

PROCUREMENT OF ECOSYSTEM SERVICES FOR MUNICIPAL REGULATORY REQUIREMENTS: “HIDDEN” INVESTOR GEMS?

ACES 2018

JENNIFER EGAN, P.G., PH.D. PRINCIPAL SCIENTIST, SKELLY AND LOY, INC

NAOMI YOUNG, DIRECTOR, LANCASTER CO. ECONOMIC DEVELOPMENT CO.

Outline

- ▶ What are we paying for now?
- ▶ Mobilization and shift to “new” capital sources and models ?
 - ▶ private investment
 - ▶ partnerships

Comparative study of recent projects in the Mid-Atlantic, US

- ▶ Knowledge gaps need to be filled through understanding:
 - ▶ transaction costs, supply, and demand
 - ▶ shared information set for parties (regulator, buyer, seller)
 - ▶ performance to account for progress (metrics)
 - ▶ heterogeneity in measurement of outcomes

Knowledge gaps

Elements	DC Water	RWF (PFS)	P.G. County CB-P3	Anne Arundel, Full-delivery (PFP)
Supply	Who currently supplies the ecosystem services			
Demand	Who currently demands the ecosystem services			
Metric	How are outcomes or outputs measured			
Investor role	How can investors inject capital			
Efficiency gain	Where are there gains to be made from change			
Risk transfer	How is the risk allocated with new models			

Openspace funds/USDA Agricultural Best Management

- ▶ Current funding pays for preservation, conservation, restoration and implementation
- ▶ What are outputs, outcomes?
- ▶ How are they measured?

Brief economic setting – the age old problems

- ▶ Public goods – something everyone can enjoy with out exclusion and one person enjoyment does not affect another persons enjoyment
 - ▶ No one really voluntarily pays to make sure public goods are available
 - ▶ Government intervention needed (e.g. tax to secure good for public)
- ▶ Common pool resources – something everyone enjoys BUT one persons enjoyment may and does affect another persons enjoyment
 - ▶ Lack of management and cooperation depletes or degrades the resource
 - ▶ Interventions that regulate human decisions (e.g. incentives, laws and regulations)

*“Pennsylvania’s
public natural
resources are the
common property of
all the people,
including generations
yet to come.”*

PA. Const. Art. I, § 27

“If our region’s open space were lost to development, we would need to spend more than \$132.5 million per year to do what our preserved lands already do.” (DVRPC Return on Environment, 2010)

