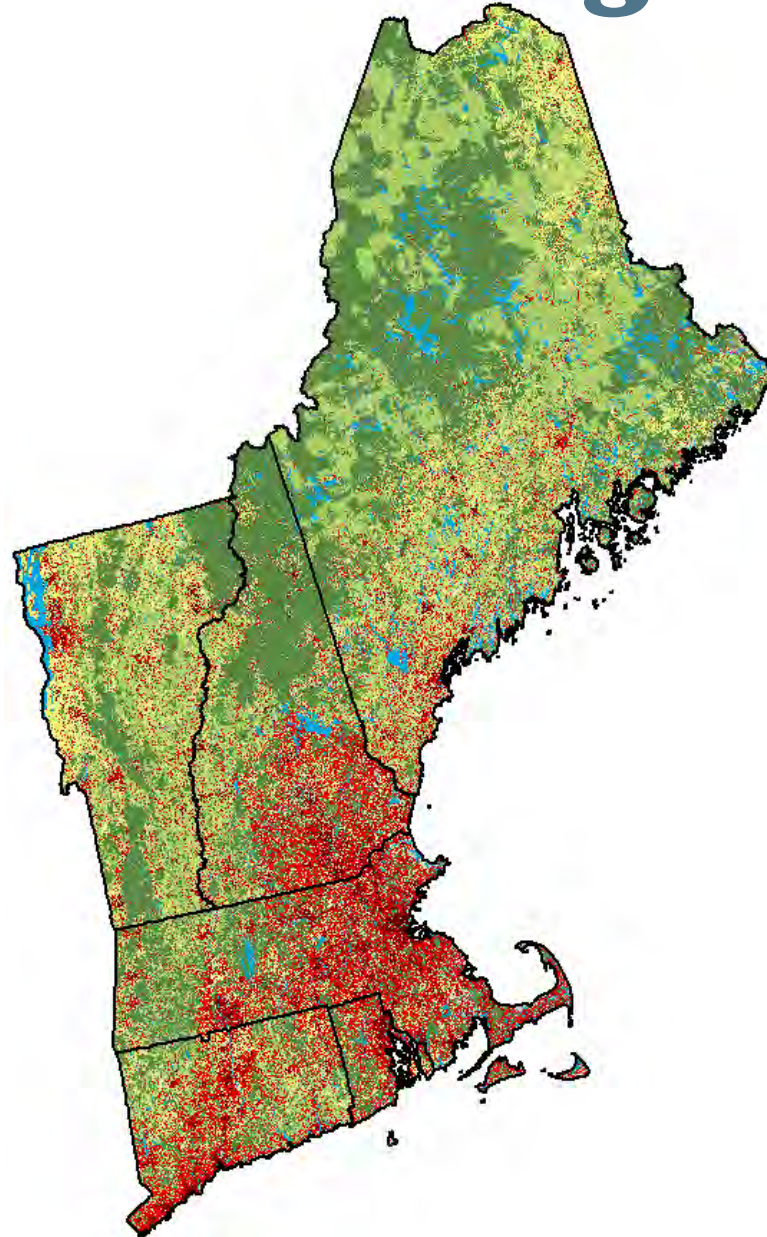


Go It Alone 2060



Consider impacts from neighboring communities

- How might wide-spread adoption of cross-laminated timber affect economic opportunities in Maine?
- How might population influxes to southern New England affect tourism opportunities?



