CASE STUDY

DC Water

DC Water Found a Better Way

Hidden below the streets, homes, and monuments scattered across the nation's capital are nearly 2,000 miles of pipes and tunnels quietly working to ensure residents have access to water and local rivers aren't overwhelmed with pollution and waste. These pathways under Washington, D.C., like over 770 other communities in the U.S., are made up of many outdated pipes within their combined sewer system, through which both sanitary sewage and stormwater runoff flow.[1] Some liquid still traverses wooden pipes dating back to before the Civil War[2] as it makes its way under the city from offices and resident homes.

Washington's combined sewer system was dumping an average of 2.5 billion gallons of combined sewer overflow (CSO) annually into 3 rivers, including the Rock Creek tributary that passes between historic Georgetown and the Kennedy Center before flowing into the Potomac River and, ultimately, the Chesapeake Bay.[3] This overflow brought bacteria, trash, and heavy metals along with it, contaminating DC's watershed and disrupting the entire ecosystem.[4] In response, local residents and community organizations demanded change, resulting in legal actions which ultimately concluded with the EPA issuing a consent decree in 2005 requiring DC Water to address the sewer overflow issue.

The Emergence of the Environmental Impact Bond

When George Hawkins became the General Manager of DC Water in 2009, he recognized the potential benefits that green infrastructure could provide not only to address the CSO problem, but also in terms of creating water treatment infrastructure that was visible to ratepayers. To date, most of the system's expensive infrastructure was either underground or housed within a distant treatment facility and therefore 'invisible to the customer,' making it difficult to articulate the cost of the city's water services. "Shouldn't water be free…like air?" their customers would often ask.

DC Water's planned solution to the EPA consent decree was a series of massive underground tunnels to be constructed beneath the city to capture and redirect stormwater. The tunnel solution was expected to work, but it had the disadvantages of being both out of sight and, at over $2 billion, extremely expensive. Working along side the DC Water's Director of Clean Rivers Project Carlton Ray, and CFO Mark Kim, Hawkins explored potential green infrastructure projects as both a visible and nature-based alternative to some of the gray tunnels initially proposed. While initially excited by their potentially lower cost, DC Water leadership was discouraged by the greater risk that these alternatives seemed to have compared to gray infrastructure. As stewards of taxpayer money, minimizing project risk

1. https://www.livingcities.org/blog/1158-the-story-behind-the-world-s-first-environmental-impact-bond
2. https://www.npr.org/2012/08/17/159003115/aging-city-pipes-in-need-of-a-plumbers-touch
3. https://www.dcwater.com/whats-going-on/news/dc-water-breaks-ground-26-billion-clean-rivers-project-largest-construction
4. https://www.epa.gov/green-infrastructure/what-green-infrastructure

George Hawkins, Former General Manager, DC Water

"I'm a big fan of Environmental Impact Bonds. They give government leaders a much needed way to pay for innovations that don't leave the government holding all the risk. EIBs also open up a better set of conversations with ratepayers, taxpayers, and customers. Finally, everybody wins!"

was a top priority – spending public funds without the ability to guarantee outcomes was more risk than most cities could handle.

Then Kim met Eric Letsinger, CEO of Quantified Ventures, an outcomes-based capital firm focused on bringing pay-for-success models to scale. As Kim detailed the challenges being faced by DC Water, they both saw an opportunity to pay for this green infrastructure in an entirely new manner where all stakeholder interests are aligned, which they penciled out on a napkin.

The pay-for-success model enabled project risk to be transferred away from government payors, like DC Water, to outside investors, minimizing the impact on taxpayer funds. Quantified Ventures recognized that in the case of DC Water, leveraging a pay-for-success model could make the decision to add green infrastructure projects to their current 'all gray solution' a rational choice by connecting investor returns directly to the delivery and measurement of environmental, social, and economic outcomes.

