

To: Undersecretary Cooper, Director Gaertner, and EEA Forests as Climate Solutions Team
From: Andy Finton on behalf of The Nature Conservancy
Date: November, 21 2023
Re: Input on The Climate-Oriented Guidelines for Forest Management

Dear Undersecretary Cooper and Director Gaertner,

Please accept the following input from The Nature Conservancy, in the format of the online form. Our comments exceed the character limit of the online form, so we are submitting them via email. Thank you for the opportunity to provide comments, and we are always happy to discuss these topics and help you reach the Commonwealth's ambitious climate and biodiversity goals.



Andy Finton
Senior Conservation Ecologist

Formatted as in the online form:

Question 5: General Comments: Please see comments related to each statement in Question 16 below. In general, strategies should be designed to protect and manage forests for multiple benefits, not solely Carbon.

Rankings for each statement:

- 6.Keep Forests as Forests: **10**
- 7.Forest Management for Habitat: **6**
- 8.Disturbances **10**
- 9.Carbon Stocks & Sequestration **10**
- 10.Soils **7**
- 11 and 12. Resilience **10 and 8**
- 13.Invasive Insects & Disease **9**
- 14.Invasive Plants **9**
- 15.Wood Production **10**

16. Comments supporting the ranking of the Statements above:

Question 6: Keep forests as Forests: This is likely the highest priority to achieve the goals of the Forests as Climate Solutions initiatives, and the Clean Energy and Climate Plan. Unless we protect a connected network of resilient forests, we will not be able to achieve our biodiversity and climate goals. The decisions we make now will define the trajectory for the next 30 years and beyond. The new BioMap defines areas that support Forest Interior, Resilient Landscapes, and Regional Connectivity, and provides a vision and road map for success. We continue to lose forest, and getting to No Net Loss for all forests, not just protected forests, is imperative.

Question 7: Forest Management for Habitat: The Nature Conservancy supports the creation and maintenance of habitat for species that require open, shrublands, grasslands, and young forest (early successional habitat). We recommend clearly defining which lands will be managed for these purposes (public and private), and focusing these management practices within those areas. If the locations of this management regime are poorly defined, and shift over time, it will undermine the ability to secure the other forest values. We also need to acknowledge that there are many forest habitat types, beyond early successional, and old forests provide unique habitats that are important for the diversity and abundance of many species and ecological processes.

Question 8: Disturbances: Yes, disturbances are a critical aspect of forest ecology and have been for millennia. They create habitat, add structural and compositional diversity to our forests, and provide resilience. These disturbances are most beneficial when they play out on large, minimally fragmented forests, highlighting again the need to conserve forests at scale in MA. We have an opportunity to study this phenomenon in real time, monitoring the response of the 10,000 acres of forest significantly impacted by the 2011 tornado in and around Brimfield State Forest. This, and other natural disturbances can, and have, created early successional habitat. We also acknowledge that some disturbances have anthropogenic origins (e.g. Nonnative forests insects and pathogens, extreme climate events); yet, disturbances are still critical as described.

Question 9: Carbon Stocks & Sequestration: This is a complex topic, with many nuances, and a substantial literature. However, we completely agree with the statement, i.e. “managing for a diverse range of ages and developmental stages across forest landscapes is the optimal means of promoting carbon sequestration and many other forest ecosystems services.”

Question 10: Forest Soils: It’s true that “Forest soil carbon can be protected by requiring harvesting practices that reduce forest soil disturbance”. However, there are also other strategies and variables to address to protect soil carbon, soil biodiversity, and soil structure and function. Harvesting in general has been shown to warm soils and increase rates of decomposition and carbon release. It can also reduce large coarse woody debris and other components of the forest floor, reducing forest carbon and biodiversity.

Questions 11 and 12: Resilience: Both are true. And both are needed in different portions of the MA forest landscape (Reserves: Passive Management, Woodlands: Active Management). Forests are inherently resilient, and if we conserve large, intact, and connected forests, they can respond to climate and other impacts with resilience. As is stated, “Ecological processes, including disturbances and forest regeneration, should be allowed to unfold without intervention.” This should be applied to large portions of our state forests. It is also true that climate-smart forestry practices can create structural and compositional characteristics that impart resilience. This will be especially important in forests that have significantly lost their resilience and functionality due to human-based alterations to composition and structure, including from poor management, non-native insects and diseases, and other factors. There is uncertainty as to how both practices are will lead to resilience over time. Likely both will, and we need both to maintain resilient and complex forest processes, and to learn as we go.

Question 13: Invasive Insects & Disease: TNC supports this conservative approach to proactively managing in forests threatened by Invasive insects and disease. It will be critical to precisely define the words “novel” and “limited circumstances with clear rationales”, to make sure there is clarity, transparency, and consistent understanding and application of this approach. Treatment responses will also depend on whether the infestation occurs in an area designated as a “Reserve” (passive mgt.) or a “Woodland” (active mgt.). “Novel” pests should only include those which are not yet established and have the potential to impact much larger areas of forest, such as Asian Longhorned Beetle. As in the statement, it should not apply to established pests that are already ubiquitous in the landscape such as Emerald Ash Borer or Hemlock Wooley Adelgid. But again, some treatments for these two insects, and similar pests, could occur in woodlands to facilitate persistence of the host tree species in the landscape, etc.

Question 14: Invasive Plants: We agree with this statement, but this should be focused on the most egregious outbreaks, and most sensitive habitats for feasibility. We recommend adding deer management to this topic, as deer likely have as big or bigger impact on forest structure, composition, and function than invasive plants.

Question 15: Wood Production: Wood is an important part of full carbon accounting and should be considered when we measure Massachusetts forests’ contribution to fighting climate change. Wood production is a valid reason for choosing to actively manage forests, including on state lands, and is an explicit part of DCR’s mission. State forest lands are likely to be able to meet higher standards than are private lands around invasive treatment, best management practices, and other safeguards, and can serve as important demonstration sites for climate-smart forestry. Investments in the sawmills and production/manufacturing will be required to increase the proportion of wood products used in Massachusetts that are produced here.

Comments related to Climate-Oriented Forest Management Guidelines

Nov. 14, 2023

Brian Donahue

I am Professor Emeritus of American Environmental Studies at Brandeis University, where I specialize in the farm and forest history of New England. I am co-author of all three Harvard Forest “Wildlands & Woodlands” reports since 2005, and co-author (along with several Climate Forestry committee members) of the forthcoming “Beyond the Illusion of Preservation” report. I am also president of the Massachusetts Woodlands Institute—MWI is submitting separate comments together with Franklin Land Trust.

I co-own a farm in Gill, MA where we do periodic timber harvests under a Forest Stewardship Plan. My wife and I built our house from timber harvested on our property, and we heat with wood. Beyond that, for forty-two years I have either carried out or overseen harvesting of firewood and timber on conservation land in Weston, MA. I am familiar with forest issues from several angles. These are my thoughts.

First, to optimize carbon storage, the most important thing we can do is to keep forests as forests. So, we should reinforce every strategy we have to cluster development, prevent forest loss, and permanently protect forest land.

After that, we could argue forever about whether just letting forests grow, or sustainably harvesting them, is better for storing carbon. I don’t think anyone on earth can definitively answer that question, because it depends on what you count.

I think there are good reasons to have both more managed and wild forests, but they have little to do with carbon: as a society we need wood, but we also need all the other benefits that forests give us, such as protecting water quality and providing a diverse array of wildlife habitat. Therefore, we need to learn how to make those things work together, rather than fighting over which is better.

If we cut Massachusetts forests less, that will store more carbon in *our* forest—but unless we also reduce our consumption of wood, that just means more will be cut somewhere else, and it’s all the same to the atmosphere. It’s just a shell game.

By far the surest thing we can do to store more carbon in forests somewhere is to reduce our consumption of wood products. Secondly, we can shift both consumption and production of the wood we really need towards longer-lasting products like timber, and away from quickly oxidized paper and fuel.

Reducing wood consumption is not as starry-eyed as it sounds. In fact, paper consumption has decreased some 25% in the past two decades, and that trend can be continued if we control our mania for packaging. Recycled content has steadily risen, as well.

As for lumber, the analysis for the Building Sector report as part of the MA Decarbonization Roadmap projects a decline in demand for housing and other construction after 2030. In the “Beyond the Illusion” report, we calculate that a 25% decline in lumber consumption over the coming decades would still be consistent with meeting our housing needs, and with replacing some steel and concrete construction with mass timber. In fact, building more multi-unit and affordable housing would help drive a trend towards smaller units and reduce material consumption across the board. A reduction and shift in wood consumption fits well with a shift in forest management and wood production in Massachusetts.

For both our state forest lands, and for our forests overall, I am among those who advocate a dual “Wildlands & Woodlands” approach: designate more wild reserves, *and* harvest more timber so that we are meeting more of our own legitimate wood needs in the most responsible way. We have room, and need, for both.

As for Wildlands, we have called for at least 10% of Massachusetts to be designated as wild reserves. Presumably a lot of that would fall on state lands. But I would not advocate foreclosing our options by designating all state lands as wild reserves right away.

I believe we should also harvest *more* timber on state lands. We should turn state-owned forests into models of artfully combining wild reserves with ecologically-sound management for timber. We should use these highly-visible public models to vigorously promote a similar approach on private lands. We have been doing this in Weston for over forty years, Lincoln Fish has been doing it in the Greenfield town forest for decades, and there are many other good examples: if we advocate a “Wildlands and Woodlands” approach we should be actively demonstrating it on public lands, not just hiding the harvesting on private lands.

We should promote forestry that puts ecological values first, but that also, if practiced over a wider acreage, can produce more wood products than we are now, which is a tiny percentage of what we consume. In “Beyond the Illusion” we calculate that Massachusetts produces about 5% of its lumber and 6% of its pulp, but those are estimates from FIA plot data that if anything *overstate* how much wood that is cut actually gets processed. In any case, the number is small.

With careful, conservative management of about half of our public and private forest land, and reduced consumption, we estimate Massachusetts could reasonably produce about 16% of what we consume. We will never produce all of what we need within our state, but we can do better than we are now.

Again, by themselves, neither designating more wildlands, nor producing more wood within Massachusetts will dramatically change our climate impact—only reducing and reconfiguring our rate of consumption can do that.

But it *will* mean that we are taking more responsibility for what we do consume, providing good jobs in the forest sector, and serving important ecological values at the same time. We can serve as a model—and not just an ecological model, but a social and political model of how to work these things out.

Designate more wildlands *and* protect more woodlands. Reduce our consumption of wood *and* produce more timber within our own state.

These goals may *sound* contradictory, but they are not. In fact, they have long been broadly endorsed by the wide range of environmental and forest industry groups who are part of the Massachusetts Forest Forum. Let’s put them into practice.

MASSACHUSETTS'S PUBLIC LANDS AT THE CROSSROADS
HOW DID WE GET HERE AND IS THERE A WAY FORWARD?

By Bruce Spencer – Forester

November 19,2023

The method of logging is one reason why we are at the crossroads of public lands management. The following is a brief description of logging methods and impacts on the land from 1965 to the present.

In the 60's and 70's small crawler tractors pulling a sled or trailer and small skidders around 5-6 tons were common, The tractors were narrow and easy on the land and with small poles could cross soft soils with out impact. The small and common JD Skidder was light but more powerful than the tractors and could skid long logs that often took the bark off nearby trees, requiring the reduction of log length to around 30 feet. Skidders kept getting bigger and more powerful which required straight skidroad layout to prevent damage to skid trail trees and roots. Forwarders were the next machine, the first were small, just two axles, but they carried the logs out of the forest and did not require straight roads. In the 80's and 90's everything got bigger and heavier. Skidders, especially grapple skidders doubled in weight from early models and forwarders went from 2 axles to 3 and 4 axles, The size of loads for both skidders and forwarders increased dramatically requiring wider roads and firm soils, otherwise ruts became more common. Whole tree logging, used in land clearing, has become a preferred logging system for some foresters. From the last decades of the 20th century to the present, machines to cut and process trees in the woods and hauled out with forwarders has been available. The largest weighing up to 30-35 tons. Forest roads for these machines vary from 10-20 feet in width. Forest aesthetics changed with more space allocated to machines especially the whole tree harvesting system that left fewer trees and a clean forest floor. The forest no longer looked like a forest and this has not gone unnoticed by the public.

Soil disturbance came in hidden ways, not the erosion of forest roads that are taken care of with best management practices, but the soil compaction and soil ruts. Recent science has indicated that important underground fungal connections are disturbed by both soil compaction and soil ruts plus slowing regeneration and soil drainage.

The way forward requires changes in how the DWSP forest is managed and how it is logged. Lighter and smaller logging machines are available and even some of the large machines can be fitted with wider tires or tracks to lessen soil compaction. In addition, strict silvicultural standards that promote advance regeneration and then releasing this regeneration in small openings of 1/3 acre or less and keeping all machines on 10% or less of the treated a forest. The last DWSP Land Management Plan called for a diverse forest of species and ages including the oaks. This has not happened for the majority of timber sales conducted during this 10 year Plan. And most important DWSP needs oversight of Green Certification. I could not support the DWSP withou this oversight.

As a perspective, it is imperitive that the DWSP personel understand that the MWRA Water Supply System is a World Class System, not equaled anywhere else, the only shortfall happens in Watershed Management. I don't take this lightly and would give my time to show anyone why I am saying this.

MASSACHUSETTS FOREST ALLIANCE

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November 21, 2023

Stephanie Cooper, Undersecretary for Environment
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Undersecretary Cooper:

Thank you for holding a second public feedback session and for the opportunity to submit comments on the Climate-Oriented Forest Management Guidelines. We represent forest landowners, foresters, timber harvesters, and forest products companies in Massachusetts.

We were hoping for more clarity on the proposed guidelines or recommendations in advance of this meeting. We remain concerned about a potential delay and a continuation of the “pause” beyond your proposed early December expiration date. As you know, we asked that you include the 2022 DCR Forest Management Projects as case studies in the Committee’s work to avoid a situation where these projects would have to be revised following the Committee’s report – potentially extending a one year pause to an 18-month pause or longer, which will significantly negatively impact our timber harvester members. We’re not sure of the process or where you stand on this, but we hope to be able to avoid that situation.

