Generating News You Can Use: Building Scenarios of Future Land Cover/Land Us in New Hampshire

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NH EPSCoR
Interactions Among Climate, Land Use, Ecosystem Services, and Society

ECOSYSTEMS + SOCIETY

Research Question: How do changing climate and human land use affect the ability of New Hampshire landscapes to provide essential aquatic and terrestrial ecosystem services to the state and region across multiple scales?

Data and Information

Headwater intensive sensor network

Distributed sensor networks
(LoVoTECS, CoCoRAHS)

Airborne hyperspectral

NH resident perceptions
via surveys & interviews

Evaluation

Additional data & info
leveraged sites
met, discharge, census, etc.
satellite

Models and Analysis

FRAMES, PnET, WRF

Land use/demographics

Ecosystem valuation

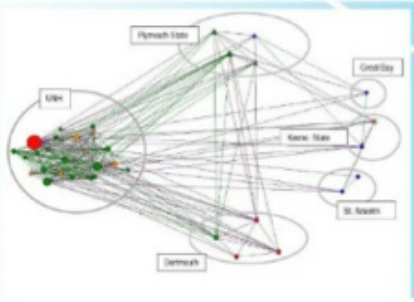
Stakeholder engagement

NH resident perceptions

Land use and climate
scenarios








Interactions Among Climate, Land Use, Ecosystem Services, and Society

ECOSYSTEMS + SOCIETY

Decision Capacity Goal

To strengthen management and policy decision capacity in New Hampshire regarding ecosystems and their services to, and interactions with, society

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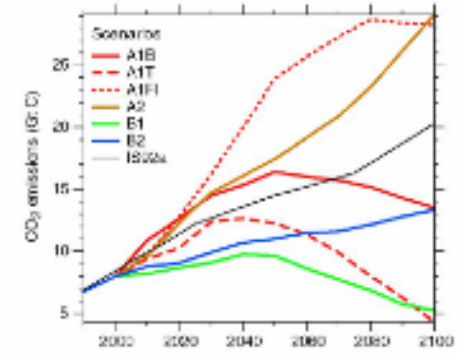
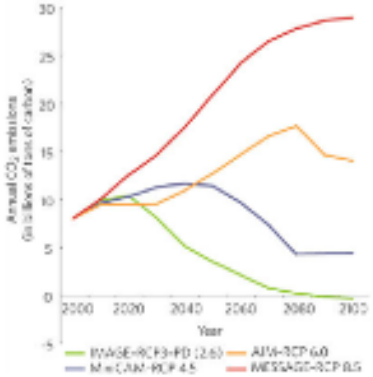
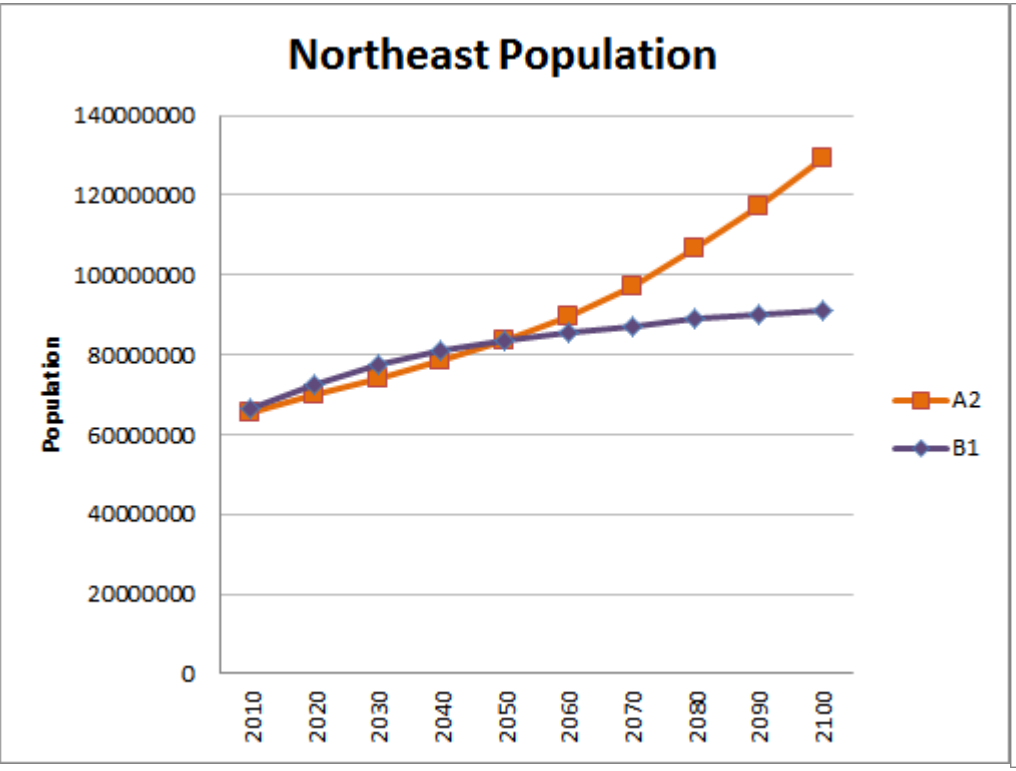
Climate Scenarios

