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Public Private Partnerships
Prince George's County Urban Stormwater Retrofit Model
"Innovation in Low Cost Technology, Economic Development and Financing"

Presenter

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Public Private Partnership Urban Retrofit Program

An Affordable Alternative
To Finance, Construct and Maintain
Water Quality Infrastructure

I. Introduction

Prince George's County, Maryland is using an innovative 30 year-long Public Private Partnership (P3) business model to finance, design, build, operate and maintain (FDBOM) a massive urban stormwater retrofit program to meet EPA's Chesapeake Bay TMDL requirements. This is not a typical design build contract. This P3 program has been purposefully designed to promote innovation and create a true partnership between the County and the private sector to: share financial and legal risks; drive costs down through technological innovations; obtain greater efficiencies through market forces; and stimulate economic development by creating new sustainable business opportunities, jobs and building community wealth. This is not a privatization program but, rather a long term teaming agreement with clear standards to ensure the interests of the County and the private sector are very closely aligned. The magnitude and longevity of the program provides an unprecedented opportunity for long term economic development gains and job creation. This paper provides an overview of the P3 program's impetus, goals, benefits and organization.

II. Driver/Need for a New Business Model

The County is under a Phase I MS4 permit and required to operate a comprehensive urban stormwater water quality control program to prevent water quality degradation from new development and to take remedial retrofit and prevention measures to restore locally impaired waters. Local water quality restoration is accomplished by meeting a Total Maximum Daily Load (TMDL) pollutant load allocation standard. Generally, this is accomplished through pollution prevention programs and construction of retrofit water quality treatment mechanisms to address existing uncontrolled development.

However, since the County is located in the Chesapeake Bay watershed, EPA Region 3 has established an unprecedented additional TMDL requirement for local governments to restore the Bay by 2025, see the link: http://www.epa.gov/chesapeakebaytmdl/ . EPA and the Bay states established waste load allocations and milestones for the MS4 local jurisdictions for sediment, phosphorus and nitrogen. In Maryland, ten jurisdictions including Prince George's County were assigned waste load reduction goals and required to develop a Watershed Implementation Plan (WIP) to show they intended to meet the Bay TMDL goals, see the link:

http://www.princegeorgescountymd.gov/sites/Sustainable/Services/WaterQuality/WIP/Pages/default.aspx .

Prince George's County's WIP requires retrofit of approximately 15,000 acres of uncontrolled impervious surfaces by 2025 at an estimate cost of $ 1.2 billion. A critical evaluation of the County's capabilities indicated the County could not meet the milestones or afford the program as described in the WIP. In general, the County's highly structured capital improvement program implementation process makes mass production, speedy construction or optimizing cost efficiencies impossible. Every step of the conventional capital improvement process (planning, design, permitting, construction, operations and maintenance) is lengthy, adds complexities and costs and more importantly prohibits innovation to gain efficiencies of any kind.

In order to meet the compressed time frame and drive costs down a more efficient business model was needed. A new model was required driven by innovation to accelerate the implementation, increase affordability though market forces, advanced highly efficient lower cost technologies and reduce long term operation and maintenance costs. The P3 model seemed to be the best fit as it utilizes the private sector's ability to innovative and use market forces to more rapidly and affordably build and operate needed public infrastructure. Although a P3 model has never been used to implement a comprehensive stormwater retrofit program, there was enough experience with other infrastructure projects such as highways, solid waste facilities, and water / wastewater treatment plants that a model could be developed for stormwater. It seemed reasonable the P3 business model combined with more streamlined permitting could reasonably meet the time constraints and drive costs down significantly. Early indications were a P3 program could drive down cost by as much as 40% thus saving the County over 400 million dollars over the life of the retrofit program.

III. EPA's National Interest in a New Retrofit Business Model

Nationally local governments are increasingly investing in sustainable Low Impact Development (LID)/Green infrastructure (GI) practices to retrofit urban areas for improved stormwater management to restore impaired waters and meet CSO requirements. This use of LID/GI for urban stormwater retrofits is expected to significantly increase as the multiple economic, environmental and social benefits of LID/GI over traditional gray infrastructure practices become more widely known, see the link: http://water.epa.gov/infrastructure/greeninfrastructure/index.cfm. Despite these benefits, the scale of urban retrofit required to meet desired water resources goals will require major capital investments; long-term funding commitments for asset management; and, create additional administrative burdens for local governments. Local governments need affordable solutions as they are generally ill-equipped to meet the long term financial requirements to build and maintain an extensive LID/GI

infrastructure. EPA believes the P3 business model will significantly improve the economic feasibility, and practicality of retrofit programs to better leverage public sector resources by encouraging private investment and shared risk to implement sustainable LID/GI practices, see the link: http://water.epa.gov/grants_funding/cwf/privatization.cfm