You asked for feedback on a number of statements that appear to be guiding the Committee’s work. Here are our comments on those statements.

Keep Forests as Forests

Reduce the conversion of forests to other land uses and increase permanent conservation of forested lands.

We support this statement. For private landowners, having an occasional timber harvest as part of a long-term forest management plan can generate enough income to pay taxes on the land, helping keep it as forest.

The biggest threat to forests is development, so more conservation of lands makes sense. There are a few caveats, however. First, we generally are concerned about Natural Resource Protection Zoning (NRPZ), because it may devalue forestland and make it harder for forest landowners to take out a loan on the property if needed. We also believe that forest landowners should have the right to carve out one or two small house lots for their children, while keeping the rest of the forestland intact.

We take “permanent conservation” in the statement to mean protection with a conservation restriction (CR) or state acquisition of forestland. We have some

Advocating for a Strong, Sustainable Forest Economy

concerns about CRs as well. The state's model CR is growing ever more complex and restrictive, and as a result we've seen forest landowners begin to question whether they should proceed with a CR. We've provided feedback to the Massachusetts Land Trust Coalition, who often work on the model CR, for the next time it comes up for review. We would encourage EEA to consider involving forest landowners in the development of the next model CR to give their important perspective and air their concerns about binding their heirs with extremely restrictive covenants that have no flexibility to address future events.

We also are realists and must concede that *some* forestland will still need to be converted for renewable energy projects such as solar, battery storage, substations, and transmission lines. We can try to minimize this as much as possible, but some will inevitably still be needed. The DOER **Massachusetts Technical Potential for Solar** [report](#) has an associated [StoryMap](#) that grades land suitability for such projects. Perhaps projects should be limited to those areas with an "All A" or "Mostly A" rating.

Finally, if "permanent conservation" in this statement is read as meaning "reserves/wildlands *only*," we're not sure we would still be in strong agreement. We stand with leading environmental organizations, academics, scientists, land trusts, the Intergovernmental Panel on Climate Change (IPCC) and others who believe that climate science clearly supports a mix of forest reserves and actively managed forestland. The Healey Administration has indicated that they wish to expand reserves on state lands. While there is the opportunity to do so – particularly on newly-acquired land near existing reserves – setting an arbitrary increase, such as 5%, is not based on science to any real extent. Reserves should be carefully chosen based on existing and predicted future conditions, such as age class, species mix, structure, level of resiliency, etc.

One point that we think most people miss in the discussion of reserves is that the vast majority of all forestland in Massachusetts is *effectively* in reserves, with no management in decades and no plans for any in the future. Much of this is in very small acreages not eligible for Chapter 61 tax incentives. Only a tiny percentage of Massachusetts forestland is subject to any forest management in a given year.

Forest Management for Habitat

Review existing state habitat goals and pursue the most carbon sensitive ways to create and maintain habitat for species that require open, grassland areas (early successional).

One major concern we had going into this process was that the Healey Administration would choose to end habitat management if it involved cutting trees. We were relieved to learn that this was not true. It would certainly conflict with Governor Healey's recent executive order on biodiversity, which would be impossible to achieve without cutting some trees.

We think this statement makes sense as a goal, but we are confused by the language. We see grasslands, shrublands, and early successional forest as three entirely separate habitats. Not only are they quite different, but their ongoing management is very different. We are concerned that EEA appears to believe that they are all identical. In some respects, creating grassland and shrubland habitats should be seen as restoring the landscape to its natural state, where a century of fire suppression has created a forest where fire-adapted plants would otherwise

thrive in the presence of regular fires. Managing these habitats with prescribed fire keeps them in a natural state without the risk of fire spreading out of control to other areas – achieving public safety while still allowing fire to do its natural work.

Disturbances

While their frequency and intensity has been increased by climate change, disturbances (e.g., severe weather events, insect outbreaks, disease) are fundamental and necessary forest ecosystem processes. Disturbances increase the biodiversity, structural complexity, and the dead wood that Massachusetts' forests generally lack due to intensive historic land uses.

There is no question that natural disturbance plays a key role in forest ecosystems and can lead to many long-term benefits for forest resilience, wildlife habitat, and more. Our only concern with this statement is that it implies a total surrender to and acceptance of ***unnatural*** disturbances from invasive insects and plants.

We do not believe that DCR Forest Health should stop its work to control invasive insect outbreaks, as recently occurred on Martha's Vineyard with the Southern Pine Beetle, or halt all efforts introducing biocontrols such as parasitic wasps to control the Emerald Ash Borer. We treat each of these threats on an individual basis. For example, the Asian Long-horned Beetle, because it feeds on many different tree species, was responded to with fast and aggressive tree-cutting to attempt to eradicate it, rather than slow its spread, while other invasive insects received a more measured approach.

While surrendering to invasives on state lands might be possible, for private forest landowners the loss of a significant number of trees destroys the timber value of their land, making it more difficult to cover expenses and making it more likely that they will sell the forestland for development. And invasive insects and plants do not respect property lines, so if the Commonwealth were to give up on invasive control on its forestland, that would make life much worse for private forest landowners.

Carbon Stocks & Sequestration

Carbon stocks are typically greatest in older forests and in the largest trees. Forest reserves with minimal or no tree harvesting are therefore important for maintaining carbon stocks. Young and middle-aged forests generally sequester carbon at higher rates than older forests, but managing forests for the narrow life stage of maximal carbon sequestration is impractical and undesirable. Instead, managing for a diverse range of ages and developmental stages across forest landscapes is the optimal means of promoting carbon sequestration and many other forest ecosystems services.

We agree with the statement and support managing for a mosaic of forest age classes across the landscape.

However, we might tweak the second sentence to reflect reality. Forest reserves are important for *attempting* to maintain carbon stocks, but there is no guarantee that they will actually do so long-term. A severe weather event, infestation with invasive insects or plants, or other health challenge can very easily destroy carbon stocks in reserves. We believe there are multiple

reasons to keep some forest land in reserves beyond simply carbon, as viewing the continuation of those carbon stocks as inevitable ignores significant evidence to the contrary.

As a result, managing to increase diversity and resilience at a landscape scale makes sense as a strategy, and we support efforts to do so.

Soils

Soils are the largest carbon pool in Massachusetts' forest ecosystems, generally storing more carbon than is stored in living biomass. Forest soil carbon can be protected by requiring harvesting practices that reduce forest soil disturbance and preserve their structural integrity and diversity of fungi and other organisms.

Forest soil carbon research tends to be confusing and contradictory, as studies range from measuring two inches of soil to measuring six feet. But the conclusion from exhaustive research at the Hubbard Brook Experimental Forest seems to indicate that best management practices (BMPs) can protect forest soil carbon during a timber harvest and lead to no or minimal carbon loss, as this statement indicates. We don't believe there is a need for additional restrictions or practice changes based on current research data.

Resilience

[There are different schools of thought among Climate Forestry Committee Members regarding resilience. Please respond with your ranking for each statement.]

Massachusetts' forests are inherently resilient and do not require human intervention. Ecological processes, including disturbances and forest regeneration, should be allowed to unfold without intervention.

Climate change is creating new conditions that highly stress and threaten Massachusetts' forests. Active forest management can create forest conditions, including a diversity of climate-adapted species and varied age classes, that will increase forest adaptive capacity to future stressors and promote resilience to ecological disturbances, and therefore should occur.

We believe that the science and evidence is clear that a forest with diverse species mix, age classes, and structure is more resilient to challenges to forests caused by climate change, severe weather, and invasive insects and diseases. There is also solid evidence that these forests tend to sequester carbon at a higher rate. Given that most of our second-growth forests are even-aged and lack this diversity, forest management is one way to speed transition to it. This will help protect the carbon stored in the forests from release.

While we are firm believers in the science stated in the second statement, the point we made during our oral comments at the public meeting was that we didn't need to choose between the two. We have some state forestland in reserves, and some open to management. Both sides will have their preferred actions carried out. DCR's extensive forest research work – the Continuous Forest Inventory (CFI) – can help answer questions about this over time.

We have urged EEA for some time to communicate this research out to the public. For example, DCR held an internal research symposium this year for staff only – these types of efforts should be open to the public or special events put on to communicate this research out, to better inform public debate on forest management. You’ve indicated that this is a goal of the Administration, and we think it is a worthy one and we encourage you to follow through and share more of this research publicly.

Invasive Insects & Disease

Invasive insects and disease can cause tree mortality that results in carbon emissions to the atmosphere. Active management activities, including tree harvesting, should be employed if a novel infestation may be eradicated through rapid response. Proactive harvesting in response to infestations of established insects and diseases should only occur in limited circumstances with clear rationales.

We have some concerns about this statement, as we did about the earlier one above which seemed to indicate the desire to not respond in any way to invasive insects and diseases. Some invasive insects and diseases have well-established management practices that are proven to reduce mortality and protect neighboring trees from infection. For example, white pine needle disease can be managed by allowing sunlight and air to reach the full crown of the trees. This will require removing some of the sickest trees to protect the remaining trees in the stand. Would we be better off allowing all the trees to die and release their carbon back into the atmosphere? We’re somewhat confused by what problem this statement is trying to solve.

Invasive Plants

Invasive plants that can cause significant tree mortality and negatively impact forest regeneration, such as climbing vines, should be removed when feasible.

We can’t imagine that anyone is opposed to this statement. It’s obvious that we should do this, and we haven’t heard opposition to it, even among the most fervent forest management opponents.

Wood Production

Active management of public lands produces only a small volume of wood. This is because wood production is incidental to management of public lands for other objectives, including services like habitat, water supply, and recreation. Total wood production in Massachusetts is about 5-7% of our wood consumption. More wood, especially long-lived wood products, should be sourced from Massachusetts forests, with some contribution from state lands.

We strongly support this statement. The public is largely confused by the use of the term “commercial logging” when applied to state-owned forestland. The clear implication of this term is that the state throws open the doors to timber harvesters and tells them to take what they want. People are typically surprised to learn that what DCR and other agencies are doing is quite different. One group of forestry opponents recently toured a DCR forest management project and declared, “This isn’t commercial logging – it’s forest management!” and discovered they weren’t opposed to what DCR was doing. That’s largely because this misperception exists.

That being said, we believe more Massachusetts forestland could benefit from sustainable forest management that creates the wood products that all of us use every single day. Wood is a renewable, sustainable, biodegradable, natural material that we should be encouraging the use of.

One note related to long-lived wood products is that much of the wood in Massachusetts forests is low-grade wood that cannot be made into these products. Timber Stand Improvement can thin low-grade trees and encourage the growth of trees that can someday be turned into durable wood products like lumber, furniture, and flooring. Harvesting only wood that can be turned into long-lived products is a practice known as high-grading, and in the long run results in fewer and fewer trees that can be used in long-lived products. The Commonwealth should be incentivizing TSI to improve timber quality in order to achieve the goal set out in this statement.

The use of modern wood heat to displace fossil fuels also has a significant decarbonization benefit, as is shown in research conducted with funding from the Commonwealth, including the *Manomet* study, follow-on peer-reviewed research published in prestigious scientific journals, and even MassCEC's [GoClean website](#), which shows that modern wood heat has a lower carbon impact today than air-source heat pumps using grid electricity, which is still produced mostly from fossil fuels. Production of this important forest product is related largely to residues from harvesting, low-grade material thinned in a TSI project, or residues from sawmills that create long-lived wood products, and should not be overlooked.

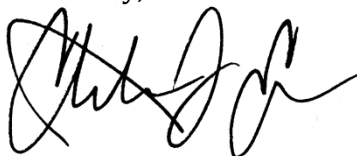
We strongly support efforts to increase sustainable forest product production in Massachusetts, and hope EEA follows through on these plans.

Summary


Those are our thoughts on the statements you wanted feedback on. We've been appreciative of the efforts of the Executive Office of Energy and Environmental Affairs throughout this process. We greatly appreciate the Forest Viability Program in particular and the chance to work with EEA in a stakeholder process to help develop it. We look forward to continuing to work with the Administration to implement all of these various pieces of the program going forward.

Thank you again for the opportunity to share our perspective.

Sincerely,

A handwritten signature in black ink, appearing to read "Chris Egan", written in a cursive style.

Christopher Egan
Executive Director



A Visual Report on DCR's
implementation of their
10-Year “Forest Restoration”
Plan for the Myles Standish
Complex located in Carver,
Plymouth, & Wareham, MA

Myles Standish State Forest
FIELD TRIP REPORT

By Glen Ayers • Oct 28, 2023

- 2000 Acres of Existing Wild Habitat was Eliminated.
- A Diverse Recovering Forest was Simplified & Homogenized.
- No MEPA Process, No Public Say.
- No Climate Impact was Analyzed or Disclosed. [MGL Ch. 30, sec. 61](#)

DCR Utilized the MEPA Loophole-

MEPA Logging Loophole at [301 CMR 11.03\(1\)\(a\)1](#): Threshold (exemption) applies as long as DCR is following

“an approved forest cutting plan or similar generally accepted practice”

Whatever that means??? Accepted by Whom?

No Standards, No Process, No Decision, No Appeal.

100% Discretionary and up to DCR to do whatever it wants.

Utilized the DCR “Reserves” Loophole.

From page 22 of the Landscape Designations for DCR Parks & Forests: Selection Criteria and [Management Guidelines \(2012\)](#) “Habitat manipulation, silvicultural treatments and commercial harvesting operations are not permitted in Reserves. **However, if deemed appropriate by DCR and reviewed by the FRSAC, the following exceptions may be allowed:**

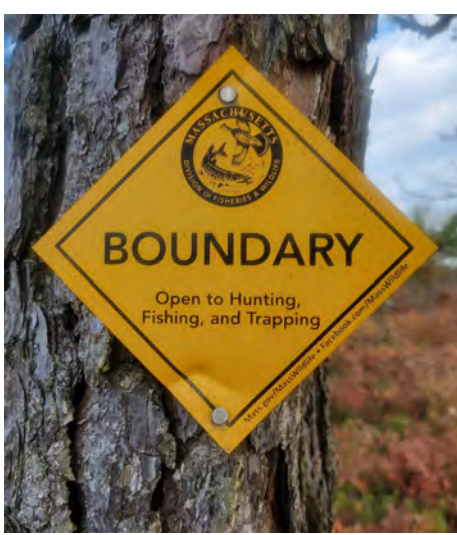
a) Implementation of NHESP recommendations to restore, maintain or enhance habitat for rare and endangered species and exemplary natural or rare communities.”

