

# Minnesota Forest Resources Council Staff Comments on Minnesota Climate Action Framework Draft Action Plan

July 21, 2025

## Overview

### Minnesota Forest Resources Council (MFRC)

Established by the Sustainable Forest Resources Act (Minnesota Statute 89A), the purpose of the Minnesota Forest Resources Council is to develop recommendations to the governor and to federal, state, county, and local governments with respect to forest resource policies and practices that result in sustainable management, use, and protection of the state's forest resources. The policies and practices must:

1. acknowledge the interactions of complex sustainable forest resources, multiple ownership patterns, and local to international economic forces.
2. give equal consideration to the long-term economic, ecological, and social needs and limits of the state's forest resources.
3. foster the productivity of the state's forests to provide a diversity of sustainable benefits at site levels and landscape levels.
4. enhance the ability of the state's forest resources to provide future benefits and services.
5. foster no net loss of forest land in Minnesota.
6. encourage appropriate mixes of forest cover types and age classes within landscapes to promote biological diversity and viable forest-dependent fish and wildlife habitats.
7. encourage collaboration and coordination with multiple constituencies in planning and managing the state's forest resources, and
8. address the environmental impacts and implement mitigations as recommended in the generic environmental impact statement on timber harvesting.

Minnesota's 17.7 million acres of forests cover 35% of the state. The forestry sector, which includes forests and forest products, is the only "net negative" economic sector in Minnesota and currently offsets approximately (15%) of Minnesota's total greenhouse gas emissions (Figure 1). Additionally, forest carbon sequestration and storage, both in-forest and in forest products, is projected to increase by (35-45%) over the next 25 years based on current baseline conditions (Figure 2).

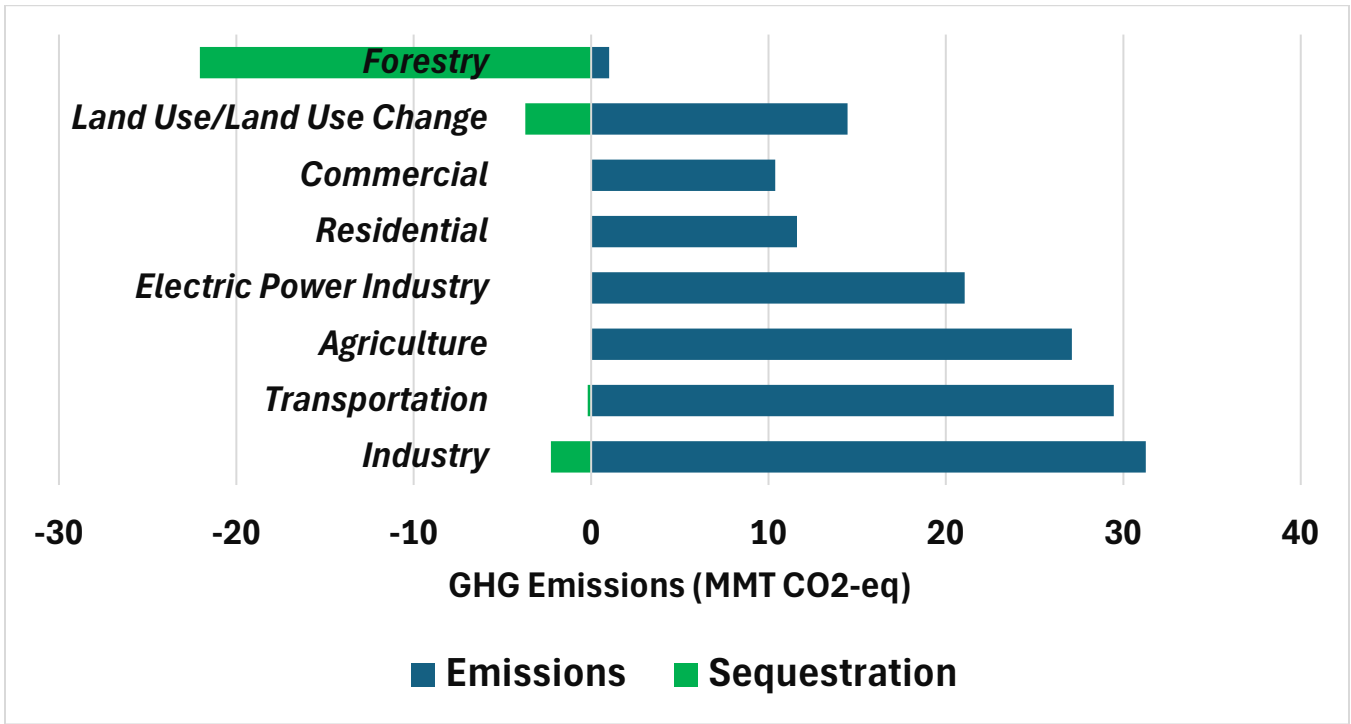


Figure 1. Minnesota greenhouse gas emissions (2022) and storage by major economic sector (EPA 2025).

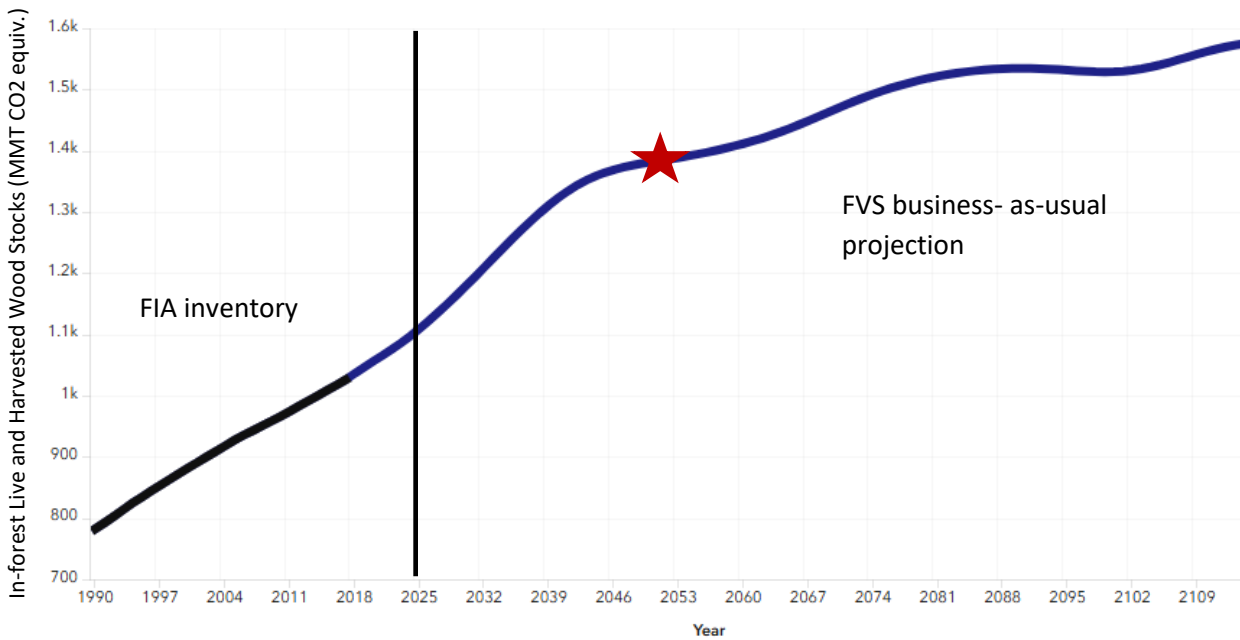


Figure 2. Projected (2025 to 2110) Harvested wood products and in-forest above ground carbon stocks (MMT CO<sub>2</sub>-equiv.) under business-as-usual management. The red star corresponds to the 2050 carbon stock projection.



**Because of the forestry sector’s unique and substantial role in offsetting statewide greenhouse gas emissions, the Minnesota Forest Resources Council (MFRC) strongly recommends that carbon sequestration and storage in Minnesota forest lands and forest products be an independent initiative under Goal 2-Climate-Smart Natural and Working Lands. This independent design also presents the opportunity to recommend more specific sub-initiatives and a larger number of forest specific climate actions. This framework revision is in keeping with the structure of other climate action goals.**

**Additionally, MFRC offers more detailed action specific recommendations that reinforce the comprehensive comments that MFRC submitted to the Minnesota Pollution Control Agency on January 28, 2025, a copy of which is attached.**

## **MFRC Position on Climate Action Framework**

MFRC’s overarching position is that using the best available science-based information is essential to accurately portray the Forestry sector’s role and opportunities in Minnesota’s Climate Action Framework and Plan. Here, we provide a brief overview of key climate issues and opportunities related to forestry as they pertain to climate action framework initiatives, sub-initiatives and climate actions. Where possible, we have provided quantifiable estimates of the potential CO<sub>2</sub> mitigation benefits associated with many of these actions. **These recommended actions and associated CO<sub>2</sub> emission reduction assessments are supported by the University of Minnesota’s 2024 forest carbon report “Estimating Current and Future Carbon Stocks and Emissions in Minnesota Forests and Forest Products” ([Minnesota Forest Carbon Baseline & LCA Report](#)) .**

We encourage Minnesota’s Climate Action Working Group to consider both the nature and magnitude of estimated CO<sub>2</sub> storage and offsets associated with recommended forestry related climate actions. In some cases, these benefits are very large (e.g., in-forest carbon storage resulting from growth) but depend on interlocking actions outlined in several goal areas or sub-initiatives (e.g., changes in acres managed, silvicultural prescriptions implemented, or additional policies aimed at keeping forests forested). Because forests and trees touch so many aspects of Minnesota’s economy, society, and natural environment, we further recommend providing annotation of these linkages throughout the Climate Action Plan.

