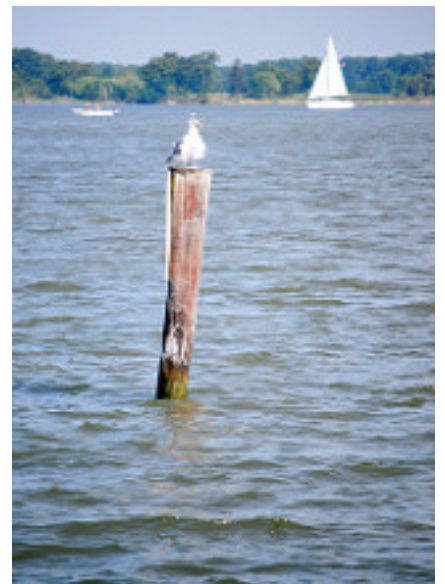




# CHESAPEAKE BAY ENVIRONMENTAL FINANCE SYMPOSIUM Recommendations and Final Report



Prepared by the Environmental Finance Center at the University of Maryland  
August 2016



## Acknowledgments

The Environmental Finance Center would like to thank the following people and organizations for their assistance in implementing the Symposium and developing this follow-up report:

**Project planning, guidance, and implementation.** The Financing Symposium process was greatly aided by several committees, including the Symposium Steering Committee, Symposium Planning Committee, and Symposium Report Editing Committee.<sup>1</sup>

**Symposium speakers.** We are very grateful to the following people for presenting at the Symposium. Their expertise provided an effective starting point for the subsequent conversations.

- Eric Letsinger, *Quantified Ventures*
- Paul Carroll, *City of Newport, Rhode Island*
- Perry Raso, *Matunuck Oyster Bar*
- Jag Khuman, *Maryland Department of the Environment*
- Nick Dilks, *Ecosystem Investment Partners*
- Jeremy Sokulsky, *Environmental Incentives*
- Secretary Ben Grumbles, *Maryland Department of the Environment*
- Deputy Secretary Angela Navarro, *Virginia Department of Natural Resources*
- The Honorable Penelope A. “Penny” Gross, *Local Government Advisory Committee to the Chesapeake Executive Council, Virginia Delegation*
- Delegate David Bulova, *CBC and Virginia Delegate*

**Symposium facilitators.** The conversations within the twelve Symposium breakout sessions were expertly guided by the following facilitators:

- Doug Black
- Colleen Copple
- Jim Copple
- Gary Decker
- John Lesko
- Perry Pockros

### **Report review and comment.**

- Local Government Advisory Committee
- Citizen’s Advisory Committee
- Chesapeake Bay Program Management Board
- Maryland Department of Natural Resources
- Pennsylvania Department of Environmental Protection

A special thanks to the following individuals for reviewing and commenting on the report:

- Jeff Corbin
- Nick Dilks
- Kurt Stephenson

---

<sup>1</sup> A complete list of the members of each committee is included in the Appendix of this report.

- Beth McGee
- George Kelly
- Doug Lashley
- Jack Kartez
- Khris Dodson
- Doug Wheeler
- Mark Bryer
- Craig Holland

Finally, the Environmental Finance Center would like to thank the leadership and staff at the Chesapeake Bay Program Office for their support and assistance throughout the Symposium process. This project would not have been possible without their partnership.

Cover photos courtesy of the Chesapeake Bay Program Office.

# Contents

<b>Executive Summary</b>	<b>5</b>
<b>Section 1: Background</b>	<b>8</b>
<b>Section 2: Conditions that Enable Private Sector Engagement</b>	<b>11</b>
<b>Section 3: Recommendations for Scaling and Accelerating Public - Private Engagement</b>	<b>14</b>
<b>Conclusion</b>	<b>34</b>
<b>Appendix</b>	<b>36</b>

## Executive Summary

On April 25-26, 2016, the Environmental Finance Center (EFC) at the University of Maryland, in collaboration with the EPA Chesapeake Bay Program (CBP), convened the **Chesapeake Bay Environmental Finance Symposium**. This event was catalyzed by Chesapeake Executive Council Resolution 2015-2, which charged CBP with bringing together a symposium to identify innovative approaches for leveraging or incentivizing private investment in Bay restoration and protection efforts.

The event gathered more than 130 creative, successful leaders from diverse fields including finance, business, policy, and resource protection to discuss options for advancing a more market-like approach to achieving Bay restoration goals. Symposium participants engaged in robust and fruitful discussions, both during and following the event, and these conversations have provided the foundation for the analysis and recommendations presented in this report.

**Key findings.** The conversations that took place at the Symposium addressed an array of financing, policy, and implementation barriers and opportunities. Though the event generated a diverse collection of ideas, a handful of themes permeated much of the discussion at the event and therefore have directly and indirectly influenced the recommendations presented in this report. These common themes include:

- *Market diversity.* Symposium participants represented many different industries, firms, and market segments, each with their own unique role in the Bay restoration effort. The private sector is diverse, serving a range of functions and providing an array of potential benefits in the context of water quality improvement. As a result, there is no single solution or set of solutions that can effectively leverage private sector activity. The conversations at the Symposium, therefore, largely focused on the universal conditions that are necessary to engage multiple market segments and actors.
- *It is not all about water quality trading.* The benefits and barriers of establishing water quality markets was a dominant theme at the event, and for good reason. Water quality trading and markets have the potential to dramatically reduce the cost of water quality compliance, especially at the local level. However, the scale of the restoration effort means that trading is not a panacea, but rather one of many important components of the financing solution.
- *There is a foundation for financing success across the region.* Clearly the Chesapeake Bay restoration financing challenge is significant and will require the mobilization of fiscal resources across the entire region. In spite of the challenge – or perhaps as a result of that challenge – there are examples of local and state governments effectively establishing the conditions necessary for catalyzing market behavior, and of successful market-based financing programs that are accelerating implementation and reducing costs throughout the region.
- *The private sector is ready to engage.* Symposium participants represented industry sectors that are ready to engage, invest, and advance restoration activities, once the right conditions are in place to enable these sectors to act.

**Summary of core recommendations.** To leverage the private sector’s potential for advancing the Bay restoration effort, it will be necessary to lay the groundwork for effective engagement. All participants in Bay restoration – public and private – have a role to play in creating a set of key “enabling

conditions” that set the stage for successful interaction with the market and private sector: 1) achieving flexibility in project design, implementation and permitting; 2) improving consistency in market demand, procurement, permitting and regulatory enforcement; 3) building universal standards and infrastructure for the marketplace; and, 4) boosting broad-scale demand for restoration.

To advance these enabling conditions and catalyze private sector engagement in Bay restoration, the EFC makes the following core recommendations:

- *Advance a basin-wide restoration economic development effort.* Much of the Bay restoration finance dialogue is focused on the cost of complying with pollution reduction mandates. Though reducing costs and achieving greater returns on investment must be a critical goal, the overall restoration effort will be more effective if it can become folded into a larger, restoration-based economic development initiative. Water quality investments have the potential to stimulate significant and sustainable economic activity across the region. By linking investments to industry and business development, there is an opportunity to establish the mid-Atlantic region as the center of water quality restoration-based technology, industry, and business.
- *Create credit-based financing systems and market infrastructure watershed-wide.* The foundation for achieving efficient and effective Bay restoration financing is a credit-based system that enables nutrient and sediment reductions to be generated and sold wherever is most efficient. Such a system – even if implemented only in a limited form – brings opportunity to reduce the overall cost of compliance and accelerate implementation of Bay restoration goals.
- *Establish basin-wide implementation and performance standards.* One of the most important prerequisites for effective market activity is the establishment of standards that set the code of conduct. While the restoration financing effort may have myriad goals – including stimulating economic activity in the region – the primary, overarching goal of the effort must be to restore water quality in the Chesapeake Bay and its tributaries. Implementing performance standards helps ensure that restoration markets ultimately advance this goal.
- *Reduce unnecessary transaction costs.* A consistent message in Symposium discussions was the fact that inefficient government processes have an adverse impact on private sector activity. Targeted reforms to permitting and procurement processes to remove unnecessary inefficiencies could stimulate private sector engagement.
- *Facilitate the flow of restoration investment through innovative institutional structures.* Private sector and market experts at the Symposium described a variety of opportunities for gaining investment efficiencies, each one requiring flexibility that is too often lacking in existing public financing systems. Yet there are models of institutional structures that invest public funds in a way that incentives effective programs and practices, and these models should be replicated.

These primary recommendations are universal, in that they could apply in all communities and jurisdictions throughout the Chesapeake Bay watershed. In addition, there are opportunities for establishing innovative financing processes and programs with local-level specificity, including linking private capital and implementation with public sector investment through pay-for-success programs; leveraging mitigation banking processes at the local level; utilizing public-private partnerships to reduce implementation costs; and using tax incentives to motivate adoption of water quality practices

on private land. While these options may not apply in every jurisdiction, each has the capacity to expand local and state financing capacity.

## Section 1: Background

In July 2015, the Chesapeake Executive Council issued Resolution 2015-2, which directed the EPA Chesapeake Bay Program (CBP), under the leadership of the Principals' Staff Committee, to convene an Environmental Finance Symposium that would identify innovative approaches for leveraging or incentivizing private investment in Bay restoration and protection efforts. The CBP engaged the Environmental Finance Center (EFC) to plan and implement this Symposium, which was held at University of Maryland at College Park on April 25 and 26, 2016. Guided by the rich discussions that occurred before, during, and after the Symposium, the EFC has prepared a set of key financing recommendations contained in this report.

**Committee guidance.** To guide the development and implementation of the Symposium, the CBP and the EFC convened two committees, each comprised of public and private sector leaders from the Bay states and the District of Columbia. The committees included representation from experts in a range of related fields, including finance, resource management, planning, and policy. Committee descriptions and a list of Committee members can be found in the Appendix.

**Event structure.** The Symposium convened more than 130 individuals from diverse fields including academia, resource management, finance, business, and policy. The two-day event agenda included plenary sessions that set the stage for conversations on effectively engaging the private sector in Bay restoration. Speakers from Bay states and around the country, representing both the public sector and the private sector, including social impact investors, made presentations that framed these issues. The core of the event, however, was a series of working sessions in which participants dove deeply into the issues at hand, brainstorming and vetting innovative approaches to catalyzing private investment in Bay restoration, as well as singling out obstacles to these approaches. Each participant was assigned to participate in two of six working groups organized around key themes (see below), with discussion led by a trained facilitator. Work groups discussed barriers and opportunities associated with creating more effective linkages between the public sector, the private sector, and the marketplace. A full summary report of work group discussions, along with the complete event agenda and list of participants, can be found in the Appendix.

**Key themes.** The Executive Council's directive clearly defined the primary focus of the Symposium to be the interaction with and engagement of the private sector, including the role of environmental markets in the Chesapeake Bay restoration financing effort. Given the complexity and scale of the challenge facing the Bay communities, this charge made sense. The public sector alone does not have the capacity to achieve restoration goals; successful Bay restoration will depend on the engagement of the private sector including citizens, businesses, and investors. To that end, the Symposium was designed to hone in on how the public sector—primarily state and local governments—can effectively engage and partner with the private sector in the restoration effort.

Symposium participants were charged with identifying opportunities for scaling investment, creating financing efficiencies and cost reductions, reducing restoration financing risk, expanding economic development opportunities, and incentivizing innovation and new approaches to water quality restoration. In order to organize discussion on these wide-ranging issues, the project team in partnership with the guiding Committees, identified six themes to explore in depth during the Symposium:



- Reducing implementation costs;
- Incentivizing innovation;
- Creating and expanding consumer demand for conservation and restoration;
- Integrating public and private capital;
- Mitigating investment risk; and,
- Establishing water quality markets and trading programs.

Each of these themes represents an opportunity for the private sector to bring value and benefit to the restoration financing effort, and/or the mechanisms that can create linkages to the marketplace. Conversations around these themes provided the framework for the recommendations and path for moving forward.

**Goals of this report.** In its work plan with the Chesapeake Bay Program, the Environmental Finance Center was charged with distilling key findings from the Symposium and preparing a set of financing recommendations to be delivered to the Chesapeake Executive Council at its 2016 annual meeting. Specifically, this final report was to focus on:

- The enabling conditions necessary for incentivizing private investment, which are discussed in Section 2; and,
- The key opportunities for bringing water quality investments to scale; these are contained in Section 3, which details the EFC's financing recommendations.

