



Climate-Smart Forestry for our Communities:

A Critical Piece of the Solutions Puzzle

RCP Network Gathering, November 9, 2023





Agenda

Moderator: Lisa Hayden, NEFF Outreach Dir.

Panelists:

- John Daigle, a Citizen Member of Penobscot Nation and Professor of Forest Recreation Management at Univ. of Maine
 - Jeff Spiritos, Principal of Spiritos Properties
 - Jennifer Shakun, NEFF Bioeconomy Initiative Dir.
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NEW ENGLAND
FORESTRY
FOUNDATION

Conserving and Sustainably Managing Forests for Future Generations

1944

Year Founded

1.2 Million

Acres Protected

National Impact:

Third largest land trust in the U.S.

Specialties:

- Working Forest Conservation
- Exemplary Forest Management
- Climate Change Mitigation



“Protect, Manage & Restore”

Nature’s ability to sequester and store carbon

“**Improved agricultural and forestry practices...** present significant opportunities for absorbing climate-warming carbon out of the atmosphere while at the same time **supporting local economies by offering sustainable livelihoods.**”

- Pottsdam Institute for Climate Impact Research, Sept. 2022

The IPCC (Olsson et al. 2019) summarizes the optimal role that forests can play in reducing atmospheric greenhouse gases (GHG):

“In the long term, a sustainable forest management strategy aimed at maintaining or increasing forest carbon stocks, while producing an annual sustained yield of timber, fiber, or energy from the forest, will generate the largest sustained mitigation benefit.”



**UN: Global
population =
reached 8 billion as
of Nov. 15, 2022 -**

<https://www.visualcapitalist.com/cp/population-boom-charting-nearly-8-billion-people/>



U.S. DEPARTMENT OF AGRICULTURE

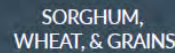
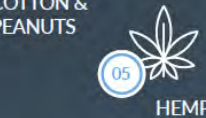
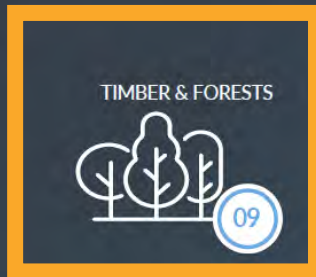
PARTNERSHIPS FOR CLIMATE-SMART COMMODITIES

BY THE NUMBERS



The U.S. Department of Agriculture is investing over **\$3.1 billion** in **141 selected** projects under the Partnerships for Climate-Smart Commodities.

PROJECTS BY COMMODITY



New England Climate-Smart Forest Partnership

\$30 Million Forest-Based Incentive Program



USDA CSC requested projects that...



Provide technical and financial assistance to producers to **implement climate-smart production practices** on a voluntary basis on working lands



Pilot innovative and cost-effective methods for quantification, **monitoring, reporting and verification of greenhouse gas benefits**



Develop markets and promote the resulting climate-smart commodities

New England Climate-Smart Forest Partnership

Climate-Smart Forestry Incentives

Carbon Monitoring, Verification & Reporting

Mass Timber for Affordable Housing

John Olver Design Building at UMass



[NEFF](#)
[Mass Timber](#)
[video:](#)



<https://builditwithwood.org/resources/videos/>

<https://www.lwa-architects.com/project/integrated-design-building/>

Forestry Incentives

Climate-smart forestry incentive payments of approximately \$15 million.

Available to:

- Large and small private forestland owners
- Tribal Nations
- Foresters & loggers

To implement uneconomic silvicultural practices that increase storage of carbon in the forest and in forest products.



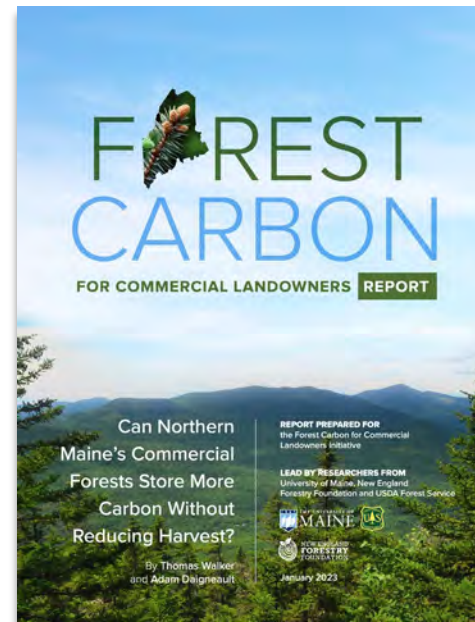
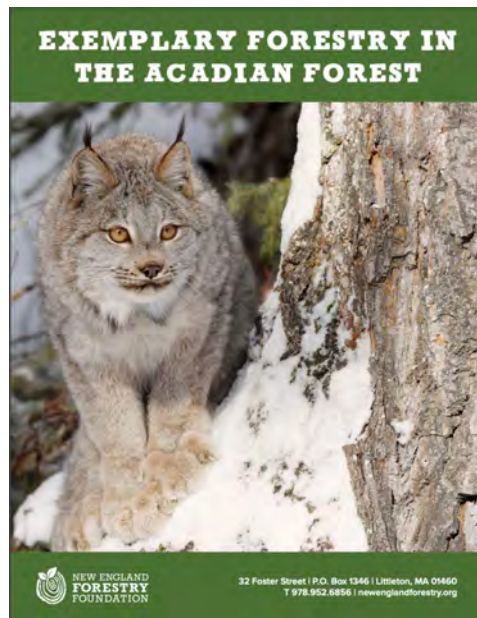
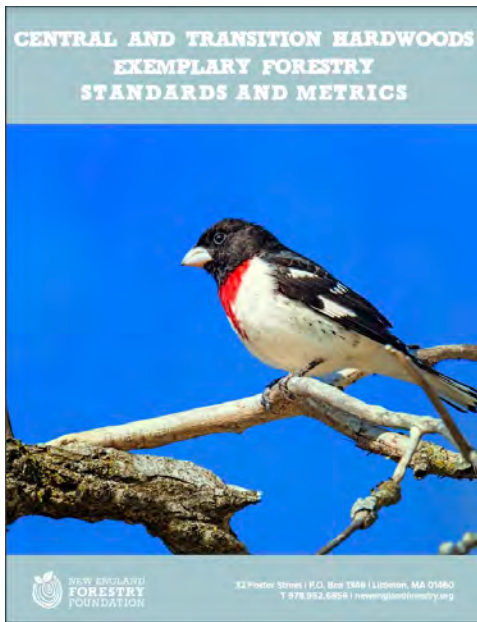
Climate-Smart Forestry Practices