# Recommended Initiative, Sub-Initiative, Actions and Edits

## GOAL 1 CLEAN TRANSPORTATION

### 1.2.1 Sub-initiative – Recommended New Action Step

Add a new action step to “Include forestry residues, mill waste, and dead wood as eligible feedstocks for a clean transportation fuels standard to incentivize increased investment in activities and processes that result in active management and renewal of our forest while offsetting fossil carbon emissions through the use of biogenic carbon neutral feedstocks.”

## GOAL 2 CLIMATE-SMART NATURAL AND WORKING LANDS

### Recommended New Initiative 2.1 Carbon sequestration and storage in forests and harvested wood.

The desired outcomes is for Initiative 2.1 to be specific to forests and include “harvest wood.” Please see the following suggested Initiative 2.1 Sub-Initiatives and Actions. Renumber other natural land initiatives accordingly.

#### 2.1.1 (Sub-Initiative) Maintain Forests (Sub-Initiative 2.1 to be specific to maintaining forests)

##### 2.1.1.1 (Action) Reduce forestland conversion to other land uses

The desired outcome is to avoid 1.65 MMT/yr CO<sub>2</sub> emissions reducing forestland conversion by reducing the 36,000-acres/year converted to agriculture (18,000 acres) and settlement (18,000 acres) uses (57 MMT CO<sub>2</sub> equiv. by 2050).

##### 2.1.1.2 (Action) Establish no-net-loss reforestation policy in regions where unavoidable forest conversion, loss, or wildfires occur.

The desired outcome is to mitigate an average of 644,000 MT CO<sub>2</sub> annual emission on reforested acres via reforestation or afforestation of 40,000 acres/year. Benefits are cumulative and grow over time, totaling additional in-forest storage of 15 MMT CO<sub>2</sub> equiv. by 2050.

### **2.1.1.3 (Action) Avoid conversion of forested wetlands (e.g. Ash) to non-forest wetlands through climate-smart forest management and supplemental tree planting.**

The desired outcome is to avoid conversion of Ash and other forested wetland types to non-forest wetlands through proactive silviculture and establishment of additional tree species on these wet sites on 20,000 acres/year. Average additional net flux through 2050 should be 244,000 MT CO<sub>2</sub> equiv. per year totaling an additional 6.8 MMT CO<sub>2</sub> equiv. stored by 2050.

### **2.1.1.4 (Action) Increase investment in programs that maintain forests on private lands through voluntary easements, property tax reduction, and long-term forest management agreements.**

The desired outcome is to avoid an average of 1.15 MMT CO<sub>2</sub> equiv. emissions per year by protecting 15,000 additional forestland acres per year, an approximate 1% increase in acres per year. Total additional mitigation benefit is 32.3 MMT CO<sub>2</sub> equiv. stored by 2050.

## **2.1.2 (Sub-Initiative) Manage Forests**

### **2.1.2.1 (Action) Enhance climate mitigation and resiliency by supporting sustainable forest management that balances ecological, economic, and social values**

The desired outcome is an increase carbon sequestration beyond the current 22.5 million metric tonnes CO<sub>2</sub> equiv. added to in-forest carbon stores annually. Up to 125 MMT CO<sub>2</sub> equiv. could be added to in-forest carbon stocks by 2050.

### **2.1.2.2 (Action) Promote tree species, age class, and cover type diversity for enhanced climate adaptation, resiliency, and mitigation through silviculture and tree planting.**

### **2.1.2.3 (Action) Increase public investment in programs that offer family forest landowners long-term (8 yr., 20yr., and 50 yr.) forest management contracts and covenants.**

### **2.1.2.4 (Action) Maintain, support, and expand sustainable forest resource management certification through the Forest Stewardship Council (FSC) and Sustainable Forestry Initiative(SFI); and encourage nonindustrial family forest landowners to enroll in forest**

stewardship programs such as the American Tree Farm System or Minnesota Forestry Association.

**2.1.2.5 (Action) Support emerging forest product markets (e.g. biofuel, bioenergy) for sustainable harvest of woody biomass, fuelwood, and logging residuals that encourage forest management.**

**2.1.2.6 (Action) Support capital bond appropriations that fully fund post-harvest tree planting needs and fulfill statutory requirements for state-owned and managed forestlands**

### **2.1.3 (Sub-initiative) Plant New Forests**

**2.1.3.1 (Action) Plant 40,000 acres of new forest per year with a 2050 goal of increasing forested acres by 1 million acres.**

The desired outcome is to increase sequestration and storage by 40,000 – 850,000 MT CO<sub>2</sub> equiv. annually, 15.4 MMT CO<sub>2</sub> equiv. by 2050.

**2.1.3.2 (Action) Increase public investments in programs that provide annual payments, cost-share, and technical assistance to family forest landowners for tree planting.**

**2.1.3.3 (Action) Support capital bond appropriations and other funding to increase tree seedling production through expanded and modernized nursery capacity, seedling plug production, and seed collection support.**

**2.1.3.4 (Action) Supplemental planting to support full stocking and biodiversity of tree species composing Minnesota’s forests.**

### **2.1.4 (Sub-Initiative) Harvested Wood and “Climate-Smart” Wood Products**

**2.1.4.1 (Action) Increase wood product manufacturing efficiency using improved technologies that store more carbon by incorporating more of each tree into a finished product.**

**2.1.4.2 (Action) Harvest and utilize more forestry management residuals for lower carbon intensity pulp, bioenergy, biofuel applications.**

**2.1.4.3 (Action) Source wood-based products from Minnesota to capture carbon, offset emissions, and promote local forest-based economies.**

**2.1.4.4 (Action) Develop green policies, building codes, financial incentives, and certifications (e.g., LEED) for sustainably constructed houses and buildings that use low carbon intensity wood materials as substitutes for plastic-based, steel, and concrete construction.**

**2.1.4.5 (Action) Invest in wood technologies, innovation, and new product incentives.**

**2.1.4.6 (Action) Support emerging markets for wood-based, low carbon intensity biofuels, bioenergy and biochar.**

### **2.1.5 (Sub-Initiative) Protect against and respond to wildfire**

**2.1.5.1 (Action) Increase wildfire response capacity, in-forest fuels reduction treatments, and increase market support for biofuels and bioenergy markets to consume wood waste and low-value pulp logs.**

The desired outcome is to avoid 5 MMT CO<sub>2</sub> equiv. in emissions by 2050 - 5 MMT direct wildfire emissions and 10.5 MMT CO<sub>2</sub> equiv. indirect emissions from dead and scorched trees left to decay after fires.

**2.1.5.2 (Action) Reduce undesirable wildfire risk through climate adaptive, lighter entry silviculture, Firewise treatments, expanded markets for in-forest woody biomass, site level forest management, and woody residue, debris and dead, dying, or diseased treatment and removal.**

The desired outcome is wildfire risk reduction on 100,000 acres annually - 2.5 million acres treated by 2050.

**2.1.5.3 (Action) Increase capacity for wildfire response by supporting wildfire cooperative fire protection program, Community Firewise program, and mutual aid response coordinated by the Minnesota Incident Command System (MNICS).**

The desired outcome is to reduce wildfire extent by 10,000 acres per year-with 450,000 MT prevented CO<sub>2</sub> emissions per year.

#### **2.1.5.4 (Action) Support bioenergy markets for woody biomass and forestry residuals to reduce undesirable fuel loads and to enable climate adaptive silviculture and fuels reduction treatments at scale.**

The desired outcome is reducing the risk of unwanted wildfire on treated acres through biomass removal and utilization. This action is needed to address the increasing dead wood present in Minnesota’s forest because of climate mediated mortality.

#### **2.1.5.5 (Action) Use capital bond appropriations and other funding to plant trees and reforest sites impacted by wildfire.**

#### **2.2.1.2 Action Step – Recommended Edit**

Incorporate “State Wildlife Action Plan and the development of regional and local land conservation plans” into Action step 2.2.1.2, e.g., “Work with local governments **and consult the State Wildlife Action Plan in developing regional and local land conservation plans**, identifying priority locations for habitat protection, enhancement, and restoration.

#### **2.2.2 Sub-initiative – Recommended New Action Step**

Add the following new action step to Sub-Initiative 2.2.2: “Develop guidelines for timber salvage harvest and other responses following natural disasters such as wildfires, floods, and wind events”

### **GOAL 3 RESILIENT COMMUNITIES**

#### **3.1.3 Sub-Initiative – Recommended New Action Step**

Add the following new action step to Sub-Initiative 3.1.3: “Collaborate with natural resource managers and technical service providers on public lands and private lands in high-risk communities to integrate wildfire mitigation planning and implementation into ongoing land management efforts. These efforts should aim to reduce wildfire risk, improve evacuation routes, and support effective emergency response.”

#### **3.2.1 Sub-Initiative – Recommended New Action Step**

Add the following new action step to Sub-Initiative 3.2.1: “Support the management of emerald ash borer and other plant pests and diseases in communities through treatment, removal and replacement, proper disposal, and financial assistance.”

### 3.2.1.1 Action Step – Recommended Edit

Add “long-lived” qualifier to Action step 3.2.1.1, e.g., “Encourage preservation of mature **long-lived** tree species through heritage tree preservation and management policies and programs on public and private lands.

### 3.2.1.2 Action Step – Recommended Edit

Revise Action step 3.2.1.2 to read as: “Support management and replacement of aging and climate disturbed tree canopies to enhance resiliency and maintain community benefits.”

### 3.2.1.7 Action Step – Recommended Edit

Revise Action step 3.2.1.7 to include “aging trees with hazard potential,” e.g., “Prioritize community forestry actions in disproportionately impacted communities that decrease building energy use, mitigate heat islands, and replace pest-infected, diseased trees, and **aging trees with hazard potential.**”

### 3.2.1.8 Action Step – Recommended New Action Step

“Support management and replacement of declining and climate disturbed (sickened from drought, flood wind), or diseased tree canopies to enhance resiliency and maintain community benefits.”