The report first lays out the prerequisite factors or enabling conditions for local and state governments to effectively partner with the private sector. In addition, some of the main obstacles to establishing these conditions are identified, drawing from input received at the Symposium. Following that, Section 3 lays out recommendations for moving forward with a more market-based approach to Bay restoration, informed both by Symposium conversations and the EFC's own understanding of this landscape. The Appendix contains a set of materials intended to provide additional context for the Symposium and this report.

**A few preliminary notes.** The charge from the Executive Council was to focus on *water quality*, so this report does not discuss the financing challenges related to the myriad additional issues that are critical to Bay restoration and addressed in the Chesapeake Bay Agreements, such as goals related to fisheries and public education. The EFC's intent is to develop a path forward based on engaging private investment and market-based programs for water quality restoration that will pave the way for similar efforts related to other watershed restoration goals.

Second, where this report touches on *public* rather than private sources of revenue for restoration, it is intended to highlight how to maximize the impact of those investments, rather than explore potential new public sources. Public investment is essential to the Bay restoration financing system, and in many cases is the primary catalyst for restoration activity. However, the range of public revenue sources and the mechanisms for deploying them are, for the most part, well-established, and there are plentiful existing resources addressing the financing challenges that Bay area jurisdictions face. Additionally, because public revenue generation is a political rather than technical challenge, the conversation is contained to understanding how to maximize the effectiveness of investments, whether they come from public or private sources.

Third, the EFC's focus was on state and local financing opportunities and processes; federal financing and funding resources and programs were not directly addressed. Certainly, federal resources are essential to the restoration process, especially in certain sectors such as agriculture. In addition, federal interaction can also have a big impact on market dynamics in a variety of areas such as insurance tools and mechanisms, land protection, and application of technology. However, the complexity of federal financing programs and the cumbersome process for shifting spending patterns and priorities would have made it very difficult to identify recommendations that would be able to affect change in the restoration process in time to achieve mandated pollution reduction targets. That said, the recommendations presented in this report provide an effective foundation for leveraging federal resources within their existing structures.

Finally, it should be noted that the Symposium did not attempt to estimate the aggregate cost of restoration activities. Costs matter, but rather than try to estimate what costs may be in the long term (a necessary exercise when developing budgets and financing plans), the event focus was narrowed to the issues, processes and opportunities associated with reducing those costs, whatever those might be.

## Section 2: Conditions that Enable Private Sector Engagement

The private sector is no newcomer to the world of public infrastructure financing. In fact, private firms and the market have been integral players in financing public services for generations – and the Chesapeake Bay restoration effort is no exception. Private institutions and businesses have been involved in a wide range of restoration activities, including designing and constructing best management practices and water quality infrastructure; providing institutional management and capacity building services; supplying financing and capital management; and, facilitating market activity through aggregation and technical assistance. Perhaps most notably, the private sector has provided the majority of the revenue for restoration activities in the form of taxes and fees.

The advantages of such involvement by the private sector and the market are well documented and include:

- **Efficiency:** Market-based financing processes are often able to achieve outcomes more efficiently – in other words, more quickly and cost effectively. In regard to water quality restoration, this translates to an opportunity to maximize the level of pollution reduction per dollar invested.
- **Effectiveness:** The private sector is often able to achieve higher-quality outcomes as a result of greater overall capacity and access to resources.
- **Expediency:** When unnecessary public barriers are removed, the marketplace is able to mobilize capital and resources more nimbly—a boon to the Bay community, with restoration deadlines approaching quickly.
- **Innovation:** The market forces that create cost efficiencies also incentivize the development of innovative new practices, policies, and financing mechanisms that will advance the restoration effort.
- **Risk mitigation:** When private firms provide restoration services, they assume the risk associated with them, shifting it away from the public sector.

The private sector is already providing a number of market functions related to Bay restoration, as mentioned above, and there is almost limitless opportunity for enhanced engagement in order to capitalize on the power of the market to achieve more efficient, effective, innovative, and certain outcomes. The success of such engagement, however, depends on how it is structured and whether the right conditions are in place. What those conditions are, and how they can be achieved, was a main theme of the Symposium dialogues. Participants worked to identify the prerequisites for successfully stimulating private sector engagement, as well as the challenges and opportunities associated with putting these conditions in place. These discussions led to the identification of four “enabling conditions” that provide the foundation for leveraging the benefits of the market.

***Flexibility in project implementation, design, and financing.*** A common theme in Symposium discussions was the risk-averse nature of the public sector associated with restoration investments. The need to comply with regulations, permitting procedures, and procurement policies has resulted in a financing system that has a tendency to be rigid and overly prescriptive, which in turn reduces incentive for innovation and efficiency. A more flexible system that can react more nimbly and emphasize results rather than approach would give market actors incentive to find the most efficient and effective way to achieve desired outcomes. The result is reduced cost, increased innovation, and accelerated implementation. What often inhibits policy makers from enabling flexibility is a concern

that it could result in substandard performance and outcomes. To avoid this, programs can include clear, appropriate program parameters that drive performance. Restoration programs can be guided by parameters that ensure projects are designed, constructed, and maintained in a manner that reduces nutrient and sediment loading. As long as a firm can demonstrate that its project meets the established standard, the process to achieve those outcomes need not be prescriptive.

**Market consistency.** Another critical prerequisite condition identified repeatedly in Symposium discussions was the need for consistency – specifically, consistent demand for restoration services, consistent procurement and permitting processes within and across jurisdictions, and consistent regulations and regulatory enforcement regarding water quality goals.

Steady demand for goods or services facilitates market activity by spurring healthy competition, drawing more vendors to the table, and driving down costs. Predictable demand for – and investments in – pounds of pollution reduction would give private firms a clear expectation of desired results as well as a reliable source of revenue flow as they work to achieve those results. Unfortunately, this scenario is hindered by several factors, including the shifting nature of public spending priorities, which makes it difficult to predict the level of demand for water quality investments, as well as appropriation processes that infrequently base investment decisions on achieving pollution reduction goals. Additionally, most public budgeting and spending programs require that funds be expended within the current budget cycle or be redirected. This “use it or lose it” mindset leads to inconsistent – and often ineffective – investment decisions. A project which may not have been identified as a solid investment at the beginning of a budget cycle may end up being funded at the end of the cycle, simply because the agency does not have the flexibility to roll over funds from one fiscal year to the next. This system is not only a poor use of public funds; it increases the risk of project failure and sends the wrong signals to the market.

Another area where consistency is lacking is public procurement and permitting. Procurement is the primary connection between the public and private sectors, and as a result, defines the relationship between the two. When procurement requirements differ from community to community, private firms must develop their own processes to navigate varied requirements, which drives up transaction costs. Additionally, jurisdictions all have their own permitting processes for water infrastructure projects; when these processes are unnecessarily slow or cumbersome, it causes frustration and slowdowns in BMP installation. Reducing the burden of slow and inefficient permitting systems at all levels of government was identified as a major opportunity for improving the ability of the private sector to participate in restoration activity.

Finally, inconsistent regulations – specifically related to stormwater management in urban communities – and inconsistent regulatory enforcement across jurisdictions poses a barrier to project implementation, especially as it relates to market-based programs. Addressing this will require auditing and reforming regulations so that they are protective of water quality, and consistently enforcing regulations. By developing and applying consistent parameters, jurisdictions free the market to do what it does best: pursue the lowest-cost methods for achieving regulatory goals.

**Universal standards and policies for the marketplace.** A third prerequisite for successful private sector engagement is the establishment of shared standards for the water quality marketplace. This is especially challenging – but also especially necessary – given the size and diversity of the Chesapeake Bay watershed. Bay jurisdictions currently pursue their own regulatory and financing strategies for

achieving water quality goals. For example, Bay states use various metrics to guide MS4 permit implementation, such as acres of impervious surface treated, gallons of water retained on site, and pounds of nutrients reduced. While local governments *should* tailor their approach to local needs, the Bay-wide restoration effort would benefit from a more integrated system. Universal standards for the design, installation and monitoring of stormwater BMPs, for example, would make it easier and less costly for private firms to provide these services region-wide.

***Broad-scale demand.*** Finally, a necessary condition for engaging markets at scale is broad demand for the practices, behaviors, and programs that result in a restored Chesapeake Bay, which in turn will drive the supply of those practices, behaviors, and programs. Building demand for restoration will require interventions at multiple points, including maintaining / increasing existing levels of public investment in restoration; ensuring that local, state, and federal laws are consistently enforced; and redoubling efforts to boost public demand for Bay clean-up. This is no small task, involving outreach and education so that citizens, businesses, and institutions throughout the watershed understand that a clean Chesapeake Bay is integral to the community's quality of life and economic health.

These four conditions – flexibility in project design, implementation and permitting; consistency in market demand, procurement, permitting and regulatory enforcement; universal standards for the marketplace; and, broad-scale demand for restoration – represent the foundation for establishing a robust Bay restoration market. The EFC does not presume that these are simple goals to achieve – but striving to establish these conditions will help set the stage for effectively engaging the market and the private sector, with the payoff of enhanced efficiency, effectiveness, and innovation – and ultimately, a healthier Bay and regional economy. The next section presents recommendations for incremental actions that work toward achieving this vision.

## Section 3: Recommendations for Scaling and Accelerating Public - Private Engagement

The EFC's key recommendations represent strategies that have a strong potential to bring about a Bay restoration financing system that proactively leverages private sector capacity. These approaches take significant strides toward overcoming the barriers outlined in the previous section; if implemented, they would also advance establishing the conditions necessary for productive engagement between public and private sector actors. Several recommendations target certain levels of government and will require coordination between state, local and federal agencies and among both private and public market participants. The recommendations are organized into two categories:

- **Core recommendations** represent broad-scale market interventions and for the most part are intended to be implemented by states rather than local actors; they could be undertaken by all Bay states; and,
- **Theme-specific recommendations** address specific ideas that have demonstrated the capacity to accelerate the implementation of enabling conditions at the state and local levels.

Before exploring these recommendations, however, the EFC offers one over-arching recommendation regarding an immediate next step that will aid implementation of all of the proposed next steps. To maintain the momentum generated by the Symposium and move toward actual change, it will be critical to continue the conversation in a codified way and to have an entity that can provide leadership and continuity in shepherding the implementation process. Thus, the EFC recommends that the Chesapeake Bay Program create a **Financing Advisory Board** to work in partnership and coordination with its newly-formed Budget and Finance Work Group, which has been charged with engaging on issues that pertain to financing the requirements of the Chesapeake Bay agreement.

The proposed Financing Advisory Board would be populated by finance, economic, and policy experts and address key financing issues impacting the Bay jurisdictions. The Budget and Finance Work Group would serve as staff and support to the Board; working in partnership, the two groups would have the capacity to provide leaders, public and private, with actionable ideas for advancing restoration finance – those contained in this report and any others that emerge as the conversation continues. The recommendations that follow suggest tasks and implementation steps that would be appropriate for this new Board to undertake.

### Core Recommendations

#### **Recommendation 1: Advance a Basin-Wide Restoration Economic Development Effort.**

This core recommendation represents the greatest hope and opportunity for restoring and protecting the Chesapeake Bay: strengthening the linkage between the Bay restoration effort and the region's economy and economic development framework. While the Symposium process and this report have focused on identifying processes for reducing Bay restoration costs through market systems, the public sector must begin to shift its focus from controlling costs toward seeing water quality investment as a powerful tool for achieving sustained economic development in the region.

Bay states are compelled by federal mandates to pay for water quality improvements, yet these expenditures are not simply costs to Bay area jurisdictions; they are in fact investments in local and regional economies, creating jobs, building key industry sectors, and shoring up the long-term potential for the Bay area to remain a desirable place to live and work. It goes without saying that a clean and healthy Bay is foundational to the Bay area's economy and way of life, sustaining iconic industries such as fishing, tourism and recreation. Yet more can be done to strengthen the linkage – both perceived and actual – between Bay restoration and economic development.

