

**Testimony of Calvin Norman, Forestry and Wildlife Extension Educator, Penn State
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before the Policy Committee Hearing regarding Forest Carbon Markets (CWD)**

April 20, 2022

Representatives Martin Causer, Mike Armanini, and distinguished members of the Pennsylvania House Majority Policy Committee, on behalf of Penn State Extension, I am honored to participate in today's hearing and to inform the committee about Forest Carbon Markets and the Climate Crisis.

Today carbon dioxide levels are at 420 parts per million, of which 100 parts per million have accrued since the 1960's. This accumulation of carbon dioxide and other greenhouse gases has resulted in unprecedented change in climate. Globally, the seven hottest years on record have taken place in the last decade; in Pennsylvania number of days above 90 degrees have increased by 5 and sea levels have risen by 4 inches.

These changes have not gone unnoticed, and many countries, companies and individuals are trying to take action to limit or reverse the crisis. One of these actions is through the establishment of carbon markets. These, markets function by allowing carbon emitters to offset their footprint by buying carbon credits from people who store additional carbon. Regulated markets, such as the Regional Greenhouse Gas Initiative (RGGI) and the California Air Regulator Board (CARB), set strict rules about who can buy and sell carbon credits and how those credits are created. The voluntary carbon offset market is driven by private interests and depends on third party verifiers, such as registries, to legitimize the sale of carbon credits.

Buyers on the voluntary market are very much interested in leveraging forests. This is because forests are the most cost-efficient strategy for (1) rapidly sequestering large amounts carbon, through the process of photosynthesis, and (2) storing carbon for a long period of time.

Since 2010, a number of forest carbon payment programs have emerged but, due to economies of scale problems, they primarily target forest owners that have more than 2,000 acres of forested land. Recent advances in technology and methodology, in areas such as remote sensing and artificial intelligence, have now allowed payment programs to include forests as small as 30 acres. Many of the emerging small forest programs are being tested here in Pennsylvania because, (1) 70% of forests are under private ownership with an average parcel size of 16 acres, (2) the climate is well situated to maximize carbon sequestration in millions of acres of valuable hardwood forest, (3)

there are relatively few threats to forests like wildfire or hurricanes that could comprise a carbon project, and (4) the commonwealth has a long history of active forest management.

In forest carbon markets, additionality is generally achieved through three methods: extended rotation, improved forest management, and afforestation. Extended rotation or harvest deferrals are when the program pays a landowner to not harvest timber for a set amount of time—generally 20 to 65 years. In an improved forest management program, a landowner is paid to undertake new forest management practices which are known to be climate smart, like controlling invasive species or putting up deer fencing. Afforestation programs are when programs help plant new forests on land that had previously not been forested, like reclaimed mine land or marginal farmland.

These various methods of sequestration are promising but not without costs, depending on which forests are enrolled. In Pennsylvania, there are relatively few young forests, which are important habitat to a wide range of important wildlife, such as deer, turkey, and ruffed grouse. Extending harvest rotations delays the creation of this much needed habitat. Extending harvest rotations on a very large number of acres may also reduce the total volume of wood coming from private lands, which can weaken the forest products industry. Payments offered to help improve forest management practices are still not substantial enough to cover the required practices, thus limiting the number of landowners who will want to enroll. Afforestation projects are challenged by supply problems, since there are only a few large tree nurseries in Pennsylvania.

My review of carbon markets in the US shows that there are a wide range of approaches, and many are very experimental. I am aware of programs that pay owner to defer harvest for one year and programs that ask for up to 100 years deferral. Some programs are looking to do afforestation projects with genetically modified trees, which have unknown implications. And finally, some programs are paying owners to help protect the next generation of trees, which can sequester carbon more quickly and provide important wildlife habitat. Regardless of the approach, the payment levels offered to landowners are only attractive to very early adopters. The current price of carbon is between \$3.50 and \$10.00 a ton, which means landowners get paid about \$5-15 an acre. I expect that these prices will increase as climate change impacts become more obvious and interest in buying offsets increases.

A national survey by the National Woodland Owners Association found that less than 1% of small forest owners are enrolled in a forest carbon market and over 80% were not at all familiar with carbon markets. If we are to include private forests in climate change solutions, forest owners need to become informed and engaged economic actors. We at

Penn State Extension are looking to address this knowledge gap through the implementation of the Forest Owner Carbon and Climate Education (FOCCE) program (<https://sites.psu.edu/focce>). This program is supported by a 1.5 million grant from the USDA National Institute of Food and Agriculture (NIFA). It was developed in cooperation with extension professionals from 13 land grant universities and experts at 3 USDA Climate Hubs. Educational programming will be delivered to forest owners throughout the eastern US starting in 2023.

In closing, I know that carbon markets and all these landowner payments programs can seem really complicated, because they are. But when it comes to leveraging private forests to help mitigate climate change, the most important things we can do are: (1) keep forests as forests, and (2) do what is good for the woods.

Key points:

- Forests both sequester (the act of capturing carbon dioxide from atmosphere) and store carbon dioxide for long periods of time.
- Carbon markets are expanding rapidly into all aspects of forestry and targeting all sizes of landownership.
- Prices are still relatively low at \$3-10 a ton for buyers and \$5-15 an acre for landowners.
- The Forest Owner Carbon and Climate Education (FOCCE) Program at Penn State Extension is working to support landowner involvement in this ever-changing marketplace.