## 3.2 Initiative – Recommended New Sub-Initiative and Action Steps

Add a new sub-initiative to Initiative 3.2 titled, “Be prepared to deal with large-scale storm damage, disease, dead, blown down, and dying trees,” with the following action steps:

- Action step: Develop community or regional wood waste disposal plans that include pick-up, disposal, and management of materials including planning for staging, storage, operations, and personnel needs.
- Action step: Work with surrounding businesses on wood disposal and use such as timber and non-timber markets (work with local mills, encourage biofuel, biochar, as well as other uses such as firewood, wood chips, and mulch).
- Action step: Investigate material disposal methods that avoids open burning and encourages carbon storage through such means as local use, markets, or wood-only landfills.

## GOAL 4 CLEAN ENERGY AND ELECTRICITY

### 4.1.1 Sub-initiative – Recommended New Action Step

Add the following new action step to Sub-initiative 4.1.1: “Work with utility providers to plan for future energy transmission improvements and additions that strategically place energy production and maximize the use of existing transportation and utility corridors (avoiding forests and other natural lands).”

## 4.2 Initiative – Recommended New Sub-Initiative and Action Step

Add a new sub-initiative to Initiative 4.2 titled, “Coordinate woody biomass collection with forestry management,” with the following action step:

- Coordinate woody biomass collection with forestry and urban forestry management activities to capture soon-to-be-emitted carbon present in management residues, dead wood, and mill wastes.

## 4.3 Initiative – Recommended New Sub-Initiatives

Add new sub-initiatives to Initiative 4.32 titled, “Use sustainable forest management and timber guidelines when harvesting woody biomass for bioenergy.” And “Coordinate woody biomass collection with forestry management activities to capture soon-to-be-emitted carbon present in forestry residues, dead wood, and mill wastes.

# GOAL 5 HEALTHY LIVES AND COMMUNITIES

## 5.3 Initiative – Recommended New Sub-Initiative & Action Step

Add a new Sub-initiative to Initiative 5.3 titled, “Use watershed forestry planning to maximize the clean water and water storage benefits of forests and forest soils,” with the following action step:

Action Step: Fully fund regional and watershed forestry initiatives to maintain sufficient forest cover to slow runoff and provide water filtration services and a constant supply of clean water.

## 5.3 Initiative – Recommended New Sub-Initiative

Add a new Sub-initiative to Initiative 5.3 titled, “Maintain and strengthen access for all to forestland, trees, and the many health benefits they provide (e.g., clean air, relaxation, spiritual/psychic renewal, recreation, and many more).”

# GOAL 6 CLEAN ECONOMY

## 6.2.1 Sub-Initiative – Recommended New Action Step

Add the following new action step to Sub-Initiative 6.2.1: “Increase use of forest residues and other biomass/waste streams to power industrial, commercial, and residential needs.”

### 6.2.3 Sub-Initiative – Recommended New Action Step

Add the following new action step to Sub-Initiative 6.2.3: “Investigate methods for carbon storage from trees removed during wildland fuel reduction projects, forest health management, or post-disaster response such as wood burial when markets are not available or feasible.”

#### 6.3.1.5 Action Step – Recommended Edit

Revise Action step 6.3.1.5 to include reference to “compostable or renewable materials,” e.g., Help businesses, governments, and organizations switch from single-use food and beverage containers and utensils to reusable, **compostable, or renewable materials** through incentives, grants, rebates, and government purchasing policies.

### 6.3.1 Sub-Initiative – Recommended New Action Step

Add the following new action step to Sub-Initiative 6.3.1: “Increase use of forest residues and other biomass/waste streams to power industrial, commercial, and residential needs.”

## GOAL 7 EFFICIENT AND RESILIENT BUILDINGS

#### 7.1.4.1 Action Step – Recommended Edit

Revise Action step 7.1.4.1 to specify renewable energy options, e.g., “Ensure state programs combine energy efficiency design with building siting and design of on-site renewable energy, **including solar, wind, geothermal, hydro-electric, biomass, wood or other options.**”

#### 7.1.5.2 Action Step – Recommended Edit

Revise Action step 7.1.5.2 to include “carbon storing construction materials and products,” e.g., “Provide education and technical assistance to owners, developers, design professionals, and the construction workforce to support the use of low-carbon **and carbon storing** construction materials.”

#### 7.1.5.3 Action Step – Recommended Edit

Revise Action step 7.1.5.3 to include “carbon storing construction or renewable materials and products,” e.g., “Offer financial incentives for construction projects to use low-carbon **and carbon storing** construction or renewable materials and products.”

#### 7.1.5.4 Action Step – Recommended Edit

Revise Action step 7.1.5.4 to include “carbon storing construction materials and products,” e.g., “Adopt building codes to support the use of low-carbon **and carbon storing** construction materials and products, such as, but

not limited to, strawbale, hemp-crete, rammed earth, timber, engineered wood, mycelium, and reused/recycled construction materials.”

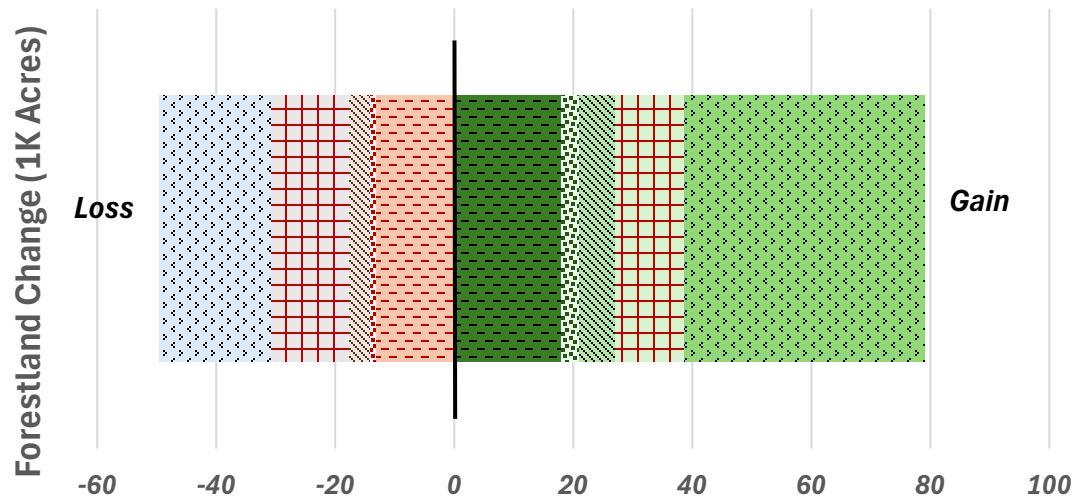
### **7.2.5 Sub-Initiative – Recommended New Action Step**

Add the following new action step to Sub-initiative 7.2.5: “Encourage the use and installation of carbon neutral heating and water heating systems such as low-emissions wood burning stoves or wood-boilers, biomass or wood-based district heat and energy, or other options.”

## **Rationale and Summary of Greenhouse Gas Reductions**

From 2025 to 2050, Minnesota’s forests are forecasted to sequester and store an additional 375 MMT of CO<sub>2</sub> equivalent because of sustainable forest management and associated forest growth. Annual net flux is expected to exceed an additional 20 MMT CO<sub>2</sub>-eq. per year stored in the forest until 2039, and then decline to approximately 14 MMT CO<sub>2</sub>-eq. per year by 2050. Net in-forest flux is expected to vary between 5-12 MMT CO<sub>2</sub>-equiv. per year thereafter. Rates of flux are expected to decline after 2033 due to the advancing age and slower growth of the forest. Examples of common active forest management practices that increase both climate mitigation and resiliency are forest stand improvements, regenerative harvests, tree planting, and wildfire risk reduction measures.

Historically, Minnesota had an estimated 31.5 million acres of forests. Planting 1 million acres of additional forest by 2050 would increase Minnesota’s total forest acreage by 5.6%. Over the next 25 years, this goal equates to planting an additional 40,000 acres of trees per year. Notably, each year approximately 43,000 acres of Minnesota’s forests are being converted to non-forest uses, particularly agriculture, settlements, and non-forest wetlands. Thus, such increased planting rate is needed to offset continued forest conversion (Figure 3). A single tree can sequester as much as 10 pounds (4.5 kg) of CO<sub>2</sub> each year. From 2016 to 2020, the average number of tree seedlings planted in Minnesota was about 7.5 million trees, or about 12,500 acres. To achieve a goal of 1 million acres of additional forest the extent of tree planting needs to be four times the current rate. Minnesota’s forests store on average 85 U.S. tons of carbon (290 metric tons of CO<sub>2</sub> equivalent) per acre (above ground live, below ground live, deadwood, litter, and soil carbon pools). Planting 1 million acres of additional forest will store an additional 13.7 MMT of CO<sub>2</sub> by 2050.



