Conowingo Watershed Implementation Plan Financing Strategy

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Executive Summary

The following report is a product of the Center for Global Sustainability (CGS, or the Center), based at the University of Maryland. CGS is located in the Washington, D.C. metropolitan area, which provides the Center with access to a strong research network and international policy experts and contacts. CGS's research informs global, national, and local discussions on climate, energy, economic development, and sustainability. The Center's work is organized around four topical areas—climate policy; energy pathways; health and ecosystems; and adaptation and resilience—that draw upon existing strengths at the University of Maryland, with the integrative goal to facilitate policy design and multi-stakeholder implementation.

CGS and its partners Throwe Environmental and E3 International, were awarded an EPA grant in July 2019 to develop and implement a financing system designed to advance the Conowingo Watershed Implementation Planning (Conowingo WIP) process. The Conowingo WIP is a road map toward achieving a "pollution diet" similar to those in place for the entire Chesapeake Bay watershed. For decades, the Conowingo Dam reservoir functioned to trap nutrients, sediment, and other pollutants so that less of it traveled from the Susquehanna River to the Bay. Now the area behind the dam has silted in, rendering it unable to trap any more pollutants. CGS proposed to design and implement an innovative financing system that will result in greater financing scale and efficiency in support of water quality and pollution reductions defined in the Conowingo WIP. This report provides a framework for this financing system.

Summary of Key Issues

The Conowingo WIP process and the proposed financing system is founded on decades of implementation experience and knowledge. The proposed financing system is not entirely new. However, the Conowingo WIP process has some unique elements that require some equally unique financing policies and systems. First, the Conowingo WIP is interstate in nature. Project implementation and financing processes must have the capacity to function across jurisdictional boarders. Second, the Conowingo WIP is distinct and separate from existing state WIPs currently in place to address Chesapeake Bay pollution limits. The Conowingo WIP is independent of these plans, and the implementation obligation is in addition to the existing state WIP obligations. The Conowingo WIP differs significantly from the state WIPs in that the entire process—including funding, financing, and implementation—will presumably be implemented collectively among all the Bay jurisdictions. Financing the Conowingo WIP creates some unique challenges. Successfully dealing with those challenges will require state and federal leaders to address some key issues and barriers moving forward.

One key issue is that a ***public commitment to invest is paramount***. The entire Conowingo WIP financing process is predicated on the responsibility of the public sector in general and the Bay States in particular to fund restoration activities. Without this obligation and commitment, the Conowingo WIP financing system will be very limited in scale and impact. There appears to be consensus that the public sector is responsible for funding and supporting the Conowingo WIP restoration activities, but as of yet, there is no clear indication of exactly how that consensus will translate into action. The scale and impact of the financing process will be extremely limited without this commitment.

The current fiscal challenges facing the Bay States are very real and very daunting. As a result, the proposed financing system must address the difficult task of accomplishing offsetting additional pollutant loads with fewer financial resources. The responsibility for ensuring restoration implementation rests with the public sector; however, any new financing system that does not alleviate the fiscal burden of that responsibility will not be successful. The development of the financing strategy as proposed in this document occurred within the parameters of these two foundational issues.

Public investment is essential, but public investment alone will not be sufficient. Long-term sustainable implementation success will require investing in the most innovative industries and processes that have the potential to create efficiencies, identify and leverage untapped revenue streams, and utilize long-term financing and investment tools. In short, the Conowingo WIP financing process must result in a transition from publicly subsidized grant funding to publicly incentivized restoration investments.

Long-term restoration success will require close collaboration with and partnerships between the public and private sectors. It is the public sector's responsibility to put the parameters around the restoration financing process in the form or regulation, policies, and long-term funding. It is the private sector—the businesses, investors, farmers, landowners, churches, nonprofits, and citizens—that have the primary implementation role in the financing and implementation process.

Finally, there are clearly very difficult decisions to be made moving forward. The financing strategy provided in this report is no panacea for the challenges and difficulties that lie ahead. However, this strategy provides leaders and jurisdictions across the region with a reasonable, sustainable, and ultimately successful path forward. It is predicated on a core recommendation: ***Establish the Conowingo Financing Authority.***

The unique interstate nature of the Conowingo WIP puts added emphasis on the need to expand institutional capacity within the financing system. A primary recommendation is to establish a Conowingo Financing Authority. This Authority should reside in a single jurisdiction with the capacity to receive revenues and invest in restoration activities across the region and the Bay watershed. Its mission will be to facilitate and execute water quality restoration funding and financing transactions specifically in support of the Conowingo WIP. The Authority will be structured on three primary components and processes: diverse pools of capital; innovative procurement and investment processes; and, long-term capacity through debt financing.

The Conowingo Financing Authority will be the mechanism by which a more efficient, effective, and innovative implementation process can move forward at scale. The details of how the Authority will be established and function will be determined once restoration leaders approve a final WIP. However, the basic structure of the Authority and the system in which it will function and operate are described in the following financing plan.

The Financing Challenge

Though the additional annual pollutant load reductions associated with the Conowingo Dam reservoir are a relatively small percentage of the total necessary load reductions Bay-wide, they are not insignificant. Additional pollutant load reductions require more resources in the form of land, labor, time, and revenue. The Conowingo WIP must address more restoration responsibility with limited resources. As a result, any new financing system that does not alleviate the fiscal burden of these new restoration responsibilities will not be successful. There must be a shift in how public capital is deployed to address environmental restoration and protection. As the Conowingo WIP process moves forward, public capital must be managed as investment capital, and the ecological return on those investments must be achieved through a combination of innovative funding and financing processes. Public capital should be used as a catalyst for new technologies, practices, and market mechanisms. Some specific challenges for making these new approaches a reality are highlighted below.

