

HB0871_Support_Letter_Hegberg.pdf

Uploaded by: Charles Hegberg

Position: FAV

February 23, 2026

TO: Members of the Maryland House and Senate Committees

FROM: Charles Hegberg, Environmental & Restoration Consultant, Maryland and Mid-Atlantic Region

RE: SUPPORT for HB0871 – Carbon Removal and Biomass Storage Framework

Dear Members of the Committee,

As an environmental and restoration consultant with extensive experience across Maryland and the Mid-Atlantic region, I write in strong support of HB0871, the Carbon Removal and Biomass Storage Framework. I respectfully urge a favorable report on this legislation, which is essential to ensuring Maryland remains a global leader in climate innovation while simultaneously revitalizing our rural economies and forestry sectors.

I. Maryland Innovation and National Leadership

The technology underlying Wood Vaulting was invented and developed at the University of Maryland. With support from the Maryland Energy Innovation Accelerator (MEIA), we have already witnessed the successful construction of the world's first commercial-scale Wood Vault right here in Northern Maryland—the Potomac Project. This achievement is a testament to Maryland's scientific ingenuity and entrepreneurial spirit.

Despite this remarkable milestone, our local startups currently find themselves trapped in a “regulatory gray zone,” forced to navigate rules designed for waste disposal rather than carbon sequestration. HB0871 directly addresses this critical gap by:

- **Differentiating residuals from waste**, providing the clear legal distinction required for permanent carbon storage operations;
- **Adopting high-integrity verification standards**, such as the Isometric or Puro methodologies, ensuring every ton of sequestered carbon is independently verified and credible.

Other states—most notably California—have already enacted binding legislation such as the Climate Crisis Act to reach net-zero, and are actively debating multi-million dollar carbon dioxide removal (CDR) purchase programs. Maryland should not stand on the sidelines. We possess the home-grown science and the startups ready to scale. We simply need the “rules of the road” that HB0871 provides to unlock their potential.

I also wish to note that the Maryland Department of the Environment (MDE) has discussed developing a “For Benefit” permit process to help environmentally beneficial projects navigate Maryland's complex permitting framework. HB0871 would work synergistically with such an initiative, providing both the statutory foundation and the regulatory clarity needed to expedite approval of carbon storage projects.

II. Economic Renewal and Rural Development

The economic case for HB0871 is equally compelling. Maryland's highly valuable “wood baskets”—including the lower Eastern Shore and Western Maryland—have suffered significant economic

decline following the closure of regional sawmill facilities, pellet operations, and papermills. These closures have not only hurt local communities but have also contributed to deteriorating forest health and increased pests and wildfire risk.

HB0871 offers a genuine lifeline for these communities by establishing a new industry centered on Improved Forest Management (IFM), another verifiable carbon methodology; and sustainable wood harvesting, and carbon storage. This framework will catalyze the creation of specialized, high-paying technical jobs in our rural agricultural and forestry sectors—exactly where investment is most needed.

Critically, this bill does not just help the climate in the abstract—it supports sustainable forest management by utilizing only “un-merchantable biomass” and forestry residuals, transforming underutilized debris into high-value carbon assets. While states like California are already investing tens of millions of dollars in CDR purchase programs, Maryland has the unique opportunity to leverage our own local innovation to grow our economy from within, rather than ceding this emerging market to other states.

Furthermore, Maryland has thousands of sand and gravel pits and end-of-life mine sites that are in need of remediation. This opportunity, developed by myself and receiving strong support by both the Maryland Department of Environment and Department of Natural Resources offers significant opportunity to see degraded landscapes restored for the benefit of the Chesapeake Bay. This legislation would enable these properties to serve as sites for “shallow geologic storage” of carbon—solving two problems simultaneously: accelerating land restoration and advancing our climate goals.

Conclusion

HB0871 represents a rare convergence of environmental leadership, economic opportunity, and Maryland ingenuity. It builds on world-class university research already conducted in our own state, creates a durable regulatory framework for an emerging industry, supports rural workforce revitalization, and positions Maryland to lead—not follow—on one of the defining challenges of our time.

I strongly urge this Committee to issue a favorable report on HB0871. Maryland has earned the right to lead on climate and carbon innovation. This bill ensures we do.

Respectfully submitted,



Charles Hegberg
Environmental & Restoration Consultant
Maryland and Mid-Atlantic Region

SUPPORT HB0817 Carbon Removal and Biomass Storage.