There are three key opportunities here. First is the opportunity to develop industries and products that generate revenue in support of restoration practices; for example efforts to restore oyster habitat and populations or initiatives that are creating energy from waste. A cluster of industry sectors with high growth potential – such as sustainable agriculture and fisheries, urban green infrastructure, and eco-tourism – are predicated on clean water, and economic development efforts in these areas should be integrated with the Bay restoration effort. The economic activity associated with sustainable agriculture and fisheries, nature-based recreation, and the establishment of urban green space is in the many billions of dollars and growing annually.<sup>2</sup> The Chesapeake Bay states have an opportunity to establish the region as the focal point of this type of economic activity, which in turn will improve the quality of life for citizens, attract new businesses and skilled workers, and enhance the infrastructure foundation for long-term economic growth and development.

Second, there is the opportunity to target investment in best management practices that also support the local and regional economy. A study conducted by the Environmental Finance Center in 2013 showed that investments in stormwater management practices, for example, have an impact on local economies similar to the impact of other industries such as construction. There is compelling evidence that effective water quality investments will pay real dividends to state and local governments, and projects should be selected with an eye toward accelerating that economic impact. This approach to connecting economic growth the water quality investments is the basis of Prince George's County's new stormwater public-private partnership, which is on its way to becoming a national and regional model in achieving multiple community economic and financing goals.

Third, by explicitly linking water quality financing to economic development, local and state governments create incentives for establishing and growing industries that have the potential to generate revenue in support of restoration activity while at the same time functioning as a restoration practice in and of itself. For example, provisioning goods such as oysters, fruit and nut trees within forest buffers, and waste-to-energy systems all have the capacity and the potential to advance water quality while at the same time generating revenue. These are a few well-known examples of these types of productive practices. The key point is that by establishing this economic development-financing link, there is the opportunity to establish market incentives for innovative activity, which in turn will result in the discovery of new, efficient, and profitable water quality practices.

This mindset shift – water quality as economic development – has great potential to overcome resistance to restoration activities among certain stakeholders, especially upstream communities and industries that tend to resist regulation. While it is not a new idea to use Bay restoration to generate economic activity, funding efforts in this area have tended to focus on pilot projects that are rarely embraced by key leadership in the region. There are exceptions; the next step is to learn from those

---

<sup>2</sup> Source forthcoming.

communities that have successfully advanced Bay-related economic development initiatives and apply them in multiple communities across the region. But more than that, what is called for is a widespread, coordinated economic development effort that leverages the “Bay brand” for growth in promising industry clusters and seeks strategic connections between restoration activity and broader economic development initiatives.

### **Next Steps:**

The most important next step is to integrate economic development experts and leaders into the Bay restoration apparatus, thereby creating the opportunity to advance these ideas into the future. The EFC recommends that representatives of state departments of commerce and economic development be included in Chesapeake Bay management and decision making systems, specifically in the Principals’ Staff Committee at the Chesapeake Bay Program and the proposed Chesapeake Finance Advisory Board. Once these leaders have been formally engaged, the goal should be to use their expertise to identify opportunities for economic development and efficiency, including:

- Integrating restoration in various areas of state- and local-level economic development activities including those surrounding finance, marketing, neighborhood development, workforce development, small business development, business retention and expansion, technology transfer, and real estate development;
- Connecting Bay restoration to other economic development priorities including housing and high-tech, opening up the opportunity to integrate restoration into these existing market structures rather than compete with them; and,
- Building markets that produce both provisioning goods (and associated revenues) and ecosystem services (water quality specifically).

### **Recommendation 2: Create a watershed-wide, credit-based financing system and market infrastructure.**

The second core recommendation is to establish a common restoration financing and market system that is based directly on reducing pollution loads to the Chesapeake Bay in the most efficient way possible. This will involve establishing nutrient and sediment credits as the basis for restoration financing, requiring that investments result in actual pollution reduction, and setting up the necessary infrastructure to enable this Bay-wide marketplace.

**Recommendation 2a: Establish a credit-based financing system** in order to explicitly tie water quality restoration investments with the desired outcome of reduced nutrient and sediment loading to the Bay.<sup>3</sup> By structuring restoration transactions in terms of reduction credits, the marketplace will have a consistent protocol for evaluating each proposed restoration project (i.e. in terms of how many credits it generates), and the Bay community will have a clear metric by which restoration progress can be measured. This supports enhanced transparency in how state and local governments finance restoration activity, and it will require project implementers in the private sector to be more transparent in accounting for performance, which ultimately improves the efficiency ratio and results in greater conservation per dollar spent.

---

<sup>3</sup> We use the term “credit-based financing system” as a way of capturing the multiple components, actors, and activities within that system. It should be noted that in many cases the credit-based financing system is referring to an accounting system, which is a specific component of the broader system.



Adopted watershed-wide, across multiple jurisdictions, a credit-based accounting system would provide broad-scale consistency in how restoration investment are made and reduce transaction costs to project implementers and practitioners. Furthermore, a credit-based financing system would lend itself to be folded into a larger, watershed-wide water quality trading market, which could leverage the success of several current functioning and effective environmental market programs within the watershed such as the programs in Virginia and the District of Columbia. By establishing a credit-based universal financing system with standardized metrics, the marketplace is in a position to aggregate or bundle projects in a way that creates scale and as a result, efficiency. This in turn will attract capital and private sector engagement at multiple points in the process.

**Recommendation 2b: Shift to performance financing.** Hand-in-hand with adopting a credit-based financing system is a move toward a performance-financing approach, which focuses on the desired outcome rather than on the means to get there. By creating a clear, consistent platform for determining the value and cost effectiveness of restoration projects, investors are able to make informed decisions and pay only for the most effective, efficient pollution reduction practices. Further, paying for results rather than projects provides the incentive that market actors need in order to find the most innovative, efficient technologies and practices.

This represents a new way of doing business, as paying for performance rather than for projects is not how most public revenue programs are structured. It is important to note that performance need not completely supplant other funding criteria but rather can supplement them, enabling multiple project needs to be addressed without sacrificing financing efficiency.

One of the more common concerns about focusing on the cost effectiveness of restoration investments is that getting projects to the point of investment and implementation can require a variety of interventions that are not directly associated with water quality restoration. For example, overcoming cultural barriers through education and outreach, or providing technical assistance are often “off balance sheet” in that they do not show up in project proposals or cost assessments – and therefore would not be accounted for in the credit generation process. However, this need not be the case. The power of performance-based financing is that the funding organization, usually state or local government, can require the seller of credits, i.e. the project implementer, to be responsible for all project costs, including outreach, science and monitoring, or long-term technical assistance. By putting these activities in the marketplace, there is incentive to ensure that they are accomplished in the most efficient manner possible. This in turn will lead to long-term cost reduction and efficiency.

**Case Study: Chesapeake and Atlantic Coastal Bays Trust Fund.** A good example of a public revenue program that uses performance to guide investments is the Chesapeake and Atlantic Coastal Bays Trust Fund. Formed by the Maryland General Assembly in 2007, the Trust Fund is capitalized with revenue from Maryland motor fuel and car rental taxes.<sup>4</sup> Between 2009 and 2015, the Fund has invested more than \$250M in efforts to improve the health of the Chesapeake Bay, including projects that advance implementation of local and state Watershed Implementation Plans (WIPs).<sup>5</sup>

---

<sup>4</sup> Maryland Department of Natural Resources. 2016. *Maryland’s Chesapeake and Atlantic Coastal Bays Trust Fund Fiscal Year 2016 Budget At a Glance*. Available: <http://dnr2.maryland.gov/ccs/Documents/TrustFundFY16.pdf>

<sup>5</sup> Ibid.

The Fund's explicit goal is to ensure the greatest environmental return on investment.<sup>6</sup> To that end, the Fund is advised by a Scientific Advisory Panel, which annually recommends where funds should be targeted and which BMPs and monitoring protocols are likely to be most effective. Based on Panel recommendations as well as geographic mapping via the US Geological Survey SPARROW model, the Fund annually targets investments to "specific watersheds, watershed areas, projects and practices that provide the most cost-effective water quality benefits to the Chesapeake and Coastal Bays via reductions in non-point source nutrient and sediment loadings."<sup>7</sup>

To track whether projects are achieving anticipated goals, the Trust Fund works with the Maryland Biological Stream Survey (MBSS) to document baseline conditions and monitor and compare the effectiveness of various BMPs. Results are shared publicly via the Fund's Trust Fund Monitoring website as well as the Maryland StreamHealth website managed by the MBSS.<sup>8</sup>

**Recommendation 2c: Create water quality market infrastructure basin-wide** to serve as the foundation for an array of water quality investments, from direct public investments and subsidies to payments based on regulatory compliance, i.e. water quality trading. With this infrastructure in place, local governments would continue to make investments in order to comply with MS4 permit requirements, but they would also be able to buy and sell credits generated by any pollution reductions above and beyond federal requirements.

Leaders throughout the watershed have pinpointed water quality markets and trading as a promising way to achieve Bay restoration goals – and certainly, the benefits of founding restoration financing on market systems are significant. Such a system reduces transaction costs for both buyers and sellers; results in efficient allocation of scarce resources; and, incentivizes innovation in developing new approaches to solve entrenched problems. Water quality market infrastructure would enable any community in any state to meet its Chesapeake Bay pollution reduction obligations by financing the most efficient restoration practices, which would augment efficiency in achieving overall Bay pollution reduction targets.<sup>9</sup> For all these reasons, the use of water quality trading and pollution offsets will be essential to mitigate the impacts of additional growth and development in the watershed and achieve pollution reduction targets. Establishing credit-based market infrastructure within each jurisdiction will create an opportunity to add scale to restoration transactions and reduce implementation costs to communities throughout the region.

It should be noted that the value of this type of system is not predicated on any one type of market buyer. Demand may come from local governments seeking to comply with MS4 permits; wastewater treatment plants needing to achieve regulated pollution reduction requirements; or state or federal governments investing subsidy monies in restoration activities. A broad-scale credit system would establish a common framework for all of these sources of demand to meet their needs most efficiently.

---

<sup>6</sup> Maryland Department of Natural Resources. Chesapeake and Atlantic Coastal Bays Trust Fund website. Accessed 7/21/14: <http://dnr2.maryland.gov/ccs/Pages/funding/trust-fund.aspx>

<sup>7</sup> Ibid.

<sup>8</sup> Trust Fund Monitoring site: <http://dnr2.maryland.gov/streams/Pages/trustfund.aspx>; MBSS Maryland Stream Health site: <http://www.streamhealth.maryland.gov/>

<sup>9</sup> This assumes that local water quality requirements are first achieved and maintained.

For this type of market to materialize, it will be necessary for local, state, and federal stakeholders to establish the appropriate infrastructure and rules of engagement. This includes defining the currency or unit of transaction, which in this case is likely to be a water quality credit defined as one pound of nitrogen, phosphorus, or sediment reduced per year. The value of a credit will need to be calculated via an established protocol, and there will also need to be consistent mechanisms for evaluating the pollution reductions associated with each water quality restoration practice installed. Additionally, market infrastructure will include an administrative system for tracking, monitoring, and registering market activity.

The market infrastructure will be most effective if established watershed-wide rather than separately in each jurisdiction – but barring that, the system would still work if state-specific programs are integrated with one another. Market programs currently exist in most of the Bay jurisdictions to some degree, and each has its own metrics and transaction protocols. For example, the District’s trading program is based on gallons of stormwater reduced (stormwater retention credit or SRC), whereas Maryland’s program is based on reductions in nutrient and phosphorous. To achieve the type of system envisioned above – and minimize unnecessary transaction costs – there must be a mechanism for translating all transactions into a common currency.

Transitioning to a new watershed-wide, credit based financing and accounting system offers huge potential to harness the power of the market – and yet it will not be without considerable logistical, legal, and political challenges. The most significant will be linking a new financing and accounting system with the current systems in place across the region. At the state level where the vast majority of investments in water quality are in the form of subsidies, the shift will require transforming grant-based funding programs to investment-based ones. While this is relatively straightforward from a technical standpoint,<sup>10</sup> it will require concerted effort and strong leadership to spearhead cultural change.

**Case study: Maryland Nutrient Credit Trading Program’s Marketplace and Trading Registry.**

While Maryland’s Nutrient Credit Trading Program has not yet seen trading activity, its web-based Marketplace and Trading Registry is a good model of well-conceived market infrastructure. The portal includes a tool for estimating credits generated by BMPs, and it serves as a central place for buyers and sellers to find one another and make transactions. After setting up an account on the Marketplace, participants can post and/or purchase registered credits. The Registry also records all registered credits, tracks transactions, and enables the public to track progress of the trading program.<sup>11</sup>

**Next Steps:**

Sub-recommendation 2a is foundational and could be implemented independently of the other two sub-recommendations, but the greatest impact will be had if they are all pursued in tandem. While many actions will be needed in order to bring about such a comprehensive change, big-picture next steps include the following:

---

<sup>10</sup> We address logistical and legal barriers later in the report.