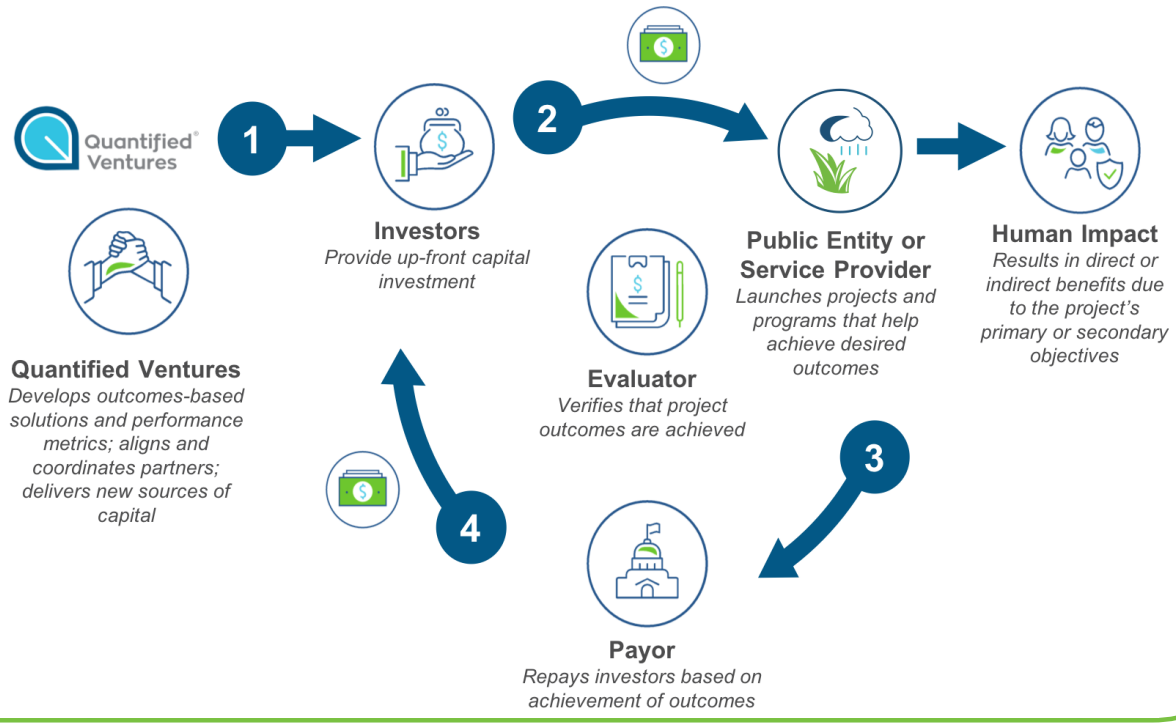
What Is Green Infrastructure?

- **Planter Boxes**
- **Bioswales**
- **Rain Gardens**
- **Green Roofs**
- **Permeable Pavement**

(Source: https://www.epa.gov/green-infrastructure/)

Together, Kim and Letsinger coined the term "Environmental Impact Bond" (EIB) for this type of pay-for-success instrument. A special kind of municipal bond, an EIB focuses on the delivery of successful environmental outcomes and can include investor payments and penalties attached to the achievement, or non-achievement, of those outcomes. In DC's case, the system's increased ability to control the volume flow of stormwater through the sewers during peak storms would serve as the metric that determines the investors' return on investment. This selected metric, which had the added benefit of being easy and inexpensive to measure, served as a proxy for the project's target outcome – a cleaner Potomac River.

How an EIB Works



Ann Carper, DC resident and DC Water customer

"I'm proud that my neighborhood did its part to help achieve a cleaner, greener DC and Potomac River. From green infrastructure and massive tunnels to innovative financing like the Environmental Impact Bond, DC Water is definitely making bold, cutting-edge moves to address our city's environmental concerns."

DC's Environmental Impact Bond Benefits:

- **Stormwater mitigation**
- **Workforce development**
- **Access to greenspace**
- **Performance risk sharing between DC Water and investors**

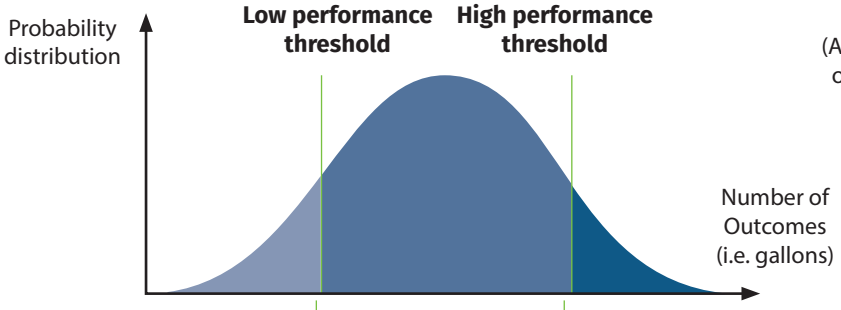
The EIB proposed three different scenarios related to project performance: if the project performed as expected, the bond would be paid back as planned, and DC would be able to confidently build the remaining acres of green infrastructure instead of reverting to gray infrastructure plans. This effort would likely deliver a significant cost savings from the gray infrastructure build-out, delivering success to investors and DC Water. If the project underperformed, investors would be required to pay back a sum to DC Water, known as a clawback, also leaving DC water to reassess the viability of green infrastructure projects. If the project overperformed, they could build out the green infrastructure at an even lower cost than anticipated because the green infrastructure would be more efficient than expected, saving DC Water even more than predicted.