	Forestland Gain or (Loss): 2022
■ Cropland to Forestland	18.04
▨ Grassland to Forestland	2.94
▨ Other Land to Forestland	6.08
▨ Settlement to Forestland	11.59
■ Wetland to Forestland	40.43
■ Forestland to Cropland	(13.20)
▨ Forestland to Grassland	(1.01)
▨ Forestland to Other Land	(3.46)
▨ Forestland to Settlement	(13.15)
▨ Forestland to Wetland	(18.66)

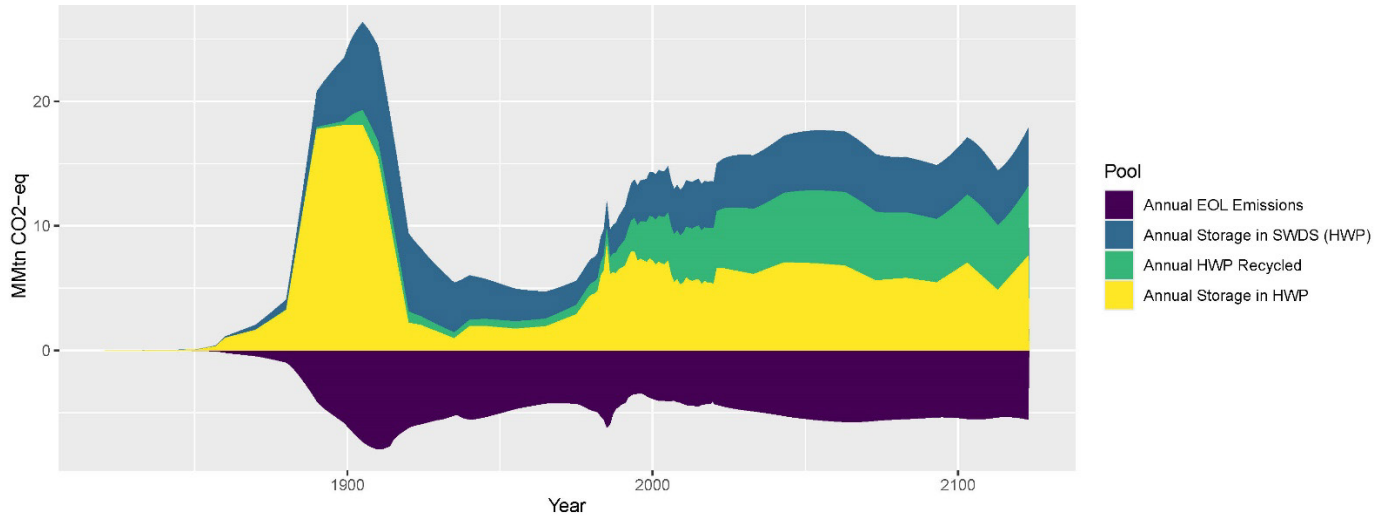
Figure 3. Forestland gain and loss in Minnesota (2022). Estimates are derived from USDA-FIA and depict forestland change in thousands of acres.

Emerging technologies also are creating new market opportunities for using sustainably harvested wood and forest/mill residuals as climate-smart biofuels, bioenergy, and bioproducts that MFRC expects to develop during the next 25 years, especially with policy and investment support. Common harvested wood products include recyclable paper, dimensional lumber, composite panels, pallets, furniture, oak barrels, and many other long lived wood products. The economic value of these products (\$25.3 billion in 2022, MNDNR) supports needed forest management and benefits the economy and people of Minnesota.

Importantly, when wood from construction waste, building demolition, discarded furniture, etc. is deposited in solid waste disposal sites, the carbon is stored for decades, and sometimes longer than if it had remained in the tree (Figure 4). From 2020 to 2050 18 MMT of forest carbon (66 MMT CO<sub>2</sub> equivalent) will be added to forest carbon stored in harvested wood products and solid waste disposal sites. Life cycle assessments demonstrate that more forest carbon is stored in harvested wood products than is emitted from harvesting, transportation, processing and manufacturing wood products, resulting in net gains. Importantly, harvested wood products

often replace comparable products with higher fossil carbon emissions. For example, steel framing material contains 33 times the embodied carbon associated with wood framing lumber needed to build an interior wall.

**a. Estimated annual CO<sub>2</sub> flux for Minnesota’s harvested wood products: 1823-2123.**



**b. Estimated harvested wood carbon storage for Minnesota’s forests: 1823-2123.**

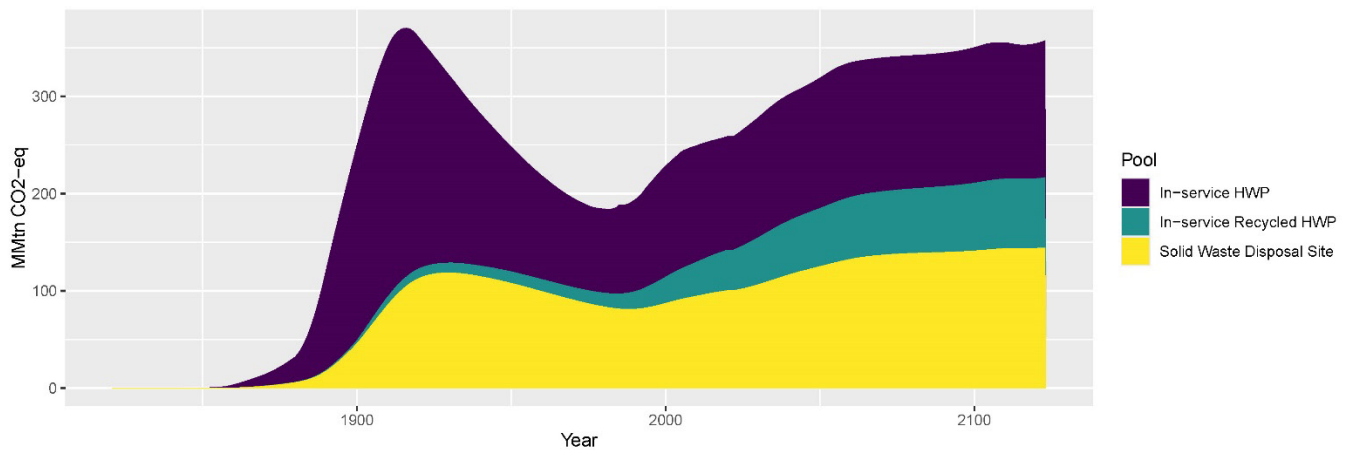


Figure 4. Historic harvested wood product production and carbon flow (4.a.) and storage (4.b) for Minnesota with business as usual projections for 2021-2123. Note: This figure does not include harvesting, transportation and manufacturing emissions.

Given the scale and diversity of the forestry sector’s influence on current and future CO<sub>2</sub> emission reduction and mitigation, MFRC strongly recommends that a focused initiative, with key sub-initiatives and actions, be used to advance “Carbon sequestration and storage in forested lands and harvested wood.” This is more in keeping with the scope and magnitude of other initiatives contained within the climate action framework.

MFRC’s comments further identify and elaborate on important sub-initiatives and actions within the forestry sector initiative. Also, CO<sub>2</sub> emission offsets are calculated for specific forestry actions that help communicate the scale of impact. MFRC further recommends that these action specific CO<sub>2</sub> emission reduction assessments

be used to project the forestry sector’s potential to help achieve Minnesota’s no-net-emission goal. MFRC believes that these action specific emission reduction assessments are critical for making future policy and investment decisions for implementing Minnesota’s Climate Action Framework. These action specific and quantifiable offsets must be included in climate action framework emission projections to achieve Minnesota’s 2050 no-net-emission goal.

Furthermore, there are several important linkages and trade-offs between potential forest management policies, practices, and intensities of management affecting anticipated carbon and climate benefits provided by the forest. MFRC has invested heavily in researching and understanding these issues, and the carbon sequestration/emission outcomes, which we believe are critical to developing realistic estimates of expected benefits and identifying practicable solutions to enhance those benefits. Our recommended climate actions stem from the application of accepted forest growth models and biometric analysis to state-of-the-art forest inventory data using a range of potential management approaches including diverse silvicultural prescriptions and varied management intensities.

These models project our aging forest across 100 years of development using business as usual (Figure 5), climate adapted, economic intensive, or no management silviculture under current harvest levels (~1/2 of the sustainable harvest; 2.8 million cords annually). For reference, estimates of sequestration due to forest growth are provided for scenarios developed using current harvest intensities. In total, these projections depict the addition of 583-833 MMT CO<sub>2</sub> equiv. to in-forest and harvested wood carbon stocks by 2050.

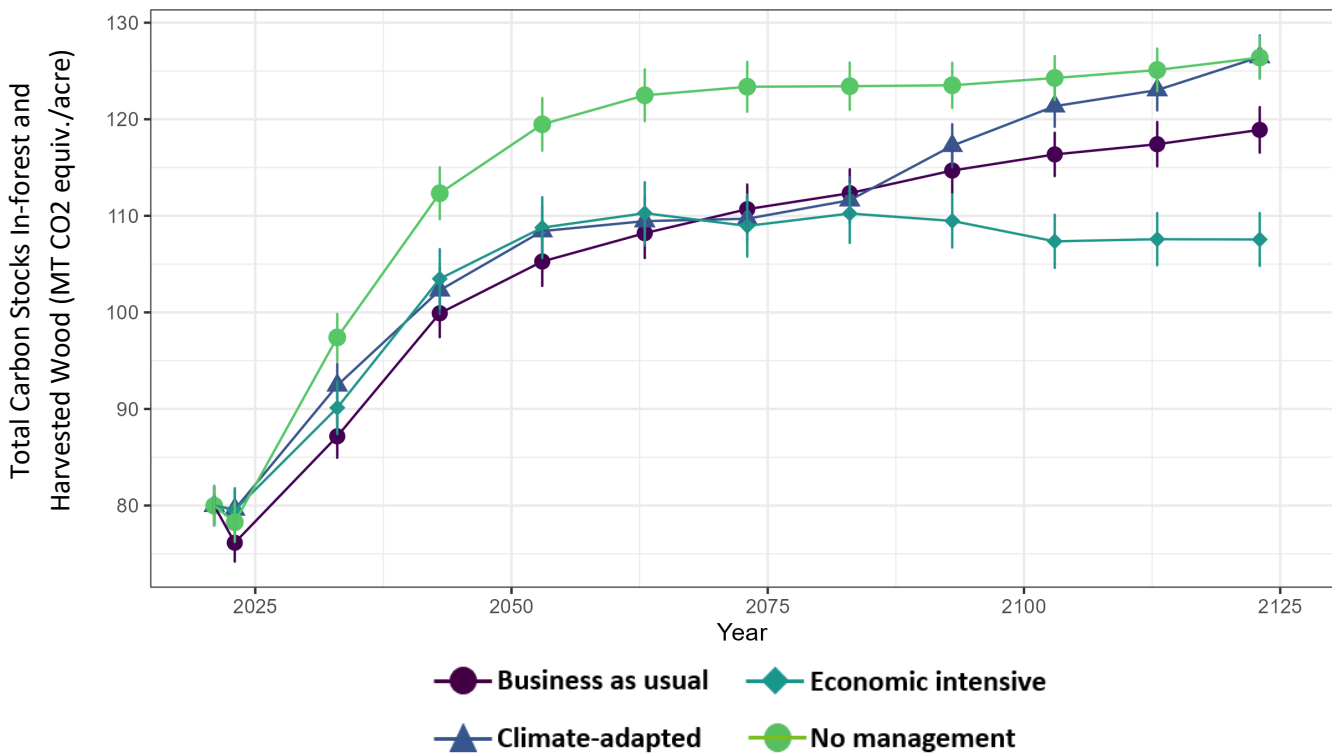


Figure 5. Projected in-forest live and harvested carbon storage (MT CO<sub>2</sub> equiv. per acre): 2022-2123.

