

Applying NELF to Your Work

NELF Lunch Chat - 29 September 2020

Welcome!

Who are you and what motivates you to be here today?

NELF Explorer and/or data has been used for conservation, planning, and education.

Fundraising

- Recent Trends
- Other scenarios: uncertainty of the future, urgency of work

Understanding development threat, trends in conservation

- Recent Trends: rates and patterns of development & conservation (based on 1990-2010)
- All scenarios: what gets developed every time?
- Inform comprehensive plans

Talking about climate change impacts

- Growing Global: unexpected population influxes, managed retreat
- Role of forests and farmlands in mitigating climate impacts

Teaching ecological/landscape concepts

- Human impact on the landscape, policy solutions to avoid fragmentation
- Land use and ecosystem services
- Role playing civic engagement / persuading different perspectives
- Connecting landscape patterns and processes

GIS analysis of NELF data

- Imperviousness within areas of interest
- Analysis with your data: what happens to X in the scenarios?

Community conversations

- Use scenarios as a visual aid in discussing future possibilities for your community
- Get people talking about what they hope for the future

Resources

Resources included in this slide deck

- Recent Trends spreadsheet
- Framing suggestions
- Full length narratives
- Video tutorials
- Lesson plans
- Story map

- Not included but worth checking out: [FAQ](#)

Recent Trends spreadsheet

What it does: creates descriptive statistics and charts of future land use under the business-as-usual Recent Trends scenario

Can be used for: adding context on what the current trajectory means for your area of interest (e.g., for showing evidence of need on grants)

Access this resource!

Spreadsheet: <http://bit.ly/NELFstats2>

Instructional video: <https://www.youtube.com/watch?v=IKOcFrEkEso>

Recent Trends spreadsheet

Step 1: You enter data from NELF Explorer:

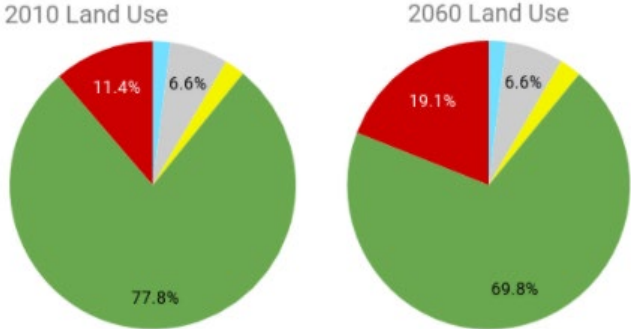
Table 1. Acres of land use as seen in "Land uses over time" Recent Trends chart.

Land Use	2010 acres	Future acres
Water	429	429
Other	1,424	1,424
Agriculture	492	533
Conserved Forest	5,518	9,636
Unprotected Forest	11,260	5,432
Low Density Development	2,074	3,120
High Density Development	376	999

Step 3: You use the numbers and charts to illustrate your case: *“Athol is about **78%** forest, and **one third** of existing forests are protected. Given recent land-use trends, it is likely that **10%** of Athol’s existing forests – an area the size of **1,300** football fields – will be lost by 2060. This grant will enable us to purchase X acres for permanent protection...”*

Step 2: The spreadsheet automatically creates additional statistics and charts:

Land Use	2010	Future
% of land that is forest	78	70
% of forest conserved	33	64
% of forest unprotected	67	36
% of land that is developed	11	19
% of developed low dens.	85	76
% of developed high dens.	15	24



Framing suggestions

What it is: recommendations for ways to summarize, describe, and talk about the scenarios & important things to know

Can be used for: deciding which scenarios work for you and preparing your messaging around the scenario(s)

Access this resource!

Direct link: https://drive.google.com/file/d/1SplhK2bgQhXL3PhR8w0NcJ_qCwLfoPWa/view

Help Website location: <https://help.newenglandlandscapes.org/nelf-scenarios>

Full length narratives

What it is: ~800 word stories describing life in each alternative to Recent Trends, with footnotes stating how qualitative scenario characteristics were mapped as land use change

Can be used for: deeper understanding of the scenarios as stories and how the maps represent real-world concepts (e.g., climate resilience)

Access this resource!