CSF applied through the program will integrate forest ecological health -

Serving three combined outcomes:

- ✓ Improved wildlife habitat and biodiversity
- ✓ Increased carbon sequestration and storage
- ✓ Harvesting more sustainably produced wood.

Practices will be informed by:



Support & Partnerships

Landowners, Foresters, Loggers: Participating Producers

- Seven Islands
- Weyerhaeuser
- Wagner Forest Management, Ltd.
- Baskahegan Land Company
- Robbins Lumber
- Passamaquoddy Forestry Department
- Mi'kmaq Nation
- The Nature Conservancy (Maine lands)
- Woodlands Partnership of Northwest MA
- Massachusetts Tree Farm Program
- Hull Forestlands, L.P.
- Heyes Family Forests LLC
- Appalachian Mountain Club

Participating Loggers & Foresters

- Professional Logging Contractors Maine
- *Trust to Conserve Northeast Forestlands*
- Professional foresters & loggers

University of Maine Assistance With Program Design and Implementation

- *University of Maine: Dr. John Daigle, Liaison to Maine's Penobscot Nation, Passamaquoddy Tribe and Mi'kmaq Nation*
- University of Maine Advanced Structures & Composites Center
- *Forest Policy & Economics – School of Forest Resources*
- School of Forest Resources and Climate Change Institute
- Office of Innovation and Economic Development

Monitoring, Verification & Reporting

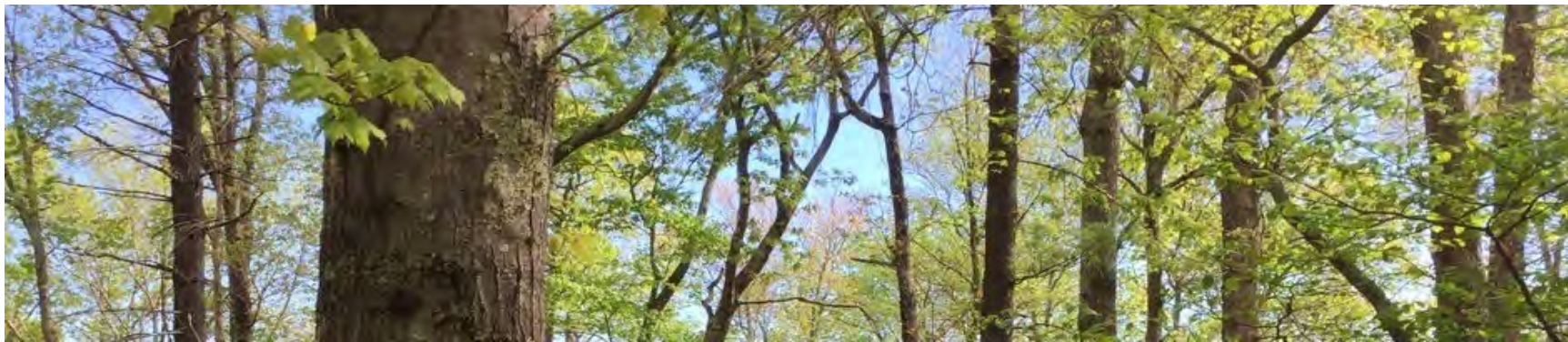
- *American Forest Foundation – Family Forest Carbon Program*
- *Spatial Informatics Group*
- *Thomas Walker, Resource Economist*
- *Innovative Natural Resource Solutions*

Commodity Markets

- *Spiritos Properties, LLC (Developer)*
- *Leers Weinzapfel Associates (Architects)*
- *Quantified Ventures (Finance)*
- *WoodWorks (Mass Timber)*

Supporting Organizations

- Forest Stewards Guild
- Mass Audubon
- *Our Climate Common*
- Highstead Foundation
- Massachusetts Forest Alliance
- Connecticut Forest & Park Association



Supporting cultural connections in building
resilience for ecological recovery and
community wellbeing

John Daigle (Penobscot Nation)

