TECHNICAL BRIEF

PAY FOR PERFORMANCE CONTRACT MECHANISMS FOR STORMWATER MANAGEMENT

Environmental Incentives

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What is Pay for Performance?

Pay for performance contract mechanisms for stormwater management link payment to the delivery of verified pollutant load reductions.[1,2] If supported by the program structure, payments in a stormwater pay for performance contract mechanism can create financial incentives for private companies, private property owners, or government agencies to implement cost-effective projects that reduce runoff. Pay for performance contract mechanisms can also maximize tax revenue[3] by directing it toward projects that achieve desired pollutant load reductions for lower costs compared to traditional procurement approaches. Furthermore, by assigning value to outcomes, pay for performance contract mechanisms create opportunities for investors to finance stormwater projects with potential to achieve a return on investment if pollutant load reductions are cost-effectively produced.

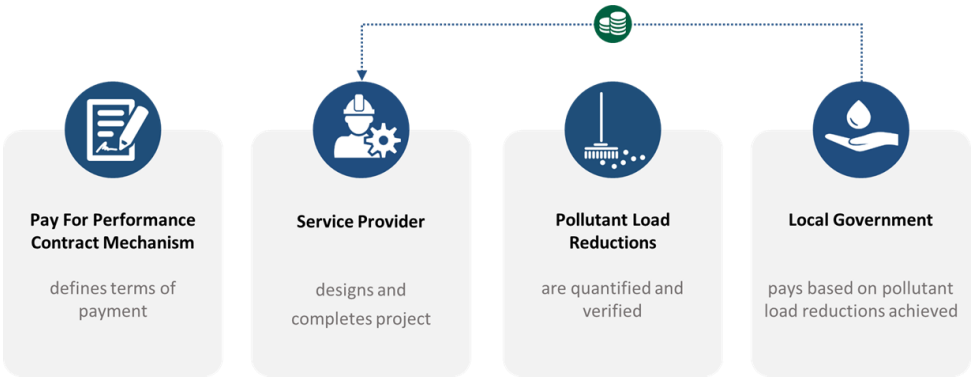


Figure 1: Simplified structure of a basic pay for performance contract

Environmental Incentives (EI) considers contract mechanisms to include pay for performance provisions when they link a meaningful portion of payment to the production of verified outcomes. For over ten years, EI has developed pay for performance contract mechanisms for the water, wildlife and land sectors. Significant projects include developing the Lake Clarity Crediting Program for Lake Tahoe, Mokelumne Watershed Environmental Benefits Program and Nevada Conservation Credit System, among others.[4] This technical brief adapts successful program structures from those programs for stormwater management, and conveys findings to stormwater professionals.

Pay for Performance Participants & Components

Pay for performance contract mechanisms focus a diversity of participants on the effective use of capital to deliver verified pollutant load reductions. One person or group (e.g., government agency, utility) can serve more than one role in a pay for performance program.

[1] Galloway. (2013). Foreword. Community Development Investment Review 9(1): 3-4.
[2] Nicola, D. (2013). Environmental Impact Bonds. Case i3: The Case Initiative on Impact Investing.
[3] Pay for performance mechanisms can be used to purchase pollutant load reductions that achieve stormwater goals or meet mitigation requirements by any public or private entity.
[4] More information on EI's pay for performance programs is available at environincentives.com.

Actors

- **Regulators** are public agencies that define pollutant load reduction requirements and oversee Municipal Permittee compliance with those requirements.
- **Permittees** are grouped into two categories.
  - **Municipal Permittees** purchase verified pollutant load reductions to meet regulatory requirements set forth by Regulators in Total Maximum Daily Loads, Watershed Implementation Plans and MS4 permits.
  - **Permitted Entities** are private entities such as industrial, construction and other private organizations that purchase verified pollutant load reductions to satisfy regulatory requirements set forth by Municipal Permittees.
- **Investors** are private equity managers, investment bankers, commercial bankers or foundation program-related investment managers that finance stormwater projects with the intent of achieving a return on investment. Impact investors may require concessionary returns[5], while institutional investors require a risk-adjusted market rate of return. Government programs occasionally act as investors using public funds.

- **Implementers** are parties that design and implement stormwater projects, including private property owners and stormwater professionals.
- **Administrator** is an entity that 1) oversees measurement, verification, and tracking of pollutant load reductions, 2) provides template pay for performance contract mechanisms and financing terms, 3) administers long-term operations and maintenance contracts, and 4) connects permittees with contractors to streamline delivery, generation and exchange of pollutant load reductions. The functions of the administrator can be performed by the regulator or by other third parties.

Components

- **Pollutant Load Reductions** are measurable, quantified units of pollutant reduction or their proxies that serve as the basis for payment in pay for performance contract mechanisms.
- **Pay for Performance Contract Mechanisms** include solicitations and contracts between permittees, regulators and contractors that use pollutant load reductions as the basis for payment.
- **Capital** refers to financing for project implementation that is intended to be paid back once the contractor receives payment from delivering pollutant load reductions.

[5] Concessionary returns are below market rates of return.

Why Use Pay for Performance?

Pay for performance contract mechanisms align the incentives of permittees and implementers to cost-effectively produce and sustain pollutant load reductions that achieve regional stormwater goals. Linking payments to pollutant load reductions, rather than or in addition to reimbursing expenses, minimizes permittees' risk of funding ineffective projects that do not deliver intended results. Furthermore, pay for performance contract mechanisms share risk with those best positioned to manage it – implementers – while providing financial incentives that inspire innovation, improve the effectiveness and reduce the cost of green infrastructure projects. Long-term pay for performance contracts can include provisions to incentivize operations and maintenance to sustain pollutant load reductions over the long-run.