Direct link: <https://drive.google.com/file/d/1kGaPdYF01xlrZsNiXOhh3g6fEQrHGWSI/view>

Help Website location: <https://help.newenglandlandscapes.org/nelf-scenarios>

Video tutorials

Video tutorials provide instructions on topics including:

- Using and interpreting NELF Explorer
- Adding geographic context (e.g. roads, place names) to NELF Explorer
- Using the Recent Trends spreadsheet
- Creating and sharing specific NELF Explorer map views

Access this resource!

NELF YouTube channel: <https://www.youtube.com/channel/UC6l07r3KyjPE9og5Xgkp7Ww>

Help Website location: <https://help.newenglandlandscapes.org/videos>

Lesson plans

What it is: lesson plans utilizing NELF Explorer created by educators

★**THANK YOU** to educators for taking the time and effort to integrate NELF in your classrooms, and sharing those efforts with others!

Can be used for: teaching in your own classroom

Access this resource!

Middle to high school lesson plans: <https://harvardforest.fas.harvard.edu/schoolyard/lesson-plans>

- There are 1 middle school (Sautter) and 2 high school (Alcorn, Scanio) lesson plans in the 'Our Changing Forests' section of the above-linked webpage.

College lesson plan: <https://qubeshub.org/publications/1867/1>

Story Map

What it is: Esri story map introducing the NELF project and scenarios

Can be used for: better understanding the scenarios and Explorer

Access this resource!

Direct link: <https://newenglandlandscapes.org/story>

Help Website location: <https://help.newenglandlandscapes.org/story-map>

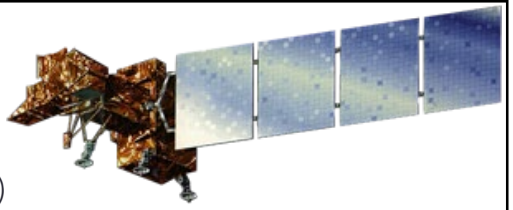
About NELF Maps

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

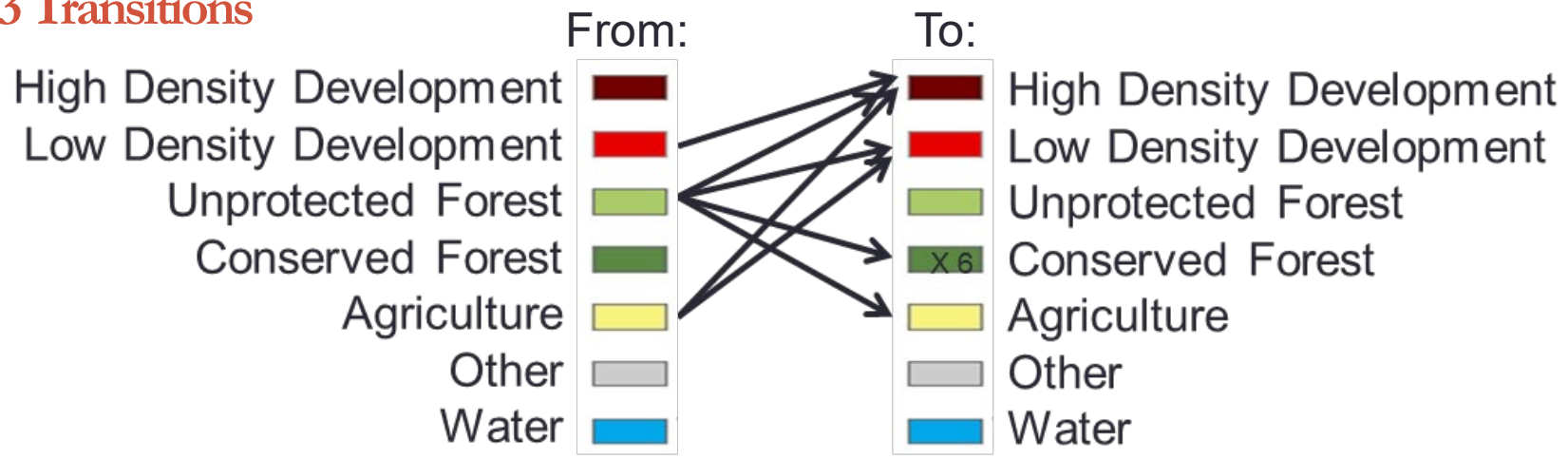
32 Sub-regions

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.