Interstate Implementation and Financing. The Chesapeake Bay restoration effort is founded on the obligation of the Bay states to achieve mandated pollution reduction goals. Leaders in each of the Bay states and the District of Columbia previously established financing institutions, programs, processes, regulations, and revenue streams necessary to achieve mandated pollution reductions. As a result, the Chesapeake Bay restoration effort is supported through an amalgamation of seven distinct yet interconnected financing systems. Watersheds and nutrients do not respect geopolitical boundaries, but laws and regulations do. The law is very clear: the Bay jurisdictions are primarily responsible for developing and implementing plans that address pollutions loads that have been attributed to their respective state. The current Bay restoration financing system reflects this jurisdictional responsibility.

The development of the Conowingo WIP occurred against the backdrop of these state-based regulatory and implementation systems. However, the Conowingo WIP is intended to step outside this state-based system and address the challenged posed by the additional pollutant loads collectively and collaboratively. This in turn refines the challenge: to develop a collaborative Conowingo WIP funding and financing strategy that works in concert with the existing state-based implementation and financing system that is in and of itself not designed for this type of collaborative process.

Uncertainty in Regard to Scale of the Funding Challenge. The proposed Conowingo WIP is estimated to cost approximately $53 million annually. These costs were estimated using the Chesapeake Assessment Scenario Tool (CAST), which enables users to establish customized cost profiles associated with individual best management practices (BMPs). These profiles include summarized information related to capital, operations and maintenance, and opportunity costs.

An important part of the CAST model is its capacity to convert aggregate costs to annual costs. Though annualized costs are important for comparing the scale and fiscal impact of restoration scenarios, there are two very important limitations to connecting these cost estimates to the financing process. First, annualized costs do not provide an estimate of necessary annual cashflows. This is because annualized costs are based on modeled best management practice lifespans, and these estimated lifespans have no connection to actual cashflow. Best management practices are primarily funded through grants and cost share programs or through debt financing. In either case, the cashflow requirements are based on program and financing requirements. While the useful life of a structural practice is accounted for within financing processes, it has little to do with grant funding. For example, if a stream restoration project is paid for through an implementation grant, the entire cost to the state for funding the project occurs in the first year, not over the 30-year life of the project. A cashflow estimate would put the costs entirely in year one, whereas CAST spreads the costs across the entire project lifespan.

Second, annualized costs do not necessarily provide an accurate estimation of what overall restoration costs will be for each scenario. This is because accurately estimating long-term total project costs requires a present value calculation, which in turn requires an end date. For those scenarios that rely heavily on annual practices, annual costs extend essentially in perpetuity. For those scenarios that focus on permanent practices, costs decrease overtime because funding and financing comes to an end. Therefore, total implementation costs are influenced by time horizons, something that annualized costs estimates do not take into account.

Uncertain Risk Environment. The Conowingo WIP process was launched within an environment of extreme uncertainty on the part of both the public and private sectors. This is an unprecedented and extraordinary time in our history. The world has changed and will continue to do so into the future. The proposed financing system must be designed to evolve accordingly. All financing endeavors expose all parties to risk. However, ignoring, avoiding or removing risk from the financing process also results in removing any opportunity for financial and environmental innovation and efficiency as well as the incentives for facilitating innovative economic growth and development.

Accelerated implementation. There are many challenges associated with financing and

implementing best management practices at a scale necessary to address the required Conowingo WIP pollution load reductions. The limited time available to meet required restoration deadlines adds another layer of complexity to the process. Though the Conowingo WIP is unique, mandatory deadlines are not. Any financing system must focus on moving limited amounts of capital to the most effective best management practices in a short amount of time.

The Restoration Financing System

A financing system is simply a collection of institutions and rules of engagement that permit the exchange of funds. In the private sector this includes banks, exchanges, insurance companies and investment firms. In the public sector the system includes agencies charged with allocating and distributing revenues in support of programs and capital projects. When financing systems are functioning appropriately, borrowers, lenders, and firms invest current funds, either to produce goods and services or to generate financial returns on investment. Financing systems can be local, global, and virtually anywhere in between; and while the structure of these systems is basically universal, how these systems function tends to mirror the unique nature of the industries, regions, and cultures in which they exist.

Financing systems that support the delivery of public goods and services have unique characteristics that enable them to function effectively. This is the case in regard to those systems that support the protection of the public "commons," which are the resources that are managed for the benefit of all. The government takes on an outsized role (relative to the private sector) in the design, execution, and support of the necessary financing processes of these systems. The Chesapeake Bay and Conowingo restoration financing processes are no exception. The restoration financing system is a complex, interconnected ecosystem of actors, rules, agencies, and revenues all working with the collective purpose of restoring and protecting the Chesapeake Bay and its watershed lands. As is the case with the Bay ecosystem itself, attempts to simplify and model the financing system is fraught with uncertainty and limitation. Doing so, however, is essential to determine how best to improve system performance. Understanding how best to improve the financing system requires an understanding of the structure and components that enable it to function effectively. To that end, the project team identified four components that will serve as the basis for the Conowingo WIP financing process.