It is important to note that absent management, our aging forest (Figure 6) will begin to stagnate and become more susceptible to an increasing array of climate related disturbances (e.g., insects, disease, wildfire, drought, flooding, and other extreme weather events) affecting Minnesota’s forests (Figure 7). Importantly, it is active management through silviculture that results in the largest regenerative response on disturbed forest sites (Wilson et al. 2022). This regeneration involves the establishment of a new cohort of trees, and management provides the opportunity to enhance this regeneration either through introduction of additional seed/seedlings, or the introduction of species anticipated to flourish on a site, given the effects of climate change. Active management can have profound impacts on the carbon sequestration potential of a site, and for the forest as a whole, including wildfire risk reduction.

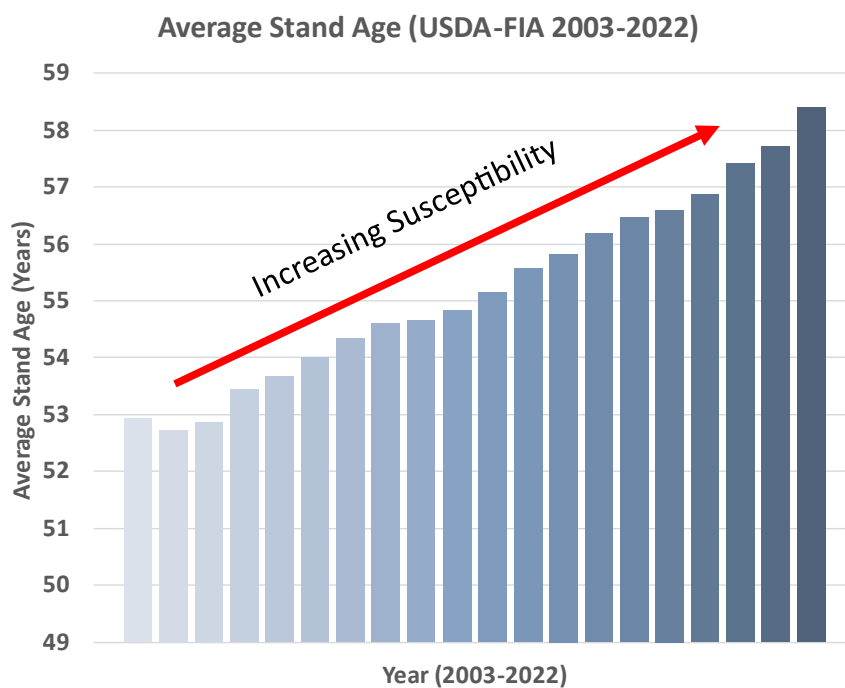


Figure 6. Average stand age in Minnesota has advanced from about 53 years in 2003 to over 58 years in 2022 (USDA-FIA 2025).

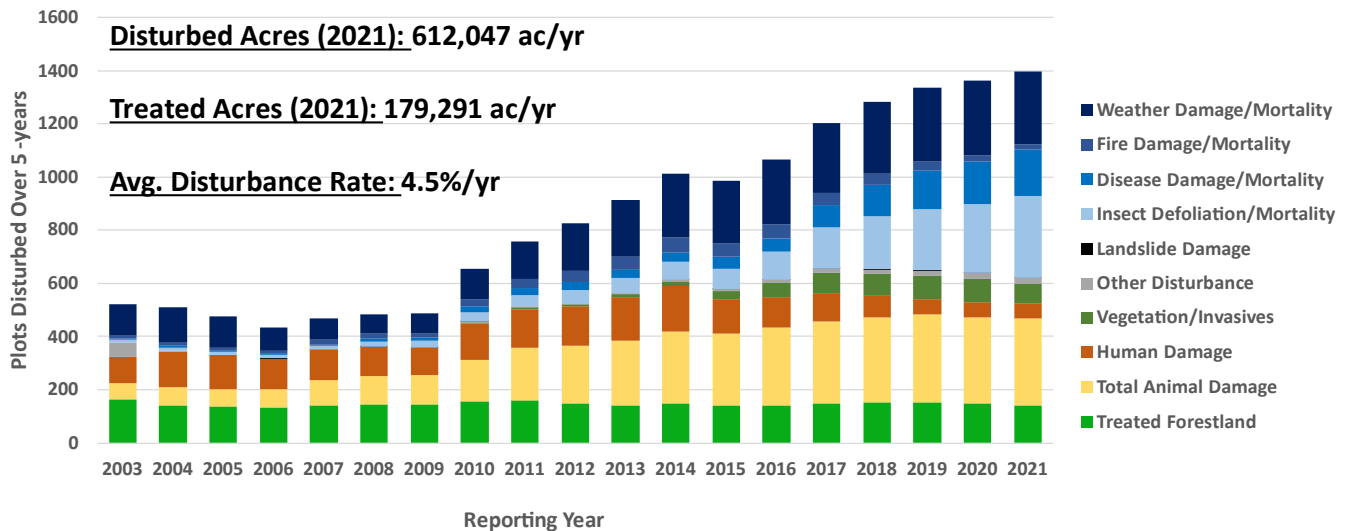


Figure 7. 5-year average forest disturbance trend in Minnesota (2003 – 2021) associated with climate change (insects, disease, wind, fire, drought, flooding, and extreme weather), animal and human disturbance, and intentional treatment or management of the forest. (USDA-FIA 2021 ([EVALIDator 2.1.0 \(usda.gov\)](https://www.usda.gov/evaluator)))

As of 2022, Minnesota’s 17.7 million acres of diverse forests stored 1,399 MMT of carbon stocks, the equivalent of 5,128 MMT of CO<sub>2</sub>. On the average, 43,000 acres of forest land is converted annually to non-forest. Conversion to cropland and settlement represent the largest loss of forest land at about 36,000 acres per year. Annual wildfires consume an average of 13,000 acres of forest with the largest being the 2011 Pagami Creek fire which burned 92,682 acres and emitted an estimated 1.4 MMT of CO<sub>2</sub> and left another 3.0 MMT CO<sub>2</sub>-eq. in charred and dead wood on the landscape. In 2022, 144,123 acres of forest land was disturbed by climate and extreme weather events, for which there are limited, if any, financial resources available to replant and restore. Preventing future emissions of stored carbon is critical to achieving Minnesota’s carbon emission goals and requires proactive measures against future forest conversion, wildfire, and where possible, climate related mortality; as well as dedicated resources to reforest and restore. These realities are reflected in the climate action recommendations and estimated benefits provided below.

While in-forest carbon storage is already happening (22.5 MMT CO<sub>2</sub> equiv. added to in-forest carbon stocks in 2022), forest policy related emission reductions and offsets are cumulative and expected to accrue over time adding to the baseline expectation. Table 1 shows the estimated annual and total emission reductions associated with climate actions described herein. Between 2025 and 2050, it is estimated that Minnesota’s forests will store an additional 375-443 MMT CO<sub>2</sub> equiv. (BAU expectation = 375 MMT CO<sub>2</sub> equiv. added by 2050) in live above and below ground biomass. Without the addition of forested acres, the climate adapted scenario could provide up to 440 MMT CO<sub>2</sub> equiv. additional storage by 2050. Additionality above the business-as-usual scenario would then be approximately 65 MMT CO<sub>2</sub> equiv. With a no forest loss policy and additional planting (40,000 acres annual afforestation plus 40,000 acres retained), and continued management of our forests for a diverse array of benefits, including timber, biodiversity, clean water, wildlife habitat, recreation, and solitude, an additional 210-403 MMT CO<sub>2</sub> equiv. could be removed from the atmosphere. Figures 8 and 9

depict the baseline annual net flux and potential additionality of current and proposed forest policies on forest carbon stocks.

