Overcoming the Hurdle: Addressing Implementation of Agricultural Best Management Practices (BMPs) Through a Social Science Lens

Scientific and Technical Advisory Committee Virtual Workshop Report July 13-14, 2021

STAC Publication 22-002

About the Scientific and Technical Advisory Committee

The Scientific and Technical Advisory Committee (STAC) provides scientific and technical guidance to the Chesapeake Bay Program (CBP) on measures to restore and protect the Chesapeake Bay. Since its creation in December 1984, STAC has worked to enhance scientific communication and outreach throughout the Chesapeake Bay Watershed and beyond. The STAC provides scientific and technical advice in various ways, including (1) technical reports and papers, (2) discussion groups, (3) assistance in organizing merit reviews of CBP programs and projects, (4) technical workshops and (5) interaction between STACSTAC members and the CBP. Through professional and academic contacts and organizational networks of its members, STAC ensures close cooperation among and between the various research institutions and management agencies represented in the Watershed. For additional information about STAC, please visit the STAC website at http://www.chesapeake.org/stac.

Publication Date: October 12, 2022

Publication Number: 22-002

Suggested Citation:

Collins, L., Stephenson, K., Palm-Forster, L., Power, L., Gibson, A., Arbuckle, J., Handen, A., Fowler, L., and Read, D. 2022. Overcoming the Hurdle: Addressing Implementation of Agricultural Best Management Practices (BMPs) Through a Social Science Lens. STAC Publication Number 22-002, Edgewater, MD. 107 pp.

Cover graphic from: Will Parson, Chesapeake Bay Program

Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

The enclosed material represents the professional recommendations and expert opinion of individuals undertaking a workshop, review, forum, conference or other activity on a topic or theme that STAC considered an important issue to the goals of the CBP. The content therefore reflects the views of the experts convened through the STAC-sponsored or co-sponsored activity.

STAC Administrative Support Provided by:

Chesapeake Research Consortium, Inc.
645 Contees Wharf Road
Edgewater, MD 21037
Telephone: 410-798-1283
Fax: 410-798-0816
http://www.chesapeake.org

Workshop Steering Committee:
Loretta Collins (Chair), University of Maryland, Chesapeake Bay Program
Kurt Stephenson*, Virginia Tech
Leah Palm-Forster*, University of Delaware
Lucinda Power, Environmental Protection Agency, Chesapeake Bay Program Office
Allyson Gibson, Lancaster Clean Water Partners
J. Arbuckle, Iowa State University
Amy Handen, Environmental Protection Agency, Chesapeake Bay Program Office
Daniel J. Read, University of Maryland Center for Environmental Science

Workshop Participants
See Appendix B

STAC Staff:
Meg Cole, STAC Coordinator, Chesapeake Research Consortium

Workshop Facilitation Team:
Lara Fowler*, Penn State
Kristen Saacke-Blunk, Headwaters, LLC
Jackie Pickford, CBP Staff, Chesapeake Research Consortium
**STAC member*

Acknowledgements:
Lisa Wainger, University of Maryland Center for Environmental Science
Denice Wardrop, Director, Chesapeake Research Consortium
Elizabeth Nellums, Environmental Consultant
Megan Ossman, CBP Staff-Chesapeake Research Consortium
Breck Sullivan, CBP Staff-Chesapeake Research Consortium

Special Thanks:

THRIVING AG

Funded by USDA's National Institute of Food and Agriculture (NIFA) Thriving Ag is working to create economically thriving and environmentally beneficial agricultural systems in urbanized landscapes. https://thrivingag.org/

Acronyms Used in Report

ACPF	Agricultural Conservation Planning Framework
BMP	Best Management Practice
CBP	Chesapeake Bay Program
CBW	Chesapeake Bay watershed
GIS	Geographic Information System
NGO	Non-Governmental Organization
NRCS	Natural Resources Conservation Service (USDA)
P4P	Pay-For-Performance
RC&D	Resource Conservation and Development Council
TA	Technical Assistance
TMDL	Total Maximum Daily Load
TSP	Technical Service Provider
USDA	United States Department of Agriculture
GIT	Goal Implementation Team
WQ	Water Quality

Recurrent Terms:

Agricultural service provider: anyone who works to provide technical or managerial support to farmers, whether conservation-related or otherwise and potentially have influence on management decisions made by farmers. Several terms are used interchangeably: technical service providers (TSPs), technical advisors and conservation professionals. May also include representatives of from agriculture retail outlets.

Agricultural retailers: sellers of seeds, nutrients, crop protection products, farm equipment, precision technology and agronomic services.

Community: use of term changes depending on the context of the conversation. May refer to public or private stakeholders (e.g., agribusiness, government, consumers, residents). Clarity is provided where necessary.

Commodity production system: system encompasses all the participants in the production, processing and marketing of an undifferentiated or unbranded farm product, including farm input suppliers, farmers, storage operators, processors, wholesalers and retailers involved in the flow of the commodity from initial inputs to the final consumer.

Conservation practices: used interchangeably with best management practices (BMPs) to indicate any on-farm treatments, such as a structural or vegetative measure, or management techniques used to reduce degradation of local soil, water and air quality.

Conservation professional: anyone who works primarily to implement soil and water conservation practices (BMPs) on private farmland. Includes government and private employees.

Cover crop: a plant that is used primarily to slow erosion and nutrient loss to waterways, improve soil health, enhance water availability, smother weeds, help control pests and diseases, and increase biodiversity. A long-term investment in improving soil health and farm management.

Cost-effectiveness: assessment of BMP cost-effectiveness depends on desired outcomes.

- Private outcomes: conservation practices with agronomic or on-farm benefits (cover crops, tillage practices, etc.), with attention paid to the time it takes to accrue said benefits. (e.g., fertilizer precision management practices *with lesser need for subsidizing- supply chain encouragement*)
- Public outcomes: conservation practices with little agronomic or on-farm benefits. Practices with relatively high upfront costs but that offer substantial opportunity to "move the needle" in terms of reductions in nutrient loss (e.g., manure conversion projects, denitrifying bioreactors, riparian buffers practices *with greater need for subsidizing*)

Critical source area: a site with a high likelihood of relatively high levels of pollutants entering waterways.

Farmers: any individual or family operating a farm that provides food and/or fiber to support agricultural markets. Also referred to as farmer operators, operators or producers throughout the workshop.

Model: given the context and sponsorship of this workshop, "model" often refers specifically to the Chesapeake Bay Program's Watershed Model but could also signify other models or tools that are used to predict environmental outcomes based on a series of inputs, that are either measured or estimated, based on a series of assumptions.

Monitoring: use of this term shifts depending on frame of reference. May mean monitoring of the physical/chemical attributes of a specific water body or be in reference to tracking and monitoring of BMP implementation. Context is provided where necessary.

Table of Contents

Executive Summary

The agricultural sector is a key part of the solution for achieving long-term water quality goals established by the Chesapeake Bay Program (CBP) partnership. Current levels of best management practice (BMP) adoption on agricultural lands are not sufficient to meet pollutant reduction goals across the Chesapeake Bay watershed (CBW). In this workshop, agricultural service providers across public and private sectors were invited to propose and discuss ideas on BMP adoption and implementation garnered from their own experiences.

The main points that emerged from the workshop are: 1) BMP adoption strategies need to be flexible and adaptable to the specific circumstances of individual farm operations (i.e., one size *does not* fit all), and 2) conservation programs should be designed with outreach needs in mind in order to reach a much broader range of farmers, especially those in critical source areas[1] and those who do not typically seek conservation technical assistance. The recommendations found in this report were formulated by the steering committee based on what was heard over the course of three workshop sessions, taking in mind the words below:

> *"The incredible complexity of delivering resources to farms creates an unusual amount of waste of public resources and it is frustrating to farmers. So, I think **focusing on how to deliver those resources quicker and with less complexity is crucial**. There needs to be a sense of urgency about that. There is a lot of talk, but how do we fix it? A sense of urgency would go a long way in getting people to engage and be willing to do things. I hear all the time, "We had a farmer hooked and by the time the funding came in they had quit." Not surprising. Their energy went somewhere else. A very basic concept: **Everything has an opportunity cost. If you make being a responsible citizen too difficult or complicated, they'll go do something else.**" - Closing Remark from Day 3 Participant*

Recommendation #1 (Streamline):
The CBP should support the collaboration of federal, state, county, and non-governmental partners (NGOs) in accelerating efforts to streamline conservation programs so that farmers can enroll easily, and conservation professionals can manage projects efficiently.
Proposed CBP Partner(s): Management Board, funding organizations

Recommendation #2 (Value Relationships):
The CBP should support program managers and designers by allocating resources for program design that enable the time necessary for building and nurturing trusted relationships between conservation professionals and farmers.
Proposed CBP Partner(s): Management Board, funding organizations

Recommendation #3 (Creative Incentives):
The CBP should support scalable programs across the CBW related to Pay-for-Performance and other incentive structures using common program design techniques such as steady payments over time, committed funding sources, compatibility with the CBP's BMP crediting system, communication and outreach.
Proposed CBP Partner(s): Management Board

[1] **Critical source area -** site with a high likelihood of relatively high levels of pollutant delivery to waterways

Recommendation #4 (Differential BMP Crediting):
The CBP should develop and implement a clear and consistent BMP crediting system in which pollutant load reduction credit reflects the relative impact of implementing BMPs in critical CBW landscapes.
CBP Partner(s): Scientific, Technical Assessment & Reporting (STAR) Team and relevant workgroups, Water Quality Goal Implementation Team, Modeling Team

Recommendation #5 (Local Success):
The CBP should use available localized information and data to craft and disseminate success stories.
Proposed CBP Partner(s): CBP Strategic Engagement Team, Scientific, Technical Assessment & Reporting (STAR) Team and relevant workgroups, Agriculture Workgroup, Local Leadership Workgroup, Local Government Advisory Committee (LGAC), Citizens Advisory Committee (CAC), Strategic Engagement Team, Chesapeake Monitoring Cooperative

Recommendation #6 (Communication):
The CBP should develop a communication strategy to directly engage agriculture-minded audiences on the opportunities and limitations of the Chesapeake Bay Watershed Model and other available decision support tools.
Proposed CBP Partner(s): Scientific, Technical Assessment & Reporting (STAR) Team and relevant workgroups, CBP Strategic Engagement Team, Strategic Engagement Team, Agriculture Workgroup

Recommendation #7 (Peer Learning Exchange):
The CBP should establish quarterly workshop sessions for agricultural service providers that cross CBW jurisdictional boundaries to discuss BMP implementation strategies.
Proposed CBP Partner(s): Agriculture Workgroup, Local Leadership Workgroup, Local Government Advisory Committee (LGAC), Citizens Advisory Committee (CAC), funding organizations

Recommendation #8 (Institutional Knowledge & Capacity):
The CBP should support **new incentive** structures for the development and retention of conservation professionals. Strategies will vary depending on the organizational framework of conservation districts in each of the six Bay states.[2]
Proposed CBP Partner(s): Management Board

Recommendation #9 (Professional Training):
The CBP should support partners in adapting capacity needs to local areas (e.g., training in leadership and social engagement strategies).
Proposed CBP Partner(s): Management Board, Local Government Advisory Committee (LGAC), Local Leadership Workgroup, Agriculture Workgroup, CBP Strategic Engagement Team, Strategic Engagement Team

Recommendation #10 (Research Synthesis & Application):
The CBP should support collaboration amongst CBW partner organizations to synthesize relevant social science knowledge and distill what we already know about behavior as it applies to conservation decision-making.
Proposed CBP Partner(s): Chesapeake Research Consortium (CRC), The Center for Behavioral & Experimental Agri-Environmental Research, Management Board, Fostering Chesapeake Stewardship Goal Implementation Team, CBP Strategic Engagement Team, Strategic Engagement Team

[2] There are no conservation districts in Washington, D.C.

Introduction

Background

As partners across the Chesapeake Bay watershed (CBW) look towards 2025 and achieving the levels of programmatic implementation necessary to achieve the goals outlined in the 2014 Chesapeake Bay Watershed Agreement, many questions linger regarding the feasibility of implementing all that is framed out in the CBW jurisdictions' Watershed Implementation Plans (WIPs). While there are still improvements to be made in the wastewater sector, particularly among smaller localized facilities, most future progress in nutrient and sediment load reductions is expected to come from non-point pollutant sources. Many outreach efforts are underway in the urban/suburban sector to address pollutant loads related to stormwater run-off; however, it is generally accepted that a disproportionate amount of the remaining load reductions will need to come from management changes in agricultural landscapes due in part to prohibitively high costs associated with some urban stormwater BMPs. The workshop described here builds off the outcomes of previous STAC-sponsored endeavors, listed below, by engaging the social science of agricultural BMP adoption, allowing for a better understanding of the factors influencing management choices in the agricultural community.

> *2011: Integrating the Social Sciences into the Chesapeake Bay Program*. This workshop was a beginning effort to integrate social science into the Chesapeake Bay Program (CBP), acknowledging that human behavior is possibly more complex than the Bay ecosystem in question.
> *2012: Chesapeake Bay Goal Line 2025: Opportunities for Enhancing Agricultural Conservation Conference Report*. Identified themes important to increasing BMP implementation, but the underlying socio-economic characteristics that impact these themes were not considered.
> *2015: Exploring Applications of Behavioral Economics Research to Environmental Policy-Making in the Chesapeake Bay Watershed*. The driving goal of the workshop was to broaden participants' understanding of the impact of behavioral economics on CBP partnership activities and to be a stepping-stone to further integration of social science principles into partnership commitments and strategies. After this workshop, the Center for Behavioral and Experimental Agri-Environmental Research (CBEAR) was established at the University of Delaware.
> *2020: Increasing Effectiveness and Reducing the Cost of Non-Point Sources Best Management Practice (BMP) Implementation: Is Targeting the Answer?*. The goal of this workshop was to investigate opportunities to improve the effectiveness of nonpoint source BMPs through refined targeting of high loss areas and treatment options. While the workshop discussed techniques and policies to incentivize treatment of high nutrient loss areas, it did not broadly examine the agricultural conservation adoption literature.

Justification

Understanding of the complex nature of the Chesapeake Bay ecosystem continues to evolve with experience and new research. Current scientific understanding has resulted in a suite of BMPs aimed at returning the Bay and its tributaries to an improved level of functionality. Less is known at the CBP about the role of behavior change in environmental decision-making and how these behavioral dynamics can be more effectively utilized to result in sustainable improvements in the health of the CBW. Agricultural BMP adoption and implementation requires buy-in from a diverse array of stakeholders, and legislative achievements across all CBW jurisdictions have indicated things are moving in the right direction. To ensure continued success, the agricultural community is being asked to accelerate BMP implementation without proportionate increases in the financial and human resources needed to do so. There is an urgent need to identify ways to ensure every dollar goes farther, while also maintaining the viability and sustainability of agricultural

operations. It is also time to look more critically at our human resources and understand where there is opportunity to shape individual decision-making within the agricultural community in such a manner not only beneficial to the health of the Bay and local waters, but also the psychological, physiological and economic well-being of the farmers on whom society depends on.

The intent of this workshop was to bring together a broad swath of expertise from the social science, policy and practical ("boots-on-the-ground") realms to provide actionable recommendations to the CBP partnership that address the underlying socio-economic characteristics and engagement approaches that will result in farm management modifications necessary to achieve nutrient and sediment load reduction goals, while also fostering viability within the agriculture sector. The CBP is currently embracing the idea of using social science-based behavior change models to inform and improve its work towards the goals and outcomes detailed in the 2014 Chesapeake Bay Watershed Agreement. Due to limited availability of resources, tying implementation and programming to high impact behavior change is integral to achieving the desired outcomes. Several CBP Goal Implementation Team (GIT) members have taken behavior change/social marketing training to inform their work and the CBP Management Board (MB) has made a commitment to prioritize application of behavioral change strategies as a critical tool for achieving desired Bay watershed outcomes. There is now recognition among CBP partners that information and education are important but will not alone result in substantive behavior change. Efforts are evolving that will incorporate social science approaches across the GITs and their associated workgroups, with the Citizen Stewardship Workgroup leading the charge.

Workshop Summary

General Structure of Workshop

Due to the limitations imposed by the historic COVID-19 pandemic, this workshop was held in a virtual setting. This resulted in the loss of some potential participants with a strong preference for face-to-face interactions, but the end result was likely increased participation because travel time and cost were not barriers. In order to minimize "Zoom fatigue" the workshop was spread over three mornings, each no longer than three hours in length.

Each day began with a 30-minute introductory presentation and orientation, followed by hour-long small group (7-10 participants) breakout working sessions, a 15-minute break and a full-group report-out/discussion/debrief. Participants were encouraged to participate in the discussion as they felt comfortable: speaking up, via the Zoom chat function and via Jamboard (a virtual sticky-note board that allows for anonymity). There was also the option of emailing facilitators directly or leaving thoughts in an anonymous virtual "parking lot" between meetings. Each breakout group was equipped with a facilitator and a note-taker. The discussions were not rigid in structure, allowing groups the freedom to follow different lines of thought. a profile of those that attended the workshop can be found in Appendix B.

The following three sections summarize emerging themes from each day and participant comments. Detailed notes can be found in the appendix of this report.

Day 1: Envisioning the Future (Great Water Quality, Resilient & Profitable Farms)

Workshop organizers set the stage by providing a very brief overview of the factors that impact achieving water quality goals on farmland based on social science literature (Fig. 1). The following section is a report-out on participant conversations.

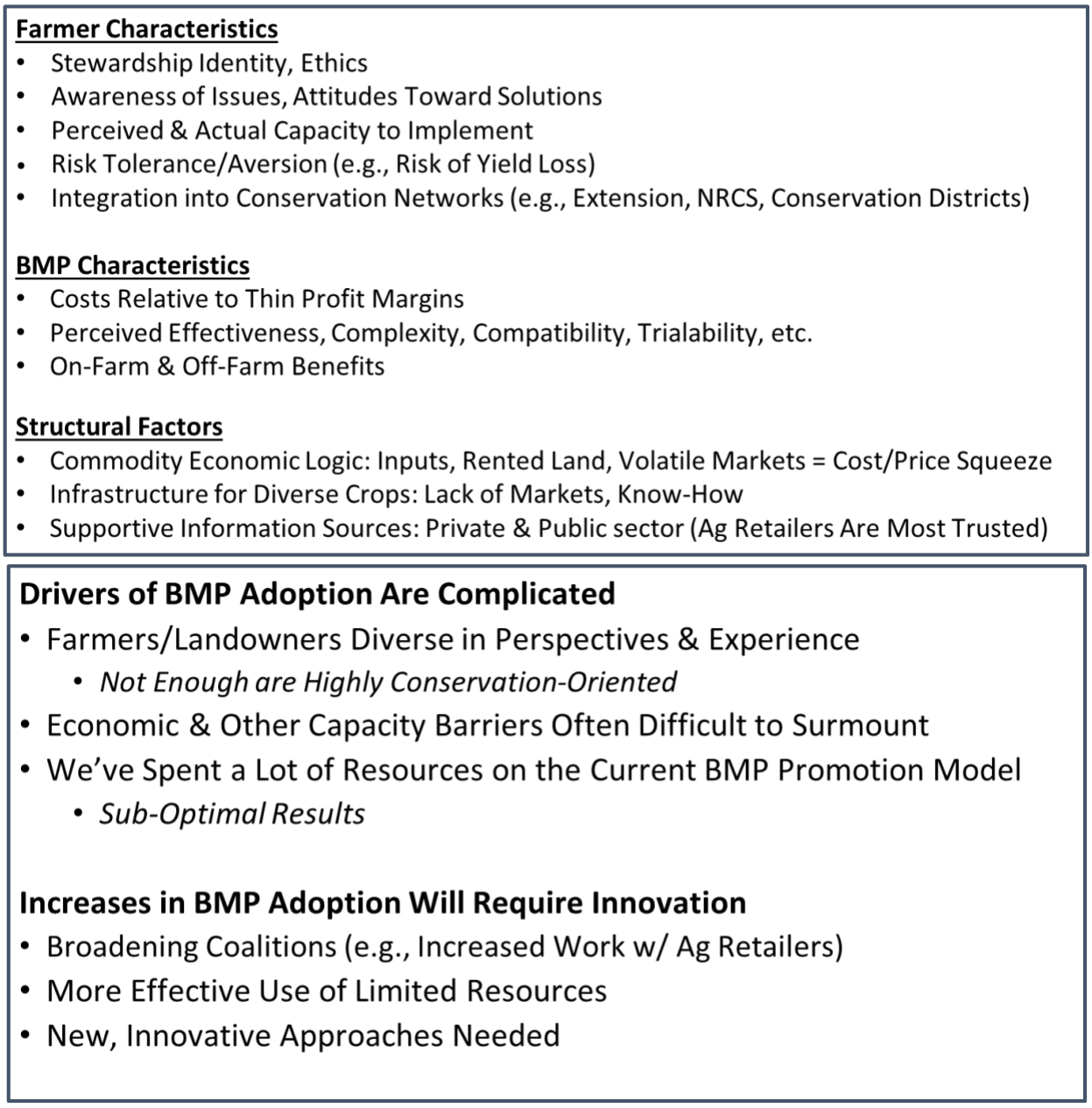


Figure 1. Factors that influence BMP adoption by farmers.

Break-out Summary

Imagine an ideal future where we've overcome the hurdles and met agricultural nutrient and sediment reduction goals in the CBW. It's 2031—We have scaled and accelerated conservation implementation and have sustainable agriculture across the CBW and are meeting other Bay-wide restoration goals.

- *What does this look like?*
- *How did we get there?*
- *What programs exist to support this?*

What are the challenges and limitations to this 2031 vision?

In 2031: a paradigm shift

- **Water quality is local and therefore meaningful.** A clear focus on improving water quality at the local level exists by thinking "at the local level". This has meant acceleration of Bay recovery, without residents needing a connection to the Bay to make it happen.
- **A culture of good stewardship is dominant in agriculture.** Management strategies change because conventional farming is not deemed sustainable. Conservation is considered to be as integral in farm planning as production goals. "Long-term conservation stewardship" is a common component of farm management planning. Generational succession on-farm means more willingness to adopt alternative management strategies.
- **Manure is always a resource, never a waste.**
- **Ag retailers and their consultants are fully engaged in supporting precision in agriculture.** Focus has shifted from maximizing yield goals to emphasizing cost-to-benefit analysis and maximizing profitability. This allows conservation management and profitability to co-exist in ag operations.

In 2031: the typical farm

- **Farms are sustainable and profitable** with reliable income for agricultural products, soils are healthy, streams are buffered, nutrient rich food is standard, manure is managed as a resource and producers have implemented BMPs that are climate (flood, drought) and market resilient.
- **Regional farms and diversification in management is thriving**. Crop rotations are the norm, as is further integration of organic and tillage management. Conservation and manure plans are fully implemented. There is ample space in the market for smaller regional farms. Non-productive/marginal ground is put to better use than cultivation.
- **Local on-farm field trials are common-place,** providing real-world data and solutions accessible to farmers, as well as opportunities for peer-to-peer networking opportunities.

In 2031: scientific, technical and financial capacity

- **Funding and effort are targeted effectively**, with critical source areas identified and BMPs focused on critical areas (hot spots) and for critical time periods (hot moments). Efforts are more focused on addressing projects at a sub-watershed level.
- **"Pay-for-Performance" is accessible and utilized across the CBW** as a market-based

program with payments for pounds of pollutant reduced supported by on-going verification at appropriate scales for payments and performance outcomes.

- **Technical assistance is robust with a cohort of well-trained people across the watershed who have (or can) build trust**, including through "gateway" projects like energy audits. Training programs through colleges/universities are well developed to produce a "pipeline" of expertise. Constructive connections with the private sector help to advance BMPs.
- **Access to technology to address regional nutrient imbalances is widely implemented** so that nutrients are then sent to areas that are nutrient poor. Technological advances are readily approved without redundancies in requirements and funding is possible for large-scale infrastructure technologies because the price per pound for pollution reduction makes such investment worthwhile.
- **There is a uniform BMP tracking and reporting system** that has sensible and reasonable goals with a neutral third-party data collector who can provide solid information ("Who you listen to and what information is out there is different from how information is collected and shared.") Farmers are given credit for work they are doing.
- **Financial support and "positive incentives" are available**, with price premiums paid for good stewardship practices, discounts for services (loans, insurance) for those implementing critical BMPs, steady or increasing payments over time, and support for on-going maintenance that appropriately addresses climate- or market-related risks.
- **Innovative funding mechanisms make BMP implementation swift and streamlined.** Cost-share funding structures are flexible and reliable to accommodate a spectrum of needs.
- **Localized water quality monitoring networks are robust** allowing for a better understanding of direct impacts of conservation management on water quality trends and illustrating what is having an impact (and what is not).

In 2031: advancement in communication and behavioral strategies

- **Agencies have adopted a "farmer"-centered approach** versus a "program"-centered approach, with more straightforward messaging (streamlined goals, objectives, funding mechanisms, simpler messages); easy access to materials or equipment; sufficient staffing; easier participation for farmers (fewer hurdles, less frustration, fewer bottlenecks, quicker turnaround, more time/flexibility); easier paperwork (see Maryland's water quality cost share program, link); lower barriers to adopting new ideas or technologies; adaptation to conditions like drought; openness to innovation; and more funding for larger projects.
- **Ways to meet farmers and producers where they are have been tested and established**, whether they are Plain Sect or others. We are celebrating the diversity of farms [production (e.g., dairy), farm type] and working with farmers, having cultivated trusted messengers (including liaisons to under-served communities or third parties to streamline projects) and messages that may link to other values, including being good stewards and protecting local water quality for their family and neighbors. We've found a way to work with both land renters and owners to implement BMPs.
- **Peer-to-peer networking and learning opportunities are expansive** in reach and audience. Outreach and education opportunities are universally available and accommodating of on-farm priorities.

In 2031: community support

- **Robust community support exists at multiple levels**, including through peer-to-peer outreach/engagement; for transition planning; and ag/watershed groups or coalitions in local watersheds. We are celebrating success in a variety of ways that meet farmer needs/preferences and showing how the agricultural sector is "doing its part" to address critical water quality challenges.
- **Informed consumer demand drives conservation by influencing markets and policy decisions** with their wallets, releasing the burden of highly effective, but costly, water quality BMPs off of farmers. Farmers are paid equitably for products.
- **Communities (tied by cultural, political and geographic boundaries) are united in common goals** and cultural awareness opens opportunities to underserved communities.

Full Group Discussion Summary

Areas of interest have been collected into general thematic clusters: Community Support/Collective Goals, Communication/Messaging, Systemic Challenges and Solutions, and Economic Incentives and Challenges. There are many areas of overlap across these clusters and themes are recurrent throughout the workshop.

Community Support/Collective Goals (private and public sector)

Community supported BMP adoption, building social momentum through local support, peer-to-peer learning: Participants stressed the need for community support for shared water quality goals and determining the best way to achieve them. This includes employing community liaisons to encourage BMP adoption and putting resources towards relationship and coalition building through dedicated staff. Expanding service provider networks was identified as a critical need, as was focusing on solutions-based approaches such as leveraging "gateway practices" (e.g., extreme weather mitigation practices) that starts the dialogue and sets reluctant BMP adopters on a path of enhanced conservation.

Power of the group: The discussion centered around the thought of outreach in terms of curated groups instead of individuals. This could take the form of local watershed groups that work directly with farmers (e.g., Resource Conservation and Development Councils[3] (RC&Ds), water and agricultural councils that exist in every watershed and other examples cited in Vermont and North Carolina). The group also discussed the option of bundling services through enhanced networking, while. The Virginia Forage and Grassland Council provided examples of mentor-mentee programs. It was also mentioned that a focus on smaller catchments to delist local streams can serve as a common goal to bring neighbors together, providing focus to funding efforts and targeting for most effective BMPs. Neighbors can influence other neighbors through a shared goal.

Competition as a motivator: It was discussed that competition for higher payments based on nutrient/sediment reductions could be an incentive for BMP adoption. There was indication that farmers enjoy friendly competition with low stakes, but high stakes can be problematic. There is potential to stifle engagement or inhibit sharing and supporting others through competition. Some suggested that water quality is a collective challenge and competition does not support working together.

[3] National Association of RC & D Councils website

Communication/Messaging

Speaking a shared language, identifying common goals, and communicating successes and misses: Common, understandable language is essential. If communication gets too technical or complicated, people will disengage. Additionally, coordination between public and private organizations is critical to ensure that farmers are not receiving conflicting messages or being overwhelmed by disjointed efforts to promote agricultural conservation. Telling effective stories of successes and acknowledgements of good work with consideration of cultural preference and local nuances is motivating.

Trust in monitoring rather than modeling: A recurrent theme was that farmers have more trust in monitoring data (nutrient and sediment, biological and physical metrics) than modeled outcomes (e.g., Chesapeake Bay Watershed Model). Farmers are more likely to get involved (and trust) if they truly know that the stream is impaired based on localized physical data. There was strong interest amongst the group to use local monitoring data as a communication tool to indicate what is working and what is not working upstream as far as BMP implementation. Proof-of-concept in BMP implementation facilitates greater adoption and helps identify local critical source areas. Such localized data could also help stakeholders have more confidence in the identified sources of pollutant loads. Participants wondered if there are sources of monitoring data that have not been tapped into. Can water treatment/municipal water suppliers fill in some of the gaps? Some of the current resources mentioned include the Chesapeake Monitoring Cooperative[4], which offers expansive availability of data. Each state releases an Integrated Report of Surface Water Quality every two years, mandated by the Clean Water Act, that provides methods on which and how streams are labeled impaired. How could more farmers be brought into these efforts? There was a sense that a lot of data exists that is not integrated into planning and decision-making. What can we learn from short-term, rather than long-term trends (10-20 years)?

System Challenges and Solutions

Flexibility emerged as a key theme: Inconsistent streams of funding impact outreach and technical assistance and inhibit relationship-building with farmers. Streamlining and simplifying funding for faster rollouts is a critical step to engaging reluctant BMP adopters. It is not uncommon for conservation projects to juggle multiple funding sources with different rules and requirements. Trout Unlimited was cited as an example of an organization that works directly with farmers to address conservation needs but takes care of contract and cost-share requirements, while implementing structural practices to reduce workload on farmers. There was discussion of whether RC&Ds can play a bigger role, but federal funding for regional councils has been unpredictable and cumbersome in the past.

Expanding the conservation workforce: There are not enough contractors and conservation district staff to meet demand, although the needs vary depending on location and type of practice. Engineers for structural BMPs are in short-supply and getting designs completed to meet farmer timelines is a struggle. Local organzations/agency investment in equipment is needed (e.g., roller crimpers, post drivers, weed wipers, no-till drills) to facilitate BMP implementation with available staff.

[4] Chesapeake Monitoring Cooperative website

Land Ownership: A significant portion of cultivated land in the CBW is leased by farmers. Lease agreements are often short-term and sealed with a handshake. Why invest time and energy in land that may be gone next year? Long-term leases are needed to ensure return on investment (ROI) for farmers. Providing tax incentives for prioritizing conservation in leasing agreements could serve as motivation for landowners. There was also conversation around the continued need for successional farm planning to adapt to generational changes that occur in on-farm management. Because conservation planning must be viewed through a long-term lens, it is critical that both the next generation on family farms and beginning farmers are equipped to make long-term decisions in a business that can have wild short-term fluctuations.