Rules and Regulations. The Chesapeake Bay Total Maximum Daily Load (TMDL) has created an exceptionally complex legal and regulatory environment, and as a result, laws and regulations have a significant impact on the financing process. While literally every market is guided by rules and codes of conduct to ensure a level of trust in the system, regulations and law take on added importance within the context of the Bay restoration effort, if for no other reason than without them there is no restoration market or financing system at all.

The scale and complexity of the Bay restoration effort has resulted in complex rules and regulations regarding implementation and financing. The entire restoration effort is very prescriptive. Virtually all restoration activities are structured, including the financing processes that support the process. The Bay watershed model and the resulting WIPs literally define the entire implementation process, including the types of acceptable installation practices, where they can be installed, and the credit given for their installation. All of this is reasonable given the nature of the TMDL, but it creates significant restrictions on the financing system, and working

through those restrictions is much of the purpose of this entire process.

Sufficient, Diverse, and Sustainable Revenues. Financing systems ensure money is exchanged efficiently. What distinguishes restoration systems from others is the role revenue plays. In a market-based financing system, revenues and cash flows exist because of the self-compelled desire for profit and financial gain. In a regulated or commons-based financing system, revenue flows exist because governments are required to take action. This is the case for the Chesapeake Bay: without public revenue flows, restoration does not occur. Identifying and allocating sufficient and sustainable revenue streams/sources is an issue that tends to receive the greatest amount of attention in regard to the Chesapeake restoration process. The Conowingo WIP is no exception. This makes sense given the scarcity of available revenue sources.

Procurement Systems. An often overlooked component of the financing process is effective procurement processes. Government procurement—government agencies soliciting the business or private sector for the goods and services they provide—represents the point where public revenues and regulations directly connect to the market and private investment. Procurement is where the entire financing system is enabled. All the innovative policies and programs designed to reduce costs, incentivize innovation, and accelerate implementation are able to function well, or not, through the procurement system. Rethinking public procurement processes is a central theme within the Conowingo WIP financing process.

Institutions. The fourth primary component of a functioning restoration financing system is public institutions. Public institutions are involved in virtually every aspect of the restoration process, including assessing and allocating revenues, developing and enforcing rules and regulations, tracking and monitoring restoration activities, and guiding and coordinating the efforts of a broad set of actors and stakeholders. Institutional structures are part of the uniqueness of the Bay restoration process. For example, the Chesapeake Bay Program enables a wide variety of agencies form across the region to formally collaborate on restoration activities. However, given the state-based nature of the restoration effort, financing institutions are located and function primarily within the state financing frameworks. This in turn creates a challenge for financing the Conowingo WIP.

These four components represent the primary structure of the Chesapeake Bay restoration financing system. By extension, these four components provide the structure for the Conowingo WIP process. The Conowingo WIP, however, is in many ways unique from the state-based WIPs and the broader restoration effort. The Conowingo WIP is designed to be a collaborative, watershed-based restoration process. This implies that restoration activities, including funding and financing, will occur across jurisdictional boundaries. This will have a profound impact on the entire system, including institutional structures and their associated financing processes. Second, the entire process is being designed and implemented within a very uncertain economic and fiscal environment. Though public revenues are scarce even in the best of times, they are even more so now, and public budgets are stretched perhaps further than before. The Conowingo WIP financing system must be designed to do more with less.

Time is of the essence. The legally mandated implementation deadline is fast approaching. The process to address offsetting additional pollutant loads associated with the Conowingo Dam

reservoir got a very late start. Much of the foundation for the Conowingo WIP financing system is in place, but necessary adjustments need to be made quickly.

The following financing structure and strategy provides what we believe is the most reasonable path forward for achieving the Conowingo WIP's restoration goals and responsibilities. The strategy is founded on the four key financing components—rules and regulations; revenue streams; procurement processes; and long-term financing—while at the same time creating the enabling conditions for success. The entire strategy is centered on what will be a very unique institution: the Conowingo Financing Authority.

Conowingo Financing Authority

Institutions are the organizing mechanisms within financing systems. Institutions ensure that rules, regulations, and codes of conduct are enforced, thereby enabling the participants in the financing process to trust the veracity of the system. They establish and manage the procurement processes that public agencies rely on to build, operate, and maintain infrastructure. Institutions provide structure to innovative approaches for advancing innovation and ingenuity within the public financing sector. Financing institutions create the enabling conditions that are necessary for the entire restoration process to function effectively.

The unique interstate nature of the Conowingo WIP puts added emphasis on institutional capacity within the financing system. The focal point of the Conowingo WIP financing process is expanding institutional capacity in the form of a new financing corporation called the Conowingo Financing Authority.[1] The Authority's ***mission*** will be to facilitate and execute water quality restoration financial transactions. As envisioned, it will serve to directly fund, finance, and invest in projects, practices, and technologies that advance ecosystem restoration goals, primarily in support of the Conowingo WIP. The Authority will contract directly with public, private, and nongovernmental organizations (NGOs). In addition, the Authority will have the ability to receive funds from any public, private, or nonprofit institution or investor and invest these funds within any of the Chesapeake Bay states/jurisdictions. Specifically, the Authority will be authorized to procure services directly through RFPs and other similar procurement mechanisms and support innovating ventures, projects, and practices through direct equity investment or through debt financing. The Authority will be structured on three primary components and processes:[2]

- A restoration fund supported through a diverse pool of capital. An infusion of multiple revenue sources will be required that go beyond what is currently allocated from public sources from federal and state governments. These revenues must be varied and diverse.
- Innovative procurement and investment processes designed to reduce risk and accelerate

[1] The term "authority" is used as a placeholder. Authorities can be defined as a specific type of financing institution. The exact corporate and institutional structure will be determined in Phase 2.