Community visualization and discussion

- Visualizing alternative scenarios of the future can help people articulate their own visions
 - What do we like / dislike about each scenario's outcomes?
 - What can we do to make our preferred future a reality?
- Bring people together around a focal point to facilitate and ground discussions



NELF Resources

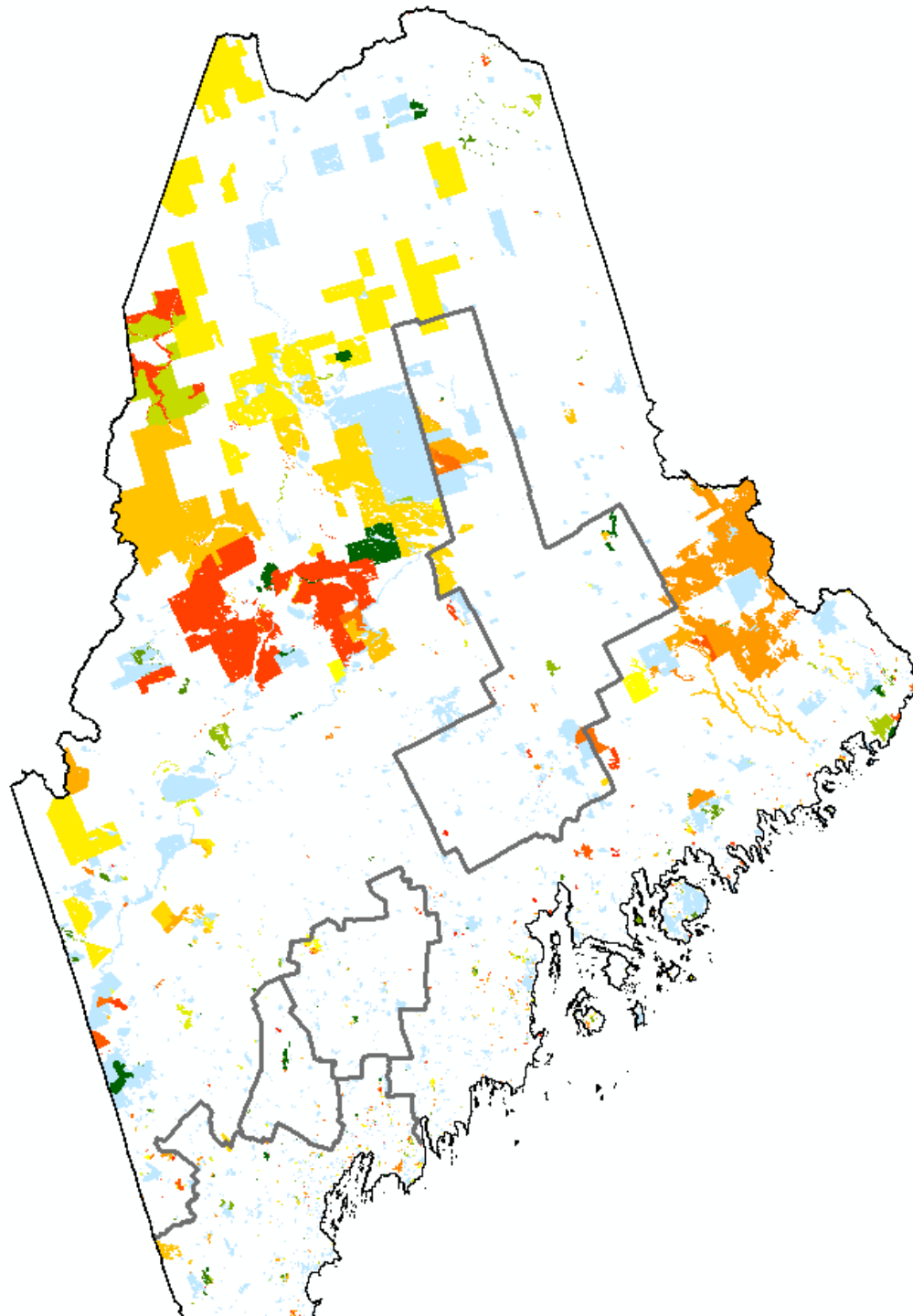
- Print materials:
 - *Voices from the Land* – project background, quotes from workshop participants, scenario summaries & illustrations
 - Postcard – contact information, relevant links
 - Request for Proposals – max budget \$6000
- <https://help.newenglandlandscapes.org>
 - Video tutorials
 - FAQ
 - Peer-reviewed publications
- <https://bit.ly/NELFsurvey>
 - Feedback on the NELF Explorer and scenarios! All questions are optional!