BENEFITS

Reduces risk of funding ineffective projects

Incentivizes long-term operation and maintenance

Streamlines regulators' effort to oversee and manage stormwater programs

Supports adaptive management and learning

Leverages private capital and private property owners as a solution to stormwater pollution

Inspires public trust to sustain long-term stormwater programs & mitigation policies

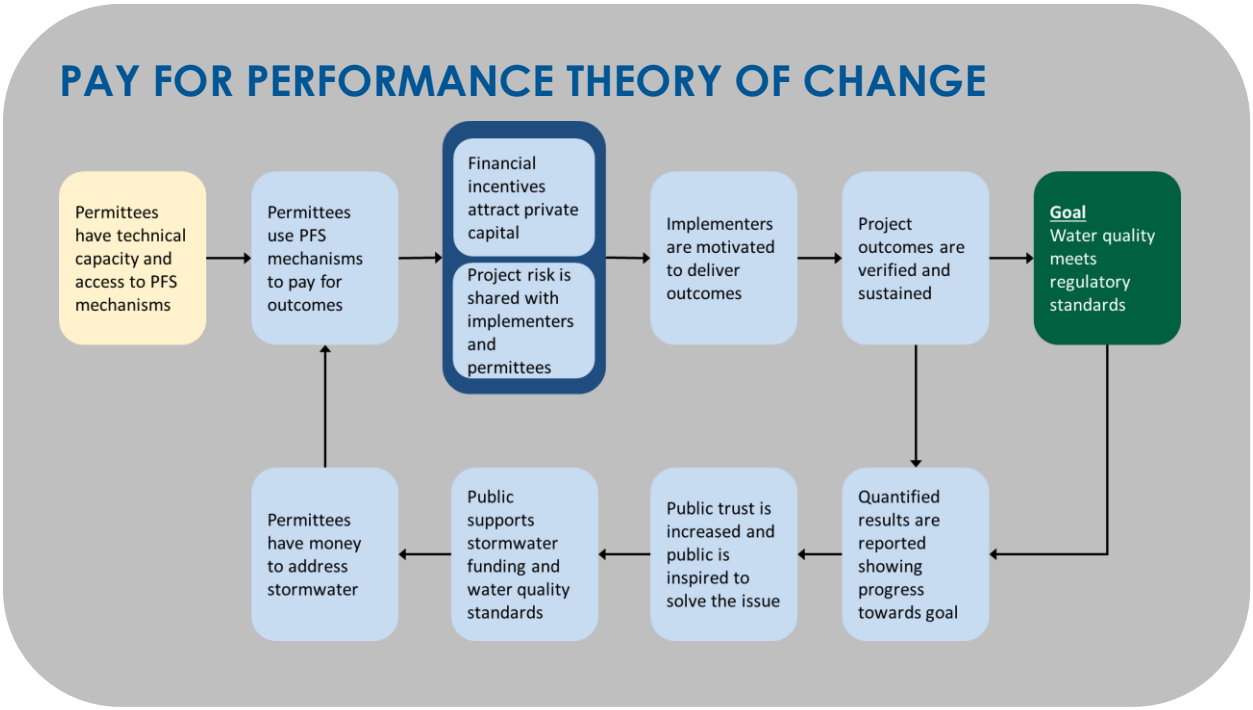
Pay for performance contract mechanisms streamline efforts to oversee and manage stormwater programs, particularly in regions where dispersed green infrastructure projects are needed in multiple locations across a municipality and millions of dollars of stormwater spending is expected over several years. The opportunity for financial gain motivates a whole industry of stormwater professionals to work with private property owners and efficiently identify high potential green infrastructure opportunities, design effective projects and implement cost-effective stormwater practices. Negotiating the legal assurances that must be placed on stormwater sites to ensure durability and exclude competing land uses can be complicated, lengthy, and restrictive for municipal permittees, creating uncertainty and unease with many private property owners. Municipal permittees and permitted entities are able to negotiate prices and agreements with private property owners and bundle cash and opportunity costs of maintaining pollutant load reductions with overall project costs. Pay for performance contract mechanisms increase efficiency for municipal permittees and administrators by reducing the need for costly and detailed project-by-project reviews that require specialized staff skills, consume limited staff time, and result in project delays. Therefore, municipal permittees and administrators can screen projects for desired attributes and determine a competitive price for pollutant load reductions, leaving the details of project implementation to be handled by implementers who hold the financial risk for project performance.

Pay for performance contract mechanisms link ongoing revenue streams to inspection results that demonstrate if a project is maintaining pollutant load reductions. The requirement to pass inspections over many years fosters long-term relationships with implementers and ensures availability of ongoing information necessary for adaptive management and learning. Municipal permittees can use pollutant load reductions to determine the environmental return on investment, in terms of credits per dollar. Providing

effectiveness information to stormwater professionals enables the industry to rapidly learn to select and design more effective projects.

Pay for Performance Theory of Change

The following describes the theory of change for how Environmental Incentives work related to pay for performance enables pay for performance mechanisms to significantly improve the effectiveness of stormwater spending, and sustain public and stakeholder interest in allocating the resources necessary to achieve priority stormwater goals.