Building Goodwill through Greening

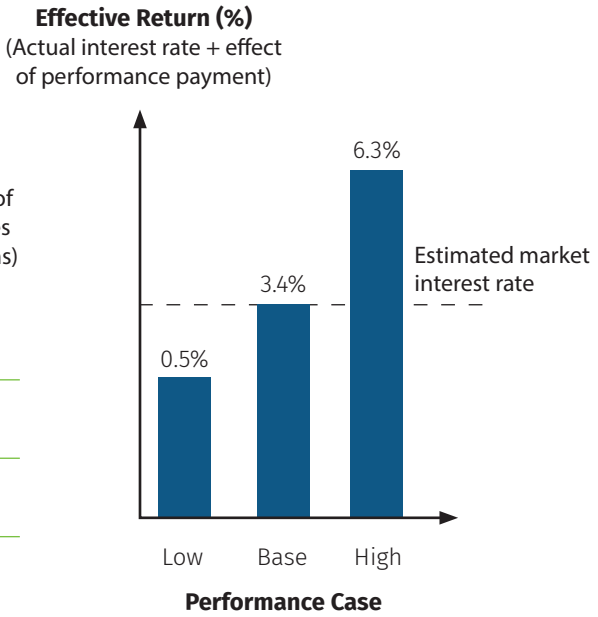
Much of the service that water utilities provide traditionally goes unseen as it is largely underground and not well understood by its ratepayers. The EIB doesn't just reduce the flow of runoff and sewage into the Chesapeake Bay; through the funded green infrastructure projects, it also delivers access to new green spaces at many locations around the District, leading to improved health outcomes.[5] Furthermore, ratepayers can now see, touch, and feel the physical benefits of their dollars at building and maintaining work. An additional benefit of these projects is that these spaces creates an additional pathway for workforce development programs for DC residents. The construction of these facilities created jobs and greenspaces for the community to enjoy. To fill these jobs, the EIB structure sparked the creation of

5. https://www.who.int/sustainable-development/cities/health-risks/urban-green-space/en/

DC Water EIB Performance Structure



Performance:	Low	Base	High
Fixed (Actual) Interest Rate:	3.43% (market rate)	3.43% (market rate)	3.43% (market rate)
Additional Payment:	$3.3M Clawback (Investors to DC Water)	None	$3.3M Payment (DC Water to Investors)
Probability:	2.5%	95.0%	2.5%



Jerrell Johnson, Graduate National Green Infrastructure Certification Program

"The NGICP program was extremely vital to my career growth with my current company. The skills gained from this experience gave me an advantage when educating stakeholders on upcoming and ongoing Green Infrastructure projects."

By the Numbers:

- **$25MM bond** privately placed with Goldman Sachs & Calvert Impact Capital
- **30 year term** with a mandatory tender in year 5
- **3.43% coupon rate** for 5 years
- **Largest social impact bond** investment in the US[1]
- **100+ candidates** trained for green infrastructure jobs

1. As of May 2019 - Pay for Success: The First 25 https://nff.org/sites/default/files/paragraphs/file/download/pay-for-success-first-25.pdf

the National Green Infrastructure Certification Program (NGICP), collaborating locally with the University of the District of Columbia to support the DC Water workforce development initiative. The NGICP certification sets the standard in training new candidates to develop expertise in green infrastructure construction, inspection, and maintenance. As of 2019, the NGICP program now brings green infrastructure to new communities beyond DC as it operates across the country in 14 states. These are all additional long-lasting and sustainable benefits to the original objective of reducing stormwater runoff into surrounding waterways.

Conclusion

The completion of this first Environmental Impact Bond with DC Water laid pathways for other cities, both big and small, to employ this outcomes-based financial tool to implement much-needed infrastructure that is distributed, risky (perceived or real), or unfunded. Numerous cities are now innovating on the EIB model to pilot new innovations and scale bold solutions to a variety of challenges including coastal resilience, declining water quality, water scarcity, wildfire mitigation and forest health, and funding for outdoor recreation infrastructure, among others. The co-benefits from EIBs can drive efficient compliance and deliver an array of positive health, social, and environmental externalities.

Project Partners

Service Provider, Payor, Evaluator

dc water is life®

Investors

Calvert Impact Capital

Goldman Sachs

Quantified® Ventures

Quantified Ventures is an outcomes-based capital firm that drives transformative health, social, and environmental impact. Visit the company's website (https://www.quantifiedventures.com/) for more information on how Environmental Impact Bonds or other outcomes-based financing could address your needs.

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