*Table 1. Estimated policy related GHG emission reductions (2025-2050). All estimates are additional to those occurring for the business-as-usual (BAU) scenario.*

<b>Sub-Initiative Description</b>	<b>Annual Emission Reduction (Annual Net Flux)</b>	<b>Total Emission Reduction Above BAU (2025-2050)</b>
Maintain Forests (2.1.1.)	1.65 MMT CO2 equiv. prevented emissions (47,000 acres/yr).	127 MMT CO2 equiv.
Manage Forests (2.1.2)	2.6 MMT CO2 equiv. above BAU	65 MMT CO2 equiv.
Plant (1M Acres) Forests (2.1.3)	47,000 – 850,000 MT CO2 equiv. (accelerating with additional planting – 47,000 acres per year).	18.3 MMT CO2 equiv.
No Loss Policy (prevent conversion to non-forest)	1.65 MMT CO2 equiv. prevented emissions (47,000 acres/yr).	127 MMT CO2 equiv.
Harvested Wood and Climate Smart Wood Products (2.1.4)	~2.3 MMT CO2 equiv.	66 MMT CO2 equiv.
<b>Total</b>	<b>8.4 – 16.1 MMT CO2 equiv. additionality</b>	<b>210 - 403 MMT CO2 equiv.</b>

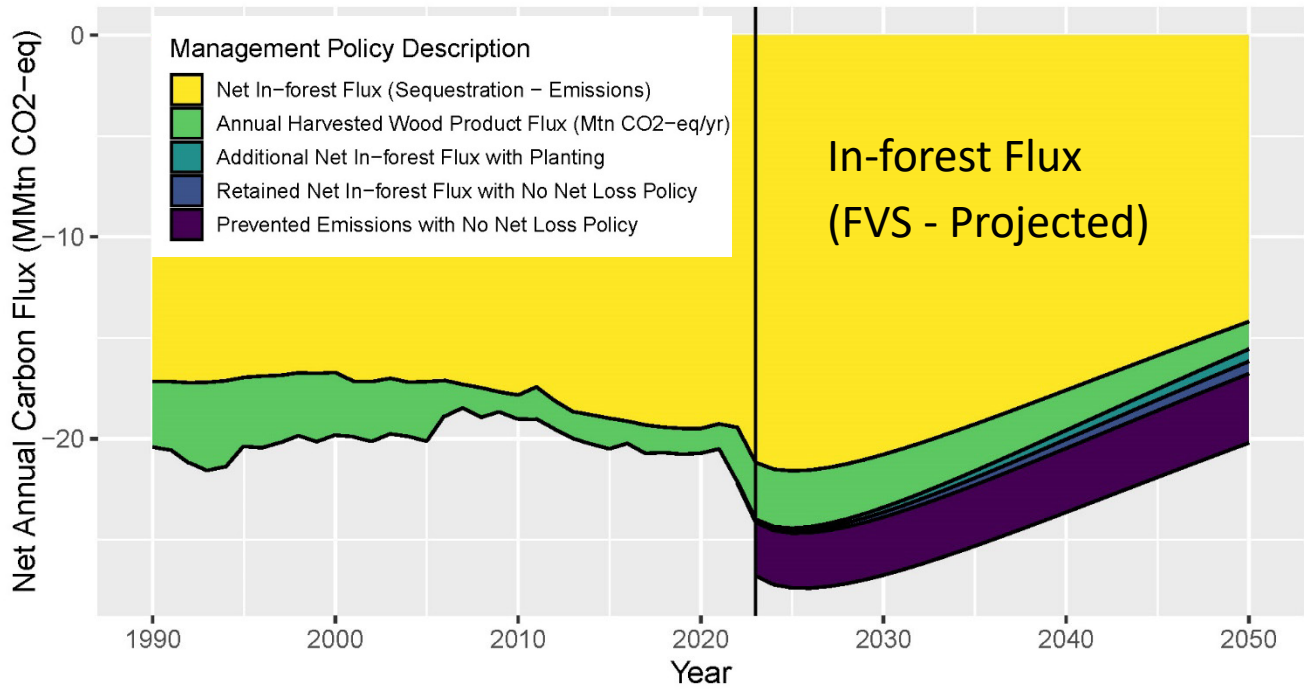


Figure 8 Net forest carbon flux in Minnesota (1990-2050) with FVS projections and proposed policies to plant and retain additional forest (40,000 acres planted and 40,000 acres retained each year).

### Forestry Sector GHG Stocks (MMtn CO<sub>2</sub>-eq): Minnesota 1990–2050

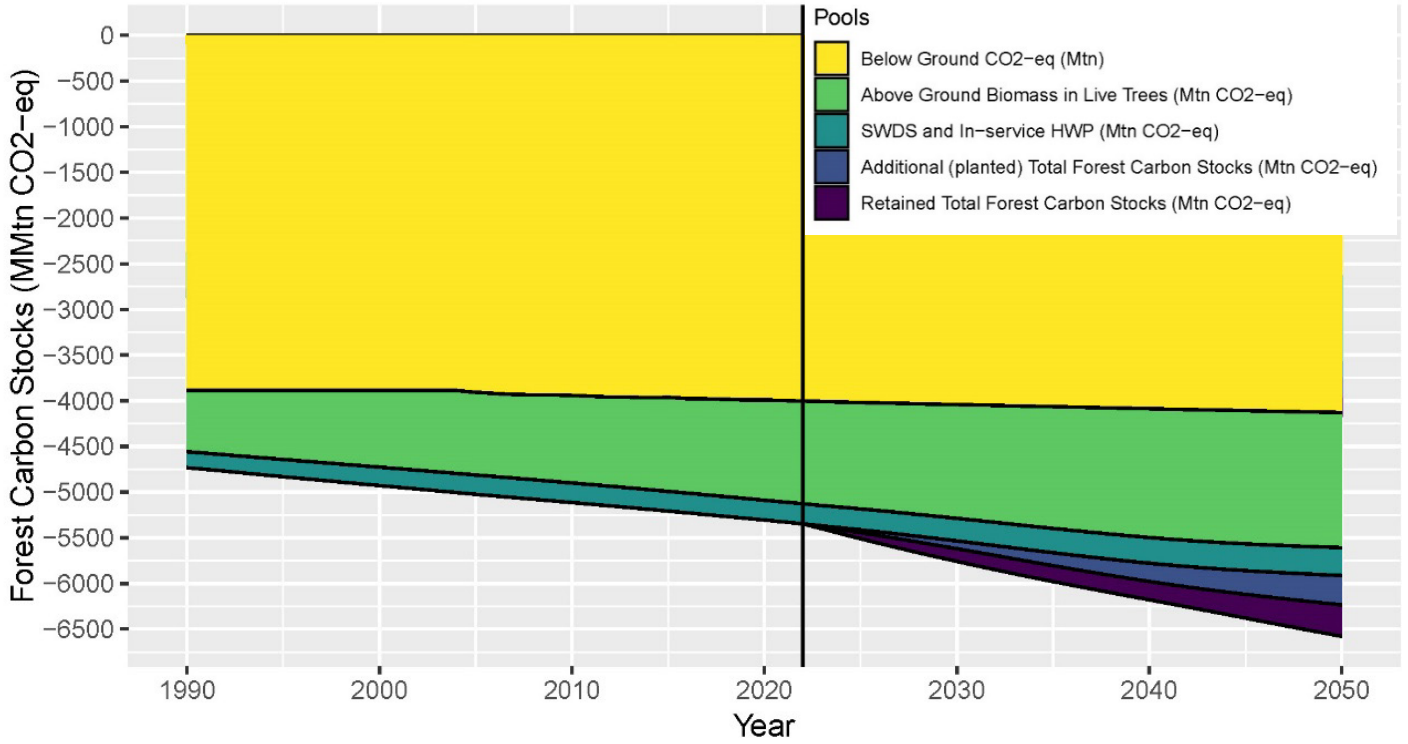


Figure 9. Minnesota forest carbon stocks: 1990-2050.



Minnesota  
Forest  
Resources  
Council

Representing:  
Commercial Logging  
Contractors  
Conservation  
Organizations  
County Land  
Commissioners  
Department of  
Natural Resources  
Environmental  
Organizations  
Forest Products Industry  
Games Species  
Management  
Labor Organizations  
Minnesota Indian  
Affairs Council  
Nonindustrial Forest  
Landowners  
Research and  
Higher Education  
Resort and  
Tourism Industry  
Secondary  
Manufacturing  
USDA – Forest Service

January 28, 2025

Commissioner Katrina Kessler  
Minnesota Pollution Control Agency  
520 Lafayette Road  
St. Paul, MN 55155

Commissioner Kessler,

Please accept the following input on the Climate Action Framework on behalf of the members of the Minnesota Forest Resources Council (MFRC). The MFRC is statutorily charged with advising the governor and federal, state, county, and local governments on sustainable forest resource policies and practices. The following comments focus entirely on the role of Minnesota's forests in helping achieve the desired outcomes of the Climate Action Framework.

The MFRC recently released the results of a commissioned study entitled, *"Estimating current and future carbon stocks and emissions in Minnesota forests and forest products under multiple management scenarios."* This innovative research provides a current assessment of carbon storage and emissions in Minnesota's forests and forestry sector and simulates their changes over 100 years under four forest management scenarios while holding forested acres, harvest rates, and climate constant. The simulation shows the highest forest carbon storage and sequestration rates occur from 2025 to 2050, contributing to the state of Minnesota's target to achieve statewide no-net atmospheric carbon (CO<sub>2</sub>) emissions by 2050. All management scenarios modeled in the research projected long-term increases in carbon storage both within forests and in harvested wood products.

We strongly encourage the Climate Action Framework planners and modelers to closely examine the study. It provides a higher estimate of our forest's net atmospheric carbon removal than other sources. It also provides a Life Cycle Assessment of Harvested Wood Products (HWP) manufactured in Minnesota that may be informative.

**Key Findings Include:**

Forests are key to achieving Minnesota's climate action goals. Minnesota's forests and forestry sector play an important role in the state's goal to achieve net-zero emissions by 2050, helping reduce the severity of future climate-change impacts. Related details include:

- Minnesota's forests absorb about 27 million metric tons (MMT) of atmospheric carbon (CO<sub>2</sub>) each year, offsetting about 15 percent of the state's annual greenhouse gas emissions as estimated by the Minnesota Pollution Control Agency (146 MMT CO<sub>2</sub>).
- Minnesota's forests may be offsetting more greenhouse gas emissions than previously understood. The amount of carbon stored by Minnesota forests has increased in recent

years<sup>1</sup> and, the carbon study's simulation projects carbon storage will continue to increase in the future. The magnitude and longevity of future increases will be dependent upon management actions and the severity of climate change.

