Highstead

New England's Climate Imperative: Our Forests as a Natural Climate Solution

A SUMMARY

New England forests are a critical yet underutilized tool in fighting climate change. They store massive amounts of carbon–and each year they sequester more.

Despite the work our forests are already doing to keep Carbon Dioxide (CO2) out of the atmosphere, they could do substantially more. As New England states work to meet their 2050 goals for reducing emissions, the relative importance of forest-based mitigation will grow.

Five Pathways to Increase the Climate Mitigation Potential of Forests

The recent study, **New England's Climate Imperative: Our Forests as a Natural Climate Solution** *(Meyer et al, 2022)*, identifies five distinct but complementary pathways that illustrate how New England forests can do even more to tackle climate change. **By implementing these five pathways, especially if done together, New England can advance conservation and increase the climate mitigation potential of forests:**

- ***Avoided Deforestation:*** Each year, 28,000 acres of forests are permanently converted to development, emitting their stored carbon and forgoing all future sequestration. We must reduce this rate of forest loss. If we reduce deforestration to 7,000 acres per year in New England, 74 million tons Carbon Dioxide Equivalent (CO2e) would be kept out of the atmosphere by 2050.
- ***Wildland Reserves:*** Less than 4% of our forests are currently protected as wildland reserves. We need to ensure that a minimum of 10% of New England's forests are allowed to grow and mature without the influence of any extractive land uses. This would sequester an additional 50 million U.S. tons CO2e by 2050.
- ***Improved Forest Management:*** Society is heavily dependent on wood products, and New England is a great place to grow trees. By changing our management practices and stewarding timberlands to maximize carbon sequestration, we can maintain harvest volumes while increasing carbon storage in the forest. If just 50% of harvests employed "climate smart" techniques, an additional 203 million U.S. tons CO2e could be sequestered by 2050.
- ***Mass Timber Construction:*** Trees are a valuable climate solution inside and outside the forest. Using mass timber building materials is much less carbon intensive than steel or concrete and have the added benefit of storing carbon through the life of the building. If 50% of the eligible new buildings used mass timber construction, an additional 15 million U.S. tons CO2e could be stored.
- ***Urban and Suburban Forests:*** Expanding tree and forest cover within our communities has enormous benefits even beyond carbon, including shading, clean air, clean water, and recreational and employment opportunities. A 5% increase in urban tree canopy in New England could sequester an additional 17 million U.S. tons CO2e by 2050.

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New England Forests are Already Making a Difference

New England's forests currently absorb roughly 27 million U.S. tons CO2e each year—equal to 14% of the CO2 emitted through burning fossil fuels in the region in 2020. By adopting these pathways, even at a moderate pace, forests could sequester the equivalent of 21% of 2020 emissions. And if New Englanders choose to make the most of their incredible forest resources, they can do much more.

Making an Even Greater Impact through Multiple Approaches

These five pathways increase the carbon stock and rate of sequestration on the landscape in different ways, interacting in ways that we capture in our analysis and in conceptual ways that we are not able to quantify. The uncertainty around potential future climate change effects to New England's forests underscores the importance of using multiple approaches: If one avenue to increase carbon storage and sequestration fails, diversified strategies compensate for losses elsewhere.

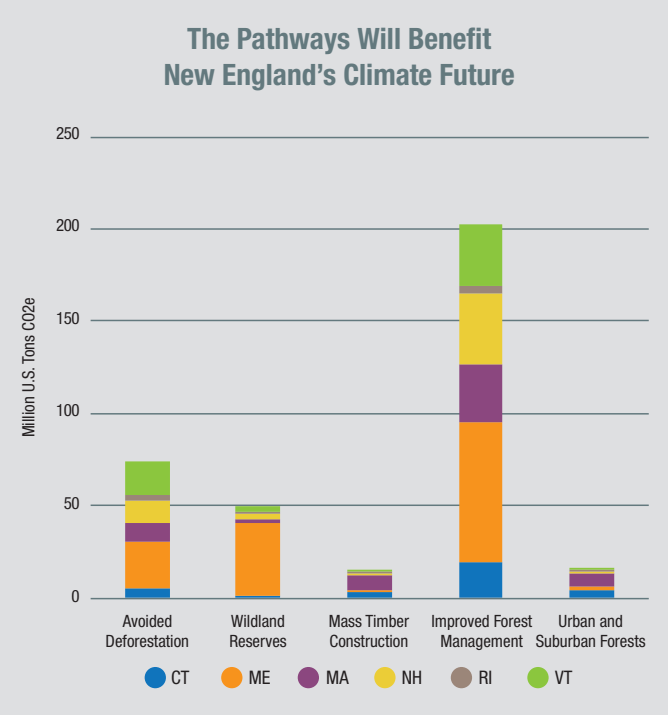

Figure 1: Additional CO2e sequestered by 2050 above the business-as-usual (BAU) scenario. Estimates shown are associated with the adoption of each pathway at its middle tier; see individual pathway sections for estimates at the low and high tier. See Figure 3 for estimates of low and high tiers.