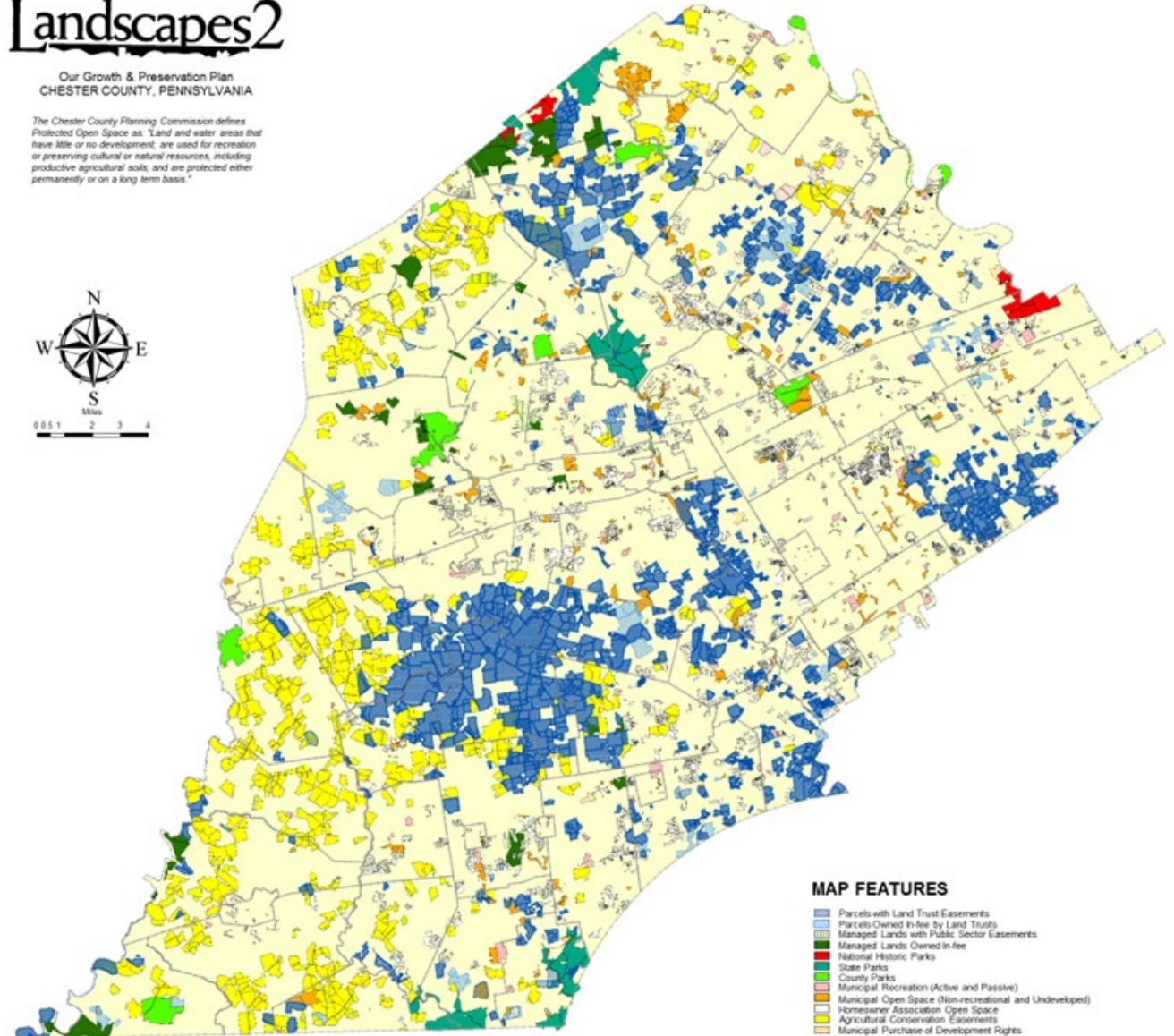
Protected Open Space

as of December 31, 2017

Landscapes2

Our Growth & Preservation Plan
CHESTER COUNTY, PENNSYLVANIA

The Chester County Planning Commission defines Protected Open Space as: “Land and water areas that have little or no development, are used for recreation or preserving cultural or natural resources, including productive agricultural soils, and are protected either permanently or on a long term basis.”



MAP FEATURES

- Parcels with Land Trust Easements
- Parcels Owned In-fee by Land Trusts
- Managed Lands with Public Sector Easements
- Managed Lands Owned In-fee
- National Historic Parks
- State Parks
- County Parks
- Municipal Recreation (Active and Passive)
- Municipal Open Space (Non-recreational and Undeveloped)
- Homeowner Association Open Space
- Agricultural Conservation Easements
- Municipal Purchase of Development Rights
- Municipal Transfer of Development Rights

RETURN ON ENVIRONMENT

The Economic Value of Protected Open Space
in Southeastern Pennsylvania

SUMMARY REPORT

Study prepared by the Economy League of Greater Philadelphia, Econsult Corporation, and Keystone Conservation Trust for GreenSpace Alliance and the Delaware Valley Regional Planning Commission. November 2010.

OPEN SPACE ENHANCES HOME VALUES.

- Open space adds **\$16.3 billion** to the value of southeastern Pennsylvania's housing stock.
- Protected open space generates **\$240 million** annually in property tax revenues to support county and municipal governments and local school districts.

OPEN SPACE PROTECTS PROPERTY, FILTERS DRINKING WATER, AND CLEANS THE AIR.