[2] A fourth component—project monitoring and tracking—will be essential for many of the Authority's efficiency goals to be achieved. We differ discussion on that issue to our project partners who are responsible for designing and implementing a Conowingo WIP monitoring system.

restoration investment activities. The Authority must have the capacity to move beyond traditional procurement processes. It must have the ability to disburse and invest any funds that it receives. The Authority must also have the capacity to track the use of those funds to ensure that investments are achieving restoration goals. Finally, it must have the capacity to move money quickly and efficiently in support of efficient restoration outcomes.

- Long-term investment through debt financing. The authority must have the capacity to finance projects in the long run through the appropriate use of equity and debt. It must be able to leverage in a variety of ways such as bonds as well as through innovative public private partnerships. The primary mechanism to raise revenues will be through the issuance of revenue bonds by the authority. The revenues to support these bonds will come from the revenue-generating practices that the authority identifies. The authority will, in turn, use the proceeds of these revenue bond issuances to invest in these practices.

Component 1: The Restoration Fund

The Authority's restoration funding and investment activities will be supported through a dedicated pool of revenue called the ***Restoration Fund*** (or the Fund). The purpose of the Fund will simply be to fund and finance restoration practices and activities in support of water quality and ecosystem restoration. The Fund will be the mechanism that receives money to support restoration practices, and it is through the Fund that investments will be made in support of those practices. It will serve as the link between private investment and public funding. The Fund will support a portfolio of projects that collectively will advance Conowingo WIP implementation in the most efficient and effective way possible. Program/project team leaders at the Authority will select projects based on overall cost efficiency, cashflow requirements, and the project's potential connection to available financing mechanisms. Projects will be selected based on availability of revenue within the Fund itself.

Table 1 summarizes the four best management practice (BMP) categories that will comprise the Fund's project portfolio: natural infrastructure; constructed filters and water quality treatment; pollution reduction and nutrient management; and agronomic/annual practices. The purpose of segregating the BMPs in this way is to identify the unique funding and financing needs and characteristics, cashflow requirements, appropriateness for long-term financing, and potential risk. This provides a glimpse of how a portfolio of practices will fit into a variety of funding sources and financing tools and mechanisms.[3]

Table 1: Conowingo Financing Authority Project Portfolio

Category	Practice Types	Land Use: Urban/Rural	Annual or Structural	Funding and Financing Risk Profile	Potential Strategy
Natural Infrastructure	Forests, streams, wetlands, aquatic	Primarily agriculture based, but also	Exclusively structural, some	Often very high (relatively)	Long-term financing

[3] The financing project team has begun recategorizing the proposed Conowingo WIP practices into this table, including modelled timelines. This process will be completed once the WIP itself has been officially accepted into the system.

	habitat	includes urban stream restoration	with very long-time frame	implementation costs. Annual cashflow requirements decrease significantly over time	opportunities with a finite end date
Constructed Filters and Water Quality Treatment	Primarily urban stormwater management but also includes agriculture structures such as animal waste storage	Both rural agriculture and urban stormwater	Exclusively structural	Often very high (relatively) implementation costs. Annual cashflow requirements decrease significantly over time	Long-term financing opportunities with a finite end date
Pollution Reduction and Management	Manure injection, manure management	Both urban and rural, with greater reduction opportunities associated with ag/ rural practices	Non-structural practices, often focused on behavior modification		Short-term funding with limited financing opportunities and no end date
Agronomic Practices	Cover crops, conservation tillage	Primarily/exclusively agriculture based.	Non-structural practices	Very low (relatively) annual cashflow requirements. Very uncertain future funding requirement: projects must be funded in perpetuity. As a result, funding and implementation risk can increase significantly over time	Short-term funding with limited financing opportunities and no end date

It is hard to overstate the importance of this part of the portfolio development process. Establishing a thorough understanding of costs, cashflow needs, and financing risk profile is essential for any new business venture. It is even more so in regard to the Conowingo WIP due to the scarcity of revenue and fiscal resources. The project portfolio enables program managers to assess the key needs and issues related to the funding and financing process, including:

- Minimize and balance cashflows. Estimating annualized project costs is important for understanding the potential scale of the restoration effort, but it does not provide an accurate estimate of the annual cashflow needs required to implement the WIP. This is true even if cost estimates are completely accurate. Cashflow analysis is an essential step towards understanding what is possible, rather than theoretically possible.
- Minimizing restoration costs. The portfolio approach provides a much more accurate understanding of the total restoration costs. Annualized costs are important for planning purposes, but the primary cost-related priority should be to reduce total restoration costs and adapting to reduce those costs as much as possible. The portfolio financing approach provides the process and template for understanding how best to reduce total project costs

over time.

- Understanding and adjusting for risk. The portfolio approach provides and effective process for understanding the inherent risks associated with each project (e.g., performance risk and funding risk) and how they impact the overall portfolio risk. A project portfolio needs to balance risk over time. This process will help identify and track performance.

The financial reasons for a balanced approach to developing the BMP portfolio—balancing cashflow and risk specifically—mirrors the ecological reasons for achieving the same type of balance. No type of practice is better than the others. A cursory analysis of the proposed Conowingo WIP shows that the portfolio of practices necessary for achieving a restored watershed mirrors the financial reasons for achieving the same balance.