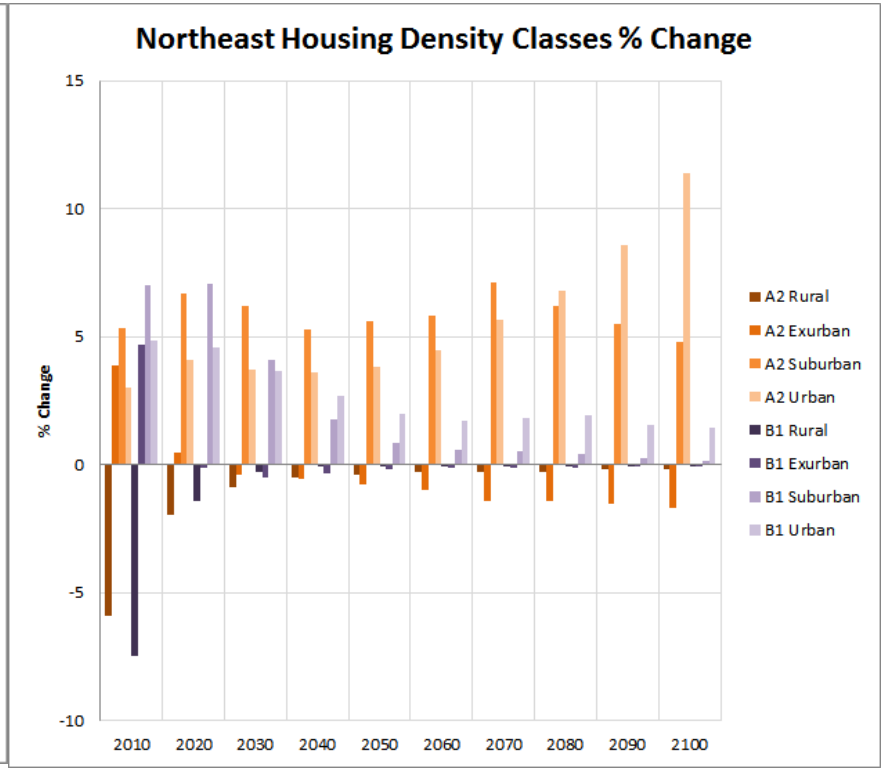
- Global Climate Scenarios from IPCC AR4; Downscaled to stations and grid for entire Northeast
- Use model output to drive models (PnET, FrAMES, WRF)
- Use AR5 Representative Concentration Pathways when available





