

# Forest Carbon Markets

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Forest carbon programs allow landowners to receive payment for taking certain management actions to increase the carbon stored on their land. This Science and Technology Note provides an overview of forest carbon markets and discusses some options available to West Virginia families that choose to take part in them.

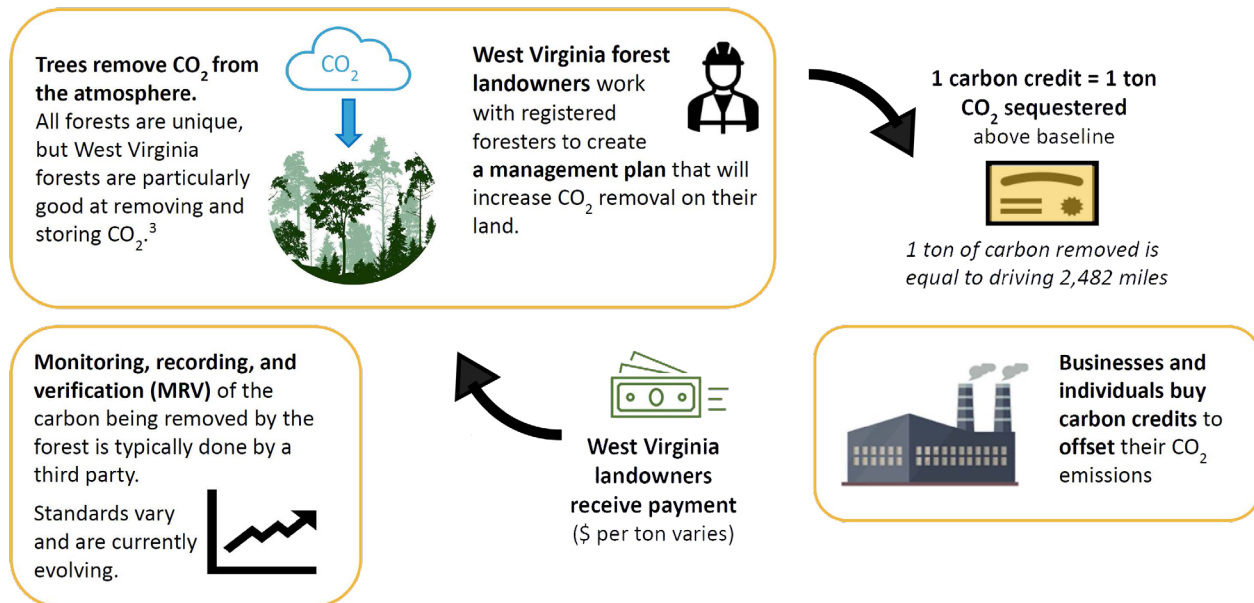
## How Do Forest Carbon Markets Work in West Virginia?

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

Below are some key factors for carbon offsetting in West Virginia:

- Several cost-share programs exist to help landowners develop their forest management plan.

## How Carbon Markets Work for West Virginia Land Owners



## Research Highlights

- The [12 million acres](#) of West Virginia forest are a valuable natural resource that can remove carbon dioxide (CO<sub>2</sub>) from the atmosphere.
- One metric ton of CO<sub>2</sub> taken up by managed forests can be sold as one carbon credit to companies and individuals interested in offsetting their carbon emissions.
- To date, almost [28 million credits](#) have been issued to corporate land owners 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.
- Numerous third-party 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. In most carbon offset programs, timber harvesting is allowed.

## Forest Carbon Programs Currently Operating in West Virginia

Program Name	Acreage Requirement	Pricing	Term Agreement Duration	Harvesting Allowed?
California Air Resources Board (CARB)	40+ (not profitable <2,000)	Variable, depends on market: \$20-\$100+ per acre per year <sup>1</sup>	25-year credit term & 100-year monitor term	Yes
Family Forest Carbon Program <sup>2</sup>	30-2,400	Variable	20 years	Yes
Forest Carbon Works	40+	\$10/acre/year or 25% revenue share	60 years (25 crediting period + 35 year monitoring period)	Yes

Source: West Virginia University, 2022. Based on data from [Forest Carbon Works](#)<sup>1</sup> and [The Nature Conservancy and American Forest Foundation](#)<sup>2</sup>.

## West Virginia Carbon Market Opportunities and Challenges

### ➤ In most carbon offset programs, timber harvesting 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 agreement may lead 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 programs consider the minimum tree cover, percentage 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 terms refer to whether the companies buying the offsets are doing so voluntarily or are required by law to offset their emissions, such as for businesses operating in California.

This Science and 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](mailto:scitechpolicy@mail.wvu.edu) for more information.