Revenues supporting the Fund's project funding and investments. The Fund will receive revenues from public, private and philanthropic sources. While the scale of these revenues will have the most immediate and lasting impact on the Fund's activities and investments, the sources of these revenues will also impact how the Fund functions over time.

The Chesapeake Bay restoration effort is supported and defined by a complex, interconnected labyrinth of revenue flows that cross multiple jurisdictions, institutions, companies, agencies, practices and projects. Every year, hundreds of millions if not billions of dollars flow through the restoration financing system to support a myriad of restoration activities. Some revenues are embedded or ingrained within the financing system—either through the normal course of business, regulatory compliance, or both—while others are targeted to a variety of on-the-ground activities. The project team focused on four revenue sources that can have the most immediate and lasting impact on the Conowingo WIP and the Conowingo Financing Authority.

- *Voluntary public revenues* which support unregulated projects, activities, and programs.[4] These revenues can be generated at the local, state, or federal level.
- *Private capital* in the form of upfront project investment. These are revenue flows that originate from private investors in support of restoration infrastructure.
- *Philanthropic-based revenues* designed to reduce market failure.
- *Consumer-based revenues*, which are revenue flows that indirectly support restoration activities through consumer markets.

Each has an essential role to play in the financing process, and each is linked directly or indirectly to the others. The most important revenue source for the near future will be voluntary public revenues generated and appropriated by Bay jurisdictions in support of the Conowingo WIP.

The entire Conowingo WIP and the resulting portfolio of projects and practices it will ultimately contain is ***unregulated***. The entire responsibility of meeting pollution load reductions falls to the Bay jurisdictions. The Conowingo WIP was developed well after the other jurisdictional-based WIPs were developed. Pollution reductions attributed to regulated activities such as wastewater

[4] To be clear, the TMDL requires pollution reductions to be achieved, so in that sense, the entire process is regulated. We refer here to those activities that are, or are not, regulated.

and stormwater treatment have already been accounted for. Without new regulations or further restrictions on these currently regulated activities, the Conowingo WIP must rely exclusively on voluntary public revenues. While those revenues may come from any level of government, including the federal government, most of the funding will come from the states themselves.

It is important to understand the role and function of state revenues to the Fund's process given that the primary source of funding will be voluntary state revenues. State-led commitment to fund restoration activities sends a signal through the entire restoration process that it is real and moving forward. State-led investments or the guarantee of investments is catalytic to the process. Because these are public revenues, mission is paramount. Though efficiency can be improved, the risk profile associated with these funds is low to moderate. These monies must result in credited pollution reductions. Lastly, these investments, whether local, state, or federal in their origins, have significant political strings attached. Public money is political, and this political risk must be accounted for in the investment process.

Public revenue or the commitment of public funding is catalytic to the financing process. Once committed, however, ***private capital investment*** becomes paramount. Private capital exists primarily (though not exclusively) to generate financial return. Private revenue can be deployed and targeted to restoration efforts once the public funding commitment has been made. In addition, private capital is invested upfront, which means that the institutions making these investments take on the various forms of associated investment risks. This is how these firms generate a financial return on investments. Private capital's primary role in the restoration financing process is to assume risk, accelerate implementation, and achieve permanent restoration and pollution reductions in the most efficient and cost-effective manner possible.

It is this connection and interaction between public revenue and private capital that will serve as the foundation of the Fund's investment activities. Philanthropic revenue will play an essential role in the process. The Chesapeake Bay restoration effort could best be described as a highly prescriptive, risk-averse process. Innovation and ingenuity in the restoration process, including financial innovation, are not incentivized directly. ***Philanthropic revenue*** plays a critical role in identifying and supporting new ideas, technologies, practices, policies, and funding/ financing schemes, all of which are critical to create a truly adaptive restoration finance process. Philanthropic investments in support of innovation can have an outsized impact on the process and will be essential to advance many of the innovations through the Fund's processes.

Consumer-based revenue may be one of the most important sources of long-term revenue for supporting the Fund specifically and the broader restoration effort more generally. The need to protect natural resources that are in the "public commons" exists because the broader economy itself is unable to do so. The need for public revenues decreases the more that consumers and businesses incorporate water quality and ecosystem protection into their daily lives. It is difficult to develop policies that effectively change consumer behavior, but there are examples of where this has and is working: oyster restoration; sustainable energy production; organic and sustainable farming; and open space protection and conservation. Consumer-based activities that drive these markets generate many millions of dollars per year in economic activity, which in turn results in water quality and ecosystem restoration, all without any regulatory requirements. Regulations have often pushed these markets along, but each exists and functions in and of

itself. Creating and leveraging these consumer markets will be essential for sustaining the long-term restoration financing effort. An explicit goal of the Fund will be to invest in these innovative ideas and technologies into the future. Establishing consumer-based revenue sources will have very little impact on the Fund's cashflows but will ultimately reduce the need for public revenues and investment. This is central to the Authority's and the Fund's purpose and role.[5]

These four revenue sources: voluntary public revenues, private investment capital, philanthropic revenue, and consumer-based revenues are central to the mission and function of the Conowingo Financing Authority and the Restoration Fund. Ensuring that each revenue source work in concert will require an innovative and efficient procurement system.

Component 2: Innovative Procurement and Investment Processes

Important components of the Financing Authority will be its innovative procurement policies and processes. Its nonprofit and quasi-governmental corporate structure will be used to link the transparency and oversight policies inherent to public sector procurement systems with the speed, innovation and efficiency of the private sector. This will result in efficient and effective accelerated restoration activities.