BMP Design and Innovation: Simplifying the infrastructure and reducing skill and labor requirements lowers the cost of BMPs. An example would be allowing the use of semi-permanent fencing instead of permanent fencing for pastures that intersect riparian corridors. Participants expressed a need for the rapid approval of innovative technologies.

Contemporary agricultural systems: Prevailing commodity production systems (i.e., corn-soy-meat) create a major driver of excess nutrient pools and loss. Can we adapt agricultural systems to better mimic nature rather than fighting it?

Economics Incentives and Challenges

BMP cost-effectiveness for society (outcome-driven) or farmers (wallet-driven): "Dependent" BMPs are driven by water quality outcomes. An example is structural BMPs that are costly up-front, but effective. They best address direct stream delivery and withstand big storm events (e.g., waterways, diversion, barnyard and manure storage). Over the lifetime of such practices, the cost per pound of nutrient reduction is relatively affordable given the benefits. "Independent" BMPs happen whether or not water quality is improved (wallet-driven). Independent BMPs are far more powerful and do not require monitoring (e.g., monitoring can undermine confidence in BMP efficacy if results don't show what you want!). Benefits include direct on-farm agronomic benefits, cost-share payments, as well as social benefits like improvement of water quality. General emphasis for BMP implementation has been on what is considered the most cost-effective for farmers through cropland BMPs.

Improving "public" benefits: Emphasis in the CBW has been on blanketing BMPs across agricultural landscapes rather than focusing on critical source areas. Identifying areas with disproportionate risk of nutrient and sediment loss, and identifying the appropriate BMP, can address program effectiveness, paperwork obstacles and monitoring needs. Better understanding of BMP performance against extreme weather events through storm-based performance metrics and under various hydro-climatic conditions will continue to be appealing now and into the future.

Better BMP incentives: Pay-for-performance compensation models appeal to both farmers and service providers. These models value BMP implementation based on localized calculations of pollutant reductions, rather than average effectiveness values. Higher payments for BMP placement in critical source areas could encourage BMP adoption among reluctant adopters. Market-based incentives based on consumer demand (voting with wallets) is also an area of growing potential. Value-added products and practices and deriving income opportunities for areas of lost production need further exploration.

Sometimes it is not the money: Although farm profitability is key to effective BMP adoption, in some places funding is not the issue—changing behavior is the real challenge. Generational changes need to be considered. It is important to note that many farm operators do not rely on the farm as their sole source of income.

References shared by participants:
Covey, S. M. R. (2008). The speed of trust. Simon & Schuster.
Website: https://www.speedoftrust.com/

Day 2: Solutions - How Do We Get There?

Day 2 began with a brief poll (see Appendix C) and a review of key messages culled from Day 1 with the full group. This section is a report-out on participant conversations. Day 2 was focused on envisioning solutions.

Break-out Summary

Agricultural BMP implementation is critical to achieving our shared WQ goals. The agricultural BMPs in place now are not proving as effective as we had hoped in terms of preventing nutrient and sediment losses from agricultural lands. Why is this? How can we improve BMP effectiveness and adoption rates?

Each group was asked to consider the scenarios (See Appendix D) that may help with the following challenges:

- *Engaging farmers that have not previously prioritized BMPs (i.e., reluctant adopters).*
- *Improving adoption of BMPs with high public (WQ) benefits, but low private (on-farm) benefits.*
- *Implementing BMPs in landscapes and by farmers that can generate cost-effective reductions with limited budgets (i.e., "Bang-for-the-Buck").*

Scenario 1: Expanded Use of Spatial Prioritization (Technical Targeting Tools)

Participants in this group represented a range of perspectives, from the less familiar and curious to very positive, about the use of spatial prioritization. People thought this could be a useful tool, particularly if the cost of ground truthing the tools could be reduced (see below) and potentially create more value-added tools for screening areas of potential. Currently, such tools are largely being used to sum up performance, not to target BMP application. They could be used to identify availability of pollutant reduction opportunities.

Streamlining BMP Implementation: Using tools upfront may help avoid a lot of paperwork to confirm BMP eligibility (especially early in the process or when confirming BMP adoption) and address economic needs (e.g., matching requirements or equipment and funding needs). Prioritization tools could be used to compare the "conservation efficiency factors" across different farm across local watersheds. Volunteers could use publicly available tools (e.g., aerial photos, satellite imagery, GIS) to find potential opportunities for BMP implementation through a community science approach. Farmers could work together at the catchment scale to identify

stream reaches with high sediment loads.

Refining outreach to farmers: Prioritization tools use landscape-level spatial data (both biophysical and social) to evaluate who might be most willing to adopt BMPs. This information could be useful to facilitate public/private sector outreach opportunities and organize field days in areas with lower adoption.

Challenges or barriers: There is a critical need to engage with both landowners and farm operators. Avoid "targeting" people as no one wants to be targeted. It is better to engage farmers from the beginning and to think about how their farm parcel may be an opportunity for BMP adoption. Information gathered with remote tools needs ground-truthing, which means staff time. Developing trust in tools is imperative, both for farmers and service providers.

Scenario 2: More Flexible Financial Incentives

Flexible incentives are about exploring different ways to motivate and encourage adoption outside of the cost-share framework. It is critical to focus on 1) farmers who are reluctant BMP adopters, 2) technologies (BMPs) that provide high public but low private benefits and 3) incentives that encourage treatment of critical source areas.

Designing Pay-for-Performance (P4P): Would P4P compensate producers on water quality services (dollar per pound of pollutant removed) provided rather than the cost to install a practice? How would payments be distributed? Could price rates for practices be provided upfront to increase farmer certainty in value? How would the baseline from which to begin counting reductions be determined? Is there certainty in payments over the long-term? P4P could be implemented as a primary way to fund conservation or as a supplemental system to existing cost share programs. For example—consider the [NRCS] Conservation Stewardship program, in which a farmer implements, and is paid in the usual way, but can sign up for additional payments by being a steward of that practice. Other P4P options include ranking programs based on dollar per pound of pollutant reduction.

P4P impact on water quality: Landscapes with higher risk for pollutant loss will get higher dollar per pound reductions. Many farmers are reluctant to adopt BMPs with significant costs and limited on-farm benefits. P4P can address this since payments are based on public water quality benefits, not just installation costs. An example of P4P potential is stream fencing. Many farmers are concerned about stream fencing because of upfront installation costs, potential high maintenance costs (e.g., wash out during storms) and the opportunity cost of land taken out of production. Additionally, overstocking (too many cattle per acre of pasture) is an important resource challenge, particularly for small, resource limited operations. Under existing crediting programs, farmers get the same payment and pollutant reduction credit for a stream fencing project regardless of stocking rate on the operation, thus providing the same reward for significantly different water quality outcomes.

Other questions: Would reluctant BMP adopters who have not participated more fully in BMP implementation be willing to participate in a program aimed at water quality results? Local-level administration is key to this engagement. How would funding be distributed in a P4P program among farmers? Would "big" farmers receive more?

Other incentives: Offering farmers, or a collection of farmers, financial rewards for achieving specific measurable outcomes (e.g., achieving reduced soil phosphorus levels on farm operations with high phosphorus soils).

Scenario 3: Using Insights from Behavioral Science to Plan Outreach Efforts and Design Conservation Programs

The focus of this group evolved from a program-centric model to a farmer-centric approach.

Re-framing the narrative: Farmers are a critical part of the solution (rather than a source of the problem). This will help build trust and develop new social norms for long-term impact. Building appreciation can motivate action (as opposed to "farmers are the bad guys").

Individualized needs: Individual farms, managers and communities are unique. We need to tap into different values, perceptions, needs and issues to move forward. Community-based social marketing campaigns vary in their approaches, but may include social media, focus groups, interviews, field days, community ambassador events, exchange programs (farmers visiting fisheries and vice versa) and recognition appropriate to the expected recipients.

Building and utilizing trusted networks: One-on-one, peer-to-peer and/or focused engagement combined with other approaches can lead to a snowball effect and therefore more adoption, especially if tailored to meet local needs. A farmer-built network and mentorship program may be important. Outreach professionals across organizations need to coordinate to share consistent messages.

Celebrating success: An accessible catalog of conservation success stories, profiling BMPs implemented, costs and professional contacts would be a valuable resource for CBW stakeholders. Can the CBP support a "sustainable agriculture" goal, akin to the "sustainable fisheries" goal?

Leveraging consumer demand: Consumer-driven markets for sustainable products can provide further incentive for BMP adoption if price premiums and niche markets are strategically developed.

Scenario 4: Rewarding Conservation Professionals for Reducing Nutrient and Sediment Loss from Agricultural Lands

Participants in this discussion liked the idea of rewarding people for promoting conservation practices but concluded that rewarding effective "conservation professionals" or people who work for an entity like a conservation district, is not a good idea because BMP implementation in conservation district offices is a team effort. Staff that focus on education and outreach may be overlooked and creating competition between agencies when cooperation is needed would be counterproductive. Additionally, conservation district staff have goals that extend beyond nutrient/sediment reduction as defined by the CBP's water quality outcomes. The discussion therefore turned towards staff retention and looking outside the districts' doors for rewarding conservation advocacy.

District staff retention: The CBW states vary in funding structures for conservation district staff, but all face staffing challenges. Districts need more consistent and reliable funding, especially

those districts with critical source areas. Participants indicated that setting state-level pay rates for district staff could help, as well as de-coupling district funding from the number of contracts by aligning funding more with impact of projects completed.

Expanding conservation capacity: Where conservation professional capacity is limited, perhaps farmers and crop advisors can step in to expand outreach in critical source areas. Further integrating agribusiness into conservation efforts through public recognition for agricultural retailers who help promote adoption of conservation practices is appealing. Providing meaningful incentives (e.g., compensation) to farmers in the community for talking with other producers, making referrals and engaging in the groundwork to increase BMP implementation (including higher bonuses for bringing in producers from critical source areas) could stimulate the effectiveness of peer-to-peer learning. Increased funding for conservation research and monitoring by university extensions is critical to success (e.g., support for extension research programs).

Scenario 5: A mix of scenarios, plus enforcement and other tools

Participants discussed the potential for a mix of tools. They noted that each idea above may be necessary, but any idea alone was not sufficient and constructive synthesis is needed.

Prioritize "hot spots" and temporal "hot moments": Outreach and collaboration between several partners is key to effective placement of BMPs. Trust in the Chesapeake Bay Watershed Model (or any model) is insufficient and too complex to incentivize conservation. Monitoring at the same spatial/temporal scale as BMP targeting is critical. Is an effective spatial scale around 10-20 farms in a smaller catchment? See Lancaster (PA) Clean Water Partnership approach as an example: link. There is a need to think about what metric or activity is the target for improvement (e.g., streambank erosion).

Financial incentives: Who would be the focus of P4P? Will P4P engage reluctant adopters? Monitoring is critical; monitor at the same spatial scale as the P4P payments. There is a need for a holistic/collective approach to management and water quality outcomes, beyond one BMP at a time.

Regulatory enforcement: Participants did not see a need for additional regulations, but rather consistent enforcement of existing ones. This would be a welcome change for some (particularly those already in compliance), but not for everyone.

"Teachable" moments: When a farmer wins an award, there is an opportunity to instruct peers on BMPs. How can the CBP partnership better leverage media attention on CBW farmers to disseminate impactful information?

Full Group Discussion Summary

Meeting farmers and producers where they are was a repeated theme from the breakout sessions and the general discussion. At the end of the session, the opportunity to leverage other drivers for water quality progress were considered. For example, can MS4 requirements be met through agricultural practices? These types of trade-offs are occurring in Pennsylvania and could possibly be replicated in other Bay states.

Pay-for-Performance: Interest in P4P was high, but raised questions, such as how to effectively market such incentives to reluctant BMP adopters rather than reward and incentivize even higher levels of conservation by those already advanced in conservation management. What should be the established baselines for qualifying for such programs?

Monitoring: While participants agreed on the importance of monitoring, some did not think that this would be a tool for encouraging reluctant adopters to engage in BMP implementation. For some, monitoring is more than water quality monitoring, but includes data tracking (e.g., plans written, BMPs implemented, nutrient application records kept). Questions of monitoring versus BMP tracking and verification were points of discussion regarding understanding the progress being made in water quality outcomes.

Job Satisfaction: A participant astutely asked what everyone liked and did not like about their work as agricultural service providers. The responses would be familiar to most. Positive experiences included working outside, engaging with people and partners, building trust/connections, making a better world, learning about strategies that work and above all, "Helping farmers is rewarding." Stress comes from deadlines, paperwork, over-documentation, tight turnarounds, delays, the time from idea to implementation, restrictions, programmatic red tape, conflicts and competing priorities.

Day 3: Translate Real-World Experience into Concrete Policy

The following week, the workshop reconvened with a mix of participants from Days 1 and 2, along with new additions from leadership roles in conservation and policy. The goal of Day 3 was to move towards development of concrete, implementable recommendations based on key messages from Days 1 and 2. Participants were provided a "Report for Day 3" (Appendix H) as an initial summary of the emerging themes/ key messages from the first two days. At the start of this final session, highlights of this report were reviewed, as well as survey responses from Day 2 participants (Appendix C). The survey served as an informal means to "take the temperature" of participants. It provides some insight into the mind-sets of participants but should not be used to draw any specific conclusions. Participants were asked what thoughts or ideas caught their attention from Days 1 and 2 before splitting into break-out groups. This section is a report-out on participant conversations.

Community Support/Collective Goals

- empowering peer-to-peer networks, promoting new social norms.
- partnerships and engagement as critical.
- reluctance on the part of some farmers [to engage] and how to handle.

Communication/Messaging

- where are the "people" in our BMPs?
- engage the non-adopters in a welcoming/brave way.
- incentivizing farmers to help spread the word on conservation.

System Challenges

- streamlining processes and services for implementing BMPs—motivating government agencies to address.
- treating conventional agriculture as a resource concern.

    - add policies and programs that support diverse crop rotations and/or more perennial crops to address nutrient reduction, soil health and potential economic benefits
- smaller farmers with little or no staff need technical service providers available to them at no cost to assist in the planning and incorporation of BMPs.
- making it easier for farmers to participate in our programs!

Economic

- building a relationship between spatial prioritization tools and behavioral approaches.
- P4P option for increased conservation implementation and compensation based on water quality benefits/ improvements.

Break-out Summary

- *What are the most important obstacles currently holding us back on doing more and doing better with respect to improving BMP adoption?*
- *What specific opportunities do you see as ways to:*
    1. *improve the acceleration of BMP adoption and*
    2. *improve adoption and achieve better WQ outcomes (more reductions) for any given level of staffing/funding?*
- *What barriers exist to implementing these opportunities and how can we overcome them?*
- *What specific factors for implementation should be considered?*
- *What specific recommendations can we make to the CBP or others?*

Scenario 1: Expanded Use of Spatial Prioritization (Technical Targeting Tools)

Harness agribusiness influence: Regional nutrient reduction goals coming from consumers and agribusiness create stronger incentives than goals from government agencies. Messaging through agribusiness is more effective for regional sustainability incentives.

Conversations need to start on the farm: Site specific strategies are needed to effectively control nutrients and start the conversation with farmers. These prioritization tools that have been developed by the government or other organizations are rarely used by service providers directly, although providers understand the need for a site-specific plan. Tools can start the conversation, but service providers must listen to the farmer's detailed knowledge. Farmers want to have input into the conversation on how to manage nutrients on their farms. Tools should be simple and the gains of using the tools should be clearly communicated and understood. Two-way conversation between the service providers and the tool developers would result in the most useful tools.

Sub-field management engages farmers: To engage the BMP reluctant adopters, service providers need to focus on saving farmers' time and making them more money. Conversation needs to start with what problems they are facing and how service providers can help alleviate those problems.

Scenario 2: More Flexible Financial Incentives

Build/increase flexible financial opportunities: Service providers utilize federal/state/local cost shares to implement BMPs. There is a need for more flexible incentives, such as P4P to maintain BMPs over time. The Conservation Stewardship Program[5] (CSP) model was mentioned although this program is designed for high performing producers and not reluctant adopters. There is no

[5] USDA Conservation Stewardship Program

need to replace cost-share programs, just a need to better incentivize it. Payments need to reflect the scale of water quality benefits.

Empower conservation districts: USDA-NRCS should provide districts with funding to run flexible programs for reluctant adopters (design unspecified) and pay for outcomes. This would speed the process up for getting farmers funded.

Flexible enrollment requirements: Funding that enables producers to dip into programs without having to enroll the entire farm would help with addressing critical source areas and easing producers into conservation practices. BMPs could be offered on a "trial" or semi-permanent basis.

Differential BMP crediting is imperative: The CBP must recognize and credit differential WQ impacts—given that every producer and landscape have variation—to ensure that funding goes to the right people in the right places for the public benefit of WQ improvements.

Scenario 3: Using Insights from Behavioral Science to Plan Outreach Efforts and Design Conservation Programs

More support for conservation professionals: Conservationists require support on multiple levels. Staff retention is a challenge. Competitive wages are needed. Mentorship programs are necessary for early career tracks. Training is needed for staff to understand diverse personalities and behaviors. Consider a bootcamp that teaches soft skills and how to approach farmers. This would include the basics of stepping on a farmstead, finding the right place to park, taking off your sunglasses, and interacting with farm dogs. CBP partnership could utilize tools such as a survey to better understand district needs.

Space and resources for building trust: Better relationships may create better outcomes. Service providers need time to build relationships—more than just a "quick visit". Find a way to count relationship building as an "output" in program deliverables. Supervisors/administrators don't always recognize relationship building as an output.

Keep it local: Focusing on Bay improvement goals might be too large. Coalitions at the local level are essential. Broad coalitions can bring together diverse stakeholders to share experiences. 'Water cooler' discussions don't happen as often as they should.

Equip farmers as conservation ambassadors: Identify strategies to incentivize farmers to encourage other farmers to adopt BMPs. Research is needed to test strategies. Examples include allowing farmers access to funds that they could direct to other farmers or provide farmers with bonuses for getting others to sign on; providing referral bonuses for farmers that lead neighbors to sign up for BMP implementation projects; and expanding educational farm tours led by trusted farmers with outreach directed toward hesitant BMP adopters.

Strengthen and expand peer-to-peer networks: How much can we rely on social media versus face-to-face contact? Organize field days and other ways for farmers to network. Allocate funding to catalyze farmer-to-farmer groups. Assess peer-to-peer networks to build on the body of knowledge with evaluation protocols. There is a need to support and incentivize evaluation to build a community of practice as well as the evidence base for social behavior approaches to effective

engagement. Identify strategies to address variance in cultural norms. One example is that Plain Sect farmers may not accept financial assistance for BMP implementation (a major hurdle to overcome).

Care in communication and messaging: Don't sell programs—sell the outcomes. Learn from personal experiences and build a catalog of success stories that could be shared among conservation professionals. Be more demonstrative and visible in a "thank-you" to the farmer when they take action. Everyone taking a positive action should be recognized—a meaningful "thank-you" that will show gratitude for their actions and will make them want to continue to work with you and do more.

Provide a hook: Flexible programs are best as they do not hold farmers to a specific timeline. Consider using pre-commitments (which may work for conservation leaders rather than reluctant BMP adopters).

Scenario 4: Rewarding Conservation Professionals for Reducing Nutrient and Sediment Loss from Agricultural Land

Supporting conservation districts: *Highest Priority* funding for consistent technical assistance is fundamental and relationship trust-building takes time. Participants in this group indicated that success in other actions discussed in this workshop depend on enhanced support of conservation districts. This is a challenge throughout the CBW, but the avenues of support may look different across the states because the governance and funding mechanisms for districts vary. The Chesapeake Bay Commission provided a simple breakdown of these differences in its 2017 report.[6]

Conservation district staff retention: Set a state pay scale for district employees to improve certainty and staff retention. There is too much variability between districts in how funds are allocated and how employees are paid.

Empower districts to direct funding: Enable districts to establish their own goals based on current capacity and ask for the funding needed to meet those goals, rather than tying funding to a quantity of BMP contracts.

Peer-to-peer support: Contract with farmers experienced in conservation management to do outreach in critical source areas. However, farmers may not want to give up tools of the trade. If competition between farmers poses a barrier, bring in folks from outside of the immediate area.

Agribusiness partnerships: There is variation in the quality and focus of work from ag retailers and crop advisors. It may be challenging to incentivize service providers in the retail space to promote conservation.

Supporting university extension: Increased funding for staffing, research, monitoring and promotion of conservation practices is needed. Regional land grant universities need strong advocates for supporting the work of extensions (e.g., Farm Bureau, conservation districts, legislators).

[6] Boots on the Ground: Improving Technical Assistance for Farmers

Scenario 5: A Mix of Scenarios, Plus Enforcement and Other Tools

Understanding agriculture: Create a CBP public education program on sustainable agriculture directed at the public at-large and farmers (e.g., Lancaster Water Week: www.lancasterwaterweek.org). Highlight ag retailers that promote conservation and offer economic incentives to implement BMPs.

Regulatory enforcement: Compliance must be simple and easy to enforce. Compliance checks provide an opportunity to meet more producers but it's not always a welcome visit. Compliance should be judged by functionality (e.g., a rule could be "keep the animals out of the stream", rather than "here's exactly how you have to build a fence and here's the cost structure to access funding").

Speed and accessibility of dollars: When producers must wait for application periods, we lose them. Having dollars available for technical service providers to access and offer to producers when they are ready is critical to maintaining engagement with farmers. An example of this is the Conservation Excellence Grant (CEG) funding in PA, link.

Full Group Discussion Summary

Don't let perfect be the enemy of good: Does program complexity and accounting for nutrient and sediment reductions hinder engagement? Should we concentrate more on heading in the right direction, than simply aiming to get the numbers exactly right? Does accelerated BMP implementation outweigh ineffective targeting of those BMPs? One workshop participant stated, "you don't want to create something so complex it is counter-productive to engagement."

Supporting conservation districts: Can quality (environmental outcomes achieved) be rewarded over quantity (number of contracts issued)? Productivity is often a function of staffing, which is variable across conservation districts. Better staffing leads to better outcomes. Rewarding well-staffed districts may exacerbate stresses on those that are under-resourced. Allowing districts to set their own goals through two-way dialogue between themselves and funders would allow for funding based on realistic capacity. This would get rid of the "use it or lose it" approach to funding.

Reaching reluctant BMP adopters: Working with reluctant adopters requires proactive engagement; the incentive to do so does not exist in conservation districts. The risk is too great to dedicate time and resources to a farmer that may back out. District staff already have full workloads with motivated farmers. Ag retailers and agribusiness at-large will play a growing role in motivating conservation actions into the future, fueled by societal/consumer demand for corporate responsibility in addressing clean air, water, food and environmental justice.

Communicating and building on success stories: Participants provided many examples of successes in conservation (listed below). They discussed the need for more frequent forums to better communicate across jurisdictional lines between conservation-minded agricultural service providers, while considering the seasonality of conservation work. Lines of communication are sometimes blunted by agencies and NGOs that take care to control how information is disseminated.

Policy-maker perspective: Those working at higher-levels to shape policy acknowledged the need for getting funds out the door faster. One possible mechanism would be to prioritize specific BMPs most critical to water quality, linking them to continuous funding to avoid lost opportunities with farmers. The urgency of getting BMPs on the ground, as well as the challenges in doing so, is understood. but how to act on this urgency in a meaningful way continues to be elusive until there is enough momentum to push for transformative change.

Participant References (Success stories)

- Work by Richard Moore (Ohio State University) in Sugar Creek, OH:
  - Final brief: Sugar Creek Method of Research and Farmer Team Building (2017)
- Cullers Run, WV:
  - An article in the Journal of Soil and Water Conservation *about Cullers Run:* Performance-based payments for water quality: Experiences from a field experiment (2009)
  - FY18 STAC report with information on pilot program: *"Increasing Effectiveness and Reducing the cost of Nonpoint Source Best Management Practice (BMP) Implementation: Is Targeting the Answer?"*
- Hewwitt Creek Model:
  - Iowa State University Extension: Performance-based Environmental Management, the Hewwitt Creek Model (2006)
- Vermont -level investment in farmer-led watershed associations/coalitions (an example of STRONG alignment between federal-state-local programs/resources to meet the Lake Champlain TMDL):
  - Vermont Clean Water Initiative 2021 Performance Report
- Water for Ag leadership team effort in Mifflin County, PA:
  - Mifflin County Project Update PSU webpage
- Pilot project in the Walla Walla river basin (WA) to suspend the rules of prior appropriation, allowing local districts to manage for stream restoration:
  - Confederated Tribes of the Umatilla Indian Reservation (CTUIR), Walla Walla river basin webpage
- Motivating farmers by aiming for stream fish habitat / sportfishing benefits:
  - An article in Lancaster Online, "Conservationists hope to boost Hammer Creek's wild trout potential with $5.2 million pollution mitigation plan" (2021)
- Salmon Safe label for marketing in the Pacific Northwest.
  - Salmon Safe website
- Smith Creek Showcase Watershed in Vermont (early adoption of armer sounding board groups):
  - Smith Creek Watershed Partnership website
- Hoover with the Lancaster Farmland Trust (peer-to-peer work is highlighted in this recent white paper from their work in the Pequea watershed):
  - Barriers to the Implementation of Best Management Practices in the Pequea Creek Watershed, a report by Lancaster Farmland Trust
  - Lancaster Conservancy Water Week website

Key Findings and Recommendations

The recommendations in this report are contemporaneous with federal funding efforts including the recently passed Infrastructure Investment and Jobs Act,[7] and the Billion for the Bay Initiative[8] submitted to Congress in May 2021 that includes a specific call for funding farm resiliency[9]. Utilizing potential funding from these efforts must be done strategically, taking into account what is known from the behavioral and social sciences to make investments effective and the impacts durable over time. Current initiatives to increase agricultural BMP implementation in the CBW also need guidance on where to concentrate efforts for future funding cycles.[10]

Beyond these immediate initiatives, Congressional committees on agriculture are gearing up for the 2024 Farm Bill, which can provide tremendous investment in conservation and has the influence to disrupt the status quo of agribusiness. Currently, commodity farmers make do in a system that they do not control: What if that system made advanced conservation the easy choice? · What if crop insurance programs provided significant premium discounts to farmers who prioritize conservation and resiliency or are denied insurance based on subpar conservation management? · What if a firm commitment was made to steady funding for critical conservation programs that pay farmers to maintain riparian buffers and functional wetlands on land that might otherwise be cultivated or developed? · What if a historic level of funding went to regional land grant universities to scale up staffing for essential outreach to assist all types of agricultural service providers in making meaningful connections with farmers? · What if similar funding efforts were applied to conservation professionals to increase opportunities for staff retention and training?

Below is a set of key findings and actionable recommendations based on constructive and honest discussions about the challenges and opportunities associated with expanding the reach of BMPs in the CBW. The main points that emerged from the workshop are: 1) BMP adoption strategies need to be flexible and adaptable to the specific circumstances of individual farm operations (i.e., one size *does not* fit all) and 2) conservation program design and outreach must extend to a much broader range of farmers, especially those in critical source areas[11] and/or those who don't typically seek conservation technical assistance.

KEY FINDING: BMP Programs Should be Easy and Flexible.

Across both public and private sectors, agricultural service providers indicated that helping farmers is rewarding, but bureaucratic hurdles and rigidity hinder BMP outreach and adoption. Engaging directly with people and partners, building trust and making connections, and sharing in successes,

[7] Infrastructure Investment and Jobs Act
[8] Billion for the Bay 2021 Letter
[9] A Proposal for a USDA Chesapeake Resilient Farms Initiative (CRFI) (2021)
[10] e.g., The National Fish and Wildlife Foundation's Chesapeake Bay Stewardship Fund https://www.nfwf.org/programs/chesapeake-bay-stewardship-fund
[11] **critical source area -** site with a high likelihood of relatively high levels of pollutant delivery to waterways

all contribute to a positive working environment. Deadlines and tight-turnarounds, excessive paperwork, programmatic restrictions and conflicting/competing priorities are barriers to increasing BMP adoption. Incorporating more flexibility in conservation program design will allow for engagement of the right people, on the right landscapes, with the right BMPs and the right incentives.

Immediate Need: Find effective and actionable ways to reduce barriers to farmer outreach and BMP adoption.

Recommendation #1: The CBP should support the collaboration of federal, state, county, and NGOs in accelerating efforts to **streamline conservation programs so that farmers can enroll easily and conservation professionals can manage projects efficiently.** This includes restructuring requirements across funding organizations to allow for fast-tracking of funding and fewer paperwork requirements.

Proposed CBP Partner(s): Management Board, funding organizations

Recommendation #2: The CBP should support program managers and designers by allocating resources for program design that enables the **time necessary for building and nurturing trusted relationships between conservation professionals and farmers.** Funding organizations should establish indicators of successful relationship building as a specific deliverable in anticipated project outcomes.

Proposed CBP Partner(s): Management Board, funding organizations

---

KEY FINDING: Outcome-Based BMP Incentives are Needed.

Workshop participants indicated that BMP financial and technical assistance disproportionately goes to motivated farmers (early BMP adopters) who seek it out. Current incentive structures for agricultural BMP adoption do not motivate non-adopter farmers, limiting the types of BMPs adopted, where they are adopted and who adopts them. Successful outreach and engagement with reluctant BMP adopters will require more creative incentives. Additionally, the current method of assigning pollutant reduction credits to conservation BMPs in the Chesapeake Bay Watershed Model cannot reflect specific conditions on individual farm operations. BMP implementers and BMP funders *want credit where credit is due* for their conservation work.

Immediate Need: Long-term commitment to the development of alternative incentive mechanisms that reward quantifiable improvements in water quality and have the potential to expand BMP adoption in critical source areas. This reiterates a 2020 STAC recommendation[12] on increasing BMP effectiveness and reducing cost.

---

[12] STAC FY19 Report, *Increasing Effectiveness and Reducing the Cost of Non-Point Sources Best Management Practice (BMP) Implementation: Is Targeting the Answer?*

Recommendation #3: The CBP should support **scalable programs across the CBW related to Pay-for-Performance and other** incentive structures using common program design techniques such as steadiness of payments over time, committed funding sources, compatibility with the CBP's BMP crediting system, communication and outreach. These programs must be designed on sufficient timelines and scale to both build commitment and evaluate efficacy. An example of this recommendation is a review of pay for performance programs that exist outside of the CBW for potential application in the CBW with an outcome of advancing one such program at the pilot scale on the near-term.

Proposed CBP Partner(s): Management Board

Recommendation #4: The CBP should **develop and implement a clear and consistent BMP crediting system** in which pollutant load reduction credit reflects the impact of implementing BMPs in critical CBW landscapes and is based on potential water quality impact (right BMPs, right place), rather than applying average BMP effectiveness values regardless of local conditions.

Proposed CBP Partner(s): Scientific, Technical Assessment & Reporting (STAR) Team and relevant workgroups, Water Quality GIT, Modeling Workgroup

---

KEY FINDING: Farmers Want to Know What Works.

Farmers want to know if what they are doing to improve water quality is working. Many workshop participants suggested that demonstrative, observable changes in local water quality conditions could help motivate farmers to adopt BMPs and could improve program effectiveness. Participants indicated widespread skepticism that the Chesapeake Bay Watershed Model fully reflects the conservation improvements that have been made by farmers. Showing local successes motivates farmers to adopt more BMPs and could improve program effectiveness.

Immediate Need: Build confidence in sources of information using avenues that resonate within the local community (e.g., farmers, local governments).