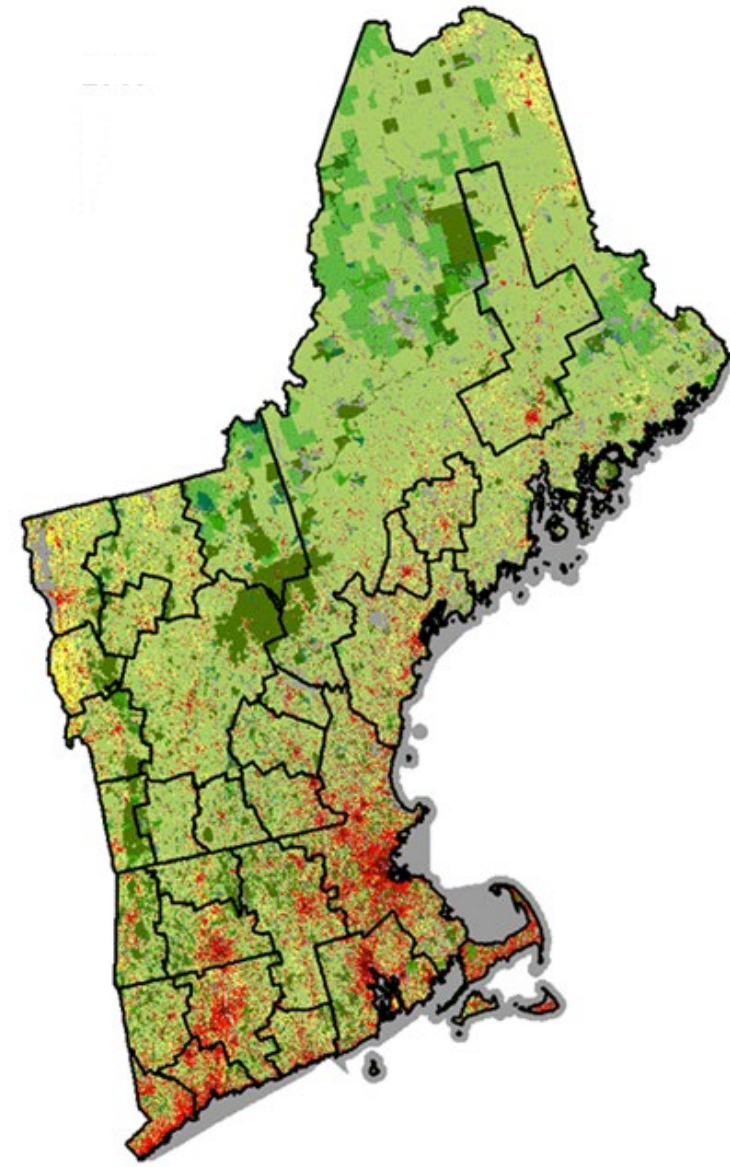


13 Transitions



7 Driver Variables

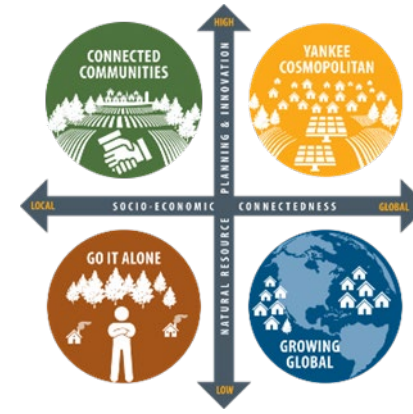
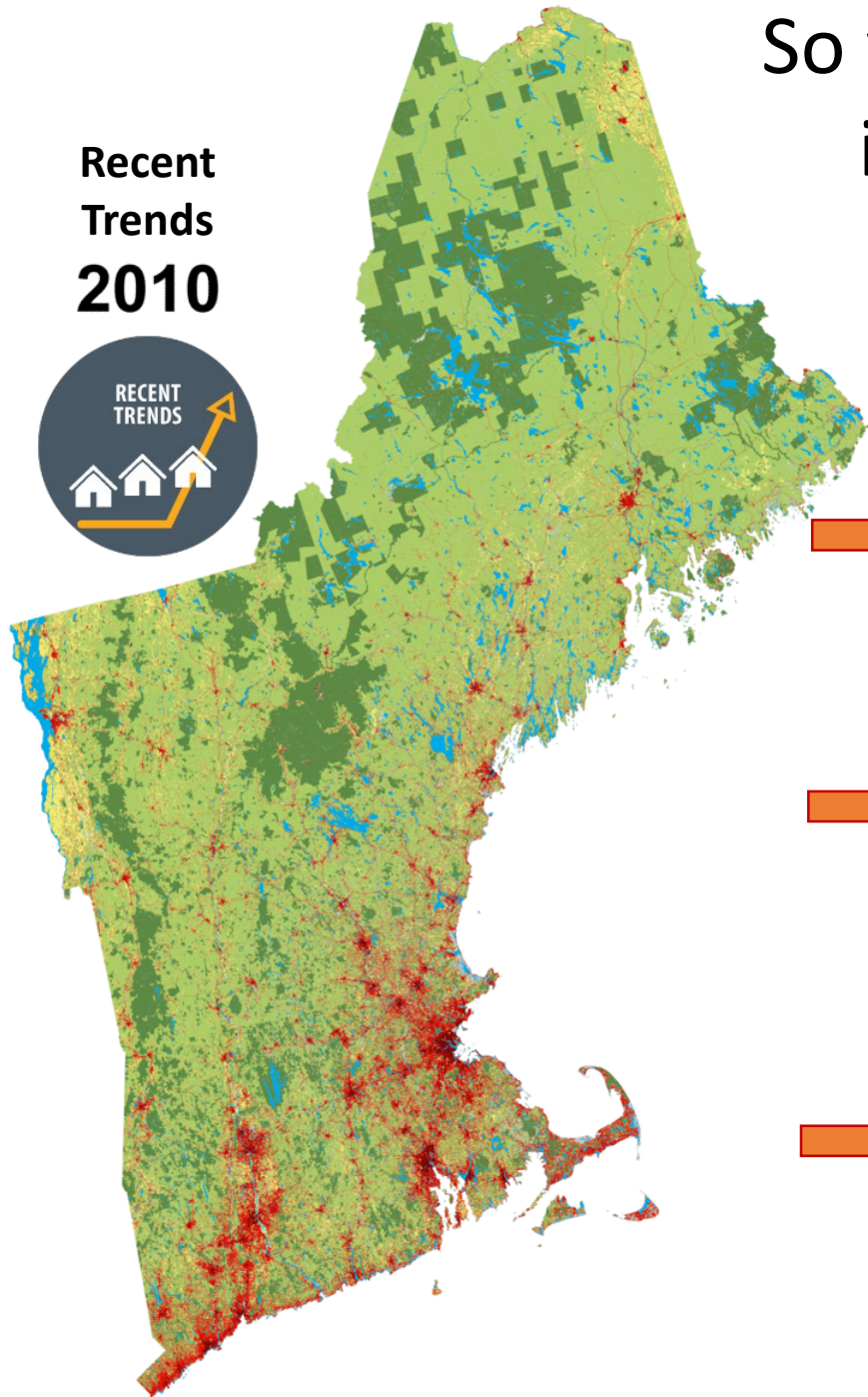
- Distance to Cities
- Distance to Development
- Ownership
- Population Density
- Distance to Roads
- Slope
- Wetlands/Non-wetlands



5 Ten Year Time Steps
From 2010-2060

So what do we change in the scenarios?