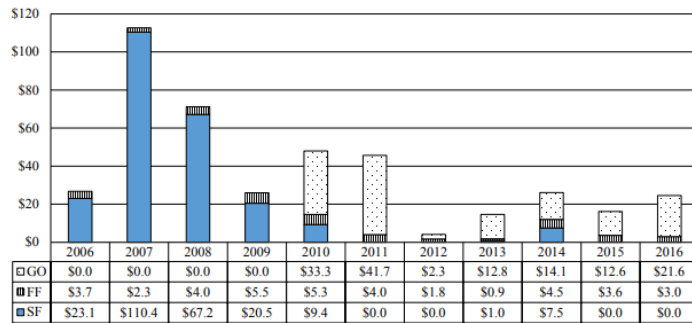
- Southeastern Pennsylvania realizes nearly **\$61 million** in annual cost savings from protected open spaces' ability to naturally filter out pollutants and replenish water supply.
- The total annual benefit generated by natural flood mitigation services is more than **\$37 million**.
- Trees on protected open space are estimated to provide **\$17 million** in annual air pollution removal and carbon sequestration services.

http://www.chesco.org/DocumentCenter/View/5672/DVRPC_GSA_EconomicValueSummary?b idId=

Maryland Open Space

Measurement =
millions spent,
acres secured

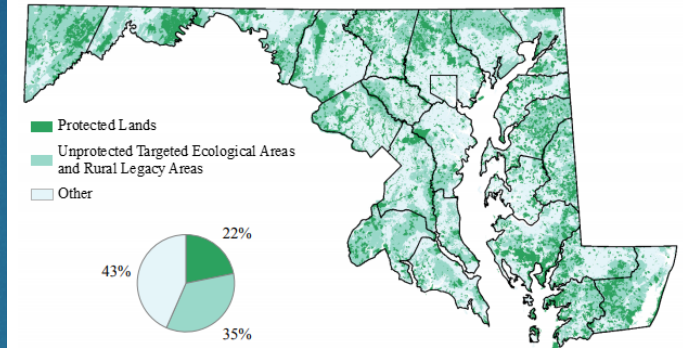
Exhibit 4
Program Open Space State Land Acquisition Funding
Fiscal 2006-2016
(\$ in Millions)



FF: federal funds
GO: general obligation bonds
SF: special funds

Source: Department of Legislative Services

Exhibit 6
Protected Lands and Unprotected Targeted Ecological Areas and Rural Legacy Areas



Note: This map and pie graph were created using geographic information system data available on the Department of Information Technology's MD iMAP website. Changes to the land acreages, since the data was created, could slightly affect the percentages shown.

Source: Department of Natural Resources; Department of Information Technology; Department of Legislative Services

Program Open Space funds will be used to purchase a permanent conservation easement on property located north of Unionville.

"Through our partnership with Frederick County, we can preserve agriculture and farmland while benefiting the environment and water quality," Maryland Natural Resources Secretary Mark Belton said. "This voluntary program is a win-win

for our bay and our farmers, and is essential to protecting the state's 134 unique watersheds."