IV. Public Private Partnerships in General

There are a wide variety of P3 models. Please see the link for the National Council of Public Private Partnerships for more information: http://ncppp.org/howpart/ppptypes.shtml. In exploring how to adapt a P3 model to the Bay TMDL retrofit requirements, the County evaluated a number of models. First, the County has used a long term P3 business models for landfill gas-to-electricity facilities at our two landfills. The County contracted with a private entity to finance, design, build, operate and maintain the infrastructure as well as market both gas and electricity to purchasers. So our own experience with P3 contracts has been very positive and has worked well for over 20 years.

Another important model evaluated was the United States Department of Defense's Military Housing Privatization Imitative (MHPI). This P3 program began in 1996 to deal with all of the DOD's housing needs. The DOD's P3 performance based MHIP experience clearly demonstrates that a well-planned program provides: significant cost savings and greater affordability; enhanced capacity to leverage public funds and expand services and benefits; a significant shift of program responsibilities and risks to the private sector; and, expedited delivery of quality services and projects, see the DOD's website with more details on the success of their P3 program: (http://www.acq.osd.mil/housing/mhpi.htm).

V. Best Fit P3 Model for Urban Retrofit

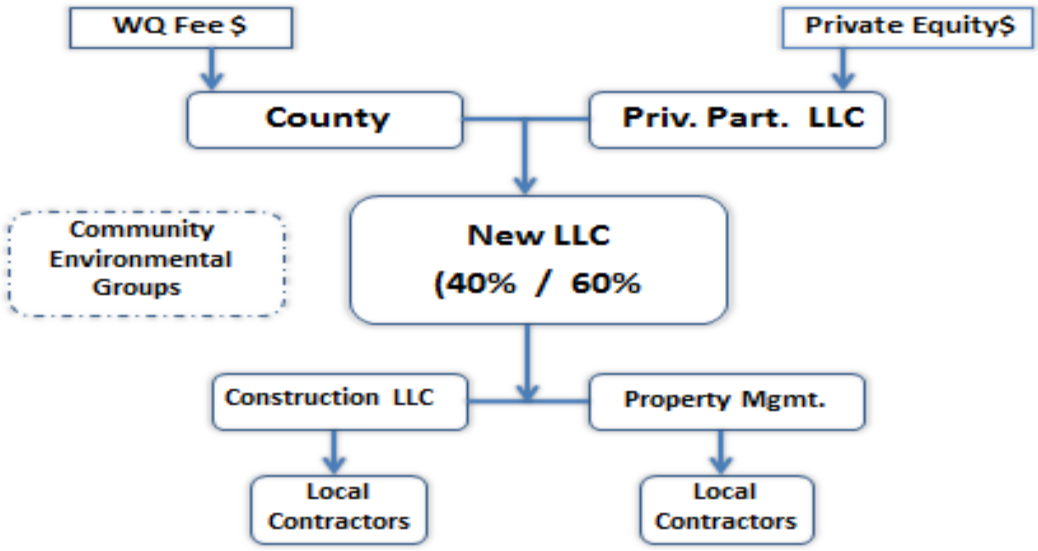
A variation of the DOD's MHPI model looks to be well suited to meet the County's needs. In this model the Private Partner would act as the general contractor and program manager in partnership with the County through a limited liability company (LLC) framework. Program transparency is maintained through joint program administration and decision making expressed in the LLC operations. The Private Partner would provide all or part of the initial capital costs and the County would pay the Private Partner a monthly fee that would include the debt service plus costs for operation and maintenance from the County's water quality retrofit fund. When necessary the Private Partner would provide all upfront costs with an affordable extended payback period.

Under this contract the Private Partner gets a base fee plus an incentive fee. The base fee is 50% of a project cost and is paid on a monthly basis. The incentive fee is 50% of the project cost and is only paid if all performance standards are met. The performance

standards include meeting cost saving targets, delivering project on time, meeting economic development goals (creating local businesses) and optimizing local job creation. The Private Partner doesn't get paid and can lose the incentive payment if the performance goals are not met. This performance fee based approach ensures the Private Partner's first priority is to meet the County's program / performance goals and not optimization of profits.