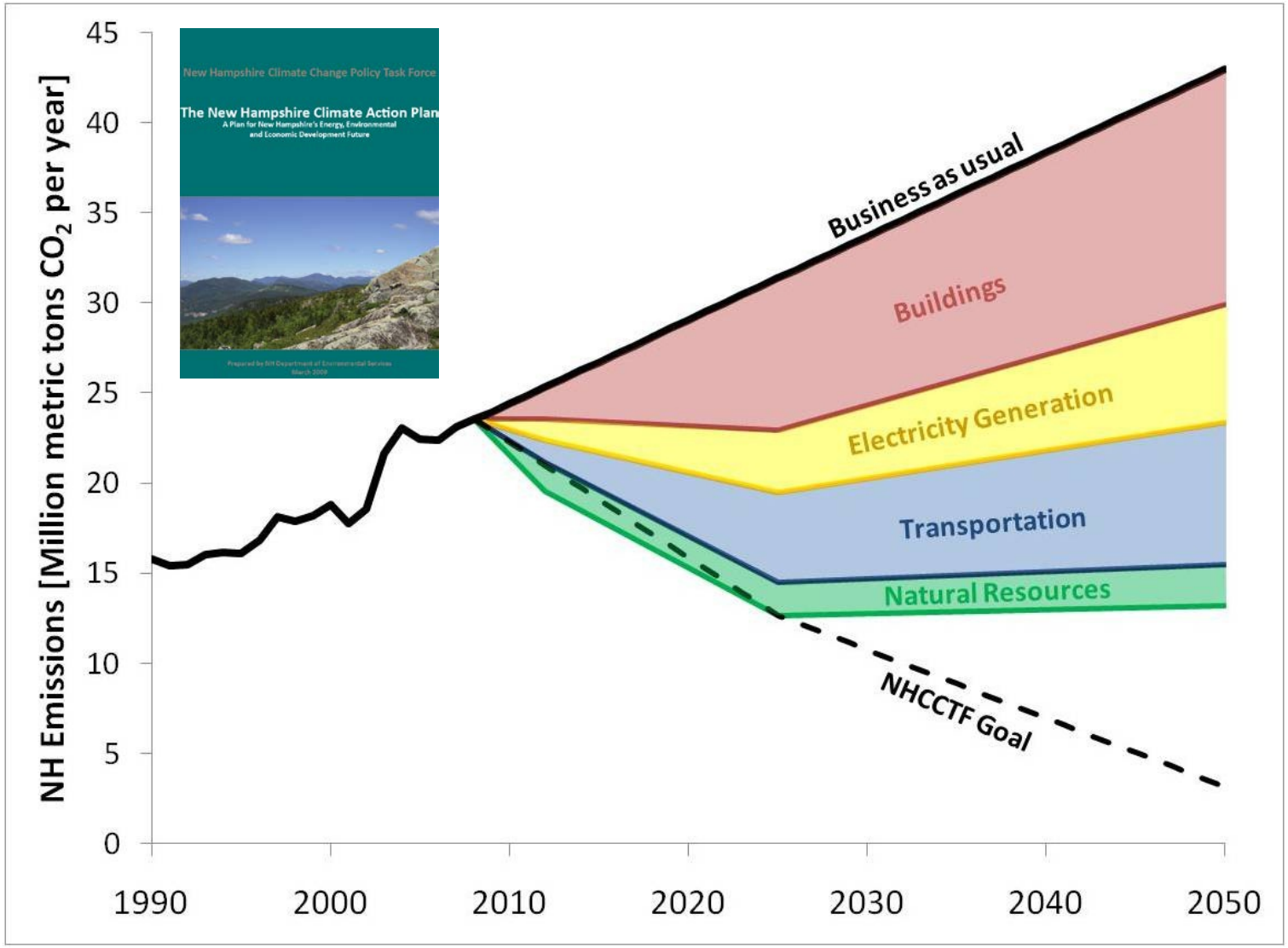
National Climate Assessment
Integrated Climate and Land Use Scenarios (ICLUS)