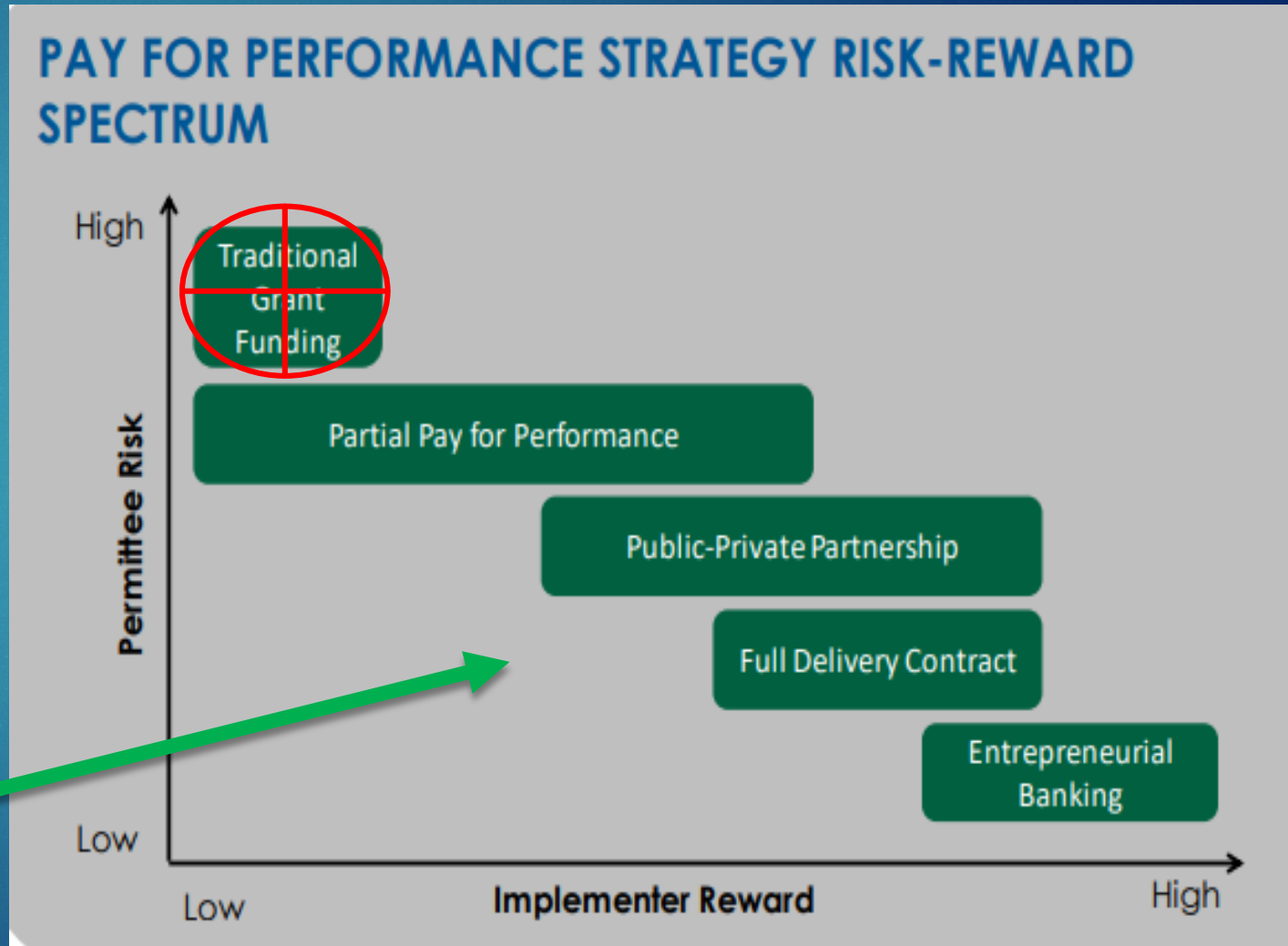
<http://dls.maryland.gov/pubs/prod/NatRes/POS-Fact-Sheet-September-2015.pdf>

Outcomes based contracting

“Traditional Grant” as Status Quo presents challenges to innovative performance based contracting