Based on Junk Science and 1950's Ecology

Creation of a So-Called
“Pine Barrens” Where One
Never Historically Ever
Existed According to
Documented Evidence.

[Miles Standish Forest from
Ice Age to Present](#)





Creation of wholly artificial landscape that will require perpetual, intensive maintenance to hold natural succession at bay. FOREVER.





Before and After

An aerial photograph showing a landscape with two ponds. The pond on the left is surrounded by a network of thin, light-colored lines, possibly representing a drainage system or field boundaries. The pond on the right is situated in a more open, brownish area. The overall terrain is a mix of green and brown, suggesting different vegetation or soil types. Two text labels are overlaid on the image in a light green font.

SE Pine
Barrens
Wildlife...

Camp Cachalot
Wildlife
Management
Area

- Converting the Entire Landscape from an Accelerating Carbon Sink to a Perpetual Source of CO₂ Emissions for Decades to come (or Permanently if their “Management” Plan is Followed).
- Ignoring the Climate Emergency.

“This is Insanity” - Linda Coombs, Aquinnah Wampanoag Elder





The Solution is the Passage of H.4150 to Save Mass Forests

I'll try to be as succinct as possible but this is a complex issue. I have been a forester for 50 years. I've seen it all, the good, the bad and the ugly. Though I'll defend forestry as much as anyone I've also been its biggest critic in Massachusetts.

I'll now point my barbs to the "Climate-Oriented Forest Management Guidelines". Right from the start, you have something wrong. Unfortunately, everyone who has commented to the Nov. 14th webinar also has it wrong- and that is that there is a "climate emergency". In Massachusetts, any skepticism to this supposed emergency is essentially forbidden. State officials, academics, the mainstream media and even many business enterprises go along with this fundamentalist belief. I suspect many don't believe it but they think it's better to go along to get along. Skeptics (mostly outside the state) suggest that the reason they do so is that it's the only way to get funding to advance the cause of their agency or college or enterprise. Trillions of dollars are going to be spent to fight this "emergency". Now that I've pointed out that I'm a skeptic, not to be confused with "climate denier" as one can be a skeptic that a slight warming is an emergency without denying anything. There is a good deal of science to back up the views of skeptics. I could write several pages on this but I'll keep it simple by saying read "Unsettled" by climate scientist Stephen Koonin. I'll make the claim that if you don't read that you cannot claim to be open minded on this subject. There is strong evidence if you are willing to look- that there are not more severe storms, floods, droughts, heat waves than in the past and the glaciers are not melting and the polar bears are doing just fine. If you really would like to understand what I'm saying, just read the essays and comments at: <https://wattsupwiththat.com/> though I know you won't.

Now on to forestry. Forestry has many problems- the least of which is climate change. I have been speaking up about these issues since I started my career in 1973. Let me list just a few:

- For the entire second half of the 20th century, the most common form of logging in Massachusetts was high grading which did a great deal of damage to the forests. My speaking up about this was ignored by the state, environmental groups and even, and especially forestry organizations. If you'd like to know why, feel free to ask me. The quality of timber harvesting in this century has greatly improved. If you'd like to know why, just ask.
- The big negative regarding logging in this century is that there was a big push for large scale clearcutting. The argument was made that it's necessary for biodiversity. That was a phony excuse. If you'd like to know the real reason, just ask.
- This entire "climate emergency" story has actually resulted in tremendous damage to forestry- not because of a slight changing of the climate but because it was a means to back up the claims of forestry haters who were determined to prevent the rise of a biomass power industry and wood chip industry. They came up with a false premise they call "carbon debt". Their logic seems reasonable to anyone who doesn't really understand forests and forestry. If you want my explanation why it's false, just ask. The reason that stopping these biomass industries is so destructive to forestry and forests in this state is that the forests are in poor condition, by and large, due to past high grading and invasive species. A biomass industry would have greatly stimulated forestry as it would provide a market for half of the trees that need to be removed which otherwise can't be harvested economically. Much of the supposed managed forest on state land and in the Chapter 61 programs really can't be managed if you don't have the market. So, stopping the biomass industry from starting was a way for the forestry haters to slow down forestry. As I noted above, there is no climate emergency- there is no need to have a net zero policy, which is an extremely radical policy. If the biomass industry had developed there would have been a boom in forestry like never before and, amazingly, it would have resulted in as much or more carbon in the forests than you'll get with these new policies including large reserves-

since the reserves are loaded with diseased and dying trees due to past high grading and invasive species and other diseases. Foresters doing great forestry- with a full understanding of long term forestry economics will want to grow large trees- of the best species that were dominant in primeval times. Ergo, great forestry will accomplish the objectives you seek but not for the reasons you think are important.

- Another problem which I've spoken up about and of course was ignored is that the state doesn't have a genuine civil service system. Believe it or not, when I graduated from the U. Mass. forestry department in 1973, I called the old DEM in Boston and asked for a job application for forestry. I was told by a very rude employee that "it doesn't work that way- you must contact your state politician". Over the years I've noticed who gets hired by the state agencies. Most are good at their work but it's evident to anyone with their eyes open that the goal wasn't to hire the best. Hiring is based on who you know and in recent years it's obviously based on affirmative action, not so much for African Americans, but for women and other groups that "progressives" think should get the jobs. As for the leadership of state agencies- it's obvious to everyone that hiring is all about whether or not you check off the right "progressive" issues. It is my opinion that many in leadership jobs are not qualified or are not as qualified as people who don't fit the politically correct image that is desired.
- Regarding reserves. There really is no justification for more than 10% of the forests to be in reserves. Well managed forests will be healthier, far more valuable, look better, and have more wildlife diversity, and less invasive species. What's not to like? It's for philosophical and religious reasons that some people want more reserves.
- In conclusion: forestry when done right is a very great thing. It really does improve the forest in all ways. It's an economic endeavor badly needed in this state especially in rural areas. I roughly estimate that if 90% of all the forest in this state were managed correctly, it would add several billion dollars to the state's GNP. One reason it's so large is that, as once described by the late professor David Kittredge, that the multiplier effect of the value of a tree cut is amplified 50 times as the wood gets processed into finished products. For some inexplicable reason- virtually nobody on either side of these discussions dares mention the economics of forestry, as if putting dollar signs on trees is a dirty thing. I'll add here that the U. Mass. forestry program no longer teaches forestry economics, a course I took in the early '70s. If the economics of forestry is ignored, then any policies will be false, without a solid foundation of truth, based on mere politics.

For more on some of my thinking on forestry- go to my YouTube channel:

<https://www.youtube.com/@JoeZorzin/videos>. I have 3 videos of logging work, a video of the construction of a solar "farm", and I've started a podcast with 13 forest policy related videos. I'll will soon add one regarding this climate forestry policy process.

11/17/23 Comments for the second round of public input
Karl Dziura, Conway MA

I thought Undersecretary Cooper's mention of DCR's Continuous Forest Inventory data seemed disingenuous, since she suggested it was an example of EEA's scientific approach. DCR has not produced any studies using this data and, though it created a state-owned forest land designation system that included a ten-year review, at that review DCR stated it did not even set a goal, scientific or otherwise, for this last ten year period. This performance is not only lacking in science, but constitutes misfeasance. Despite the numerous requests by dozens of citizens to DCR, the DCR Stewardship Committee, the Division of Fisheries and Wildlife, and EEA itself for data and supporting studies for the positions it has taken, including FOIA requests that have been ignored, none have been forthcoming. Without this information, this process remains undemocratic and unscientific. Instead of further insulting citizens by wasting more taxpayer money hiring a consulting firm to help EEA make this perfunctory process look legitimate, please provide supporting data, studies, a definition of "Climate Smart Forestry," publish the proceedings of the Forest Advisory Committee, convene the Reserves committee, make their proceedings public and allow for genuine interaction with the public, and meet your own commitment to use the best climate science. Also, none of the written comments from September have been posted on the Forests as Climate Solutions website. This behavior is consistent with DCR's Peter Church's failed promise to answer questions submitted during the 10 year review of the Forest Designations last September, though I reminded him monthly for 6 or more months, and with the failure to publish and the complete lack of response to comments submitted to the *Central Highlands Kickoff* public participation process last year.

I responded to the 10 questions with rating scales on the form, but since the statements lack sufficient information in several cases and are leading in others, below is a set of comments on each of those statements.

6. Keep Forests as Forests

Reduce the conversion of forests to other land uses, and increase permanent conservation of forested lands.

This question does not address how "increase[s] permanent conservation of forested lands" will occur. EEA has made references to giving money or land to large private land trusts, which I adamantly oppose. State expenditure to buy land to reduce forest conversion should be dedicated to buying land that remains under state and taxpayer control. I might agree with providing state support for small private land trusts, but only on a case-by-case basis. However, I support the expansion of Chapter 61 incentives to private landowners to keep their land forested. I would prefer they were not required to submit it to active management, but I could agree to that IF state owned forest land is designated as Wildlands.

7. Forest Management for Habitat

Review existing state habitat goals and pursue the most carbon sensitive ways to create and maintain habitat for species that require open, grassland areas (early successional).

1 Of course everyone wants the state to reevaluate its activity and reduce its carbon footprint. However, I find this question dishonest in its manipulative wording. Much more information is needed. How much carbon would be released following this theory of land management versus not creating early successional habitat? I have seen many claims that are prima facie wrong that declare species x or y requires early successional habitat. I have also seen studies that conclude that none of these species

need this kind of management to survive. Having personally researched the state species list, most or all of them are considered of low concern across their ranges. Massachusetts should be coordinating with other states sharing a given species' range to create conservation plans for species that are declining to the point of losing viability if, in fact, any species are in danger of not having sufficient breeding populations for survival. The scientific aspect of this discussion that the state has not addressed is the trade-off between releasing more atmospheric carbon by creating early successional habitat that will immediately increase the burden on humans and other species that are already much more acutely experiencing the impact of climate change than the state listed species. Alaskan Indigenous people, Pacific island and African nations, and other human populations already suffering due to climate change along with existentially threatened non-human species like coral that are genuinely on the brink of extinction deserve first consideration. Given the more tenuous situation for these human and non-human populations, please do not use our taxpayer money to make their situation worse in order to increase wildlife populations that are in no danger of continuing to survive across their range.

8. Disturbances

While their frequency and intensity has been increased by climate change, disturbances (e.g., severe weather events, insect outbreaks, disease) are fundamental and necessary forest ecosystem processes. Disturbances increase the biodiversity, structural complexity, and the dead wood that Massachusetts' forests generally lack due to intensive historic land uses.

I do not see evidence supporting the first eleven words, though I answered 10 on the basis of the remainder of the statement. Considering EEA's claim to be following the best climate science, the lack of citations and supporting evidence is inexcusable.

9. Carbon Stocks & Sequestration

Carbon stocks are typically greatest in older forests and in the largest trees. Forest reserves with minimal or no tree harvesting are therefore important for maintaining carbon stocks. Young and middle-aged forests generally sequester carbon at higher rates than older forests, but managing forests for the narrow life stage of maximal carbon sequestration is impractical and undesirable. Instead, managing for a diverse range of ages and developmental stages across forest landscapes is the optimal means of promoting carbon sequestration and many other forest ecosystem services.

If the statement is meant to apply to lands other than state-owned forests, I could reluctantly agree. Make all state-owned forest land Wildlands, which are only about ten percent of our forested state land, and use them as a control group. Apply the stated idea to the other ninety percent of state owned forests, which, if the approach is so valuable, allows for a potentially greater impact. Enhance Chapter 61 and work with private land trusts to actively manage their forest land. This saves the state money, fulfills all of the theoretical ecosystem services the state theorizes are needed (despite having provided no proof), and provides a basis for genuine scientifically based decisions in the future, while leaving state-owned forest for citizens to enjoy in peace.

10. Soils

Soils are the largest carbon pool in Massachusetts' forest ecosystems, generally storing more carbon than is stored in living biomass. Forest soil carbon can be protected by requiring harvesting practices that reduce forest soil disturbance and preserve their structural integrity and diversity of fungi and other organisms.

1. I don't think soil disturbance can be reduced sufficiently, but again, my answers differ depending on what lands we're talking about: My answers for different lands would be-State owned forest: 1, small

local land trust, 1. Land purchased with state money for large private land trusts, 1, Privately-owned, Chapter 61 incentivized forest land, 5.

11. Resilience

[There are different schools of thought among Climate Forestry Committee Members regarding resilience. Please respond with your ranking for each statement.]

Massachusetts' forests are inherently resilient and do not require human intervention. Ecological processes, including disturbances and forest regeneration, should be allowed to unfold without intervention.

I absolutely agree, but differently owned land may yield different opinions from me.

12. Resilience

[There are different schools of thought among Climate Forestry Committee Members regarding resilience. Please respond with your ranking for each statement.]

Climate change is creating new conditions that highly stress and threaten Massachusetts' forests. Active forest management can create forest conditions, including a diversity of climate-adapted species and varied age classes, that will increase forest adaptive capacity to future stressors and promote resilience to ecological disturbances, and therefore should occur.

1. There is no evidence that nature will be unable to adapt to climate changing environments without human intervention. The state has had decades to study these changes (DCR's Continuous Forest Inventory has extensive, unexamined data), and it has failed to make a genuine scientific examination of climate related changes. Provide data for "Climate change is creating new conditions that highly stress and threaten Massachusetts' forests." I've been requesting data and studies for two years without any constructive response from the state.

13. Invasive Insects & Disease

Invasive insects and disease can cause tree mortality that results in carbon emissions to the atmosphere. Active management activities, including tree harvesting, should be employed if a novel infestation may be eradicated through rapid response. Proactive harvesting in response to infestations of established insects and diseases should only occur in limited circumstances with clear rationales.

