

Title: *Identifying Natural and Social Sciences Gaps to Support Market-Based Approaches to Chesapeake Bay Watershed Restoration*

Steering Committee (Proposed)

Name	Affiliation	Expertise
Scott Knoche*	Morgan State University	Markets, Economics
Lisa Wainger*	UMCES	Economics; Ecosystem Services
Matt Baker	UMBC	Remote Sensing; Carbon
Christine Kirchoff	Penn State	Engineering Innovation
Emily Trentacoste	EPA ORD	Blue Carbon Projects
Pat Gleason	EPA R3	Water Quality Trading
Joe Wood	CBF	Water Quality Trading
Elliott Campbell	Md DNR	Economics; Ecosystem Services
Kurt Stephenson	VaTech	Water Quality Trading
Katie Brownson	US Forest Service	Green Carbon
Leah Palm-Forester	UDE	Experimental economist
Tony Buda	UPENN	Market based improvement for Ag. - CARAT

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Topic Background

The current approach to Chesapeake Bay restoration relies primarily on public funding of voluntary management practices. Transformative approaches would harness the power of economic markets to bring a wider variety of funding sectors, including the private sector, while maximizing economic efficiency and spurring technology innovation. Such potential markets include Blue Carbon, Green Carbon, agricultural soil carbon, water quality trading, and climate resilience credits.

Water quality markets have long been identified as a mechanism to efficiently achieve water quality improvements (EPA, 2001; Stephenson and Shabman, 2011) and have been established for all the states in the watershed, in varying forms (EPA, 2021). However, these markets have different levels of activity and there have been challenges in how they function (Fox et al. 2021, Saby et al. 2023). Recent work suggests that changes are needed to the current framework of trading in the Chesapeake Bay watershed to be able to address non-point source loads from agricultural lands (Stephenson and Shabman, 2017; Stephenson et al., 2023).

Carbon offsets are another well-established market, with active projects and programs in the watershed. The carbon market has garnered extensive criticism and controversy (West et al., 2020; Guizar-Coutiño et al., 2022; Trouwloon et al., 2023; West et al. 2023) for poor practices and tracking, raising the imperative for these projects to meet rigorous standards for additionality and environmental justice (Legano et al. 2020, Ellis et al. 2024).

This workshop is designed to identify the future needs for filling gaps and overcoming roadblocks from both the natural sciences (monitoring or modelling of the marketed ecosystem service and co-benefits or ecological impacts) and the social sciences (economic feasibility, landowner willingness to participate) perspectives. From the findings of the workshop, The Chesapeake Bay Program Partnership can make informed decisions about what initiatives could resolve identified roadblocks. The workshop will focus on ecosystem crediting and credit markets, not non-market valuation of ecosystem services (ES).

Rationale for Workshop

STAC Workshop Proposal: Science Gaps to Support Market-Based Approaches

The Chesapeake Bay Program Budget and Finance Workgroup under the Enhance Partnering, Leadership and Management Goal Implementation Team maintains a mission to: “*Support the Chesapeake Bay Program (CBP) Partnership Goal Implementation Teams (GITs) in achieving the goals established in the Chesapeake Watershed Agreement by providing a platform for coordination, innovation, collaboration, and accurate reporting, which addresses budgeting, funding sources, and integrated financing strategies.*” To promote innovation and development of leading-edge financing strategies, this workshop will explore barriers to market-based economic strategies and bring the strength of the Chesapeake Bay Program Partnership to bear on making progress to overcome barriers.

This workshop is in direct support of an action commitment in the 2024 BFWG workplan item 1.a “Spotlight innovative finance by convening experts from projects or programs that employ innovative environmental financing”.

This workshop will extend the findings from a recently completed [STAC workshop \(June 2023\)](#) “Using Ecosystem Services to Increase Progress Toward, and Quantify the Benefits of, Multiple CBP Outcomes”. The proposed workshop will provide an opportunity to explore the findings from the June 2023 workshop, focusing on implications for ecosystem credit markets. The workshop recommended additional incentives, communication, diversification in markets, standardization in approaches, and alignment with Beyond 2025 efforts. The recommendations require a better understanding of what is and isn’t working with ecosystem credit markets currently active in the Bay watershed and across the country.