http://scenarios.globalchange.gov/content/scenarios

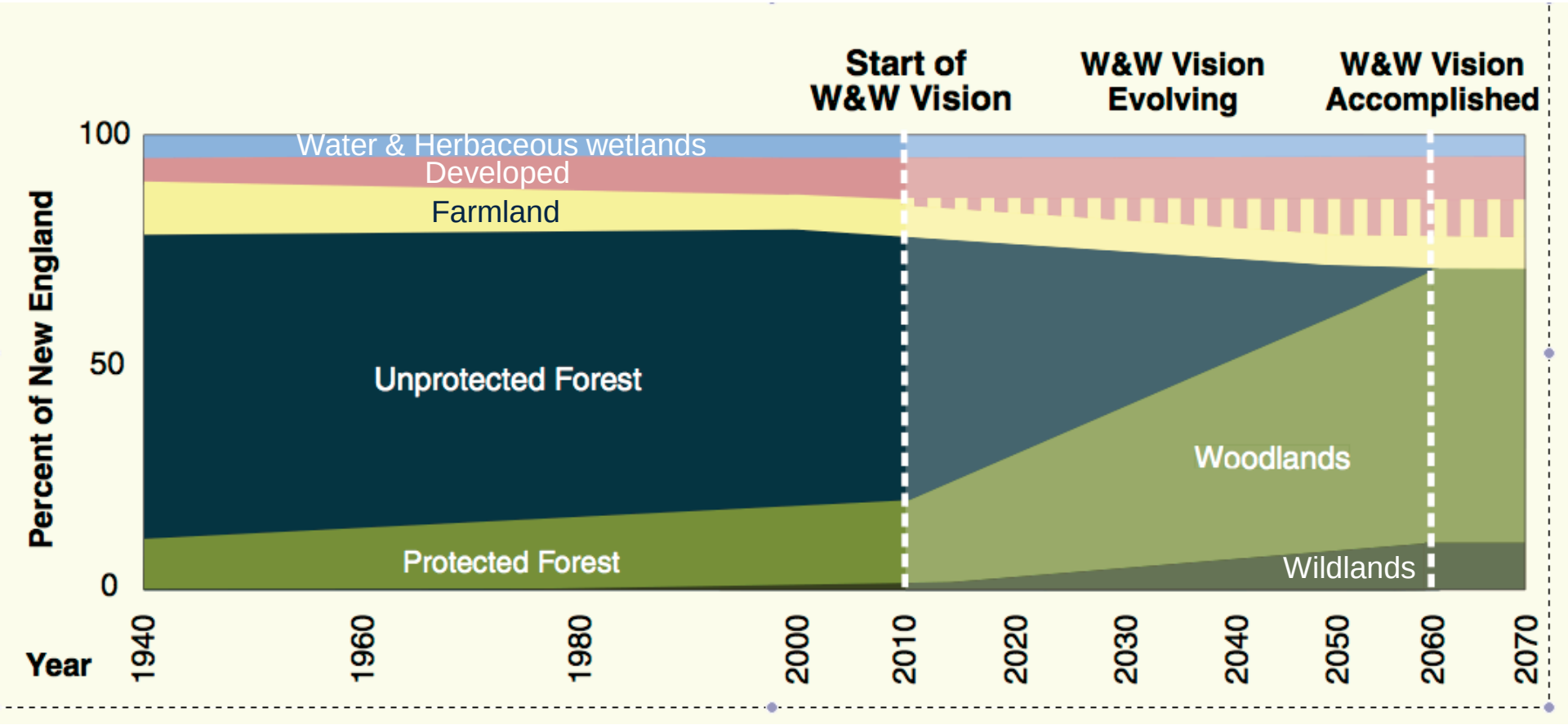
NH Climate Action Plan



Wake et al. (2011) Production of Decision-Relevant Information for NH's Climate Action Plan. *The Northeastern Geographer* 3, 1-21.