1: Need more information. Has this situation ever occurred and has there ever been an effective rapid response that eradicated a novel infestation in Massachusetts? Would this rapid response exclude salvage logging, since this incentive has, at the very least, resulted in an appearance of impropriety where individual pecuniary interests have biased decision makers? The DCR Stewardship Council, with members belonging to logging lobbies, refuses to consider or even hear disparate viewpoints about logging state forests and only permits presentations by "Friends Groups." DCR Forestry Program leaders, Fish and Game administrators, and members of the DCR Stewardship Council belong to lobbies that promote logging, and while these memberships do not constitute a legal conflict of interest, they certainly raise questions about bias.

14. Invasive Plants

Invasive plants that can cause significant tree mortality and negatively impact forest regeneration, such as climbing vines, should be removed when feasible.

If it's limited to climbing vines, 8. Need more information on any other invasive species removal before commenting on it.

15. Wood Production

Active management of public lands produces only a small volume of wood. This is because wood production is incidental to management of public lands for other objectives, including services like habitat, water supply, and recreation. Total wood production in Massachusetts is about 5-7% of our wood consumption. More wood, especially long-lived wood products, should be sourced from Massachusetts forests, with some contribution from state lands.

1. My answer would change to 7 if logging was restricted to private land. Like the carbon accounting pages for DCR and DFW, this statement disingenuously presents this situation in a manner designed to evoke the desired answer, which would be agreement with logging state lands. Despite more than a decade of state support for the sector, local wood production has not significantly increased. DCR and DFW state that the amount of forest carbon sequestered in long term wood products is only 50 percent, meaning the other fifty percent is going into the atmosphere. If the logging industry thinks it can increase the percentage of local wood production, nothing is stopping them from doing so by logging private land. Logging public land does not hold out any significant hope of increasing our local wood products share of the state's wood products market. Increase Chapter 61 incentives for logging private land and deem our relatively small amount of state-owned forest Wildlands.

As a retiree. I personally spend most days in the growing season in state forests, including Wendell, Conway, Northfield, Warwick, Montague, Mount Grace, and Petersham. All of these are slated for logging if the state's current plan proceeds. Unlike the extensive revenues expended on Parks in Eastern MA, I'm not asking for a great deal of more revenue for Western MA state-owned forests. Some gates to prevent vehicle degradation would be advisable. What I am asking is that, since the science supports doing so, please stop extracting wood from, and experimenting on, Western Massachusetts state owned forests. Eliminate the Woodlands designations and declare them Wildlands.

Below is a written copy of my oral comments

First, Regarding the ten statements sent with rating scales last Friday: they are not a sufficient substitute for a genuine discussion about the management of our state-owned forests since they lack the nuance needed to make decisions.

These are my general comments

After the state has spent millions of taxpayer dollars over decades to convince citizens that state-owned forests need to be logged, while stonewalling citizens who request information about that logging, Massachusetts EEA has finally admitted that "There are different schools of thought among Climate Forestry Committee Members regarding resilience" in a form it emailed. These unnamed scientists believe that:

"Massachusetts' forests are inherently resilient and do not require human intervention. Ecological processes, including disturbances and forest regeneration, should be allowed to unfold without intervention "

This statement is consistent with the call in *Wildlands in New England* to set aside 10 percent of forests as unlogged Wildlands, about the amount of state-owned forestland in Massachusetts. The form has not been made available on the FACS website. Inexplicably, the state has waited until very late in the

process to make this information almost public: It has only been published ephemerally in a Form that disappears upon submission. The obscurity and untimeliness of this admission in comparison to the state's lengthy, expensive campaign to justify logging suggests it was not released in good faith. If this conclusion is in error, the state can easily correct this misperception. Please uphold the EEA's published commitment to "develop forest management guidelines based on the latest climate science," BY

1. completing the promised discussion of expanding Reserves and including a genuine public discussion in conjunction with a release of that committee's proceedings **before** issuing forest guidelines,.
2. Publish the proceedings of the "Climate Forestry Committee" widely, on the FACS website and elsewhere.
3. Solicit and fulfill requests for information about logging and burning in our state-owned forests.
4. Provide a definition for "Climate Smart Forestry" , including its support for burning lands for habitat management, with a bibliography of publicly accessible studies that support implementation in the Northeast.
5. Extend the logging moratorium and facilitate a genuinely robust public discussion that includes the possibility of declaring our state-owned forests as Wildlands as defined in *Wildlands in New England*, a 2023 study endorsed by dozens of scientists.

Without these steps, the state is undemocratically and unscientifically declaring that we must continue logging and burning our state-owned forests, contrary the thousands of citizens who petitioned the state to end this practice.

Karl Dziura
2 Hidden Ledge Drive
Conway, MA 01341

Dear Forests as Climate Solutions Team,

Thank you for the time that you all have devoted to this process and the serious considerations that you have given. My name is Lynne Man and I am submitting these comments on behalf of Nancy Polan and myself. The two of us are co-leaders of Sierra Club, MA Chapter, Forest Protection Team. The Sierra Club, MA Chapter, submitted comments for the first Public Comment period on September 14, 2023. Those comments still stand today. Nancy and I offer these comments in response to the survey questions, presentation and oral comments from November 14, 2023.

Like others, we are disappointed that there were no actual “guidelines” to review and that very little new information was presented prior to the public comment period. We strongly believe that the moratorium should be extended until the group is closer to agreement on either guidelines or rules and that the public should have ample time to provide substantive input. We also agree with others on the call that this group should consider rule-making, rather than guidelines, as a more rigorous standard, one that requires transparency, accountability and has the potential for meaningful evaluation.

It is clear from the oral comments that there are a lot of questions and doubts (which we share) about the state’s competency in both choosing sites for habitat restoration and early successional habitat and in the degree to which such sites are managed. What the public and environmental organizations often see is more destruction than the creation of viable, worthwhile habitat from land that was purportedly in “need” of restoration. From this perspective, trust in state agencies’ judgment and even intent, has been severely undermined. The case in point from the discussion was Squannacook River WMA, (which is a terrible idea), but there are many additional examples as well.

At the same time, the state acknowledges the importance of older forests to biodiversity and climate resilience. Why not reserve public lands for this purpose? This is what the *public* wants. It is completely feasible to meet all of our needs for local wood/wood products through climate-oriented forestry practices on private lands, which constitute the vast majority of forested land in MA. (Indeed, one commenter remarked that we are not doing enough on private lands). This would also give state foresters opportunities to work with private landowners in updating forestry practices that meet both practical needs and optimize ecosystem services within the framework of extraction *and* climate.

“Climate-oriented forestry” itself has not been well defined and the state has not proven that “selective harvesting” or various woodland restorations are, in fact, beneficial to ecological health or carbon sequestration and storage. Comments from the public input session indicate a willingness from the public to allow the state to conduct small demonstration projects using rigorous scientific methods. Given that the state has committed to conducting research and to sharing data and conclusions with the public, we support such projects specifically to expand our understanding of how various silvicultural techniques impact climate and biodiversity goals and outcomes. We would emphasize the need to include non-management controls in any such study.

We would also like to see an analysis of current and potential open spaces and early successional habitat in places that are not managed specifically for this purpose. For example, do areas under power lines that are cut at regular intervals function as early successional habitat? Could there be a campaign to convert large areas of monoculture turf, such as those frequently seen outside industrial buildings, into meadows or grasslands? Could optimizing available spaces for early successional habitat reduce the need to clear or thin mature forests for this purpose? We would urge you to consider this in drafting your proposal.

In terms of decision making processes and transparency, EEA and state agencies repeatedly claim that transparency and communication are essential. We appreciate this intent, but find such statements to be somewhat hollow. Public comment sessions, for example, are unsatisfying because people spend time preparing their statements, wait for long periods to present, are thanked and then move on with no discussion. And while written comments may be posted, there is no summary or analysis of either oral or written comments anywhere. Moreover, we never know how comments that we spend many hours preparing are used in decision making. In other situations, requests for information go unanswered, requests for access to meetings of public bodies are denied, (even just posting of a video of the meeting after the fact would be helpful), data are not readily available and peer-reviewed scientific studies on which the state claims current practices are based, are not made available for public review. All of these things could be easily remedied and would increase both public trust and support for EEA, DCR and DFW.

Finally, we recognize that you are in the tough position of balancing many perspectives and requests from organizations and people who come with deep-seated beliefs and values about what is "right" and what is "wrong." While most of us ultimately have the same goals in terms of protecting biodiversity, mitigating climate change and meeting practical human needs, we have very different ideas on how that should be accomplished. And so we want to end by acknowledging the great effort and thought that you all have committed to this process. Our comments are made in the spirit of suggestions for improvements, since in the end, the decisions that this group makes will impact credibility and trust in different ways from all participants.

Thank you.

Lynne and Nancy

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New England Society of American Foresters
54 Portsmouth Street
Concord, NH 03301
Website: nesaf.org

November 14, 2023

Dear Honorable Members of the Climate Forestry Committee,

The New England Society of American Foresters (NESAF) supports environmentally sound forest management practices to increase resilience to climate change disturbances, and stabilize or improve carbon sequestration to reduce the impacts of carbon in the atmosphere contributing to climate change.

The Society of American Foresters (SAF) is a professional forestry organization whose mission is to “advance sustainable management of forest resources through science, education, and technology, promoting professional excellence while ensuring the continued health, integrity, and use of forests to benefit society in perpetuity.”

The New England Society of American Foresters (NESAF) represents 667 SAF members who support this mission, and genuinely understand the importance of sustainable forest resource management regarding climate change and the future of forests in the region.

Our forests are a key part of our environment that can be used as a natural instrument to alter, for the better, the trajectory of climate change.

Thoughtful and thorough position statements, written and reviewed extensively by forest management and academic professionals, address the concerns conveyed by the people of the Commonwealth of Massachusetts. We offer these documents as a reliable source of information to assist the development of climate-oriented forest management in Massachusetts.

NESAF encourages the Commonwealth of Massachusetts to adopt a strategy that employs active forest management on state lands to mitigate climate change that will serve as an example of climate stewardship to other landowners in the Commonwealth.

Sincerely,

Dr. Susan Romano
NESAF Policy Chair

Attachments:

NESAF Forest Carbon - Forest Management - Climate Change Solutions
SAF Forest Management, Carbon, and Climate Change



Forest Carbon - Forest Management - Climate Change Solutions

A Position of the New England Society of American Foresters

Adopted by the New England SAF Executive Committee on June 15, 2022. This position statement will expire in 2027, unless, after subsequent review, it is further extended by the New England SAF Executive Committee.

Purpose

To discuss the important connection of carbon to forests in New England and provide insight to the science surrounding forest carbon, climate change and associated forest management strategies that provide for conserving carbon on the landscape. These concepts are discussed and documented in recent policy positions nationally (Society of American Foresters [SAF] 2020) and regionally (Yankee Division of the New England Society of American Foresters [YDSAF] 2020).

Scope

This position statement describes how the forests of New England are connected to the region culturally and economically and are extraordinary carbon sinks and through wise stewardship and management approaches can provide resilience to anticipated climate change.

Position

It is the position of the New England Society of American Foresters (NESAF) that balanced and tactical, science-based forest management conducted on private and public forest ownerships throughout New England will:

- (1) Establish and maintain value in forests and forest ownership fostering the economic conditions to keep forests as forests and thusly,
- (2) mitigate greenhouse gas (GHG) emissions through the sequestration of atmospheric carbon in resilient, well-managed forests (trees and soil), producing wood-based products to replace both non-renewable materials and fossil fuel based energy sources; and
- (3) provide the conditions for diverse resilient forest landscapes that are capable of adapting to future climate patterns and provide resistance to disturbance driven by climate change.

Issue

New England's forests have long provided its residents a myriad of ecosystem services: wood, soil and water protection, and wildlife habitat. Recently, carbon storage and sequestration have gained recognition as additional ecosystem services. Through photosynthesis, carbon is sequestered by living trees within forests and once sequestered, stored in those trees and the soils that support them. Climate and landscape variables create a range of conditions that result in differing rates and time horizons of the process. For example, sequestration can take place at high rates, particularly in young regrowing forests (Pugh et al 2019), while older forests with complex conditions can accumulate and store large amounts of biomass (carbon) (Keeton et al. 2007, Keeton et al. 2011). Policy makers are urged to support processes or activities that reduce CO₂ emissions or remove (sequester) CO₂ from the atmosphere. Examples are implementing sustainable forest management and using biobased energy and materials in place of carbon intensive products (IPCC, 2014).

The forests of the eastern United States including New England face significant threats to loss of carbon sequestration and storage capacity potential from forest cover loss. Keeping forests as forests in a rapidly urbanizing Northeast is the most important contribution that can be made in relation to carbon storage, sequestration and mitigating climate change (Woodall et al 2015).

Carbon is also stored in the long lived products (flooring, furniture, structural timber) that are harvested from forests. Utilizing locally sourced wood products as opposed to importing wood products can significantly reduce New England's "carbon footprint" (Berlik et al 2002, Ashton et al. 2012). Additionally, long lived forest products produced in New England have the potential to replace steel, concrete, and plastics which are fossil fuel, carbon intensive produced building products (Oliver et al 2014). This replacement potential will likely increase given the acceptance of wood-based construction materials such as "mass timber".

There are abundant opportunities to replace fossil fuel use for energy by using low grade woody biomass from New England's forests - approximately 61% of the harvested wood in the region is used or otherwise available for energy production (Burrill, et al 2021, Smith et al 2006). The use of domestic forest biomass for energy has the potential to advance the reduction of life cycle carbon emissions compared to the continued use of nonrenewable fossil fuel. It also can help with local and national energy security and improve employment in domestic rural economic sectors. (Society of American Foresters 2019, Kukrety et al 2015)

Different forest management approaches can have different carbon results. In general, passive management, which precludes harvesting, will result in higher carbon accumulation, while managing for young forest habitat can maximize annual sequestration (Catanzaro and D'Amato, 2019). However, tradeoffs exist between these management approaches that extend beyond immediate carbon accounting. Passive management systems, for instance, may not be best adapted for providing other critical ecosystem benefits: resilience from disturbance, diversity of habitat, regional water supply management, or regional wood products markets. A landscape approach that simultaneously manages for multiple forest structures (young and old trees) can increase carbon storage while providing the many other benefits afforded to us by managed forests (Nunery and Keeton 2010). In a landscape approach to forest management it is important to use a variety of approaches that capture carbon as well as store carbon to maintain the strength of the region's carbon sink while also meeting other ecological objectives. (Littlefield and D'Amato 2022, Massachusetts Department of Conservation and Recreation Bureau of Forestry). In New England, managing for reserves is

appropriate in some locations when balanced by sustainable timber harvesting in other areas and the outcome best serves the full spectrum of human needs over time. Meeting these objectives will require a full suite of conservation strategies working together, including both sustainable harvesting and reserve-based management (Foster et al. 2017).