Recent Trends 2010



Rate

- Increase Rates
- Decrease Rates
- Ramp / Fluctuate Rates

Patch Statistics

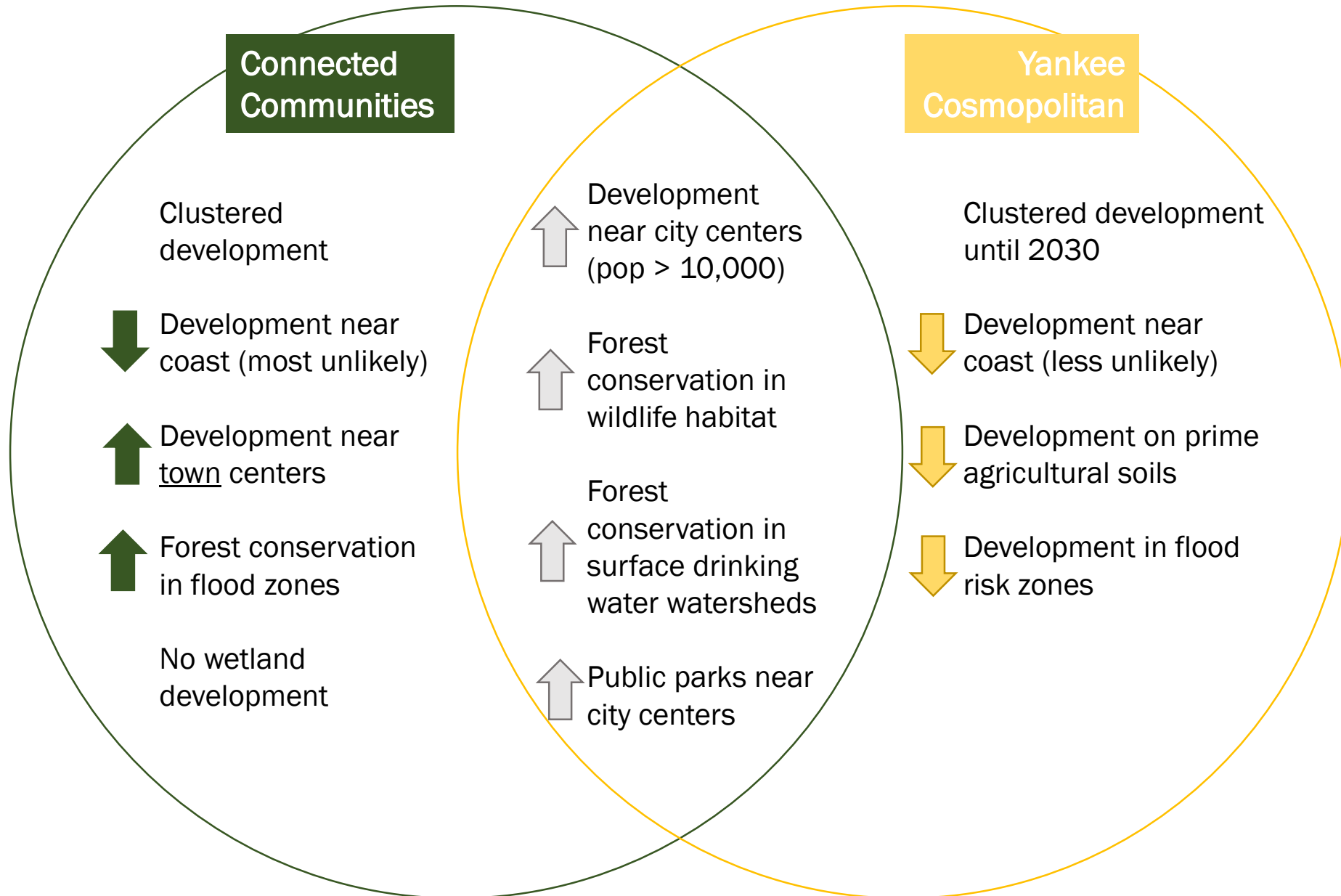
- Mean size
- Variance
- Isometry

Probabilities

- Increase Probability
- Decrease Probability



Consider climate resilience



This Venn diagram shows how likelihood of land use changes were increased or decreased to simulate the 2 more climate-resilient scenarios.

Find more information like this in the full-length narratives.

Limitations, considerations, framing

- None of the scenarios is a prediction – they are each plausible future conditions based on recent trends and future uncertainties identified by stakeholders
- NELF models are pure land-use models, no population or econometric modeling involved
- All models simplify reality: reference period, land-use transitions modeled, and driver variables are influential in determining suitability for specific uses
 - Stochastic model – if we ran all scenarios again they would look slightly different due to randomness
 - Randomness + lack of zoning = not suitable for parcel level uses
- Narratives → quantitative land use changes can be “squishy”
 - Recent Trends avoids this as the “data driven” scenario
- Alternatives to RT can be framed as a story line rather than trying to explain how they were created:
 - Growing Global: “Scenario where we are unprepared for influx of climate refugees and Boston becomes a megacity with sprawling development across the region.”