Recommendation #5: The CBP should help relevant stakeholders **curate and provide available localized information and data to tell stories of success**, bolstering efforts of key local conservation organizations to improve understanding of BMP adoption and impacts on the health of local waterways (including public health and/or other local benefits[13]) and bolster local efforts to collect and synthesize data. Establish a means of communicating findings with local and regional organizations that influence on-farm BMP adoption.

Proposed CBP Partner(s): CBP Strategic Engagement Team, Scientific, Technical Assessment & Reporting (STAR) Team and relevant workgroups, Agriculture Workgroup, Local Leadership Workgroup, Local Government Advisory Committee (LGAC), Citizens Advisory Committee

[13] Quantifying Ecosystem Services and Co-Benefits of Nutrient and Sediment Pollutant Reducing BMPs

(CAC), Strategic Engagement Team, Chesapeake Monitoring Cooperative (CMC)

Recommendation #6: The CBP should **develop a communication strategy to directly engage agriculture-minded audiences** on the opportunities and limitations of the Chesapeake Bay Watershed Model and other available decision support tools for making informed choices on how agriculture can help address water quality challenges.

Proposed CBP Partner(s): Scientific, Technical Assessment & Reporting (STAR) Team and relevant workgroups, CBP Strategic Engagement Team, Strategic Engagement Team, Agriculture Workgroup

---

KEY FINDING: Conservationists Want to Know What Works.

Workshop participants identified a lack of sufficient platforms in which agricultural service providers can connect with like-minded professionals across the CBW as a means to exchange ideas on what works and what doesn't when it comes to engaging farmers and supporting BMP adoption.

Immediate Need: A forum for agricultural service providers to talk across CBW jurisdictional boundaries about what is working, what is not and creative solutions to increase effective BMP adoption[14].

Recommendation #7: The CBP should **establish quarterly workshop sessions for agricultural service providers** that cross CBW jurisdictional boundaries to discuss BMP implementation strategies. Work with state conservation boards and other relevant public and private organizations to identify timely topics (many of which can be pulled from this workshop's full report). Provide participants with continuing education credits for professional advancement.

Proposed CBP Partner(s): Agriculture Workgroup, Local Leadership Workgroup, Local Government Advisory Committee (LGAC), Citizens Advisory Committee (CAC), funding organizations

---

[14] In the Mississippi River basin, One Good Idea was developed as part of an EPA grant to help farmers get started and have success with soil health and regenerative practices. A multi-state team of university extension professionals and farmers established the multimedia clearinghouse to facilitate farmer-to-farmer learning about practices that can improve soil, land, and bottom lines, such as cover crops, conservation tillage, rotational grazing, and nutrient management.

KEY FINDING: Fostering Career Conservationists is Essential.

Conservation professionals[15] are critical to establishing trust and building working relationships with farmers. The negative impacts of staffing challenges on BMP implementation have been documented in recent social science research[16]. Workshop participants indicated that conservation districts continue to face challenges in attracting, retaining and funding staff sufficiently, echoing technical assistance needs outlined by the Chesapeake Bay Commission in 2017[17]. Additionally, the conservation workforce is in the midst of a retirement wave that must be met with the successful recruiting of a new generation of conservationists[18].

Immediate Need: Implement strategies to retain and increase staffing[19] in conservation district and USDA-NRCS offices where needed and warranted based on local conservation goals and outcomes by pairing university graduates with the organizations before graduation.

Recommendation #8: The CBP should support **new incentive structures for the development and retention of conservation professionals**. Strategies will vary depending on the organizational framework of conservation districts in each of the six Bay states.[20]

Proposed CBP Partner(s): Management Board

Specific Considerations:

a. **Evaluate the need for predictable funding** to conservation districts that allows for **competitive staff salary and benefits,** relative to federal and private sector conservation.

b. **Develop a framework for equitably distributing funding for conservation district staffing** based on both a history of positive water quality outcomes and continued need for improvement, *while maintaining equitable employment practices*[21].

[15] **conservation professional** - anyone who works primarily to implement soil and water conservation practices (or best management practices) on private farmland. Includes government and private employees

[16] Morris, Chris, J. Gordon Arbuckle, Catherine DeLong, and Clare Lindahl. "Supporting On-the-Ground Conservationists: The Conservation Practitioner Poll." Journal of Soil and Water Conservation 76, no. 5 (September 1, 2021): 92A-94A. https://doi.org/10.2489/jswc.2021.0827A.

[17] Boots on the Ground: Improving Technical Assistance for Farmers, a report of the Chesapeake Bay Commission (2017)

[18] Pennsylvania in the Balance: Harnessing Agriculture's Culture of Stewardship as a Solution to Clean Water, conference report (2017)

[19] Increasing staffing could provide the CBP an opportunity to further integrate the 2021 CBP diversity, equity, inclusion, and justice initiatives (DEIJ) Strategy Implementation Plan.

[20] There are no conservation districts in Washington, D.C.

[21] It was noted by several workshop participants that many factors work towards success or failure in achieving water quality outcomes and those factors may be out of the control of individual districts. Therefore, it is important that conservation district employees are treated equitably, taking into account such factors.

c. **Enhance conservation training opportunities to increase technical capacity.** Creating and/or fostering educational and training opportunities is critical to continue building a comprehensive workforce.

KEY FINDING: Connecting with Reluctant BMP Adopters is Critical.

Workshop participants indicated that conservation professionals need more support to effectively engage reluctant BMPs adopters. Training in effective communication and application of behavioral nudges[22] in conservation program design will foster better working relationships with farmers and allow for more effective delivery of technical assistance. Access to meaningful tools to address individualized needs and to target limited conservation resources in the right places will result in better water quality outcomes.

Immediate Need: Develop incentives and tools to better equip conservation professionals to reach reluctant BMP adopters on the critical landscapes that will have the greatest positive impact on water quality and public health.

Recommendation #9: The CBP should support partners in adapting capacity needs to local areas (e.g., training in leadership and social engagement strategies). Listen to and act with the agricultural community by working with local leaders and trusted sources. Give both watershed residents and farmers a reason to make an investment in BMP implementation.

Proposed CBP Partner(s): Management Board, Local Government Advisory Committee (LGAC), Local Leadership Workgroup, Agriculture Workgroup, CBP Strategic Engagement Team, Strategic Engagement Team

Specific Considerations:

a. Develop a framework to **train agricultural service providers so that they are equipped to tailor messaging** for individual farmers to achieve outcomes that support broader conservation goals (examples of such programs include the National Wildlife Federation's Grow More program, Growmark FS, and the PA 4-R Alliance[23])

b. Collaborate with agricultural service providers to **identify technical targeting tools[24] that are compelling and useful to farmers and proliferate their use in CBW conservation efforts.**

[22] Positive reinforcement and indirect suggestions as ways to influence the behavior and decision-making: contrasts with other ways to achieve compliance, such as education, legislation or enforcement. See Increasing Effectiveness and Reducing the Cost of Nonpoint Source Best Management Practice (BMP) Implementation: Is Targeting the Answer? for further discussion on the use of behavioral nudges as a means to increase conservation opportunities.
[23] Links to the Grow More program, the Growmark FS program, and PA 4-R Alliance trainings
[24] **Technical targeting tools -** precision conservation tools to identify and prioritize--at the watershed, farm, or field level--precise placement of BMPs to more efficiently reduce nutrient and sediment loss into waterways

c. Provide **funding and support for farmers doing peer-to-peer education and outreach** on conservation planning and BMP implementation and maintenance.

d. Work with agricultural partners to **identify and celebrate success at all levels—** from the farmers with a long history of prioritizing conservation to those that are taking the first steps.

e. Coordinate conservation outreach across organizations to clarify local goals and reduce farmer fatigue through strategic farm visits and messaging that is unified rather than conflicting.

KEY FINDING: Evidence-Based Program Design Can Increase Effectiveness.

Integrating insights from the social sciences into conservation programs and systematically testing different communication and outreach strategies will help determine which generate the best outcomes. In particular, agricultural service providers and social scientists emphasized the importance of developing and testing farmer-informed strategies for engaging with reluctant BMP adopters.

Immediate Need: Insights from the social sciences to guide conservation program design and implementation, as well as embed social science research within programs to test new strategies and measure their success.

Recommendation #10: The CBP should support collaboration amongst CBW partner organizations to **synthesize relevant social science knowledge** and distill what we already know about behavior as it applies to conservation decision-making. Identify strategies that have potential to improve conservation outcomes in the CBW. and make recommendations as they apply at the federal, state, and county level

Proposed CBP Partner(s): Chesapeake Research Consortium (CRC), The Center for Behavioral & Experimental Agri-Environmental Research, Management Board, Fostering Chesapeake Stewardship Goal Implementation Team, CBP Strategic Engagement Team, Strategic Engagement Team

Specific Considerations:

a. Work with social scientists to develop a framework that conservation programs can use to **systematically test different communication and outreach strategies** across the CBW and evaluate their outcomes, including changes in BMP adoption and water quality.

b. Develop, experimentally test[25] and evaluate an **incentive-based program for farmers to become trained as trusted advisors** connecting reluctant BMP adopters to technical assistance providers. Leverage a range of farmer perspectives to foster meaningful connections between those with decades of conservation experience and those just getting started.

[25] For more information about how to embed behavioral experiments in conservation programs, see the CBEAR Insights Brief titled "Test, Learn, Adapt: Innovate by running experiments in your programs" (https://centerbear.org/download/cbear-insights/).

Appendix A: Workshop Agenda

Chesapeake Bay Program (CBP)
2021 Scientific and Technical Advisory Committee (STAC) Workshop

Overcoming the Hurdle: Addressing Implementation of
Agricultural Best Management Practices (BMPs) Through a Social Science Lens

Logistics:

- Tuesday, July 13, Wednesday, July 14, and Tuesday, July 20, 9 AM-12 PM ET
- Virtual via Zoom links provided in Google Calendar Invite

About the workshop:
The agricultural sector is an important part of the solution for achieving long-term water quality (WQ) goals in the Chesapeake Bay watershed, but we still have a long way to go in best management practice (BMP) implementation to reduce pollutant loads to levels that will achieve established WQ standards. Current on-farm BMP adoption demonstrates the agronomic, economic, and environmental benefits of conservation practices, but the current rate of adoption is not sufficient to meet Bay pollutant reduction goals. Thoughtful distribution of limited resources through creative and flexible approaches is essential. In this workshop, ag service providers from across the public and private sector are invited to propose and discuss ideas garnered from their own experience. The expected outcome of this exercise is a set of practical recommendations to broaden and deepen farmers' efforts to reduce field-level nutrient and sediment losses. Note: Day 1-2 is focused on listening to farmers and service providers, with Day 3 then dedicated to synthesis, ideas for implementation, and recommended action steps.

Agenda at-a-glance (a short break will be included each day)

Tuesday, July 13 (Day 1)

- Getting started: welcome, introductions, workshop overview, survey results
- Work session #1: Imagine an ideal future where we've overcome the hurdles and met agricultural nutrient and sediment reduction goals in the Chesapeake Bay Watershed.
    - How did we get there?
    - How did we structure programs to support achieving these goals?
- Quick report back, discussion, and exploration of potential solutions and challenges
- Summarize and prepare for Day 2

Wednesday, July 14 (Day 2)

- Review key messages from Day 1, additional discussion
- Work session #2: developing solutions by exploring scenarios
- Quick report back, discussion, and exploration of scenarios
- Summarize and prepare for Day 3

Tuesday, July 20 (Day 3)

- Review key messages from Days 1-2
- Work session #3: How do we go from where we are now to the ideas discussed in Day 1 & 2?
    - Factors for implementation? Funding? Other?
    - Recommendations to the Chesapeake Bay Program or other decision makers.
- Quick report back, discussion
- Summary of overall discussion, recommendations, next steps
- End

Basic ground rule: To encourage creativity, ideas from the workshop can be shared but without attribution. Names and affiliations are kept private. We will use a variety of tools to foster engagement, including anonymous input and sharing of ideas. Workshop results will be summarized and shared.
Detailed agenda by day:

Day 1: Tuesday, July 13, 9-12 eastern

9-9:30 Getting started

- Welcome, introductions
- Purpose of workshop
- Review survey results, background information
- Guidance for engagement during the workshop

9:30 Work session # 1: What do we want?

Prompt for discussion: It's 2031- We have scaled and accelerated conservation implementation and have sustainable agriculture across the Bay watershed, high quality water, and are meeting other Bay-wide restoration goals.

- What does this look like?
- How did we get there?
- What programs exist to support this?

Guidance for this work session: we're asking you to throw out the window existing programs, law, regulations, limitations, etc. and instead imagine what could be. We'll dig into this as we work through the workshop and plenty of problems and challenges will come up. For now, we ask you to think creatively about what could be.

- 6-8 people per each breakout room, with a mix of perspectives randomly assigned
- Each session will be facilitated with a jamboard for adding ideas (anonymously) and a notetaker capturing key points that come up in discussion

10:30 Break

10:45 Report back & discussion (all)

- Facilitators provide a quick report back on three potential ideas
  - What visions did people provide?
  - What might be needed to support those vision(s)?
- Discussion
  - Areas of excitement?
  - Areas of challenge?

11:45 Next steps, scenarios to explore for Day 2

12 End

Day 2, Wednesday, July 14, 9-12 eastern

9:00 Review key messages from Day 1, additional discussion

- Thoughts/reactions to the previous day's discussion?
- Further discussion?

9:30 Work session #2: developing solutions by exploring scenarios (facilitators in parentheses):

- Group #1: Technical targeting tools (Lisa Wainger)
- Group #2: Flexible financial incentives (Kristen Saacke Blunk)
- Group #3: Insights from behavioral science (Leah Palm-Forester)
- Group #4: Rewarding conservation professionals (Dan Read)
- Group #5: A mix of the above, including enforcement, other tools (Denice Wardrop)

For this work session, each facilitator is focused on a specific scenario. These scenarios were shared prior to the workshop and are available here: https://www.chesapeake.org/stac/wp-content/uploads/2021/06/Scenarios_FINAL.pdf

The goal of focusing on specific scenarios is to explore more deeply potential ideas, challenges, and pathways for implementation.

- What are the opportunities and pitfalls to implementing these types of solutions?
- If you have first-hand experience with similar approaches, what can you share about your experiences?
- Are there other ideas that you have considered based on your work?

As you consider these scenarios, consider both types of best management practices under discussion:

Practice type 1: Conservation practices with agronomic/farm benefits (cover crops, tillage practices, etc.), with attention to timescale of benefit accrual *(fertilizer precision management-practices with lesser need for subsidizing- supply chain encouragement)*

Practice type 2: Conservation practices with little agronomic or farm benefits. Practices with relatively high upfront costs but that offer substantial opportunity to "move the needle" in terms of reductions in nutrient loss (manure conversion projects, denitrifying bioreactors, riparian buffers, etc.) *(practices with greater need for subsidizing)*

10:30 Break

10:45 Report back & discussion

- Quick summary of the scenario in question
- Facilitators will provide a short (2-3 minute) summary of key points covered in their discussion
- Following the report backs, we will open the floor for a general discussion

11:45 Summary, next steps

12 End

Day 3, Tuesday, July 20th, 9-noon eastern

9:00 Welcome, Agenda Review, Key Messages from Days 1-2

- Reminder of workshop purpose, agenda for today
- Review what we heard from participants during Day 1 & 2 (see attached)
- Discussion, questions

9:30 Work session: How do we go from where we are now to the vision outlined in Day 1-2?

<u>Breakout groups (participants choose their group or will be assigned)</u>:

- Scenario #1: Technical targeting tools (Lisa Wainger)

- Scenario #2: Flexible financial incentives (Kristen Saacke Blunk)
- Scenario #3: Insights from behavioral science (Leah Palm-Forster)
- Scenario #4: Rewarding conservation professionals (Dan Read)
- Scenario #5: A mix of the above, including enforcement, other tools (Allyson Gibson)

Questions for each group, with each group to tailor the discussion to their own scenarios:

- What are the most important obstacles currently holding us back on doing more and doing better with respect to improving BMP adoption?
- What specific opportunities do you see as ways to
    1. improve the acceleration of BMP adoption and
    2. to improve adoption and achieve better water quality outcomes (more reductions) for any given level of staffing/funding?
- What barriers exist to implementing these opportunities and how can we overcome them?
- What specific factors for implementation should be considered?
- What specific recommendations can be made to the Chesapeake Bay Program or others implementing ag-related BMPs?

10:30 Break

10:45 Report back on recommendations (2-3 minutes/group); discussion; next steps

12:00 End

Appendix B: Workshop Participants

DAY ONE

Adam Mowery, Environmental Consultant
Allyson Gibson, Lancaster Clean Water Partners
Amy Handen, EPA Chesapeake Bay Program
Amy Jacobs, Nature Conservancy - Eastern Shore
Amy Shober, Nutrient Management Extension Specialist
Chelsea Hudson, Delaware, Sussex County, Conservation Planner
Christopher Thompson, Lancaster County - CD, District Manager
Cory Guilliams, VA NRCS, Conservation Actions
Daniel J. Read, University of Maryland Center for Environmental Science (UMCES)
Dave Graybill, Dairy Farmer
Debbie Absher, Sussex Conservation District
Elizabeth Dellinger, Shenandoah Valley Soil and Water Conservation District
Elizabeth Nellums, Environmental Consultant
Ginger Noble, Planner in MD, Washington County
Greg Heigel, Lancaster Conservation District
J. Arbuckle, Iowa State University
Jackie Pickford, Chesapeake Research Consortium (CRC)
Jacob Gilley, Livestock Farmer, American Farmland Trust, Mid Atlantic Sustainable Grazing Mgr
Jeremy Daubert, Virginia Tech
Jeremy Weaver, Team Ag, Lancaster PA, Conservation BMP design/implementation
Jim Palermo, Trapp Woods Inc., Crop Consulting
Josh Walker, Shenandoah Conservation
Karl Blankenship, Bay Journal
Kathy Boomer (FFAR), STAC Member
Kelsey Williams, Hanover Soil and Water Conservation District
Kevin Tate, Project Manager, Shenandoah Valley, VA
Kristen Saacke-Blunk, Headwaters, LLC
Kristina Stair, Ag Resource Conservation Specialist
Kurt Stephenson, VA Tech, Dept Ag and Economics, STAC
Lara Fowler, Penn State University
Leah Palm-Forester, University of Delaware
Lisa Wainger, University of Maryland Center for Environmental Science
Lucinda Power, EPA/CBPO
Mark Dubin, University of Maryland/CBPO, Ag Advisor
Mark Flaharty, York County Conservation District
Matt Kowalski, Chesapeake Bay Foundation
Meg Cole, Chesapeake Research Consortium
Patrick Flemming, Franklin and Marshall College, PA
Rachel Felver, Alliance for the Chesapeake Bay / CBP Communications Director
Ruth Cassilly, NPS Policy Analyst, UMD
Ryann R, Ren Barn Consulting
Sarah Hirsch, Ag Agent in MD (Lower Eastern Shore)
Sharon Conner, Hanover SWCD, Conservation Specialist, Soil Science
Stephanie Heidbreder, NFWF
Tim Hushon, Agronomist, PA & MD
Timothy Rosen, ShoreRivers
Walt Whitmer, Penn State Extension
Whitley Gray, ShoreRivers

DAY TWO

Alex Metcalf, University of Montana, Social Marketing
Amanda Goldsmith, Lancaster Co Conservation District
Amy Handen, EPA Chesapeake Bay Program
Amy Jacobs, Nature Conservancy, Ag Program Director,
Chelsea Hudson, Conservation Planner, Delaware
Cory Guilliams, VA NRCS, Conservation Actions
Daniel J. Read, University of Maryland Center for Environmental Science (UMCES)
Dave Graybill, Dairy Farmer Juniata County
Denice Wardrop, Director, Chesapeake Research Consortium
Elizabeth Dellinger, Shenandoah Valley Soil and Water Conservation District
Elizabeth Nellums, Environmental Consultant
Ginger, MDA Ag Planner in MD
J. Arbuckle, Iowa State University
Jackie Pickford, CBP Staff, Chesapeake Research Consortium
Jacob Gilley, Livestock Farmer, American Farmland Trust
Jen Nelson, Delaware and Maryland State Association of Conservation Districts
Jeremy Daubert, Harrisonburg VA Dairy Extension Agent, Vice-Chair for Ag Working Group
Jeremy Weaver, Team Ag, Lancaster PA, Conservation BMP design/implementation
Josh Walker, Shenandoah Valley Soil and Water Conservation District
Karl Blankenship, Bay Journal
Kathy Boomer, FFAR
Kelsey Williams, Hanover-Caroline Soil and Water Conservation District
Kemper, Conservation Specialist, Hanover Caroline SWCD
Kevin Tate, Shenandoah Valley Conservation Collaborative

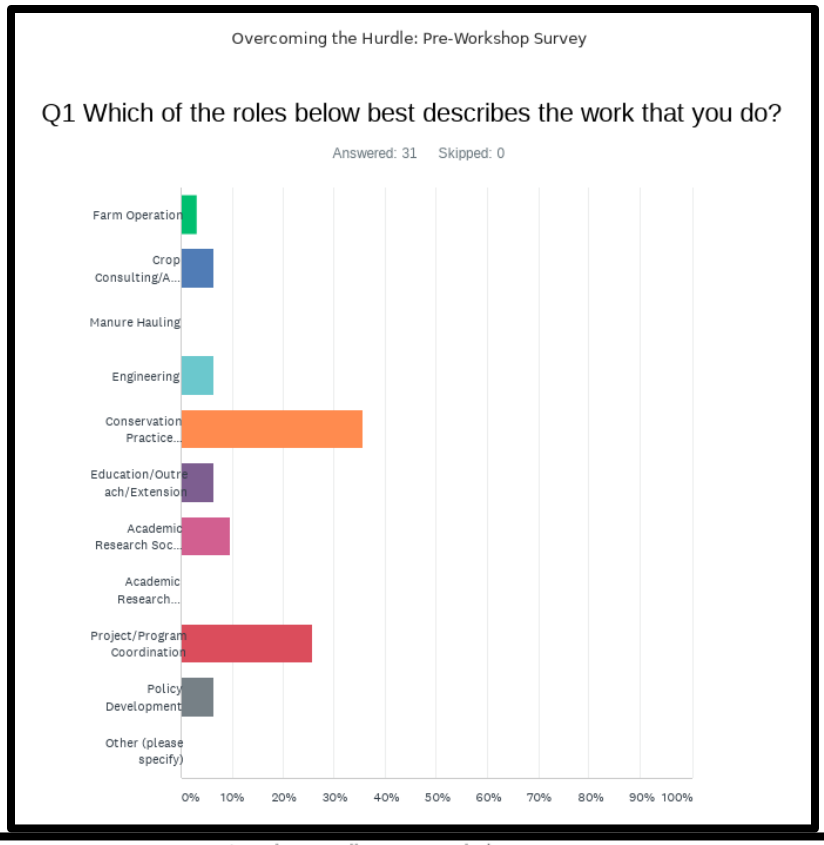
Kristen Saacke-Blunk, Headwaters, LLC
Kristina Stair, MDA, Ag Conservation Specialist
Kurt Stephenson, Virginia Tech (Economist)
Lara Fowler, Penn State University
Leah Palm-Forster, University of Delaware
Lisa Wainger, University of Maryland Center for Environmental Science
Loretta Collins, UMD/CBPO
Lucinda Power, EPA/CBPO
Mark Flaharty, York Co Conservation District
Matt Kowalski, Chesapeake Bay Foundation
Mauricio Rosales, ACB Lancaster PA
Pat Flemming, F&M Economist
Rachel Felver, Alliance for Chesapeake Bay
Ruth T Cassilly, UMD
Ryann R, Ag Planner
Sarah Hirsch (UMD, extension) Ag Agent
Sharon Conner, Hanover-Caroline SWCD
Stephanie Heidbreder, NFWF
Timothy Rosen, ShoreRivers
Walt Whitmer, Penn State Extension
Whitley Gray, ShoreRivers

DAY THREE

Adam Tarr, DC
Amanda Goldsmith
Amy Shober, Professor and Extension Specialist for Nutrient Management, UDEL
Cory Guilliams, VA NRCS, Conservation Actions
Craig Highfield, ACB, Forest Program
Daniel J. Read, University of Maryland Center for Environmental Science (UMCES)
Dave Graybill, PA Dairy Farmer
Debbie Absher, Sussex County DE, Soil Health
Elizabeth Dellinger, Shenandoah Water Conservation District, Ag Programs
Elliot Kellner, West Virginia University
J. Arbuckle, Iowa State University, Rural and Extension Sociologist
Jackie Pickford, CBP Staff, Chesapeake Research Consortium
Jacob Gilley, Livestock Farmer, American Farmland Trust
Jake Reilly, Fish and Wildlife Foundation
John Cox
Josh Walker, Shenandoah Valley SWCD, Engineer
Kathy Boomer, Foundation for Food and AG Research, DC, Director of Sustainable Water Management
Kelsey Williams, Conservation Specialist, SWCD Hanover
Kemper, SWCD Hanover, Conservation Specialist
Kristen Saacke-Blunk, Headwaters, LLC
Kurt Stephenson, Department of Ag and Applied Economics, VA TECH, STAC
Lara Fowler, Penn State University
Leah Palm-Forster, University of Delaware
Leon Tillman, NRCS
Lisa Wainger, University of Maryland Center for Environmental Science
Loretta Collins, University of Maryland/CBPO
Lucinda Power, Environmental Protection Agency/CBPO
Marel King, Chesapeake Bay Commission
Matt Kowalski, Chesapeake Bay Foundation
Peter Hughes, PA Red Barn Consulting
Rachel Felver, Alliance for the Chesapeake Bay
Ruth Cassilly, University of Maryland/CBPO, Nonpoint Source Analyst
Sarah Hirsh, University of Maryland - Extension
Sharon Conner, District Manager Conservation Specialist, Hanover
Walt Whitmer, Penn State Extension

Appendix C: Survey Results

Pre-Workshop Survey



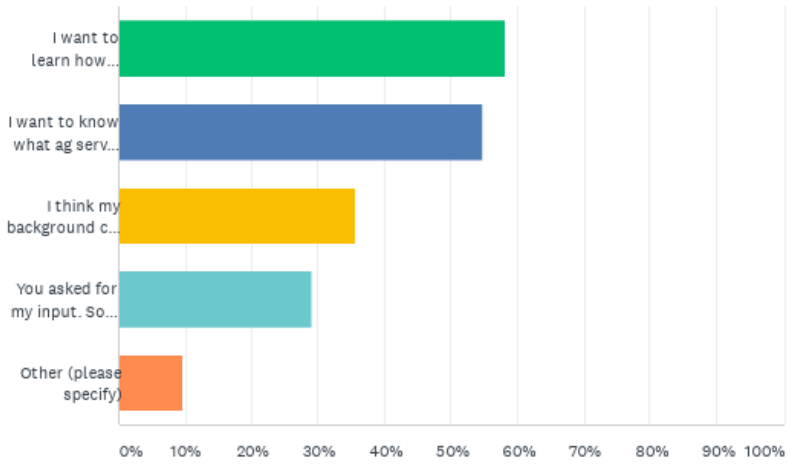
Overcoming the Hurdle: Pre-Workshop Survey

ANSWER CHOICES	RESPONSES	
Farm Operation	3.23%	1
Crop Consulting/Agronomy	6.45%	2
Manure Hauling	0.00%	0
Engineering	6.45%	2
Conservation Practice Implementation	35.48%	11
Education/Outreach/Extension	6.45%	2
Academic Research Social Science (e.g., psychology, sociology, anthropology, economics)	9.68%	3
Academic Research Natural Sciences (e.g., soil/crop/watershed, natural resources)	0.00%	0
Project/Program Coordination	25.81%	8
Policy Development	6.45%	2
Other (please specify)	0.00%	0
TOTAL		31

Overcoming the Hurdle: Pre-Workshop Survey

Q2 What are your expectations for this workshop? Check all that apply.

Answered: 31 Skipped: 0



ANSWER CHOICES	RESPONSES	
I want to learn how others are addressing BMP implementation challenges.	58.06%	18
I want to know what ag service providers think is working and not working related to BMP implementation.	54.84%	17
I think my background can help the group develop strategies to improve BMP implementation strategies.	35.48%	11
You asked for my input. So here I am.	29.03%	9
Other (please specify) See below for responses.	9.68%	3
Total Respondents: 31		

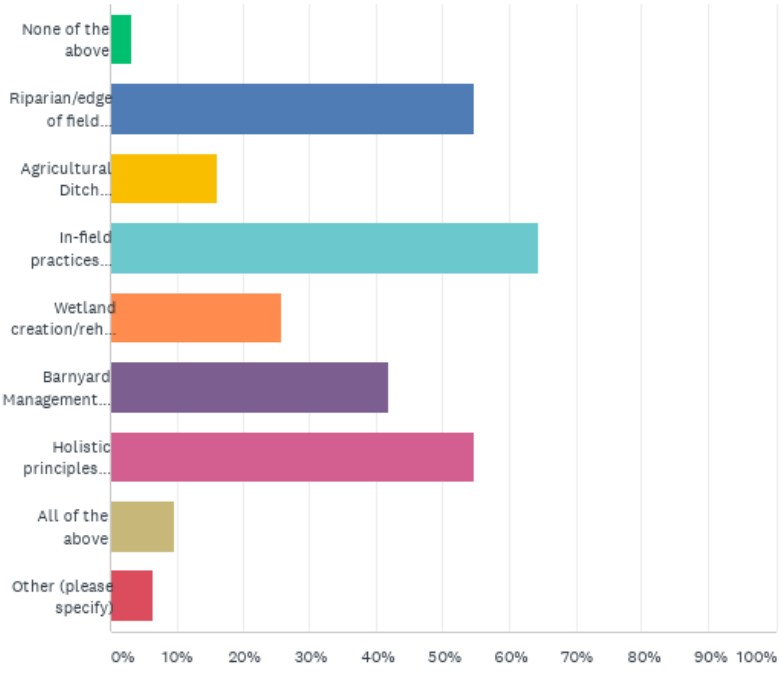
Other Responses:

- I am representing Lancaster CCD mostly to listen in and add input as applicable.
- Develop a way to focus on getting the most effective BMPs on the ground.

Overcoming the Hurdle: Pre-Workshop Survey

Q3 Which BMPs are your primary focus? (If you are a farmer/land manager, what BMPs have you implemented and/or would you like to see implemented on your farm?) Check all that apply.

Answered: 31 Skipped: 0



ANSWER CHOICES	RESPONSES	
None of the above	3.23%	1
Riparian/edge of field (buffers, ...)	54.84%	17
Agricultural Ditch Management Practices	16.13%	5
In-field practices (nutrient management, cover crops)	64.52%	20
Wetland creation/rehabilitation	25.81%	8
Barnyard Management (manure on-farm and transport	41.94%	13
Holistic principles (e.g. soil health, resiliency, regenerative ag)	54.84%	17
All of the above	9.68%	3
Other (please specify)	6.45%	2
Total Respondents: 31		

Other Responses:
- Grazing management
- Cover crops

Q4 What type of technical support, scientific information, training, outreach strategies, or other innovative approaches do you think could improve the effectiveness of delivering conservation programs and practices to farmers/land managers? (Optional)

Answered: 16 Skipped: 15

- Farmer to farmer training/testimonies

- Dedicated service and outreach personnel in combination with resources and effective community-based stakeholder engagement.