Public sector organizations and agencies are essentially owned and run by the government. Everything that they do must be transparent and in support of the stated mission, in this case the restoration and protection of the Conowingo and Chesapeake Bay watersheds. It is important that the process be completely transparent with information in regard to bidding and access to the process be clear and open. In addition, there must be an equal opportunity provided by the government to each company or entity wishing to do business with them that meets the requirements.[6] While transparency and openness in the procurement process is essential, public procurement systems are not designed to address the risks and opportunities necessary for creating a more efficient, innovative implementation and financing system. That will require incorporating the benefits of private procurement processes.

Private organizations function much differently in that they draw revenue from sales, investments, and other business-related areas. Their money is more centralized, which speeds the procurement process along. Privately owned businesses can seek out different suppliers to find the best deal because they have more time and resources to do so. Their focus is more on saving the most money and getting things done quickly, which is exactly what the Conowingo WIP implementation process will need to succeed.

The Financing Authority will occupy a middle ground between public and private procurement processes as a nonprofit or nongovernmental organization. Certainly nonprofits must comply with transparency and procurement requirements inherent to the public agencies that support

[5] When these consumer-based markets are functioning well, the revenues supporting conservation and restoration will be embedded within the broader economy; there would/will be no need to direct revenues outside that system.

[6] See: https://www.concordnow.com/blog/private-vs-public-sector-procurement-practices/

their missions. The Authority, like other nonprofits, will have more flexibility in regard to establishing procurement policies and procedures due to the diverse nature of its anticipated funding support. This provides opportunities to create innovation within the restoration financing process. The Authority will have the capacity to balance efficiency with project effectiveness in support of the public trust.

Achieving a balance between efficiency and effectiveness (restoration outcomes) requires enabling essential functions and capacities. First, the Authority must be able to ***purchase ecosystem services (PES) as they are delivered***. This is important for several reasons. PES procurement processes enable public institutions to transfer much of the implementation risk associated with restoration practices to the private sector. PES systems require private sector firms to use private capital to design, implement, and operate and maintain restoration practices. This provides certainty in regard to long-term project costs and performance. This is a significant departure from traditional request-for-proposal and public procurement systems.

The Authority must also have the ***capacity NOT to invest*** or fund practices that do not meet funding and financing goals and priorities. Public funding often must be expended on an annual basis or those funds may be pulled back. Even forward-thinking programs that do their best to utilize market and performance-based procurement processes are often limited in their impact by the need to ultimately spend out public revenue. In the private sector, services are procured *only* if they meet the needs of the firm. If they do not, then no contract is issued. Firms have the advantage of waiting for the right contract at the right time. The Authority must have the same flexibility imbedded into its procurement policies and processes.

The Authority must also have the capacity to ***pay for outcomes*** rather than outputs. In other words, procurement processes must have the capacity to balance fiscal efficiency with program effectiveness. In fact, the ability to balance and maximize efficiency and effectiveness within the procurement process by focusing on restoration outcomes will be fundamental to the success of the Conowingo WIP. Efficiency and effectiveness are often used interchangeably, but they mean very different things. As we defined earlier, efficiency refers to achieving a goal with the least amount of time, money, and labor. In other words, minimizing waste. As it relates to the Conowingo WIP, efficiency primarily means achieving pollution reduction goals at the least possible cost. Effectiveness on the other hand, can best be described as doing the right thing. In other words, the best management practices that are supported in the WIP actually achieve desired outcomes. When efficiency and outcomes or effectiveness are in balance, restoration success will be achieved.

The Authority must establish procurement processes that have the capacity to directly ***invest in innovation and ingenuity*** in the restoration process. As we've discussed, the Bay restoration effort in general is very prescriptive and risk averse; and while the regulatory reasons for this prescriptive approach are clear, equally clear is the need to identify new technologies, financing mechanisms, and overall restoration approaches that are not officially part of the Bay restoration processes and systems. A very key and impactful role for the Authority moving forward will be to directly incentivize potential innovations. This will often require evaluating and taking risks that public institutions are not designed for nor equipped to address.

It could be argued that investing in innovation and ingenuity is at the opposite end of the spectrum from paying for known ***modeled*** outcomes. This is because paying for innovative new approaches is risky and that risk can't be removed through the procurement process. However, in the long-term, financing innovation will improve performance and restoration outcomes, so the two investment approaches are actually interconnected. The capacity to balance risk with certainty defines one of the most important distinctions between public funding and private investment. Investors and capital managers in the private sector understand intuitively how to assess risk, minimize it as much as possible, and then make investments that account for risk where it exists. In fact, assuming and controlling risk is what drives profits (and explains why a 30 year mortgage has a higher interest rate than a 15 year mortgage). By identifying particular revenue sources as appropriate for taking the risks associated with advancing innovative new restoration approaches (philanthropic revenue, for example) the Authority will be able to create a restoration portfolio that is efficient, effective, and innovative; and that best describes the path forward to address this very difficult restoration challenge.

Another important priority for the Authority will be to reduce the administrative costs associated with the funding and financing processes. Public and nonprofit grant making agencies can be extremely bureaucratic and administratively burdensome, especially when engaging the private sector and the marketplace. This is specifically related to the procurement policies and rules that they must follow. As a result, the administrative costs to both the grantee and grantor can be significant and a major barrier to efficiency. The Authority's procurement policies will remove these administrative barriers without compromising the transparency and objectivity that are essential to the mission of public financing. Which brings us to the final point on procurement.