Uploaded by: Linda Ellis

Position: FAV

TO: Members of the Maryland House Environmental and Transportation Committee
FROM: Linda Ellis, Ph.D., Howard County, MD
RE: SUPPORT for HB0817—Carbon Removal and Biomass Storage Framework

My written testimony is in support HB0817, which I view as an important means of sequestering wood and wood products that otherwise would decompose or burn, releasing CO₂ into the environment.

I was pleased to tour Dr. Ning Zeng's laboratory at the University of Maryland last year in order to inform myself of the methodology and goals of his research into carbon sequestration. My conclusion is that this research offers Maryland a much-needed technology that will help our state meet critical environmental goals, and in addition support the development of industry and provide jobs to Maryland residents.

This technology was invented and developed at the University of Maryland, and the world's first commercial-scale Wood Vault has already been constructed in northern Maryland. The results have been most encouraging and indicate that this novel approach to dealing with a potent source of environmental pollution needs to be implemented more broadly with the support of the resources of the State of Maryland.

I strongly support HB0817 and respectfully request a favorable report on this important bill.

SUPPORT SB0625 Carbon Removal and Biomass Storage.

Uploaded by: Linda Ellis

Position: FAV

TO: Members of the Maryland House Environmental and Transportation Committee
FROM: Linda Ellis, Ph.D., Howard County, MD
RE: SUPPORT for SB0625—Carbon Technology and Practices

My written testimony is in support SB0625, which I view as an important means of sequestering wood and wood products that otherwise would decompose or burn, releasing CO₂ into the environment.

I was pleased to tour Dr. Ning Zeng's laboratory at the University of Maryland last year in order to inform myself of the methodology and goals of his research into carbon sequestration. My conclusion is that this research offers Maryland a much-needed technology that will help our state meet critical environmental goals, and in addition support the development of industry and provide jobs to Maryland residents.

This technology was invented and developed at the University of Maryland, and the world's first commercial-scale Wood Vault has already been constructed in northern Maryland. The results have been most encouraging and indicate that this novel approach to dealing with a potent source of environmental pollution needs to be implemented more broadly with the support of the resources of the State of Maryland.

I strongly support SB0625 and respectfully request a favorable report on this important bill.

USBC Letter Maryland SB 0625 (1).pdf

Uploaded by: Markus Videnieks

Position: FAV

March 6, 2025

The Honorable Brian Feldman
Chair, Education, Energy, and the Environment Committee
Maryland Senate

Dear Chairman Feldman and Members of the Committee,

I am writing on behalf of the US Biochar Coalition to express our enthusiastic support for SB 0625 – *Carbon Removal Technology and Practices – Regulations and Use of Funding*.

The U.S. Biochar Coalition is a trade association unifying the voice of the biochar industry to catalyze development of the market, policy, and economic conditions necessary to expedite industry growth in the United States. A core part of our mission is advancing state policies that accelerate durable carbon removal while strengthening local economies. SB 0625 is exactly the type of forward-looking framework that can position Maryland as a national leader in carbon removal.

Biochar is produced by heating biomass—such as waste wood, agricultural residues, and forestry byproducts—in an oxygen-limited environment. The resulting material is stable, carbon-rich, and capable of permanently removing atmospheric carbon dioxide when applied in durable uses. One ton of high-temperature biochar can sequester up to three tons of CO₂ equivalent. Today, biochar represents the majority of delivered, durable engineered carbon removal credits globally.

Maryland is uniquely positioned to benefit from biochar deployment. The state's agricultural base, forestry resources, and ongoing Chesapeake Bay restoration efforts create strong alignment with biochar's capabilities. When applied to soils, biochar improves water retention, increases soil health, and can reduce nutrient runoff—directly supporting Bay water quality goals. Emerging applications also include incorporation into asphalt and concrete mixes, which may improve material durability while embedding long-term carbon storage in public infrastructure. Additionally, biochar has demonstrated promise in addressing contaminants such as PFAS in soils and water, an issue of growing importance in Maryland.

SB 0625 is important because it establishes a technology-neutral framework for carbon removal funding. By avoiding mandates that favor specific pathways, the bill allows innovation to compete on measurable environmental performance. That approach ensures Maryland can deploy the most effective and scalable solutions as the sector evolves, while attracting private capital and complementary federal investment.

The economic implications are equally significant. Biochar production facilities are typically small- to mid-scale operations located near biomass sources, supporting rural communities, farmers, foresters, equipment operators, and local construction and logistics providers. A predictable, inclusive state framework can catalyze private-sector investment and job creation across multiple regions of Maryland.