- Monitoring of pollution loads, i.e. where are the worst spots for N, P, and sediment loads currently, and how do specific management actions affect them (monitored / measured, as opposed to just modeled).

- Time and resources to assist them in conducting economic benefits and analysis of adopting BMPs

- 1. Time in-between visits
2. Framing the practice in multiple ways
3. Field days

- Community-based social marketing campaigns could be highly beneficial to increase BMP adoption. I think the biggest barriers though continue to be lack of awareness around funding and lack of funding in general.

- Collaborative approach between ag consultants, supply chain buyers, and farmers to emphasize the economic benefits of resource improvement practices.

- Land grant universities could step up their game in this area. They can have unbiased research, they can protect private information of landowners, and they are usually trusted.

- Education of how much pollution actually comes from typical farms. Education on how BMPs help a farm's bottom line. Project management for use of cost-share (i.e. don't ask the farmer to be responsible for managing complex cost-share programs- allow consultants or services to handle those complexities)

- More on the ground technical assistance providers that have expertise in certain practices to support landowner engagement and implementation and that these technical service providers are knowledgeable about targeting data on how to most effectively address source areas.

- Pay for performance

- Streamlining the process of going from project concept to implementation.

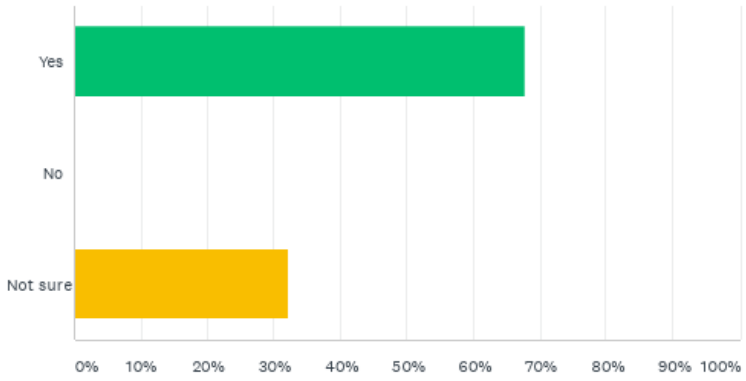
- Outreach on a township level. Visit every farm in a township in one year. Take inventory of planning needs, implementation needs, and willingness to accept funding. Lancaster Farm Trust is doing this.

- Outreach strategies for underserved communities.

Overcoming the Hurdle: Pre-Workshop Survey

Q5 Spatial prioritization: use precision conservation tools to target BMP implementation in ag landscapes where it will be most effective

Answered: 31 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	67.74%	21
No	0.00%	0
Not sure	32.26%	10
TOTAL		31

Other Responses:

- The reality is we are regulating all acres as if they contribute to pollution equally when in reality it is probably only about 10% or less of the acres that are contributing 80% of the problems. Resources can be better utilized by concentrating on the 10%. The trick is fairly and accurately identifying these acres and the real root cause of why they are a problem.

- Isn't the implementation of a conservation practice beneficial regardless of the watershed? Isn't it about the type of BMP not the place?

- We generally know where the major problem farms are located or where the predominant problem watersheds are. Need to be able to spend the individual time with landowners and farmers. Who pays for it?

- Precision ag is very good at conservation but comes with a high price tag.

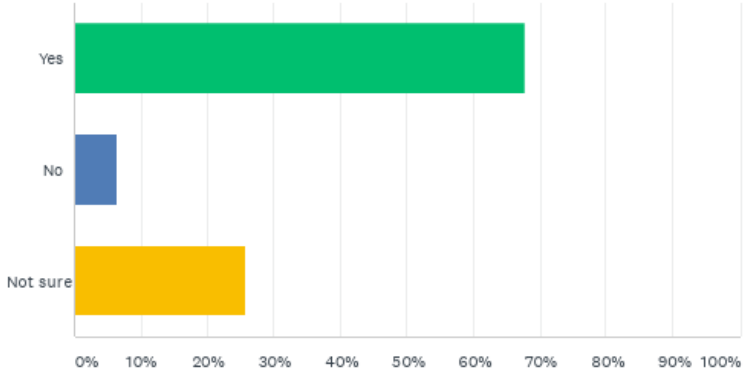
- Yes with many reservations.

- This strategy is being used by a couple of organizations. Targeting specific landowners has been challenging. Not all landowners will be on board. Having a robust network of partners will help.

Overcoming the Hurdle: Pre-Workshop Survey

Q6 Alternative/flexible financial incentives: reward farmers/land managers for reducing nutrient losses (i.e., pay-for-performance programs), which means payments could differ based on how much they "move the needle" toward achieving water quality goals.

Answered: 31 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	67.74%	21
No	6.45%	2
Not sure	25.81%	8
TOTAL		31

Other Responses:

- Everyone needs to remember that farmers get paid to sell commodities. The nature of profitable commodity production is that cost of production is what matters. When it comes to conservation, etc. we are asking farmers to provide an outcome that isn't always tied to success in running a commodity business. We need to think in terms of paying them for the outcomes we desire and separating that when appropriate from their main business of growing food.

- Need a combination of positive and negative incentives. Yes rewarding those for going above and beyond is okay but we need to get everyone to a minimum level- compliance with state laws. This may mean negative incentives - fines and penalties.

- Social science research shows that one-time payments due not lead to long-term adoption of the behavior change.

- Many activities will produce different results based on the weather encountered over the designated time period and the soil types. Same activity but varied results that are no fault of the operator.

- Need to learn from the pilot projects that have been performed in this area and why they were not widely successful. I think a first step would be to better understand the type and amount of incentives that are needed to increase engagement.

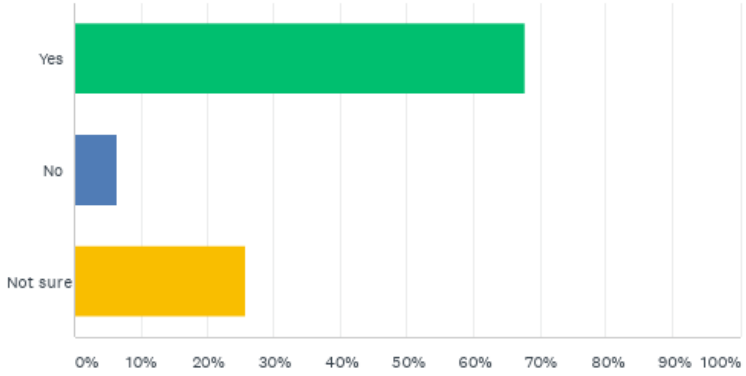
- Yes with many reservations.

- Great in concept difficult to implement. It really depends on how you are going to measure success. For instance, trying to measure nutrient reductions may be complicated if there is not a standard.

Overcoming the Hurdle: Pre-Workshop Survey

Q7 Apply insights from behavioral science to plan outreach efforts and design conservation programs: Examples include using influential messengers, publicly recognizing stewardship actions, asking for pre-commitments

Answered: 31 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	67.74%	21
No	6.45%	2
Not sure	25.81%	8
TOTAL		31

Other Responses:

- This is so essential and is a common part of influencing behavior in so many facets of our lives in and out of Ag. We cannot ignore this.

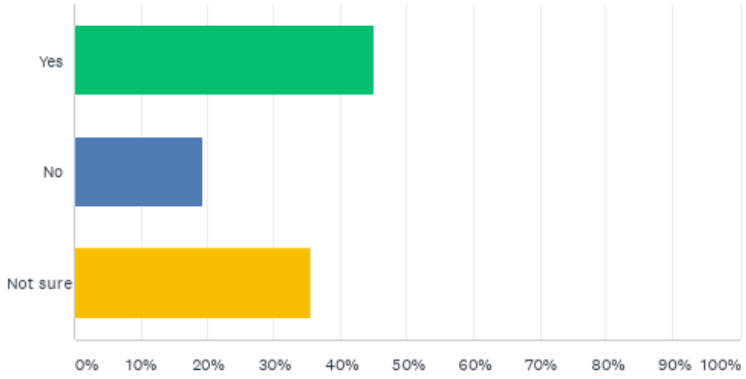
- You need buy in to get the activity started.

- It works. Partnering with corporations interested in reducing supply chain effects is a powerful message.

Overcoming the Hurdle: Pre-Workshop Survey

Q8 Reward effective conservation professionals by offering incentives (e.g., bonuses, salary increases, promotions) based on estimated nutrient and sediment loss reductions resulting from BMPs they helped install.

Answered: 31 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	45.16%	14
No	19.35%	6
Not sure	35.48%	11
TOTAL		31

Other Responses:

- I can't really speak with authority about conservation professionals that work for SCD, but I can about retailers. It is very frustrating for a retailer to be told we aren't eligible to directly apply for cost share on new technologies we could bring to market because we are "for profit". As a result we do not EVER consider building offerings around programs that are dependent on government cost share because we don't know whether our customers will get it or not and we can't afford to spend time and capital developing programs that we find out later are "unfunded".

- In many offices the implementation of programs is a team effort. This would create competition within an office that would hurt the farmers and training of conservation professionals.

- It would depend on how accurate the "estimates" of nutrient and sediment loss are. If the estimates are not very good/inaccurate at a local scale, this could become just another way to game the system.

- Would be wonderful but how does it get implemented in government setting when financial packages, salaries are restrained by systems and policies. All districts are not set up the same structurally. Also why is the consultant/agency staff the responsible party, landowner and operators are the ones responsible to meet rules.

- It depends on the type of incentive and if it is more than a one-time thing.

- Competition between conservation professionals will be counter-productive for the community.

- Legally, I'm skeptical that this approach would be valid for public employees and for the private sector, we've had pushback because it could be in conflict with other services the company is selling.

- I like to think that all the conservation professionals working on these issues are here because we care about it and we are not after the money. But, it'd be a interesting experiment.

Overcoming the Hurdle: Pre-Workshop Survey

Q9 Are there any other thoughts that you would like to share with us now? (Optional)

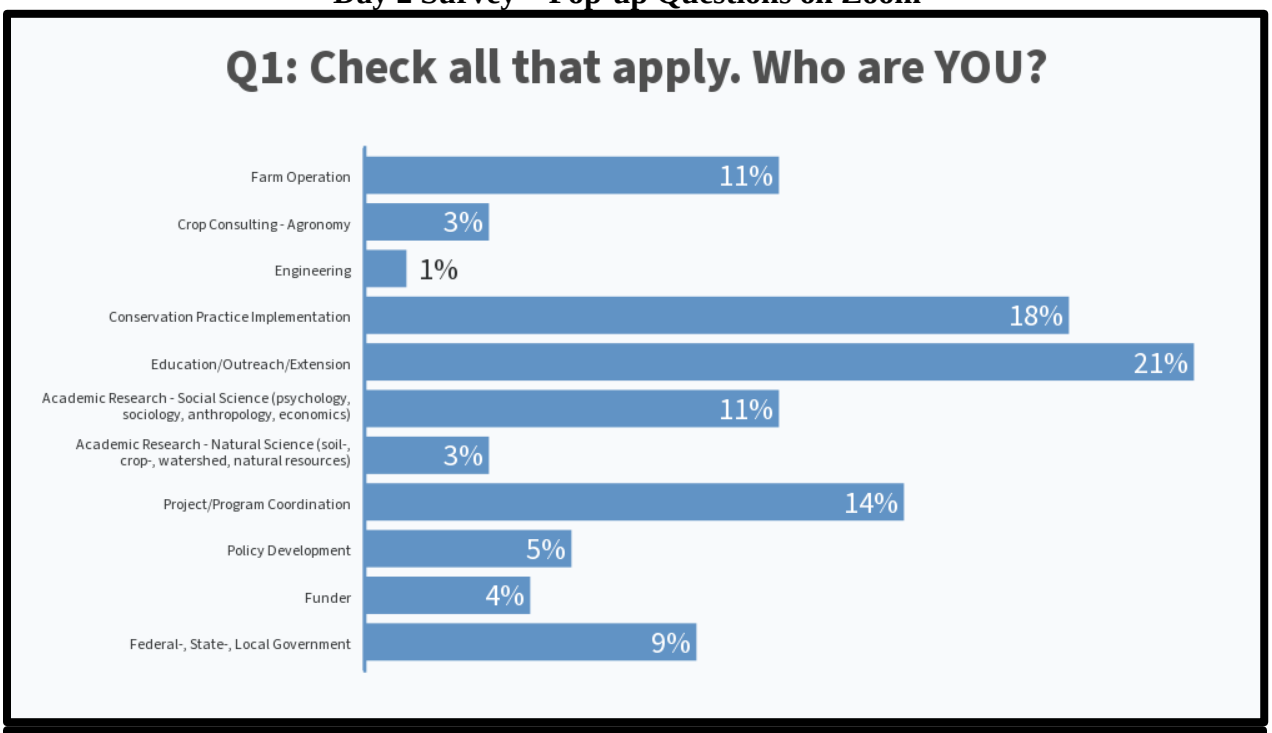
Answered: 5 Skipped: 26

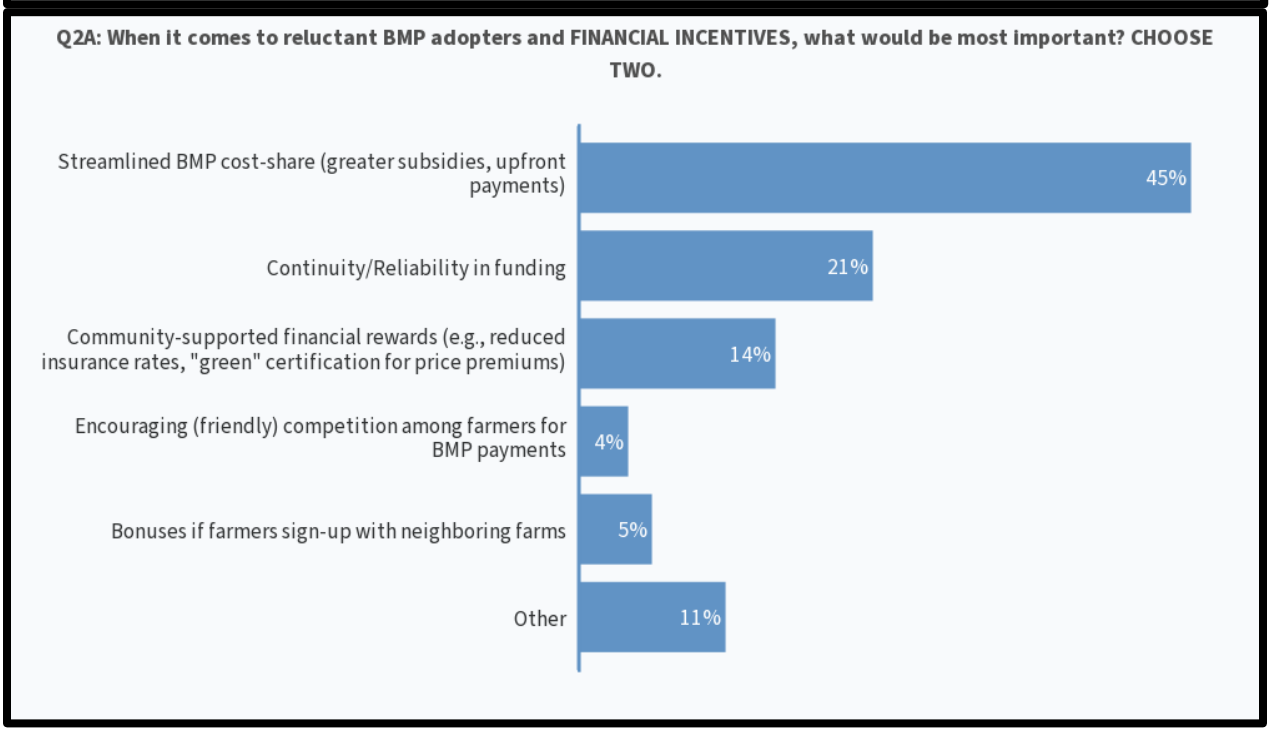
- I hope there is active collaboration with the 4R Alliance and all the state departments of ag in this effort. There's already a lot of energy going into overcoming these hurdles and we shouldn't be duplicating efforts. In addition some key themes that will undoubtedly come up are:
(a) Investing in and obtaining contracts on rented ground
(b) Use of Irrigation as a risk management tool and possibly funding of expanding that to improve conservation.
(c) Incorporating crop insurance assistance on acres where proven practices are implemented
(d) Funding necessary research on things like phosphorous transport, carbon sequestration and length of sequestration and practical and repeatable means to measure soil carbon sequestration over time.

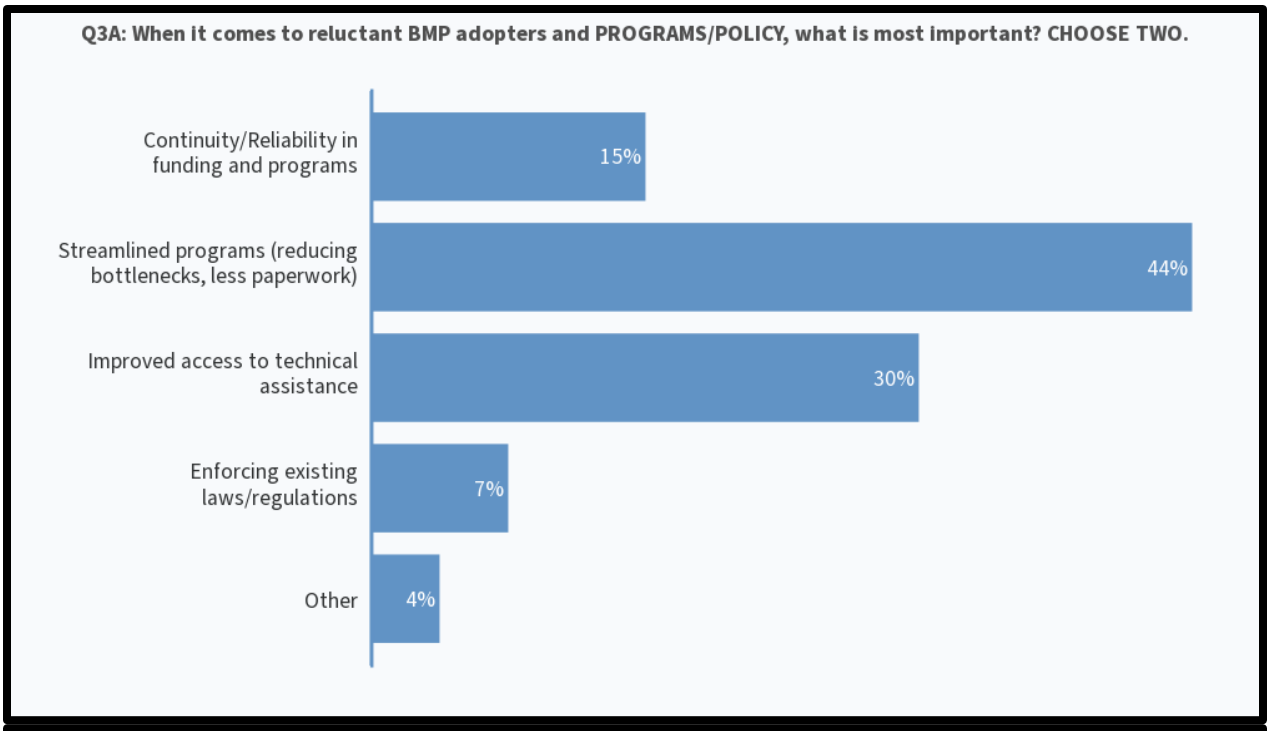
- We need to think about what people and communities really want. What risks do they accept? What goals do they have? What do they want their community to look like? Not what we want it to look like to hit our pollution reduction goals.

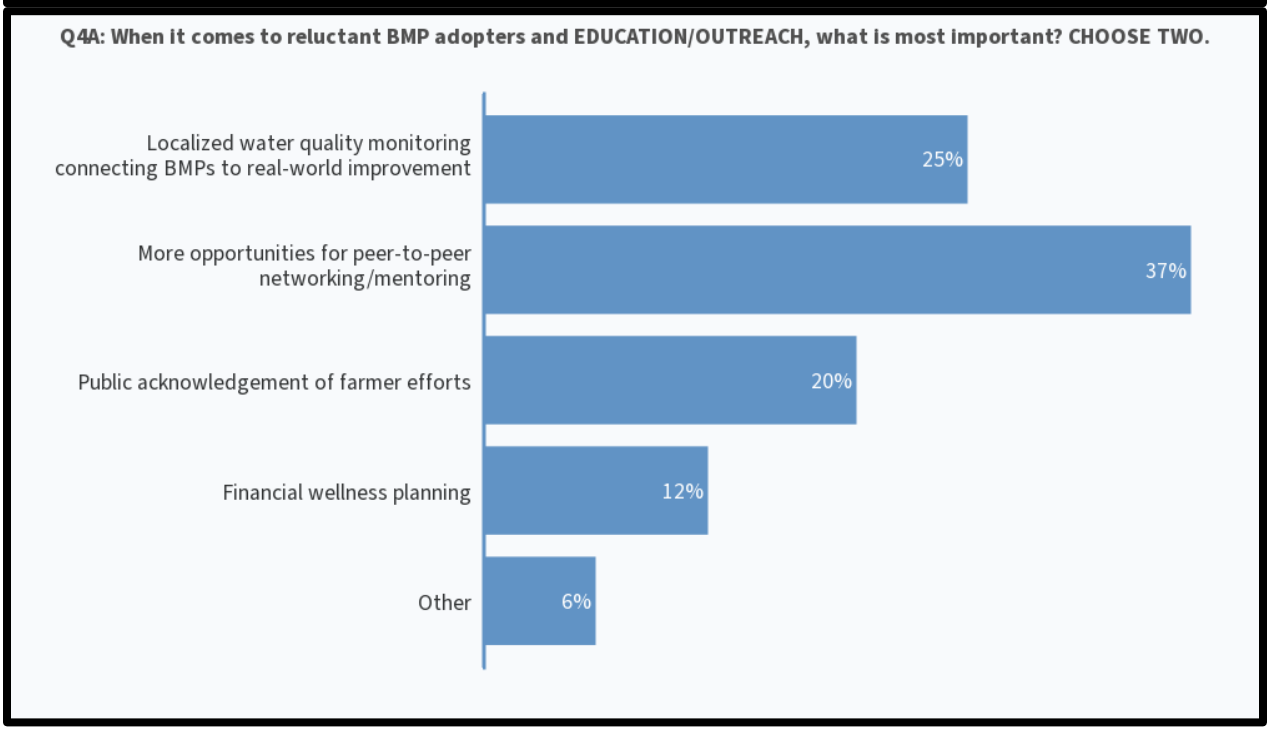
- Discussion of regulation of nonpoint source (NPS) pollution from farms. Only adequate incentives and regulation truly move the needle with NPS pollution. Are we going to discuss regulation as an option?

Day 2 Survey – Pop-up Questions on Zoom






Q3A: When it comes to reluctant BMP adopters and PROGRAMS/POLICY, what is most important? CHOOSE TWO.
Continuity/Reliability in funding and programs
15%
Streamlined programs (reducing bottlenecks, less paperwork)
44%
Improved access to technical assistance
30%
Enforcing existing laws/regulations
7%
Other
4%


Q4A: When it comes to reluctant BMP adopters and EDUCATION/OUTREACH, what is most important? CHOOSE TWO.
Localized water quality monitoring connecting BMPs to real-world improvement
25%
More opportunities for peer-to-peer networking/mentoring
37%
Public acknowledgement of farmer efforts
20%
Financial wellness planning
12%
Other
6%

Appendix D: Scenarios

Overcoming the Hurdle:

Innovative Approaches to Increase Engagement & Adoption of Conservation Best Management Practices

Ag conservation BMP implementation is critical to achieving our shared water quality (WQ) goals. The ag BMPs in place now are not proving as effective as we had hoped in terms of preventing nutrient & sediment losses from ag lands. Why is this? How can we improve BMP effectiveness & BMP adoption rates?

Below are four scenarios that may help with the following challenges:

Engaging farmers that have not previously prioritized BMPs (i.e., reluctant adopters).

Improving adoption of BMPs with high public (WQ) benefits, but low private (on-farm) benefits.

Implementing BMPs *in* landscapes and *by* farmers that can generate cost-effective reductions with limited budgets (i.e., "Bang-for-the-Buck").

Scenario 1: Expanded Use of Spatial Prioritization (Technical Targeting Tools)

Scenario 2: More Flexible Financial Incentives

Scenario 3: Using Insights from Behavioral Science to Plan Outreach Efforts & Design Conservation Programs

Scenario 4: Rewarding Conservation Professionals for Reducing Nutrient & Sediment Loss from Ag Land

Scenario 1: Expanded Use of Spatial Prioritization (Technical Targeting Tools)

Current Reality:

We have the technological capacity to identify and to treat **critical source areas**. These areas disproportionately contribute to water quality (WQ) degradation. However, soil and water conservation efforts tend to focus on farmers/land managers who walk into field offices rather than

Critical Source Area
Site with a high likelihood of relatively high levels of pollutant delivery to waterways.

proactively engaging farmers/land managers of these high impact areas.

Alternative Approach:

Instead of relying primarily on walk-in clients, conservation professionals use precision conservation tools to identify and prioritize--at the watershed, farm, or field level--precise placement of BMPs to more efficiently reduce nutrient and sediment loss into waterways. A number of tool sets now exist and more options are in development.

Questions to Consider:

- Are watershed-level and field-level precision conservation tools used in your office, and if so, how?
- How effective are precision conservation tools at...
    - identifying *critical source areas* that would benefit from BMPs?
    - identifying & engaging *reluctant BMP adopters* in those areas?
- How can precision conservation tools be made more effective in your work with farmers/land managers?
    - Is awareness, trust & confidence in such tools widespread?
    - If not, what might be improved to develop awareness, trust and/or confidence?

Scenario 2: More Flexible Financial Incentives

***Current Reality*:**

Financial incentives help farmers/land managers offset the costs of adopting conservation BMPs. However, the type and timing of financial assistance may not be sufficient to cover costs and encourage participation. Such systems make it difficult to provide incentives for BMPs in critical source areas or to support farmers/land managers in identifying cost-effective BMP options.

Alternative Approach:

"Pay-for-Performance" (P4P) programs are being proposed or piloted in several states in the Bay watershed. P4P programs would compensate farmers/land managers based on the site-level effectiveness of water quality (WQ) BMPs rather than based on the BMP implementation alone. For example, farmers/land managers would receive compensation on a per-pound basis for preventing nutrient and sediment loss. Such payments could incentivize BMP implementation in critical source areas and implementation of BMPs with high public (WQ) benefits, but low private (on-farm) benefits. P4P programs could compensate farmers/land managers for their management time and opportunity costs, potentially providing a profit opportunity if payments are above implementation costs. In addition, it may be possible to structure incentives to scale across a watershed to encourage more land to be enrolled in conservation practices.

Questions to Consider:

- Would a P4P program attract farmers/land managers who have been reluctant BMP adopters?

- Are there other financial incentive program designs that could improve effective participation in critical source areas & among reluctant BMP adopters, particularly over a larger area?

Scenario 3: Using Insights from Behavioral Science to Plan Outreach Efforts & Design Conservation Programs

Current Reality:

Farmer/land manager decisions to implement conservation BMPs are partly influenced by how conservation professionals present options to them.

Alternative Approach:

Behavioral scientists have identified simple, low-cost program modifications that can improve program outcomes (sometimes called "nudges"). We've outlined some of the key ideas below:

- **Messengers:** Outreach may be more effective when information is communicated by influential "messengers." Work with influential members of the community to deliver information about your program, especially when the information may be new or controversial.
- **Social norms:** Farmers may be more likely to use a conservation practice if they know that others in their social circle also use it. Provide information about how other farmers and land managers are engaging in environmental stewardship.
- **Recognition:** Farmers may be more willing to use conservation practices if they are publicly recognized for their actions through awards, verification programs, and other public acknowledgments, including signs that can be displayed on their land.
- **Pre-commitment**: People are more likely to take an action if they have already pre-committed to doing it. Ask farmers to make a public commitment to adopt a BMP or participate in a program, especially if participation requires sustained actions over time.

Questions to Consider:

- Would these outreach approaches engage more farmers/land managers across-the-board, or would they be more effective for certain types of farmers?
    - Which approaches would be most effective for engaging reluctant BMP adopters?
- For which BMPs would these approaches be effective (or ineffective)?
- How would these approaches influence farmer/land manager BMP adoption and maintenance over the long-term?

Scenario 4: Rewarding Conservation Professionals for Reducing Nutrient & Sediment Loss from Ag Land

Current Reality:

Conservation districts have few mechanisms to reward staff members who are particularly effective at reducing nutrient and sediment loss from agricultural land through BMP adoption. It is not uncommon for district offices to invest several years in training staff members only to have them leave for more lucrative positions in other agencies, the private sector, or elsewhere outside the Bay watershed. Similarly, agricultural retailers have few incentives to refer clients to conservation professionals.

Alternative Approach:

Conservation district staff members receive incentives (e.g., bonuses, salary increases, promotions) based on estimated nutrient and sediment loss reductions resulting from BMPs they helped install.

Ag retailers get a commission for referring motivated farmers/land managers to conservation professionals or helping to install conservation practices in critical source areas.

Questions to Consider:

- How would these kinds of rewards change the way you conduct your work?
- What impact would these rewards have on who adopts BMPs & the number, type & location of those BMPs?
- How would these rewards affect your relationships with your colleagues & with farmers/land managers?
- How would these rewards affect the overall technical assistance capacity in the Bay watershed & within different agencies?

Appendix E: Detailed Group Discussion Summaries DAY 1

Group #1(Day 1):

In 2031…Innovation in ag conservation is swiftly identified, defined, and implemented.

Challenge/Limitation: Lack of innovation in ag management practices.

Technical assistance providers (TAPs) need clear, concise guidance on new technologies and effective tools to get those technologies implemented (remove barriers).

Transporting manure nutrients efficiently to areas of need.

Slow acknowledgement of movement towards precision agricultural management.

Rigid systems need greater flexibility to account for diverse circumstances.

In 2031… A uniform and trusted BMP reporting system instills confidence in progress assessments.

Challenge/Limitation: Voluntary actions and improvements aren't being captured

Need a uniform reporting system for BMPs, 3rd party data collector to ensure robustness.

Concern raised that CB bad report cards are bad on purpose, don't reflect improvements observed. Need more transparency in how report cards are created.*

In 2031…Communities are united in a common goal.

Challenge/Limitation: Farmers feel singled out to achieve water quality goals.

Communities invest bring together resources and engage in positive reinforcement with local ag operations.

Ag industry provides incentives through efforts such as discounted services (e.g., lowering insurance rates).

Regulations alone do not incentivize.

In 2031…Cultural awareness has opened opportunities to underserved communities

Challenge/Limitation: Needed investment establishing relationships via knowledgeable liaisons.

Break down barriers with folks that understand needs of diverse farming communities:

Example:

- Lancaster County uses culturally-aware liaison to develop trusted relationships with Plain Sect community leaders (bishops) and remove barriers to engagement.
- VA identified low participation in cost-share programs among African American farmers. In response, building a program to utilize liaisons to build trusted relationships between farmers and local agencies.

In 2031… Farms use the same mindset for both production and conservation practices.

Challenges/Limitations: Lack of economic incentive to implementation conservation practices.

Pay-for-Performance programs are generating interest. Farmers need a guaranteed source of income and P-4-P may be a solution.