Background

Keeping forests as forests is of paramount importance to continuing carbon sequestration and providing a buffer to climate change impacts. Preventing the conversion of forests to non-forest uses will reduce GHG emissions (Canadell and Raupach 2008). Between 1990 and 2010 over 28,000 acres of New England forests were converted to some type of non-forest each year. Converting a forest to non-forest land use eliminates most of the carbon storage and all of the forest's capacity to store and sequester carbon in the future (Catanzaro and D'Amato 2019).

The New England region is vast and its forests and their management vary significantly throughout the region. As the New England climate changes, so must the approaches to forest management be judicious so that landscapes are resilient to disturbance created by climate change. There are strategies to use our region's forests as a natural climate solution, sequestering CO₂ and storing carbon.

Natural Disturbance Regimes - Forest Management Provides Resilience to Climate Change

The specific forestry tools appropriate to New England are a function of our unique ecosystem components including climate, soils, species, and disturbance history. Our forests range from the typically moist, spruce-fir and northern hardwood types in northern New England subject to infrequent major disturbance of near 400 years, to the oak-hickory and pine hemlock forests of southern New England which have a disturbance cycle of perhaps less than 100 years (Seymour et al 2002, Lorimer and White 2003). These variables all contribute to a "profile" of carbon sequestration and storage and need to be considered when arriving at management strategies.

Forest management that replicates small canopy disturbances, which are common in northern New England, has the advantage of maintaining complex forest structures and maintaining stored carbon on site. Larger canopy disturbances, historically more common in the southern part of our region may sacrifice stored carbon but will have high carbon uptake rates (Nunery and Keeton 2010) and provide much needed early successional wildlife habitat. Balancing both these different strategies across the New England landscape is important in providing a variety of size and age classes, key components of higher biodiversity.

Because climate changes are affecting the natural disturbance regimes (Evans and Perschel 2009), foresters and resource professionals have sought to integrate this complexity into management decisions to enhance forest resilience. A system of evaluating options, strategies, and approaches to forest resilience and carbon management has been developed for forest managers (Janowiak et al 2014, Ontl, et al 2020) Examples of real world projects in New England where foresters have integrated climate considerations, promoting ecosystem resiliency, and carbon stock management are documented through the Climate Change Response Network (Northern Institute of Applied Climate Science 2022).

Wood as an Alternative

The wood products industry has been a fabric of New England for 400 years. In 2011 the forest based economy in the northern part of our region (including New York) contributed 33.1 billion dollars and 177 thousand jobs. Likewise, in 2013, the southern New England (MA, CT and RI) states produced an estimated \$5.8 billion dollars in gross regional output and provided employment to approximately 28,525 individuals (Northeast State Foresters Association 2013, 2015).

In New England, high quality lumber, timbers, furniture, cabinets, flooring, plywood, and pallets are produced (Irland and Kingsley 2014) all of which store significant amounts of carbon for long periods of time (Janowiak et al 2017). Average annual harvests in our region as of 2019 resulted in long lived products that store nearly 3.7 million tons of carbon annually. The carbon stored in these wood products harvested from New England's forests is approximately equivalent to the annual CO₂ emissions of 2.7 million automobiles (Burrill, et al 2021, Smith et al 2006, US EPA 2021). There is now great interest and momentum in "mass timber" which uses large wood components in building structures replacing concrete and steel (Struck, 2019). The University of Massachusetts is home to the Olver Design Building, the largest and most technologically advanced academic contemporary wood structure in the US. This mass timber building has sequestered 2,000 tons of CO₂ from the atmosphere within the 70,000 cubic feet of wood in the structure (University of Massachusetts 2019). Using wood products, such as those produced with sustainable forestry in New England, in place of concrete and steel, can offset up to 31% of global CO₂ emissions (Oliver et al 2014).

Wood as an alternative source of energy for heat and power in New England is significant. New England businesses, schools, hospitals, public buildings and homes use low grade wood products including traditional firewood for heat and power. Wood as a fuel source provides approximately 2% of the electrical power in New England (ISO New England 2021). Portions of the wood harvested annually in New England is already used to generate heat and electricity so that 4.2 million tons of carbon per year do not have to be emitted from other sources, including fossil fuels (Burrill, et al 2021, Smith et al 2006)

Summary

The New England SAF advocates for keeping forests as forests as a natural carbon sink. These forests are managed by foresters with techniques that provide resilient forest structures and recognize regional disturbance regimes that are changing due to climate change. Many forest management approaches, including passive and active, can produce positive carbon benefits. Locally produced forest products that offset fossil fuel emissions and store sequestered carbon for long periods of time are recognized as part of the solution to excessive atmospheric carbon and resulting climate change.

References

- Ashton, M.S., M.L. Tyrrell, D. Spalding, and B. Gentry (eds.). 2012. *Managing Forest Carbon in a Changing Climate*, Springer Science+Business Media. 414 p + 61 illustrations.
- Berlik, M., D. Kittredge, and D. Foster. 2002. The illusion of preservation: a global environmental argument for the local production of natural resources. *Journal of Biogeography* 29:1557–1568. <http://harvardforest.fas.harvard.edu/publications>.
- Burrill, Elizabeth A.; DiTommaso, Andrea M.; Turner, Jeffery A.; Pugh, Scott A.; Menlove, James; Christiansen, Glenn; Perry, Carol J.; Conkling, Barbara L. 2021. *The Forest Inventory and Analysis Database: database description and user guide version 9.0 for Phase 2*. U.S. Department of Agriculture, Forest Service. 1024 p. [Online]. Available at web address: <http://www.fia.fs.fed.us/library/database-documentation/>.
- Canadell, J.G. and M.R. Raupach. 2008. Managing forests for climate change mitigation. *Science* 320:1456-1457. Available online at <http://dx.doi.org/10.1126/science.1155458>.
- Catanzaro, P. and A. D'Amato. 2019. *Forest Carbon: An essential natural solution for climate change*. University of Massachusetts Amherst. 28 p
- Evans, A.M. and R. Perschel. 2009. A review of forestry mitigation and adaptation strategies in the Northeast U.S. *Climatic Change*. 96(1):167-183.
- Foster, D., K.F. Lambert, D. Kittredge, et al. 2017. *Wildlands and Woodlands, Farmlands and Communities, Broadening the Vision for New England*. Harvard Forest, Harvard University, Petersham, Massachusetts. 44 p.
- IPCC, 2014: Summary for Policymakers. In: *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
- ISO New England. Resource Mix. 2021. <https://www.iso-ne.com/about/key-stats/resource-mix/>
- Janowiak, M., C. Swanston., T. Ontl. *Carbon Benefits of Wood-Based Products and Energy*. 2017. U.S. Department of Agriculture, Forest Service, Climate Change Resource Center. <https://www.fs.usda.gov/ccrc/topics/carbon-benefits-wood-based-products-and-energy>
- Janowiak, M.K., C.W. Swanston, L.M. Nagel, L.A. Brandt, P. R. Butler, S. D. Handler, P. D. Shannon, L. R. Iverson, S. N. Matthews, A Prasad, M. P. Peters. 2014. *A Practical*

Approach for Translating Climate Change Adaptation Principles into Forest Management Actions. *Journal of Forestry* 112(5):424 – 433

Keeton, W.S., C.E. Kraft, and D.R. Warren. 2007. Mature and old growth riparian forests: structure, dynamics, and effects on Adirondack stream habitats. *Ecol. Appl.* 17:852-868.

Keeton, W.S., A.A. Whitman, G.C. McGee, and C.L. Goodale. 2011. Late-successional biomass development in northern hardwood-conifer forests of the northeastern United States. *For. Sci.* 57:489-505.

Kern, C.C, L.S. Kenefic, C. Kuehne, A.R. Weiskittel, S.J. Kaschmitter, A.W. D'Amato, D.C. Dey, J.M. Kabrick, B.J. Palik, T. M. Schuler. 2021. Relative influence of stand and site factors on aboveground live-tree carbon sequestration and mortality in managed and unmanaged forests. *Forest Ecology and Management* 493(8): 119266. 12 p.
<https://doi.org/10.1016/j.foreco.2021.119266>.

Kukrety, S., D. C. Wilson, A. W. D'Amato, and D. R. Becker. 2015. Assessing sustainable forest biomass potential and bioenergy implications for the northern Lake States region, USA. *Biomass and Bioenergy* 81:167-176.

Ireland, Lloyd, E. Kingsley. 2014. Vision for New England's Wood Products Industries in 2060. 10.13140/RG.2.2.30936.29446.

Littlefield, C. E., and A. W. D'Amato. 2022. Identifying trade-offs and opportunities for forest carbon and wildlife using a climate change adaptation lens. *Conservation Science and Practice* 4:e12631.

Lorimer, C.G. and White, A.S. 2003. Scale and frequency of natural disturbances in the northeastern U.S., implications for early-successional forest habitats and regional age distributions. *Forest Ecology and Management* 185: 41-64.

Massachusetts Department of Conservation and Recreation Bureau of Forestry. (n.d.) Managing our Forests . . . For Carbon Benefits. <https://www.mass.gov/info-details/managing-our-forests-for-carbon-benefits>

Northeast State Foresters Association. 2013. The Economic Importance of the Forest-Based Economies of Maine, New Hampshire, New York and Vermont, https://www.inrsllc.com/download/Nefa_Publications/NEFA13_Econ_Importance_Summary_AW_Feb05.pdf

Northeast State Foresters Association. 2015. The Economic Importance of the Forest-based Economies of the States of Connecticut, Massachusetts & Rhode Island, <https://www.nefainfo.org/publications.html>.

Northern Institute of Applied Climate Science. 2022. Climate Change Response Network. Available at <https://forestadaptation.org/>. Accessed 9 March 2022.

- Nunery, J.S. and W.S. Keeton. 2010. Forest carbon storage in the northeastern United States: Net effects of harvesting frequency, post-harvest retention, and wood products. *For. Ecol. Manage.* 259:1363-1375.
- Oliver C.D., N.T. Nassar, B.R. Lippke, J.B. McCarter. 2014. Carbon, Fossil Fuel, and Biodiversity Mitigation with Wood and Forests, *Journal of Sustainable Forestry*, 33:3, 248-275.
- Ontl, T. A., M. K. Janowiak, C. W Swanston, J. Daley, S. Handler, M. Cornett, S.Hagenbuch, C. Handrick, L.Mccarthy, N. Patch. 2020. Forest Management for Carbon Sequestration and Climate Adaptation. *Journal of Forestry*, Volume 118, Issue 1, Pages 86–101
- Pugh, T. A. M., B. Mats Lindeskog, B. Smith, A. Poulter, A. Ameth, V. Haverd, L. Calle. 2019. Role of forest regrowth in global carbon sink dynamics. *Proceedings of the National Academy of Sciences* 116 (10): 4382–4387.
- Seymour, R. S., A.S. White, P. G. deMaynadier. 2002. Natural disturbance regimes in northeastern North America—evaluating silvicultural systems using natural scales and frequencies. *Forest Ecology and Management* 155 (2002) 357–367
- Smith, James E.; Heath, Linda S.; Skog, Kenneth E.; Birdsey, Richard A. 2006. Methods for calculating forest ecosystem and harvested carbon with standard estimates for forest types of the United States. Gen. Tech. Rep. NE-343. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station. 216 p.
- Struck, D. (2019) Forget the Log Cabin. Wood Buildings are Climbing Skyward with Pluses Planet Washington Post Climate Solutions. <https://www.washingtonpost.com/climate-solutions/2019/12/12/forget-log-cabin-wood-buildings-are-climbing-skyward-with-pluses-planet/>
- Society of American Foresters. 2019. Utilization of Woody Biomass for Energy. Society of American Foresters Position Statements Page. https://www.eforester.org/Main/Issues_and_Advocacy/Statements/Utilization_of_Woody_Biomass_for_Energy.aspx
- Society of American Foresters. 2020. Forest Management, Carbon and Climate Change. Society of American Foresters Position Statements Page. https://www.eforester.org/Main/Issues_and_Advocacy/Statements/Forest_Management_and_Climate_Change.aspx
- United States Environmental Protection Agency. 2021. Greenhouse Gas Emissions from a Typical Passenger Vehicle. <https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle#:~:text=typical%20passenger%20vehicle%3F-A%20typical%20passenger%20vehicle%20emits%20about%204.6%20metric%20tons%20of,8%2C887%20grams%20of%20CO2>

University of Massachusetts. 2019. The John W. Olver Design Building at UMass Amherst.
<https://bct.eco.umass.edu/about-us/the-design-building-at-umass-amherst/>

Woodall, C.W., B.F. Walters, J.W. Coulston, A.W. D'Amato, G.M. Domke, M.B. Russell, P.A. Sowers. 2015. Monitoring Network Confirms Land Use Change is a Substantial Component of the Forest Carbon Sink in the eastern United States. *Sci. Rep.* 5, 17028; doi:10.1038/srep17028.

Yankee Division of the New England Society of American Foresters. 2020. Southern New England Forest Management in an Era of Climate Change. New England Society of American Foresters Policy Page. https://nesaf.org/wp-content/uploads/2020/09/2020_Yankee_SAF_Position_Mgt_Climate_Change_Expires_2025.pdf



Forest Management, Carbon, and Climate Change

A Position of the Society of American Foresters

Originally adopted on December 8, 2008, revised and renewed on December 7, 2014, and again May 2, 2020. This position statement will expire in 2025, unless, after subsequent review, it is further extended by the SAF Board of Directors.

Purpose

To clarify the increasingly complex opportunities and challenges associated with forest management for mitigating and adapting to climate change, including: carbon valuation and forest conservation, natural resources economies for ecosystem services, and risks to and opportunities for increasing the resilience of American forests and surrounding communities.