SB 0625 strikes the right balance: environmentally sound, economically practical, and adaptable to technological advancement. We respectfully urge the Committee to advance this legislation and position Maryland at the forefront of durable carbon removal policy.

Thank you for your consideration. We would be pleased to serve as a technical resource to the Committee as the bill moves forward.

Sincerely,



Maureen Walsh
Executive Director

Mike Wood Vault Senate Testimony.pdf

Uploaded by: Mike Tidwell

Position: FAV



MARYLAND SB 625, "CARBON REMOVAL REGULATORY FRAMEWORK"

SENATE, EDUCATION, ENERGY, AND THE ENVIRONMENT COMMITTEE

FAVORABLE TESTIMONY OF MIKE TIDWELL, DIRECTOR, CHESAPEAKE CLIMATE ACTION NETWORK

Chairman Feldman and Members,

I'm Mike Tidwell, director of the Chesapeake Climate Action Network, and on behalf of our 40,000 supporters across Maryland I am here to enthusiastically support SB 625, the Carbon Removal Regulatory Framework. I want to thank Chair Feldman for sponsoring this important bill.

I have been an advocate and lobbyist for sound climate policy in this state for 24 years, ever since we passed the region's first Renewable Portfolio Standard to mandate the addition of wind and solar power to our grid. We have since made good strides on climate policy, thanks to the leadership of many of you on this committee. We now have a 50 percent clean energy standard for our electrical grid by 2031 and we have mandated 60 percent cuts in greenhouse gas emissions below 2005 levels by 2032.

Yet scientists now tell us that the clean energy revolution, now well underway in Maryland and across the world, is not moving fast enough to keep the planet at or below the goal of 2 degrees Celsius warming this century. Since 2014, the UN's Intergovernmental Panel on Climate Change has made clear that we need so-called "negative emissions," which means sucking from the atmosphere carbon dioxide that has already been emitted, and subsequently storing it safely underground or underwater.

This bill will finally create a framework to allow Maryland to do that, establishing defensible, safe, and scientifically grounded guidelines for carbon sequestration in many forms, including burying biochar or whole trees that have died from storms whose carbon would be released into the atmosphere unless buried in low oxygen clay, keeping the trees from decomposing for a thousand years or more.

These are innovative techniques that work to sequester carbon, and UN climate experts need states like Maryland, with our strong commitments to the climate fight, to move forward quickly with responsible carbon sequestration policies.

This bill allows the Maryland Department of the Environment to work with advocates and experts to form guidelines so the sequestration work can finally begin.

Many thanks,

Mike Tidwell

Written Testimony_MD_SB0625_20260310.pdf

Uploaded by: Ning Zeng

Position: FWA

Written Testimony

TO: Members of the Maryland Senate EEE Committee

FROM: Dr. Ning Zeng, Professor at the University of Maryland and Co-founder of the Carbon Lockdown Project

DATE: March 10, 2026

RE: Support for SB0625 – Carbon Removal Technology and Practices - Regulations and Use of Funding

Introduction: The Need for a Broad CDR Framework

My name is Ning Zeng. I am a Professor at the University of Maryland and co-founder of the Carbon Lockdown Project. I am writing to express my strong support for **SB0625**. This legislation is a critical step in establishing a regulatory environment for Carbon Dioxide Removal (CDR) in Maryland. As the state pursues its ambitious net-zero goals, we must create a clear pathway to facilitate the transition of carbon removal technologies from the laboratory to commercial scale.

The Scientific Imperative: Global and National Context

The consensus among the global scientific community, reinforced by the UN IPCC and the U.S. National Academy of Sciences, is that gigaton-scale carbon removal is no longer optional; it is a mathematical necessity to mitigate the most catastrophic impacts of climate change. Just like renewable energy, CDR creates a trillion-dollar industry. **CDR includes** a diverse portfolio of carbon removal technologies—ranging from high-tech industrial capture to nature-based solutions.

Wood Vaulting as an Example

To understand the importance of this bill, one can look at the example of **Wood Vaulting**. This is a hybrid nature-engineering method that leverages the natural photosynthetic capacity of trees to capture CO₂. Wood residuals are then buried within engineered ‘vaults’ to prevent decomposition, forming an effect carbon sink. 15 years of research and pilot projects have demonstrated the method to be a low-cost, practical carbon removal method that can be scaled to gigaton scale within a decade. Estimated potential for just this technology at Maryland is 1.2 mega-tonne per year, equivalent to taking 300,000 cars off the road.

The technology was invented at the University of Maryland which continues to lead the world in this burgeoning research field. Over a dozen companies worldwide are currently implementing the technology, including UMD startup Carbon Lockdown.