“Free services” to beneficiaries
i.e. municipalities with Stormwater permits

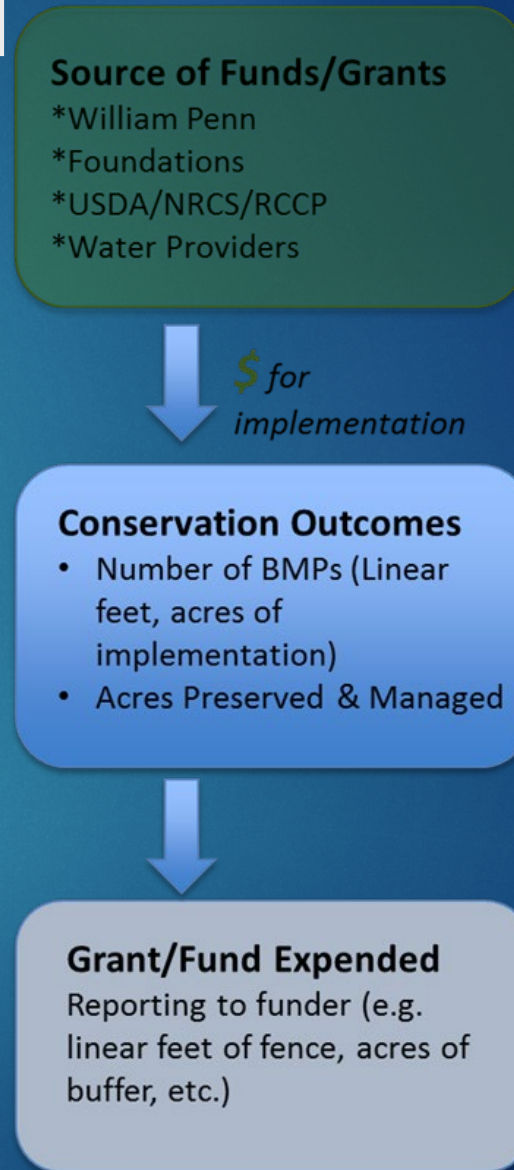
Service parsing



Status quo- e.g. Water Fund

Importantly, the funds are expended and investment is not fully realized.

How do we **monetize** the conservation outcomes to generate more investment in restoration?



The situation with funding restoration



“In order to bridge the funding gap that exists...philanthropic resources, foundations...need strategies to attract additional resources and new partners. They need leverage from new sources. Philanthropic organizations have a long history of partnering with the public sector. However, its engagement with the *private sector* offers potential that has been less explored – especially as the number of impact investors and socially responsible entrepreneurs rise.”

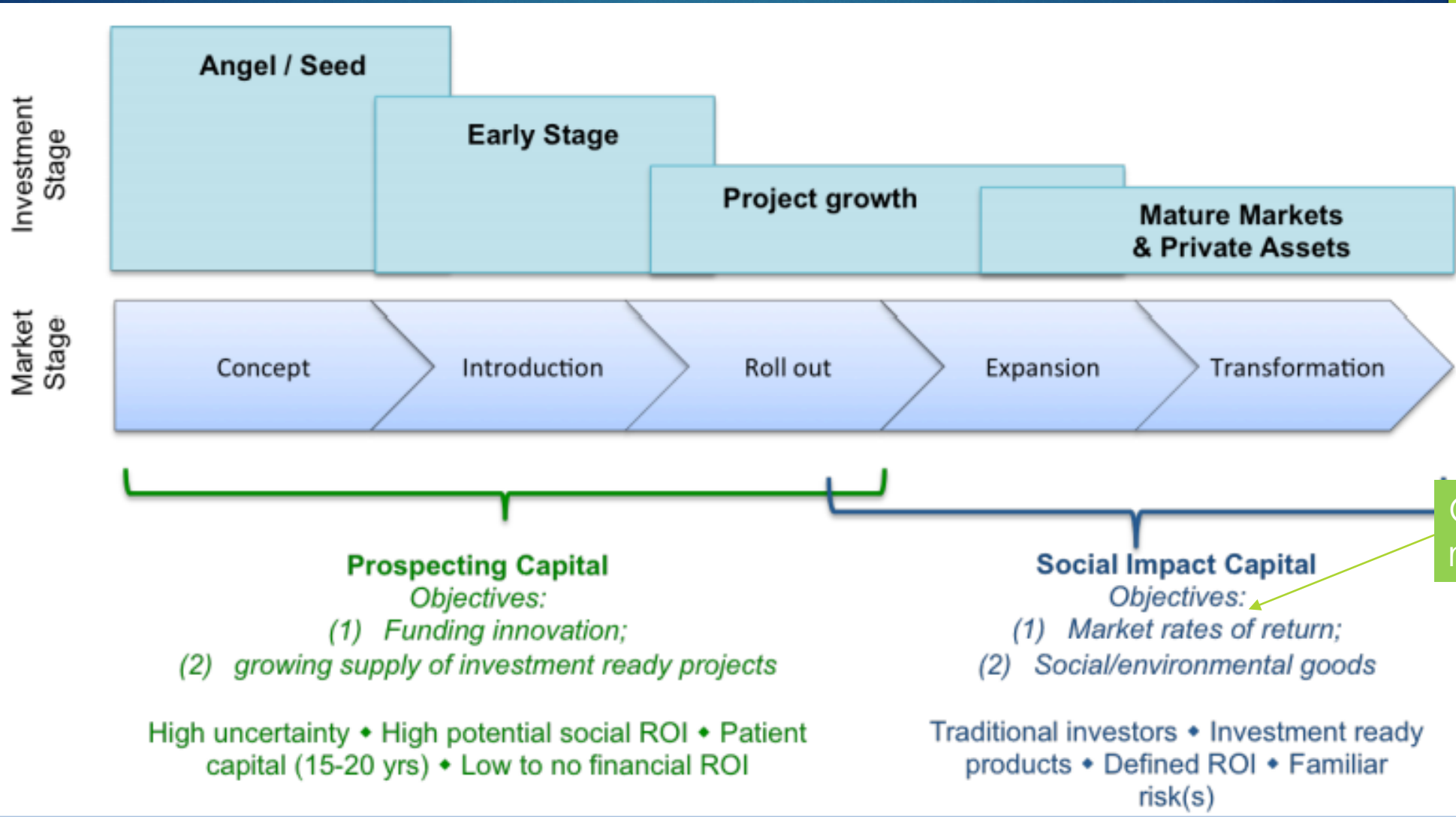
<https://efc.umd.edu/assets/delawarewatershed.pdf>