Investment in conservation on rented lands in tough to justify. Selling land for development is a profitable endeavor. Land owners want to have that option available. Often part of retirement plan.

Farm size is a factor. Smaller farm often don't have comfortable-enough profit margins to consider management changes that are costly (time and money) and don't have clear financial benefits.

Group #2 (Day 1):

In 2031… Farms are environmentally and financially sustainable.

Soils, food produced, and farmer.

In 2031… Awareness of that circumstances are different in different places

Not every stream can be buffered. Diverse operations require diverse answers. Farmers have space to approach conservation from different angles.

Challenges/Limitations:

More flexibility in funding programs needed. Programs are often geared to a few specific practices that may not meet the needs of a farm operation. By offering few choices, planners are taking away potentially beneficial management options.

In 2031… Venues for farmer-to-farmer knowledge sharing are common.

Farmers value clean water and share knowledge with other farmers on how to get it.

In 2031… Water quality is local.

The Bay is not relevant to many parts of the watershed, but local streams and rivers are. Thinking local will result in more action.

In 2031… Farmers are paid equitably for their product.

Challenges/Limitations: Unpredictable commodity markets and weather patterns make it difficult to anticipate future profits and losses.

Without income stability, investments in alternative management systems are challenging and often unrealistic.

In 2031… Farms are resilient to market and weather factors.

Programs that support farmers adapt quickly to changes.

Effective outreach and education give farmers the tolls they need to adapt with the What? Why? and How? clearly identified.

In 2031… Farmers have access to structural technology.

Cost and technical assistance barriers have been overcome and technologies are tailored to farm-level needs.

Challenges/Limitations:

Structural practices are cost-prohibitive for many operations, even with available cost-share.

In 2031… Manure is universally viewed as a resource, not a waste product.

Technological solutions reduce manure to a product that can economically transported to areas where it is needed.

Challenges/Limitations:

Storage constraints force manure to be disposed of as a waste product, rather than a nutrient-rich soil amendment.

In 2031… "Long-term conservation stewardship" is a common component of farm management planning.

Challenges/Limitations:

BMPs can fail over time without regular maintenance or be subject to loss with fluctuation in land value or commodity markets (e.g., buffers).

In 2031… Farmers change management strategies because conventional farming is not deemed sustainable.

Challenges/Limitations:

Long-term research has shown that financial incentives to make farms sustainable typically don't last long-term.

Group #3 (Day 1):

In 2031… Funding for conservation is available and easy to obtain.

Funding maintenance of practices is high priority.

Private industry works directly with farmers to advance BMP implementation.

Third-party provider (e.g., Ducks Unlimited) streamline process by working between farmer and agencies.

Cost-share funding identifies localized needs.

Challenges/Limitations:

Interest in projects lost due to lag times from beginning to end.

Federal & state programs are difficult to work with. NRCS reaches 12-15% of farmers nationally. There is not enough scope and outreach. Funding priorities and stipulations can frustrate farmers.

Paperwork bottlenecks slow progress and limit progress.

Difficult to balance between needs of population dense watershed and ag environmental conservation.

In 2031… Technical service provider networks are robust and dependable.

Educational pathways and career development are many and desirable for ag engineering and conservation agronomy.

Farmers seeking TA do not have to wait long.

TSPs equipped and available to reach out to hesitant BMP adopters.

Research priorities focus on local needs, rather than federal-level trends.

Challenges/Limitations:

Revolving door at state agencies. Private sector pays better and benefits better. Staff leave before project completion.

Not enough TSPs to meet demand.

Finding nexus between future farmers and environmental science. Where are the opportunities and are we describing them effectively to students (tomorrow's professionals)?

In 2031… Pay-for Performance programs are operational in the CBW.

The market funds conservation, rather than the government.

Government funding is targeting to practices based on $/lb reduced.

Challenges/Limitations:

Where are successful P-4-P currently operating?

Working with current funding structures and legislative processes is challenging.

In 2031… Targeting BMPs to be most effective is the norm.

Identification of problem and projects development is focused on the sub-watershed level.

Flexibility in programs give room for targeting.

Copied and scaled lessons of effective programs.

Challenges/Limitations:

One-size fits all blanketing of BMPs does effectively address conservation needs.

Easy to fund cover crops, less easy to pinpoint source of on-farm NPS pollution.

Difference states and sub-watersheds have different areas-for-improvements.

Need to understand what is holding us back from effective targeting.

People do not like being singled out.

Why is my neighbor getting funding and not me?

Farmers generally support targeted/precision conservation- communication approach important.

Conservation-minded farmers generally not yet comfortable knocking on doors to approach neighbors.

In 2031… Non-productive/marginal ag land is no longer cultivated.

Farms focus on land that will make money and non-productive parcels are put to better use.

In 2031… Science leads to diversification in crop rotations for more sustainable meat production.

Research in the U.S. and abroad is leading to new ideas for animal feed production.

Group #4 (Day 1):

In 2031… Every on-farm stream has 35-ft tree buffers, an implemented conservation and manure plan and more focus towards organic and tillage BMPs.

Organic farms would focus both on soils and structural BMPs like contours and waterways.

In 2031…We have made space for smaller regional dairies.

Manure transport is efficient and effective.

The economics of the dairy business allow focus on conservation investments (via subsidies or change in market forces).

Challenges/Limitations:

Dairies have not been profitable in recent years due to end market prices.

Smaller dairies are squeezed out, but larger dairies have more of an environmental impact.

Manure transport options for dairies need improvement.

In 2031… Cost-share funding structures are flexible and reliable to accommodate a spectrum of needs.

Rules are straight-forward. easy to follow, and can flex depending on the situation.

Minimum funding thresholds are available on annual basis.

Funding full-spectrum of implementation needs (outreach, engagement, staffing, monitoring).

Challenges/Limitations:

Willingness to take financial assistance varies and complexity in getting it does not help.

Project standards and payment caps are not flexible. This often results in over-engineering of structural projects.

Federal cost-share caps inhibit needed progress.

Funding not reliable or consistent. Conservation districts can't plan without reliable funding. Neither can farmers.

In 2031… A culture of good stewardship is dominant in agriculture.

Farmers take pride in the health of creeks and streams flowing through their operations.

BMPs are encouraged based on ethics.

Challenges/Limitations:

Lack of refined-scale water quality monitoring data.

Trust is enhanced if we can show the changing in water quality on a local scale.

BMP implementation more likely where problems can be pin-pointed.

In 2031…A reliable and consistent cohort of TA providers is available to address farmer needs.

TA staff interactions with farmers are flexible and solutions-oriented, not BMP oriented.

Each county or sub-region has a designated person that is a one-stop shop for TA and understand the needs of the area and had built solid, trust-based relationships with farmers.

Local coalitions encompassing multiple perspectives drive the narratives and bring farmers into the fold.

Relationships and trust come first. Funding is secondary.
TA providers without ag backgrounds engage in on-farm internships to better understand working farms.

In 2031… We lift the burden of highly effective BMPs off of farmers.
Third-party entities design, implement, and maintain BMPs that don't involve daily farm operations, such as riparian tree buffers.

In 2031… Outreach and education with farmers has expanded and is more effective.
More farmers understand the benefits of BMPs to their farms in the long-term, rather than just the short-term economic impacts.
Social media and other communication networks show what neighbors are doing to improve plant and soil health and follow suit.
Gateway practices (e.g., energy audits, high tunnels, cover crops) that may be simpler to engage allow the establishment of relationships with TA providers that can result in further conservation investments.
In 2031…Local on-farm field trials are common-place.
Farmers set aside parcels for farm trials that are carefully monitored and offer demonstration of how BMPs can work on localized scales and provide learning opportunities to neighboring farmers with no risk.
In 2031…Consumer demand drives conservation through markets and policy.
Consumers speak with their wallets and are willing to pay more to ensure the societal benefits of water quality conservation.
Certification programs with marketing options inform consumers of on-farm management practices.

Challenges/Limitations:
Communicating to the consuming public the importance of supporting local family farms and conservation, even if that means spending more.
Ensuring the farmers see the market benefits of implementing conservation practices.

Group #5 (Day 1):

In 2031…Farms are prosperous, and the list of impaired streams have been reduced by half.
We got there through collaboration at the local level.
In 2031… Innovative funding mechanisms have opened up BMP implementation opportunities.
Pay-for performance, accelerated payment timelines make is easy to get effective implementation on the ground.
Funders think about scalability. EPA is focusing on regional collaboratives to address economic drivers and bring it to scale.

Challenges/Limitations:
Overcoming limitation in existing structures. Look towards what is working in other watersheds.
Federal funding cumbersome for grantees.
Identify the innovations in funding that will streamline effective implementation.

In 2031…Improvements in conservation management and profitability co-exist in ag operations.
The carrot is favored over the stick.
Water quality focus is on localized benefits rather than the Bay.
Farm resiliency due to conservation brings down insurance rates.
Ag tourism provides an additional source of income to farmers and strengthens community connections.

Challenges/Limitations:
What is the end-game? There is a fear of environmental goals that are unreachable. If existing goals are reached, there is always something else to do.
Light at the end of the tunnel and financial rewards for practice adoption needed.
What certifications can provide market incentives for practice implementation.
Environmental stewardship is a long-term goal. Weather patterns are beyond our control. Impacts of climate change will impact goal in the future.

In 2031… Informed consumers support conservation with their wallets.
Marketing strategies provide trusted local branding indicators (e.g., PA Preferred).
Consumers are invested in local water quality improvements and the impact on their lives.

Challenges/Limitations:
Clear definitions for labeling to instill trust from consumers.
Educating consumers on the multiple benefits of conservation and water quality.

Making connections between the value of the natural world that the influence of consumer dollars.
How much are consumers willing to pay to ensure systematic changes in conservation?

In 2031…Flexibility in BMP implementation standards based on localized needs.

Implementation plans take into account management and financial considerations.

Challenges/Limitations:

Conservation BMP implementation does not occur in isolation. There are always broader operational management implications.

Federal programs (e.g., NRCS) have strict protocols for sign-up and payment structures.

In 2031…We have a clearer picture of the direct impacts of conservation management on water quality trends.

Localized water quality monitoring reveals what practices in what situations work best.

Farmers can see real-world data and make informed management decisions based on science- more trust in monitoring than modeling.

Challenges/Limitations:

Overall water quality trends are not moving in the right direction in many places. Are we doing something wrong? Wrong practices? Wrong places?

Communicating science must be done carefully. No quick answers for a complex system.

We are continually improving, but always should be aware of next steps.

More edge-of-field monitoring may not be well-received by some landowners.

What is the perception of intermediate measurements (e.g., erosion rates, soil phosphorus levels)?

In 2031… Ag retailers and consultants are fully engaging in supporting precision management among farmer clientele. Shift culture from productive to profitable.

Private sector food corporations commonly invest in risk assessment tools that provide farmers with field-by-field analysis of erosion and nutrient loss and economic analyses.

Farmers are enabled to apply farm-tailored science to make informed management decisions.

Challenges/Limitations:

Ag/food companies that are not public-facing have less incentive to encourage conservation practices on partner farms.

In 2031…Generational succession on-farm means more willingness to adopt alternative management strategies.

Transitional planning for future farm operation is an opportunity to incorporate new management approaches on operations that have been hesitant to change.

Challenges/Limitations:

Changes in management are costly regarding time, money, and cognitive load. It is easier to do what has always been done. Some of the late adoption can be attributed to these factors.

Day 1 Break-Out Reports to Full Group Notes w/ chat

Group 5 (Day 1) (See Jamboard):

- More consideration of cooperate economic drivers
    - More econ analysis is available. Help use farmers make decision at farm or field level to drive work cooperate level
- Pull in consumer audiences: need clean wells, less flooding, local food movement, more engagement from all of community
- PARTIES- reason to celebrate in a culturally appropriate way.

Challenges

- Science metrics and monitoring played up over modeling to get engagement from farmer, land owners, cooperate entities. Want to see results of implementation and ROI from practices.
- Funding levels and flexibility. Reviewing at parcel-level and requirements at federal level.
    - What do the funders have to think about with scaling up these practices?
- Weather challenges. Quick impacts.

Group 4 (Day 1):
In 2031…

- Expanded stewardship ethic among farmers. Less CAFOs, streams with 35 ft buffers, grass-fed livestock and not over-stocked.
- Solutions-oriented outreach TA. Conservation is not everyone's top priority, but can show how conservation can solve on-farm problems. Gateway practices.
- Dedicated coordinator in each county agencies who can refer farmer. Expanded use of monitoring data to show progress towards addressing runoff problem.

Challenges

- more consistent and predictable funding levels for staff and programs.
- lifting funding cap to cover more costs.
- More support from local leaders that can coordinate but also communicate with policy leaders. on needs. Blanket funding may be counter-productive if the result in unsustainable farm management practices

Group 3(Day 1) (See Jamboard):

- More identification of critical source areas to target efforts and funding for effectiveness.
- Need for flexible streamlined programs and P4P programs based on reduction in sediments being achieved.
    - Some may be paid more than others, but the flexibility is important.
- Need to learn from successful program models.
    - Reduce bottled necks and frustration for quick turn-around so not to lose momentum toward BMP implementation.
- Richer networks of ag retailers and service providers. Better to engage hesitant farmers.
    - We don't have a lot of trained staff to increase these networks.
    - Improved certification programs with community colleges and LGUs that will serve the community.

Group 2 (Day 1)(See Jamboard page 1):
Envisioning 2031 and how we got there.

- We have flexibility in funding program to enable practitioners and farmers to work together. Funding allows for individual farmer needs.
- Farmer knowledgeable of the BMPs available to them and resilient to weather, climate, and price markets… doing their thing fluidly and without limitations.
- Farmers are aware of what they will get financially from year to year. Equitable payments each year. Making enough money to do what they need to do and engage with conservation and diversity of their specific system. Recognize sustainability at the farm scale (soils, economic, etc)
- We know there are some large infrastructure systems with high funding and technologies at farm-scale. No limitations on getting BMPs employed regardless of cost.
- Related to manure… farm resource not waste source. Storage systems have been updated for choice and capacity for sustained animals without deleterious environmental impact.

Group 1 (Day 1):

- Agency level change needed.
- Barriers to innovation.
    - Too many new practices mean workload problem.
    - CBP approval is a barrier to innovation. Must make easier to implement.
    - Simplify messaging.
- Community support
    - Farmers should not sacrifice alone.
    - Support with improved premiums. Discount on lands, insurance… positive reinforcement
- P4P
    - Outcome based payments. Farmers are ready. Let them compete on run-off reduction performance.

- Payments reflect effectiveness. If they are taking time to implement they don't want any old rules of thumb hindering progress.

Waterfall Chat Response: What's one idea that caught your attention from the small group or report backs?

- The idea of farmers using lost production areas as opportunities for income
- flexibility in use of BMPs (and funding) was heard multiple times. Flexibility will be key.
- competing for higher payments based on nutrient/sediment reductions (performance)
- Building local support rapid approval of program innovation
- Identifying critical pollution source areas through greater monitoring, funding for increased monitoring
- Landowners are more open to competing for water quality improvements (and payments tied to them) than originally thought.
- more stream monitoring
- enhancing farmer incentives
- community supported bmp adoption
- Curious about thoughts regarding alignment between feedback from breakout groups and Jay's initial presentation.
- Being able to monitor outcomes rather than model them.
- Farmland fragmentation may be impeding BMP adoption. Farmers who rent spend a lot of time driving to far-flung parcels.
- The interdependent corn-soy-meat production system creates major driver of excess nutrient situations and nutrient loss.
- How more monitoring can facilitate greater adoption of practices
- Competitions for farmers to reduce nutrient runoff from their farms
- Flexibility of government programs to fund innovative technologies
- Hopes and aspirations of other groups that pay for performance (P4P) is a possible vision for a 2031 Chesapeake Bay watershed ag landscape…. that both farmers and practitioners see as possible….
- flexibility
- I really liked what one of our group members suggested regarding the community taking on the cost of the conservation initiatives that are weighing on farmers and that the community should support farmers/ag with reductions in insurance premiums, etc!
- The lack of consistent funding for outreach and technical assistance affects staff members' ability to make relationships with farmers and limits their ability to use BMPs that will solve farmers' problems.
- liaisons to communities encouraging practices
- Shifting from social and dependent benefits to direct/individual and independent (payment) to inspire adoption
- Operation profitability is key to effective implementation of conservation practices
- growing service provider networks
- Market-based Incentives from consumer standpoints to increase adoption of BMPs on farms
- Economics and financial issues drive all the farmers decisions.
- Funding flexibility and new opportunities mentioned by most groups but that would also require structural/process changes to support faster role out of funds

Full Group Discussion (Day1)

Participant: I was a feed flock supervisor working with farmers competing on contracts. Competing against the last 11 farmers and their efficiencies. Competing against the average. Keeping secrets was common. Growers were always in the top getting paid more but keeping secrets. Better to talk about baseline then competing against others. Once you get the secret you can help the bottom people. And it was never the big things, always the little things. Competition is good but must be careful.
Participant: Community support. SWCD and agencies helping but farmers are out of pocket. Giving post to farmers with discounted also recognizes efforts. Farmers are not the bad guys, they are doing things to help us all.
Participant: Large scale famers are doing what we asked over last 60-70 years. Make investments based on the way markets are structured. Can we help get them out of their path of dependence.
Facilitator: How do we scale up what is working?

Participant: NC has watershed groups of farmers. If your watershed is not achieving TMDL goals. Every farmer asked to implement 3 costly BMPs or come up with a group solution. Don't know how it is working. Not enforced…

Participant: TSP/farmer suggested to be eligible for BMP bundle- join a group. Must belong to a network that provided information.

Participant: heart and social connection. Local leadership group watershed associations ag watershed councils provide opportunity to build social momentum. Social connection mutual support peer to peer learning an important piece of the puzzle. Can we think about that more directly in our funding?

Facilitator: So what would that look like in 10 years if you have really amp up the social support?

Participant: I would love to see a water and ag related council in every county. Solution-oriented rather than programmatic-oriented are reason for being. Broad representation of TA, community support.. all of the above approach. Integrate players in a facilitative way.

Participant: amplifying success stories… what we have heard from our team members. Acknowledgement can come from cooperate (ex: PA Preferred), signage, premiums for product. Ex: Plain Sect do not what publicity. Just a thank you. Celebration can serve as outreach and education.

Participant: those are all fantastic ideas, and usually if one farmer sees what their neighboring farms are doing, they are more apt to adopt similar practices.

Participant: Lancaster small catchment delisting. Neighbors talking to neighbors work together. We are working on capacity with funding and right BMPs for that stretch.

Facilitator: What is friendly competition?

Participant: Farmers/landowners and protecting information. 4H, FFA. Youth groups have tapped cooperation and competition—can we do that for adults.

Participant: Lack of pipeline of youth groups to university science-based careers. Farmer essential to human ecosystem. We don't have a bay program goal that focuses on healthy ag systems. Soil health, watershed health.

Participant: In my PA county USGS is expanding water monitoring. What are the N delivery rates rather than modeling? A lot of data is not in the system. Farmers say, "We are doing a pretty good job- is it showing up in the stream" let's find out! Takes money and time to see trends. Regulatory end- work off two years trends rather then 10-20 years. What can we learn on a shorter time-frame? What can we get from shorter-term data? Is it just ag and not other sources?

Participant: Common language needed. Monitoring data can help with that. How do we know what works is we don't have monitoring data?

Facilitator: Idea: need for common language, common understanding. Monitoring data = good way to achieve this. Networks of relationships to learn from each other- monitoring data helps show what works.

Participant: Visited water treatment station. They talked about seasonal run-off. Focus on particular problem/event. Key in with farming practices- also beyond N/P/SS. More water systems out there monitoring their water all the time- monitoring for WQ. Community water monitoring?
How do we tap into community water monitoring systems?

Participant: BMPs handling storm events becoming more prevalent with climate change. We have data in different ways. How do we make sure our BMPs are adapted to climate change (flood , drought…)
How do we handle the extremes?

Participant: I don't think we know. BMPs are based on base conditions. We are no longer in normal cycles. There is a technology gaps- and might be super expensive.

Facilitator: Cost-effectiveness vs. effectiveness.

Participant: Smaller acreages are the big problems. If barnyard near the stream more direct connection. (targeting) Farmers don't do the larger cost things or the site does not allow for it. We need to look towards getting those done.

Participant: I like the comments that I see. When talking about runoff, animal vs. crop systems. With climate change, we look at BMPs in the larger picture not small areas. Ex: soybeans growth this year will be less bushel of beans. same with corn. What the model is based on changes dramatically. We need to know what is happening in the local community.

Facilitator: TSPs? What are the needs? What do you see?

Participant: discussion has been about management decisions. Assumption that manure needs to be managed in a certain way. Or crop erosion issues. Everything is a management decision. What is the BMP that can address current management and is the way it is being used a good idea? Can we better mimic nature?

Participant: We have a lot of orgs and funding to implement BMPs. I think is more of a social science challenge. Better understanding of why folks aren't and who should gather that info. Maybe extension, or coops (ag retailer) conservationist overwhelmed with foot traffic. I see a generational challenge. Do what father did. How not to insult based on what has been done. Farmers don't rely on farms from income. Financial benefits are not related to income. If new generation can't do anything it's a waste. Support value-added practices rather than penalties and reward for the work they are doing.

Participant: Streamlining and simplified. Some projects have 3,4,5 sources of funding to get a project done. Each has own requirements and paperwork. Discouraging to get farms on board.

Participant: availability of contractor to do the work. Even with funding famers rely on contractors. Need more of this.

Facilitator: Cut the 'green tape'. Are there groups that have effective synced funding?

Participant: Trout Unlimited has a turn-key service. They do the work, contracts.., they are the project manager. Farmer has the cost-share money then TU gets the rest. You are good to go. hand this over to your funder. Takes more money.

Participant: RC& D unleased by USDA as few have moved into that. Lower Eastern show has been doing stuff around the stormwater. They are free agents and operate differently. They could bring together programs that could provide that support. Are the contractor limitations an issue everywhere?

Facilitator: Quick summary:

- We are making progress but not fast enough.
- Need to be reaching more folks.
- We can only move at the speed of trust.
- Work at the local level.
- Peer to peer networks engage were it matter.
- Non-destruct competition.
- Celebrate success.
- How to we move through programs?
- How do we bring it together? How to we get faster approvals?
- Monitoring – seeing is believing. Is it making a difference? Can we take it fast enough to move forward?

Appendix F: Detailed Group Discussion Summaries DAY 2

Scenario #1 (Day 2): Expanded Use of Spatial Prioritization (Technical Targeting Tools)

Precision targeted conservation - drilling down to fields within a small watershed, identifying hot spots (those areas that deliver the majority of nutrients and sediments).

Anyone already using these tools and if so, what are challenges and successes?

--We have a tracking program that we enter a lot of data in and it looks at watershed TMDLs, slopes and soils. It generates a ranking and cost-effectiveness type factor for the BMPs we install. We already have a database - we know where all the ag lands are through USDA federal partners. Most of those lands are already mapped. There are participants that fall out of USDA framework and that is more of a difficult process so we use GIS to target landowners for grazing system practices.

Are you choosing which farmers to contact based on cost effectiveness ratio?

Most producers are already targeted through tracking programs and FSA. Trying to convince producers to do more or sign up for new programs. The livestock producers are probably the most difficult because they don't qualify for FSA programs. Need to use GIS to find land use and get an address and a landowner.

--Use private monies or settlement funds to support riparian forest buffer implementation. Identify the parcels with the highest potential for restoration regarding forest buffers. Have used some targeting tools developed by the Chesapeake Conservancy down to the parcel level that lack riparian forest buffers. You need to take it with a grain of salt...we realized that there was always the need to ground truth the tool with boots on the ground. The ground truthing takes an enormous amount of time and that's why we haven't done another 319 grant since it took so much staff time to ground truth it. That's a restriction and stumbling block. A good way to get around that is to have someone do an aerial photograph interpretation. Or have human eyes train artificial intelligence. Or use drones to identify and select parcels. And farmers might not react well to drones.

--SWCD directors are actively farming and have jobs or are retired and run farms. Very few have very little time to do any more. One of the duties of the directors is to find areas for BMPs but everyone is so overworked so that's not really happening. Haven't found a solution.

--So busy with people coming into the door and 70% of their time is filling out paperwork and helping the landowner fill out forms. If targeting tools were used to determine eligibility, some of that paperwork might not be necessary. I'd be more interested if you had a ranking tool as potential customers come in and you get this conservation efficiency factor. GIS tool that also ranks parcels for people that haven't come to you.

Conservancy's tool: Trying to quantify the extent to which a riparian forest buffer of two different widths determines how much potential a restoration opportunity area is created. Try to roughly calculate the catchment basin that the buffer would filter. Have you used this tool with farmers or how would you use it with farmers?

We use it on the backend to target outreach. That alone can be a tricky conversation with the farmer. Nobody wants to be a target. We're very careful in our messaging with the farmer. Even if you used the tool, you may not be getting to the audience you need to reach since much of the land is rented.

Need to target landowners?

We do need to interface with renters if there's also an ag operation but our first phase of prioritization is identifying where those restoration opportunities are for riparian forest buffers. We try to give the landowner information about the program but the renters might not want to deal with the additional BMPs.

--A colleague was doing a project with an environmental NGO- mailings to landowners. Farm press exploded about the contact with the landlords. The farmers preferred to be contacted along with the landowner. Unless you have

access to the FSA records, then you have to contact the landowner first to see if they have a tenant and if so, who that is.

--We have a lot of tools that you all have. The consultant company I work for does have a few GIS folks that are using remote sensing and doing the precision ag stuff with cover crops and other information from precision ag (survey equipment). We can get satellite imagery every five days to know what kind of cover crop was planted and where. We're just now getting into that and finding all the best uses for these tools. Now that you know who has cover crops and who doesn't - the next step is to target farmers who don't have cover crops. It's very noticeable who is using no-till and cover crops. The next question is for folks not doing cover crops, where are they and why are they not doing it? Hold farmer meetings in partnership with NGOs for field days in those areas where cover cropping isn't happening.

--I know we had to field truth some of the images to make sure what was being picked up was actually out in the field. We also spoke with farmers about things - good question to ask about whether fertilizer was applied. There are minor loading differences from what comes off the field in the modeling tools. Use GIS tools to identify those lands that have cover crops.

Trying to use these tools to target non-adopters.

We have been trying to target tools from the people side. There are some people who are interested in some BMPs or respond well to one message to another. Spent a few years building models and taking a look at all of the farmers in a catchment and looking for those landowners who look like they are interested in buffers. As you prioritize outreach and restoration, you're working with the best properties with restoration benefits but can also provide a list of people who are likely to participate. Working to build the models better and the next step is to understand how the information would be used. Trying to help understand if BMPs will be more or less attractive to folks, or say that these are the folks that have a strong stewardship identity, and use that angle. If we can whittle that list down to people who have a conservation ethic, those that are interested in wildlife, those that are interested in precision farming, etc., that would be a tremendous tool to use.

How does economics factor into this?

We have not built models around precision ag but if we did, we could certainly identify folks who are more likely to have the capacity already, so your outreach is directed to when and where. If they don't have the capacity, your outreach is more about how to build that capacity.

Being able to compare the people that walk in the door to other folks in the watershed

- we have limited resources and spend so much time trying to figure out eligibility of producers and then they're not eligible. If we could figure out ways to streamline using these targeting tools to get the most bang for your buck, that would be extremely useful.

Where is the data coming from to identify conservation identities?

We can start to build models from publicly accessible data, media and marketing data, and from other sources. If you're interested in talking with farmers, that's a lot harder to connect on the ground. We've been supplementing that data with survey work. That combined with GIS layers that identify the critical areas can be an incredible tool. Also private sector service providers can use that to target most likely customers for their services. Entry to private based market conservation.

Top Messages
--Important to engage renters and owners from the beginning to avoid concerns in the use of targeting tools.
--Opportunity for targeting tools to streamline paperwork and eligibility
--GIS or targeting tools to streamline all aspects of technical assistance workload to provide more opportunity to work with farmers.

--the use of social and environmental characteristics to create more refined targeting could be expanded to include economic data.
--find more cost-effective options for using tools (e.g., identify critical gaps where additional funding could move a project forward)
--current spatial data requires ground truthing - the costs of that are not small. If we could better tailor those spatial products to eliminate at least some of the ground truthing, that would be extremely helpful.

Scenario #2 (Day 2): More Flexible Financial Incentives

Takeaways from the morning session: We started with the Hugh Hammond Bennett idea of engaging farmers with other farmers, but then jumped quickly to monitoring, which would likely scare farmers away. When dealing with farmers who are particularly skeptical of government, this would be a barrier. Also, sometimes the monitoring doesn't show the promised outcomes because of other impacts (like climate change) that have a masking effect. You need the right farmer messengers to talk to their peers and convey the message. We're not talking about early adopters anymore; we're talking about those who are reluctant.

Flexible Incentives is really about exploring different ways to motivate and encourage adoption outside of the cost-share framework. This is thinking differently about rewarding and incentivizing. Historically we reimbursed people for costs, but one of the most fundamental changes is to compensate people from the value they create; the amount of water quality improvements. Farmers are rewarded for how much corn they grow or milk they produce, not based on the labor cost. To pay for success, I would compensate a farmer per pound based on a pound rate of the reductions per year. You're trying to reach areas that have been hard to reach through traditional cost share, who have been reticent to participate in past programs, but now they see it as a revenue opportunity. If designed properly it would address the critical source areas that are generating the highest load. If half an acre is producing 80% of the load on the farm, let's go for that one and get a bigger bang for our buck. For the type of BMPs with very little agronomic benefit - like ditch systems or bioreactors - as opposed to cover crops or no till - we should be paying directly for that public benefit.

Question: Is this a discussion of replacing the current system, or as a complement to it?
Answer: Either one. It could be an add-on, an additional incentive. That's probably more realistic. We know what tools we can already use for financial incentivizing, but are there newer tools that our systems don't yet support us in using? Virginia has a small pilot program, Maryland and Pennsylvania have bills in the legislature.

Feedback from folks who do this work on the ground: This seems like an opportunity, and could perhaps help with the maintenance that folks often complain about, and the risks that a landowner is accepting, such as a fence that has a high likelihood of being washed out. This could provide ongoing money coming in to offset it.

Producers are saying, what would it take? It's a good chunk of pasture or cropland when you do a wide buffer along a stream in the Shenandoah. If the farmer would continue to get a paycheck for a practice over time. That's an important design criteria; you could also provide a large sum up front or make it an annual payment. It might be like the Conservation Stewardship program, in which the farmer implements and is paid in the usual way, but by being stewards of that practice you can sign up for additional payment. In VA they're more limited in paying for something like that, but you could rank these people, perhaps statewide, and you could monitor it. If they know they've got a payment coming to go above and beyond, they may be more likely to do that.

The ranking is important, you can rank based on who can do the most the cheapest. That's a way to stretch public dollars.

One concern is that the big guys will get all the money because they can do it for less. The people we're missing out on in this region are those who have 50 cows. On the other hand, you can operate under the presumption that a large farm has more resources already and the smaller ones are the cheapest because their losses are so high. We'd have to go back and put it to pen and paper. It's important to consider the scale of the operations in the design.

The maintenance is an important point. Initially the pay for performance model isn't attractive for someone who's reluctant to participate because there's a lot of uncertainty; I see it as a better match for an early adopter who is willing to work through it. But if the payment is high enough to make it worth it for someone to participate; where

it's paired with an established cost share model - now you're just sweetening the pot for areas where there's particularly valuable.