Socio-Economic Benefits of Wood Vaulting

The implementation of SB0625 extends benefits far beyond carbon removal:

- **Waste Utilization:** Wood Vaulting does NOT encourage deforestation. On the contrary, it encourages sustainable forest management to improve forest health. It uses only residual un-merchantable biomass. It transforms underutilized wood residuals and storm debris into high-value assets.
- **Fire Prevention and Public Safety:** Reduces the accumulation of combustible biomass piles in urban and forest-fringe settings.

- **Air Quality Preservation:** Prevents uncontrolled biomass fires and the associated release of harmful pollutants and methane generation in mulch piles.
- **Rural Economic Development:** Through partnerships of different agencies and universities, this framework will catalyze the creation of specialized, high-paying technical jobs in Maryland's rural agriculture, forestry, waste management, and construction sectors.

The Frontline Reality: Missed Opportunities at Camp Small

As a startup founder in this space, I see the real-world consequences of our current lack of regulatory clarity. A tragic example is the recent fire at **Camp Small**, Baltimore's wood recycling hub on Dec 5, 2024. Thousands of tons of wood residuals went up in smoke, releasing carbon and pollution into the atmosphere.

Under a robust regulatory regime such as the one proposed in SB0625, that material would not be viewed as "waste" to be piled up, but as a valuable climate asset. With proper permitting and oversight, these **wood residuals** could have been diverted to projects, turning a fire hazard into a permanent carbon sink.

Regulatory Challenges and the Startup Perspective The primary hurdle for CDR startups in Maryland is not the science—which is well-established in peer-reviewed literature and governed by multiple international standards and independent verifiers—but the **regulatory "gray zone."** Currently, innovative carbon removal projects are often forced to navigate rules designed for waste management or traditional construction.

I'm aware of several imminent opportunities in Maryland that could be implemented to achieve climate and multiple co-benefits, including:

- **Western Maryland:** The closing of the only papermill is causing a decline of a whole industry in the region. Utilizing the forest resources for CDR can provide a lifeline for local economy.
- **Remediation of sand and gravel pits and end-of-life mines:** Thousands of sites across the state.
- **Washington-Baltimore Metropolitan area:** Urban waste wood (backyard tree removal, etc) has overwhelmed our waste management capability, leading to Camp Small fire, mulch pile explosion, etc. Bury them is a 'two-birds with one stone' solution.

To scale CDR, we need a framework that:

- **Differentiates Residuals from Waste:** Provides a clear legal distinction for materials intended for permanent carbon storage.
- **Adopts High-Integrity Standards:** Incorporates existing scientific protocols and international standard to ensure every ton of carbon removed is verified and durable. We also need ensure that unintended negative impacts are avoided or minimized.
- **Provides Permitting Certainty:** Allows startups to attract the investment necessary to build the infrastructure Maryland needs to meet its climate mandates.
- **Support pilot projects:** Accelerate the deployment through 'learning by doing'.

Other states like **California and New York** are also moving to regulate and incentivize CDR. Maryland shouldn't just follow—we should lead. We have technology invented by state

universities, we have the startups, we have Climate Solutions Now Act (SB528, 2022), state organizations like MCEC and MEIA.

Conclusion SB0625 is not just about one technology; it is about building the infrastructure for a new carbon economy. By providing a clear regulatory home for CDR and support pilot projects, Maryland can prevent future losses like the Camp Small fire and instead lead the world in durable, low-cost climate solutions. I urge a favorable report on SB0625.

References

Selected Research

- Smith et al., 2024: The State of Carbon Dioxide Removal, 2nd Edition. <https://www.stateofcdr.org/home>
- CDR.fyi: A comprehensive data base on the state of the voluntary carbon market for CDR. <https://www.cdr.fyi/>
- Zeng, N., Hausmann, H. Wood Vault: remove atmospheric CO2 with trees, store wood for carbon sequestration for now and as biomass, bioenergy and carbon reserve for the future. Carbon Balance Manage 17, 2 (2022). (**A comprehensive paper on science, technology and economics on biomass burial and storage**). <https://doi.org/10.1186/s13021-022-00202-0>.
- Woodall CM and McCormick CF (2022) Assessing the optimal uses of biomass: Carbon and energy price conditions for the Aines Principle to apply. Front. Clim. 4:993230. <https://doi.org/10.3389/fclim.2022.993230>
- Zeng N, Zhao X P, Poisson G, et al. [3775-year-old wood burial supports “wood vaulting” as a durable carbon removal method](https://doi.org/10.1186/s13021-024-00270-4). Science, 2024, 385(6716): 1454-1459.
- Hausmann, H., et al. Quantification of biomass availability for wood harvesting and storage in the continental United States with a carbon cycle model. Carbon Balance Manage 19, 34 (2024). <https://doi.org/10.1186/s13021-024-00270-4>
- Johnson D, Voorhis J, Porder S. Life cycle emissions associated with vault storage of wood cleared for fire management in the Western United States. Carbon Balance Manag. 2025 Aug 8;20(1):26. doi: 10.1186/s13021-025-00309-0.