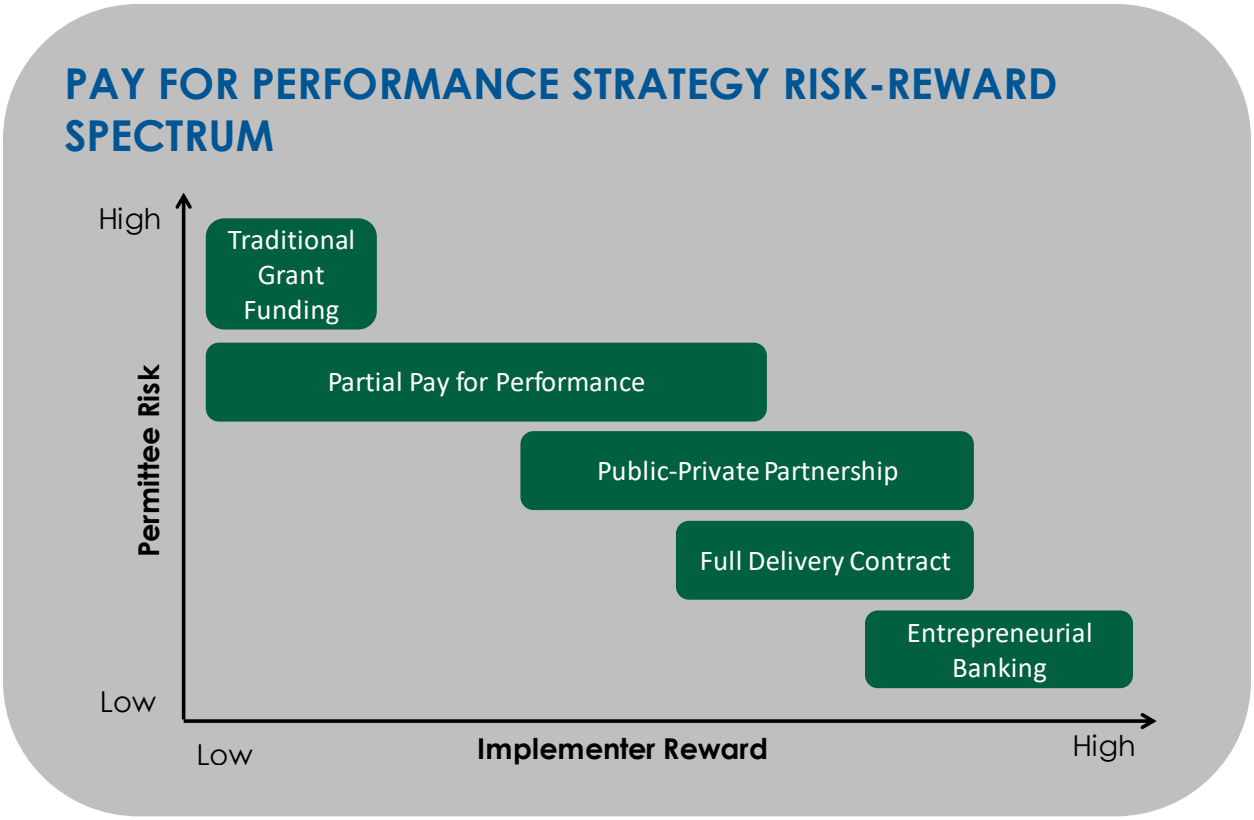


Environmental Incentives' goal is to **build technical capacity and create pay for performance contract mechanisms** that **enable permittees to pay for pollutant load reductions**. Pay for performance contract mechanisms **attract private capital** to finance stormwater projects and **share risks** between permittees and implementers, **creating incentives for implementers to deliver pollutant load reductions**. By linking payments to outcomes, **project benefits are verified and sustained. This contributes to achieving water quality that meets regulatory standards**.

Publicly **reporting quantified results** demonstrates progress toward achievement of regional stormwater goals, which in turn, **increases public trust and interest** in achieving stormwater goals. This quantified feedback enables public audiences to check progress in a manner that is understandable, similar to checking the score of a favorite sports team. This understanding **increases public support to fund stormwater programs and increases their support for policies** that require developers to mitigate harmful impacts to water quality. Therefore, municipal permittees **have sufficient funds to achieve regional stormwater goals.**

Pay for Performance Strategies

There are four pay for performance strategies: Partial Pay for Performance, Project Seed Funding, Full Delivery, and Entrepreneurial Banking. Each strategy varies in terms of the potential risk to permittees of spending funds without the intended pollutant load reductions and the potential financial reward for implementers from cost-effectively producing pollutant load reductions.



Each of these strategies may be appropriate given the context of the stormwater program's familiarity with pay for performance, the environmental issue and funding availability. In regions lacking experience with pay for performance strategies, it may be necessary to start with a strategy in which permittees bear more risk, such as a Partial Pay for Success. Once the definition of pollutant load reductions is well defined and permittees, private property owners and a network of stormwater professionals understand how to price risk, Full Delivery Contracts or Entrepreneurial Banking can increase efficiency of managing stormwater at scale.

Contextual Factors Influencing the Appropriateness of Pay for Performance Strategies

Each strategy description includes (1) a narrative and diagram showing how the participants and components interact to complete a transaction, and (2) the context in which the strategy is most likely to succeed at aligning incentives of multiple parties to produce cost-effective pollutant load reductions. The six contextual factors listed below are considered for each pay for performance strategy.

CONTEXTUAL FACTORS	RANKING AND CRITERIA	
Total Expected Demand Over Time	High	Greater than $10M from both stormwater and permittees
	Medium	$3M – $10M from both stormwater and permittees
	Low	Less than $3M from both stormwater and permittees
Predictability of Demand	High	Defined funding vehicle or program that allocates a predictable amount of funds annually or more frequently on a predictable schedule
	Medium	Some demand is highly predictable, however, timing or amount of demand is unpredictable
	Low	Expectation is that demand may only arise once within a period of several years and the anticipated amount is unpredictable
Implementer Access to Capital	High	Existing implementers have experience accessing sufficient capital to finance project costs
	Medium	Implementers understand that they can seek capital to finance project costs, but lack experience securing capital and expect the learning curve to be costly or risky
	Low	Implementers believe that they do not have opportunities to secure capital sufficient to finance project costs
Project Risk of Producing Outcomes	High	High uncertainty whether actions will result in intended outcomes
	Medium	Moderate certainty that actions will result in intended outcomes
	Low	Near certainty that actions will result in intended outcomes
Acceptable Rate of Return	High	No legal or social limits for implementers gaining profit from producing cost-effective pollutant load reductions
	Medium	Revenue beyond cost is allowable, but social norms create pressure for profits to be limited to a socially accepted level
	Low	Legal restrictions cannot allow any revenue greater than direct costs
Quality of Quantified Unit of Pollutant Load Reductions	High	Methods are clearly documented and results are trusted as a relevant representation of desired outcomes
	Medium	Methods exist and have been vetted by key stakeholders, but results have not been proven reliable through transactions that show a relationship between the quantified outcomes and desired stormwater improvements
	Low	Methods do not exist or are draft and have not been vetted by stakeholders

TRADITIONAL GRANT FUNDING

Traditional grant funding does not meet the definition of pay for performance, and is provided here as a reference point to illustrate how the pay for performance strategies differ from this model of funding. Because this is not a pay for performance contract mechanism, the term funder is used instead of permittee, and project proponent is used instead of implementer.