Money is available from the private sector - but needs deployed differently and necessitates new fund “vehicles.”

Market development

Ample demand and capital exists but not enough is being directed to early-stage market development. Impact capital is largely deployed to deliver services rather than foster innovation and capacity – leaving a much needed and vital role for philanthropic capital.

Innovation is in the partnerships AND the mechanics. Existing instruments for deploying capital are sufficiently robust and applicable to watershed restoration.



Conservation rates of return

METRICS and MECHANISMS – long run view

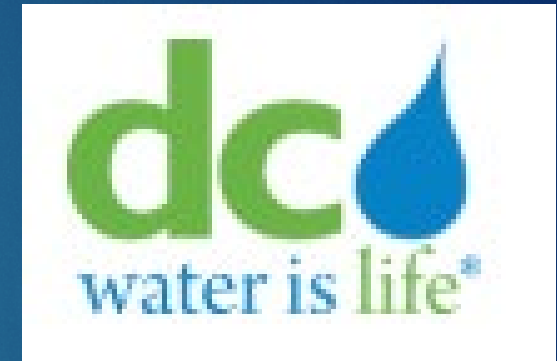
Elements of Mechanism

- ▶ Established relationships or new paradigm?
- ▶ Clear output – metrics?
- ▶ Risk transfer – to whom

- ▶ What is different by sector and program?