Scope

Forest management practices that conserve forestlands, sustain economies and communities, and protect our natural resources in light of anticipated climate change.

Position

The Society of American Foresters (SAF) promotes and supports science-based policies and actions that consistently recognize the positive role that forest management plays in: (1) mitigating greenhouse gas (GHG) emissions through the sequestration of atmospheric carbon in resilient, well-managed forests (trees and soil), producing wood-based products to replace both non-renewable materials and fossil fuel-based energy sources; and (2) adapting to future climate patterns through active forest management that reduces the risk of stand-replacing wildfire and other climate-driven disturbance emissions and avoids land-use changes from forests. Successfully adapting our forests and forest management practices to climate change will require explicit and long-term investments in research, education and outreach to aid in management for these changes. This includes direct monetary support to private landowners and public agencies to explore and implement the technologies and practices that can be used to mitigate carbon emissions and adapt to changing climate conditions, and associated assistance programs for local communities to implement the necessary changes.

Issue

Forests play an essential role in regulating global atmospheric GHGs while providing essential ecosystem services like clean water, wildlife habitat, recreational opportunities, and forest products that, in turn, store carbon (Deal et al. 2017, Buotte et al. 2019). Despite that role, forestry is often intentionally or unintentionally excluded from policy processes focused on carbon and climate given the complexity of accounting for the potential roles of forest management in carbon markets, regulatory uncertainty and the unintended consequences of some wood energy policies (Canadell and Raupach 2008, Johnston and Radeloff 2019). Such policy fluctuations and uncertainty have the potential to diminish the clear, known positive benefits that forests and sustainable forest management can play in stabilizing Earth's climate (Miner et al 2014, IPCC 2018).

Forests sequester carbon at variable rates depending on species, climate, disturbance regimes and management practices, but all forests fix carbon dioxide from the atmosphere and store it, in net, for long periods (Birdsey et al. 2019). Full life-cycle carbon accounting (modeling) is difficult and often controversial since it lacks perfect empirical evidence (Kim and Dale 2011, Miner et al. 2014). Standing forests store large amounts of carbon that can contribute to climate change mitigation (e.g., Buotte et al. 2019); however, a simple comparison of carbon storage between standing forests and harvested forests ignores three fundamental issues:

- 1) **natural disturbances.** Disturbances continually release carbon to the atmosphere via associated tree mortality, and forests therefore can accumulate only a certain amount of carbon over time and space;
- 2) **market flexibility.** Carbon is not stored terrestrially by preserving a given tree or stand in one location and ignoring replacement harvests from elsewhere; and
- 3) **product substitutions.** Reduced wood consumption, which could increase the carbon stocks in forests, would be undesirable since carbon emissions are exacerbated by the substitution of fossil-fuel intensive products for wood. Like forests, wood products have tremendously variable life spans (Johnston and Radeloff 2019); many products have a long-term net positive impact on carbon compared to non-renewable alternatives.

Finally, changes in climate (increasing temperatures, rising sea levels, reduced/short-lived snowpack, altered precipitation patterns, and extreme weather events) have the potential to dramatically affect forests nationwide through a variety of interconnected impacts (USDA Forest Service 2012, USGCRP 2018) that are difficult to fully anticipate. These include: prolonged droughts, longer wildfire seasons, and increased incidence of pest and disease related to warmer winters that drive tree and stand mortality, all of which influence forest composition and structure. Climate-related food and water shortages have the potential to move humans into new regions and/or place more demands on our nation's forests. These changes *already* have been associated with increasing temperatures and concentrations of atmospheric carbon dioxide (CO₂) and other GHGs in the atmosphere (IPCC 2018); all global circulation models project future increases in temperature.

Background

Two active, complementary forest management approaches are fundamental to addressing climate change:

- 1) **mitigation**, in which forests themselves and resultant forest products are used to sequester carbon, forest biomass is used to provide substitute renewable energy, and GHG emissions are avoided through complementary product substitution (wood for carbon-intensive fossil fuel consumer goods) and resilient forest composition and structure; and
- 2) **adaptation**, which involves positioning forests and their associated benefits (above) in order to become more resistant and resilient to uncertain future disturbances as they become more likely in the face of changing climate conditions.

Mitigation: Carbon Sequestration

Forests sequester carbon as a function of site productivity and the potential size of various carbon storage pools: soil, charcoal, litter, downed wood, standing dead wood, and live stems, branches, and foliage. Sequestration capacity depends on stand density, tree species and sizes, tree and stand vigor and longevity, soil disturbance, tree mortality, wildfires, insects, and diseases. Forest management that regulates composition and structure prudently over time and space, balancing tree retention and removal, simultaneously stores carbon in both intact forests and renewable carbon-smart products (e.g., lumber, engineered composites, paper, and byproduct energy) with its associated socioeconomic benefits. Above all, enhancing the role of forests in reducing GHG emissions through sequestration requires keeping forests as forests and, where appropriate, increasing the forestland base through afforestation and restoration of degraded lands.

Traditional silvicultural treatments focused on wood, water, wildlife, and aesthetic values are fully amenable to enhancing carbon storage and reducing emissions from forest management (Tappeiner et al. 2015). Choices regarding even-aged or uneven-aged management regimes, species composition, slash disposal following harvests, site preparation, timing and intensity of intermediate harvests, fertilization, and rotation length/entry cycles can all be modified to increase carbon storage and reduce carbon emissions. In particular, improving the ecological resistance and resilience of fire-adapted ecosystems enhances long-term sequestration through avoided loss to wildfire (Finkral and Evans 2008). Prudent forest management and wood utilization sustain high levels of carbon stored in large landscapes over long time periods.

Mitigation: Solid Wood Product Substitution

Substituting solid wood products for fossil-fuel-intensive products can reduce GHG emissions in several important ways. Life-cycle analyses consistently show that lumber, wood panels, and other solid wood products store more carbon, emit less GHGs, and use less fossil-fuel energy than steel, concrete, brick, or vinyl, whose manufacture is energy intensive and produces substantial emissions (Lippke et al. 2004, Malmshemer et al. 2011). Harvesting temporarily reduces carbon sequestration in the forest by removing biomass and disturbing the soil, but much of the removed biomass is subsequently stored in forest products or otherwise used to substitute for fossil-fuel products or energy. The carbon in lumber and furniture may not be released for many decades; paper products have a shorter life.

Storage of carbon in harvested wood products is gaining recognition in domestic climate mitigation programs, though the accounting for the carbon through a product's life cycle is complex (Johnston and Radeloff 2019). Solid wood product substitution, however, provides long-term carbon storage that when combined with appropriate waste and landfill management can further delay the conversion of wood to GHG emissions, or provide waste wood for power generation to reduce the need for fossil fuel generation.

Mitigation: Woody Biomass Substitution

The use of woody biomass from forests to produce energy and biochemical products opens two additional opportunities to reduce GHG emissions (see our associated Position Statement on *Utilization of Woody Biomass for Energy*). One involves using biomass for combined heat and power (CHP) rather than allowing low-value forest residues to accumulate and decay on site or removing them by open burning. Hundreds of millions of tons of biomass could be generated annually from logging residues, treatments to reduce fuel buildup in fire-prone forests, treatments to improve forest health, fuelwood harvests, forest products industry waste, urban wood residues, and energy plantations (US Department of Energy 2016). Biomass can be burned directly, mixed with coal, or added to oil- and gas-generated electric production processes to reduce GHG emissions (Xi Lu et al. 2019); any such use of biomass for energy can reduce regional dependence on coal, natural gas, diesel, and/or heating oil imports.

The second opportunity is substitution of forest biomass as a feedstock for biofuels and biochemicals, which can be substituted for fossil-derived fuels and chemical production. Fossil-fuel chemical products introduce new, additive pollutants into the atmosphere, whereas biogenic emissions are re-sequestered over time. Substituting cellulosic biomass for fossil fuels greatly reduces carbon emissions (US EPA 2007). Further, the use of forest biomass enhances domestic and regional economic development by supporting rural economies and fostering new industries making value-added bio-based products.

Bioenergy with Carbon Capture and Storage (BECCS) has been a recent addition to global bioenergy strategy due to the potential to intercept CO₂ emissions associated with biomass combustion for CHP and permanently store this CO₂ in geological formations (e.g., aquifers). Technological challenges remain, but BECCS has gained traction through inclusion in three of the four illustrative model pathways outlined in the IPCC Special Report on Global Warming of 1.5°C.

Mitigation: Reducing Wildfire and Disturbance Emissions

Active forest management, including prescribed burning, and wildland fire management strategies that reduce fire intensity and restore forest health can dramatically reduce GHG emissions (e.g., Bonnicksen 2008; see our associated Position Statement on *Wildland Fire Management*). The ten-year mean number of acres burned annually across the United States is approaching 7 million for the past decade (NIFC 2019); the cumulative emissions from these fires is large, and altering the intensity of these fires represents an opportunity to significantly reduce emissions. Climate change models forecast an increase in wildfire activity (IPCC 2018), exacerbated by climate change and increased accumulations of hazardous forest fuels causing ever-larger wildfires. Wildfires burning with more intensity can then lead to unintended consequences of changes in vegetative makeup and subsequent reduction in carbon sequestration (Westerling et al. 2006).

Concurrently, bark beetle outbreaks across western North America increase dead wood loading that releases large amounts of GHG emissions as it decays, and can lead to increased severity of wildfires when that loading subsequently burns and reburns. Such disturbances are projected to increase with warming climate conditions (Hicke et al. 2012). Canada estimates that their bark beetle outbreak shifted its land use carbon inventory from sequestering CO₂ to becoming a net emitter (Kurz et al. 2008).

Mitigation: Avoiding Land-Use Change

Preventing the conversion of forestlands to non-forest uses is another way to reduce GHG emissions (Canadell and Raupach 2008; see our associated Position Statements on *Parcelization, Fragmentation and the Loss of Private Forestland in the US* and *Forest Offset Projects in a Carbon Trading System*). Conversion of forestlands globally released an estimated 136 billion tonnes of carbon, or 33 percent of the total emissions, between 1850 and 1998, more emissions than any other anthropogenic activity besides energy production (Watson et al. 2000). Forest conversion and land development releases carbon from loss of forest biomass, both aboveground vegetation and tree roots, as well as belowground soil stocks. In the United States, a major threat to forestland is the rise in land values for low-density development. Landowners generally convert forestland to residential and commercial uses to capture increasing land values or avoid reforestation costs post disturbance.

Several options exist to slow the rate of private forestlands being converted to non-forest uses. Easement acquisitions provide one method to encourage landowners to keep forests as forests. New and stable product markets also provide positive incentives to landowners (Miner et al. 2014). Viable wood products markets that recognize the benefit of carbon storage and sequestration provide positive incentives for forestland ownership. Sustainable utilization of working forests for a combination of wood products can improve forest landowners' returns on their land, bolster interest in forest management, and thus prevent conversion to other uses.

Adaptation: Resistance, Resilience and Assisted Migration

Resistance and resilience of current and future forests can be enhanced through prudent proactive forest management of existing tree species and stands, including restoration of structure and composition when current conditions are outside a range of desired conditions (Tappeiner et al. 2015). For example, there are millions of acres of dense, fire-excluded dry forest types of the American West needing some fuel reduction treatment (mechanical and prescribed fire) in advance of dry climatic patterns and wildfire. These treatments allow for the marginal, progressive adjustment of forest conditions, which are largely consistent with professional forestry standards but can be more quickly implemented in anticipation of emerging, rapid climatic shifts.

More controversial techniques include actively assisting species/genetic material migration to facilitate transitions to new locations and new conditions faster than would happen naturally (Williams and Dumroese 2013). Assisted migration has the potential to expand the available genetic diversity for future conditions, encouraging better-adapted species mixtures and gene stocks, and provide new locations for genetic material (i.e., future refugia). These practices are rooted in traditional reforestation and afforestation practices (e.g., seed zones and transfer guidelines) but will require a commitment to new research, education, and outreach as the profession moves forward. Many scientific, policy and ethical concerns exist about risk of expediting the movement of some plant materials, including distraction from other simpler conservation and mitigation strategies, genetic pollution and hybridization, introduction of new pests and pathogens, and future impairment of ecosystem function (Williams and Dumroese 2013).

References

- Birdsey, R.A., A.J. Dugan, S.P. Healey, K. Dante-Wood, F. Zhang, G. Mo, J.M. Chen, A.J. Hernandez, C.L. Raymond, and J. McCarter. 2019. *Assessment of the influence of disturbance, management activities, and environmental factors on carbon stocks of U.S. national forests*. USDA Forest Service Gen. Tech. Rep. RMRS-GTR-402, Rocky Mountain Research Station, Fort Collins, CO. 116 pages plus appendices.
- Bonnicksen, T.M. 2008. *Greenhouse gas emissions from four California wildfires: Opportunities to prevent and reverse environmental and climate impacts*. FCEM Report 2. The Forest Foundation, Auburn, CA.
- Buotte, P.C., B.E. Law, W.J. Ripple, and L.T. Berner. 2019. Carbon sequestration and biodiversity co-benefits of preserving forest in the western USA. *Ecol. Applic.* 30(2):e02039.
- Canadell, J.G. and M.R. Raupach. 2008. Managing forests for climate change mitigation. *Science* 320:1456-1457. Available online at <http://dx.doi.org/10.1126/science.1155458>.
- Deal, R., L. Fong, and E. Phelps (tech. eds.). 2017. *Integrating ecosystem services into national Forest Service policy and operations*. USDA Forest Service PNW-GTR-943, Pacific Northwest Research Station, Portland, OR. 87 p.
- Finkral, A.J., and A.M. Evans. 2008 The effects of a thinning treatment on carbon stocks in a northern Arizona ponderosa pine forest. *For. Ecol. Manage.* 255(7):2743-2750.
- Hicke, J.A., C.D. Allen, A. Desai, M. Dietze, R.J. Hall, E.T. Hogg, D. Kashian, D. Moore, K. Raffa, R. Sturrock, and J. Vogelmann. 2012. The effects of biotic disturbances on carbon budgets of North American forests. *Global Change Biol.* 18:7-34.
- IPCC. 2018. *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.). World Meteorological Organization, Geneva, Switzerland. 32 pp. Available online at <https://www.ipcc.ch/sr15/>.
- Johnston, C.M.T., and V.C. Radeloff. 2019. Global mitigation potential of carbon stored in harvested wood products. *Proc. Natl. Acad. Sci.* 116(29):14526-14531.
- Kim, S., and B.E. Dale. 2011. Indirect land use change for biofuels: testing predictions and improving analytical methodologies. *Biomass Bioenerg.* doi:10.1016/j.biombioe.2011.04.039.
- Kurz W.A., C.C Dymond, G. Stinson, G.J. Rampley, E.T. Neilson, A.L. Carroll, and L. Safranyik. 2008. Mountain pine beetle and forest carbon feedback to climate change. *Nature* 452:987-990.
- Lippke, B., J. Wilson, J. Perez-Garcia, J. Bowyer, and J. Meil. 2004. CORRIM: Life-cycle environmental performance of renewable building materials. *For. Prod. J.* 54(6):8-19.
- Malmsheimer, R.W., J.L. Bowyer, J.S. Fried, E. Gee, R.L. Izlar, R.A. Miner, I.A. Munn, E. Oneil, and W.C. Stewart. 2011. Managing forests because carbon matters: Integrating energy, products, and land management policy. *J. For.* 109(7):7-50.
- Miner, R., R.C. Abt, J.L. Bowyer, M.A. Buford, R.W. Malmsheimer, J. O'Laughlin, E.E. O'Neil, R.A.