- Of Minnesota's eight economic sectors, forestry is the only sector that offsets greenhouse gas emissions. Minnesota's forests are a net carbon sink (i.e., store more carbon than they release) due to their ability to absorb atmospheric carbon and convert it into wood, where it is stored in the forest and in harvested wood products.

Sustainable forest management helps keep forests healthy and can promote carbon sequestration and storage. Sustainable management of Minnesota's forests conserves and increases forest cover and maintains a balance of young, middle-age, and old forests over time. Generally, young forests sequester carbon at a faster rate than old forests, but old forests store more carbon than young forests. Both are important for forests' ability to adapt and be resilient to climate changes.

- We modeled the carbon stored and sequestered in Minnesota's forests and forest products under four management scenarios, which projected long-term increases in carbon storage to varying degrees within forests and in harvested wood products. These four management scenarios include:
  - No management: No management treatments were applied in this scenario. While this model projected an increase in the amount of carbon stored within Minnesota's forests, it showed a decline in carbon storage rates over time. No management can compromise the forest's ability to adapt and be resilient to climate changes.
  - Business as usual (BAU): Silvicultural prescriptions (i.e., a planned treatment of a forest site designed to change current stand structure or condition to meet management goals) were identified according to typical management strategies used in Minnesota. Harvests occurred at a rate identified by historical timber harvests. The BAU scenario incorporates the other three management scenarios (i.e., no management, climate-adapted, economic intensive) to the extent they are currently being applied on Minnesota's forests.
  - Climate-adapted: Silvicultural prescriptions (i.e., a planned treatment of a forest site designed to change current stand structure or condition to meet management goals) were identified for each forest type that sought to promote forest resilience under an adaptive silviculture strategy. Characteristics included tree planting, shorter entry periods (i.e., the interval between harvesting operations), and managing for diverse species and stand ages.
  - Economic intensive: Silvicultural prescriptions were identified that sought to maximize economic return from forest management activities. Characteristics included shorter rotation ages and increased harvest intensities.

---

<sup>1</sup> USDA-FIA 2024, EPA 2024, USDA Forest Service, Forest Inventory and Analysis Program, *Forest Inventory EVALIDator web-application Version 2.1.2*. St. Paul, MN: U.S. Department of Agriculture, Forest Service, Northern Research Station, <https://apps.fs.usda.gov/fiadb-api/evalidator>.

Grant M. Domke, Brian F. Walters, James E. Smith, Eric J. Greenfield, Courtney L. Giebink, Stephen M. Ogle, John Steller, Kenna Rewcastle, Jonathan A. Knott, John W. Coulston, Kelly A. Heilman, Ashley K. Lang, [Greenhouse gas emissions and removals from forest land, woodlands, urban trees, and harvested wood products in the United States, 1990–2022](#) (2024).

- Results from the four management scenarios investigated in the research suggest how forest management activities might be adjusted to increase the carbon storage potential of forests. It should be noted that all four scenarios are in play on varying acreages in Minnesota based on ownership and management directive.
- The model used for this research did not account for climate change, including large events that can disrupt the forest like wildfire or an increase in tree mortality. Such events could contribute to the release of stored carbon back into the atmosphere and reduce the amount of carbon sequestration and storage.
- This model held the proportion of Minnesota’s forests subjected to management constant at current (2020) levels but adjusted the silvicultural treatments and management intensity on those acres. As a result, under all scenarios the overall forest age and forest carbon storage increased. As forest age increases beyond maturity, growth tends to decline and emissions from mortality and decomposition increase. Forest management can be used to regulate the age structure and species composition of the forest to sustain future growth and carbon storage rates. The study highlights a variety of silvicultural treatments and regimens capable of sustainably increasing the ability of Minnesota’s forests to help achieve climate goals.

Minnesota has a time-sensitive opportunity to increase our forests’ ability to help achieve the state’s climate action goals. Minnesota’s forests are currently growing faster than removals, thus sequestering and storing more carbon than they emit. However, the research model predicts a turning point in the rate of growth and an increase in natural mortality levels over time. We have an opportunity now to manage our forests to help them remain vigorous and be more resilient to the changing climate.

- After 2100, the research model projected annual carbon sequestration by Minnesota’s forests slows (managed scenarios) or declines (unmanaged). Adjusting forest management approaches, increasing forest area, and increasing the total acreage of active forest management are good strategies that can increase carbon sequestration beyond this period.
- Research from the MFRC-commissioned study reinforced the need for policies and economic opportunities that will help Minnesota sequester and store more carbon by:
  - Keeping forestland forested
  - Planting trees and increasing forest cover
  - Managing forests
  - Supporting forest product markets
  - Using wood-based products instead of high carbon-emitting alternatives
  - Balancing forest ecological, economic, cultural, and social benefits
  - Increasing use of climate-adapted forest strategies; and
  - Investing in research and the development of forest resources data that can help inform cost and benefits of climate adaptive forestry strategies moving forward.

There is largely untapped potential to grow our state’s clean economy with innovative, energy-efficient, low-carbon forest product markets that offer environmental benefits and provide family-sustaining job opportunities.

- Research shows that the increased sequestration rates of young forests combined with the overall long-term storage of sequestered carbon in forests and harvested wood products offsets carbon emissions associated with logging, hauling, and manufacturing of forest products, and supports the management for continued health and vigor (i.e., growth) of the forest.

Further research is needed to determine if there is even more that our forests can do to address climate change. We believe we can reduce emissions from wildfire and decomposition through management; increase the area of forest through planting, and the sheer number of trees by increasing stocking rates in some stands; increase carbon absorption through thinning and regenerating decadent stands; and increase in-stand storage by maintaining longer-lived forest types.

Climate adaptation and carbon management are two of a myriad of services our forests deliver. Our forests supply habitat for a broad array of life that requires very diverse habitats and conditions. They provide recreational opportunities and cultural needs that support the human condition. They support good-paying jobs in rural communities and forest products that we need every day. And they are the source of clean water and air for all life. Sustainable forest management balances all forest resources, which are defined in [Minnesota Statute 89.001](#) as “natural assets of forest lands, including timber and other forest crops; biological diversity; recreation; fish and wildlife habitat; wilderness; rare and distinctive flora and fauna; air; water; soil; climate; and educational, aesthetic, and historic values.”

Following are comments on Climate Action Framework Initiatives and Sub-initiatives where we feel the forestry sector can play a role.

## **1. Clean transportation**

Connect and serve all people through a safe, equitable, and sustainable transportation system.

1.2. Clean and efficient vehicles: accelerate the transition to electric vehicles (EVs) or zero emission vehicles (ZEVs) and advanced clean fuels.

1.2.1. Reduce the carbon intensity of transportation fuels. Biofuels manufactured from woody feedstocks have lower carbon intensity and GREET Model scores than any other feedstock. MFRC supports reducing the carbon intensity of fuels so long as it does not diminish our forests’ health, habitat, water quality, recreation, cultural importance, and other ecosystem services.

## **2. Climate-smart natural and working lands**

Enhance climate benefits by absorbing and storing carbon, reducing emissions, and sustaining resilient landscapes.

2.1. Carbon sequestration and storage in forested lands, grasslands, and wetlands: manage forests, grasslands, and wetlands for increased carbon sequestration and storage.

2.1.1. Maintain, expand, and actively manage forestlands. Reducing forest conversion, planting trees, and active management of diverse forest types and age classes can increase carbon absorption, decrease carbon emissions, and increase the amount of carbon stored in-forest and in wood products.

2.1.4. Encourage individual actions that increase carbon storage. Public and private forest landowners make decisions on forest outcomes every day. MFRC encourages continued support of public and private forest landowners through policy decisions and financial incentives that encourage proper sustainable management.

Per [MRFC Resolution 2022-2](#), we support expanding state and private seedling production of bare root and containerized seedlings to historical levels of 10 million seedlings produced per year and incentivizing private land tree planting through cost-share programs, partnerships, and projects to fully utilize planned increases in nursery stock.

2.2. Resilient landscapes and ecosystems: enhance the ability of plants and animals, including crops, to adapt to the effects of climate change.

2.2.1. Conserve and enhance biodiversity. Prioritize active forest management that helps provide the diversity of forest types and age classes necessary to support a diverse array of life with appropriate attention to conserving biodiversity (e.g., adjust management where necessary to conserve rare species).

2.2.3. Promote the benefits of natural lands in climate adaptation. Natural forest lands with a variety of species and age classes are well suited for climate adaptation.

2.4. Sustainable landscapes and water management: reduce greenhouse gases and improve landscape resiliency through multi-purpose water storage and management practices that protect farmland, water supplies, and infrastructure.

2.4.3. Consider adding the following sub-initiative: “*Manage forested landscapes to hold water and reduce runoff.*” It is the same as the ag-related 2.4.2, but forests are already a major source of clean water, as well as water-absorbing landscapes that reduce runoff. That may become strained under some climate change predictions, hence the need for the sub-initiative.

2.5. Investments in emerging crops, products, and local economies: support emerging agricultural and forest technologies and products that reduce waste, create jobs, and expand economic opportunities.

2.5.2. Promote forest products that store carbon and reduce GHG emissions. All harvested wood products store carbon but for different lengths of time.

2.5.4. Reduce waste and promote beneficial use of materials. Paper products already have a high recycling rate; however, as is the case with all commodity sectors, there is room for improvement. When considering “beneficial use of materials” we urge the state to fully consider the substitution effect of selecting materials that are less carbon

intensive than others. The MFRC study analyzed the substitution effect of harvested wood products over things like concrete and steel in construction. By comparison wood has far lower embodied carbon and is renewable.

MFRC Resolution 2022-1 recommends that Minnesota should support development of markets for forest products mill residues and forest management residuals to reduce waste, add value to the forest economy, improve forest health, and improve carbon management.