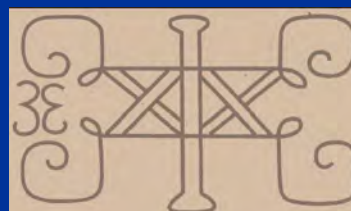
University of Maine

School of Forest Resources

jdaigle@maine.edu

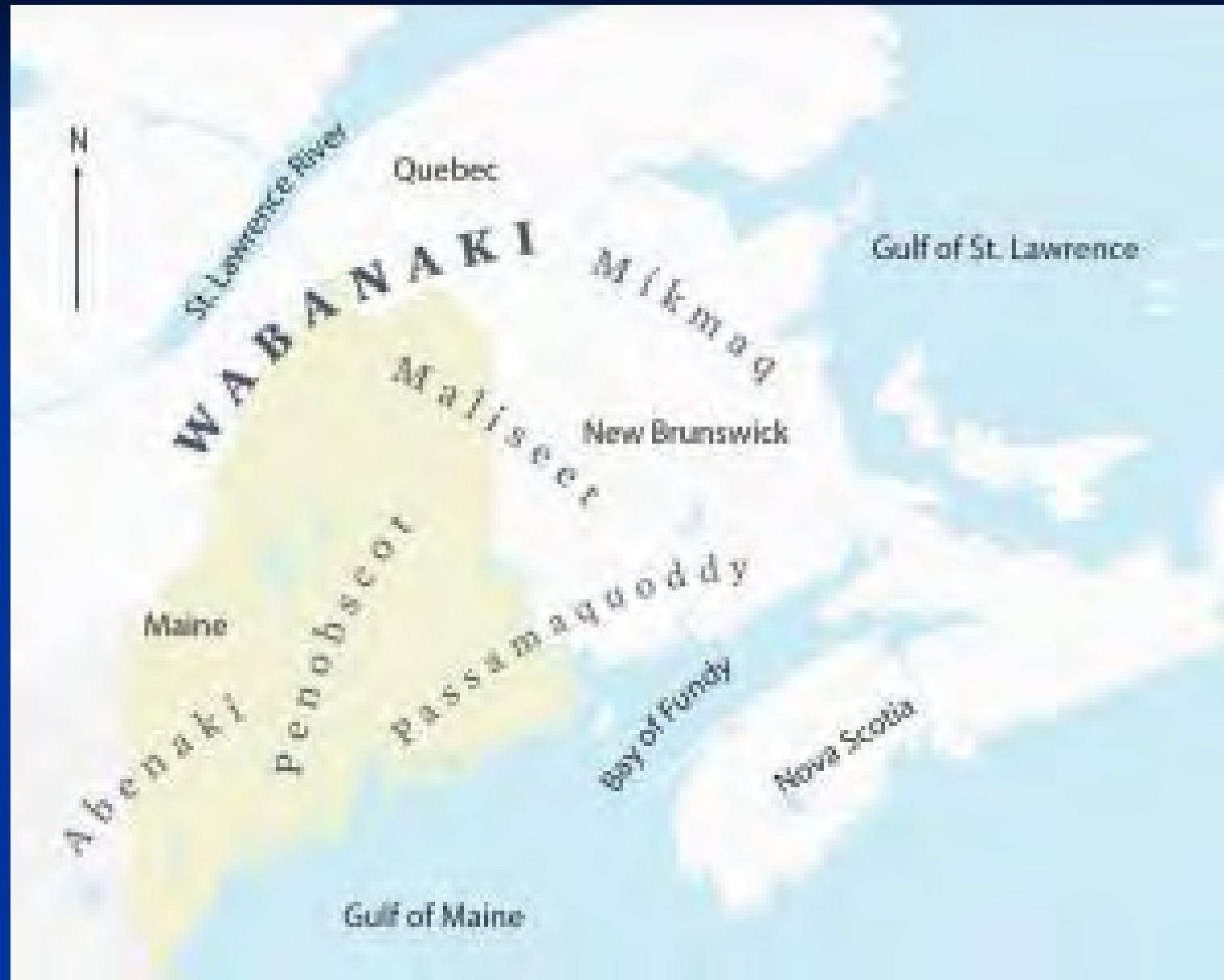
Regional Conservation Partnership Network Meeting

November 9, 2023



Overview of presentation

- Identify aspects that make Wabanaki and indigenous peoples' cultural connections a key ingredient to building conservation partnerships and resilience for ecological recovery and community wellbeing
- Recognizing strengths of diverse people and backgrounds in future conservation partnerships



Cultural connections to the land

Indigenous peoples of the U.S. are spiritually and culturally invested in specific areas and many of the values, meanings, and identities are closely interlinked with features of the natural landscapes and physical interactions with that landscape

Cultural connections to the land

Glooskap came first of all into this country, into the land of the Wabanaki, next to sunrise. There were no Indians here then. And in this way he made man: He took his bow and arrows and shot at trees, the basket trees, the ash. Then Indians came out of the bark of the ash tree. – Wabanaki Creation Story

Cultural connections to the land



- According to Houser et al., (2001) approximately 1.2 million (60%) of the U.S. tribal members live on or near reservations, and pursue lifestyles with a mix of traditional subsistence activities and wage labor

Cultural connections to the land



- There are wild foods such as fiddleheads, deer, moose, birds, fish, berries, and seafood that provide not only sustenance but cultural connections through story telling, harvesting, processing, and sharing food

Building Network Capacities

- Ethical perspectives
- Systems of Ecological Knowledge
- Some of the contemporary solutions of indigenous peoples may help society at large to frame and guide successful adaptation

“Natilanaḥ bemnowoog”

(all our relations)

- embodies animals and plants along with those who came before us as ‘*ancestors*’ while signifying an innate connectivity of the Wabanaki people to the great laws of creation.