Transparency and objectivity are fundamental to public financing processes, as maximum public benefit is only achievable when expectations, disclosures, and performance metrics are clear and equitable. The Authority's procurement policies will be structured to ensure openness, independent of political ties as much as possible, guided by well-defined standards for implementation and performance so as to provide public and private entities with clear expectations for involvement. This is especially important as it relates to administrative costs. The administrative costs associated with public funding, especially grant funding programs, are often embedded and hidden within public budgeting and accounting processes. It can be difficult to understand how administratively burdensome these programs actually are. The procurement processes of the Financing Authority will be made transparent to ensure efficiency while maintaining integrity in the process.

Component 3: Long-Term Financing and Leveraging

The Financing Authority will require the capacity and the authority to facilitate debt transactions—directly or indirectly—in support of restoration projects and practices throughout the Bay watershed. The appropriate use of debt will be essential to keep annual implementation costs low over time. The Authority will focus on three types of leveraging tools and processes: bond financing; state revolving loan fund financing; and, mitigation banking financing.

- *Bond financing*. The use of municipal or publicly issued bonds is ubiquitous in regard to infrastructure financing. Borrowing is essential for large-scale infrastructure projects, and the use of tax-free bonds provides local and state governments with relatively inexpensive

capital with long-term payback time horizons. Though the Authority will be incorporated in a single jurisdiction, it will require the authority and the capacity to issue debt in support of water quality projects in all of the Bay jurisdictions. The capacity to issue traditional tax-free revenue bonds will be important for many of the large-scale structural practices and projects in the Authority's portfolio, but it will be only one of several different options for leveraging private capital. In fact, issuing bonds should always be done as somewhat of a last resort. The Authority's bond financing capacity will also extend to innovative new financing mechanisms such as green bonds, resilience bonds, and grant-anticipation bonds.

- *State revolving loan funds*. The Clean Water State Revolving Fund (SRF) has been a very important financing tool associated with the Chesapeake Bay restoration effort for decades, especially for providing low-interest loans in support of more advanced wastewater treatment systems. Supporting point source upgrades will continue to be an important function of the SRF programs. The SRF is also becoming an increasingly important tool for financing nonpoint source pollution reductions. The Authority will work directly with SRF programs within the Bay to link SRF products and processes such as subsidized loans, and debt guarantees to projects in its portfolio.
- *Public-Private Partnerships*. The Authority's primary financing mechanism will be the application of strategic public-private partnerships (P3s). P3s can take a variety of forms and functions depending on the public sector needs. For the Fund, however, these partnerships will be focused on infusing private capital in support of restoration practices. This relationship between the guarantee of public funding in support of private upfront investment is critical to addressing virtually all of the restoration financing challenges associated with the Conowingo WIP. Private capital generated through P3 contracts will accelerate investment and implementation, which is essential given the truncated timelines. Utilizing upfront private capital through PES financing mechanisms will provide the Authority and, by extension, the Bay jurisdictions with a buffer in regard to funding the investments (i.e. paying back investments). This funding "grace period" will be essential for Bay jurisdictions as they navigate the current difficult economic circumstances.

Long-term financing is exclusive to structural or long-term practices. It can only be a part of a more complex and comprehensive funding and financing system. But, the capacity of financing to level cashflows, balance risk, and generate permanent restoration projects on the ground is absolutely critical to ensuring successful implementation of the WIP.

Potential Corporate and Governance Structure

The Conowingo Financing Authority is anticipated to be an independent corporation with a mission to facilitate investment in water quality and ecosystem restoration projects. The Conowingo Financing Authority is intended to be an independent publicly chartered institution that will work in direct partnership with state leaders from across the watershed. Though the Authority will be domiciled in a single state (most likely Pennsylvania or possibly Maryland) it will be enabled to finance projects anywhere within the Chesapeake Bay watershed. Project partner Hogan Lovells, LLC, worked directly with the project team to create draft governing documents that will be necessary for launching this new venture; these include:

- Articles of Incorporation;

- Bylaws; and
- A proposed Conflict of Interest policy.

These draft documents are included in Appendix B of this report. How the corporation is ultimately structured and governed will be determined through discussions with executives in each state. However, our intention in drafting these documents at the beginning of this process was to provide an advanced starting point for those discussions. The project team believes that the most effective way to create an efficient, effective financing institution is to launch a large-scale financing demonstration and pilot project. A proposed strategy for launching a large-scale Conowingo WIP strategy is the focus of the next section.

Key Issues and Questions

A number of key questions and recommendations related to the Conowingo Financing Authority for financing the Conowingo WIP came up through the advisory committee and interview process.

How will the Authority collaborate and communicate with multiple partners? There is no single institution or process capable of implementing the Conowingo WIP. Partnerships, collaboration, and cooperation are the cornerstones of the Bay restoration effort and will be essential for addressing the challenges of the Conowingo WIP. The Authority will need to work in coordination with the extensive network of established leaders, institutions, and programs. The Authority must foster diverse partnerships and work collaboratively to develop solutions in line with the Conowingo WIP. This means that the Conowingo WIP will be implemented within the context of the broader Chesapeake Bay restoration effort. The Authority must be developed to ensure that interaction, communication, and engagement between the Authority and the myriad of experts, leaders, and partners is effective and integral to its operations. The Authority's role in the financing and implementation process will focus on those processes and activities that are directly associated with on-the-ground implementation. Its role will not be to replace or replicate the work of state and local agencies related to key public sector functions such as: regulatory or permit enforcement, monitoring, scientific evaluation, and/or policy development. The Authority will work directly with state agencies to expand capacity in each of these areas.