Methodologies, International Standards, US legislations

- Zeng, Ning, Daniel Sanchez, Erica Belmont, Henry Hausmann, 2023: Implementation Guidance for Carbon Sequestration via Wood Harvesting and Storage Version 1.0. <https://doi.org/10.48550/arXiv.2309.06529>. September 2023. (Open source)
- Puro Methodology on [Terrestrial Storage of Biomass](#) Edition 2023 v1, November, 2023.
- Isometric Standard on [Subsurface Biomass Storage](#), v1.0, September 2024.
- **California SB 308 – [Carbon Dioxide Removal Market Development Act](#)**

Media coverage and commentary

- Scientific American: [Can We Bury Enough Wood to Slow Climate Change?](#) October 16, 2025.
- [Woody Biomass Burial](#), Illuminem, by Wil Burns, June 3 2025
- Washington Post: [A cheap, low-tech solution for storing carbon may be sitting in the dirt](#) Sep 25, 2024

- Coverage by national and international [media outlets](#) (50+) listed on Altmetric
- USDA [webinar](#): Wood Harvesting and Storage (Wood Vault): A low cost and easily scalable way to remove atmospheric CO2 to fight climate change, May 12 2023, 49min including Q and A.
- Construction of the world's first commercial-scale Wood Vault, [Potomac Project](#) Phase 1 by Carbon Lockdown at Northern Maryland, Nov 13, 2023. youtube video, 4min.
- WBAL, Dec 5 2024: 'Could have saved all that wood': [A professor's project might have prevented Camp Small fire](#)

MDE SB 625 INF.pdf

Uploaded by: Jeremy D Baker

Position: INFO



**The Maryland Department of the Environment
Secretary Serena McIlwain**

Senate Bill 625

Carbon Removal Technology and Practices – Regulations and Use of Funding

Position: Letter of Information
Committee: Education, Energy, and the Environment
Date: March 10, 2026
From: Jeremy D. Baker, Director of Government Relations

The Maryland Department of the Environment (MDE) offers the following **LETTER OF INFORMATION** for SB 625.

Bill Summary

Senate Bill 625 would require the Department to adopt regulations governing the permitting of carbon removal technologies by January 1, 2028. The carbon removal practices must be certified by an internationally recognized third-party certification body. State agencies shall use available funding sources to fund carbon removal projects that use carbon removal technologies and practices certified by such internationally recognized third-party certification bodies.

Position Rationale

The current language in Senate Bill 625 is broad and unspecific, implicating a wide array of existing technologies (e.g. carbon or direct air capture and underground storage) and emerging technologies (e.g. ocean-based carbon removal and enhanced rock weathering). Senate Bill 625 is filed under Title 2 of the Environmental Article; however the preamble states that the current practice of applying solid waste regulations to carbon removal is unsuitable. Solid Waste regulations are found under Title 9 and any change to applying solid waste regulations to be more suitable should be addressed in Title 9. The bill's preamble indicates a specific need to revise solid waste regulations that are "unsuitable" without specifying what practices are inadequate and must be altered. Certain regulations may be unsuitable due to underlying statutory authorities and directions provided to MDE. Additionally, direct air or carbon capture and sequestration technologies ultimately may require the state to adopt new regulations and seek EPA primacy related to the permitting of Class VI underground injection wells under the Safe Drinking Water Act. In other states, such programs require a large staff of technical subject matter experts and have been deeply controversial with surrounding communities. The broad language requiring each State agency to use all available funding sources would implicate every revenue type - General, Capital, Special, and Federal Funds- to fund carbon removal projects. This could have a significant fiscal impact in the hundreds of millions of dollars. Senate Bill 625 does not limit or constrain the scope or number of projects, or the amount of funding required to facilitate the installation of such projects.

MDE hopes this information is useful to the Committee and is available for questions related to SB 625.

Contact: Jeremy D. Baker, Director of Government Relations
Cell: 443-931-0937, Email: jeremy.baker@maryland.gov