The basic P3 organization structure is shown below. This general model is quite flexible but required work to adapt and customize it to the County's unique procurement process, funding availability, permitting process, compliance issues and local water protection / sustainability needs. The use of a limited liability corporation or LLC ensures a close partnership with the Private Partner and is important to transparency of all operations. There is also the possibility of greater community input into the planning and implementation of the retrofit program as the public can be part of the LLC board.

P3 Organizational Structure



VI. P3 Benefits and Advantages

The P3 business model provides a wide range of benefits to the County primarily through the transfer of some risk and most of the responsibility to the Private Partner to implement all aspects of the retrofit program. The benefits include:

1. **Better program oversight.** The LLC P3 model permits the County to be a partner with direct involvement in the oversight of the LLC operations and management. Further, the County's LLC representatives could include municipal

officials, residents and environmental groups to allow public input by impacted communities.

2. **Off the books debt**. The private financing and debt is issued to the LLC. This allows the County to increase its overall debt load and structure the debate in a more affordable manner. For Local governments without bonding authority this will allowing borrowing and use of private bonds.
3. **Less staff required**. No need for the County to hire new staff for program administration, enforcement, project management, inspection or maintenance. All these functions are transferred to the Private Partner.
4. **More affordable**. The Private Partner pays the initial startup costs and County payments do not begin until projects are in the ground and approved. The cost to the County will be very low initially and increase over time at a rate that can be controlled.
5. **Drive down costs down through market forces.** There are many options available to the Private Partner to increase affordability beyond competitively bidding contracts, these include: leverage the scale and long-term timeframe of the contract to negotiate lower costs for materials and services; requiring innovation to improve technology; development of more efficient construction practices, maintenance and program administration practices; greater adaptability to lower costs and improve efficiencies based on lessons learned; and, time savings due to reduced administrative burdens, overlapping design and construction scheduling, and reduced need for redesign or reconstruction.
6. **Creation of new local jobs and businesses.** This P3 retrofit program is unique in the scale of work and its long term nature thus providing sustainable incentives to develop new local businesses. Once a contractor is part of the P3 program and performs well, they are guaranteed predictable work for many years. This long term sustainable cash flow provides and incentive and resources for long term financing and business growth not currently achievable through the County's conventional piecemeal bidding of contracts.
7. **Designed for adaptive management and flexibility.** The contract will evolve over time to improve efficiencies and to incorporate additional services as needed to adjust to lessoned learned, financial constraints and changing regulations. The LLC partners can modify the retrofit program requirements on the fly as needed without renegotiating fees or services as long the changes meet the performance goals and the LLC board's approval. Flexibility is needed by the private sector to take advantage of all the possibilities to gain cost and performance efficiencies; optimize leverage to obtain lower cost financing, products and services; expedite permit reviews; use of performance standards; encourage innovation to reduce the cost of technology, design, construction and maintenance.

8. **More streamlined program administration**. Using typical local government contracting and procurement process to manage this program would have been nearly impossible as there would have been multiple contracts with many firms. Under this P3 model the County only contracts with the Private Partner on a one time basis. This drastically reduces the time spent on procurement, project management and contractual entanglements between multiple service providers.
9. **Private contracting practices.** The private sector has more ability to leverage business relationships, allowing flexibility to better adapt to change in order to achieve cost savings, efficiencies and improve performance. Private parties adjust to unforeseen circumstances through more informal, less costly or time-consuming processes. In contrast, traditional public sector contracting practices make it difficult to achieve lower costs or deliver services in a timely manner. Public contracting is often characterized by very rigid formalized procedures, standards and time consuming red tape requiring frequent costly formal renegotiations and change orders.
10. **Many options to gain e****fficiencies to lower costs.** The scale and long term of the program allows the Private Partner to reduce costs through standardization of design, construction and maintenance practices. This P3 model encourages:
    a. Sustainable maintenance programs to become more cost efficient because economies of scale can be applied. For example, the per unit maintenance cost will fall as the number of units increase. The private sector can better leverage procurement of supplies, services and use of equipment. Efficiencies can also be achieved by standardizing practices and optimizing scheduling of routine maintenance. As the cost per unit for maintenance goes down it then becomes more cost effective to begin a proactive rather than a reactive maintenance program. The long term nature of the P3 program also provides market incentives and greater competition to drive down maintenance.
    b. Economies of scale also allow the P3 Private Partner to leverage both the project scale and time frame to achieve cost savings in financing, professional services and service providers. In large scale programs, technology cost savings can be achieved where products can be standardized, mass-produced and materials discounted.
    c. Competitive bidding for P3 contracts will be keen. The long term predictability and large scale of the urban retrofit program represents a unique business opportunity for the private sector for guaranteed long term revenues. A long term guaranteed revenue stream is highly desirable. However, the P3 contractor selection will not be based solely on lowest bidder but, also qualifications and experience to ensure performance standards can be met.