There was a test of this in the Eastern Shore of Maryland. There's a model in Iowa. I can never get someone to tell me how much they're willing to pay for a pound of Nitrogen. As the project implementer who is working with the farmer, I can't develop a project because I need to know the cost. That's what the biggest drawback is as the implementer; I don't know if I'm developing a project that's going to be funded or not. Is that fixable? If the purchaser is willing to tell me up front, "I'm willing to pay $10 per pound of Nitrogen," I could do that, but nobody does that because they're wanting to get the cheapest amount. Also, you have to hit baseline on the farm first. There are sector restrictions and watershed boundaries. You can't trade with the Patuxent from the Eastern Shore within the nutrient trading tool. The inter-jurisdictional goal doesn't work because the different sectors have to hit their goal first (wastewater vs ag). If the Department of Ag is administering the funds, it can be different. If there's Farm Bill backing, that is a barrier. In Maryland we administer the MACS program, and you have to hit a standard, and we'll pay for the conservation parts but not the agronomic parts. When you get to conservation projects with a larger agronomic element like drainage (?) water management- they're paying the cost share on the cheapest part of the project, and the farmer is putting $40,000 into the field. Maryland is trying to shift to pay for the nitrogen. The Trust Fund is buying outcomes; you get the grant if you rank competitively. The state cost share is exploring the model. The existing programmatic rules make it really challenging and people underestimate that.

Without the proof of concept, without knowing they will scale up, consistency and reliability of an approach is difficult for funders. NFWF administers federal funds so the legality gets tricky.

We've focused on the pay for performance model in this discussion and there's a lot of excitement at the Bay level on developing this. Are there other financial incentives that you think "if we could just do X we could get these folks to do practices"?

Rules under cost share that present a financial option to meet the farmer where they are.

Our biggest problem in our area is livestock over-stocking. What if you had financial incentives to sell animals and keep the stocking rate lower. We put a 35 foot buffer for a farm with 100 cows and say it's doing the same as a farm with 5 cows. We need to find ways to target. Can pay for performance incentivize that? What makes the farmer get down to 50 cows? Is that a regulation? When you start from baseline, and we say we're not going to count until you get to a good stocking point, you're killing the incentives. That's a design question.

Are we thinking of a program that pays for the reductions that the buffer or the storage would create, or management?

Ideally, it would be both; we would say "we don't care how you do it, but if you can provide these benefits to the stream, we will pay for that." It's hard to picture how we'd quantify that. Is that back to monitoring? It would be a model estimate. The Bay Program is already counting, whether we like how they're counting or not.

The challenge is so much in the details for us to understand how to explain this to the producers. Does this have to be a state-level program, or can it be a Soil and Water District program? To have the infrastructure over time to help people work within it. We've described some features we'd like to see, but is there a way to say what scale at which it works?

You'd have to start with a District with passion to work through the details before taking it to the state level. In VA it would be difficult because there's three regions.

As an aggregator, it's easier to have the simple straightforward contract (this is structural stuff) where I can pay up front and now they're done with me, other than monitoring. They get what they wanted, and I get the credits to take back to the funder. But it's really hard when you don't know the future rate. You have to figure out all these other details.

Speaking to where do we start, the model doesn't scale, but from working one-on-one with farmers, they would be more receptive to a local program coming from the District. They're a lot more accepting and trusting of District employees. It's already hard to get the farmers to trust us.

What do people think about a bonus/reward payment, rather than a pay for success or cost-share? It could be an individual award where you get a no strings attached bonus if you meet certain thresholds - for example a P-index. If you can demonstrate that you've made measurable progress in an indicator, you get a bonus payment. Or if you take a small watershed and get the base level nitrates from X to Y, everybody gets a bonus payment. Observed, measurable benchmarks. X-thousand dollars if you can get this and maintain it.

Responses from the group: The first example is more appealing than the second. When a farmer sees what they're being credited for, they're going to see how much they produce and perhaps realize the scale of the problem.

Scenario #3 (Day2): Using Insights from Behavioral Science to Plan Outreach Efforts & Design Conservation Programs

Engaging messengers: if people are unsure what to expect from the process; working with someone they trust might encourage people to sign up

- NEED: networks of outreach professionals; outreach among programs
    - Lessen silos
    - Share information across programs
- Could help bring in reluctant adopter (e.g., Plain Sect)
    - Might have to meet them where they are (go have lunch/church);
- Peer-to-peer, mentor networks
    - 'What is my neighbor doing?': break down silos, can speak to someone about success stories
        - definition of success is different per farmer
        - CBP case studies: working on a database for TSPs and others to reference (jobs created? Energy $ saved?)
    - NEED: a catalog of information the messenger can tap into as they learn farmer's concerns
        - Applied information to connect farmers to resources: prices, contractor information, etc.
- Ag and water councils:
    - respects and taps into farmer knowledge and skill sets, share ideas
    - helpful building trust
- Community-based social media marketing campaign: more investment in research is better to reach communities/farmers
    - Focus groups, interviews
    - Consumer point of view: highlight a product that is made locally in a store
    - Find opportunities to elevate what farmers have done/shift the narrative that farmers 'are the bad guys'
        - Building appreciation could motivate more action, opposed to a deficit model
            - Recognize the struggle and difficulties farmers face
    - Snowball effect: highlighting local successes, don't have to go out and find each person
        - Coordinated efforts: organize field days on farmer property
        - Community ambassador events
        - CBP Exchange Programs, DELMARVA farmers visiting fisheries and vice versa
        - Maybe not as influential: recognition, awards (Dairy Distinction, Water Awards), signs on the road
            - Farmers are results-driven, bottom-line (e.g. consumer demand, organic)
                - Plain Sect: driven by *not needing to engage with the government, regulators ('you won't need to engage again with government for x-amount of years')
            - Neighbors can't say "let me copy what you did to get that reward"
            - Other farmers do the work but aren't recognized
- Rented ground and absentee owners and part-time farmers:
    - Long term leases can help: most farmers would prefer year to year
    - High variability

        - Craft responses to this: 1 on 1. What's their personal motivations? Capacity? One-size/one-approach for all is almost impossible
            - How? Need more funding, resources

Solution mindset: approaching the farmer and finding how it fits, the opposite of a program mindset

- Allows to tailor and adopt the program
- Connect to what that farmer needs: every farmer, community, parish is different

How would these approaches influence adoption and maintenance over the long-term?

- Recognize farmers as an important part of our society, economy and a sustainable agriculture
- Possibly a *CBP Goal for sustainable agriculture* similar to sustainable fisheries: same goal to improve soil health are applicable for watershed health
    - Sustainable fisheries goal has a number of outcomes looking to achieve specific targets (increasing forage fish, bluecrab). A sustainable agriculture would need equally as specific goals
        - 'Sustainable agriculture' is a very broad concept, would need to look into quantifying what it is in order to integrate it into a Bay Program goal
        - Labels are difficult
- Profitable
    - Equipment, practices change over time
- Technology advancements are needed

Scenario #4 (Day 2): Rewarding Conservation Professionals for Reducing Nutrient & Sediment Loss from Ag Land

Concern: Nutrient and sediment reduction as main focus.

- Not all district employees have nutrient and sediment reduction as their top priority
- Could be difficult to have only some employees have opportunities for bonuses, but others not (ex. education people)
- Nutrient/sediment reduction is not always what folks focus on, most of the time its cost-effectiveness for the farmer or something like that. Could not be in direct alignment with the SWCD direct goal.

Need to improve staff retention

- Could strengthen SWCD. Challenge is turnover so staff retention is important.

Concern: Increased competition between agencies

- NRCS and SWCD work with producers really well together. There is concern that this kind of incentive would turn them against each other as competition, and competition between agencies would hinder progress.
- Potential Solution: Bonuses at the district-level so that it's spread evenly among the staff.
- Planners vs technical staff. Multiple staff members involved.
- Needs to be agreement that the money actually gets back to the staff members.

Solution: If agency staff are already super busy, what if we incentivize progressive ag producers to do the outreach?

- Could rely on progressive producers in the field that have already implemented practices themselves to reach out to other producers in the field. We could incentivize them and train them to be a part of the planning/implementation process. It would take the burden off of district staff, which in turn might help staff retention.
- Small incentive for producers to refer peers, but only a few select producers; producers would have to qualify for it, to have a clear plan and training, interview process. Almost like hiring a consultant.
- This would help to bridge the gap between ag production and conservation folks. We would have a trusted member of the community which could convince the more reluctant adopters to implement these practices. The financial incentive would encourage the producers to talk to their peers about what they're doing in the field.
- We can identify priority areas with the science we have right now. Higher bonuses to bring in producers from those critical source areas.
- We could also have "demo farms" so that folks can go out and see how things are being implemented. Meet with the producers and show them around. Agency staff should also go out and see those to get a better background and understanding.

Incentivizing Ag Retailers

Concern: are they going to take a holistic approach? Farm resiliency, soil health, along with economic factors?

- Ag retailers are (usually) primarily concerned with selling, not necessarily conservation. So you might have conflicting goals because profitability and conservation don't always go hand in hand.
- VA has had success with ag retailers promoting conservation while also selling their product. Ag retailers tend to have a big impact with producers too. They have formed relationships with folks over the years to help them carry certain products to promote conservation too.
- Not sure if there's a need to provide an additional incentive for ag retailers though, at this point.
- Maybe an alternative would be some type of public recognition for conservation efforts rather than financial incentives. And maybe it could go through the SWCD. Public recognition would be more effective than financial incentives.
- Some are reluctant to take money to the private businesses. They want the money going directly to the farmer.

Concern: would the incentives be bolstering the folks who are already doing the work and leaving behind the folks that actually need it? How can we avoid this?

- This could hurt the counties that are understaffed and have the biggest challenges.
- Approach to incentivizing needs to be for everyone, not just those who are "peak performers". I think we need to put more money into conservation district staffing and training.
- Solution: maybe we could base it on a rate of change so it's proportional, rather than the total amount of reduction. Relative change instead of absolute.
- Solution: maybe we could focus more on those critical source areas. Funnel the funding to where it's really needed.

Concern: Framing this in terms of nutrient reduction only.

- Solution: maybe we could control that by focusing on the critical areas.

Link to Jamboard:
https://jamboard.google.com/d/1lsIf1lXF_iPy9bxBjs9Oj7e2lAKqP2bKul1_XYfCZPM/edit?usp=sharing

Chat Discussion

Most promising ideas:
- Incentivizing producers, training them and allowing them responsibility in contracting/planning phase so it takes workload off of district staff.
- Target funding in priority areas, funneling resources towards critical source areas.
- More consistent funding to improve staff retention.

Challenges:
- MONEY!
- Framing this in terms of nutrient reduction only.

(Day 2) A mix of scenarios, including enforcement, other tools

Intro: Keeping in mind 2 practice types. 1. Practices that have farm benefits with attention to time scale, those practices that have benefits cover crops, tillage practices. 2. Those practices with little farm benefits. High up-front costs but offer opportunity to move the needle with pollutant reductions. Do they have a lesser or greater need for subsidizing? As a group, would you like to start talking about some of those specific scenarios? This is a chance to talk more specifically about how to get there.

1st scenario was spatial prioritization. Are those precision conservation tools used in your office? How effective are they in identifying source areas? How can they be made more effective? Improve development of awareness, trust and confidence in using tools?

My experience in talks about targeting tools, they mean modeling SWAT, bay model, that have assumptions about inputs and land use and come up with an amount. I think while those are helpful, those don't do much to general confidence and trust because there are so many assumptions. For a tech targeting tool to be trusted, it helps to have data on where the worst spots are. Transparency about actual data is most helpful. Not just spatial targeting but temporal targeting. Storm events. Address the hot moments as well as the hot spots.

At what scale would that monitoring have to happen?

Challenge is that it gets very costly. That has been the challenge in NPS pollution for a long time. Hard to know where spots are. Ideal world it would be fine-scale. In absence of that, I would be curious for other thoughts, but promising indirect indicators like LiDAR imagery which can show where soil loss for stream bank erosion.

We need to go to smaller watersheds. We are currently doing mainstems. Simple sampling upstream because the community wants to know their stream impacts. More apt to tackle if they know the problem and where it is really from. If educated and shown data, more apt to take action.

Being in early phases of trying this. As you go to early phases to try spatial targeting. What are immediate barriers?

Lancaster rapid stream de-listing plan. A big part of it is coordinating with all partners to get BMPs in ground.

Technology used more and more to achieve goals faster. Outreach strategy is the key part, have enough LOCAL partners to make it happen. By doing outreach work, this technology / tool is in full capacity.

Is there high confidence in tools that allow you to spatially target?

A full process. Initially getting feedback, they wanted to know where work has been done in the past. That was the first step. That was not easy. Having conversations is the first step. And then making sure to share what they have done and planning to do.

2nd scenario - flexible financial incentives. Would a PFP attract non adopters? Other financial program incentives worth considering? Are there other program designs that improve effective participation in larger areas?

When we talk to farmer groups, the sense is they are doing stuff. They want to know: What is happening? Is what we are doing effective? This is the challenge of NPS pollution. Water quality monitoring stations don't get to the nuances. Dream that part of the farm operation [along a stream] is to check water quality. Bay program incorporates embedded citizen monitoring. The CBP Ag workgroup talked about P-4-P. One of the things came up was that it is mini-modeling, it's not tied to water quality directly.

If we do need financial incentives to encourage reluctant farmers, what does that look like?

Dominant paradigm is paying for practices in place. But I observed some that say we need more of that. On the other hand- target places causing problems and a way to do that is to pay-for-performance, create structure that would incentive doing the most for the least cost. P-4-P takes data on performance. You can model but have the same trust problem. I think bonuses for moving water quality in the right direction. Some sort of hybrid situation. If water quality moving in the right direction could get bonuses.

Small edge of field monitoring?

Seems like a smaller scale catchment that can encompasses several properties is most feasible, vs an individual farm. In the stream delisting strategy, how small of an area is monitoring data and track over time?

Yes, it is a small set of farms, 10 farms in one cohort, another could be 20. Not seen more than 25. Not a pre-determined area. We are looking by the farm for what they need. Going back to P-4-P that would be a good model for those already on board and implemented BMPs on farms and looking to do better. Problem is that I only have a handful of those around here. The majority don't have manure storage or most basic things yet, in my opinion should have both, PFP and pay for implementation.

At what point do negative incentives need to move the needle? Really interesting question. What are role of negative incentives? Compliance? Enforcement?

We have a lot in the ag community, knowing about the Bay Program, PA having rules and regs already in place. Significant portions have no fear of penalty for not making changes to solve the problem. Most of us here, state and feds have different program rules, people aren't always going to do it. Farmers that are trying to do a good job and spending the money and seeing others that aren't doing anything, they get frustrated.

Are current negative incentives sufficient? Different negative incentives?

We don't need new laws, we need to fairly and consistently handle the ones we have. But that takes funding and political will.

When thinking about negative, fines, tax, or reg rules. In one area there are some CAFOs, there are limits on how much manure is hauled, the Clean Water Act when established was geared to point sources, therefore are exempt from regs to Clean Water Act, whereas point sources have to monitor what they omit. I wonder if as ag consolidates and has more larger operations that becomes more like point sources if there is room for greater oversight. I'm sure there would be a lot of resistance to that though.

Knowing the politics of PA, will have organizations that fight that totally, but I know farmers that are tired of seeing other guys have a mess with no one doing anything about it.

What might a 'holistic approach' look like? Encompassing more than nitrogen, phosphorus and sediment? Or what does that mean?

Rather than limit to N, S, and P- look at the entire farm and what is going on. Tendency to look at BMPs by BMPS, financial incentive for that BMP. Cover crops, there are programs with NRCS I can use and get financing incentives. BUT if limited to looking at BMP, now you have allowed me to pollute in another area. If farm is not holistically looked at. Manure storage had to have the entire evaluation of the farm to look at all areas of pollution potential and ways to mitigate problems in those areas. Some areas had to be addressed, some were less offensive and put on longer time frames of clean-up. Those are things that help us move forward in holistic approach.

Looking at behavioral insights. Would these approaches engage more farmers across the board or be more effective for certain types of farmers? What would engage reluctant farmers? Are signs at the end of the drive, certificates, accolades effective incentives?

Less reluctance on a large-scale because it is scrutinized by everyone else. Individuals don't want to be the picture of something, but if they sit in a room and get credit. Public recognition isn't always like that.

You know people in the community are going to ask these questions. When media attention was on my farm- neighbors asked how can you have that many BMPs and I had to explain that some folks are implementing BMPs without even knowing it.

Making better use of teachable moments. Could the Bay Program partnership effectively link media articles on ag BMP implementation, that you can go to another site and see all the BMPs.

What do we find most promising, excitement, challenge? Let's go back and see some of the points we have made.

*****Big message from jamboard about spatial targeting and role of monitoring. Scale of that, and where to occur. Lack of trust around model and using model only. There is a big question to monitor at the scale doing the spatial targeting.

Collaboration with multiple partners. Spatial targeting - it is necessary that very collaborative approach and it really can't be done without attention to monitoring partnership effort. That actually shows benefits of the scale.

The roll of monitoring to support P4P. Do you have monitoring in place to support that? There was also discussion about attention to the fact that it would work best with those that already implement BMPs, not incentive for those that are reluctant adoptions at this point. Another point about holistic approach. Look at entire farms and env

impact vs BMP by BMP. and then discussion about negative incentives, may be support for increased enforcement of existing regulation but may be locally specific. No new regulations but support existing ones.

P4P work best for those already doing BMPs and have to pay attention to monitoring in-place to support ath. Part of that is, are you utilizing sticks for negative incentives that go along with that. And that actually P4P should be holistic as well.

When talking about P4P, getting 4 design criteria
1. Most appropriate for a specific group of farmers, those already implementing bmps,
2. Appropriate monitoring
3 holistic basis
4 would be opportunity to also use negative incentives.

Best use of teachable moments that we do have in a strategic and smart way. From trusted source and take advantage to share is really important.

CHAT
For those in states other than PA. Do you see adequate compliance of the state programs that are out? Is it done well or just spotty? Do farmers fear any consequences to not implementing or following?
http://lcwp.cicapps.org/ more info on prioritization/stream delisting

Day 2 Break-out Report to Full Group Notes w/ chat

Group 1 (Day 2): Spatial Prioritization (refer to Jamboard 4/6)
General enthusiasm on technical tools for targeting to make the BMPs more cost-effective
Near-term- using tools to reduce paperwork, whose adopting and who is not, reducing paperwork and quicker assessment of who is eligible for certain programs.

Social science research that helps target spatially (for NPS run-off) but also adding in who would be likely to adopt.
Spatial map and list of folks and what type of messaging they might respond to.
Layer economic needs of farmer- advance work.

Making toll more available could prevent people from over-spending- finding BMPs to do the same this for less money.

Targeting landowners without talking to renter-operators can be threatening.

Trust in tools is shaky. Ground-truthing is expensive. The use of aerial imagery and AI may relieve some of that.

From Notes
Top Messages
--Important to engage renters and owners from the beginning to avoid concerns in the use of targeting tools.
--Opportunity for targeting tools to streamline paperwork and eligibility
--GIS or targeting tools to streamline all aspects of technical assistance workload to provide more opportunity to work with farmers.
--the use of social and environmental characteristics to create more refined targeting could be expanded to include economic data.
--find more cost-effective options for using tools (e.g., identify critical gaps where additional funding could move a project forward)
--current spatial data requires ground truthing - the costs of that are not small. If we could better tailor those spatial products to eliminate at least some of the ground truthing, that would be extremely helpful.
Less red tape enables participation
How are tools used now?
Targeting tools are largely being used to sum up performance, not to target BMP application.
They can be used to confirm BMP(?) eligibility.

GIS tools don't have sufficient detail for confirming that practices will work. Targeting must be verified with costly ground truthing.
For example, a site may look like an opportunity for a riparian buffer (e.g., using the Chesapeake Conservancy Tool) but water body may be an impoundment where trees would be undesirable (because they could destabilize dams) or there may be smaller flow paths (ephemeral streams) that make a buffer less effective but aren't apparent from the tool.

Group 2 (Day 2): P4P/Financial Incentives (shared google doc)
Looking for financial incentive- circling back to reluctant adopters during conversation. Exploring adoption outside the cost-share framework. P4P has been tested in different ways with proof-of-concept.
Within the group consensus that P4P could work. Are we talking about P4P in place of cast-share? No? More of an add-on? A producer could get payments over time. If a farmer was to get money over time… could be incentive. Opportunity for steady income for pollution reduction service.
How would you do this in an over-stocking situation with proximity to water? P4P incentivize reduction in over-stocking.
How would it be administered? Local level could enhance reluctant adoption participation. Rank projects. Financial reward over-time. Producers can see the value of their actions.
KS: General consensus that targeting high-loss areas is needed. Devil in the details to get that done. One example: over-stocked farm vs. not over-stocked get the same value. That needs to be fixed.
Participant: Program caps/cost caps. How to distribute money to folks that don't normally get it?
> **KS:** Big guys get richer, poor get poorer. But P4P is potential to flip that. Limited resources with bigger problems could get the most out of the program because there is a big gap to close.

Flexible Incentives is really about exploring different ways to motivate and encourage adoption outside of the cost-share framework.
From Notes
MESSAGE 1: PAY FOR PERFORMANCE (P4P): There is a general appetite for having P4P OPTIONS:

- MORE proof of concept in places where there's interest and that show promise at that scale.
- Replacing the current system, or as a complement to it? Either one. It could be an add-on, an additional incentive.
- This seems like an opportunity, and perhaps help with the maintenance that folks often complain about, and the risks that a landowner is accepting, such as a fence that has a high likelihood of being washed out. This could provide ongoing money coming in to offset it.
- If the farmer would continue to get a paycheck for a practice over time. That's an important design criteria; you could also provide a large sum up front or make it an annual payment. It might be like the Conservation Stewardship program, in which the farmer implements and is paid in te usual way, but by being stewards of that practice you can sign up for additional payment.

Message 2: Design Challenges (OPPORTUNITIES) with P4P:

- **EX: Biggest problem in our area is livestock over-stocking. If you had financial incentives to sell animals and keep the stocking rate lower. We put a 35 foot buffer for a farm with 100 cows and say it's doing the same as a farm with 5 cows. We need to find ways to target. Can pay for performance incentivize that? What makes the farmer get down to 50 cows? Is that a regulation? When you start from baseline, and we say we're not going to count until you get to a good stocking point, you're killing the incentives. That's a design question.**
- REACHING reluctant adopters because they're not involved in those programs - LIKELY means the P4P program is administered at the LOCAL level - or by District or a third party. Reluctant adopters might be more willing because there's less visible red tape on their end. It's a private business contract.

Another point was ranking. r**anking is important, you can rank based on who can do the most the cheapest. That's a way to stretch public dollars**.

Group 3 (Day 2): Behavioral Insights (refer to Jamboard 1/6)
Focused on behavioral insights to plan outreach effort and design programs. How do we approach farmers will impact what they choose to do. General agreement that approaches work, but details matter.
#1 Move away from a program-centered approach to farmer-centered approach (acknowledging uniqueness of farmers and farming communities). Different values and needs for different individuals.

Networks of different messengers to address social norms that resonate. Snowball effect to impact across community. Combine with other approaches. Networks among outreach professionals and coordination across programs so that farmers feel there is a bigger picture unified/consistent message. A coordinated effort.
Idea: a catalogue of information for outreach professional. Details about practices/success stories/contact information/costs. Highlighting BMP success (what does that mean?)
#2 Frame WQ narrative differently
Emphasis farmers as part of the solution. Recognition of current efforts will engage farmers to do more. Build more trust. Necessary for long run impact.
#3 Incentivize consumer by increasing demand for more sustainable products. Provide for price premiums and niche markets. Bay Program goal for sustainable agriculture was mentioned.
From Notes
Key messages:

- Move from a program-centric model to farmer-centric approach
    - Shifts outreach and engagement to change long-term behaviors
- Farmer-built networks; mentors
- Incentivize consumer to buy local
    - Product demos, etc.
- Shift in the overall narrative from 'farmer's are the problem' to an appreciation

Group 4 (Day 2): Rewarding Conservation Professionals
Compensation to ag retailers who refer farmers to conservation professionals

At first, we thought it was a good idea to reward people, but as we talked we moved further away from both of these ideas.
Away from rewarding effective conservation professionals in part because of the ways district already worked. Managers spread the workload evenly across their staff where BMP implementation is a team effort. One member might handle one part, then hand it off to another. Rewards would be cumbersome for one individual. Some staff don't do implementation, but do outreach and education. A program that rewards nutrient reduction would leave those folks out.
What is we gave it to the district staff as a whole and it was distributed? Moved away from that as well because may inadvertently reward office that are already doing well and leave other offices behind. Also, would need mechanisms to ensure that these rewards where going to the staff rather then used for other office expenditures.
Maybe could base on relative improvements but settled on:

1. District staff retention with appropriate funding tied to critical source areas (have the staffing they need) is more effective than rewards.
2. Ag retailer referrals: public recognition for conservation work more effective than monetary incentives because in some cases aims can be antithetical to conservation and also there are retailers that do good work and that work is fostered best through relationships so public recognition may be most effective.

- Compensation: Farmer ambassadors that go through application process that do the ground-work could be compensated for referring farmers in critical source areas. Trust in community, ear-to-the-ground.
- Talking only about nutrient and sediment reductions can be overly simplistic and get away from practices that get at soil health, carbon sequestration, habitat…may create a disincentive when they could function as gateway practices.
-

From Notes
Problems/Challenges

1. Focus is only on BMP implementation and water quality, not holistic, farmer-oriented solutions
2. District staff retention

Solutions

- Contract with peer farmers and crop advisors from neighboring counties to do outreach in critical source areas (solution to challenge 1)
- Increased number and funding for conservation research and monitoring by extension, more ANR agents (Farm Bureau, state conservation district associations) (solution to challenge 1)

- Public recognition for ag retailers who are getting lots of conservation on the ground (solution to challenge 1)
- Decouple district funding from number of contracts (VA state soil and water board, PA State Conservation Commission) (solution to challenge 1 and 2)
- Set state-level pay rates for district staff (State conservation district associations, Chesapeake Bay Commission, VA DCR) (solution to challenge 2)

Group 5 (Day 2): Mixed Bag + Regulatory (Refer to Jamboard 1/6)
We were integrators and synthesizers. Went through first 3 scenarios. Talked about targeting…Identification of areas. There are spatial and temporal hotspots ("hot moments")

- Takes a collaboration of partners to take advantage of targeting. Outreach is key
- Need to talk about monitoring with targeting. Trust in the model is not sufficient. As long as we are using complex assumptions do not help encourage implementation.
- What are you targeting? What is the metric? Looking at erosion, nutrient loads…
- What is the spatial scale that targeting is effective at? Small catchment size? 10-20 farms (Lancaster example shared with group)

Participant: Targeting 10-20 farms is consistent with the WISCONSIN model for targeting…

Financial incentives:

- Most effective for those already engaging BMPs rather than hesitant adopters.
- Monitoring at the same spatial scale as the P4P target?
- Holistic approach to assessing performance? BMP by BMP rather than collective sense.

Negative incentives:

- We don't need new regulations, but support in ag community for enforcement of existing regulations but would vary across communities.

Behavioral strategies:

- Take better advantage of teachable moments in recognition:
    - Dave-received an award. Article said that we had 30 BMPs on the farm. Farmer did no understand what BMPs are. How do we link articles like that to BMPs fact sheets? Would take too much space on an article.

<u>Day 2 Full Group Discussion</u>

Participant: Did anything come up (group 2) about challenges associated with changing weather?

> **KSB:** P4P challenges associated with weather. P4P becoming more attractive for cover crops, but rules may be out-of-date (related to weather). Did not fully consider weather/CC related to P4P.

Participant: Cost-share programs and washed-outs for fencing could be an increasing event. We are paying to put something in- but does it include/ allow for maintenance over time?

> **KS:** Whole idea is P4P will give feedback and information that folks will need extra compensation for additional risk. How do cost-share programs now deal with that risk? Question for all programs.

Participant: I'm curious how P4P would work re: nutrient reductions - would the payment be for implementing the BMP, or is it for documented in-stream effects? If the latter, how would that work (farm by farm monitoring? attribution of increases/decreases in nutrients to specific farms seems challenging)?

> **DW:** Group 5 talked about a holistic approach to assessment of performance and the importance of monitoring at the same scale.

Participant: what makes it fun to work in your jobs as conservation professionals vs what makes it stressful to do your job?

Waterfall Chat Response

- Deadlines and tight turnaround for sign-up/approvals for cost-share is super stressful11:28:30 From fun-working outside and creating a better world.
- Fitting programs with certain restrictions to meet the needs on the ground
- Field work and working with producers best part
- Working with so many partners to do good work!
- Stressful- All the programmatic BS
- Working with awesome people. making assumptions about complex systems tough.
- Fun when I see trust and connection build. Stressful dealing with conflict
- Helping farmers is rewarding
- In recent interviews with conservation professionals in the upper Midwest, most folks said that working face-to-face with farmers and landowners was most fun, and doing paperwork most stressful.
- helping farmers vs. overdocumentation
- Fun: Getting a project to implementation. Stressful: delays in implementation
- enjoy my operators and being out. don't enjoy having multiple agencies and entities that all are "top priority" ha
- Fun- working with a farmer to help them address and correct their concerns. Not fun- the paperwork and documentation that needs done that does not change or effect which bmp we use . To long to get from plan to installation when funding involved.
- hard to do everything for everyone
- FUN: Hearing the examples of what will work. STRESSFUL: Having those examples influence programs for change.
- Working with Partners, Farmers, working outside, helping to improve the environment! Also, helping to make farmers more profitable and sustainable

Participant: Farmers enjoy working with people and hate the paperwork just like everyone else.

Facilitator: Flip that back: with government finding, accountability is needed. If you were king of the world what would you do?

> **Participant:** Change the way people think. Meet people where they are at. People may tell you what you want to hear. Will agree with you to be polite. Resistant folks may argue but do what they need to do in the end. There are a lot of personalities out there. Understand that many farmers have not had the experience that a conservation professional does dealing with a host of different personalities. Folks have to learn to meet people where they are. Farmers need to be afforded a little patience and latitude. They are humans like the rest of us.

Facilitator: Getting away from program-centered to farmer-centered.

Participant: Group 4 question - In the survey for tools, someone mentioned needing more time to encourage adoption of hesitant farmers. Did you examine a potential trade-off between rewards and spatial targeting of the high-nutrient contribution farms?

> **DR:** We discussed a couple options. First, we thought that the contracted producers who would help refer peers to conservation offices may already have those long-term relationships with their peers and would be trusted in their community. They could also use their farms as models and bring potential adopters to them to see how the practices work. We also discussed that these contracted producers would receive additional incentives to bring in peers whose farms are in critical sources areas. But yes, there was a worry that without that targeting reward, the office staff could become overwhelmed with applicants whose farms may not be best located to reduce nutrient runoff

Participant: Not a lot of farmers trust the model, so we are trying to do more monitoring where we are- not just WQ, but also data tracking- plans written, BMPs implemented, nutrient application records kept. Farmers need to be willing to provide data on what they are doing. If you can't show proof, no one believes it is true. We need to

encourage them to share information to get credit. We all think we are doing well, but it is not showing up the way we think it should.