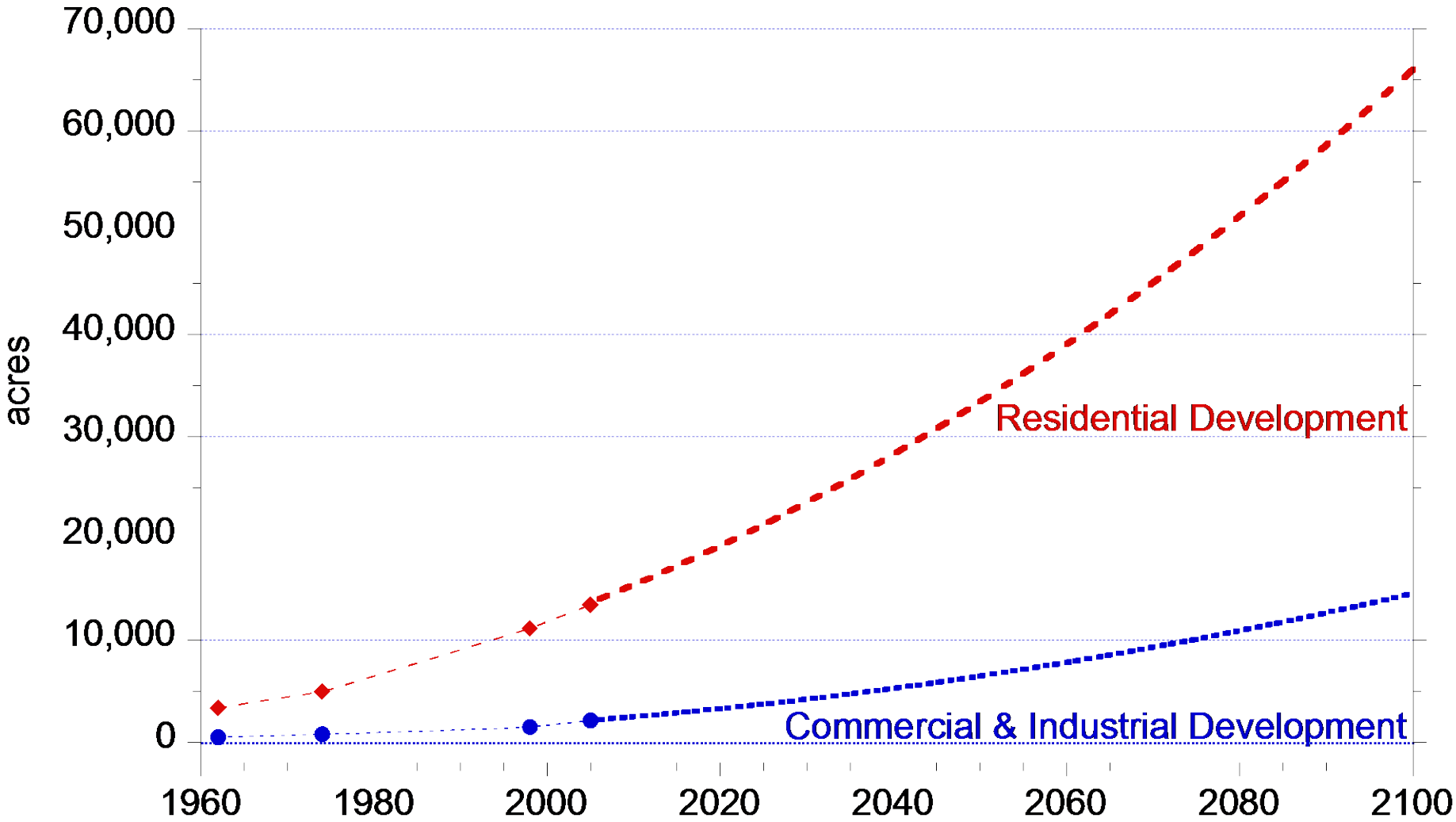
Wildlands and Woodlands

A vision for the New England Landscape



Foster et al., 2010

Lamprey River Watershed
Build Out Scenario



http://100yearfloods.org

What **would you like** and/or **what do you expect** New Hampshire to look like in the future, 2-4 decades from now?

Please include comments on:

Water resources

Dispersed verses concentrated development

Type of development

(e.g., pervious verses impervious; planned vs. unplanned)

Percent land in conservation

ECOSYSTEMS + SOCIETY

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Ecosystem Services Studied in this Project

Provisioning Services
- Water supply
- Wood (timber, fiber, fuel

Regulating Services
- Climate (carbon storage, albedo)
- Water regulation
- Water purification and waste treatment