<sup>11</sup> Maryland Nutrient Trading Program website. Accessed 7/21/14: <http://www.mdnutrienttrading.com/farmers/q3.php>

- Transition state and local funding programs and resources to credit-based financing. For local governments, this will apply to Chesapeake Bay related investments.<sup>12</sup>
- Convene a summit of state and local leaders to coordinate existing credit trading platforms and registries. The most realistic way to implement a watershed-wide market for credit purchases is to use and adapt *existing* market registries or other platforms that offer a place for credit sellers and credit buyers to make transactions, as well as a means for recording and tracking transactions. While state registries need not be identical, they do need to be integrated in a way that makes it easy to make and track transactions across jurisdictions.

### **Recommendation 3: Establish Basin-Wide Implementation and Performance**

**Standards.** There are essentially two factors that make a water quality market function as desired: efficiency and effectiveness. If we think of pollution reduction investments as a simple equation – dollars per pound reduced – efficiency is concerned with the numerator and effectiveness with the denominator. Recommendation 2, above, focused on efficiency, the opportunity for each dollar invested go as far as possible. But to be effective as well as efficient, a water quality market must result in actual improvement in water quality. To achieve that goal, water quality investments should be guided by implementation and performance standards.

Performance standards have long been integral to environmental markets, specifically mitigation and conservation banking programs. Standards ensure that the ultimate goal is achieved; in mitigation banking, this goal is to offset the impact of development on wetlands and species habits. For stormwater management, performance standards tie directly to water quality. The mitigation banking system has created a system of standards that provide an excellent framework for establishing water quality standards; three main areas should be addressed:<sup>13</sup>

- Legal standards refer to many of the activities that can create the most significant transaction costs for both the public and private sectors such as deed restrictions, conservation easements, property rights, and the securing of trust and bank documents. Legal standards are essential for bringing practices on private property to scale and as such have perhaps the most direct impact on the long-term viability of projects.
- Financial standards or assurances include activities such as construction bonding, interim management security, contingency security, and the establishment of land management endowment account. These standards essentially remove much of the risk from project implementation, thereby providing assurance to the public sector that the right steps have been taken to mitigate unintended project setbacks and delays.

---

<sup>12</sup> It should be noted that credit-based financing systems have the capacity to improve the efficiency and effectiveness of locally-based financing systems also. Washington, DC’s stormwater retention credit program, which is implemented entirely within the city limits, has the potential to reduce costs and increase implementation scale (<http://doee.dc.gov/src>). Another great example is the Lake Tahoe, CA Lake Clarity Credit Program (<http://enviroincentives.com/portfolio-item/lake-clarity-crediting-program-lake-tahoe-2/>).

<sup>13</sup> *Mitigation Banking: Performance Standards and Credit Releases*. The Environmental Law Institute Web Site: <https://www.eli.org/sites/default/files/docs/denisoff.pdf>. Last visited July 23, 2016.

- Biological or physical standards ensure that projects are designed, constructed, and maintained as stipulated in the agreement between the credit buyer and credit seller. It is these standards that ensure environmental performance and they often require monitoring efforts of some type.

The combination of these standards provides the framework or rules of engagement for the market, which ensures that the credits being purchased are actually benefiting water quality and the environment. In addition, the coupling of performance standards with credit-based financing establishes the foundation for an implementation process that connects science to financing and investment, which creates greater investment certainty over time and improves the chances of bringing about actual improvements to Bay water quality.

The relatively uncertain nature of water quality restoration practices will require establishing a more adaptive decision-making system to guide water quality investments. Adaptive management and decision-making arose from the recognition that uncertainty is inherent in natural systems, yet it is not generally possible to delay management actions until knowledge is complete and uncertainties resolved.<sup>14</sup> Such is the case with the region's Chesapeake Bay restoration financing challenge. To achieve pollution reduction targets, regional leaders must implement a decision-making and financing system that simultaneously incentivizes action while promoting advancement in the community's understanding of how well practices perform and function. This goal of improving knowledge, while at the same time guiding active decision-making, sets adaptive management apart from other natural resource management and financing policies and tools. A financing approach inspired by adaptive management provides public leaders with the flexibility to adjust decision-making as more complete information is available, or as social, political, or economic conditions change.

#### **Next Steps:**

- The proposed Finance Advisory Board should work in concert with the National Mitigation Banking Association – which is based in Alexandria, Virginia and has expertise in using performance standards in the field of compensatory mitigation – to develop model performance standards for the water quality restoration market. These standards should be adopted by each of the Bay states.

**Recommendation 4: Reduce Unnecessary Transaction Costs.** The purpose of the performance standards recommended above is to reduce water quality restoration transaction costs to the public sector. The public sector, however, can also *create* unnecessary transaction costs through inefficient application of services necessary for project implementation. The EFC recommends two main process changes that could have a significant impact on the public sector's capacity to effectively engage the private sector: streamlining permitting processes, and transforming local and state procurement systems.

**Establish a template for fast-tracking permitting processes at the state and local levels.** No single issue or barrier was discussed more at the Symposium than challenges associated with local and state project permitting, which can cause implementation and construction delays and drive up costs. While

---

<sup>14</sup> National Research Council. 2011. *Achieving Nutrient and Sediment Reduction Goals in the Chesapeake Bay: An Evaluation of Program Strategies and Implementation*.

water quality best management projects obviously must go through the permitting process in order to achieve best outcomes, unnecessary delays in the process can have surprisingly profound cost impacts on private firms and by extension, on the public. This problem is not unique to water quality industries; a study by The American Institute of Architects showed that removing permitting delays in the construction process could increase spending by up to 5.7% and lead to a more than 16% increase in tax revenue to state and local governments.<sup>15</sup> In addition to increasing tax revenue flow, streamlined permitting processes can ensure that local governments are competitive in attracting business investment.

While permitting delays are often assumed to be solely the result of inefficient government operations, permittees themselves often also play a role. The City of Tallahassee, Florida, for example, recently initiated a development review fast tracking initiative, which included a list of actions that the permittee can take to speed the process, including: providing a complete package of required information at the time of submittal; meeting with staff to discuss a project at the earliest point possible; working with agency staff early in the process so the project can be designed in a manner that meets both state and local requirements; and, responding to permit review comments in a timely manner.<sup>16</sup>

**Case study: PA DEP Permit Decision Guarantee Policy.** In 2012, Pennsylvania’s Department of Environmental Protection rolled out a new permitting process designed to “reward applicants who spend time and resources submitting what DEP considers to be high quality applications for projects with verifiable, positive economic impact”<sup>17</sup> by providing them with a guaranteed fast-tracked review timeline. Conversely, initial permit applications that fail to meet established standards are subject to an extended review process. To enjoy expedited review, applications must be complete and technically adequate, addressing all relevant regulatory and statutory requirements in the first submission. The Department also strongly encourages potential applicants to participate in pre-application meeting with DEP, “going so far as to state that the Permit Decision Guarantee may be ‘void’ if an applicant chooses to forego a pre-application conference when one has been advised by DEP.”<sup>18</sup> In addition to incentivizing the submission of complete, high-quality applications, the goals of the Permit Decision Guarantee Policy are to (1) provide predictable review timeframes for applicants, (2) make application requirements clear and concise, and (3) establish expectations for DEP staff in order to make the permit review process more clear, efficient, and consistent.<sup>19</sup>

**Improve efficiency of local and state procurement systems.** Performance-financing systems greatly benefit from a procurement process that is flexible and able to shift from project-based payments to

---

<sup>15</sup> The American Institute of Architects. March 2011. *Issue Brief: Expedited Permitting*

<sup>16</sup> City of Tallahassee, FL website. “City of Tallahassee Development Review Fast Tracking and Customer Service Initiative.” Accessed 7/21/16: <http://www.talgov.com/growth/growth-10ways.aspx>

<sup>17</sup> Manko, Gold, Katcher, and Fox. November 5, 2012. MGKF Special Alert: “DEP Finalizes Permit Decision Guarantee Policy.”

<sup>18</sup> Ibid.

<sup>19</sup> Pennsylvania Department of Environmental Protection, Office of Program Integration. November 2, 2012. “Policy for Implementing the Department of Environmental Protection (Department) Permit Review Process and Permit Decision Guarantee.” Available: [http://files.dep.state.pa.us/ProgramIntegration/PermitDecisionGuaranteePortalFiles/021-2100-001\\_PRP\\_and\\_PDG\\_Policy.pdf](http://files.dep.state.pa.us/ProgramIntegration/PermitDecisionGuaranteePortalFiles/021-2100-001_PRP_and_PDG_Policy.pdf)

performance-based purchases of pollution reductions. Flexible, efficient, and adaptive are not terms that are usually associated with local procurement systems and their various policies and procedures. In fact, by necessity, procurement is a conservative and cautious process that is designed to discourage poor behavior rather than encourage what is best. As a result, implementing more performance-based systems require communities to think differently about the procurement process. However, performance financing is actually in keeping with the spirit of local procurement policy: to get the most efficient and effective outcome per dollar invested.

Communities can shift to performance-based payments using their existing procurement systems, meaning administrative costs would be minimal. A good example of this type of performance system is the North Carolina Ecosystem Enhancement Program (NCEEP). NCEEP is able to disseminate Request for Proposals (RFPs) for water mitigation credits through their state procurement system. Through this method, the state is able to connect with bidders through a market approach using a platform already in place.

#### **Next Steps:**

- Establish a Project Permitting and Procurement Task Force through the Principals’ Staff Committee and the Local Government Advisory Committee. The goal of the Task Force should be to identify specific permitting and procurement barriers at the state and local levels, the options for overcoming those barriers, and the institutional resources necessary for making system changes. The Task Force should specifically identify programmatic options for removing permitting delays such as the application of technological resources, permitting guarantees, and fast-tracking for any project using state-of-the-art water quality technology. The result would be a permitting and procurement systems guidebook that includes appropriate industry standards for state and local government.

#### **Recommendation 5: Facilitate the Flow of Capital Through Innovative Institutional**

**Structures.** Though the private sector is essential to the restoration financing process, it is the public sector that will lead restoration implementation and financing efforts, as state and local governments are ultimately being held responsible for restoring the Bay. Because state and local governments will be the primary investors in restoration activity for the foreseeable future, it is essential that public investments be consistent with a functioning restoration market.

To engage the private sector and the market in the most effective way possible, public investments must be structured to create incentives for action. One of the most important ways to do this is to make public investments in projects only when they are ready for investment. This may sound like common sense, and indeed in the private sector this generally happens naturally. In the public sector, however, budgeting and procurement restrictions – especially the “use it or lose it” provision common in public spending programs – perversely prompts project managers to invest in inefficient projects rather than lose those funds. This sends the wrong signal to the marketplace.

A way to address this is through the establishment of institutional structures that are able to make investments only when viable projects are ready, even if that requires holding funds through multiple fiscal years. Bay States should consider establishing green infrastructure or water quality financing programs or agencies that have the capacity to invest in restoration practices that achieve nonpoint

source pollution reductions.<sup>20</sup> Such initiatives can take various forms, such as stand-alone institutions, like PENNVEST in Pennsylvania, programs within existing agencies, such as the Maryland Department of the Environment's Water Quality Financing Administration, public-private partnerships, or quasi-governmental organizations. Regardless of their structure, these institutions should have the capacity to:

- Hold or bank revenue until efficient, effective projects are ready without concern to funding being sequestered or reallocated;
- Leverage revenue; and,
- Purchase, hold, and distribute water quality credits as necessary.

The combination of these three functions would enable each state to invest fiscal resources in a way that sends the correct market signals, and in a way that most effectively achieves agreed-upon implementation standards. Restricting investments to quality projects will create a powerful incentive for the private sector to provide those quality projects efficiently. As the paragraph above indicates, the foundation for establishing these agencies already exists, which means that implementation in some cases will only require a change in organizational charter or function. Regardless of whether it is necessary to establish new institutions or modify existing institutions, the goal must be to improve the effectiveness and impact of public revenue.