newenglandlandscapes.org

Blue protected before 1990

Dark green - Protected in 1990

Red - Protected in 2010



Components of the NELF Explorer

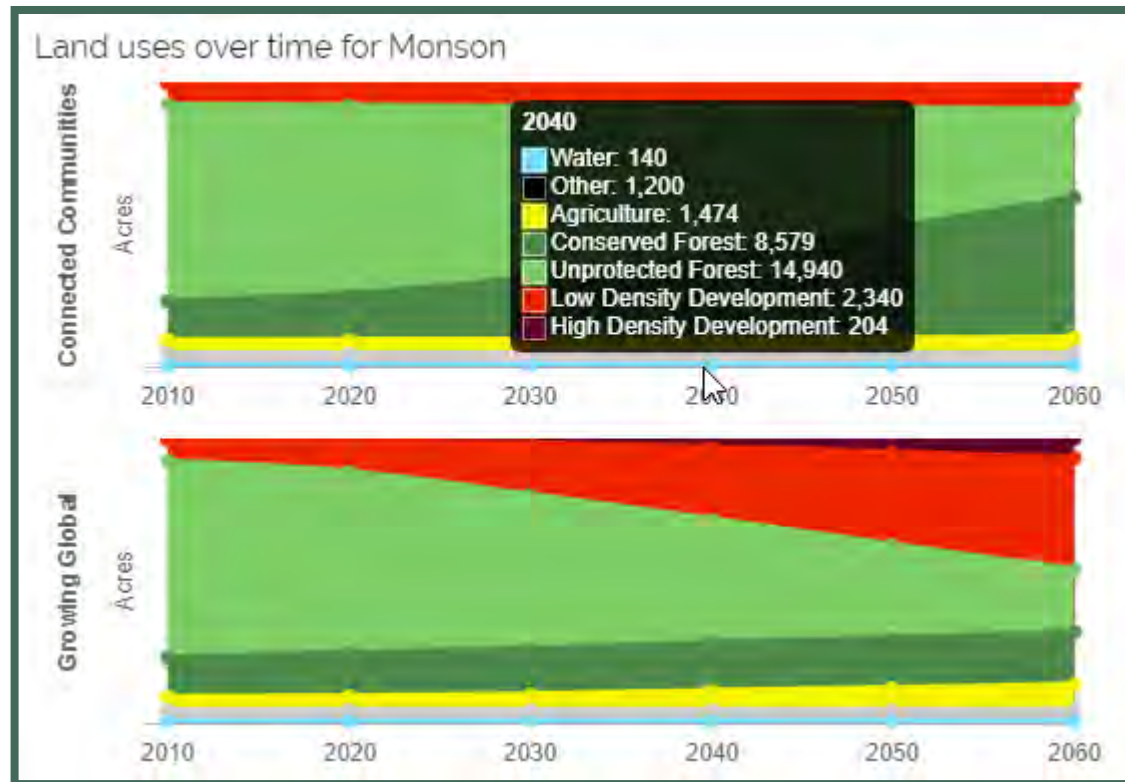
Multiple spatial scales of analysis



Components of the NELF Explorer

Multiple spatial scales of analysis

Land use through 2060 with land use acreages every decade



Explore Areas ▾

State

County

Municipality

Watershed (HUC 8)

Core-Based Statistical Area

Components of the NELF Explorer

Multiple spatial scales of analysis

Land use through 2060 with land use acreages every decade

Impacts of land use on valuable land types



Components of the NELF Explorer

Multiple spatial scales of analysis

Land use through 2060 with land use acreages every decade

Impacts of land use on valuable land types

Impacts on within Monson

Conserved forest land decreases
Connected Communities: 6,171 acres | Growing Global: 802 acres
By 2060 in Monson, conserved forest land in wildlife habitats **decreases** in the Growing Global scenario compared to the Connected Communities scenario.