“Menakato Luhkatomon”

(we move together)

- illustrates the relational aspects of tribal culture to the social ecological networks within the environment

“Ethnobiologists tell us that our great-grandparents spoke a fluent natural history. They knew the name and personalities of dozens of birds and plants. Today the average American schoolchild can recognize more than a hundred corporate logos. They can give a name to about ten plants, and these include categories such as “Christmas Tree” and “Grass.” We have lost an entire vocabulary, of speech, of experience, and of relationship. Our fundamental currency of relationship, our highly evolved capacity for paying attention to those species who sustain us, has been subverted in a kind of intellectual hijacking. How can we care for them, monitor their well-being, and fight for their existence if we don’t even know their names?” (Kimmerer 2014: 20-21).





ADDRESSING LAND JUSTICE AND EQUITY AT SCALE

CLIMATE SMART FORESTRY FOR OUR COMMUNITIES: A CRITICAL PIECE OF THE SOLUTIONS PUZZLE

2023 Regional Conservation Partnership Network Gathering
9 November 2023

SPIRITOS PROPERTIES



LEARNING OBJECTIVES

- Understand the overwhelming shortage of affordable housing worldwide and in the US
- Consider the relationship between Healthy Forests, Climate Change and Affordable Housing
- Recognize that reducing the embodied carbon in buildings (and all products) is a major key to meeting these challenges
- Explain how building with Mass Timber products can address these three key worldwide issues of our time

Housing Affordability Gap - USA

THE GAP THE PROBLEM:

The U.S. has a shortage of **7 MILLION** rental homes affordable and available to extremely low income renter households.



Housing Affordability Gap - Worldwide

Decent, affordable housing is fundamental to the health and well-being of people and to the smooth functioning of economies. Yet around the world, in developing and advanced economies alike, cities are struggling to meet that need. If current trends in urbanization and income growth persist, **by 2025 the number of urban households that live in substandard housing—or are so financially stretched by housing costs that they forego other essentials, such as healthcare—could grow to 440 million**, from 330 million. This could mean that the **global affordable housing gap would affect one in three urban dwellers, about 1.6 billion people.**

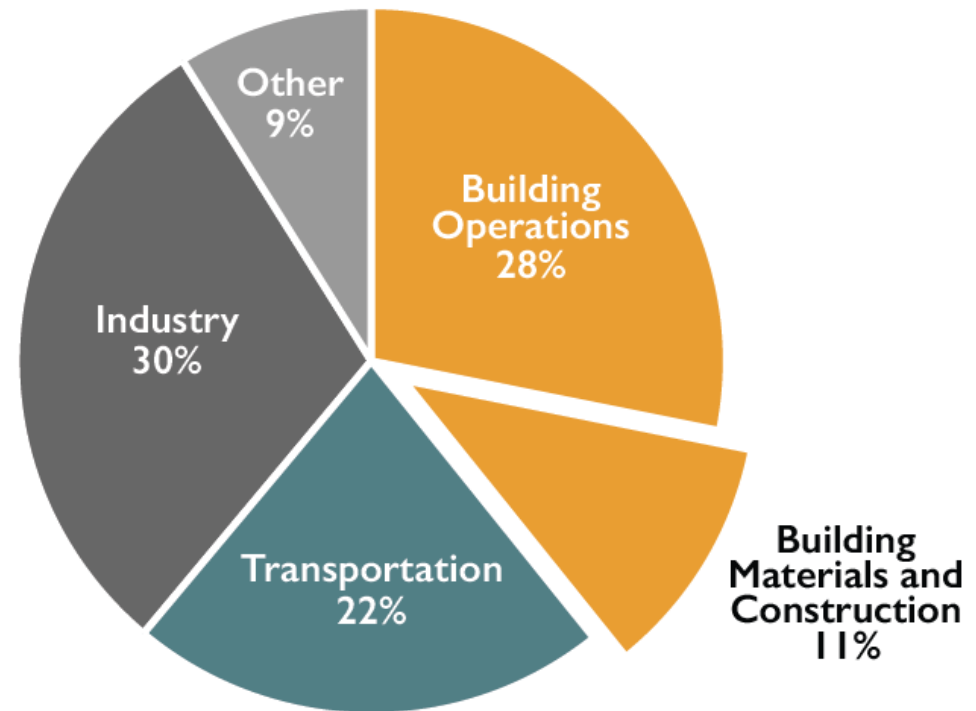
Source: McKinsey Global Affordability Gap Report – March 30, 2017

WHY THE FOCUS ON EMBODIED CARBON?

The embodied carbon emissions of building products and construction represent a significant portion of global emissions: concrete, iron, and steel alone produce approximately 9% of annual global GHG emissions; embodied carbon emissions from the building sector produce *11% of annual global GHG emissions*.