VI. Brief Comparison of Traditional and P3 Retrofit Programs Benefits

The table below is a comparison between traditional capital improvement programs and a P3 approach. In general, much of the County's responsibilities can be transferred to the Private Partner thus eliminating the need to hire and carry additional staff. The Private Partner will handle all procurement services.

Brief Comparison of Traditional County Retrofit Program with a P3 Program				
Item	**Traditional County**	**Trad. Description**	**P3 Approach**	**P3 Description**
Staffing				
Project Management	15	Each PM oversee several projects	1	Only one PM need to track P3 progress
Inspectors	10	Each to oversee several projects	3	P3 will be required to inspect and certify
Field Engineers	0	None proposed	2	Needed to approve field modifications
Professional Service Contracts	13	Consultants need to design projects	3	P3 provides consultants
Funding Sources	Bond sales / tax	Could reduce fees for bond sale	Private financing / tax	Perhaps better rates and terms
Contract term				
Retrofit Cost / Acre	$100k	Piecemeal costly designs	$70 k	Optimized BMP to reduce costs
Project Procurement Time	12 - 18 months	Typical bid process time	2 to 4 weeks	Up to P3 general contactor
Planning Time	Months	Several months	days - weeks	Site visit for BMP placement
Maintenance	County maintains	Additional burden to County	P3 maintains	P3 takes all responsibility
Retrofit Practices	Use MD standards	Costly and not optimize for retrofit	Optimized flexible standards	Only a few techniques will be used

VIII. P3 Program Unique Features

As this is the first comprehensive urban stormwater P3 program, there are many unique features of the program. Some of the these features are below.

Pilot Program - The County is implementing this P3 program as a pilot program in collaboration with EPA and the State to demonstrate the affordability and efficacy of using a privately financed public private partnership contract to implement a comprehensive urban retrofit program. It is EPA's goal to use this pilot program to demonstrate a viable approach to accelerating the restoration of the Bay by reducing urban retrofit costs through innovation in technology, alternative financing and use of private market forces.

Innovation and Standardization - The County and Private Partner will jointly develop and approve 6 or 7 basic generic retrofit practices that will allow easy integration into existing urban roadways with low cost long-term maintenance burdens. The Private Partner will be given a general permit to implement these practices to allow for minimal approvals, planning and design work to help drive cost down and expedite implementation. The goal of standardizing and simplifying the types of practices is to better achieve optimum performance, reliability and lower costs. Standardization of materials, design, construction, operation and maintenance will allow market forces to drive down cost through economies of scale and leveraging long term contracts. The

basic retrofit practice for roadways will play off of a basic / standard system theme for “urban bioretention design” with a high flow media /vegetation filter and volume underground storage for retention and reuse/ infiltration or detention, see Figure 1. This basic design is infinitely variable to allow maximum flexible to integrate a practice into an urban setting to achieve performance goals. The final practice configuration (size of filter surface are and volume storage) will vary by site constraints such as: available surface area, utility locations, proximity to structures, adequate drainage area, elevations/depth, etc. One example is the use of street trees. This practice will require greater soil depth to physically support the tree and allow for future root growth. The street tree configuration where site constraints are tight, will take the shape of a tree box system with limited storage.