**Case study: Pennsylvania Infrastructure Investment Authority (PENNVEST).** Established in 1988, PENNVEST is a state authority charged with improving water quality by providing low-interest loans and grants for the design and construction of wastewater, drinking water, and stormwater infrastructure projects.<sup>21</sup> PENNVEST also manages the state's nutrient trading program, serving as a clearinghouse for nitrogen and phosphorous credits. The agency invests more than \$3 million annually, with revenue coming from the Clean Water State Revolving Fund, the Drinking Water State Revolving Fund, state general obligation bonds, PENNVEST revenue bonds, and loan repayments and interest earnings.<sup>22</sup>

#### **Next Steps:**

- Each Bay state should conduct an assessment of its existing capacity to allocate and invest capital as described above and modeled by PENNVEST.
- Based on the results of those assessments, states should either reform existing agencies / programs or create new institutions capable of financing restoration in a way that effectively engages the market.

---

<sup>20</sup> We focus on nonpoint source pollution because each of the Bay States has created financing programs to address point source reductions from sources such as wastewater treatment plants.

<sup>21</sup> Pennsylvania Association of Conservation Districts. April 2014. "PennVEST Nonpoint Source Program: Frequently Asked Questions." Available: <http://pacd.org/webfresh/wp-content/uploads/2012/03/FAQsApril2014Rev1.pdf>

<sup>22</sup> Brion Johnson, PennVEST. 2012. "Financing Clean Water Projects for Pennsylvania" presentation. Available: <http://www.dvrpc.org/EnergyClimate/WSTP/pdf/Presentations/Pennvest.pdf>



## **Theme-Specific Recommendations**

This section presents recommendations associated with specific programs or policy interventions that are available to state and local governments and address the needs of Bay communities. How these ideas are applied will be as varied as the communities that are considering them. This section offers discussion of each idea's merits and any potential drawbacks, as well as thoughts on next steps for implementation.

**Recommendation 1: Pilot Pay for Success Investment Models.** A social impact bond, also known as a pay for success contract,<sup>23</sup> is an agreement between a public agency and a private firm, in which a commitment is made to pay for improved social outcomes that result in public sector savings. These mechanisms are relatively simple in design and are essentially an extension of the performance-based financing systems described above. Through these models, investors pay the costs of a new program in its early years, and the government later repays the investors, often with a bonus, as long as the program meets its goals. If it fails, taxpayers pay nothing. This is a relatively new model; as of spring 2016, fewer than a dozen pay for success projects have been launched nationwide (i.e. contracts finalized, financing secured, and delivery initiated),<sup>24</sup> but they are widely recognized in impact investing circles as a promising mechanism for linking funding to outcomes.

When applied to Bay restoration, pay for success mechanisms would involve a governmental agency agreeing to pay a private investor a certain sum of money for pounds of nutrient and/or sediment pollution reduced. The private investor would then identify a third party (landowner, aggregator, watershed organization, etc.) that is able to achieve the reductions at a cost below what the government has agreed to pay. The difference between the guaranteed payout and the actual implementation costs is profit to the investor.

Pay for success and social impact financing arrangements provide multiple benefits to the public sector. By offering the potential for return on investment – something very few other conservation financing systems accomplish – these models offer incentives to improve performance, achieve innovation, and lower costs. In addition, these models encourage companies to monitor and evaluate which pollution reduction practices and monitoring systems work best, and what types of communication, outreach, and social engagement processes are helpful in spurring action. Finally, this type of financing system effectively transfers risk from the public to the private sector, which is better equipped to efficiently mitigate that risk.

Despite its potential benefits, the pay for success model also has limitations. For example, it does not represent a new source of capital, and their complexity can require a significant amount of upfront work and due diligence on the part of agency staff, which in turn increases project costs. Importantly these models tend to narrow the competition, which is counter to the efficiency arguments made throughout this report.

---

<sup>23</sup> NSW Government website. "Social Impact Investment" Accessed 7/21/16:

[http://www.treasury.nsw.gov.au/site\\_plan/social\\_impact\\_investment](http://www.treasury.nsw.gov.au/site_plan/social_impact_investment)

<sup>24</sup> Nonprofit Finance Fund. April 2016. *Pay for Success; The First Generation. A Comparative Analysis of the First 10 Pay for Success Projects in the United States.*

## Next Steps:

- Where appropriate, state and local governments should pilot pay for success financing programs. The Pay for Success Learning Hub,<sup>25</sup> maintained by the Nonprofit Finance Fund, is a repository for information on this model and includes an assessment tool for governments to evaluate readiness to implement such a program.
- The proposed Finance Advisory Board should commission a compilation of successful pilot project case studies in the region as they are implemented and disseminate lessons learned.

**Recommendation 2: Establish Proactive Stormwater Banking Programs.** As communities seek lower-cost options for complying with state and federal stormwater regulations, stormwater banking is emerging as a promising option to save money for permit holders, as well as for private property owners subject to stormwater utility fees. In stormwater banking systems, property owners construct BMPs that treat more stormwater than required for permit compliance, thereby accruing credits that can be sold to others who need to meet their own stormwater management requirements, such as developers seeking a lower-cost alternative to managing stormwater onsite. This system is modeled on traditional mitigation banking, and like mitigation banking, the goal is to provide water quality benefits before they are needed in order to offset the impacts of development.<sup>26</sup> However, the mitigation banking structure has the potential to be equally effective in reducing the costs of addressing pollution from *existing* sources of pollution across the region, especially in urban communities – and stormwater banking does just that.

There is likely to be strong demand for local stormwater banking in municipalities throughout the Chesapeake Bay watershed from three main sources:

- Developers seeking lower-cost options for meeting stormwater management requirements: Many jurisdictions in the watershed require new development or redevelopment to manage a significant amount of stormwater onsite. This can be expensive and logistically challenging, especially in urban areas, because of poorly draining or contaminated soils, limited land availability, and existing utilities. Stormwater banks offer developers an easier and often cheaper alternative to onsite management.
- Municipalities complying with MS4 and TMDL permits: It has been estimated that Maryland's ten biggest MS4 jurisdictions will need to spend between \$6.8 million to \$89.8 million per jurisdiction per year to comply with mandated Chesapeake Bay TMDL nutrient and sediment reductions.<sup>27</sup> Cities would have a strong incentive to utilize stormwater banks if banks enable required reductions to be achieved at a lower cost.
- Private property owners wanting relief from stormwater utility fees: Many communities in the Chesapeake Bay watershed implement a stormwater fee to pay for stormwater management. While the fee tends to be relatively low for residential property owners, it can be significant for owners of large, usually commercial, properties with extensive impervious cover. A stormwater banking program would enable these property owners to reduce their fee by (1) building oversized

---

<sup>25</sup> Nonprofit Finance Fund. Pay for Success Learning Hub website. <http://www.payforsuccess.org/>

<sup>26</sup> Cappiella, K., B. Stack, J. Battiata, D. Nees, and L. Fraley-McNeal. November 2014. *Potential Application of Stormwater Banking in the Chesapeake Bay Watershed Using Two Case Studies*. Ellicott City, MD: Center for Watershed Protection.

<sup>27</sup> Maryland Department of Legislative Services. 2013. *Stormwater remediation fees in Maryland: Local implementation of House Bill 987 of 2012*.

stormwater BMPs on their site and selling credits, or (2) reducing their fee by purchasing credits generated elsewhere.

There are multiple ways that a stormwater banking program can be set up, depending on a municipality's particular conditions including regulatory drivers, degree of urbanization, stormwater utility details, and availability of low-value land. Cities with abundant vacant properties, for example, could make land available through sale or lease to a third party who would then construct green infrastructure or stormwater BMPs on the parcel.

Another scenario is an **off-site stormwater fee-credit program**. Many cities with stormwater fee systems offer credits to property owners who install stormwater management BMPs on their property. But for commercial property owners in particular, the payback period for BMP installation is often too long to justify the investment, or they are hesitant to limit land uses on their property or take a portion of their land out of production. Off-site stormwater fee-credit programs can address this barrier by allowing commercial ratepayers to reduce their stormwater fee by supporting offsite mitigation projects, whether previously constructed or as-yet constructed. Further, by allowing BMPs to be grouped together and targeted where they can have the greatest impact on water quality such as streambank restoration, off-site programs give cities “the ability to direct capital to those projects with the greatest economy of scale—the highest pollution reduction at the lowest cost, which is something that traditional fee-credit programs are unable to do effectively.”<sup>28</sup> This system creates a revolving source of capital that municipalities can use to install BMPs where they are most needed.

It is important to note the difference between local stormwater banking programs and the nutrient trading system suggested in Core Recommendation 1, above – as well existing state-level nutrient trading programs. Both are credit-based systems, but the key difference is *scale*: stormwater banking keeps BMPs and funds within a single jurisdiction; it is an intra-community system in which the credit supply, demand, and transactions all take place within the community. This is important, because local stormwater banking programs will not be able to compete, price-wise, with state or regional nutrient trading programs, where credits are typically derived from agricultural operations in rural areas and thus will be significantly cheaper to produce than credits generated by urban BMPs. While there is an important role for a universal credit system, stormwater banking offers jurisdictions the option to meet local water quality goals and to keep restoration dollars local.

**Case study: Philadelphia's Greened Acre Retrofit Program.**<sup>29</sup> Philadelphia Water Department (PWD) administers a stormwater utility fee based on impervious cover at the property level. To incentivize investments in stormwater infrastructure on privately-held properties, PWD offers a fee credit of up to 80% for property owners that install green infrastructure practices that treat at least the first inch of stormwater. However, a 2013 study by Natural Resource Defense Council and the Nature Conservancy found that “the costs associated with stormwater retrofits in the Philadelphia area are generally higher than the return on investing in stormwater infrastructure construction for a majority of non-residential property owners,”<sup>30</sup> with the

---

<sup>28</sup> Cappiella, K., B. Stack, J. Battiata, D. Nees, and L. Fraley-McNeal. November 2014. *Potential Application of Stormwater Banking in the Chesapeake Bay Watershed Using Two Case Studies*. Ellicott City, MD: Center for Watershed Protection.

<sup>29</sup> EPA Region 3. April 2015. *Community Based Public-Private Partnerships and Alternative Market-Based Tools for Integrated Green Stormwater Infrastructure: A Guide for Local Governments*.

<sup>30</sup> Ibid.

payback period of most green infrastructure retrofits longer than 10 years. Based on these findings, PWD began exploring other options beyond fee credits to encourage green infrastructure installation on private property.

The result was the Greened Acre Retrofit Program (GARP), which provides grants to contractors that install green infrastructure on large areas, often over multiple properties, within the city's combined sewer area. Property owners benefit by receiving a fee credit. What sets GARP apart is its emphasis on project aggregation, "an approach that groups projects together under a single retrofit effort to reduce transaction costs, by spreading this cost over many projects, and by gaining economics of scale, thereby transforming projects with unreasonable costs and return-on-investment horizons to be financially attractive efforts when viewed as a whole."<sup>31</sup>

### **Next steps:**

Jurisdictions in the Bay watershed should pilot stormwater banking programs to assess how well they reduce costs of stormwater management and achieve other community goals such as spurring redevelopment in and around underutilized properties. Municipalities considering this approach should:

- Assess the demand for stormwater banking through interviews and surveys with ratepayers and developers (this will also help determine the appropriate price points for fee credits), as well as the supply of potential locations for stormwater banks. The Center for Watershed Protection's 2014 article "Potential Application of Stormwater Banking in the Chesapeake Bay Watershed Using Two Case Studies" offers a framework for assessing potential locations for stormwater banking.
- Ensure that stormwater banking is enabled within local regulations and that fee offsets are allowed within stormwater program policies.
- Determine program elements such as fee structure, crediting approach, administrative needs, and operating policies to launch a pilot program.

**Recommendation 3: Advance Public-Private Partnerships Where Appropriate.** The potential use of public-private partnerships (P3s) for stormwater management has attracted a great deal of attention throughout the region. As local governments increasingly struggle to meet stormwater permit requirements, many are considering P3 structures to augment local capacity and reduce risk.

A P3 is a "contractual arrangement between a public agency (federal, state or local) and a private sector entity. Through this agreement, the skills and assets of each sector (public and private) are shared in delivering a service or facility for the use of the general public."<sup>32</sup> The two parties share resources in delivering the good or service, and they also share the potential risks and rewards. P3s can be used for various aspects of a project, including financing, design, construction, operations and maintenance, and/or monitoring and evaluation.