Source – Architecture 2030

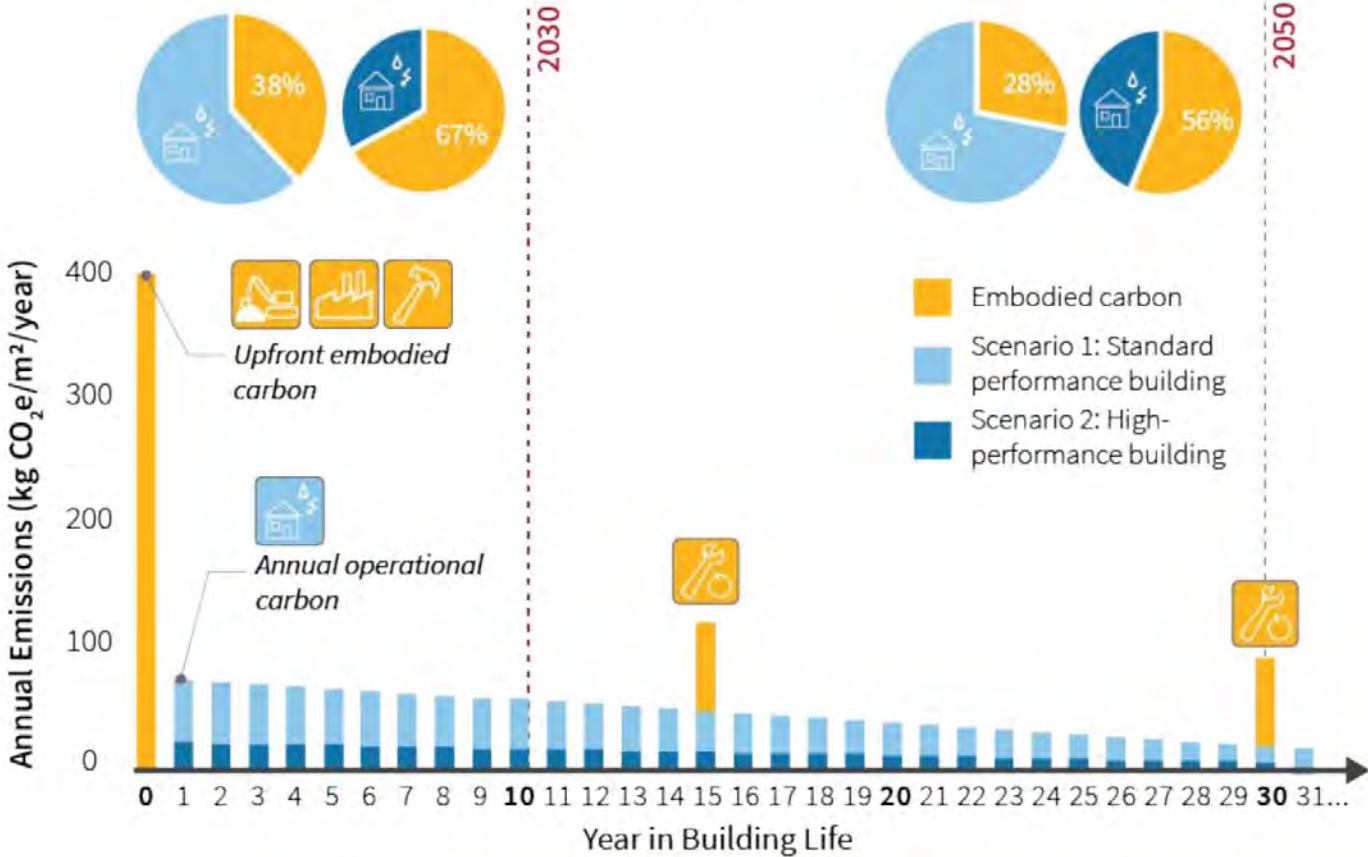
Global CO₂ Emissions by Sector



Source: © 2018 2030, Inc. / Architecture 2030. All Rights Reserved. Data Sources: UN Environment Global Status Report 2017; EIA International Energy Outlook 2017

EMBODIED CARBON URGENCY

Reducing embodied carbon is **urgent**



Embodied carbon is...

2/3 of total emissions in the first 10 years

1/2 of total emissions in the first 30 years

Image Source: [AIA-CLF Embodied Carbon Toolkit for Architects, 2021](#)

CARBON CHART FOR WOOD CONCRETE STEEL

Net Carbon Emissions in Producing a Ton of:

Material	Net Carbon Emissions (kg C/metric ton)
Framing lumber	33 (-457 with carbon stored in product)
Medium density fiberboard (virgin fiber)	60 (-382 with carbon stored in product)
Brick	88
Glass	154
Recycled steel (100% from scrap)	220
Concrete	265
Concrete block	291
Recycled aluminum (100% recycled content)	309
Steel (virgin)	694
Plastic	2,502
Aluminum (virgin)	4,532

1. Values are based on life cycle assessment and include gathering and processing of raw materials, primary and secondary transportation

2. Source: USEPA (2006)

3. A carbon content of 49% is assumed for wood

- Trees are 50% Carbon, by weight.
- The embodied carbon comes from CO₂ in the atmosphere. Oxygen is released as a byproduct.
- One cubic meter of timber stores one ton of CO₂.
- No doubt, steel and concrete are great building materials, until you consider their ecological footprint.
- 5% of all GHG emissions worldwide come from concrete, the most highly-produced material in the world.
- Trees absorb 5% of global GHG emissions.