The relative importance of these pathways will increase over time. As New England states meet their specified goals for reducing emissions, and total emissions drop from 187 to 40 million U.S. tons CO2e, by implementing the five pathways, forests will sequester the equivalent of 97% of remaining emissions.

While the climate crisis is reason enough to implement these pathways, a redoubled commitment to forest conservation will provide many other benefits: clean water; clear air; shading; cooling; public access to open spaces, recreation, and tourism; and natural resources across the region. These pathways will help New England achieve its goals for equity, environmental justice, and sustainable rural economies. If conserved and stewarded, the region's forests can be a major contributor to state climate goals and to adaptation, resilience, and reduced effects from climate change and extreme weather events.

An "All of the Above" Approach

Addressing climate change requires an "All of the Above" solution that embraces diverse strategies. We must both reduce emissions and remove CO2 from the atmosphere. While some technological approaches for removing CO2 exist, nothing comes close to forests in terms of the magnitude of carbon removed.

The 2022 study, *New England's Climate Imperative: Our Forests as a Natural Climate Solution*, estimates how New England's forests can better serve as a natural climate solution. New England's forests are a globally important carbon sink, cover approximately 75% of the region's landscape, and store 4.6 billion U.S. tons CO2e[1] above ground (trees, dead wood, and litter). Each year, these forests absorb around 27 million U.S. tons CO2e, or the equivalent of 14% of total annual emissions from New England states. In this study, five pathways are developed and assessed that could increase the climate mitigation potential of New England's forests:

- **Avoided Deforestation**
- **Wildland Reserves**
- **Improved Forest Management**
- **Mass Timber Construction**
- **Urban and Suburban Forests**

These pathways are examined separately and at low, medium, and high levels of adoption.[2] Overall, the pathways are highly complementary and additive—only if all the Pathways were adopted at their highest tier would they interfere with each other. Estimates of the carbon benefit of each pathway are provided in terms of the *additional* CO2e absorption each could provide above the current condition and trend.

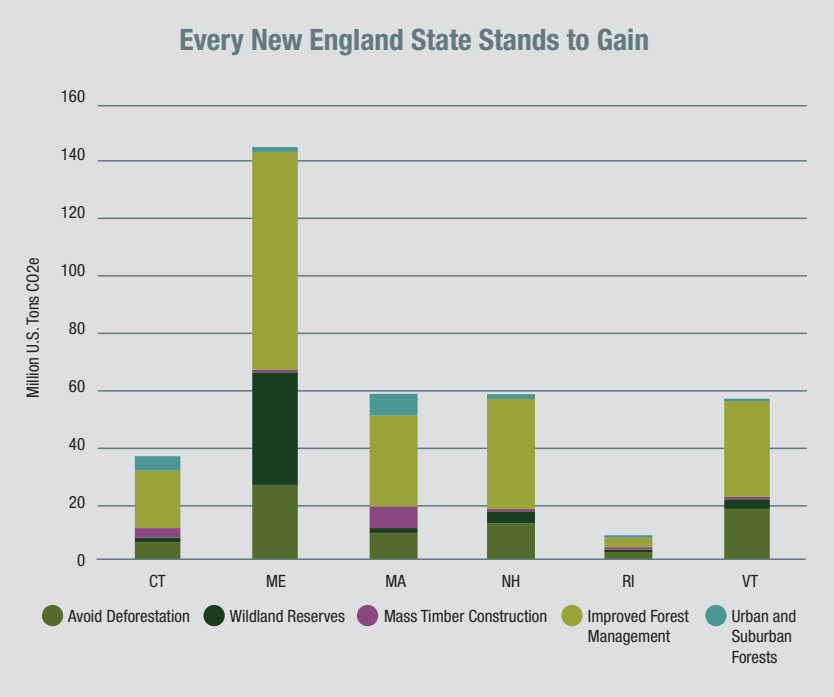

Figure 2: Additional CO2e sequestered above the BAU scenario in each New England state by 2050. Estimates shown are associated with the adoption of each pathway at its middle tier. See Figure 3 for estimates of low and high tiers.

A Cumulative Benefit

At the middle tier of adoption, the cumulative potential carbon benefits of the five pathways would lead to 358 million additional tons CO2e stored in the forest by 2050. The full report breaks down the contribution of each pathway within each New England state and shows that the benefits are large, vary by pathway, and vary by state.

Taken together, these pathways have the potential to reduce New England's near-term net annual emissions by 6.4%, boosting the total forest sequestration from a level equivalent to 14% of the region's emissions to an equivalent of 21% (Figure 4 on page 4).