Developed land increases
Connected Communities: 250 acres | Growing Global: 5,088 acres
By 2060 in Monson, developed land in wildlife habitats **increases** in the Growing Global scenario compared to the Connected Communities scenario.

About Wildlife Habitats:
Important habitat for wildlife is defined as the areas identified by each state in their State Wildlife Action Plan (SWAP). SWAPs identify priority species and habitats for conservation, tailored to each state's needs while being consistent with national goals.

Explore Areas ▾

- State
- County
- Municipality**
- Watershed (HUC 8)
- Core-Based Statistical Area

Components of the NELF Explorer

Multiple spatial scales of analysis

Land use through 2060 with land use acreages every decade

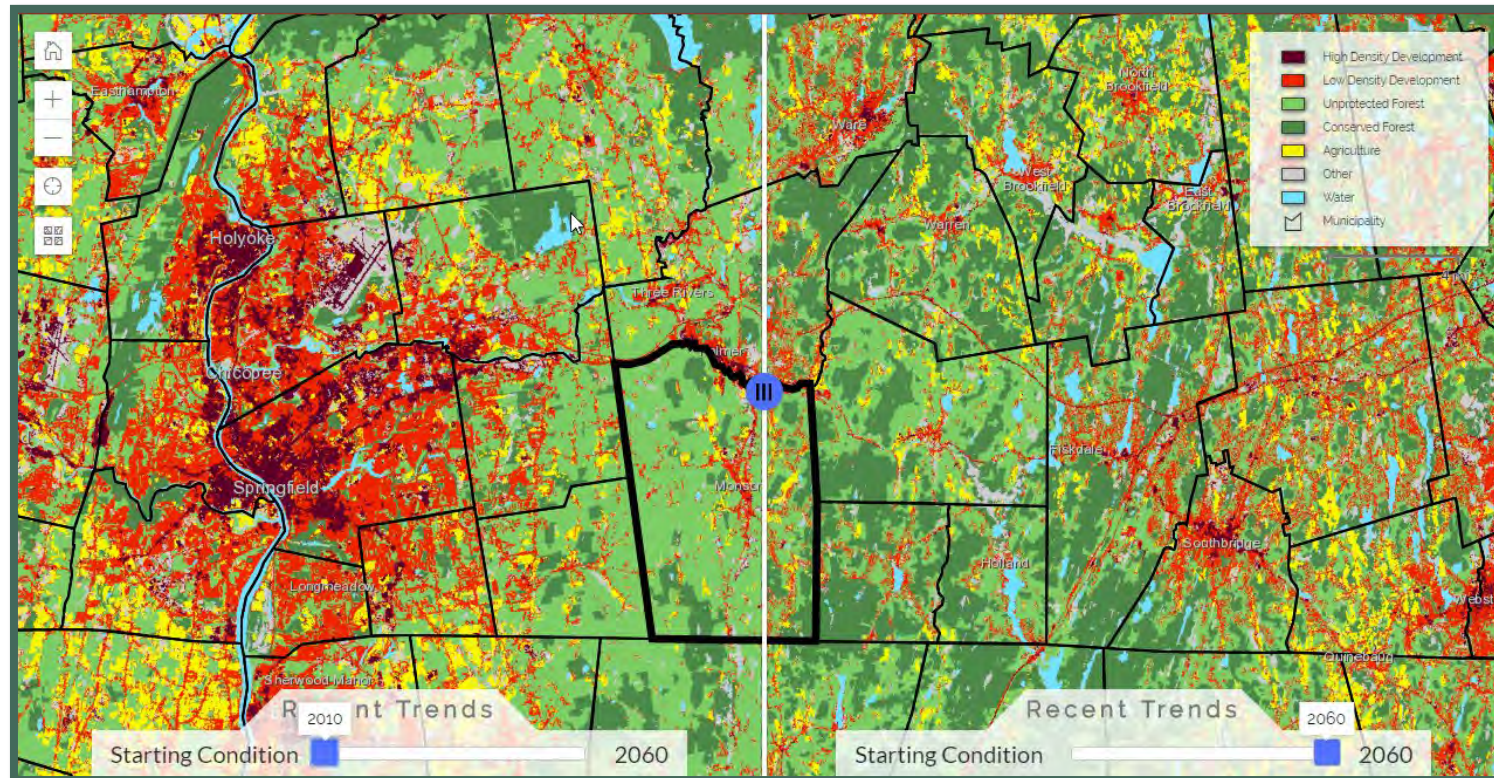
Impacts of land use on valuable land types