~Source: Australian Wood Study, 2014

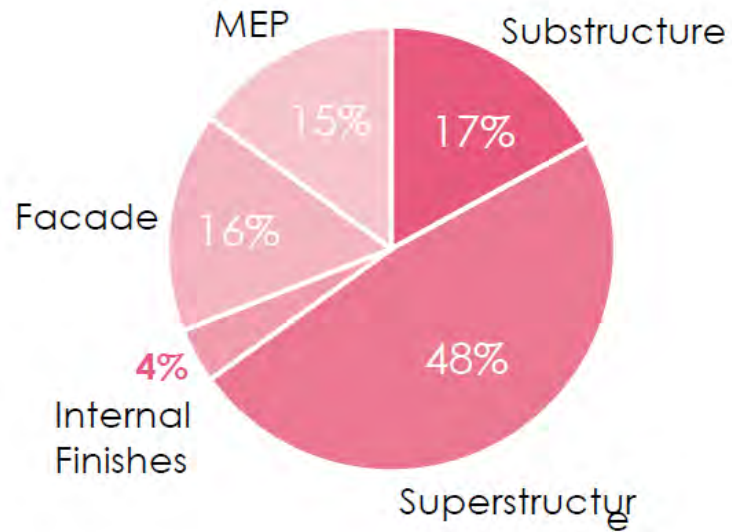
- Midrise steel or concrete building 1,500 tons of net embodied CO₂ emission
- Midrise mass timber building 610 tons of net CO₂ sequestration

The timber construction makes the building net carbon positive before it becomes operational

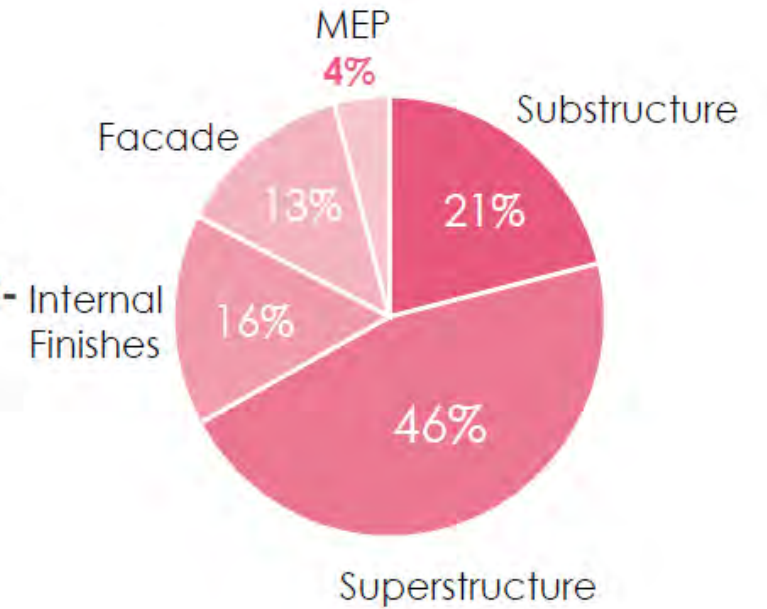
~University of Canterbury Study

Embodied Carbon Reduction – Commercial and Residential Sectors

Office



Medium scale residential



340+ Dixwell – New Haven, Ct

80% Affordable at 25-60% Average Median Income, including 20% Supportive Housing and 20% market rate