The relative importance of these pathways will increase over time. As New England states meet their specified goals for reducing emissions, and total emissions drop from 187 million U.S. tons CO2e to 40 million U.S. tons CO2e, the role of forests in sequestering emissions will grow to 97%: 30% from the five pathways and 67% from ongoing forest sequestration. So, while a 6.4% gain in the near term may seem relatively small, enacting these pathways now is essential to realizing a future in which forests mitigate nearly all annual emissions.

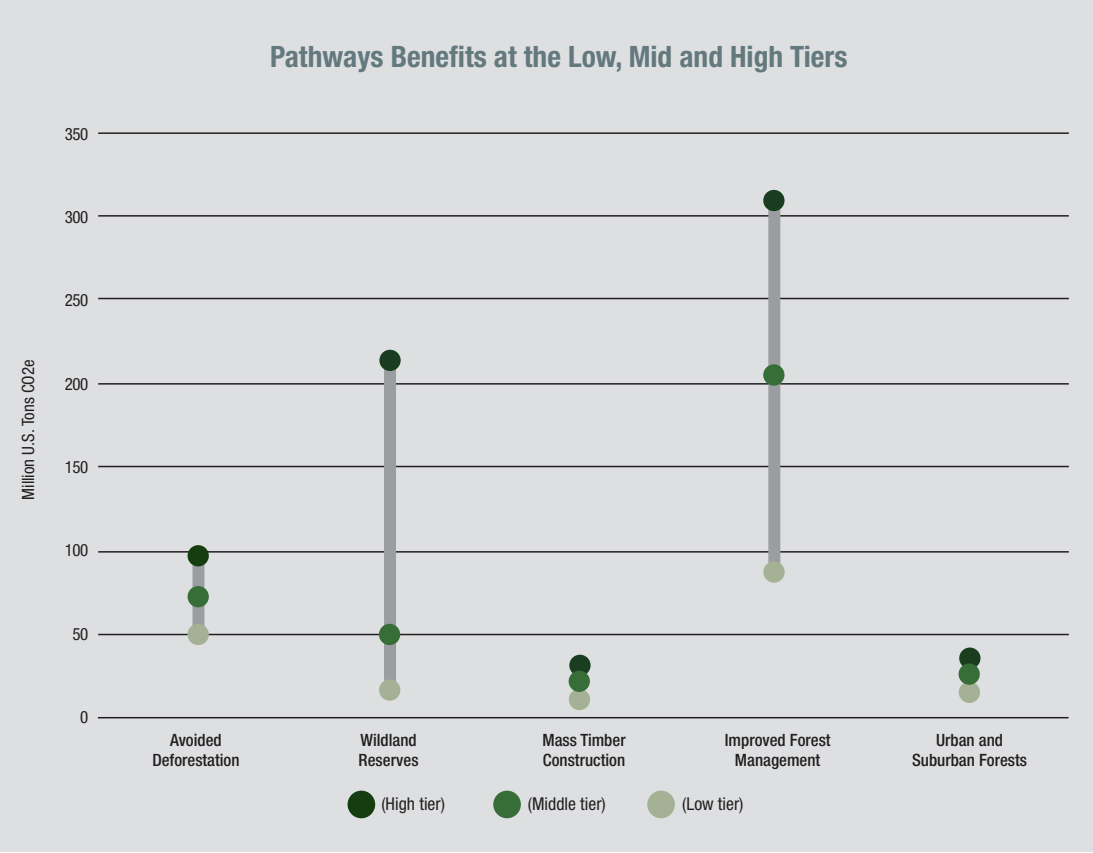

Figure 3: The accumulated carbon benefits of each pathway by 2050, shown at low, middle and high levels of adoption

FOOTNOTES

[1] CO2e (carbon dioxide equivalent) is a measure used to compare emissions from various greenhouse gases on the basis of their global warming impact. One ton of carbon stored in the forest is equal to 3.67 CO2e.

[2] Each pathway is assessed in a low, middle, and high tier, reflecting the degree of pathway implementation (e.g., the percentage of deforestation that is avoided or the percentage of additional Wildland Reserves that are designated).The estimates presented here represent the middle tier for each pathway.