Land use maps 2010-2060 at each decade

Recent Trends or “business as usual”

Explore Areas ▾

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Components of the NELF Explorer

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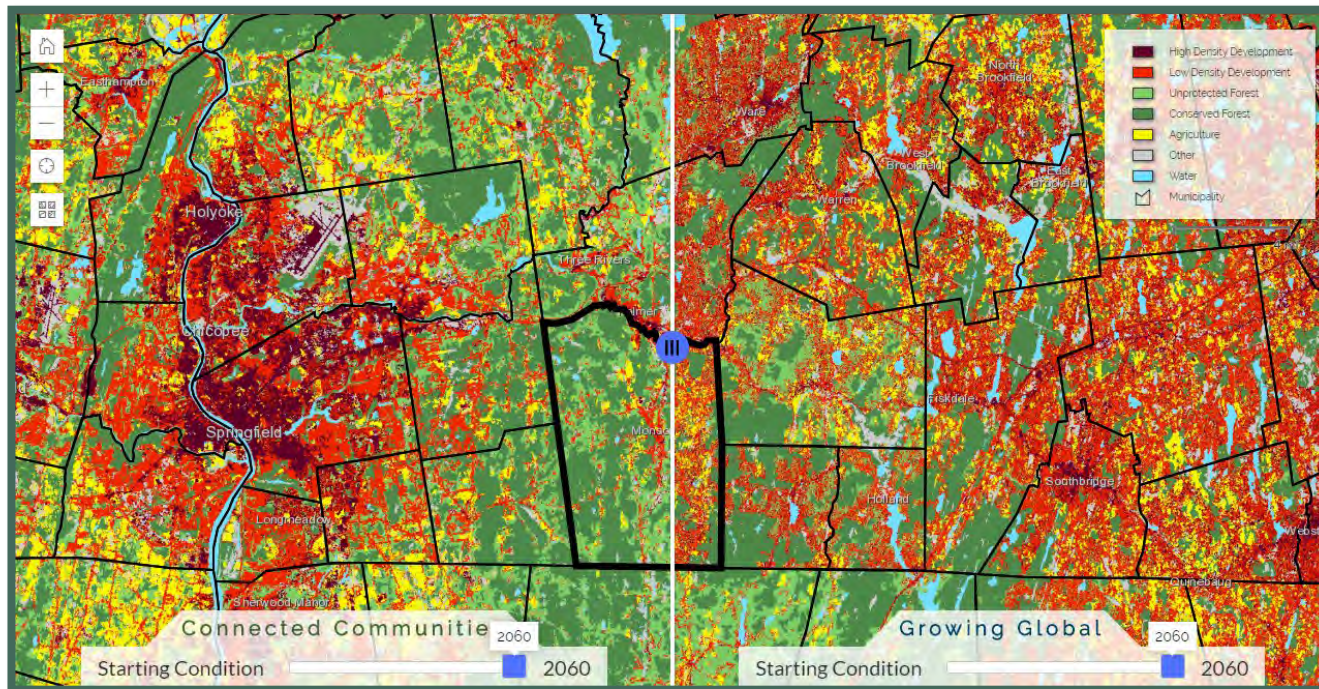
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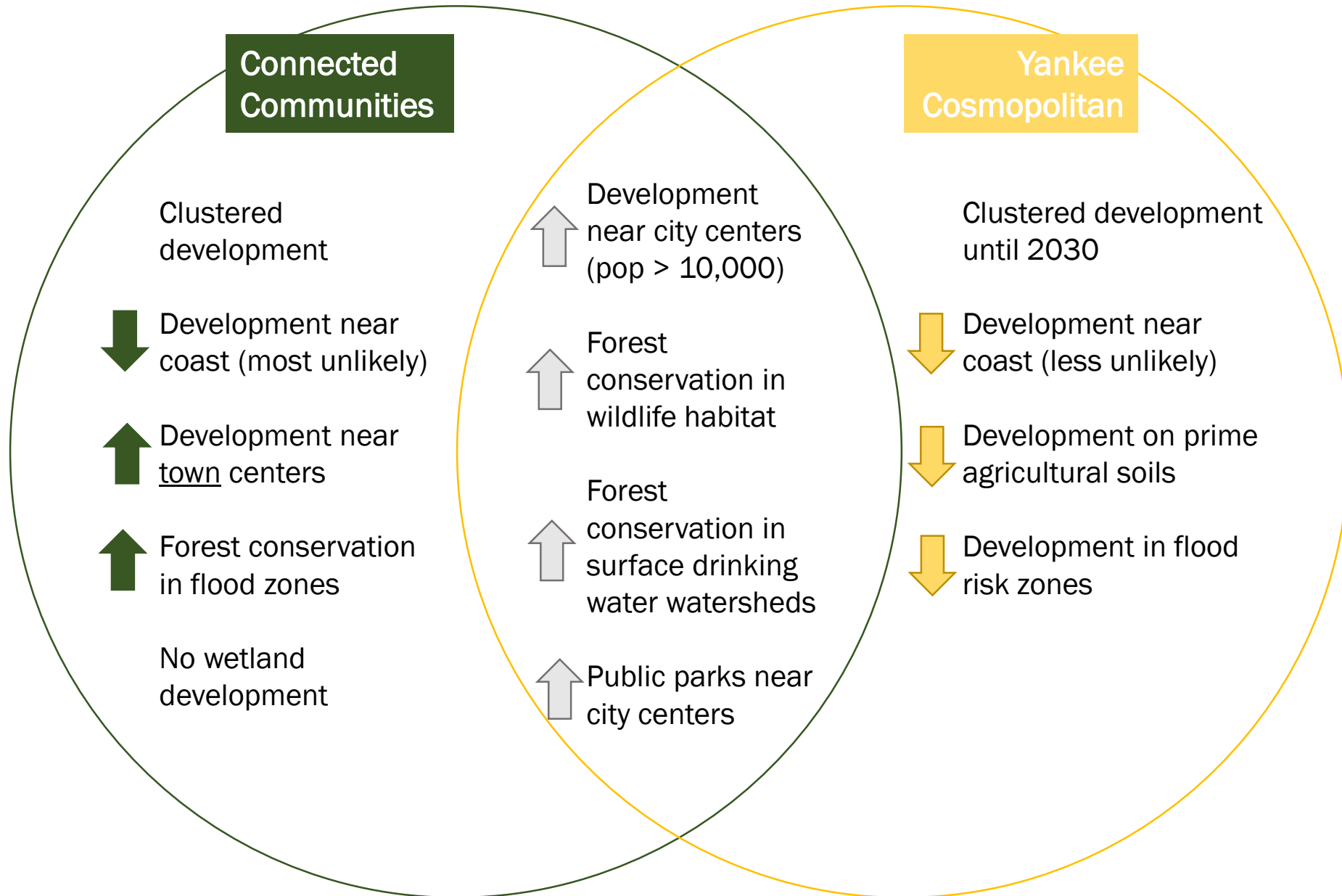
Recent Trends or “business as usual”

Alternative scenarios defined by stakeholders



[Click here for introductory video on how to navigate and interpret the NELF Explorer](#)

Consider climate resilience



Compare the impacts of land use in a CC or YC world to scenarios where we do nothing to adapt to climate change.