DISTINGUISHING CHARACTERISTICS

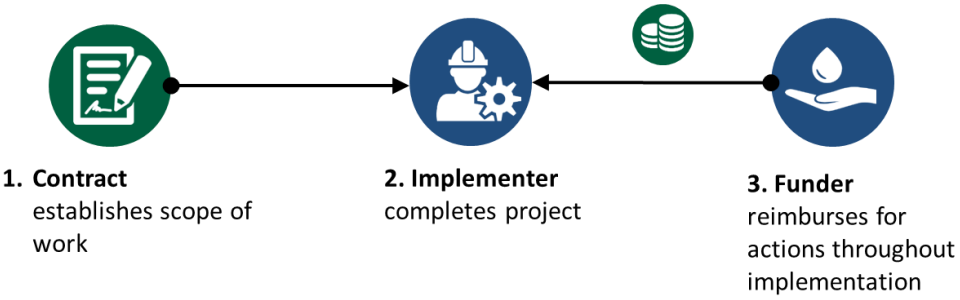
Pays for actions rather than pollutant load reductions

All risk is held by municipal permittee

Traditional grant funding entails a funder that pays a project proponent for actions based on a predefined scope of work. The payment schedule is typically linked to direct cost reimbursement and may include markups for overhead costs and an acceptable profit. If profit is allowed, it is linked to the project cost, providing an incentive for the project proponent to increase costs in both the proposal phase and through change orders. Since the project proponent is paid for actions and payments are not linked to outcomes, the funder bears all project risk projects.

HOW IT WORKS

1. **Contract** between the funder and project proponent defines a scope of work. The scope of work establishes the tasks to be completed, the timeline for completing those tasks, and payment terms based on costs incurred.
2. **Project Proponent** implements the scope of work defined in the contract and the funder incrementally pays as costs are incurred throughout implementation.



WHEN IT WORKS

Traditional grant funding may be appropriate when the amount of funding is small and thus the cost of defining a method to measure pollutant load reductions would consume much of the available funds. Traditional grant funding may also be appropriate to test stormwater actions that have a high risk of not producing intended outcomes, but are innovative and employ potentially useful techniques. Therefore, funding this type of innovative, high risk project could act as a beta test and provide the evidence and experience needed for it to be applied with low risk by implementers involved in pay for performance contracts.

FACTORS	RANKING	RATIONALE
Total Expected Demand Over Time	Low	If funding amount and the components for pay for performance do not already exist, traditional grant funding may be appropriate because the marginal benefits to setup pay for performance components do not justify the costs.
Predictability of Demand	Low	May be appropriate if the funding is a one-time effort. Implementers are not likely to invest the upfront effort necessary to identify quality projects, evaluate project risk, and submit competitive proposals for a one-time pay for performance solicitation.
Implementer Access to Capital	N/A	Outside project finance capital is not necessary with this funding strategy.
Project Risk of Producing Outcomes	Low or High	Traditional Grant Funding is appropriate when there is high certainty that project will deliver intended results, thus there is little risk to the funder. Alternatively, this strategy may be appropriate for applied research projects that serve as an adaptive management experiment to test new methods with theoretical expectation of performance, but limited real world application.
Acceptable Rate of Return	Low or Medium	Profits are typically restricted to established procurement policies for time and materials or cost plus fixed fee contracts.
Quality of Quantified Unit of Pollutant Load reductions	N/A	Quantified units of pollutant load reductions are not needed. However, grant funded projects can provide a useful opportunity to test stormwater outcome units without worry that a draft unit will inappropriately influence payments in the context of a pay for performance mechanism.

PARTIAL PAY FOR PERFORMANCE

Partial pay for performance provides an initial payment to the implementer to cover some or all of the costs to implement the stormwater project, and a secondary payment once pollutant load reductions are verified. This strategy reduces the implementer's risk of investing in a project that does not produce intended results and losing invested capital. Additionally, the partial pay for performance contract can structure the secondary payment such that the implementer is motivated to deliver pollutant load reductions so that it can maximize payment. The secondary payment reduces the permittee's risk of funding an ineffective project, but the permittee still assumes a significant portion of risk of the financial loss if the project does not deliver intended results. The amount of risk sharing is determined by the portion of funding that is paid upfront versus the portion paid upon verification of pollutant load reductions.

DISTINGUISHING CHARACTERISTICS

Permittees provide partial funding for project implementation

Implementers receive a secondary payment depending on pollutant load reductions achieved

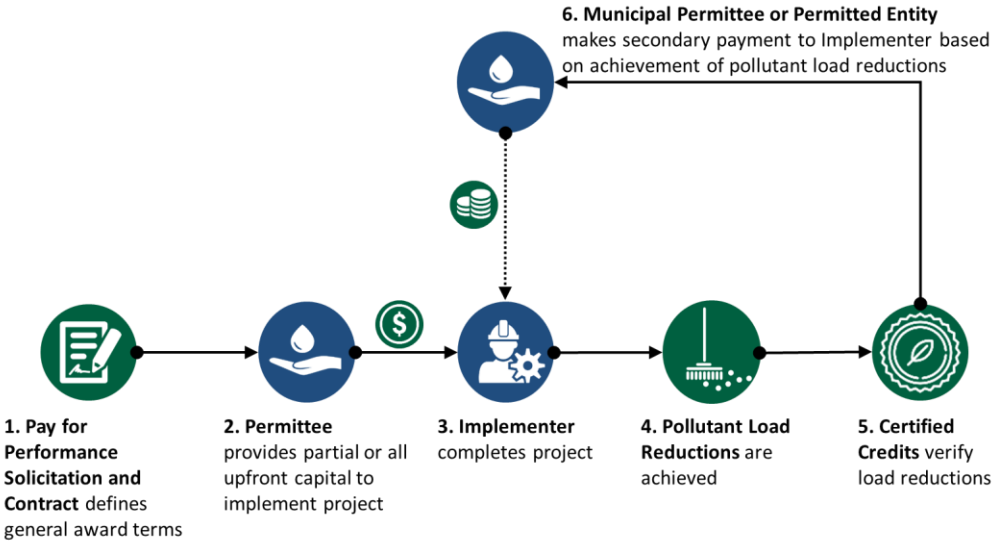
This partial pay for performance strategy requires the administrator to rigorously scrutinize projects before committing capital to finance project implementation. This strategy eliminates or reduces the need for the implementer to secure private capital. The upfront funding available to implementers can be less than the full cost of the project because implementers stand to profit from the secondary payment.