While the application of P3s for stormwater is a relatively new practice, these structures have been used extensively in other utility and infrastructure contexts, including water, wastewater,

---

<sup>31</sup> Ibid.

<sup>32</sup> The National Council for Public-Private Partnerships. "7 Keys to Success." Accessed 7/20/14: <http://www.ncppp.org/ppp-basics/7-keys/>

transportation, and military housing. The benefits to the public sector vary from project to project, but some of the more universal benefits that are also transferrable to the stormwater sector include:

- Lower costs: One of the biggest benefits of P3s is their potential to reduce the overall cost of a project by finding efficiencies that may not be available to the public sector.
- Expedited projects: In many cases, P3s allow projects to get off the ground faster and to be completed sooner, because of efficient project management and the ability to bypass some of the administrative slowdowns than can happen when a public agency is managing the project.<sup>33</sup>
- Improved asset management: Asset management is a systematic method for evaluating the life-cycle costs of infrastructure assets. When the private company is tasked with not only construction but also ongoing maintenance, it will be motivated to undertake strategic, long-term planning to maximize the life span of installed infrastructure.
- Development of innovative strategies and technologies: P3s can catalyze the development and implementation of newer, more effective and efficient mechanisms for achieving desired impact by creating incentives for the private sector to take action and innovate.
- Economic development: When a P3 makes it possible for a city to renew its aging infrastructure, the city may be able to attract new or expanded business development.<sup>34</sup> In the case of updated stormwater infrastructure, benefits such as flood mitigation and improve aesthetics in public spaces are a boon for economic vitality. Further, P3s can be structured to achieve ancillary economic development goals, such as Prince George's County stormwater P3, which requires that 30-40% of project activities be conducted by small, local and minority-owned businesses.

In short, P3s offer the opportunity to harness many of the advantages offered by the private sector. And, such partnerships have the potential to help local governments leverage resources to better protect water quality through the installation of green infrastructure and other stormwater retrofits. However, it is important to caution that P3s are not a pot of gold. Communities will still need to identify a dedicated, reliable stream of revenue for funding stormwater and water quality infrastructure investments. Just as with publicly-managed projects, stormwater projects managed by a private firm will need to be funded by one or more revenue sources such as taxes, stormwater fees, grants, state revolving loan funds, etc. Without a stable revenue stream, a community will not be able to enter into a P3.

For communities in the Chesapeake Bay region that are considering a P3 structure to achieve water quality goals, it is important to first clearly understand stormwater or water quality programming goals and financing requirements over the next 5-10 years, as well as the community's capacity to meet these needs and any existing gaps. This clear understanding will help the community determine if a P3 is really needed and, if so, how it should be structured. When a community knows what fundamental gap(s) it needs to fill – whether administration, permitting, construction, or any other stormwater management function – then it will be better positioned to design a P3 program that meets that need.

---

<sup>33</sup> Investopedia. "Public-Private Partnerships." Accessed 7/20/14: <http://www.investopedia.com/terms/p/public-private-partnerships.asp>

<sup>34</sup> Black & Veatch. "12 Ways the Public Benefits in a Public-Private Partnership." Accessed 7/20/14: <http://bv.com/Home/news/solutions/water/12-ways-the-public-benefits-in-a-public-private-partnership>

US EPA Region 3 has been leading the way in evaluating and promoting P3s for their use in the Bay region. Communities considering this approach should read Region 3's 2015 *Community Based Public-Private Partnerships (CBP3s) and Alternative Market-Based Tools for Integrated Green Stormwater Infrastructure: A Guide for Local Governments*. This comprehensive guide is designed to help communities decide if a P3 is appropriate for their unique stormwater management needs. It includes a review of the regulatory and legislative context in the Bay states as it affects the establishment of P3s; a list of key questions that a community should consider when determining if a P3 is right for them; a series of checklists to help define and establish a P3; a discussion of options for structuring the contractual relationship between the public entity and the private partner; various financing scenarios that communities may pursue; case studies from the mid-Atlantic; and, other relevant information.

**Case Study: Clean Water Partnership, Prince George's County, MD.**<sup>35</sup> A hallmark example of a stormwater P3 in the Chesapeake Bay region is the Clean Water Partnership, a 30-year agreement between Prince George's County, Maryland and Corvias Solutions, a private stormwater management firm. Finalized in spring 2015, this agreement aims to install green infrastructure and low-impact development practices on up to 4,000 acres of impervious surface throughout the County, in order to ensure compliance with federal MS4 permit requirements.

Corvias will manage the design, construction, and long-term maintenance of stormwater infrastructure; the County expects that this integrated approach will "maximize the efficiencies and savings for the entire life cycle of the green infrastructure assets,"<sup>36</sup> as well as transfer risks associated with construction and maintenance from the public sector to the private sector. Prince George's County has committed to invest \$100 million between 2016 and 2019 to plan, design and construct projects on the first 2,000 acres. Projects will be completed across the County and may be contiguous; priority will also be given to green infrastructure installations that support the goals of various County strategic plans including the Transforming Neighborhoods Initiative.

The Clean Water Partnership is unique in its scale – it is attempting to manage urban stormwater and meet federally mandated requirements *county-wide*. As mentioned above, the program is also unique in its workforce and economic development goals; at least 30% of project activities are to be completed by local, minority-owned small businesses, with a workforce training element folded into the program. This partnership is still in its infancy, and the Bay community should watch closely to evaluate its progress and determine whether it is a model for the rest of the region.

### Next Steps:

- P3s can be used in a wide range of contexts, at varying scales, and for myriad purposes. Any jurisdiction – whether municipality, county, or state – that is considering this approach would benefit from first walking through the thought process outlined above, in order to realistically

---

<sup>35</sup> Prince George's County Clean Water Partnership website. "Frequently Asked Questions." Accessed 7/20/14: <http://thecleanwaterpartnership.com/faqs/>

<sup>36</sup> Ibid.

assess local capacity and gaps. Resources from EPA Region 3 will help communities carefully assess whether a P3 can bridge identified gaps. Designing and implementing a P3 program requires a significant investment of public resources, so it is important that communities not start down that road until they have a solid understanding of their goals and a reasonable expectation that they will realize anticipated benefits.

- The dissemination of Prince George’s County’s lessons learned from its pioneering county-wide stormwater P3 will help municipalities and counties in the watershed emulate successes and avoid any pitfalls.

**Recommendation 4: Incentivize Commercial Landowners to Mitigate Nutrient and Sediment Emissions.** This final recommendation targets one of the most important market and private sector interest groups: private landowners. Clearly the Bay restoration effort will require the engagement and participation of multiple public and private stakeholders, as previously mentioned; and none are more important to restoration success than urban and rural landowners. Private landowners control activities that often result in water quality impairment, but also the activities that will be necessary to mitigate and reduce those impairments. How best to engage landowners in restoration activities will be determined by the unique financial and economic systems associated with those lands.

One of the primary barriers to gaining broad-scale adoption of water quality practices by the private sector is the cost to landowners, either direct cost in form of reduced productivity or opportunity cost from the conversion of otherwise productive land. The performance and credit-based financing systems recommended in this report are focused in many respects on overcoming these barriers by making direct investments and payments to landowners as efficient and effective as possible. And, while public investment in the form of cash or fiscal incentives will remain essential to the financing effort moving forward, long-term success will require integrating restoration activity and practices into the core functions and competencies of the businesses and firms throughout the watershed. To that end, a potentially effective way to incentivize commercial landowners—rural or urban—is to impact their tax obligations. Below we provide two possibilities for tax incentives to enable private landowners to overcome the often prohibitive costs associated with installing restoration practices on their land.

**Tax credits for depreciation and/or one-time capital improvements.** Tax credits, for depreciation or voluntary land improvements, is a common approach to incentivize desired action by commercial and residential property owners. The tax credits generally apply to either asset depreciation or direct expenditures; however, businesses often advocate for tax credits based on depreciation. Depreciation is an income tax deduction that allows a taxpayer to recover the cost or other basis of certain property. It is an annual allowance for the wear and tear, deterioration, or obsolescence of the property.<sup>37</sup> A more accelerated depreciation schedule provides more upfront benefit to land or property owners, which in turn provides more financing benefit. There are examples where tax depreciation has been used to incentivize landowner activity. For example, energy efficiency and

---

<sup>37</sup> *A Brief Overview of Depreciation.* The United States Internal Revenue Service.

<https://www.irs.gov/businesses/small-businesses-self-employed/a-brief-overview-of-depreciation>. Last accessed on July 29, 2016.

green building tax incentives have been widely used nation-wide, and they offer potential models for designing similar approaches to promote water quality restoration practices. In the real estate market tax incentives have been shown to have a positive effect on the rental and market values of commercial buildings.

Depreciation as a tax credit can come in the form of a one-time deduction or through an accelerated depreciation schedule. Section 179d of the Federal Tax Code<sup>38</sup> (also termed the ‘green building tax deduction’) provides an example of where depreciation is the basis for a one-time tax credit. To qualify for the deduction, owners must invest in upgrades that meet clearly stated, nationally accredited performance standards (ASHRAE). Accelerated depreciation helps offset high upfront costs and often cited as an approach to deploy ‘break through’ technologies.<sup>39</sup>

**Real estate – leaseback model.** As was stated above, one of the unique features of water quality restoration in both urban and rural settings is the need to construct management practices on private lands. As a result, there is a need to establish contractual relationships between government entities and private landowners to ensure proper operations and maintenance of water quality restoration structures. To that end, private and/or commercial landowners often have easements on their property that allow the public sector (government) or utilities the right to undertake work in a specified area. The easements restrict activities on the land, which in turn results in a loss of value to property owner. Existing tax systems vary in regard to the extent to which property owners are compensated for this loss of use.

One potential approach for compensating for lost value is to create a lease arrangement between the government/utility and the landowner. In short, a lease would permit the government to have limited access to the property to appropriately operate and maintain practices. In addition, the lease approach would potentially allow for the property owner to create lease expense tax deductions. A lease-based tax deduction would essentially be a modification of conservation easements, which provide an on-going income tax deduction.

We recognize that these recommendations will require significant local, state, and federal coordination and advocacy, which in turn creates a level of complexity that may distinguish it from other direct incentive programs. In addition, providing tax incentives will have an impact on budgets at all levels. However, once the appropriate enabling conditions have been put in place, these types of incentives have the potential to move commercial landowners to action more effectively than just about any other incentive program. Finally, utilizing tax incentives will essentially connect Bay restoration activities with the types of incentives and programs that define economic development efforts at the state and local levels. It therefore represents an important step towards integrating restoration activity into the economic fabric of the region.

#### **Next steps:**

- This recommendation differs from the others in that enabling depreciation for water quality practices will require federal authorization and legislation. Certainly states can create conservation tax credit programs independent of the federal government;<sup>40</sup> however, the most effective

---

<sup>38</sup> <https://www.poplarnetwork.com/news/5-green-building-tax-incentives-2015>

<sup>39</sup> <http://solutions-network.org/site-energyshift/accelerated-depreciation/>

<sup>40</sup> The Pennsylvania Resource Enhancement and Protection (REAP) program tax credit provides an excellent example.



program would include federal income tax relief. As a result, establishing a federal tax credit as described above will include a level of complexity, which differs from the other recommendations included in this report. Though prescribing a specific approach for affecting change at the federal level on this issue is beyond the capacity and scope of this project, it should be noted that national and global attention is being given to the concept of accelerated depreciation for green infrastructure, which many analysts feel could have a significant impact on a variety of environmental issues, including climate change mitigation. Therefore, a coordinated effort by Chesapeake Bay stakeholders and jurisdictions would potentially benefit from a broader effort to achieve similar goals.