- Sedjo, and K.E. Skog. 2014. Forest carbon accounting considerations in US bioenergy policy. *J. For.* 112(6):591-606.
- National Interagency Fire Center (NIFC). 2019. *Fire information*. Available online at <https://www.nifc.gov/fireInfo/nfn.htm>.
- Tappeiner, J.C., D.A. Maguire, T.B. Harrington and J.D. Bailey. 2015. *Silviculture and ecology of Western U.S. Forests*. 2nd ed. Oregon State University Press, Corvallis, OR. 440p. ISBN 978-0-87071-803-8.
- US Department of Agriculture Forest Service. 2012. *Future of America's forest and rangelands: Forest Service 2010 Resources Planning Act Assessment*. GTR WO-87. Washington, DC.
- US Department of Energy. 2016. *2016 Billion-ton report: Advancing domestic resources for a thriving bioeconomy, Volume I: Economic availability of feedstock*. US Department of Energy, ORNL/TM-2016/160, Oak Ridge National Laboratory, Oak Ridge, TN.
- US Environmental Protection Agency (EPA). 2007. *Greenhouse gas impacts of expanded renewable and alternative fuels use*. EPA 420-F-07-035, Office of Transportation and Air Quality, Washington, DC.
- USGCRP. 2018: *Impacts, risks, and adaptation in the United States: Fourth National Climate Assessment, Volume II: Report-in-Brief*. Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.). US Global Change Research Program, Washington, DC. 186 pp. doi: 10.7930/NCA4.2018.RiB.
- Westerling, A.L., H.G. Hidalgo, D.R. Cayan, and T.W. Swetnam. 2006. Warming and earlier spring increase western US forest wildfire activity. *Science* 313:940-943. (10.1126/science.1128834)
- Watson, R.T., I.R. Noble, B. Bolin, N.H. Ravindranath, D.J. Verardo, and D.J. Dokken. 2000. *Land use, land use change and forestry. Intergovernmental Panel on Climate Change Special Report*. Available online at www.grida.no/climate/ipcc/land_use.
- Williams, M.I, and R.K. Dumroese. 2013. Preparing for climate change: forestry and assisted migration. *J. For.* 111(4):287-297.
- Xi Lu, L.C., H. Wang, W. Peng, et al. 2019. Gasification of coal and biomass as a net carbon-negative power source for environment-friendly electricity generation in China. *Proc. Natl. Acad. Sci.* 116(17):8206-8213.



Protecting our water, our land, our communities

November 20, 2023

Massachusetts Executive Office of Energy
and Environmental Affairs
Attn: Secretary Tepper
100 Cambridge Street, Suite 1020
Boston, MA 02114

Re: Comments in Support of the Forests as Climate Solutions Initiative

Dear Secretary Tepper:

The Nashua River Watershed Association (NRWA) appreciates the opportunity to comment on the proposed Forests as Climate Solutions Initiative. NRWA is a member-supported organization based in Groton that works to restore and protect water quality and quantity for people, fish, and wildlife; conserve open spaces for water quality, wildlife habitat, farms, forests, and recreation; and encourage careful land-use with well-planned development.¹ NRWA also advocates for a transparent, community-driven, science-based approach to managing our public forests that accounts for the role that forests play in sustaining a healthy climate and robust ecosystem.²

NRWA supports the Initiative and applauds the steps EEA is taking to recognize the role that forests play in advancing the Commonwealth's climate goals. It submits this letter to highlight several areas for improvement and to supplement the remarks it provided at the public input session on November 14. NRWA also urges the Commonwealth to reconsider contemplated forest management projects at odds with the Initiative's goals, like the oak woodland restoration project proposed for the Squannacook River Wildlife Management Area (WMA), located within the Nashua River watershed.³

¹ Nashua River Watershed Association, <https://www.nashuariverwatershed.org/> (last visited Nov. 17, 2023).

² Climate Change and the NRWA, <https://www.nashuariverwatershed.org/what-we-do/climate-impact/overview/climate-change-and-the-nrwa.html> (last visited Nov. 17, 2023).

³ Oak Woodland Restoration at Squannacook River WMA, <https://www.mass.gov/info-details/oak-woodland-restoration-at-squannacook-river-wma> (last visited Nov. 17, 2023).

The Initiative appropriately recognizes the important role that forests play in responding to the climate crisis.

EEA is correct to recognize the importance of forests in realizing a climate smart future. Because trees and forested landscapes sequester and store carbon, they are a key part of our response to climate change.⁴ In fact, one half of a tree's weight consists of stored carbon.⁵ The Commonwealth must maximize natural opportunities to sequester carbon if it is to reach its goal of net-zero greenhouse gas emissions by 2050.⁶ Developing uniform, climate-oriented guidelines that apply to all forest management projects across the Commonwealth will help it do so.

The Initiative's shift from forest conversion to forest conservation will also ensure that the Commonwealth's forests continue to provide essential ecosystem services in the Nashua River watershed and beyond. And it will limit the harms associated with common forest management techniques, like controlled burns and the use of herbicides, which can destroy habitat, contaminate water, and harm fisheries.⁷

NRWA believes the Initiative could be strengthened in several ways.

- The climate-oriented guidelines developed as part of the Initiative should be data-driven and available to the public. NRWA is concerned that the Commonwealth's current land management policies and procedures are insufficiently transparent. Implementation of the Initiative and development of the guidelines provides an opportunity to involve stakeholders and experts from across the Commonwealth as EEA evaluates land management options.
- Relatedly, as EEA develops management guidelines, it should establish a defined public input and participation process. This includes the production of a state-wide management plan that describes applicable state programs, identifies both forest reserves and actively managed forests, and identifies the management guidelines applicable to each project underway. Information about the selection criteria for particular project sites, as well as baseline surveys and project data should be made publicly available.
- EEA should solicit public comment on and publish a set of criteria that define the Commonwealth's climate and land management priorities across all state agencies. EEA must ensure all agencies are held to an equal standard. NRWA believes a standardized

⁴ U.S. Dep't of Agric., *Forest Management for Carbon Sequestration, Mitigation and Climate Adaptation*, <https://www.climatehubs.usda.gov/hubs/northern-forests/topic/forest-management-carbon-sequestration-mitigation-and-climate>.

⁵ Paul Catanzaro & Anthony D'Amato, *Forest Carbon: An Essential Natural Solution for Climate Change* at 1 (2019), <http://masswoods.org/caring-your-land/forest-carbon>.

⁶ Clean Energy and Climate Plan for 2050, <https://www.mass.gov/doc/2050-clean-energy-and-climate-plan/download> (2022).

⁷ *Pesticides*, Nat'l Inst. of Env't Health Servs., <https://www.niehs.nih.gov/health/topics/agents/pesticides> (Nov. 2, 2023); Water Science School, *Pesticides in Groundwater*, U.S. Geological Survey, <https://www.usgs.gov/special-topics/water-science-school/science/pesticides-groundwater> (June 8, 2018).

system built with public input will foster public confidence in, and support for, the Commonwealth's land management decisions.

- Before proceeding with any forest restoration project, EEA should inventory the existing characteristics, ecological and recreational values, current and future carbon sequestration potential, and wildlife habitat values for each potential restoration site. With a proper data set, the value of forest management efforts can be measured against any potential carbon storage loss caused by management activities. That process would be consistent with EEA's data-driven approach and would foster climate-informed decision making.

Projects like the oak woodland restoration project in the Squannacook River WMA are inconsistent with the Initiative and should be reconsidered.

- The Commonwealth should reconsider any proposed forest management projects at odds with the Initiative's goals. NRWA strongly believes that the climate crisis requires the Commonwealth to use all tools at its disposal and that opportunities to keep forests as forests should be prioritized.
- The project planned for the Squannacook River WMA is particularly ripe for reconsideration. The WMA spans 2,000 acres of forest along the Squannacook River and is recognized for its ecological and recreational values.⁸ This WMA is located within an Area of Critical Environmental Concern, and has received state-level distinction for being a site containing Natural Heritage & Endangered Species Program priority habitat; a Coldwater Fisheries Resource, a BioMap Forest Core, a reference river, which overlies high water quality aquifers. There has been a tremendous amount of community time and energy devoted to preserving this land over the decades. The envisioned project entails major alterations to about 215 acres of the WMA and is designed to transition the site from a mature white pine-oak forest to a barrens and oak woodlands community.⁹ It will involve a timber harvest of up to 70 percent of the existing forest, understory clearing, herbicide application, and periodic burning for years to come. The retention of mature forests is important to mitigating climate change, since these types of forests store more carbon than younger forests and certainly more than no forest at all.¹⁰ Burning those climate stocks—and disturbing forest soils in the process—is incompatible with the purpose of the Initiative.
- As the Commonwealth reassesses the Squannacook project, it should also ensure that any efforts to create and maintain non-forested habitats are carried out in only the most

⁸ *New Addition to the Squannacook River WMA*, Mass.gov (June 24, 2020), <https://www.mass.gov/news/new-addition-to-the-squannacook-river-wma>; see *Nashua, Squannacook, and Nissitissit Wild and Scenic Rivers*, National Park Service (Apr. 12, 2021), <https://www.nps.gov/articles/000/nashua-wild-and-scenic-river.htm>.

⁹ *Oak Woodland Restoration at Squannacook River WMA*, <https://www.mass.gov/info-details/oak-woodland-restoration-at-squannacook-river-wma>.

¹⁰ Catanzaro & D'Amato at 6-7.

carbon-sensitive ways. Healthy forests should be converted to woodlands only when doing so makes climate sense.¹¹

- Forests, including those under consideration for ecological restoration, should be conserved and managed responsibly, with robust public notice and input, to facilitate continued carbon sequestration and storage, the provision of ecosystem services, and the availability of wildlife habitat.

The NRWA is enthusiastic about the progress to be made under the Initiative and supports its implementation. It urges EEA to establish a more transparent, standardized, and data-driven procedure behind all management decisions that affect the Commonwealth's critical forest resources.

Thank you for this opportunity to provide written comments.

Respectfully submitted,



Jennifer Keegan
NRWA Executive Director

¹¹ Michael J. Kellet et. al., *Forest-Clearing to Create Early Successional Habitats: Questionable Benefits, Significant Costs*, *Front. For Global Change* (2023), https://harvardforest1.fas.harvard.edu/publications/pdfs/Kellett_FFGC_2023.pdf (casting doubt on idea that restoration projects that seek to return lands to early successional habitats are based on valid science and benefit the ecosystem).

My comments on the specific statements/themes can also be found in the public comment form, up to the point that I hit the character limit. The rest are contained here. All my general comments are also contained in the public comment form. Thank you once again for considering my input.

Keep Forests as Forests

This should be the highest priority of this initiative, as development is the greatest threat to Massachusetts forests and consequently their ability to store and sequester carbon.

Forest Management for Habitat

Some research indicates that habitat for species require open, grassland areas are already in a good spot, and therefore should not be a high priority for this initiative, particularly as it relates to old growth areas managed by the state. Areas that are more actively managed can keep this in mind for their practices. While managing for habitat should not be neglected, it should not take precedence over the goal of conserving forests and increasing carbon sequestration and storage.

Disturbances

Disturbances are of great importance to forest health, but should not be allowed to get out of a hand in a way that harms people or is ultimately detrimental to the forests. A combination of natural disturbances and man-made ones should be relied on as appropriate for the health of the ecosystem. Climate change may create conditions that give increased rise to disturbances, and the ability of Massachusetts forests to cope with this is uncertain. Further research should be conducted on how forests may be affected, and how different approaches to management (active/tacet) will prepare forests for the future. For the present, a combination of these methods should be employed, but it is paramount that the initiative keep up with the latest science and change approaches as necessary.

Carbon Stocks & Sequestration

Further research should be conducted in this area as well, as I have seen conflicting research on the ability of older trees to sequester carbon compared to younger trees. Broadly, multiple approaches should be taken to keep things flexible, as ecosystems are dynamic and a one-size-fits-all approach is likely bound to fail, but older growth forests should be prioritized due to the relative lack of them in the state compared to younger trees. Most of the forests in the state date back to farm abandonment in the late 19th century, so they are generally relatively new. Since the hopefully increasingly sustainable harvesting of private lands will continue under this initiative and therefore maintain relatively younger forest lands, the state management of forests should put greater emphasis on old growth trees to maximize carbon stocks and sequestration.

Soils

The best way to protect forest soil isn't to harvest in a way that better protects the soil, but simply to not harvest at all. State harvesting should be kept to a minimum wherever

possible, as extraction of resources from forests for economic gain goes against the goals this initiative is trying to achieve in the first place. Where harvesting occurs on private lands, these measures should be taken through the use of incentives, but harvesting broadly should not be seen as the priority in management of these lands either, as healthy forests that store and sequester carbon are the primary goal here rather than profit.