HOW IT WORKS

1. **Pay for Performance Contract Mechanism** includes a project solicitation and contract that defines credit requirements and terms of payment for both upfront primary payments and secondary payments upon verification of pollutant load reductions.
2. **Permittee** provides upfront capital to implementer to cover a portion or all of implementation costs.

3-5. **Implementer** implements project and achieves **Pollutant Load Reductions**, which are verified as **Certified Credits**.

6. **Permittee** pays the implementer depending on verified pollutant load reductions and as specified by the terms for secondary payments.



WHEN IT WORKS

The primary benefit of this strategy is that it creates the inception of credits in markets with unproven demand, thus supports industry involvement by creating a pool of credits that can be easily accessed to meet stormwater requirements. Partial pay for performance may be appropriate when implementers have limited access to capital and a broader contingent of stormwater professionals with experience accessing capital are not likely to engage because of uncertainty of the amount and predictability of demand.

FACTORS	RANKING	RATIONALE
Total Expected Demand Over Time	Low or High	This is an appropriate mechanism when the expected market for stormwater credits is large but unproven. However, it can also be used to create incentives for implementers when the scale of stormwater is low and sufficient municipal permittee staff time and expertise exists to engage in the details of project selection, design, and evaluation.
Predictability of Demand	Low or Medium	This strategy can be used for one-time investments or when predictability of demand from co-permittees is low, but has the potential to increase as co-permittees learn to use credits to meet compliance requirements and implementers learn to use credits as a revenue source.
Implementer Access to Capital	Low	Permittees provide upfront funds for stormwater projects; project finance capital is not needed.
Project Risk of Producing Outcomes	Low or High	If the project risk is low, the permittee risk is low. However, if project risk is high, this strategy may be appropriate for applied research projects that serve as an adaptive management experiment to test new methods with theoretical expectation of performance, but limited real world application. This strategy would provide the opportunity to structure the secondary payment as an option to continue implementation if the project produces desired outcomes.
Acceptable Rate of Return	Low or Medium	Profits are typically restricted to established procurement policies for time and materials or cost plus fixed fee contracts.
Quality of Quantified Unit of Pollutant Load reductions	Medium to High	A stormwater outcome unit is needed. The unit of pollutant load reductions must be vetted and trusted by stakeholders and regulatory agencies in order to serve as basis for regulatory compliance. However, if the secondary payment is modest the permittee and implementer may accept a unit that has not been proven. Partial pay for performance is an opportunity to test a pollutant load reduction unit because it focuses the implementer and permittee on using the unit, but limits the risk that a draft unit will inappropriately influence significant amounts of payment.

CASE STUDIES

Clean Water Partnership – Prince George's County and Corvias Solutions

The Clean Water Partnership is a 30-year community-based public-private partnership between Prince George's County, Maryland and Corvias Solutions. The County's Department of Environment invested $100,000,000 in an initial three-year retrofit. The County's role in the partnership is to provide oversight throughout all phases of the program, which reduces the need for the County to invest excess resources in

contracting, procurement and management of contractors[6]. As the administrator of the partnership, Corvias oversees contracting with and managing subcontractors responsible for designing and constructing green infrastructure projects. The partnership is designed to mitigate the risk of the County using public funds on stormwater projects that do not deliver intended pollutant load reductions. In addition to a pay for performance approach that links a portion of payments to the delivery of pollutant load reductions, the County links some portion of payment to Corvias's delivery of social benefits, including economic development and job creation, and community outreach and educational advancement[7].

How it Works

- Each year, Corvias develops an Annual plan that specifies each proposed project to be developed.
- For each approved project from the annual plan, Corvias prepares a budget book which includes a maximum "not to exceed" price for the project, an anticipated acceptance date and the number of impervious area credits to be delivered.
- Throughout the construction phase, Corvias is reimbursed for costs and paid for base and incentive fees.
- Upon completion of a green infrastructure project, a Completion Certifier inspects and "accepts" the project if it conformed to the planned design specifications.
- Once the project has been accepted, the Completion Certifier provides an Impervious Area Credit Certificate for the number of acres that have been accepted.
- For final payment, Corvias must submit the required Impervious Area Credit Certificate. If Corvias was not granted the certificate, it must correct the issue at its own expense and earn the certificate in order to receive final payment

VARIATIONS

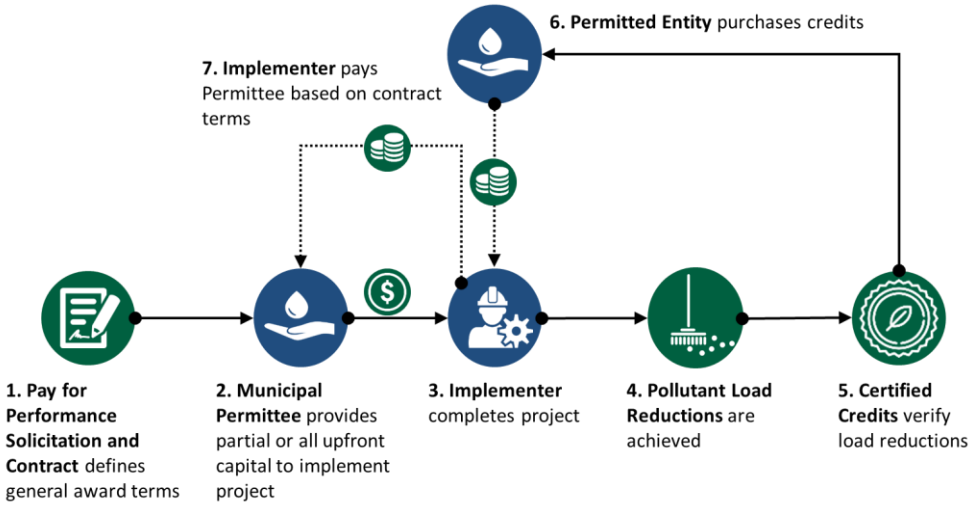
Secondary Payment upon Sale of Credits

The certified credits generated from the project can be sold to a co-permittee. In this variation of partial pay for performance, funds provided to the implementer are paid back to the municipal permittee upon sale of credits. If the credits are not sold, the public funds are not repaid but the pollutant load reductions are maintained for the contract duration.