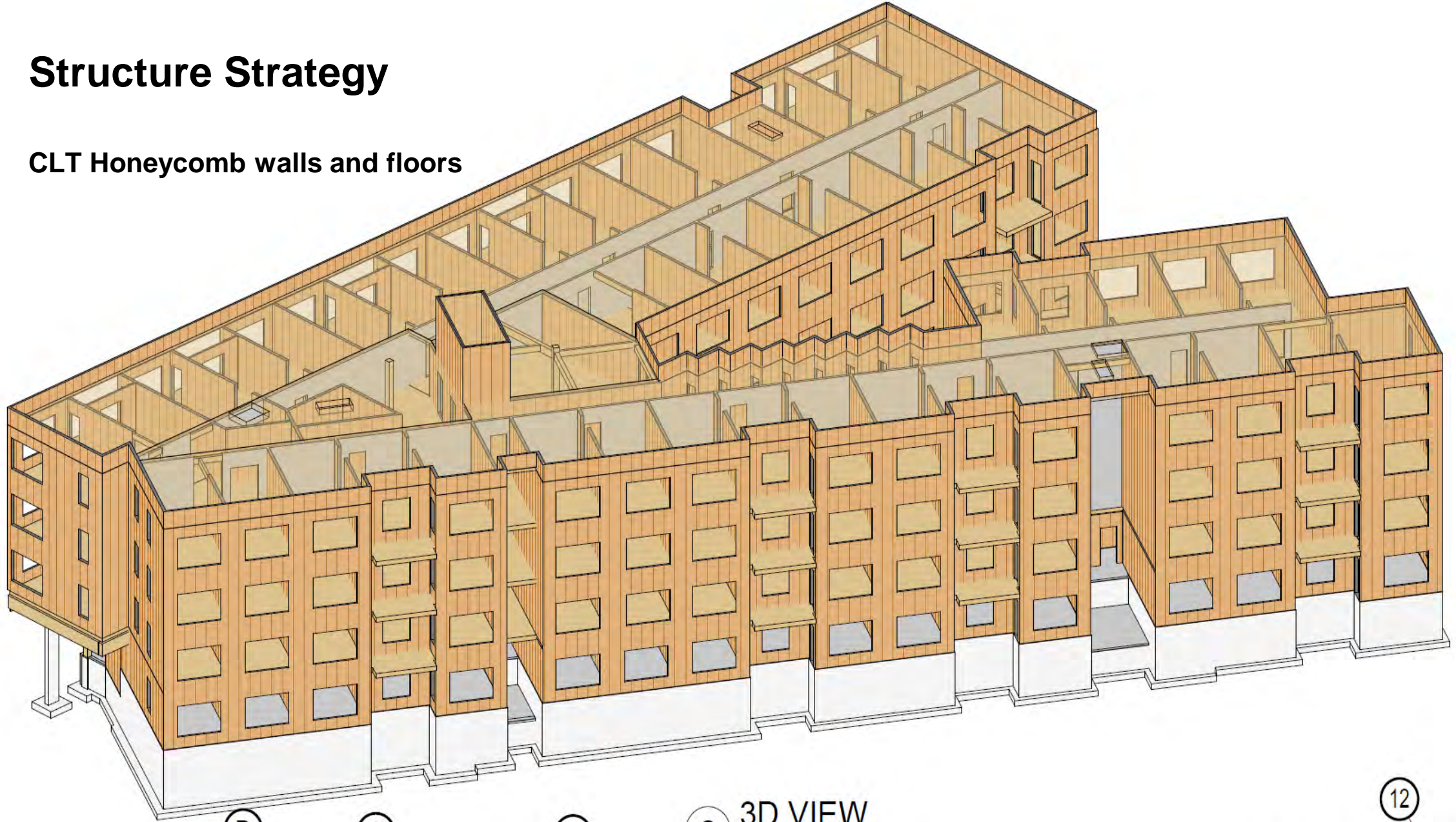
Mass Timber Passive House with solar

69 Units Total



Structure Strategy

CLT Honeycomb walls and floors



(B)

(C)

(D)

(2)

3D VIEW

N.T.S.

Odeh Engineers

(11)

(12)









The Equity In Housing Objective

While demand for every real estate product group (market rate residential, office, hotel, retail and industrial) varies with the market, not so with affordable housing where, at least until a great day in the future, THERE WILL ALWAYS BE DEMAND

Can we get to the place where the cost of housing for the masses will not be determined by the cost to build?

Let's work together to figure out how to utilize the ONLY BUILDING MATERIAL that can and must meaningfully help save our forests and our planet and solve our world's critical quality, energy efficient, healthy and affordable housing need.....for ALL

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RCP Gathering, November 9, 2023

Jennifer Shakun

Bioeconomy Initiative Director,
New England Forestry Foundation

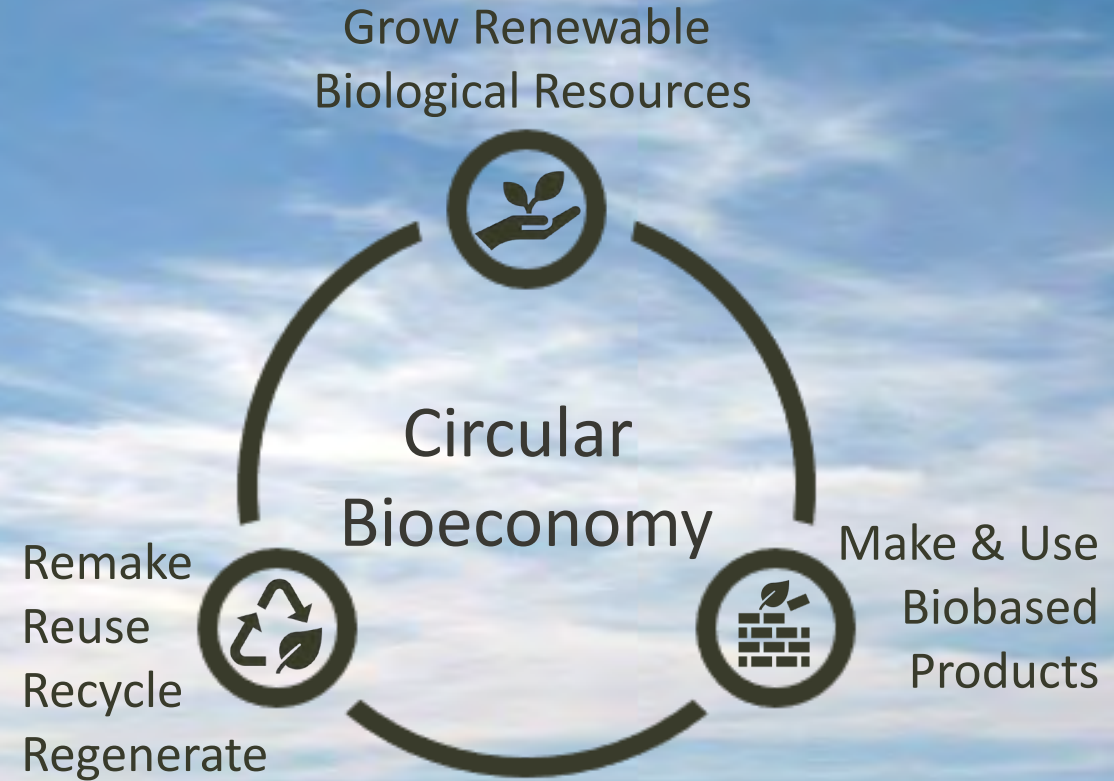




Climate change poses risks to human and natural communities.

Solving the Climate Crisis

- ✓ Use less energy
- ✓ Switch to renewable energy
- ✓ Carbon removal
- ✓ Renewable materials



Forests provide a natural climate solution...



A Forest-to-Cities Vision

Landowners, Loggers, Foresters,
Conservation Groups, etc.

Architects, Engineers, Sawmills,
Engineered Wood Mfrs., etc.

Developers, Building Owners, Occupants,
Climate & Housing Advocates, etc.