The project team's task was not to fix or change existing financing systems but was to specifically and myopically focus on the Conowingo WIP. However, the Conowingo WIP implementation and financing process offers the entire restoration community an opportunity to learn, adapt, and evolve their own restoration financing systems. The Authority specifically will serve as an incubator of sorts, thereby identifying new technologies and financing options capable of improving restoration processes everywhere.

How will water quality trading and credit financing work through the Authority? The project team does not believe that water quality trading will play a role in the Conowingo WIP in general or the Authority's investments more specifically. There are no regulated activities associated with the WIP. Any pollution reductions or credit for those reductions that are generated through regulated activities such as stormwater and wastewater management have already been accounted for in the state WIPs. The Conowingo WIP, which from a Chesapeake Bay restoration perspective functions like a new Bay State, has no buyers in a water quality trading system.

While there is the possibility that one WIP can trade with another WIP in the future, this is not a near-term opportunity or concern.

Will the Authority invest in multiple ecosystem services such as climate change and carbon reductions? The Authority will invest in multiple ecosystem services, including those related to climate mitigation and adaptation. However, the Authority's participation in these markets will remain targeted on reducing the costs associated with water quality restoration. If there is an opportunity to fund best management practices through climate-based investments, then the Authority will willingly make those investments. This is directly related to the previous question. Though water quality trading at scale may never exist throughout the watershed, credit-based financing is the mechanism by which multiple ecosystem service financing takes place. The Authority will base many of its transactions on ecosystem service credits.

Will the Authority collect taxes and fees? It is important to be as clear about what the Authority will *not* do as what the Authority will do. The Authority will not collect taxes (there are no legal options for establishing a regional tax) nor will it directly assess and collect fees. All of the revenues, public and private, that support the Authority's restoration activities will be allocated to the Authority at the discretion of the revenue generating institutions. State-based funding supporting the Authority's investments will be forwarded to the Authority at each state's discretion. The Authority will not serve as a regulatory agency although it will serve to inform public policy and the debate and conversations associated with restoration financing.

Conowingo WIP Launch Strategy

The Center for Global Sustainability is preparing to implement Phase 2 of the Conowingo WIP financing project. The project team will implement a launch strategy within the next six months in direct coordination with the Chesapeake Bay Program Office, state leaders, and its own expert advisory committee. The goal will be to bring water quality investments to scale in the most efficient and innovative way possible. The final project launch strategy is dependent on having a Conowingo Watershed Implementation Plan in place and approved by the appropriate state and federal leadership. In general terms, our effort to establish the pilot project will include:

- Identifying institutional partners. The project team recommends establishing a new financing institution. However, implementing a demonstration project in partnership with an existing institutional partner(s) will be the most effective and conservative short-term approach.
- Establishing procurement processes designed to identify and engage investment partners. Identifying and engaging private investors and project managers is a priority, especially as it relates to accelerating investment. The demonstration project will provide a process for testing procurement process to determine the potential impact moving forward.
- Determining the geographic and investment scale of the pilot/demonstration project. Establishing both the geographic and investment scale of the pilot project will require an approved WIP; however, the project team will develop a series of options that can be modified to allow quick implementation once the WIP is approved.
- Establishing adaptive management processes. The purpose of the pilot project is to both demonstrate proof of concept of the financing plan itself and to develop a system for applying lessons learned moving forward. The project team will work with its expert advisors

and the restoration community to evaluate and apply the successful financing elements that result from the pilot.

- Developing a project portfolio. The structure of the pilot project and the process for implementing that project will be determined by the structure of the final Conowingo WIP. The project team's research in Phase 1 suggests that implementing a demonstration project would effectively address some of the key challenges facing the restoration community, including accelerating implementation through private investment. The project team has interviewed dozens of private sector project implementers and investors over the past year. Most interviewed had a specific capacity and expertise in public sector financing, public/ private partnerships, and sustainable investment, with a specific focus on natural resource and water quality restoration. What became clear is that there are hundreds of millions of dollars in restoration capital available for investment. When the public sector makes the commitment to move forward and establishes the necessary mechanisms to procure ecosystem services, significant levels of investment are possible and very likely to occur.

A pilot/demonstration project provides an opportunity for moving forward at scale. It can also be structured in a way to take advantage of PES procurement processes, which would in turn significantly reduce cashflow needs in the short-term. This will be extremely important as the Bay jurisdictions navigate what will certainly be a very difficult economic and budget environment moving forward. Reducing short-term cashflow requirements will enable state leaders to accelerate economic growth and development by speeding up implementation while also developing long-term revenue plans to address the Conowingo WIP in its entirety. A pilot project in the scale of $50-$100 million dollars is doable and manageable within both the public and private sectors.

Conclusion

Implementing and financing the Conowingo WIP creates a significant challenge for public leaders throughout the Bay watershed. This is especially true given the economic environment and challenges that the next few years will bring. The financing strategy described in this report is not intended to gloss over these challenges but to ensure public leaders that every dollar of public capital invested in the WIP will have the most significant restoration impact. The Conowingo Financing Authority will serve as a unique organizing institution with the capacity to facilitate financial transactions in a variety of innovative and efficient ways. This plan provides what the project team believes to be the template for implementation success.