6. **Co-permittee** purchases credits to satisfy regulatory compliance requirements. Funds from the credit transaction are transferred to the implementer as a secondary payment.
7. **Implementer** pays back the municipal permittee for the upfront capital provided in Step 2, based on agreed-upon payment terms, and keeps any remaining funds.

[6] Prince George's County. (2016). Prince George's County's Approach to Meeting Regulatory Stormwater Management Requirements.

[7] Prince George's County (2014). Master Program Agreement for the Urban Stormwater Retrofit Program Public-Private Partnership between Prince George's County and Corvias Prince George's County Stormwater Partners, LLC.



Long-Term Operations and Maintenance Contracts

A simple application of partial pay for performance reimburses the implementer for initial project implementation costs as the primary payment and provides a secondary payment to cover ongoing operations and maintenance costs, contingent upon verification that the project is maintaining a defined level of pollutant load reductions. This approach does little to limit the risk to permittees, but provides a moderately meaningful incentive for implementers to access the ongoing stream of revenue associated with the secondary payment.

FULL DELIVERY

Full delivery contracts tie payments to measurable environmental outcomes. This strategy requires private capital to finance project implementation. Permittees pay implementers an agreed-upon price per credit after pollutant load reductions are verified and all requirements are met for certified credits.

This approach minimizes the risk to permittees while providing the implementer with a credit purchase contract they can use to secure capital to finance project implementation. The financing for this project can be considered an environmental impact bond or green bond. The contract terms may specify the maximum number of credits the buyer is expected to purchase. If the project generates more credits, the implementer has the option to sell the excess credits to other willing permittees using the entrepreneurial banking strategy (described next). This approach secures large-scale stormwater and achieves significant efficiencies for permittees and implementers.

DISTINGUISHING CHARACTERISTICS

Private investors finance project implementation

Permittees pay an agreed price per credit upon verification

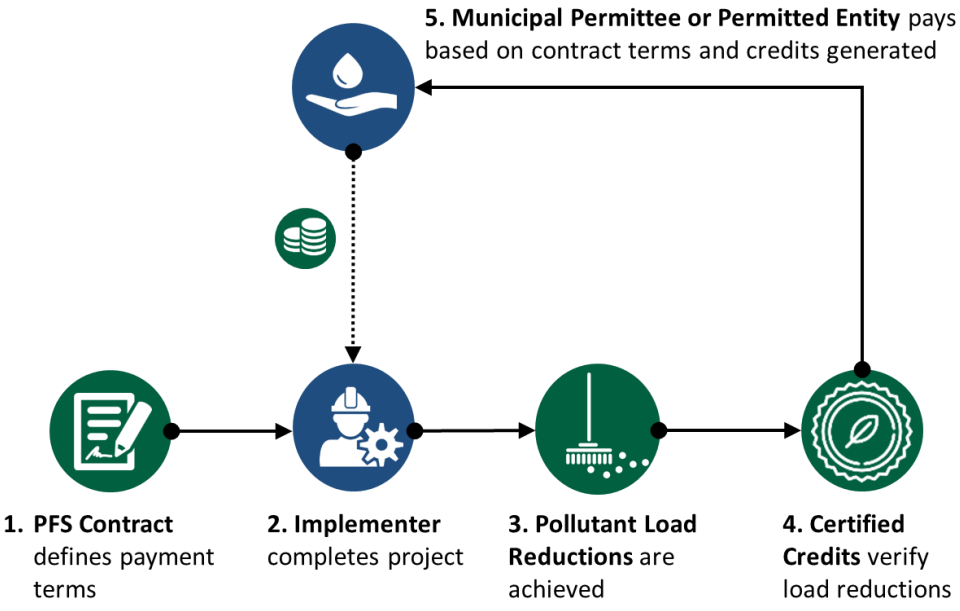
Variations can be used as the structure for an upfront in-lieu fee or revolving fund program

HOW IT WORKS

1. **Pay for Performance Contract Mechanism** includes a project solicitation and a credit purchase contract that defines credit requirements and price per credit to be paid upon verification of pollutant load reductions.

2-4. **Implementer** implements project and achieves **Pollutant load reductions**, which are verified as **Certified Credits**.

5. **Municipal Permittee or Permitted Entity** pays the implementer based on the terms defined in the pay for performance contract.



WHEN IT WORKS

In regions with a clearly defined quantified unit of pollutant load reductions, the full delivery strategy is simple and scalable. Implementers are attracted to compete for full delivery contracts when they have moderate to high certainty they can design projects to achieve pollutant load reductions, and they expect sufficient demand to warrant establishing the relationships and expertise to access private capital.

FACTORS	RANKING	RATIONALE
Total Expected Demand Over Time	High	Anticipated funding for stormwater must be sufficient to warrant implementers and investors incurring the costs of understanding the regional needs and building relationships.
Predictability of Demand	Medium to High	Demand for pollutant load reductions must be sufficiently predictable to warrant implementers and investors incurring the costs of understanding the regional needs and building relationships.
Implementer Access to Capital	Medium to High	Private capital is essential to fund upfront project implementation costs. If total funding and demand are sufficient, new stormwater professionals will be attracted to the region, therefore moving access to capital from low or medium to high.
Project Risk of Producing Outcomes	Medium to High	Project risk must be able to be managed in order to meet the due diligence requirements to access private capital.
Acceptable Rate of Return	Medium to High	Potential for an attractive margin of return is required to attract private, return seeking investors.
Quality of Quantified Unit of Pollutant Load reductions	Medium or High	The unit must be vetted and trusted by permittees and implementers in order to serve as basis for payment. If the buyer is seeking regulatory compliance, the unit must be accepted by regulators.

CASE STUDIES

DC Stormwater Retention Credit Trading Program

Under the DC Stormwater Retention Credit (SRC) Trading Program, the D.C. Department of Energy and Environment (DOEE) requires all major land-disturbing activities to achieve retention of the 1.2 inch storm volume, which represents a 90th-pecentile storm[8]. Major substantial improvement activities must retain the 0.8 inch volume. Previously, a development site was regulated if it included 5,000 square foot or more of land disturbing activity, but was required to meet water quality treatment rather than retention obligations.