Participant: Current grazing plans are written but may not utilized or updated. New apps can help with monitoring. With regard to monitoring, American Farmland Trust and our Sustainable Grazing Project have been using grazing software like pasture map to oversee grazing rotations, rest and to see pictures of residual forage. Could be a tool to potentially implement. Allows for easy export of excel report.

KS: I don't understand the P4P reaching existing producers... in a pay for performance system, people already implementing BMPs would have less WQ benefits to offer (so they have "less" WQ benefit to sell). P4P also offers a new set of incentives not based on assumptions of cost sharing, so people motivated on financial outcomes would be brought into the program. Don't understand the conclusion that hesitant adopters will not respond to P4P. Group 5 concerns that we need to communicate how the program will work.

> **KSB:** In our P4P (GROUP 2) discussion - making it available to reluctant adopters was handled as a 'design question'. 2) Monitoring was understood as a modeled pound reduction - so $/lb of N, P.
>
> **KSB:** P4P is based on what we know about practices related to modeling price per pounds reduced. We want to see the lift in the stream, but P4P is about the pounds reduced.

KS: Bottom line… We have identified limits in who we are reaching, what we can pay for, who we target…those limits are at least in part a function of the ability of our incentive programs to address them. To do better, we need to implement more effective BMPs, identify high- loading contributors, target people on the landscape. P4P goal is to get at those issues. Paying the same for vastly different outcomes [what we do now] is a problem.

LF: Recommendations may be this is an area that needs more study.

LW: In our group we discussed an example where cost of reducing nutrients was lowered greatly by switching out BMPs.

> **Participant:** Showed a township the cost savings through their MS4 for nutrient and sediment reduction. Stream restoration project planned would be very expensive, but we found we could meet the same reduction numbers by doing 70 acres on farms located in urban areas. Hundreds of thousands of dollars vs. thousands of dollars.
>
> **LW:** Is there a role for targeting tools to make these kind of trade-offs possible?
>
> **Participant:** It helped us focus via imagery. We knew exactly were to target our outreach and time. We were able to find the 70 acres we needed to find. It was an efficient use of time.

Facilitator: Any other examples like that?

Participant: Can we make more of that possible?

Participant: PA is able to make those trade-offs via rural and in the MS4 areas due to the proximity of township and agricultural areas (political boundaries). Can the same sort of trade-offs occur in other places?

> **Participant:** Opportunities exist in MD. There is a concern for risk. Counties worried about risk associated with losing control over implementation and verification.
>
> **Participant:** PA has the state, counties, townships, boroughs. A lot of pressure on small areas to meet the goals. I think they are trying anything they can. The pressure regardless of where makes things happen.
>
> **Participant:** That could happen in VA MS-4 localities. The opportunity is there in VA. I talked to a producer about the incentive idea. He said we need to offer much better tax credits for purchase of conservation/precision equipment. Currently they cap out easily with tax credits, which haven't changed in

years. Also, additional reductions in land tax rates. Most counties have landuse taxation, but a better incentive or rate to those who implement conservation practices that provide local nutrient and sediment reductions. If he were to go above and beyond an additional tax deduction on land would offset costs of conservation.

Participant: This is also part of, or at least a goal of, many of the PA county action planning processes. Some of on a county basis, some on a multi-county regional basis.

Participant: How about P4P for the SWCDs? Pay each district a certain amount (based on modeled pollution loads) with the understanding that they must achieve a certain amount of NPS reductions? In VA cost-share the state looks at where loads are the highest and those SWCD get more money. They are expected to do what they can, but there is no expectation that the achieve a certain amount of nutrient reduction.

Participant: The money comes with TA. The more the SWCD achieves, the more TA they receive.

Participant: The more money they spend, the more TA received, but that does not necessarily equate with achieved load reductions. May not be spent on the most effective practices.

Participant: Conservation Efficiency Factors (CEF) get at that. Provide what has the most bang for your buck.

Participant: But only applied to the folks that walk in the door. What about the non-adopters? You are going to rank the applications you get and fund the most effective of those. What if you were to set a threshold and it is not funded unless the effectiveness reaches that threshold for nutrient reduction. You can reach new people if you stop giving money to the same people annually.

Participant: More understanding needed of how these programs actually work…

Facilitator: How do you reduce the bottlenecks? But how do we reach those other folks? There may be a hot moment or hot location that would be impactful?

Quick review of Day 2 Group outcomes

Adjourn

Appendix G: Detailed Group Discussion Summaries DAY 3

Given the workshop participants' ideas, our questions for the last day include the following (see agenda for Day 3):

- What are the most important obstacles currently holding us back on doing more and doing better with respect to improving BMP adoption?
- What specific opportunities do you see as ways to
    3. improve the acceleration of BMP adoption and
    4. to improve adoption and achieve better WQ outcomes (more reductions) for any given level of staffing/funding?
- What barriers exist to implementing these opportunities and how can we overcome them?
- What specific factors for implementation should be considered?
- What specific recommendations can we make to the Chesapeake Bay Program or others?

How do we go from where we are now to the vision outlined in Day 1-2? Translating Experience into Recommendations

Review and crystalize the key opportunities identified AND the critical barriers that must be addressed. Focus on opportunities and solutions

(Day 3) Scenario#1: Technical targeting tools- where do we go from here?

Build on success stories - when did you hear of something working really well and can we transfer any of that info to the use of these tools?

When people say cost-effective, my experience is that folks are thinking "oh, well cover crops are cheap so let's put them everywhere and easy to implement." In my mind, cost effective might be putting a more expensive practice with high potential for nutrient losses (high water quality benefits). It's difficult when we say cost-effective because most people just think cheapest. In this context, we mean practices with high water quality benefits.

Technical targeting tools - for example, using GIS or remote sensing or ACPF (NRCS) to identify critical source areas (hot spots) and what BMPs might be most effective in reducing nutrients. In the Bay, the primary tools we have are maps that show which locations have the greatest effect on dissolved oxygen in the Bay.

We shouldn't forget about our more simple tools (P-index) and there have been quite a lot of studies out there to make a complex model out of the P-index and that the index did a better job than some of the watershed models. Let's not forget about farmer on-the-ground knowledge of their own land. All of the technical tools have some kind of error associated with them.

Really like the comment above because the efforts that are going to be most successful with hesitant adopters are the ones that incorporate the ability to use the GIS components and the field level gathering of the data. Include assessment of costs. Use these tools with farmer input at the field level. This is an assessment that means something to them - it's motivational to the farmer because the approach makes the case that you don't need to sacrifice your economic livelihood to increase your stewardship level. Farmers are running a business so they need to make that

profit. When we speak to the farmer in ways that improve their profit margin, resiliency, and stewardship, there's no better way to motivate and be successful.

Really liked the summary points - resonate very strongly with what I've observed through the Nature Conservancy. Familiar with Chesapeake Conservancy and ACPF models. The farmer can relate to data that shows field conditions. It can start the conversation. Rather than coming in and dictating that they need to adopt practices, start with how these practices can be targeted in a way that makes sense to the farmer (e.g, how can these practices help you with production on your farm). Use farmer data to evaluate and improve the models in ways that help the farmer make decisions. Farmers feel they are singled out with models that look at a larger scale.

Sub-field management and precision ag tools - ag retailers working with farmers - tying spatial prioritization and yield analysis - good approach?

My biggest concern is how to go to the farmer and say, we've been watching you and notice "this." Not going to go well. Really like the idea of working with a consultant that already has a relationship with the farmer and emphasizes production. Farmers are going to talk about production. Start off with asking the question, "where are you having issues" versus "we think you have this issue." It's really important to frame the conversation of "how can we help you be more successful?" Economic data is showing that stewardship leads to economic viability for farmers. When farmers over-apply nutrients, it results in less yield.

The business case is motivating to farmers and need to approach farmers with "how can we help you."

Time is money, especially for farmers. We have a large CIG grant and we're willing to pay partners to give us time in focus groups. Having a hard time getting people to enroll. We have to show them that conservation works and that it's not a waste of their time. Need to be sensitive to the time constraints. We have these tools that can give us real time data but need to be in this for the long run. Can't' expect that the problem will be fixed right away even if you can see the problem right away.

How do we think about the long term in using these tools? Have to have the profitability conversation and options to help production. Have you heard in any way that farmers think about the long term that might be useful here?

It's more difficult now to engage farmers in long term thought processes because there's less generational turnover. They may not have that long term version. I've dealt with some folks that rent land and the rented land is owned by someone who's father passed away and they no longer have a connection to the land and therefore there's no assistance provided to farmers to implement practices. More volatility in the market and things are expensive now. Need economic sustainability in the short term, otherwise hard to think about the long term. Economics of commodity production - it's only there for a short period of time. Over time, the profit margins on commodity trends to zero on average. That's a huge problem.

The Bay model is not the farmers' reality. From the funders perspective, the Bay TMDL is the goal. Is there any value in helping farmers understand the tools? Should we worry that we're so focused on the TMDL as opposed to approaching farmers to understand their concerns? Framing the conversation around soil health management in the midwest has worked well in communicating with farmers (focusing on the farm onsite, not downstream impacts). Are we limiting our success as we're so focused on the Bay TMDL as opposed to thinking about the range of concerns that the farmer deals with on a day to day basis? Soil health is resonating a lot with farmers in the midwest - the benefit is accruing to them. You don't have to talk about off-farm benefits. Overlaying spatial prioritization tools with that outreach around soil health can be a good approach.

That's not necessarily the way to go - you have trade offs. Every single conservation practice implemented has a trade-off. Not against soil health or conservation practices but everything has to be site specific - what suite of practices will work best here? And think about the trade-offs. It's challenging and I'm not sure of the best way to do that. If we just focus on soil health, we can push people toward practices that have big trade-offs that we're not prepared for. Soil health looks very different in the Delmarva region. We know that one size doesn't fit all.

Because there's a lot of interest in reducing runoff to tidal waters, some farms are better at that than others. Do you use this information to target farmers? If we can show a way to less concentrate nutrients and spread things out, that could be a way to sell it. I use GIS all the time but I don't target anyone (not sure how to start the conversation).

People in the NGO community want to use these tools but if you're really focused on an efficient, profitable farm, it's just a different conversation.

Working with ag retailers to figure out a way to manage site-specific farms with these tools (identify the critical source areas), that could be a good approach.

Has anyone been directed by a funding program or superior to go to specific watersheds? Some funding is only available in targeted areas - how do you use this information?

There was some edge of field monitoring money in the Nanticoke Watershed - it didn't get utilized very well. However, from my experience in Ohio with cover crops, most of the incentive programs are at the watershed level. Different experiences. Need to show farmers what works and the profitability. If the funding programs are difficult to use, then they're not going to go for it.

Targeting tools can be helpful but there are so many out there. Don't know which ones are the most reliable. Don't have the technical capacity to implement those models and it can be overwhelming to pick which one to use. There's a need to better understand the utility of these models and to package this information in a way that resonates with farmers. The learning curve of using a lot of these tools is high. Farmers will think it's cool to have all of these yield maps but won't know how to use them. The next step is not often taken. In the midwest, the ag retailers are the most trusted advisors. Need to work with them to take the farmers to the next step at understanding how these tools could be used and to track the impacts.

Has anyone heard of the ag retailers using these larger scale tools?

Not so much. Land O Lakes is trying to make the sales and service package. Replace product with service but open question if this is going to happen. I have a NFWF grant for manure injection in VA. There's someone selling precision ag and reducing a lot of nutrients by selling a product that saves the farmer a lot of money.

There is an interest and need for better understanding of the conceptual models underlying these precision tools. Farmers are aware of the uncertainty around these practices. Very attuned to the fact that we don't have a practical definition of soil health. People looking for ways to improve the guidance and decision support.

The tools are the start of the conversation. Pressure shouldn't be coming from the government but from agri business and consumers to think on a bigger scale.

There can be way too many nutrients to even use precision ag. Limited land. We have crop livestock operations in such concentrated amounts that there's too many nutrients coming in.

CAFO permits have pushed more of the decoupling. They will not have operations that are coupled. Poultry farmers have no crop land. They don't make money on the crops but make money on the chickens (or don't know how to grow crops). The ability to reuse manure is being impacted by CAFO permits- more restrictions on land applications under CAFO permits than state nutrient laws. More red tape and scrutiny.

Tools are not meeting farmers where they are but there are some ways to work through trusted partners to let these priorities flow down.

Scenario #2: Flexible financial incentives- what are the design and potential contribution for performance programs?

Question: What level is financial incentives being implemented?

- Need to have alignment of fed, state, and local programs for flexible financial incentives, more trust possibly at the local level to be implemented
- Most successful when working with farmers they have a trusting relationship with
- Most success with word of mouth for implementation
- Need the tools for program managers to be flexible to apply for various different options but district cannot be in charge if the program is going to be scalable

Question: What is the definition of flexibility?

- Flexibility of programs to provide a solution to multiple problems, program doesn't fit every farm
- Practice available for funding but it doesn't work on the ground, it gets fixed by takes a long time and then there is another problem, not applicable to farmer operations
- Contracting software doesn't work and takes longer

Question: What is wrong with RCPP?

- RCPP, partner has to step forward, no benefit to farmer

- 2018 there is now benefit but people remember how it didn't work, partners are not stepping up

Question: Problem with ranking?

- Not enough funding to fund all applications, high/medium/low set by state priorities, fencing hirer than animal waste removal

- Farmers go through EQIP, don't need to state everything just amount of acres they think they will plant
- Special projects category help fill the gap between programs

Question: What do you need in a new program?

- Payment scheduling
- Cost share needd to be set up P4P, entity managing this, flat payment but added payment for more nutrient reduction
- Not based on models, they want something measurable (monitoring), small watershed monitoring
- Challenge for CBP - recognize that there are different producers and different outcomes which is not always represented in model
- Payment they count on for a certain period of time, reliable source of funding in contract

Question: Widespread adoption for conservation stewardship program?

- CSP popular in VA
- CSP is for the best of the best, reluctant adopters can be left out
- P4P is for those that need dollars to get involved, "herding cattle"

Question: CSP used through RCPP in DE

- Not used through RCPP
- Difficulty bringing partners something to leverage
- NRCS reluctant for DE to be part of CSP
- Idea - NRCS give the Districts the funding to run a flexible program
- Look to pay those not doing conservation but if they did it they would have better conservation
- CSP looks at all resource concerns (i.e. wildlife, water quality) so that affects ranking, challenge with NRCS is that they have to consider those other resource concerns

Question: addressing critical source areas, any constraints on farmer doing part not full?

- Program is pilot, EQIP CIC, allow producers not to enroll their entire farm, landscape conservation without doing entire operation
- Beneficial but depends how state sets up CIC
- Reluctant adopters because they don't want to jump into entire farm, want to work on a small basis

(Day 3) Scenario #3: Actualizing recommendations based on insights from behavioral science

How can we frame outreach differently to be more effective?

- Helpful if the conservation folks make the first move; don't wait for them to come into the office. Conservation professionals could call and ask "do you need help with anything? Do you want to talk?"

    - Could go hand-in-hand with targeting, could see this working on a sensitive landscape
    - Get to know farmers in those priority watersheds we want to target. Could approach them with 2-3 BMPs, could use trials
        - Localized, peer-to-peer is the way to reach reluctant farmers. These networks already exist!

Change framing of outreach: what does the farmer need?

- Farmer focused, not programmatic
- Common problems farmer are facing could be addressed more completely with outreach e.g. streamlining programs
- Most important: ask the farmer leading questions. Not yes/no questions. Talk about yourself, interest on the farm. Could spend the whole time there without speaking about the BMP. Getting to the why.

Issues with rented land: how do we work with farmers to complete conservation plans?

- Clause in lease about compliance with conservation plan
- Include farmers in conservation plans, when are you planting _x_? Have the conversations upfront
    - Help farmers change their behavior. Farmers may not see the farm the way other people see it. Erosion can be harder to see (others may not care)
        - Good rapport and conversation is critical

Is speaking about 'legacy' helpful for farmer adoption?

- More fundamental, what is motivating you? Only way to engage with farmers is to figure out these motivations. Can't assume or project what should/shouldn't be important which can fracture trust/alienate farmers.
    - Mindset more than a skillset. We want people to be genuinely interested in *you* not make assumptions about what you want or are
- Have to be a great salesman. Have to connect with them, excitement about your job, and get that conversation started.
    - Speak with farmers with the purpose of gaining trust. Start with a compliment, not what is wrong. We are all humans. Long-term interaction is more based on how we feel.
        - Know-it-alls turn farmers off

Recommendations From Group

- Reduce turnover among conservation staff
    - Pay staff more to retain them
    - Teach soft skills, bootcamp about how to approach farmers. "Everything your grandfather taught you"
        - 1) find the right place to park, 2) take off your sunglasses, 3) how to interact with farm dogs
        - Train people to understand personalities/behavior. Not everything that is said is what they mean
- CBP needs to understand the districts needs and learn how to support those
    - Identify using a survey, conservation
- Coalitions at the local level
    - Broad coalitions can bring together diverse stakeholders to share those experiences
    - 'Water cooler' discussion don't happen as often as they should
- Better relationships may create better outcomes
- Peer-to-peer network:
    - Organize field days and other ways for farmer to network
    - Funding to catalyze farmer-to-farmer groups
    - How much can we rely on social media vs face to face?

    - Don’t talk about the specific programs but outcomes
- Flexible programs are best, don’t fix someone to a specific timeline
- Keep it local: Bay might be too large
- Incentivize farmers: more $ to get neighbors to sign up
    - Might cause farmers to question why their neighbor received more funds than they did, could be an issue
- Educational farm tours:
    - Let farmers see issues and understand resources to fix them
    - Include trusted farmers
    - Reach out to hesitant adopters
    - Could use case studies if there isn’t enough funding
- Mentorship program for conservation professionals
- Assessing the peer-to-peer networks:
    - Build on the body of knowledge
    - Evaluation protocols
    - Learning from personal experiences
        - Case studies
- Pre-commitments: likely won’t work for reluctant farmers, may work for leader farmers
    - Plain Sect: will not accept money/payments. Is a major hurdle to overcome.
- [chat] Make sure technical advisers have the time to build relationships and do these things that we are talking about. They all take more time than a "quick visit". Also, find a way to count relationship building as "outputs". At least with Extension, we are expected that our work results in "outputs", and people in administration/supervisors don't always recognize relationship building as an output
- [chat] Need to be more demonstrative and visible in a "thank-you" to the farmer when they take action. More than just a sign that some may not feel comfortable putting up, and more broad than just recognizing one or two award winners each year. Everyone taking a positive action should be recognized -- perhaps a free dinner?? Would need sponsorships for that, but some sort of meaningful "thank-you" that will show gratitude for their action and will make them want to continue to work with you and do more.
    - Could be a dinner
- [chat] supporting and incentivizing evaluation and building a community of practices and building the evidence base for social behavior approaches to engaging and behavior change

(Day 3) Scenario #4: Creating incentives for engagement: peer to peer networks?

Day 2 ideas are underlined. Everything underneath is comments/discussion from Day 3 participants.

1. Consistent, reliable funding for districts that is allocated according to critical source areas.
    - Incentivizing district employees is definitely a team effort.
    - Need to think about the network of professionals, not just the districts, and the different incentives for each of those groups.
    - Conservation districts are very different based on the county. Their priorities are completely different based on location so it is difficult to get a handle on the issue.
        - Limited by county policy, setting wage levels etc. Even if we have funds available, they might not be able to use them because of the limitations at the local level.

        - Also, not all districts are within the CBW. Could be some animosity between them because people in the same position at a different location would not have that same opportunity.
- Funding for Staff
    - ANR positions tend to not be filled
    - High turnover results in low trust from the producers. Funding can benefit the relationships with the producers.

1. <u>Contract with model farmers to begin outreach among their peers, incentivizing work in critical source areas.</u>

- Issue: Competition between farmers.
    - Farmers may be hesitant to share what they are doing, some want to keep their advantage over other farmers because they compete in securing land and resources, etc.
- Solution: Maybe we could utilize people outside of the districts, such as Certified Crop Advisors (CCAs) that are farmers themselves to go around and work with the farmers.
    - Goes back to getting farmers to consider cover crops or other BMPs. We need them to prioritize cover crops as if they are a crop. So many farmers treat cover crops as an afterthought, they don't know what to do or what to plant. We need it to be a first thought, part of their planning in the Spring. Need someone to meet with them to help them figure this stuff out. SWCD people are too busy to do that.
- Is this more effective than increasing funding for the districts?
    - District employees have different roles than farmers or extension employees or CCAs. There needs to be recognition of these different roles and incentives for the different groups.

1. <u>Public recognition for ag retailers who are especially effective at getting conservation on the ground.</u>

- General agreement that ag retailers don't always prioritize conservation, but rather, driven by profits. As such they don't always give the best advice.

Other ideas:

Utilizing other roles: Extension

- Used to have state level agents or start with extension. We don't have that land grant university staff anymore, so they've turned to the private sector who are driven by profit, not always giving them the best advice. We're missing that more traditional extension-type delivery of services.
- Lack of funding for extension is a general theme across the watershed.
- Extension might be a good resource for proactive implementers, but might not be effective for the hesitant adopters. Everyone is hiring the CCAs so maybe we focus on them instead, or focus on the private sector for folks who are hesitant adopters.
    - Some of the private sector is untrustworthy to do their job effectively. Some NM planners in the private sector don't want to report what the farmers are doing.
    - Solution: maybe we could do an application process?
        - Not supposed to "point" to the best NM people, so don't think that would work.
    - Does extension actively seek out people who are not as engaged in BMPs implementation?
        - It depends on funding. When working in larger areas, you'll work with the folks that come to you first.

What would we like to see? Who controls funding?

Issue: General Assembly controls funding. VA has a strong lobby with the State Association and has made progress towards consistent funding. What happens is that when it gets to the district level, you have districts that are tied to the county funding structure so the raises and the appropriate salaries can't be delivered appropriately.

- Each district would have to address this issue separately.
    - Solution: Set salary structure state-wide. There are districts that do really well and pay their staff really well. But other districts can't keep staff because they don't have the money. Uniformity across districts would help address this.
- There are benefits to SWCD being locally oriented, but it definitely creates inequality.
- About a third to half of funding comes from the county, and the rest comes from the state. If most of the funding is coming from the state level, it makes sense to have consistent salary requirements.
- Difficult to have a long-term plan for staff if most of their funding for staff / resources for staff comes from cost-share contracts, which are unreliable and inconsistent.
- Influence of district boards, some are engaged and looking for opportunities and some do not, which affects staff.
    - Solution: Unlink cost-share work with the technical assistance that's received. The TA percentage is new for VA, we used to get a set amount regardless of the amount of cost-share work.
        - Link to larger objective (?) watershed implementation plan or meeting TMDL.
        - Rather than state divvying up funds, maybe the district can have a base level fund to have a certain amount of employees and then have additional funding they can apply to if needed.

Idea: Districts set goals for how many contracts/goals, get upfront funding to meet those goals. Budgeting in a forward-looking way.

- Would nutrient and sediment goals play into that?
- Some put cost-share funding into one or two larger projects just to get the money spent, rather than working with a larger number of producers in smaller projects. Can lead to projects that don't address nutrient or sediment reductions.

University extension is better funded but expectations may be higher academically. See this decline state-wide where the state gov isn't investing into extension programs. Positions aren't refilled after people leave, so whoever is still there gets stuck with a larger amount of area. Not just about money. Demonstrating what the extension service can do. Tracking and reporting implementation are really important too.

- Bring academic focus of extension.

Issue: No incentive to go after hesitant adopters because funding is contingent upon following through with the contract.

- If they back out, the TA funding is taken back and the budget for staff is lost. So there's a high risk associated with working with reluctant adopters.

Who are the partners that we can work with?

Chesapeake Bay Commission
State Associations
DCRA - probably don't have as much ability as state association
State Dept of Ag
County Gov. - policies or pay scales
State Soil and Water Board - delinking TA funding for staff
PA State Conservation Commission (SCC)

Priority
Consistent staff is a high priority - first order challenge.

Note: 3 of the people in our group work together in the same office (SWCD)

List of Recommendations

- Set a state pay scale for district employees. Too much variability between districts in how funds are allocated and how employees are paid. Would improve certainty and staff retention.
    - Potential partners: Chesapeake Bay Commission, VA DCR, State CD Associations
    - Highest priority.
- Consistent staffing would enable other recommendations.
    - Delink technical assistance for funding from BMP contracts. Districts should say what they can do, set their own goals, and ask for funding to meet that.
    - Potential partners: State Soil and Water Board, PA SCC
- Extension funding for research, monitoring, and promotion of conservation practices, more ANR agents
    - Potential partners: Farm Bureau, CD associations
    - Extension could also help refer farmers to the SWCD.
    - Extension tends to not have mechanisms to advocate for themselves so Farm Bureau and SWCD associations would help with that.

(Day 3) A Mix of Incentives: how do we move forward with a mix of these programs?

- Farmer education - get them to acknowledge their practices may be harmful/degenerative (younger farmers are more open/willing to change)
- Compliance should be part of the discussion and is an effective tool
- Compliance is an opportunity to meet more people and impact others
- Should compliance extend to smaller operations? Do we have the capacity for more enforcement?
- If practices are mandated, do cost-share programs go away?
- Upcoming mandates on stream exclusion BMPs in Virginia if CBP goals are not met by 2025
- Hard to retain reluctant farmers when implementation/financing takes too long - may back out of any commitments
    - Speed and ease of funding is important
- Rules should be about functionality
- Talking to other farmers/peer-to-peer conversation is effective at changing minds
- Best way to convince reluctant producers is to show them what the benefits are for THEM, instead of defaulting to standard messaging about water quality (especially in WV and PA)
    - Co-benefits are actually core benefits to the producer
- Accountability at a local level to distribute funds
- Conservation District staff having accessible funding and being able to walk producers through the process
    - Having engineers on staff to walk through technical aspects
- Could create additional financial incentives for producer that adopts BMPs through private companies like equipment companies, similar to discounts farm bureau members get (possibly a branded program)
    - Having private opportunities is always good
- Education for farmers on what clean farms and beneficial practices look like

- Opportunities with the push for green marketing across the board by several large private companies instead of focusing only on cost-share programs
    - "We buy only from clean farms" (compliant and above and beyond)

List of Recommendations

- Education
    - Create a CBP public education program on sustainable agriculture
        - Public messaging and farmer messaging
            - Ex: Lancaster Water Week www.lancasterwaterweek.org
    - Ag retailers that promote conservation and offer economic incentives to do BMPs
- Compliance must be simple and easy to enforce
    - Opportunity to meet more producers but not always a welcome visit
    - rules should be about functionality (rule could be to keep the animals out of the stream, not here's exactly how you have to build a fence and here's the cost structure to access $)
- Speed and accessibility of dollars
    - Ease of having dollars available for TSP's to access and offer to producers when they're ready (when producers have to wait for application periods, we lose them)
    - Ex. CEG funding in PA

Day 3 Debrief Full Group Notes w/ chat

Waterfall Chat Response: Thoughts or ideas that caught your attention from review of Day 1 and 2?

- what can we do specifically to empower peer-to-peer networks and promote new social norms?
- partnerships and engagement as critical
- It seems like streamlining processes and services for implementing BMPs would be a big area to focus in. How do we get government agencies to work on this to encourage BMP implementation?
- Should we build a relationship between spatial prioritization tools and behavioral approaches?
- treat conventional AG like a resource concern
- Did I hear we are missing "people" in our BMPs?
- peer networking for farmers but how to engage the non-adopters in a welcoming/brave way
- Need to add policies and programs that support diverse crop rotations and/or more perennial crops, for nutrient loss reduction, soil health, and potential economic benefits to the list of potential solutions from Day 1.
- Incentivizing farmers to help spread the word on conservation
- Making it easier for farmers to participate in our programs!
- No conclusion just the issue of reluctance on the part of some farmers and what to do is an important issue
- Upvoting "Incentivizing farmers to help spread the word on conservation"
- We are just starting cost-share sign-up and a realization that we have plenty of money, but farmers still coming to us with no plan for things like cover crops. I am thinking the smaller farmers with little or no staff need CCAs available at no cost to help them plan and incorporate BMPs
- Seeing the pay for performance option for increased conservation implementation; compensation based on water quality benefits/ improvements is a nice option.

Participant: Wondering about additional thoughts regarding linking spatial prioritization tools and behavioral approaches?

Participant: Right now, we are looking at visual aids to improve engagement among non-adopters. We already know we have methods of who we would like to be adopting. Maybe each [working session] group could just think about those questions more.

Participant: "Conservation Bus" concept need multiple partners with different messages, different ways of connecting to producers. We need messengers and messages to reach the individuals.

Facilitator: That continues the idea that was discussed last week of how do we meet people where they are?

Participant: Money is sometimes there, but the buy-in is also needed and that is the part that is missing and gets to the social science piece that we are trying to get in this workshop.

(Day 3) Break-out Report to Full Group

(Day 3) Group 1: Spatial Prioritization: (see Jamboard)
Prioritization tools are not really used directly by TSPs. Providers understand that you need a site-specific recipe to really affect change. A way to use these tools is as a conversation starter, but then to listen to farmer knowledge. Farmers know that some of the tools don't work well and want to have input on the best management for nutrient reduction on their farm. The trust some tools and not others.
Even though it doesn't seem motivating to let them know that their land is high impact. Some of this message is coming through agribusiness. Maybe it would be more effective to use agribusiness for messaging.
To engage hesitant farmers, we need to save them time and make them more money. Approach them with questions like: How can we help you? What problems are you having on your farm/business? Ag retailers may be the key in utilizing field-level mapping and helping farmers make the best decision particularly in critical source areas.
Part of reason the tools are not used is that there are too many and they are too complicated. If they could be simpler and providers understand what kind of gain will occur if they take the time to use them and developers should work with service providers to ensure that the tools are useful for their needs.
Simple can be better than complex.
Adding onto sub-field management…We talked a lot about working with ag retailers to bring together spatial prioritization and sub-field management tools and bring them together to improve effectiveness of outreach. Farmers are focused on yields and profits and to the degree we can speak to that it will be more effective.

(Day 3) Group 2: Flexible Financial Incentives (See Jamboard)
We focused a lot on P4P models for the first two days. We are looking at financial incentives to engage reluctant adopters and high loss areas. Also focusing on adoption of high WQ benefit BMPs that may not have the financial benefit to the farmers.
Need to use and improve existing cost-share programs. We hoped that the RCPP would be a tool to come in after the 2008 Farm Bill Chesapeake Bay Watershed Initiative. It hasn't worked out on the landscape. We lost some momentum because the CBWI was a reliable source of funding. We believe that the cost-share programs have to increase in the way they provide flexibility. Unburdening in the level of paperwork. P4P could be used to maintain the BMP over time in follow-up to cost-share. There was discussion on CSP [Conservation Stewardship Program] but that tends to go to high performing producers.
Giving district control of funding at the local level would be more effective. Districts need flexibility in how to spend money.
Having funding opportunities for producers that won't enroll their entire farm but have critical source areas. Pilot program from NRCS is looking into that.
Ensure that we are driving these practices to the right place and right farmers. CBP needs to provide differential crediting for BMPs in the watershed.