Overlap of ES market approaches and nutrient credits

The proposed workshop will advance the Partnership response to the STAC report “Achieving Water Quality Goals in the Chesapeake Bay: A Comprehensive Evaluation of System Response” (CESR) including the following specific findings and recommendations:

- “Additionally, developing new financial incentive programs, such as pay-for-performance or pay-for-success programs, could reward treatment of high-loss areas or operations and encourage adoption of potentially more effective practices (Talberth et al., 2015)” CESR pg. 41
- “... efforts to reduce nonpoint sources have not produced sufficient levels of BMP implementation to meet the TMDL...” CESR pg. 75

Market-based solutions have the potential to spur innovation, as long as the regulatory framework driving the market allows this to occur. Markets, also when allowed, will function to efficiently allocate resources and drive towards more efficient solutions. Stephenson and Shabman (2023) identified barriers to innovation and cost effectiveness within existing Chesapeake Bay water quality markets. This workshop will highlight these barriers and work towards a pathway to removing them while identifying transferrable lessons for other ecosystem credit markets. Stage setting questions include:

- Where do ES credits get generated and by whom? What if state or federal funds created the creditable reduction, who owns those credits and can they be marketed?
- What prevents private investors from participating in ecosystem credit markets?
- What are the continuing barriers to nutrient credit trading? How do we measure nutrient benefits (% reduction v. measured reductions)?
- What is needed to allow point v. non-point source equity? How can market-based approaches move the partnership ahead on non-point source implementation?

Proposed Questions to Answer at Workshop

- Is it possible to achieve cost efficiencies for nutrient reduction while also maximizing co-benefits, i.e. progress towards other outcomes? What is that pathway?

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- How have projects funded through markets or pay for performance programs performed in terms of providing co-benefits? How do they compare in terms of environmental justice?
- What are specific policy measures needed to allow BMP innovation, pay for outcome, targeted farm or watershed based implementation, and what are the implications for achievement of outcomes beyond water quality?
- How can certainty in performance outcomes be increased and communicated to the market?

Workshop Planning and Organization

The organizers envision a day and a half meeting with both in-person and virtual attendance. To be held either in November 2024 or January 2025. For a November meeting, all planning and commitments will be finalized by the end of September, and for a January meeting by the end of November. Day 1 will include presentations by subject matter experts, break-out sessions where attendees discuss the information presented, gaps in the current understanding, and applications. Day 2 will focus on presentation of potential solutions and synthesizing findings in breakout sessions.

Proposed Guest Speakers and Participants

This topic is of great interest at both the state and federal level and we anticipate being able to attract leading experts and practitioners in the field to speak at this event. The following topic areas are likely to be included in the workshop: carbon markets (separate speakers for blue, green, and agricultural soil carbon crediting), nutrient credits and trading, methods for bundling credits/achieving multiple benefits, and the implications that ecosystem markets have on environmental justice.

Workshop Products

Summary report that highlights lessons learned from the examples given at the workshop, identifying gaps, barriers, and opportunities. The report will chart a pathway towards growing ecosystem credit markets in the CB watershed, with a focus on identifying how these markets could help achieve CBP goals more quickly and cost efficiently.

Tentative pre and post-workshop timeline

Time Frame	Task
February 2024	Proposal development
April 2024	Refine the proposal with Steering Committee- 4-5 meetings
September 2024	Final agenda and all recruiting of members and speakers
January 2025	Conduct the workshop
April 2025	Workshop draft report out for review and final comment
June 2025	Final report

Budget

For a workshop with 50 attendees (30 in-person, 20 online), we anticipate the breakdown of costs to be:

- Facility with AV support - \$3,000, possibly the Governor Calvert Inn, Annapolis Md
- Travel and per Diem - \$5,000 (for critical participants that are not able to cover travel expenses)
- Food - \$2,000 Breakfast and lunch x 2 days; dinner self-pay
- Honorarium – not expected