## Conclusion

The Chesapeake Bay Environmental Finance Symposium process generated many of the ideas and energy needed to move the needle on Bay restoration financing and economic development. The recommendations emerging from the Symposium and presented in this report have the potential to accelerate that financing process, yet many of them will also require tremendous effort, coordination, and new ways of doing business. This is no small task, but the Bay restoration community is up to the challenge. In fact, as was described throughout this report, virtually all of the recommendations have been implemented in some capacity somewhere throughout the watershed. For example:

- The District of Columbia has established credit-based financing system, in the form of Stormwater Retention Credits that has become the foundation of the City's stormwater financing system. This system is becoming one of the most recognized and modeled market-based financing systems across the country.
- The Commonwealth of Virginia has established a phosphorus offset system that mitigates the impact of new development in perpetuity. Though the program does not currently address existing pollution, it provides the foundation for a comprehensive market-based system into the future.
- As described above, the Maryland Department of Natural Resources has been developing and piloting performance-based financing programs associated with the state's Chesapeake and Atlantic Bays Trust Fund. As a result of innovative program design, DNR staff has initiated a financing efficiency process that will result in the greatest pollution reduction per dollar spent.
- DC Water is piloting a pay-for-success financing program that will potentially reduce the risk and long-term cost of installing stormwater retention projects by linking public and private capital with on the ground practitioners.
- Pennsylvania has implemented a permit guarantee system that is designed to accelerate the decision making process, thereby reducing transaction costs to the private sector.
- Prince George's County Maryland has established an innovative public-private partnership that has the potential to achieve multiple financing and implementation benefits, including economic development, water quality efficiency, and performance financing.
- Lancaster City, Pennsylvania has become a regional model in the use of green infrastructure to address water quality and stormwater retention issues and needs. In addition to piloting and testing innovative implementation and market processes, City leaders have identified green infrastructure as an important component in the City's economic development plans.
- Finally, Pennsylvania has advanced tax policy by establishing the Resource Enhancement and Protection (REAP) program tax credits. This program provides tax credits to farmers who install water quality best management practices.

There are of course many other examples; and, while they collectively represent just a fraction of what will be needed to achieve restoration success, they provide an excellent foundation for moving forward. Certainly the challenge ahead is significant, but as the Symposium process indicated, there is a wealth of talent and resources throughout the region with regards to watershed science, creative financing, and effective policy change. If that talent can be harnessed effectively there is great

potential to continue momentum and take concrete steps toward achieving innovative and effective financing of Bay restoration goals.

# Appendix

## Appendix 1: Event Agenda

Chesapeake Bay Environmental Finance Symposium

Samuel L. Riggs IV Alumni Center | University of Maryland

College Park, Maryland | April 25-26, 2016

Purpose & Background. One of the most significant environmental challenges facing our region is the restoration and protection of the Chesapeake Bay and its watershed. Though almost everyone can agree that cleaning up the Bay is important, coming to agreement on a sustainable and sufficient financing plan has been problematic to say the least. To that end, the Chesapeake Executive Council made the decision to convene the Chesapeake Bay Environmental Finance Symposium, the goal of which is to identify options, opportunities, and resources that can reduce costs and accelerate implementation. Through this event we will bring together creative, innovative, and successful financing, business, and policy leaders to identify options for advancing a more market-like approach to environmental protection and restoration. The conversations, discussions, and debate coming from the Symposium will be translated into a suite of financing recommendations that will be forwarded to the governors later this summer.

Day 1 – April 25, 2016. The purpose of Day 1 is to set the stage for the conversations and deliberations during the working sessions of the Symposium. The Day 1 agenda will include remarks from Bay States’ cabinet members and local government representatives.

- |         |   |
|---------|---|
| 1:00 pm | Welcome <ul style="list-style-type: none"><li>▪ Dan Nees, <i>Environmental Finance Center</i></li></ul>   |
| 1:10 pm | Introduction <ul style="list-style-type: none"><li>▪ President Wallace Loh, <i>University of Maryland</i></li></ul>   |
| 1:20 pm | Financing Chesapeake Bay Watershed Restoration: The Path Forward <ul style="list-style-type: none"><li>▪ Secretary Ben Grumbles, <i>Maryland Department of the Environment</i></li><li>▪ Secretary John Quigley, <i>Pennsylvania Department of Environmental Protection</i></li><li>▪ Deputy Secretary Angela Navarro, <i>Virginia Department of Natural Resources</i></li><li>▪ The Honorable Penelope A. “Penny” Gross, <i>Local Government Advisory Committee to the Chesapeake Executive Council, Virginia Delegation</i></li><li>▪ Delegate David Bulova, <i>CBC and Virginia Delegate</i></li></ul> |
| 2:30 pm | Leveraging the Innovation, Creativity, and Efficiency of the Private Sector <p>This event will focus on how the public sector—primary state and local governments—can effectively engage and partner with the private sector. More specifically, the Symposium will identify opportunities for scaling investment, creating financing efficiencies and cost reductions, reducing restoration financing risk, expanding economic development opportunities, and incentivizing innovation and new approaches</p>  |

to water quality restoration. This part of the event will serve as a launching point for the facilitated deliberations in Day 2 by providing a brief lay of the land within the six symposium themes.

- Creating Financing Efficiencies and Cost Reductions  
Eric Letsinger, *Quantified Ventures*
- Incentivizing Innovation  
Paul Carroll, *City of Newport, Rhode Island*
- Influencing the Consumer Marketplace  
Perry Raso, *Matunuck Oyster Bar, South Kingston, Rhode Island*
- Integrating Public and Private Capital  
Jag Khuman, *Maryland Department of the Environment*
- Mitigating Restoration Investment Risk  
Nick Dilks, *Ecosystem Investment Partners, Baltimore, Maryland*
- Environmental Markets  
Jeremy Sokulsky, *Environmental Incentives, South Lake Tahoe, California*

4:15 pm Closing

- Dan Nees, *Environmental Finance Center*

4:30 pm Networking Reception (ending at 6:30PM)

#### Day 2 – April 26, 2016

This is a day of small working groups designed to dive deeply into themes critical to financing Bay restoration efforts. Attendees will spend much of this full day rolling up their sleeves to engage in robust dialogue.

9:00 am Opening Remarks

- Dean Robert Orr, *UMD School of Public Policy*

9:30 am Working Group Session 1

12:30 pm Lunch

1:30 pm Working Group Session 2

4:30 pm Closing

- Dan Nees, *Environmental Finance Center*

## Appendix 2: Committee Membership

To guide the development and implementation of the Symposium, CBP and EFC convened two committees, each comprised of public and private sector leaders from the Bay states and the District of Columbia. The committees included representation from experts in a range of related fields, including finance, resource management, planning, and policy.

The **Executive Steering Committee** was charged with ensuring that the Symposium and related reports were developed and implemented within the spirit of Resolution 2015-2 and the restoration financing goals of the signatories to the Chesapeake Bay Watershed Agreement. The committee provided strategic guidance to the planning team in regard to the selection of speakers and issue experts, the structure of the Symposium, and the production of a summary report that was delivered to the Executive Council. Committee members included:

- Dana Aunkst, Pennsylvania Department of Environmental Protection
- Russ Baxter, Virginia Natural Resources for the Chesapeake Bay
- Carin Bisland, US EPA Region 3 – Chesapeake Bay Program
- Sonia Brubaker, US EPA HQ
- David Craig, Maryland Department of Planning
- Nick Dispaquale, US EPA Region 3 – Chesapeake Bay Program
- Matt Fleming, Maryland Department of Natural Resources
- Mary Gattis, Alliance for the Chesapeake Bay
- Penny Gross, Fairfax County (VA)
- Ben Grumbles, Maryland Department of the Environment
- Ann Jennings, Chesapeake Bay Commission
- Hamid Karimi, DC Department of Energy and Environment
- Joseph Maroon, Virginia Environmental Endowment
- Frank Piorko, Delaware Department of Natural Resources
- John Stefanko, Pennsylvania Department of Environmental Protection
- John Quigley, Pennsylvania Department of Environmental Protection
- Lisa Wainger, University of Maryland Center for Environmental Science
- Julie Winters, US EPA Region 3 – Chesapeake Bay Program

The **Planning Committee** worked in parallel with the Executive Steering Committee and was charged with providing guidance and resources associated with event organization and implementation. This included identifying key participants and speakers and providing input on agenda development and implementation processes. Committee members included:

- Mark Breyer, The Nature Conservancy
- Preston Bryant, McGuireWoods Consulting
- Jeff Corbin
- Felicia Dell, York County Planning Commission
- Chris Hartley, USDA Office of Environmental Markets
- Charlotte Katzenmoyer, City of Lancaster, PA

- George Kelly, Resource Environmental Solutions
- Doug Lashley, GreenVest
- Joe Lerch, Virginia Municipal League
- Eric Letsinger, Quantified Ventures
- Paul Marchetti, PennVest
- Beth McGee, Chesapeake Bay Foundation
- Neal Menkes, Virginia Municipal League
- Brad Rodgers, Moreland Advisors, Inc.
- Brooks Smith, Troutman Sanders
- Joanne Throwe, Maryland Department of Natural Resources

With leadership and support from CBP and EFC, each committee held regular conference calls in late 2015 and early 2016, in order to complete their respective tasks.

### Appendix 3: Symposium Participants

While the findings and recommendations in this report were informed by conversations among Symposium participants, the views expressed herein do not necessarily reflect the views of all participants.

Stephan Abel, Oyster Recovery Partnership  
Kristyn Abhold, US EPA  
Danielle Algazi, US EPA Region 3  
Ashley Allen, i2 Capital  
Gregory Barranco, EPA, Chesapeake Bay Program  
Randy Bartlett, Fairfax County  
Rich Batiuk, US EPA Chesapeake Bay Program  
Jenny Beard, Environmental Finance Center, UMD  
Alex Beehler, Earth & Water Law, LLC  
Mark Belton, Department of Natural Resources  
Kathy Benini, Markit  
Clare Billett, William Penn Foundation  
Carin Bisland, US EPA  
Jessica Blackburn, Alliance for the Chesapeake Bay  
Ruby Brabo, VA Vice Chair LGAC, King George County Supervisor  
Shannon Brawley, RI Nursery and Landscape Association  
Maria Broadbent, City of Annapolis, MD  
John Brooks, Timmons Group  
Seth Brown, Storm and Stream Solutions, LLC  
Sonia Brubaker, US EPA  
Preston Bryant, pbryant Consulting LLC  
Mark Bryer, The Nature Conservancy  
Darlene Bucciero, Frederick County Government  
Lynn Buhl, Maryland Department of the Environment  
David Bulova, VA House of Delegates/Chesapeake Bay Commission  
Fiona Burns, State of Maryland, Dept. of Budget and Management  
Jim Caldwell, Howard County  
Paul Carroll, City of Newport, RI  
Patricka Coady, Seale & Associates  
Kim Coble, Chesapeake Bay Foundation  
Gabe Cohee, Maryland DNR  
Kari Cohen, USDA Natural Resources Conservation Service  
Kevin Conroy, Maryland Department of Agriculture  
Lesley Cook, MD Department of Legislative Services  
Jeff Corbin, Restoration Systems  
Jen Cotting, Environmental Finance Center  
David Craig, State of Maryland  
Michael Curley, Environmental Law Institute  
Jana Davis, Chesapeake Bay Trust  
Frank Dawson, Montgomery County Department of Environmental Protection  
Liz Deardorff, American Rivers  
Terry Deputy, Delaware DNREC  
Mike Dieterich, Renew and Sustain  
Nick DiPasquale, US Environmental Protection Agency



Sarah Dougherty, Natural Resources Defense Council  
Jim Edward, EPA Chesapeake Bay Program Office  
Jennifer Egan, Skelly and Loy Inc.  
Paul Emmart, Maryland Dept. of the Environment  
Hilary Falk, National Wildlife Federation  
Lisa Feldt, Montgomery County Department of Environmental Protection  
Brent Fewell, Earth & Water Law LLC  
Matthew Fleming, Dept. of Natural Resources  
Suzy Friedman, Environmental Defense Fund  
Mary Gattis, Alliance for the Chesapeake Bay  
Jose Gaztambide, Quantified Ventures  
James Gebhardt, US EPA  
Bill Gill, Smithfield  
Kimberlee Glinka, Center for Social Value Creation, UMD  
Kate Gonick, Lancaster County Conservancy  
David Goshorn, MD Department of Natural Resources  
John Griffin, Buchart Horn  
Penelope Gross, Fairfax County  
David Groves, White House  
Ben Grumbles, Maryland Department of the Environment  
Rebecca Hammer, Natural Resources Defense Council  
Christopher Hartley, USDA Office of Environmental Markets  
Charles Hegberg, Skelly and Loy, Inc.  
Ruth Hocker, City of Lancaster, PA