### **3. Resilient communities**

Provide each Minnesota community with tools to plan for and become resilient to its specific climate impacts.

3.1. Climate-prepared communities: build Minnesota communities' capacity to protect against and withstand the effects of climate change.

Consider adding sub-initiative 3.1.4. "Reduce wildfire risk in the Wildland Urban Interface of rural forested communities." Climate change predictions include longer drought periods, which increase the likelihood of forest wildfires. Many forested rural communities need to be better prepared to protect themselves from this climate change-related threat. In northern Minnesota especially, healthy and resilient communities depend on healthy and resilient forests and the myriads of benefits they provide residents and visitors.

### **4. Clean energy and electricity**

Expand the use of carbon-free energy sources.

4.1. Clean energy sources: accelerate deployment of carbon-free energy.

4.1.1. Support clean energy siting and build community acceptance. Converting traditional energy sources to less carbon intensive sources (including woody biomass) will require public support for investments and policies necessary to making the transition.

4.1.3. Accelerate the growth of large-scale renewable energy generation. There is a sustainable supply of forest biomass that could be used for reliable base-load renewable energy generation. MFRC forest management guidelines provide safeguards that ensure that sufficient biomass is retained in the forest to provide wildlife habitat, prevent erosion, and maintain soil productivity. Another source of biomass is mill residue that otherwise is left to decompose. Sometimes residue is left from forest disturbances (e.g., wildfire, blow down, insect/disease, etc.) and can be salvaged to prepare sites for reforestation. Using this forest biomass supply for renewable energy generation can benefit forest health, increase carbon sequestration, reduce emissions, and in some cases, reduce wildfire risk. MFRC has provided comments on Minnesota Public Utilities Commission Docket #E999/CI-23-151 supporting the determination of

energy from woody feedstocks qualifying under the Carbon Free Standard set in Minn. State 216B.1691

4.1.4. Retire and/or repurpose fossil-fuel-fired facilities. Existing fossil fuel-fired facilities can be relatively easily and inexpensively repurposed for combusting woody biomass instead of coal. In the not-too-distant past Minnesota relied more heavily on woody biomass as an energy source. Adding carbon capture and storage technology could further reduce emissions.

## **5. Healthy lives and thriving communities**

Protect the health and well-being of Minnesotans in the face of climate change and advance environmental justice and equity.

5.1. Healthy communities: protect and improve Minnesotans' health and reduce health disparities from climate impacts.

5.1.3. Prevent respiratory and cardiovascular impacts from increased air pollution, wildfire smoke, and pollen. Active forest management can regenerate highly flammable forest cover, reducing wildfire risk and providing firebreaks that allow agencies to more readily control fire events. Wildfire releases millions of tons of CO2 and particulates in a very short amount of time, creating health hazards as well as contributing to climate change impacts.

5.1.5. Prevent illnesses from contaminated drinking and recreational water caused by climate impacts. Forests help provide a clean, reliable supply of water for human and ecological needs.

## **6. Clean economy**

Build a thriving carbon-neutral economy that produces goods and services with environmental benefits and equitably provides family-sustaining job opportunities.

6.1. Low-carbon, sustainable industrial and commercial businesses: integrate and stack innovative technologies to reduce and remove greenhouse gas emissions and reduce waste.

6.1.1. Increase industrial decarbonization efforts using currently available methods such as energy efficiency, electrification, and carbon capture, utilization, storage, and sequestration. As previously noted, Minnesota's forests sequester 15% of the carbon emitted by all economic sectors annually. That carbon is stored in several forest carbon pools as well as in harvested wood products. There are many opportunities to increase that sequestration rate, the amount of storage, and reduce forest-related emissions.

6.1.3. Advance economic policies to transition Minnesota's economy toward a net-zero future while maintaining economic competitiveness. Much of the active forest management performed in Minnesota is because it has a vibrant forest products industry to provide the economic engine for that management. But there have long been concerns about Minnesota's competitiveness in this global economic sector. MFRC

has published an updated [Report on the Competitiveness of Minnesota's Primary Forest Products Industry](#) as recently as December 2014. As we transition to net zero it is imperative that we maintain the forest products industry competitiveness so we can use the power of our forests to reduce atmospheric carbon levels.

6.2. Clean fuel and technology innovation: increase production of alternative, low-carbon fuels and the development and adoption of new decarbonization technologies.

6.2.1. Advance low-carbon fuel production and processing of feedstocks, deploying technologies such as hydrogen production and anaerobic digestion. Consider adding a specific reference to wood-based sustainable aviation fuel (SAF). The legislature and governor have made it clear through policy and appropriations that they want Minnesota to be a leader in SAF production. Wood-based SAF has a carbon intensity six times lower than ag-based SAF, providing an efficient pathway to decarbonizing the aviation industry. MFRC Resolution 2022-1 recommends support for new and expanded Minnesota markets for forest and mills residuals, and other types of sustainably harvested woody biomass.

6.2.2. Support technological innovation of new industrial decarbonization methods. Wood-based SAF is technologically feasible but may require policy and financial support to produce in the state of Minnesota.

## 7. Efficient and resilient buildings

Build and maintain healthy, comfortable, efficient, and resilient buildings that are cheaper to operate, pollute very little, and support grid stability.

7.1 Decarbonized residential and commercial buildings: reduce energy use, carbon emissions, and embodied carbon in buildings and building materials.

7.1.6 Reduce embodied carbon in building materials. As noted earlier, wood has much lower embodied carbon than all other common building materials, and it also stores carbon. The growing use of mass timber, glulam, cross-laminated panels and other wood technologies shows great promise in storing harvest wood produce carbon in massive amounts for long periods of time.

Consider adding sub-initiative 7.1.7 "Increase wood use in construction to store carbon for long periods of time." Specifically referencing wood would highlight its carbon storing potential and encourage planners and architects to consider the beneficial substitution effect of this material over others.

7.2 Resilient residential and commercial buildings: integrate innovative technologies, building materials, and design methods in buildings to withstand climate impacts.

7.2.5 Promote the use of healthy building materials. Wood is the healthiest building material. It is natural, organic, sustainably grown, renewable, energy efficient, biodegradable, recyclable, strong, durable, naturally beautiful, and low cost. Harvesting at appropriate levels in accordance with best management practices (e.g., Minnesota

Forest Resources Council site-level guidelines) is not detrimental to the environment. In fact, doing so properly creates wildlife habitat, increases forest health, decreases wildfire risk, and creates recreational hunting opportunities. We have witnessed the negative impact of wildfires in the United States and Canada to our forested landscape, and their significant cost, destruction, and record carbon, particulate, and heat emissions.

### **Greenhouse Gas Forecasting**

The MFRC is very interested in the State’s greenhouse gas forecasting exercise and outcomes and offers our Forest Carbon research results for use in refining your data. It was our goal to establish forest carbon baselines on and in Minnesota’s forests, soils, and harvested wood products produced by our Forestry sector. We also want to understand what more our forests can do to address climate change. We have involved MPCA and DNR climate specialists in the research process. We are aware that agricultural lands are being modeled as well and look forward to seeing how that sector contributes to the Climate Smart Natural and Working Lands portion of the Climate Action Framework effort. The MFRC Applied Forest Science Coordinator has examined the modeling assumptions used in the Minnesota forecasting update and would be available to engage that process and offer any information of interest from the MFRC Forest Carbon Research.

### **Other Comments**

We agree with and support the following statements:

- “Addressing climate change will not only require near-term strategies to meet our 2030 goals and long-term strategies to meet our 2050 goals; we must also implement strategies that reduce emissions and increase carbon sequestration and storage past 2050, such as peatland restoration and other land-management actions.”
- “Of note, some actions we take today – such as restoring wetlands or planting trees – will not realize their full climate benefits until after 2050. Those actions are still critically important for reducing historical and ongoing greenhouse gas emissions even after we achieve net-zero emissions.”
- “Emissions and removals by Economic sectors are a helpful way to look at the sources of greenhouse gas emissions and removals to identify strategies to reach our goals.”
- “The greatest emissions reductions over our current policies can come from shifting away from the fossil fuels used to generate electricity, power industrial facilities, move people and freight, and serve residential and commercial buildings, and by enhancing carbon sequestration and storage in forests, harvested wood products, and soils or through carbon capture and storage.”

However, we are concerned that the Net Zero Pathway shows very little increased carbon removal from Land Use, Land-Use Change, and Forestry (LULUCF) sector. We feel that there is ample opportunity to reduce emissions, increase carbon absorption, and increase storage in several carbon pools, including harvested wood products. We encourage your modeling team to consult with the MFRC Applied Forest Science Coordinator and others on our modeling team at the University of Minnesota to review the model’s assumptions and inputs.

## Next Steps

MFRC staff and members look forward to continuing engagement with the Climate Change Advisory Group and the Subcabinet as part of our statutory mission. I encourage the Team to work closely with MFRC staff to fully understand the role Minnesota's forests can play in addressing the climate change challenges we face. Thank you for the opportunity to provide feedback on this very important 2025 Climate Action Framework process.

Sincerely,



Pete Aube  
MFRC Chairman

cc:

DNR Commissioner Sarah Strommen

DNR Assistant Commissioner Shannon Lotthammer

Commerce Commissioner Grace Arnold (Co-Chair Governor's Advisory Council on Climate Change)

---

## About the Minnesota Forest Resources Council

*The mission of the Minnesota Forest Resources Council is to develop recommendations that result in the sustainable management of Minnesota's forest resources while protecting the balance of long-term economic, ecological, and social forest values in accordance with the [Sustainable Forest Resources Act](#). Council members represent a wide range of forest resource interests and hold public meetings every other month to discuss key issues. More information about the Minnesota Forest Resources Council is available at [mn.gov/frc/](http://mn.gov/frc/).*