DOEE recognized that offsite compliance could provide multiple benefits. For example, some regulated sites could face constraints onsite to meet retention requirements[9]. Large development sites are required to retain at least 50% of the volume of the retention standard onsite and the remainder must be achieved offsite. Options for achieving offsite retention include paying an in-lieu fee or purchasing SRCs from other properties. Since SRCs are generated by voluntarily installing green infrastructure and can be sold in an open market, they help finance green infrastructure and encourage retention in areas that need it the most.

[8] Wye, Brian. Water Environment Federation. (2012). Making Stormwater Retrofits Pay.

[9] “”

How it Works

- A private entity interested in implementing a stormwater retention project on their property, referred to as an SRC generator, designs the green infrastructure in accordance with the Stormwater Management Guidebook by creating a Stormwater Management Plan
- DOEE reviews and approves of proposed Stormwater Management Plan
- SRC generator installs the green infrastructure and applies for SRCs
- DOEE does a post-construction inspection and if the project passes, the SRC generator is granted SRCs for up to three years
- SRC generator sells SRCs to parties that need them for offsite retention
- SRC generators can reapply for SRCs at the end of the term. If the project is verified as being maintained, the SRC generator is granted the SRCs for another three years

Anne Arundel County

Anne Arundel County, Maryland recently released a request for proposal (RFP) for full delivery of water quality benefits. In response to the RFP, applicants must specify the costs and state the financing plan for implementing proposed projects. Furthermore, applicants must include in the cost proposal their proposed price per impervious acre treated, and price per pound of nitrogen, phosphorus and sediment reduced. The reason project proponents must do this is the County will not make payment to project implementers until the projects have been completed and delivered to the County. Thus the financing plan shows that the applicant is able to handle the project implementation costs prior to receiving payment from the County. This payment structure creates the need for private capital to fund project implementation, which further creates the potential for investors to partner with project implementers.

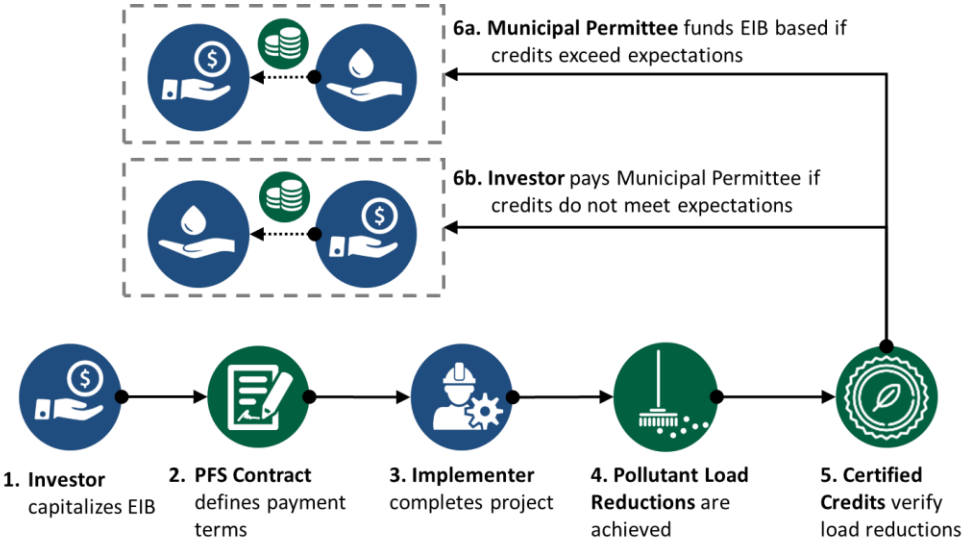
Once the applicant is awarded the contract, it goes through a three-phase inspection and acceptance process. Phase I, Initial Acceptance, occurs at the time of contract award requires that the County approve the proposed solution. Phase I serves to verify that the applicant's proposed plan has been accepted by the County and that the project will be accepted upon completion if implemented in accordance with state and local ordinance. Phase II, Substantial Completion Acceptance, is the phase in which the County inspects projects to determine they have been implemented in accordance with state and local regulations, and serves as the project completion acceptance. Lastly, Phase III, Maintenance Inspections, occurs once projects are completed. Each project is inspected during Phase III annually to ensure that it is fulfilling its original intended function.

Payment to project implementers will be made in two phases. First, the County will make an initial payment upon completion of Phase II, assuming that the County verifies that the results of the project align with what was proposed in the proposal. At this point, the maintenance costs for a two-year maintenance period are withheld. The County will disburse the remainder of the contract funds to the project implementer at the end of a two-year term of Phase III, assuming the results and site of the stormwater quality improvement projects have been maintained.

The purpose of projects awarded under this RFP is to satisfy the County's MS4 permit requirements, as well as the requirements of the Chesapeake Bay TMDL and subsequent Maryland Phase II Watershed Improvement Plan. Projects implemented under this RFP must be eligible for water quality credits consistent with the Maryland Department of Environment standards. All mitigation, natural service and water quality improvement credits must be assigned to the County.

VARIATION: ENVIRONMENTAL IMPACT BOND (EIB)

An environmental impact bond can leverage private capital to mitigate the Municipal Permittee's project risk while providing opportunity for return on investment. This variation of the full delivery strategy is attractive to the Municipal Permittee because it allows it to share risk with investors. Further, an EIB is attractive to Investors because it creates the opportunity to expand its investment portfolio to include environmental benefits.



Case Study: DC Water Environmental Impact Bond

In May 2015, DC Water entered an agreement with the Department of Justice and the Environmental Protection Agency that permitted DC Water to implement large-scale green infrastructure installations. The agreement eliminated plans for a gray infrastructure project that would install a tunnel to address combined sewer overflows in Rock Creek and modified plans for a similar tunnel for the Potomac River. Instead, DC Water is required under the agreement to implement eight green infrastructure installments for 1.2 inch storms on 365 impervious acres in the Rock Creek sewershed and 133 impervious acres in the Potomac River sewershed[10].

