West Virginia University
BRIDGE INITIATIVE FOR SCIENCE AND TECHNOLOGY POLICY, LEADERSHIP, AND COMMUNICATIONS

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Forest Carbon Markets

How do forest carbon markets work in West Virginia?

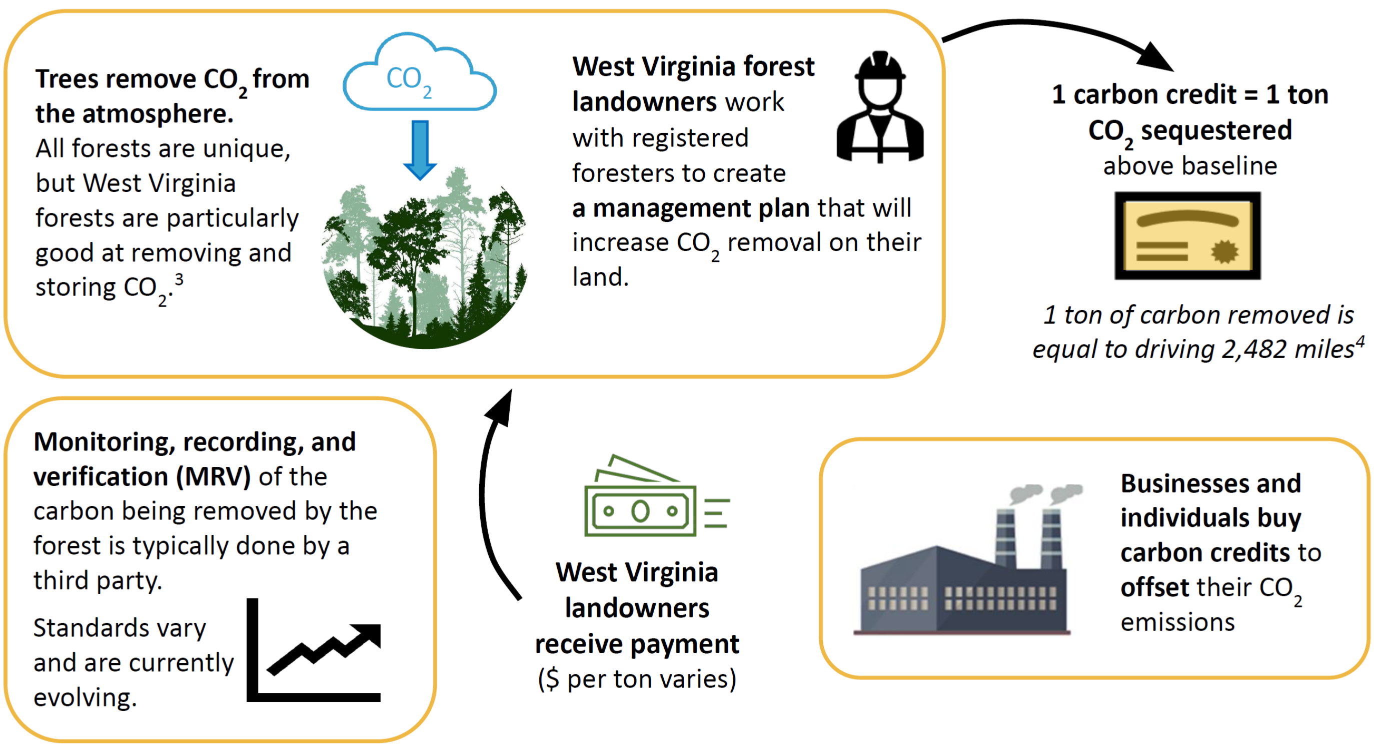
The carbon market allows landowners to earn money for increasing the carbon stored on their land.

West Virginians can sell carbon credits to companies interested in meeting their net-zero emission goals, also known as carbon offsets. Approximately 78% of West Virginia's land area (12 million acres) is forested, about half of which is owned by families. With the proper management plan, these families can choose to enroll in a carbon offset program to get paid for actively managing their forest.

The graphic below describes how the carbon market works for forest landowners.

Highlights

- The 12 million acres[1] of West Virginia forest are a valuable natural resource that can remove carbon dioxide (CO_2) from the atmosphere.
- 1 metric ton of CO_2 taken up by managed forests can be sold as 1 carbon credit to companies and individuals interested in offsetting their carbon emissions.
- To date, almost 28 million credits[2] have been issued to corporate landowners in West Virginia, and programs exist to facilitate family forest owner participation.
- In most cases, landowners must actively manage and retain rights to harvest timber on their land to be eligible for a forest carbon offset program.



- Several cost-share programs exist to help landowners develop their forest management plan.
- Numerous third-part entities exist that purchase, sell, broker, measure, and verify carbon credits.
- The monetary value of one ton of carbon fluctuates and is expected to increase.
- Currently, the market is driven by private industry and is largely unregulated.

There are several forest carbon programs currently operating in West Virginia.

Program Name	Acreage Requirement	Pricing	Term Agreement Duration	Harvest Allowed?
California Air Resources Board (CARB)	40+ *(not profitable <2,000 acres)*	Variable, depends on market $20-$100+ per acre per year[1]	25-year credit term & 100-year monitor term	Yes
Family Forest Carbon Program[2]	30-2,400	Depends on acreage, forest condition, management plan $50-280/acre	10-20 years	Yes
Working Woodlands Program[2]	2,000 +	Variable, depends on carbon credits market	Variable, long-term easements (e.g., 40 years)	Yes
NCX[3] National Capital Exchange	None	Variable, landowner bids. Ex.: $8/acre in 2020 PA bid[4]	1 year	No

Source: West Virginia University, 2022. Based on data from Forest Carbon Works[1], The Nature Conservancy and American Forest Foundation[2], NCX[3],and Penn State Extension[4].

In most carbon offset programs, timber harvest is allowed.

Many programs *require* that the landowner owns the right to their timber, and certain harvest practices may increase the number of carbon credits produced. However, one program in West Virginia, Natural Capital Exchange (NCX), *does not allow* harvesting during their one-year contracts.

Early termination of carbon offset agreements leads to penalties.

For most contracts, early termination requires the landowner to pay back the carbon credit payments they received and a termination fee. The fee covers the cost of monitoring and enforcing carbon credits on forest lands and can cost over $250,000.

If the land is bought, sold, or inherited, the new owner must uphold the contract or pay back the carbon credit payments and fees.

In the event of a natural disaster that kills trees and removes carbon from the land, landowners are not penalized, however the contract may be terminated.

All programs have different land requirements.

- Most forest carbon offset programs require a forest management plan from a registered forester.
- Many consider the minimum tree cover, % of native species, number of acres, etc.
- Landowners participating in West Virginia's Managed Timberland Program are currently still eligible to participate in carbon programs *that allow timber harvest.*

Participation in the carbon market is always voluntary for landowners.

Some confusion may arise from hearing about "voluntary" versus "compliance" markets. These refer to whether the companies buying the offsets are doing so voluntarily or if they required by law to offset their emissions, such as for businesses operating in California.

References:
[1]*Kelly and Schmitz, 2016*; [2]*CARB*; [3]*The Nature Conservancy and American Forestry Foundation*; [4]*EPA*

This Science & Technology Note was written by Brooke Eastman, Postdoctoral Researcher at West Virginia University, on behalf of the Bridge Initiative for Science and Technology Policy, Leadership, and Communications. Please see https://scitechpolicy.wvu.edu/ or contact scitechpolicy@mail.wvu.edu for more information.