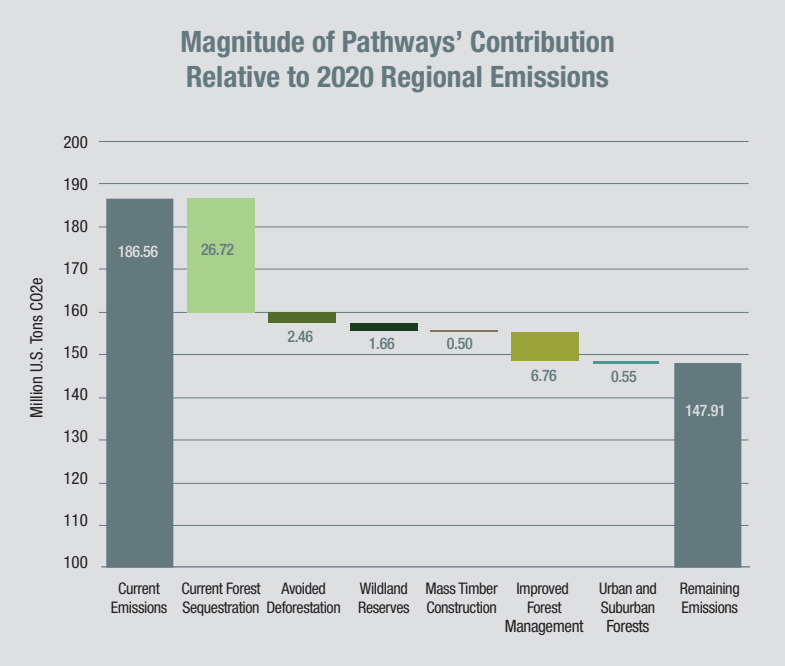

Figure 4: The adoption of each pathway (shown here at their average annual contribution when adopted at their middle tier) lowers New England's net emissions by sequestering more carbon in the forests. Please note, to show the detail associated with each pathway, the vertical axis has been scaled to start at 100 million U.S. tons CO2e.

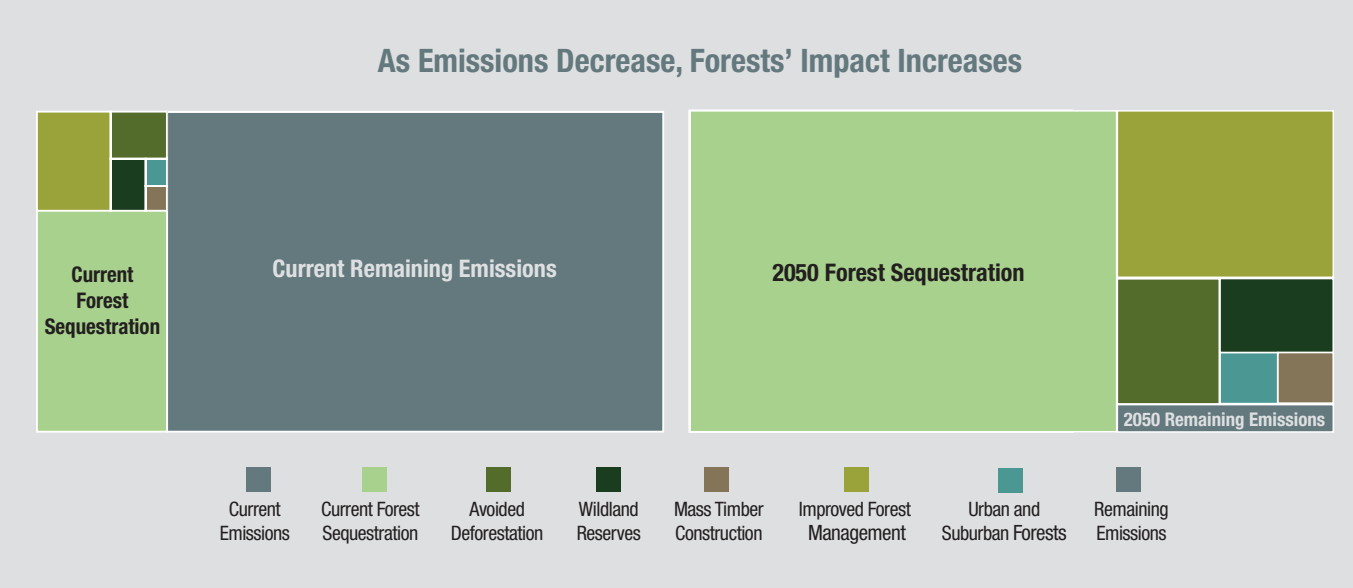

Figure 5: (Left) If the left rectangle represented the 187 million U.S. tons CO2e that were New England's greenhouse gas emissions in 2020, current forests under the BAU land use scenario would sequester the equivalent of 14%. Adopting the five pathways at their moderate tier would sequester the equivalent of an additional 6.4%. **(Right)** By 2050 the role of forests will be even larger. As New England states meet their specified goals for reducing emissions, and total emissions drop from 187 million U.S. tons CO2e to 40 million U.S. tons CO2e, the role of forests in sequestering emissions will grow to 97%: 30% from the five pathways and 67% from ongoing forest sequestration.

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About this Summary

The information in this document is drawn from the 2022 paper, *New England's Climate Imperative: Our Forests as a Natural Climate Solution*. The paper was developed by Highstead, a regional conservation organization based in Redding, Connecticut. The full report can be found at **highstead.net**.