(Day 3) Group 3: Behavioral Insights (See Jamboard)
Talked about farmer-focused rather than program focused:
Program level: Reduce staff turnover for the development of relationships over time. This may require paying staff more. There may be other retention strategies. Ask farmers what issues they need to solve with reach out possibly influenced by spatial targeting/ priority watersheds.
Importance of how TSPs address farmers- bootcamp for soft skills to improve outreach. Understanding how to approach different personalities. Knowing where to park, interacting with dogs (little things that make a big first impression). Developing trust. Talk in meaningful way to farmers (no alphabet soup). Coordinate among programs so there is not a "selling of programs" that need to meet certain deadlines at certain times.
Programs need to recognize logistics. Conservation professionals may reach less farmers in a day in order to work the relationships. Does that mean more conservation professionals? How do we facilitate the logistics?
Peer-to-peer networks: Coalition building among conservation professionals s, land owners and farmers. Invest in funding farm tours and field days. Giving leaders messages to take back and engaging reluctant farmers who would be interested in issues and how practices address those issues.
Recognizing all who take positive actions. Alternative to public recognition, which may not be comfortable for some.
Recommendations to CBP:

- Study to identify strategies to incentivize farmers to convince other farmers to adopt BMPs. We were not sure what kind of program to recommend. Examples: allow famers access to funds that they could direct to other farmers or providing farmers with bonuses for getting others to sign on.
- Building a catalogue of success stories that could be shared among conservation professionals.
- Support a mentorship program for conservation professionals.

(Day 3) Group 4: Rewarding Conservation Professionals (See Jamboard)
Contracting with model farmers to do outreach in critical source areas. Competition between farmers may prevent that from being effective. Farmers don't want to give up tools of the trade. Maybe bring in folks from outside the immediate area.
Ag retailers and crop advisors- there is variation in the quality of work they do. May be hard to incentivize across the board. Talked more about state level intermediaries (extension-types) to direct farmers to conservation districts.
Main recommendations:
Set state pay scale for district employees. Would add more certainty to people's work. This might mean high-paying districts may have to lower pay.
De-linking TA budget from BMP contracts. In VA districts are allocated staff by number of BMP contracts. Incentivizes quantity over quality. Districts should be setting their own goals and asking for what they need to get there.
More need for extension support. Through research can do active monitoring, evaluation and promote BMPs. Farm bureau and state conservation district associations could advocate for more extension support.
These are enabling conditions for all the other recommendations in this workshop. Funding for consistent TA is fundamental and relationship trust-building takes time.
Group 5: Mixed Bag + Regulatory (See Jamboard)
Education: CBP-wide but may need to be tailored to specific audiences
Compliance: a tool that needs to be simple and easy to enforce. Flexibility on how to comply (specifications). Example: Keep cows out of the stream, fence specs flexible as long as the cows stay out.
Speed and accessibility of dollars: have support available when reaching out. Conservation Excellence Grants and County Action Plans are examples.
Also talking about branding opportunities. If you are using BMPs on the farm: value-added products and educational opportunities for consumers.

(Day 3) Full Group Discussion

Participant: Group 2 - Did the group discuss any trade-offs of tailoring CBP credits to the operation and overall enrollment? You can have an unintended consequence of people who don't want to deal with hassle of accounting.

> **Participant:** We talked about the differences on the landscape and how to deal with pressing concerns first. There was concern about relying on the model but there might be direct or indirect indicators that are relatively easy to observe that would point you to the right directional outcome (ex: stocking rates). Things that are observable that might be good to get to scale. Not letting perfect be the enemy of the good. We did not have a chance to get into detail. For the full group to consider- we can pick around at a lot of things, but the main question is if it is an improvement? Even if not perfect…
>
> **Participant:** That is a testable hypothesis. VA has tried to be more generic in how they credit and was initially more successful than MD where they tried to be more quantitatively correct. The question is does more enrollment outweigh ineffective targeting? We have not explored that fully.
>
> **Participant:** You don't want to create something so complex it is counter-productive to engagement.
>
> **Facilitator:** That is something that could be a recommendation: gathering more information on this, a task-force that could gather more information.

Participant: Group 4: Do we need to reward productivity of folks/ districts that are particularly effective at getting environmental outcomes (not just # contracts)?

> **Participant:** Productivity of [conservation] districts is a factor of staffing and BMP funding. Funding and staffing is not consistent statewide. So it would not be fair to reward a District that has tremendous productivity that is generally a factor of having more staff and conservation resources to begin with. It might backfire to give more resources to more successful districts.
>
> **Participant:** We talked about districts setting their own goals. How do we ensure that goals that districts set for themselves will address the right practices, places, people …

Facilitator: Baseline resources are really helpful for districts. But then being able to ask for more to go above and beyond based on local goals is important?

Participant: Yes. We are given a lot of money, but if we don't have the staff to implement the cost-share having the money doesn't make sense. Better to ask, "How much staff do you have and what to you think you can reasonably accomplish this year?" With the added incentive if we can go above and beyond because we will get more staff or contractors than we can apply for that funding. That is better than getting "x" amount of dollars and it is a spend it or lose it situation.

Participant: How do you incentive staff to engage the farmers that are not coming to the office door, but may be a big source of the environmental problems?

Participant: Right now, there is not a lot of incentive for the districts to work with hesitant/late adopters. It can take a year to become comfortable with a producer, put staff and resources to it, but if the producer backs out not only does that contract gets cancelled, I lose the TA funding that I would need to pay my staff. I don't have an incentive to go after producer that may not really want to participate.

Participant: That is a perfect example of the challenges you face. You are not getting rewarded for working with reluctant farmers. That is a real problem.

Participant: Doesn't it make sense then to reward SWCDs that have a proven record of success. If they have resource concerns in their district that are unmet, why not give them more $?

Participant: If all things were equal and Districts received equitable resources and staffing, it would be a great idea. However, VA targets and pushes large amounts of money to certain Districts that are believed to have the biggest reductions to the Bay, They have funneled funds to those Districts above all other Districts. So if those Districts are already getting the most money including TA, should we reward them even more?

Facilitator: So I am hearing ideas on the district-side. Adequate funding, staffing, incentives to reach reluctant farmers without the risk of losing budgets. There is discussion in the chat regarding farmer-to-farmer peer networks and success stories. What successes are you aware of across the country? How are we bridging this gap?

Participant: One successful example is from WV: farmer encouraging other farmers. Cullers Run pilot study. Allen Collins ran that study. A group of farmers were given control of funding to decide what to do to move the needle on WQ. They chose to first invest in monitoring to pin-point where the nitrates were coming from and implemented BMPs there. They also identified a location where a lot of subsurface nitrates were flowing. The farmer adjacent to that land was not part of the group, but he was approached and they were able to get him to adopt a subsurface wetland to filter out the nitrate. What can programs learn from how farmers approached this problem?

References from chat:

- There are many examples such as this. One particularly relevant approach is captured in Richard Moore's work in Sugar Creek in Ohio file:///C:/Users/wew2/OneDrive%20-%20The%20Pennsylvania%20State%20University/Documents/1%20AG&WATER/Webinar%20series/Moore-Webinar-Brief-Final-1.pdf
- Here is a link for Cullers Run. An article in the Journal of Soil and Water Conservation: http://archive.cacaponinstitute.org/PDF/BOD/Journal%20of%20Soil%20and%20Water%20Conservation-2009-Maille-85A-7A.pdf
- Also, search for "Cullers Run" in this STAC report. Alan Collins came and presented on it... https://www.chesapeake.org/stac/wp-content/uploads/2020/02/Final_STAC-Report_BMP-Targeting-Workshop-Report_2.12.2020.pdf
- An example from Iowa https://fishersandfarmers.org/wp-content/uploads/2018/04/Performance-Based-Watershed-Management.pdf
- A better link to Sugar Creek and Richard Moore's work https://water4ag.psu.edu/files/2020/07/Moore-Webinar-Brief-Final-1.pdf
- I think the Vermont level investment in the farmer-led watershed assoc/coalitions - is an example of STRONG alignment between fed-state-local programs/resources to meet the Lake Champlain TMDL, for ex.
- The Water for Ag leadership team effort in Mifflin County PA https://water4ag.psu.edu/project-sites/mifflin-county-pennsylvania/
- Example: pilot project in the Walla Walla river basin to suspend the rules of prior appropriation, allow local districts to manage for stream restoration.

- Multiple examples of motivating farmers by aiming for stream fish habitat / sportfishing benefits. E.g., https://lancasteronline.com/sports/outdoors/conservationists-hope-to-boost-hammer-creeks-wild-trout-potential-with-5-2-million-pollution-mitigation/article_47d7abd0-a914-11eb-8aac-233b6803aa1a.html
- Example: Salmon Safe label for marketing in the Pacific Northwest.
- Vermont Groups are a great example. Smith Creek Showcase Watershed (early on farmer sounding board group worked good).
- Peer to peer work super star in PA is Gordon Hoover with the Lancaster Farmland Trust. A recent white paper from their work in the Pequea watershed - https://issuu.com/lancasterfarmlandtrust/docs/white_paper_paradiseleacock_final
- WQ Trading programs in Canada basins - where the producers are participating in essentially an ecosystems services payment program without being encumbered by the rules - instead the TSPs simply match up the producer with the right funding source for the right situation.

Participant: Using precision-ag tools to highlight fields where more money is going in than coming out and demonstrating how taking that land out of production and putting it in buffers can actually improve net profits.
Participant: Do we currently have a way to show what all conservation districts are doing so for example a VA person can see what a NY district person is doing that really works?

Participant: I know of from Virginia there is not a forum to share ideas across states. Our state encourages discussion between Districts on effective measures but I can't speak for other states.
Participant: Within states HUGE exchange between districts - but between states - with the exception of national gatherings like Soil & Water Conservation Society … less so within the BAY.
Participant: The National Association of Conservation Districts' (NACD) hold national and regional meetings. It's a good opportunity to network and share ideas District to District.
Participant: A forum for District discussion/sharing would be welcomed at the state level
Participant: Chesapeake Conservancy has a CBP-funded project to look at improving communications among agents. Report is expected next month or so
Participant: I believe it would be highly beneficial for partners, legislators, agencies, etc. in the bay region to get together at least annually to discuss topics

Facilitator: In OR, there are a set of watershed councils that would get together annually and share info. Do we have the opportunity here in the Bay watershed? Does VT have cross-district discussion?

Participant: It is a little different because it is one state. Fed and state cost-share are well-aligned. In the CBW, there is exchange within state, but cross-state I don't see it. Each state has its hands full.

Facilitator: Is there something we can be doing in the Bay region to facilitate communication across states?

Participant: I don't know who coordinates it. There is an all-bay meeting of the districts across PA. maybe we could build on this format.
Participant: I don't know what happens in this realm. In the PA Farm Bureau, if one county is doing great, we all get to see what the county is doing. There is a seasonality in conservation, so more than annually would be ideal, two or three or four time a year. They would know the opportune times to do it.
Participant: I've often wondered if it wouldn't be very useful to undertake a robust evaluation or at least cataloguing of the 42 counties that have undertaking CAP process.
Participant: Penn State created a Resource Inventory for Lancaster County so people can access information about all the partners in 1 place. We're working on making it more user-friendly in a web-based format. https://lancastercleanwaterpartners.com/wp-content/uploads/2021/04/Lancaster-Clean-Water-Partners-and-Resources-Inventory-March-2021.pdf

Facilitator: There is interest in this communication path, regular interaction in regular intervals in multiple ways. Policy-makers- have you heard anything today that resonates, or do you have any questions?

Participant: One thing that came up- getting money out the door quickly to keep up momentum. Putting farmers through the process of applying and finding out it is going to be years to get ranked and get the money. We have been thinking of how to get around that. Part of that is money, but demand for conservation exceeds supply. We have been thinking about CRP- there are a subset of practices that do operate like that where you can sign up on demand (continuous enrollment). We have been thinking of doing that in a working lands context: Do you have a state technical committee say, "NRCS will fund 150 different practices but if you want to do these three you can do it on demand." That is one idea. Maybe there are others. Would welcome feedback on how we prioritize or segregate a section of practices that we truly can roll-out in an on-demand fashion. Another thing is making sure that P4P benefit actually goes to

farmers. There is a lot of skepticism on in the federal legislature on carbon markets- concern that financial types will end up taking the benefit away from farmers. I don't know if that is going to happen on the ground or not but politically that is something we face.

Facilitator: Anyone else in the funding/policy realm on things that resonated?

Participant: Still not sure what the answer is, but we continually hear the message about paying for people and TA providers: pay adequately, reduce turnover, incentivize properly, have the right skills and training. Hearing the same things today and looking forward to future conversations on how to improve it.

Participant: I know that part of the discussion in our group was building the relationship/trust locally- there are apprehensions. There are those early adopters, but figuring out how do we get beyond that via the district staff, other community members, or other partners definitely will help in moving this forward. Funding from federal and state there may be reluctance to open up and share too much about an operation. If it is a trusted member of the community that can lead to more adoption.

Participant: I think a lot of these messages have been entertained at the CBP. The issue we have in communications is that we are a tiny shop. Even though we have a communications workgroup we do not have the right people whatsoever in that group that could do this kind of work. We have a local engagement action team at the Bay Program- meaning everyone beyond just officials and planners. A lot of times the state agencies and groups are protective in how they communicate out to their particular networks. That is a potential roadblock for us. That is my challenge because I can only do so much to have the right people come to the table. I would love to do more, but there is only one of me.

Facilitator: That hits on the fact that anyone of us could say there is only one of me. There is limited time, limited resources but then I think of the reach, width, depth of the people participating in the workshop today and the previous days. People all across the watershed working on local improvements and working with local folks. The depth of that is phenomenal. Any big picture thoughts?

Participant: I am a sort of outsider to this work, so I think I have a useful perspective. The incredible complexity of delivering resources to farms creates an unusual amount of waste of public resources and it is frustrating to farmers, so I think focusing on how to deliver those resources quicker and with less complexity is crucial. There needs to be a sense of urgency about that. There is a lot of talk, but how do we fix it? A sense of urgency would go a long way in getting people to engage and be willing to do things. I hear all time, "We had a farmer hooked and by the time the funding came in they had quit." Not surprising. Their energy went somewhere else. A very basic concept: Everything has an opportunity cost. If you make being a responsible citizen too difficult or complicated, they'll go do something else.

Facilitator: High-level synthesis. What we are trying to do is gather this information back for the Bay Program and other decision-makers. The workshop reports are meant to help think about where we need to go and guide it. We want to assemble this information into a report and give that back to people. Key messages:

- People and partners: farmer-focused, partnering with ag retailers, agribusiness, having messages that work, saving farmers time and money, how can we help you? Thinking about tools and simplification and training how to get there.
- Programs: Can we create flexibility and drive towards it without having a completely open checkbook? Think about programs in the right place to reach the right people.
- How to provide TA providers with more time, more funding, building those peer-to-peer networks. Training programs to reach people. Create comfort so when you are walking out to a farmer for the first time you are making a good impression/ creating that trust.
- Build communities of practice to allow folks to share what they are doing regularly what is working. Mentorship programs for this.
- Thinking about compliance…simple and easy but providing flexibility and creativity for someone who doesn't know how to start or where to proceed.
- Value-added products and providing public education to the consumer. What does that look like?
- Are there types of recognition public or not public that really help encourage doing the right thing? Some need for studies in how this might be working.
- Supporting those conservation districts or really anybody that is focused on conservation messaging.

Hard to figure how to distill this down into some recommendations but I think we really have some concrete ideas on what to do and where to go with it. Thoughts from steering committee?

Steering Committee: Thanks to everyone for thinking outside the box and hope this is a call to urgency and action.

Steering Committee: Thank you so much to the TSPs. You have so much influence on policy and the way the work is taking place on the landscape. Working for the people you are serving. You are taking time from your primary work to tell us what needs to happen. I have gotten so much rich input from the TSPs here. Thank you.

Facilitator: Big thanks to everyone. Please reach out is something else comes to mind. All materials will be on the website. This can be a start of many conversations on how to do this, given weather impacts, financial impacts, ensuring adequate food supplies. What does is look like when we bring this all together?

Appendix H: Briefing for Day 3 Participants

Chesapeake Bay Program (CBP)
2021 Scientific and Technical Advisory Committee (STAC) Workshop

Overcoming the Hurdle: Addressing Implementation of Agricultural Best Management Practices (BMPs) Through a Social Science Lens

Virtual Workshop; July 13, 14, 20

Briefing Summary in Preparation for July 20th (Workshop, Day 3)

Summary of workshop input to date
Day 1 (July 13) workshop participants (a mix of ag service providers, other ag conservation partners) were invited in small groups to ignore limitations from existing programs or laws and brainstorm what it might look like in the year 2031 to have met agricultural nutrient and sediment goals for the Chesapeake Bay. What did we do in the Chesapeake Bay watershed to achieve those goals? Participants then discussed their thoughts in a full group session.

Day 2 (July 14) participants then explored specific tools (scenarios) to achieve reduction goals in small groups: technical targeting tools; flexible financial incentives; how insights from behavioral science might be applied; and rewarding conservation professionals. The feedback from Day 1-2 is summarized below, along with questions for our discussion on Day 3 (July 20).

Day 1- It's 2031: We've met agricultural nutrient & sediment reduction goals in the Bay Watershed. What does this look like and how did we get here?

Assumptions guiding workshop that were clarified through discussions:

- How do we reach agricultural producers who are reluctant to adopt BMPs?
  - Assumption: farmers already implementing BMPs are not our primary audience; our audiences are people we are not reaching: the non- or reluctant adopters
  - Those already implementing BMPs want to know if what they are doing is making a difference through local monitoring; however, such monitoring may not drive a reluctant adopter to take action. Other incentives or nudges are needed.

- How do we increase adoption of cost-effective BMPs?
  - Assumption: to achieve the goals for nutrient and sediment reduction for agriculture in the Chesapeake Bay, we need to do more, do better, implement BMPs faster, and in the places that will result in the highest pollution reductions. As one participant noted, "NRCS only reaches 12-15% of farmers nationally. If we are relying on these programs to meet our goals, it is not enough scope or outreach."
  - How we do this is a critical question with a number of ideas raised below.
  - A regular theme raised by participants is that we need to be working with trusted voices and "gateway" projects or programs to bring reluctant adopters along, not waiting for someone to walk in the door and ask for help but going to them.
  - This summary concludes with general thematic areas for discussion on Day 3.

Potential view of what it might look like in 2031, as outlined by workshop participants:

- **Farms are sustainable and profitable** with reliable income for ag products, soils are healthy, streams are buffered, nutrient rich food is standard, manure is managed as a resource, and producers have implemented BMPs that are climate (flood, drought) and market resilient while seeing that BMPs are making a difference through local monitoring
- **Funding and effort are targeted effectively**, with critical source areas identified and BMPs focused on critical areas (hot spots) and for critical time periods (hot moments). We're more focused on addressing projects at a watershed/sub-watershed level.
- **"Pay for performance" is accessible and utilized across the Chesapeake Bay watershed** as a market based program with payments for lbs/pollutant reduced and on-going verification at scales appropriate with payments and performance.
- **Farmers consider cover crops as their "crop"** due to conservation incentives, or are competing based on nutrient reduction performance.
- **Agencies have adopted a "farmer" centered approach** versus a "program" centered approach, with more straightforward messaging (streamlined goals, objectives, funding mechanisms, simpler message); easy access to materials or equipment; sufficient staffing; easier participation for farmers (fewer hurdles, less frustration, fewer bottlenecks, quicker turnaround, more time/flexibility); easy paperwork (see MD water quality cost share program); lower barriers to adopting new ideas or technologies; adaptation to conditions like drought; openness to innovation; more funding for larger projects.
- We've **found ways to meet farmers and producers where they are**: whether Plain Sect or others. We are celebrating the diversity of farms (production [dairy], farm type) and working with producers, having cultivated trusted messengers (including liaisons to under-served communities or third parties to streamline projects) and messages that may link to other values, including being good stewards and protecting local water quality for their family and neighbors. We've found a way to work with both land renters/owners to implement BMPs.
- **Robust community support exists at multiple levels**: peer to peer outreach/engagement; for transition planning; and ag/watershed groups or coalitions in local watersheds. We are celebrating success in a variety of ways that meet farmer needs/preferences and showing how ag is "doing its part" to address critical water quality challenges.
- **Technical assistance is robust with a cohort of well-trained people across the watershed who have or can build trust**, including through "gateway" projects like energy audits. Training programs through community colleges/universities are well developed to produce a "pipeline" of expertise. We are connected with the private sector to advance BMPs.
- **Technology used to separate nutrients from livestock in nutrient dense areas is being widely implemented** to address regional nutrient imbalances; such nutrients are then sent to areas that are nutrient poor. Technological advances including precision ag, gasification, etc. are readily approved without redundancies in requirements and funding is possible for large-scale infrastructure technologies because the price/pound for pollution reduction makes that investment worthwhile.
- **There is a uniform BMP tracking and reporting system** that has sensible and reasonable goals with a neutral third party data collector who can provide solid information ("Who you

listen to and what information is out there is different from how information is collected and shared." Farmers are given credit for work they are doing.)

- **Financial support and "positive incentives" are available**, with price premiums paid for good stewardship practices, discounts for services (loans, insurance) for those implementing critical BMPs, steady or increasing payments over time, and support for on-going maintenance that appropriately addresses climate- or market-related risks.

Day 2: How might we accomplish these visions? Finding solutions by exploring scenarios: During Day 2, participants split into groups to explore potential scenarios in depth (scenarios posted online). With each scenario, facilitators presented a "current reality" then explored alternative approaches with their groups; each group's discussion is summarized below.

Scenario 1: Expanded Use of Spatial Prioritization (Technical Targeting Tools)

- Participants in this group represented a range of perspectives from less familiar and curious to very positive about the use of spatial prioritization. People thought this could be a useful tool, particularly if we could reduce the cost of ground truthing the tools (see below) and potentially create more value-added tools (screening).

- Prioritization uses **landscape-level spatial data (both biophysical and social)** about who might be most prone to adopt; this could be useful as a means to approach people

- Using **tools upfront may help** avoid a lot of paperwork to confirm eligibility (especially early in the process or confirming BMP adoption) and address economic needs (such as match requirements or equipment and funding needs)
  - Less red tape will enable participation
  - Types of tools: aerial photos, satellite imagery, GIS, artificial intelligence for ground truthing (finer scale?)
  - Potential methods to consider :
    - local identification by farmers of streams with high sediment loads
    - volunteers to look for potential opportunities (community science approach?)
    - field days in areas with lower adoption
    - prioritization tools to compare "conservation efficiency factors" of service center visitors to other farmers/landowners in local watersheds (see Virginia)
    - prioritization tools that use both social and biophysical data tools to facilitate public/private sector outreach opportunities

- There are a **number of challenges or barriers** to direct funds/attention to where needed:
  - Livestock producers don't qualify for many programs [editor's note: this is an area that needs more exploration]
  - Critical to engage with both landowners and renters
  - Need to think about messaging: avoid "targeting" people as no one wants to be targeted, engage producer from the beginning, think about how their parcel may be an opportunity
  - Verification needed: need to ensure accuracy through ground truthing (staff time), may not be able to see if cover crop was fertilized
  - Lack of trust in the tools

Scenario 2: More Flexible Financial Incentives

- **Critical to focus** on 1) producers who are reluctant adopters (vs. adopters), 2) technologies (BMPs) that provide high public but low private benefits; 3) incentives that encourage people to treat critical source areas.

- **Pay for performance (P4P) is of interest to workshop participants; there are a number questions about how such programs would be implemented**
    - For example, would P4P compensate producers on water quality services (WQ benefits, $/lb of pollutant removed) provided rather than the cost to install a practice?

    - P4P could be implemented as a primary way to fund conservation or as supplemental system to existing cost share programs

    - P4P could potentially address a number of current challenges to adoption:
        - Target high nutrient loss areas. Overstocking is an important resource challenge, particularly from small, resource limited operations. Under existing crediting/ programs, a farmer with too many cows per acre and one with a few cows per acre get the same payment and credit for a stream fencing project even though the WQ impact would be very different between the two operations.

        - Many farmers are reluctant to adopt BMPs with significant costs and limited private benefits. Many farmers are concerned about stream fencing because of upfront installation costs, potential high maintenance cost (ex. fencing washing out during storms), and opportunity cost of land taken out of production. P4P can address these issues since payments are based on public WQ benefits, not just installation costs

    - Participants discussed a number of design considerations including the following: Consider ranking programs based on $/lb pollution reduction. Consider when payments are received, annual vs. lump sum payments, providing information about prices that agencies are willing to pay for WQ services upfront (ex $/lb that agencies are willing to fund to increase producer certainty in value), and determining the baseline from which to begin counting reductions.

- **Which farmers to approach with a P4P opportunity raised questions** (see Scenario 5 discussion):
    - Would reluctant adopters who have not participated more fully in BMP implementation be willing to participate in a program aimed at WQ results?
    - How would the benefits (funding) be distributed in a P4P program among farmers/producers? Would "big" farmers receive more?

- **Participants focused primarily on P4P, but there are other flexible incentives to explore:**
    - Example: offering farmers/collection of farmers financial rewards for achieving specific measurable outcomes or achieving a specific soil P (phosphorous) index level in high P operations.

Scenario 3: Using Insights from Behavioral Science to Plan Outreach Efforts, Design Conservation Programs

- **Need to move away from a "program-centered" to a "farmer-centered" approach**

- We need to **frame the water quality narrative differently: "farmers are part of the solution**." This will help build trust and develop new social norms, critical for long run impact. Building appreciation can motivate action (as opposed to "farmers are the bad guys")

- **Individual farms, managers, communities are unique**. We need to tap into different values, perceptions, needs, issues to move forward
    - Think about a community-based marketing campaign: social media, focus groups, interviews, field days, community ambassador events, exchange programs (farmers visiting fisheries and vice versa), recognition/awards

- **Working within networks and trusted ambassadors in various communities is key**
    - One-on-one, peer-to-peer, and/or focused engagement combined with other approaches can lead to a snowball effect and more adoption, especially if tailored to meet local needs
    - Outreach professionals, no matter whom they work for, need to coordinate to share consistent message and bigger picture to break down existing siloes
    - A farmer-built network and mentorship program may be important

- It may be helpful to **develop a catalogue of BMP successes**, including success stories, BMPs implemented, costs, and professional contacts
    - Consider a Chesapeake Bay Program goal for "sustainable agriculture" (like for sustainable fisheries" goal)

- Need to think about how to **incentivize consumer demand** for more sustainable products (price premiums, niche markets)

Scenario 4: Rewarding Conservation Professionals

- Participants in this discussion liked the idea of rewarding people for promoting conservation, but concluded that **rewarding effective "conservation professionals" or people who may work for some entities like a conservation district was not a good idea**. Why?:
  - Conservation districts spread their workload for BMP implementation across staff; it is hard to reward individuals versus a team. This is a team effort.
  - Conservation district staff have a number of goals, not only nutrient/sediment reduction
  - A number of staff do outreach and and education and might be left out
  - Numerous challenges may arise: what are the metrics for identifying rewards (between offices, or relative to office performance over time)? Terms of rewards? Bonuses for staff versus needed funding for equipment? Fairness/allocation? Competition? Need to be aware of the need for staff retention. Staff are already busy.
  - Might create competition between agencies (need cooperation)

- **Alternative ideas for using incentives and rewards ("If agency staff are already super busy, what if we incentivize progressive ag producers to do the outreach?"):**
  - Districts need more consistent/reliable funding, especially for those within critical source/high impact areas
  - Public recognition of good work done by ag retailers may be more helpful than financial incentives (building relationships, conducting on the ground work) (see Day 1 discussion))
  - Think about rewards or incentives for farmers in the community who could receive compensation or incentives for talking with other producers, making referrals, and doing the necessary groundwork. Producers with trust in community, ear to the ground may make a real difference (see discussion from Day 1 on peer to peer/networking efforts)
  - Would need clear qualifications, training, interview process
  - Could have higher bonuses for bringing in producers from critical source areas

Scenario 5: A mix of the above, including enforcement, other tools

- This final group of participants discussed the potential for a mix of tools. They noted that **each idea may be necessary but any idea alone was not sufficient;** synthesis is needed. In addition, taking advantage of "teachable" moments may be key- such as when a producer wins an award, can they share the BMPs they are implementing?

- **Prioritizing key locations or "hot spots" and temporal "hot moments" in time is critical**:
  - Outreach and collaboration between a number of partners is key to effective targeting
  - Trust in the Chesapeake Bay model (or any model) is insufficient and too complex to incentivize conservation; need to partner targeting efforts with monitoring.
  - Monitoring at the same spatial/temporal scale as the targeting is critical. Effective spatial scale around 10-20 farms in a smaller catchment? See Lancaster (PA) Clean Water Partnership approach as an example.
  - Need to think about what metric or activity is being targeted (streambank erosion?)

- **Financial incentives such as pay for performance (P4P) is of interest**
  - Need to think about design criteria- focus on those already implementing BMPs?
  - Again, monitoring is critical: monitor at the same spatial scale as the P4P payments
  - Need holistic/collective approach to performance, beyond one BMP at a time

- Other considerations:
  - **Think about negative incentives/enforcement:** support the agricultural community with increased enforcement of existing regulations

Day 2, Open Discussion:
After each scenario group reported back, participants engaged in a general discussion. A few major points from the overall discussion:

- **Interest in the Pay for Performance idea was high but a number of questions on how to implement it arose.**
  - How to utilize P4P to increase reluctant adopters to implement BMPs vs. reward and incentivize even higher level conservation by early adopters raised a number of questions.
  - Who should qualify was the subject of discussion (see notes above from scenarios 2, 5) and a critical design question.

- **Monitoring as a subject came up in many ways** and is a topic to explore more:
  - While participants agreed on the importance of monitoring, some did not think that this would be a tool for encouraging reluctant adopters to engage in BMP implementation.
  - For some, monitoring is more than water quality monitoring, but includes data tracking (plans written, BMPs implemented, nutrient application records kept).
  - Questions of monitoring versus tracking and verification were frequent discussions linked with the question of how do we know if we are making progress?

- Participants had much to say when asked **what made conservation work "fun" versus stressful**:
  - **Fun**: working outside, engaging with people and partners, building trust/connections, making a better world, hearing examples that work. "Helping farmers is rewarding."
  - **Stressful**: deadlines, paperwork, over documentation, tight turnarounds, delays, time from idea to implementation, restrictions, programmatic BS, conflict, competing priorities

- **Meeting farmers and producers where they are** is a repeated theme from the breakout sessions and the general discussion.

- At the end of the discussion, the **opportunity to leverage other drivers arose**; for example, can MS4 requirements be met through ag practices?

A number of key themes overall:
During Day 1-2, a number of key themes emerged.

1) There seemed to be relatively high levels of agreement that **implementation could be improved with more flexibility in prioritizing and incentivizing high impact producers, technologies, and locations**

2) There were a **number of ideas on how additional flexibility can be structured** to get a prioritizing place, practice, and people including:
   a) P4P: paying for the amount of WQ services provided, rather than costs incurred (with many questions and discussions about the program design).
   b) Reward programs: farmers assisting with education/networking; achieving benchmark indicators.
   c) Creating revenue streams for farmers though commodity supply chain/environmental

stewardship

3) **Incentive programs need more administrative streamlining** (this goes from paperwork to complete cost share agreement to approval of innovative BMPs).
4) **Questions of trust arose in several contexts**: who might be good messengers, how information they are sharing might be used, how actions on the ground are linked to the Bay model, and so forth.

5) As noted in the final discussion, **questions related to monitoring arose in a variety of discussions**. The discussion often came up in that "farmers want to know if they are making a difference." What this means and how to accomplish this, particularly linking to social science, may be a conversation to have further

6) To improve BMP adoption success, **more needs to be done with direct engagement with farmers** through a variety of mechanisms