Peter Hughes, Red Barn  
Matt Jacobs, Coldwell Banker Residential Brokerage  
Ann Jennings, Chesapeake Bay Commission  
Hamid Karimi, District of Columbia Department of Energy and Environment  
Charlotte Katzenmoyer, City of Lancaster  
Marita Kelley, DCED, Center for Local Government Services  
George Kelly, Resource Environmental Solutions  
Jason Keppler, Maryland Department of Agriculture  
Jag Khuman, Maryland Water Quality Financing Administration  
Sandra Knight, UMD Center for Disaster Resilience  
Joshua Kurtz, The Nature Conservancy  
Doug Lashley, GreenVest LLC  
Eric Letsinger, Quantified Ventures  
Thomas Liu, Bank of America Merrill Lynch  
Paul Marchetti, PENNVEST  
Joseph Maroon, Virginia Environmental Endowment  
Brenton McCloskey, Environmental Finance Center  
Beth McGee, Chesapeake Bay Foundation  
Steve McHenry, MD Ag & Resource-Based Ind. Dev. Corp.(MARBIDCO)  
David McKay, US EPA  
Erik Michelsen, Anne Arundel County  
Kristen Mui, Environmental Finance Center  
Fay Nance, Chesapeake Bay Foundation  
Angela Navarro, Office of Governor McAuliffe

Ryane Necessary, Maryland Department of Legislative Services  
Dan Nees, Environmental Finance Center  
David Newburn, University of Maryland  
Sara Nicholas, PA Dept. of Conservation and Natural Resources  
Patrick F. Noonan, The Conservation Fund  
Teresa Opheim, Iroquois Valley Farms  
James Parker, Falling Springs  
Michael Patella, US Environmental Protection Agency  
Susan Payne, Maryland Department of Agriculture  
Ross Pickfordm, Earth-Concepts, LLC  
Frank Piorko, Maryland Coastal Bays Program  
Christopher Pomeroy, AquaLaw PLC  
Robert Proutt, VenGott, LC  
John Quigley, PA Department of Environmental Protection  
Carissa Ralbovsky, Department of Budget and Management  
Jake Reilly, NFWF  
Marc Ribauda, Economic Research Service - USDA  
Lisa Riggs, Economic Development Company of Lancaster County  
Brad Rodgers, Moreland Advisors, Inc.  
Angie Rosser, West Virginia Rivers Coalition  
Clifford Rossi, Robert H. Smith School of Business, UMD  
Kit Schaefer, i2 Capital

Theodore Scott, Stormwater Maintenance & Consulting  
David Small, DE Dept. of Natural Resources and Environmental Control  
Ginny Snead, Louis Berger  
Jeremy Soluisky, Environmental Incentives, LLC  
Tanya Spano, Metropolitan Washington Council of Governments  
Charlie Stek, Advisory Committee  
Kurt Stephenson, Virginia Tech  
Ann Swanson, Chesapeake Bay Commission  
Sandra Taylor, Sustainable Business International LLC  
John Thomas, Hampden Township Board of Commissioners  
Joanne Throwe, Maryland Department of Natural Resources  
Rachel Toker, Urban Ecosystem Restorations, Inc.  
Dennis Treacy, Smithfield Foundation  
Michelle Vigen, Montgomery County  
Rob Wallace, i2 Capital  
Cory Weiss, Urban Ecosystem Restorations, Inc.  
Douglas Wheeler, Hogan Lovells US LLP  
Leigh Whelpton, The Conservation Finance Network  
Bruce Williams, Local Government Advisory Committee  
Julie Winters, US EPA  
Brandon Wright, State of Maryland

## Appendix 4: Summary Notes from Work Group Discussions

### *Theme 1: Reducing Implementation Costs.*

Context: Perhaps the most fundamental reason for engaging the market and private sector is to achieve restoration goals more efficiently and effectively. Market-based economies and financing processes are predicated on achieving goals in the most cost-effective manner possible. As a result, there is an opportunity throughout the region to maximizing the level of pollution reduction achieved per dollar invested. The forum identified the types of conditions that are necessary for market forces to function efficiently. As a starting point for the discussions, participants discussed potential financing innovations such as pay-for-success or Social Impact Bonds, as well as pay-for-performance financing systems.

#### Key discussion issues, topics, and goals

- Need for identifying the market and finance strategies that have the highest potential for reducing costs.
- Focus on innovative new policy and financing approaches such as social impact bonds and pay-for-success programs.
- Incentivize projects with demonstrated environmental or social outcomes.

#### Barriers

- There is a lack of clarity associated with market and pay-for-performance financing systems that could be addressed with a common vocabulary.
- There is a need for a consistent approach to establishing ecosystem service value.
- Government procurement procedures are often counter to efficiency efforts.
- The public sector's financing and implementation approach is often prescriptive rather than performance based.
- There is inconsistency in regulations and policies.

#### Solutions

- Clarity of markets and common vocabulary:
  - Bring stakeholders together and get started: process will develop language and trust.
  - Recognize that perceived failures can be opportunities for growth.
  - Track and disseminate examples and case studies.
- Ecosystem service evaluation and value:
  - Engage more professional accounting firms.
  - Engage a more diverse collection of players and stakeholders.
- Government procurement procedure:
  - Assess examples from national and international spheres and create a system of best practices.
  - Establish adaptive processes and check points for managing and tracking implementation results.
- Public sector allocation process:
  - Set and focus on standards rather than implementation goals.

- Enable and incentivize governments to set a market-like playing field. This will require creating a better understanding of government’s role in the financing process.
- Allow and incentivize industry to determine the most efficient implementation processes.
- Move towards paying for performance as opposed to specific projects.

***Theme 2: Incentivizing Innovation.***

Context: The market forces that help reduce costs and create efficiencies also incentivize innovation. In fact, the push towards innovation in technology, financing, and production is one of the most beneficial aspects of market activity. However, driving innovation in an ecosystem restoration process is complicated by regulatory and policy dynamics. Therefore, the conversation in this forum focused on overcoming regulatory and policy barriers, thereby creating unique and effective options for financing and implementing restoration practices and programs. Specific discussion topics and potential financing innovations included using technology to accelerate restoration, as well as the use of formal public—private partnerships.

Key discussion issues, topics, and goals

- The need for consistent regulatory and policy frameworks to promote more restoration innovation.
- The need for governments at all levels to incentivize innovative technologies that can assist in the collection of data while at the same time directly engaging citizens in the restoration effort.

Barriers

- Regulations prioritize outputs over outcomes.
- There is a language barrier among different disciplines and sectors.
- Venders experience significant contracting delays at all levels of government.
- Bureaucrats are often unnecessarily risk-averse.

Solutions

- Regulating actual outcomes:
  - Develop metering and monitoring systems to track outcomes for all sectors.
  - Include the cost of monitoring in project cost estimates.
  - Provide financial incentivizes that encourage sustainability and cost-effectiveness.
  - Allow for flexibility; relax precision.
- Overcoming language barriers:
  - Push for financial literacy among environmental professionals and vice-versa.
  - Create mechanisms for cross-cultural, multi-discipline dialogue.
  - Establish a financial advisory group at Bay Program.
- Bureaucratic delays:
  - Accelerate priority permitting – pipeline innovative, sustainable projects.
  - Minimize rigidity to provide requirements that allow for innovation.
  - Tie science into statutory/regulatory and out year funding decisions.

- Minimize risk to adverse to public service programs:
  - Allocate unspent funds for innovation.
  - Remove adverse consequences for risk-taking.
  - Review models and case studies for agency leadership on risk/innovation.

***Theme 3: Creating and Building Consumer Demand.***

Context: Though a market-like restoration system will be primarily predicated on effective regulations and policy, there are opportunities to achieve restoration goals by creating, building, and leveraging consumer demand. There are a number of opportunities for better positioning a healthy Chesapeake Bay watershed in the consumer marketplace through industries such as organic and sustainable agriculture, sustainable fisheries, recreation, and sustainable stormwater management.

Key discussion issues, topics, and goals

- Identify new and innovative ways to build consumer demand outside of the regulatory process.
- Create processes to engage key industry sectors.
- Incentivize public recreation areas such as marinas, boat launches, and the like as opportunities to foster a public interest and investments into restoring the Bay.
- Focus restoration efforts that support the Bay’s restoration and improvement.

Barriers

- While sustainable fisheries, recreation, stormwater management, and agriculture all have their unique challenges, several themes emerged from the group discussions.
  - The individual culture of each of these sectors has inhibited the flexibility to act aggressively on a collaborative basis.
  - Public education limitations prevent the public from effectively engaging.
  - Uncertainty around costs, benefits and impact deter greater investment.
  - Deficiencies and confusion in labeling impedes market activity.

Solutions

- Create a well-defined pipeline of locally-sourced products with proceeds returning to Bay restoration.
- Strengthen partnerships and communication around economic development and conservation.
- Prioritize asset management at the community level.
- Improve public awareness.

***Theme 4: Integrating Public and Private Capital.***

Context: Though it is clear that private investment and engagement will be necessary to achieve restoration goals, it is public investment that will drive the financing process. Linking and integrating public investment to the private sector and the marketplace will be essential for creating financing scale and efficiency. This forum focused on potentially innovative approaches for maximizing the efficiency and effectiveness of existing financing mechanisms such as the State Revolving Loan Fund program. In addition, the conversation focused on how to improve the performance and effectiveness

of state-based funding programs, which have the potential to invest billions of dollars in water quality practices and programs.

#### Key discussion issues, topics, and goals

- Linking and integrating public investment to the private sector to create financing scale and efficiencies.
- Using the State Revolving Fund as a foundation for financing other water quality infrastructure needs.
- Linking public funding to performance-based outcomes in order to create efficiencies and reduce costs.

#### Barriers

- There is a lack of scale necessary for efficient financing.
- Changing political environments and a lack of civic involvement and community outreach make it difficult to effectively link public and private capital.
- There is a need to educate legislators on private sector perspective.

#### Solutions:

- Create a non-state entity to convene and bundle projects.
- Establish a special-purpose vehicle to specifically target water quality infrastructure investments.
- Identify high-level educators and conveners that could serve as a coordinating entity.
- Have the public sector act as an aggregator to create financing pools.

#### ***Theme 5: Mitigating Investment and Implementation Risk.***

Context: Given the scale of the Chesapeake Bay Restoration effort, addressing financing and implementation risk will be important at all levels of government. The Symposium's goal was to identify options and opportunities for the public sector to leverage the capacity and innovation of the private sector to ensure the financial and physical performance of water quality investments. The Symposium's forums specifically addressed established risk-based institutional and financial mechanisms such as public—private partnerships and mitigation banking programs, and how those financing tools and processes can serve as the foundation for other innovative approaches for reducing the risk and improving the performance of water quality investments. As with the other issues addressed, the goal was to identify the enabling conditions that are necessary for establishing effective market-based risk mitigation programs and tools.

#### Key discussion issues, topics, and goals

- Employing public-private partnerships to improve the quality and effectiveness of BMP operations and maintenance.
- Apply lessons learned from wetland and habitat mitigation banking programs.

#### Barriers

- Local and state regulations do not enable innovative programs that can shift risk to the marketplace.
- Effective risk management is often blocked by traditional procurement processes.

Solutions:

- Create regulatory and policy templates that will enable market-based financing processes.
- Incentivize the application of public/private partnerships and other innovative risk reducing systems.
- Expand the use of mitigation banking type financing processes.

***Theme 6: Water Quality Trading and Environmental Markets.***

Context: Regulatory-based trading programs are perhaps the most discussed, debated, and potentially impactful financing system available to state and local governments. In spite of the significant attention these market systems receive, the level of market activity has been relatively low in many Chesapeake Bay jurisdictions, and nonexistent in others. This forum focused specifically on the potential benefit of trading and the necessary enabling conditions for bring these programs to scale.

Key questions and issues:

- Establishing the necessary framework to generate marketplace demand.
- Identifying the options and possibilities for applying mitigation banking programs in a stormwater or urban environment.
- Establishing standards for BMP construction and maintenance.

Barriers

- The certainty of demand is in question.
- The local government procurement model is challenging.
- The fear of litigation from environmental community.

Solutions

- Enable and incorporate trading and market programs into regulations and permits.
- Create clear and transparent rules that decisions can be made against.
- Establish publically-backed insurance policies and credit assurance programs.