Cultural Services
- Recreation

Supporting Services
- Soil formation
- Photosynthesis
- Nutrient cycling

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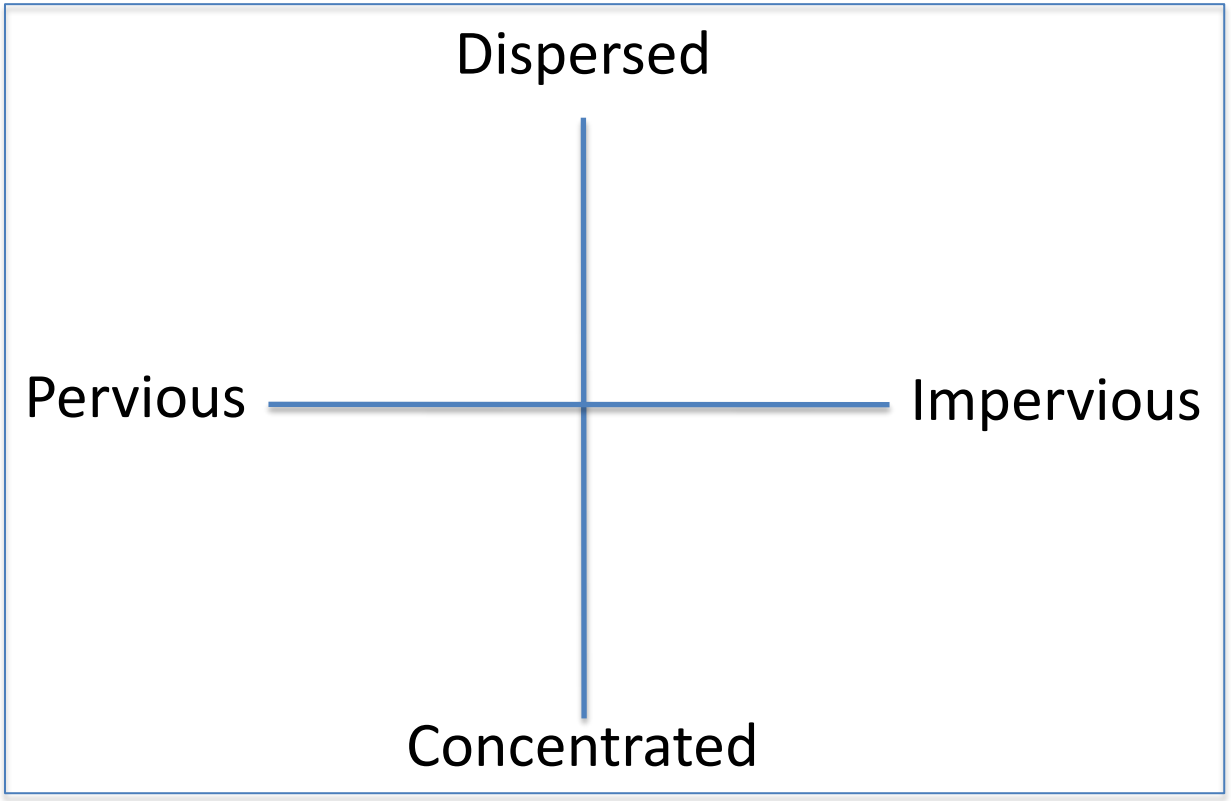
Narratives for NH Land Cover/Land Use Scenarios
Organized along two major axes:



Horizontal axis:
Type of development

Vertical axis: spatial variable also controlled by:

- housing classes (urban, suburban, exurban, rural, non-residential developed)
- population and housing density within each housing class
- "undeveloped" land cover area (forests, agriculture, wetlands, etc)

Interactions Among Climate, Land Use, Ecosystem Services, and Society
Four Primary Goals

ECOSYSTEMS + SOCIETY

1. To better understand complex interactions among climate, land use, ecosystem function, and society (Ecosystem Function Goal)

1. To strengthen management and policy decision capacity in New Hampshire regarding ecosystems and their services to, and interactions with, society (Decision Capacity Goal)

1. To build capacity for competitive research in interdisciplinary ecosystem-related natural and social sciences (Educational Infrastructure Goal)

1. To strengthen and diversify the STEM workforce pipeline in NH (STEM Pipeline Goal)

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