DC Water designed an environmental impact bond to finance the first two green infrastructure projects. The environmental impact bond aligns and shares risk between DC Water and impact investors to mitigate the uncertainty around implementing green infrastructure at this large of scale in an urban environment. DC Water will pay for construction costs of the green infrastructure projects and the environmental impact bond will be used to mitigate risks through a three-tiered performance-driven approach[11]. If the highest performance tier is achieved, which constitutes a runoff reduction of greater than 41.3%, DC Water will make an Outcome Payment to investors in the amount of $3.3 million. If the green infrastructure project results in the lowest performance tier, which constitutes less than 18.6% runoff reduction, investors will make a $3.3 million payment to DC Water. Lastly, if the middle performance tier is achieved, which constitutes 18.6% to 41.3% runoff reduction, no contingency payment is made[12].

[10] DC Water. (2016). DC Water's Green Infrastructure Program: Environmental Impact Bond Financing Overview, FY 2016

[11] Goldman Sachs, DC Water, Calvert Foundation. (2016). Fact Sheet: DC Water Environmental Impact Bond.

[12] Goldman Sachs, DC Water, Calvert Foundation. (2016). Fact Sheet: DC Water Environmental Impact Bond.

How it Works

- Impact investors capitalize the environmental impact bond
- Pre-construction monitoring is performed to determine site conditions
- Results of pre-construction monitoring are used to determine runoff reduction targets
- DC Water pays for the construction costs of the green infrastructure projects
- Post-construction monitoring is performed to determine actual runoff reduction from the green infrastructure projects
- Contingency payments are made by DC Water to the EIB if the top performance tier is achieved, or by investors to DC water if the project results in the bottom performance tier.

ENTREPRENEURIAL BANKING

Entrepreneurial banking is a pure form of pay for performance in which private sector organizations fund stormwater projects and co-permittees purchase pollutant load reductions after they have been certified as credits. A regulator or administrator is needed to review, certify and oversee monitoring of stormwater projects. However, all financial agreements are private transactions made between the implementer and investors for capital, and between implementers and co-permittees for purchase. This pay for performance strategy is used in mitigation banking, in which entities purchase sufficient credits to satisfy permit requirements from a implementer (in this case a mitigation banker) who has developed a stormwater project that produced pollutant load reductions and certified credits in advance of the sale[13].

DISTINGUISHING CHARACTERISTICS

Private entities pay for project implementation

Permittees pay private funders and implementers

Regulators administer programs, but do not fund project implementation

Co-permittees are not responsible for project implementation

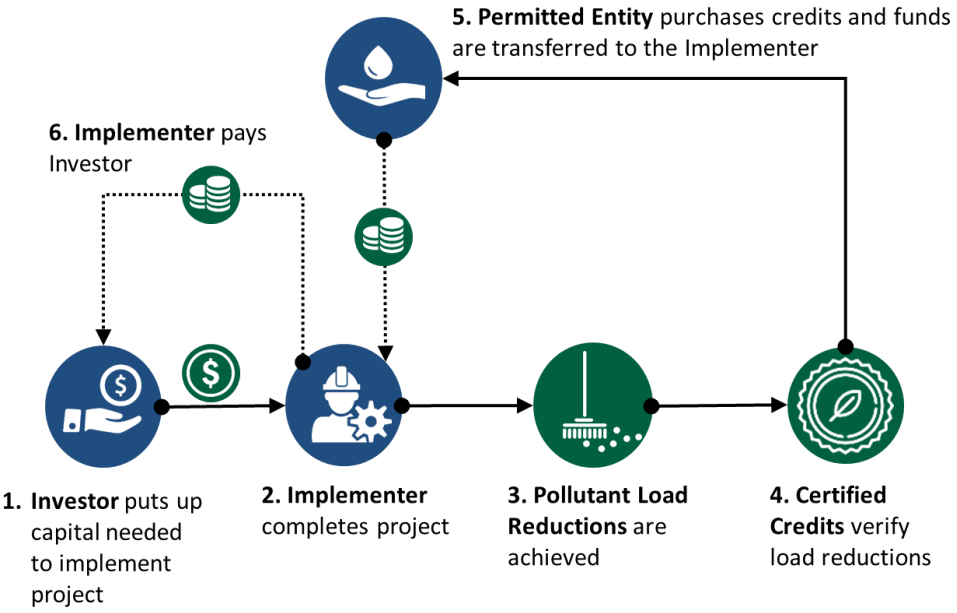
Provides opportunities for financial return on investment

Entrepreneurial banking maximizes buyer efficiency and can be scaled to meet demand for large-scale stormwater management.

HOW IT WORKS

1. **Investors** provide upfront capital needed to implement the project.
2-4. **Implementer** implements project and achieves **Pollutant load reductions**, which are verified as **Certified Credits**.
5. **Co-permittee** purchases credits to meet permit requirements. The funds from the credit purchase are transferred to the **Implementer.**
6. **Implementer** pays investors based on terms defined between the two parties.

[13] Environmental Protection Agency. (No Date). Mitigation Banking Factsheet. Available at: https://www.epa.gov/cwa-404/mitigation-banking-factsheet.



WHEN IT WORKS

Entrepreneurial banking is a proven strategy in contexts where significant and predictable demand for stormwater management exists, and regulatory agencies agree to use quantified pollutant load reduction units and certified credits as a mechanism to meet permit requirements. Permittees can also purchase credits using the entrepreneurial banking strategy.

FACTORS	RANKING	RATIONALE
Total Expected Demand Over Time	High	Implementers and investors require significant, and typically demonstrated, demand for stormwater credits before they risk developing credits without a contract from a co-permittee.
Predictability of Demand	Medium to High	Ongoing demand is required for multiple implementers to become interested in a market, which creates price competition and contains the price of credits.
Implementer Access to Capital	High	Implementers must have access to private capital in order to secure the financing needed without the security of a signed contract from a co-permittee.
Project Risk of Producing Outcomes	Low to Medium	Project risk must be relatively low in order to meet the due diligence requirements of private investors. Implementers may create banks with moderate risk if the risk-return profile is attractive and the banker can mitigate risks through phased projects or alternative revenue strategies.
Acceptable Rate of Return	High	Margin of return is required to attract private, return-seeking investors.
Quality of Quantified Unit of Pollutant Load reductions	High	The pollutant load reduction unit must be vetted and trusted by stakeholders and regulatory agencies in order to serve as basis for regulatory compliance.