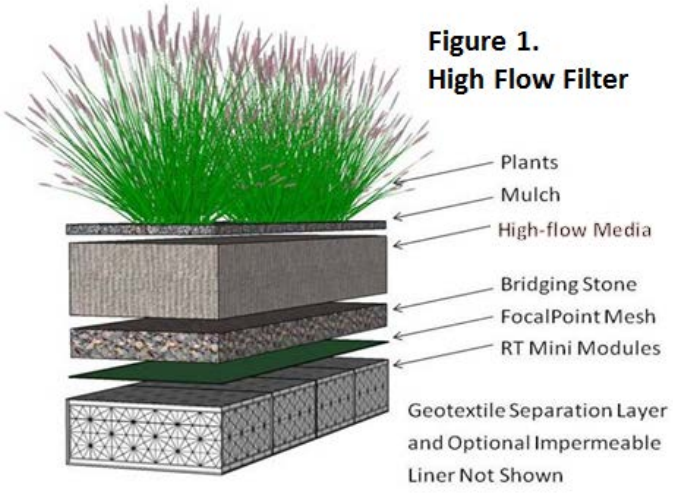


Figure 1.
High Flow Filter

Where there are fewer site constraints and more space, an entire block may be retrofitted converting the green space between the curb and side walk to a filter storage area. The idea is to use a basic treatment approach of high flow filters in combination with underground storage and vary as necessary. The final standards and specifications will be worked out jointly between the County and Private Partner.

Provide other sustainability services – It will be possible to collaborate with a Private Partner to provide other services to County residents while working on retrofit projects in a community. For example, the County could develop a variety of “Advanced Sustainability Franchises” as a general environmental and economic benefit for County residents that would provide incentives to conserve energy, save water, use solar and/or wind power and recycle or to retrofit private properties for stormwater management. The County could provide the Private Partner with exclusive marketing advantages to make available to residents’ energy/water audits and to offer performance contacts to residents to perform the improvements. The exclusive marketing advantages may include only allowing the authorized agent(s) of the Private Partner to offer County rebates or tax credits. The County could charge a small franchise fee for every property owner who enters into a contract with Private Partner’s agents. This franchise fee would only be enough to pay for the County’s administration cost to provide rebates. The Private Partner would work with service providers to find and offer the most efficient and cost effective sustainability services.

Other sustainability programs may also be developed to incentivize and encourage stormwater retrofits on private property to install rain gardens, rain barrels, down spot bioretention systems, rain water harvesting, solar power systems, tree planting and special recycling programs. We would expect the Private Partner to work with the private sectors to find and offer the most effective and cost effective sustainability services.

IX. Lessons Learned

Developing any P3 program to ensure success is inherently complex and challenging and may take several months to negotiate. Some of the most challenging issues are selecting the right partner, financing, governance, performance incentives and fees, legal issues and ensuring flexibility and innovation. These are described in more detail below.

Select the right partners. Selecting the right partner is the most important step. You will need to find a true partner to help solve problems, act in your interest, work within your financial constraints and accept as much legal and financial risk as possible. This is not easy. You will need to: a) do your homework to have a good foundation in P3 fundamentals to assess the general capabilities of a potential partner; b) use a Request for Qualifications process to find the best qualified firms and best ideas to compare approaches; c) select a firm with a known track record and references; and, d) look for optimum flexibility and use of adaptive management measures needed to adjust to changing politics, regulations and economic conditions.

Get experienced technical and legal counsel. If you're entering into your first P3 agreement you'll need good technical and legal advice. Establishing sound performance and technical requirements for governance, planning, design, permitting, construction, maintenance, inspection and approval processes is difficult and complex. You'll need a consulting firm with both engineering and P3 work experience. The same is true with the legal aspects of the P3 contract and negotiations. You must be sure that you have appropriate authority to enter into a P3 agreement, obtain private financing, develop appropriate governance and the agreement is legally sufficient to provide the adequate contract administration tools.

Understand and incentivize objectives. Much time is spent in articulating program objectives and then memorializing those objectives in the master program agreement in a fashion that ensures the Pprivate Ppartner remains incentivized through the length of the contract. The success of the program will depend on how successful the negotiations define the objectives and ensure long-term performance.

Financing - Private financing is generally more expensive than public financing through municipal bonds. However, there are advantages to private financing that allow the

Private Partner to better take advantage of market conditions and achieve greater savings through market forces. This involves fully funding reserve funds to ensure that subcontractors are paid timely to avoid carrying charges and inflated prices due to late payments. Further, when you look at the total cost of a privately financed P3 program, the cost savings generated by the private sector can completely offset any increase in private financing costs. Another advantage of using and LLC special entity is the debt is assigned to the LLC and not the public entity thus increasing the amount of debt available to the public entity. For local governments without bonding authority, a P3 program with private financing may be the most viable option to raise capital to implement needed public infrastructure.