Clean Water Cash Flows

Why P3 structures can help drive city-scale GI

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Natural Infrastructure Financing Laboratory (NatLab)

NatLab: NRDC + The Nature Conservancy + EKO Asset Management

- NatLab is dedicated to advancing innovative financing mechanisms to encourage private investment in Green Infrastructure (GI).
- NatLab is working to develop multi-stakeholder partnerships between public and private entities to advance municipal GI development plans.

NatLab's Work-to-Date

- **"Financing Stormwater Retrofits in Philadelphia and Beyond" (Jan. 2012)**

Identified ~$370M in private GI investment opportunities in Philadelphia created by city's parcel-based stormwater fee and credit system, wherein non-residential owners receive discount on monthly stormwater bills if they manage first inch of stormwater on-site. (Funded by William Penn Foundation)

- **"Clean Water Cash Flows" (Feb. 2013)**

Additional detail on private GI investment returns and additional policies and programs, including PPPs, which facilitate private sector investment in GI across land types.

(Funded by Rockefeller Foundation)

Private Capital is Needed for Green Infrastructure

- Federal "Clean Water Needs Survey" identified **$100 billion of infrastructure investment** needed over the next twenty years to address stormwater and sewage overflows in order to reach CWA compliance

- **Decline in traditional funding for municipal stormwater improvements**
    - **Federal assistance has not kept pace with municipal needs.**

- Highly likely that in many cities, retrofits in **public right-of-way not cheapest available greened acres.**

- ***How to best to effectively incentivize private capital and private parcel owners to address urban water quality needs?***

Economics of GI Retrofits on Private Parcels

Philadelphia Analysis: Fee and Credit

- **Avoiding fees is key incentive for an owner to retrofit**
- **For a commercial property owner utilizing own capital, payback needs to be achieved within at most four years**
  - ✓ Project must cost less than approximately **$0.40/ft²**
- **For a third-party investor, projects should pay back within ten years**
  - ✓ Project must cost less than approximately **$0.82/ft²**

Practice type	Retrofit cost /ft² 25-75% quartiles
Downspout disconnections	$0.33-0.38
Vegetated Swales	$0.64- 2.13
Infiltration Trenches	$1.38-1.58
Rainwater Harvest/Reuse	$1.28- 5.33
Rain gardens	$3.88-4.43
Porous Pavement	$4.88-5.58
Green Roof	$30.70-63.97

- **Stormwater fee and credit programs do not generate sufficient savings to support energy efficiency type financing models for GI**

Policy Measures Can Help Prime GI Investment Market

	Off-site Mitigation	Aggregation	$0.50/ft² Subsidy	$1.00/ft² Subsidy	$3.00/ft² Subsidy	$3.50/ft² Subsidy
Downspout Disconnection	■	■	■	■	■	■
Swales		■	■	■	■	■
Infiltration Trenches			■	■	■	■
Rainwater Harvest & Reuse			■	■	■	■
Rain Gardens					■	■
Reducing Impervious (Hard) Surfaces					■	■
Flow-Through Planters					■	■
Porous Pavements						
Green Roofs						
New Potential Greened Acres	658	215	2,532	2,252	1,015	344
Total Potential Greened Acres	658	873	3,405	5,656	6,671	7,015
Progress to 9,564 Greened Acres Goal	7%	9%	36%	59%	70%	73%

- Philadelphia will need to install approximately 10,000 “greened acres” over the next 25 years to comply with CWA, at an estimated cost of $250,000/acre, or $5.74/ft^2.
- Philadelphia can achieve its greened acre goal more cheaply through a combination of policy measures to prime the private GI market than through greening in the public right-of-way alone.

Benefits of Pay-for-Performance P3s

- **Ability to bundle most cost-effective GI investment opportunities city-wide, across full range of land types, and facilitates project aggregation on city-scale**
- **Benefits of Pay for Performance Contract:**
  - Accelerates project implementation (aggregators can bundle projects instead of reliance on individual owners' decisions to retrofit)
  - Access new sources of investment capital
  - Preserve municipal balance sheet capacity
  - Incentivize optimal performance by shifting performance risk to private partners where payments are tied directly to performance.
  - Lower the costs of construction and maintenance

Types of PPP Models

- **PPP Models can take a number of different forms*:**
  - DB: Design Build
  - OM: Operations and Maintenance
  - DPF: Design, Build, Finance
  - DBOM: Design-Build-Operate-Maintain
  - DBOFM: Design-Build-Operate-Finance-Maintain

- **Structures most relevant/advantageous for community stormwater GI programs bundle build, operations and maintenance responsibilities.**
  - GI project developer invested in long-term performance of project.
  - Risk shared with private contractor via Pay-for-Performance mechanism

* The National Council on Public Private Partnerships: http://www.ncppp.org/ppp-basics/types-of-partnerships/

Pay for Performance and Innovative Financing Models

- **NRDC, TNC and Booz Allen Hamilton recently conducted a study for PWD assessing P4P and Innovative incentive based models for GI financing. Study included:**
    - Denver Regional Transit District Transit Expansion
    - Freshwater Trust's Streambank Program
    - Valparaiso, IL Reverse Auction Program
    - Prince George's County P4P
    - Chicago Infrastructure Trust
    - Military Housing Privatization

P3s Elements to Consider in GI Context

- **Performance-triggered Payment Mechanism.**
  - **Availability payment model with performance clause.** Well tested and proven in transportation industry - relevant and most logical model for GI contracts.
  - Potential Pitfalls: Administrative burden associated with ongoing monitoring.
- **Third-party approaches with NGO or for-profit partners.**
  - Allows for greater speed/nimbleness in execution.
  - Gov't Agency can take active voice in ongoing program management
- **Robust online program management system can aid project development, delivery and reduce risk.**
  - Streamline project identification and permitting, provide transparency in performance and institute program rigor that can meet regulatory and stakeholder scrutiny.

Summary

- **Policy mechanisms are key to creating local markets in GI finance**
  - Impervious-Area based stormwater fee and "credits" for GI retrofits
  - Redevelopment requirements to capture specific storm capacity on-site
- **However, policies that provide incentives targeting individual owners are not alone likely to drive greening on a city scale.**
- **Strategically structured PPPs reap most cost-effective GI investment opportunities city-wide, across full range of land types, and facilitates project aggregation on city-scale**
  - Can utilize full range of policies highlighted in previous slides
  - Lower the costs of construction and maintenance
  - Accelerates project implementation (aggregators can bundle projects instead of reliance on individual owners' decisions to retrofit)
  - Depending on how structured, PPPs can access new sources of investment capital and preserve municipal balance sheet capacity
  - Incentivize optimal performance by shifting performance risk to private partners where payments are tied directly to performance.

Discussion and Q&A