Resilience

This is the area where research, organizations, and even the panel itself seems to be in the greatest disagreement. The resilience or lack thereof of Massachusetts forests seems to be the primary driver of arguments for and against active forest management. In the absence of consensus, more research must be conducted, and the proper resources must be allocated to do so. As development is the primary threat to Massachusetts rather than the particular management methods, debate on this issue should not distract from that key priority. One method does not presently appear to me to be concretely better than the other in all instances, so a mix of these methods should be employed as necessary and methods should be changed according to the latest research as necessary. Flexibility must be maintained in order to work effectively within this grey area for the time being.

Invasive Species & Diseases/Invasive Plants

Active management activities should take place here as necessary, particularly within old growth forests that would take longer to regenerate. This is a significant threat and should be treated as such, even within reserve lands that otherwise remain relatively undisturbed. This area in particular is where I feel that leaving forests entirely alone may be risky. While I believe that tacet management has its benefits and should be used when appropriate, these threats should be dealt with swiftly, while taking care not to interfere more than is necessary. I acknowledge that this can be difficult, so sufficient resources should be allocated to having the ability to respond properly to these situations.

Wood Production

If wood production from active management of public lands is purely incidental, there would be no need to consciously increase the state's contribution to it. Research has shown that harvesting does not help to increase carbon storage and sequestration, despite the arguments logging interests have made in favor of increased durable wood products. The best way for trees to store carbon is for them to be left standing rather than cutting them, a process which leads to the release of carbon into the atmosphere. It is contradictory that this initiative gives special treatment to logging interests which run contrary to the stated objectives of this initiative. The individual comments from the previous public input session broadly showed a distaste for logging allowed by the DCR as well. Additionally, nothing in this initiative indicates that producing more wood in Massachusetts would actually lead to the greater use of that wood within the state compared to exporting it. This essentially renders the argument that increased production would lead to better use of that wood by us rather than others moot. As far as it being a low-carbon alternative to other building materials goes, this is certainly true, but recycled wood or new, low carbon building materials such as low carbon concrete could also

reduce the carbon footprint of building materials without harming forests. Wood production would certainly continue on private lands, as it is the right of landowners to harvest wood if they wish, but incentives should be put into place to encourage sustainable practices where harvesting does happen, and to reduce harvesting where possible as well. Naturally, some active management techniques may require cutting or thinning of wood in certain areas, but these should only be done as necessary and economic profits should at no point be the driver behind decisions that lead to cutting on state lands. Viewing nature as a commodity is incompatible with efforts to promote the health of forests and to fight climate change at large.

Dear Executive Office of Energy and Environmental Affairs Forests As Climate Solutions Initiative Members,

I would like to thank each of you, and the committee of scientific experts, in this new administration for having the foresight and wisdom to bring this crucially important issue of how the state's forests are managed into your view and attention. I deeply appreciate your willingness to put a pause on further forestry projects until your search, gather and conclusions are completed in this process. Many of us hope that you will indeed extend that pause beyond a December date, in order to continue thoughtful and thorough dialog and planning with all the stakeholders before making conclusive statements. I appreciate your ongoing transparency with the public during this process. I thank you for the patience and diligence to closely examine the evidence being presented by non agency scientists on the emerging and confirmed best practices in forestry for climate crises going forward.

I came to the public input #2 session on your climate-centered guidelines through a DCR forester in my area, south county in the Berkshires. I had contacted him with concerns regarding a proposed project that was posted to begin harvesting and other treatments on 364 acres of state land within my area. That forester informed me of the hold put on the project by this state initiative. As I researched the link he provided I was compelled, in preparation for the #2 zoom session on Tuesday, to go back to review the commentary from your first public input #1 session in September.

Your task is infinity challenging, to say the least, as so many voices and perspectives are at hand. Below I hope to be concise with my concerns and commentary from these public input sessions. First there are 3 areas of concern that arose from review of session #1 and participation in the #2 session. Second are my responses to the guideline statement survey given from session #2 that I had left blank on the survey form that I submitted, as none of the range of answers were appropriate to my concerns on these specific statements and I would like to share those.

Specific Concerns and Questions:

1) After reviewing the written comments from government, NGO's and individuals from session #1 and hearing the comments of participants in session #2 I see the most often represented reasons for people to endorse the continuation of early successional forest management methods, that have been used historically and to date, are as follows. "To manage species in open lands to ensure biodiversity", "To ensure young forests for carbon sequestration because they do it faster and older forests don't sequester and they die", "To ensure varying age range of trees in the state lands and ensure the right species of trees are grown". From these statements it would be gathered that foresters need to harvest mature trees to plant young trees to sequester carbon and they need to harvest trees in order to artificially put in the "right" species of trees, and finally foresters need to harvest trees in order to create open space so that nearly extirpated game species (grouse, woodcock and bob white quail) can proliferate to be harvested by hunters.

Early successional forestry methods are of great concern in how they have been historically and currently promoted throughout the Commonwealth as methods to sustain healthy forests. On investigation it primarily seems this method of management harkens to a day in development when we approached, and allocated funding for, using forests as perpetual agriculture resources. Logging forests for wood to be sold in order to secure revenue for DCR and other agencies to function was a primary imperative of such methods. Utilizing auxiliary contractors for logging projects (creating roads, skid

platforms, transportation of logged material, etc) in order to create employment in communities was another imperative. Using herbicides and pesticides along with other soil and biodiversity disruptors (such as bush-hogging for open space throughout the year) was another. All of these streams created revenue into these state agencies for their continued functionality. Indeed there is evidence that some of the methods of early successional forestry as management method had even more incentives, beyond the health of the forest. Please see research article linked here:

Frontiers | Forest-clearing to create early-successional habitats: Questionable benefits, significant costs

<https://www.frontiersin.org/articles/10.3389/ffgc.2022.1073677/full>

The newly espoused idea that harvesting trees from our state lands (and greater harvesting on private lands) will mitigate climate crises brings many questions. Questions as to where the scientific data, independent of state and federal agency employed biologists, is that substantiates this claim. The circular reasoning provided thus far in the comments shared during your 2 sessions, and in personal conversations with agency foresters, is mystifying. Foresters tell a story that states pests, disease and invasive species disable our forests from carbon sequestration, therefore forests need to be harvested (using extensive fossil fuels and releasing carbon to do so), the logging material needs to be hauled out of the forest (using extensive fossil fuels releasing carbon, endangering biodiversity, creating irreparable soil degradation) trucked to milling/manufacturing facilities (releasing more carbon through fossil fuel use where less than 70% of logs will be deemed usable) and then to market (using yet more fossil fuels in packaging releasing more carbon) to create a durable carbon stored end product. Then, the story goes, foresters return to the harvested site where herbicides are used to eradicate invasive species takeover (endangering biodiversity, watersheds, the health of adjacent trees, etc) and then appropriate species tree seedlings are planted (in a degraded soil base, with no natural nutrients such as on forest floors) and wait 10-20 years for those saplings (if they survive in such a degraded nursery) to store carbon. Then repeat the entire process again. How can this claim to be the most climate efficient and forest resilient approach to keeping carbon from release? And an imperative side note, the track record of eradication of non-native species, disease and insects is 0 in over 60 years of such management methods. Keeping trees in the ground, not disturbing soil biota, allowing disease, non-natives, and other perceived "pests" to run their course with the forests innate self regulating processes to unfold as the singular management method is the only sensible way to store carbon. Please see research article to support such confirmed science to date here:

Frontiers | Intact Forests in the United States: Proforestation Mitigates Climate Change and Serves the Greatest Good

<https://www.frontiersin.org/articles/10.3389/ffgc.2019.00027/full>

It is understandable that foresters from all agencies and the private contract sector would be extremely concerned that the methods of early successional forestry, invasive species and disease management, harvesting for logging revenue profit and creating habitat for game species to secure hunter/angler revenue dollars, are in question. This is their livelihood and has been the order of business in forestry for the last 60+ years in New England. No questions asked. My concern is that the management methods in place from this entrenched ideology will not be willing, or frankly able, to change course unless each agency is financially incentivized to turn in a completely new direction with forestry. That new direction being no longer are they forest managers of an agricultural resource, rather becoming forest defenders and preservationists of a self regulating ecological system that needs no management, instead providing

protection against engineered anthropocentric tinkering. Can this administration provide the means by which foresters and biologists within state agencies are incentivized to create/enhance urban and suburban and rural forests, to become educators for private land owners in how to preserve their lands as carbon sinks without management, to focus only on eliminating true dangers to human safety, to run programs of education and research on all forest lands that inform visitors of the ways that forests self regulate and what we can learn from such processes about how to protect and foster natural resilience in our own ways of life? Without substituting current operating funds for a totally different way of approaching forests any guidelines suggested will not be followed. If portions of foresters current jobs will be eliminated or curtailed, resulting in lost revenue, there will be unrest, division and armor against the very thing we need most, everyone on board fully *for* forests to mitigate some parts of the climate crises.

2) In session #1 written comments there are numerous folks questioning why there is not a program under Chapter 61 for private landowners to preserve their land base and not log it (i.e. no management plan). People across the Commonwealth have absolutely no idea about Chapter 61B. I have come to understand this is largely due to the fact that neither foresters in private contract or most land trusts share education and information about this tax program under Chapter 61. Or if it is brought up they trivialize it as not being advantageous for the land owner. I do believe this administrations hope is to provide financial incentive to land owners to store carbon. I hope that that will include raising the appraised value of Chapter 61B lands to beyond the current 25% of assessed value, making this choice of program commensurate with Chapter 61 and Chapter 61A in providing financial asset for the land owner. Please see PDF:

<https://masswoods.org/sites/masswoods.org/files/pdf-doc-ppt/Ch61-Programs-Revised-2018.pdf>

3) Several participants in session #2 vocally spoke about the need for whatever conclusive guidelines are found in your process here to become mandates, rather than simply suggested guidelines. Climate crises public policy that is not a regulation or law can much too easily be put asunder by any other incoming administration, either state or federal. Our hopes are the Healey administration has it within their power to solidify guidelines into regulations.

Comments on Agreement Survey of Guideline Statements

Session #2:

7. Forest Management for Habitat

Review existing state habitat goals and pursue the most carbon sensitive ways to create and maintain habitat for species that require open, grassland areas (early successional). Please refer to my above questions and comments regarding early successional forestry methods.

12. Resilience: Active forest management can create forest conditions, including a diversity of climate-adapted species and varied age classes, that will increase forest adaptive capacity to future stressors and promote resilience to ecological disturbances, and therefore should occur. Where is the actual evidence of this? What studies within agencies and outside can be given to the public to substantiate

these claims? It would be helpful for us to have evidence of these declarations, such as the scientific evidence in years of data collection on forest research plots to show afforestation capabilities to meet climate change.

13. Invasive insects and disease can cause tree mortality that results in carbon emissions to the atmosphere. Active management activities, including tree harvesting, should be employed *if a novel infestation may be eradicated through rapid response*. Proactive harvesting in response to infestations of established insects and diseases should only occur in limited circumstances with clear rationales. Where is the evidence in over 6 decades that this forestry method has successfully eliminated disease and insects from the forests? We still contend with all the insects and diseases that we have over the past 60 years in our forests, and keep adding to the number of new diseases and insects. Some studies show that indeed it was in part due to the harvesting of our forests that many of the non-native, invasive species were brought into them and flourished, from logging equipment, etc. And this despite aggressive management by harvesting or herbicide use which is the prescriptive treatments the state agencies claim eradicates these issues. Again seemingly circular reasoning to continue forestry methods that have not proven the goal they claim to achieve.

14. Invasive Plants

Invasive plants that can cause significant tree mortality and negatively impact forest regeneration, such as climbing vines, should be removed when feasible. Please see comment for #13. Additionally if this administration's initiative in final conclusion finds that state forestry is going to continue unabated as it has historically done to date in the state, then my suggestion is that NO herbicides be used on any land bases. All plant species that are with certainty in need of removal, meaning evident by rigorous scientific studies sourced perhaps outside of the agencies incentivized to eradicate them, be done by hand.

15. Wood Production

Active management of public lands produces only a small volume of wood. This is because wood production is incidental to management of public lands for other objectives, including services like habitat, water supply, and recreation. Total wood production in Massachusetts is about 5-7% of our wood consumption. More wood, especially long-lived wood products, should be sourced from Massachusetts forests, with some contribution from state lands. While I appreciate the idea that MA forests are managed better than most forests from which wood products MA citizens consume are managed, this is not sufficient reason to begin earnest logging for eventual manufacturing of wood products. We walked that history in this state back some 150 years ago and saw the results, as did all of New England. The concept that durable wood products truly store carbon over the long term is now in question scientifically. I already outlined the outsized consumption of fossil fuels to get logged trees to manufacturing and then end product in my concerns above, as well as the carbon releases that leak all along that pathway. The well intentioned idea of giving economic boost to a dying wood products manufacturing industry in the state is again, understandable. It would seem where pointed vocational boost is the very most needed is in harnessing all the current data and applied research to the re-use, recycling emergent fields. We could be employing countless citizens in new businesses based on using what wood products and paper waste is already circulating in the Commonwealth. Anyone who has worked with building contractors knows the exorbitant cost of construction and demolition waste (C&D) in land fills. The onset of online purchasing has sky rocketed, leaving entire vacant urban buildings full of

cardboard boxes. The technology has more than advanced for re-use salvaging, and recycling into new end products that not only close the resource loop, but also retain the original stored carbon from those already manufactured wood products in perpetuity. Perpetuity, a word many foresters used in session #2 to replace conservation with. It is again a hope that this administration is preparing to not simply make adjustments to business as usual in the forestry sector - such as improve the process of harvesting to attempt least harmful practices - in order to keep the peace. Rather we hope that your intent and scope is to garner cutting edge emergent research and already applied experience to actually create a economically functional state society in which we have mandated side rails that show us how to use and re-use what we have and truly cycle what can be recreated in our own state by providing business opportunities for repair shops, recycling enterprises and craftspeople's ingenuity in enhancing salvaged materials.

Thank you for this opportunity to share my questions and concerns. I will look forward to continued engagement as you move forward.

Sincerely,

Pam Youngquist

South Egremont, MA