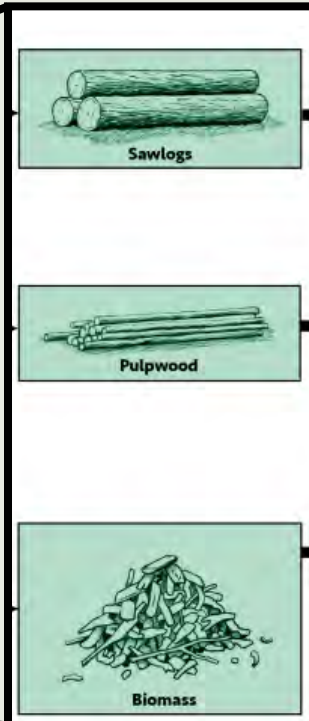


Forest Management



There are forest- and stand-level characteristics we can alter through management to influence/alter/improve forest resilience, productivity, timber quality, wildlife habitat, carbon sequestration & storage, etc.

Wood Products



Forestry for Climate & Biodiversity



Questions?



Virtual Evaluation Form

Scan the QR to fill out an evaluation form. We welcome your feedback.



(scan with your phone)



Same original stand regenerated @ 40 years ago after a clearcut, on the same site within 100 yards of one another



No Treatment



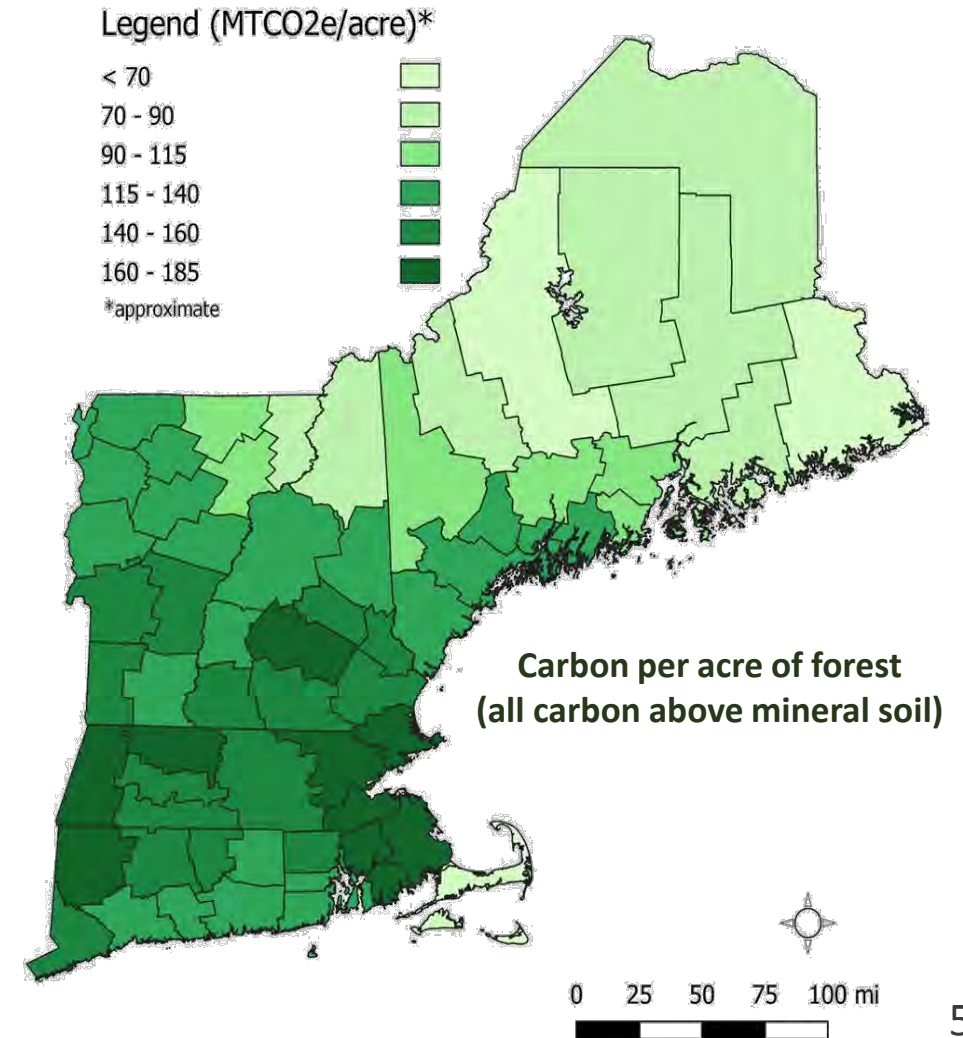
Pre-Commercial Thinning 20 years ago

Regional Context Informs Outreach & Implementation Strategy

☀ Increase Stocking
in Northern New England

☀ Harvest Lightly
in Southern New England
(resilience-focused)

Many of these rural “wood basket”
regions are economically “distressed”



Systems Thinking in Policy & Practice

- Keeping the forest land we have (wild & working)
- Reduce stressors exacerbated by warming climate
- Planting trees, restoring, reforestation
- Intentional passive management
- Active management – (gaps, thinning) in right places for right reasons – including storing carbon in wood products

Active management

- *practices*

- Create gaps to promote regeneration *
- Retain more carbon in a thinning *
- Enhance adaptive capacity in forests (Resilience - increase species, structural diversity)
- Facilitate forest transition to better match future conditions, (Transition)



**Initially reduce carbon stock – must be carefully sited and applied to increase forest carbon stock within 20 years – developed by TNC & NIACS through the Natural Climate Solutions Accelerator grant project in Massachusetts and Vermont*