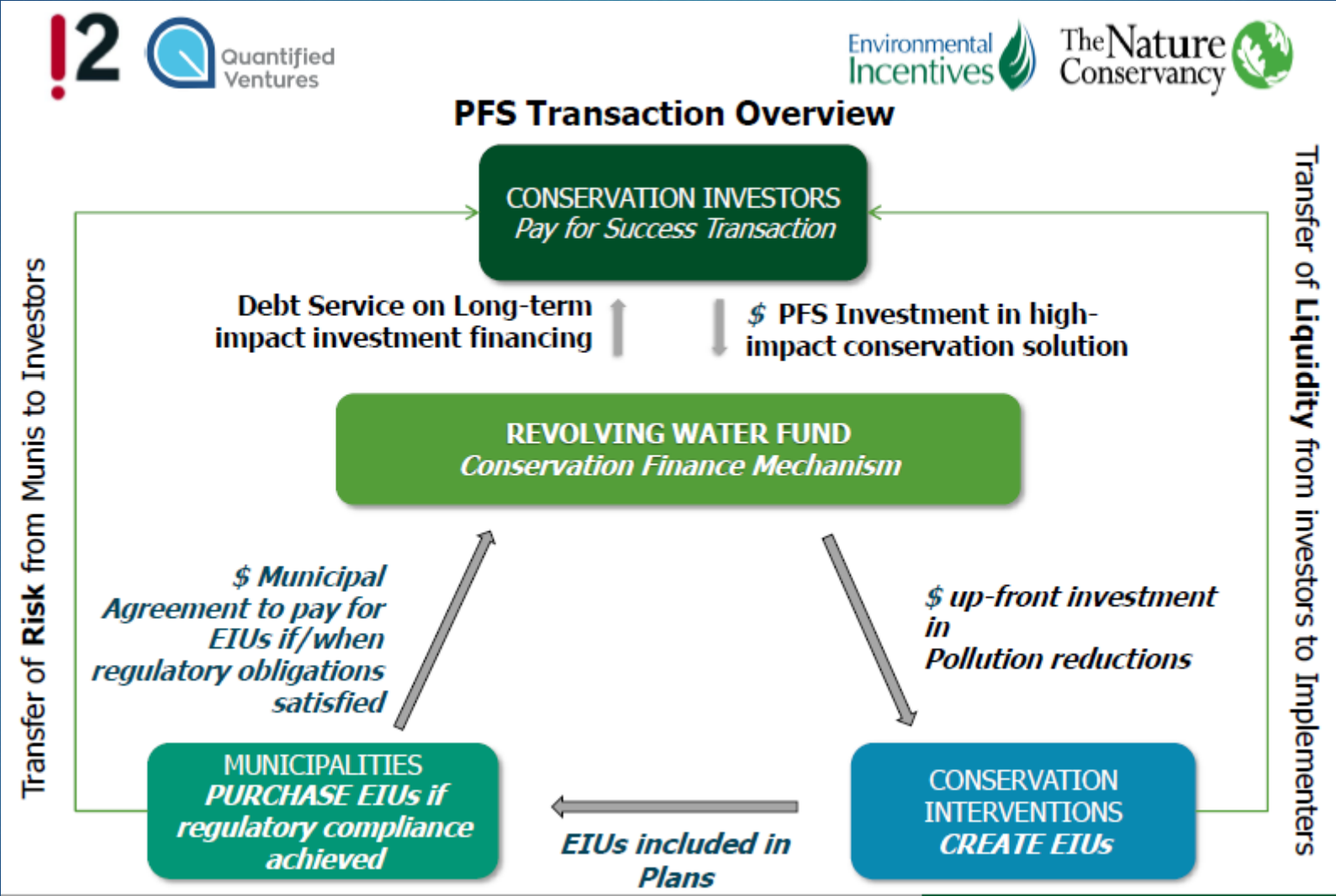
DC Water – Environmental Impact Bond

- ▶ Clean Rivers Project
- ▶ \$2.6 B - \$25 M tax-exempt bond, private
- ▶ Green infrastructure to reduce CSO into Anacostia & Potomac Rivers and Rock Creek
- ▶ Public Right of Way projects



Performance Tier	Outcome Ranges	Contingent Payment
1	Runoff Reduction > 41.3%	DC Water will make an Outcome Payment to Investors of \$3.3 million.
2	18.6% <= Runoff Reduction <= 41.3%	No contingent payment due.
3	Runoff Reduction < 18.6%	Investors will make Risk Share Payment to DC Water of \$3.3 million.

Brandywine Christina Water Fund



Public-private partnership (P3) – Design-Build-Operate-Maintain (DBOM)

Prince George's County, Md. (2015)

- ▶ \$100 M (30-yr)
- ▶ 2,000 acres of storm water infrastructure with low impact development (LID) and green infrastructure (GSI)

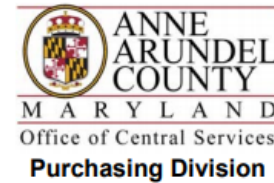
City of Chester, PA

- ▶ \$50 M (20 – 30-yr)
- ▶ 350 acre GSI
- ▶ Employ local businesses

The logo for Corvias, featuring the word "Corvias" in a white, sans-serif font on a dark teal background.The logo for "The Clean Water Partnership Prince Georges County, Maryland". It features the text "THE CLEAN WATER PARTNERSHIP" in white, all-caps, sans-serif font, with "PRINCE GEORGES COUNTY, MARYLAND" in a smaller, white, all-caps, sans-serif font below it, all set against a dark teal background.

“Full-Delivery” or Pay for Performance Anne Arundel County, MD

- Two contracts for \$5 M (2017, 2018)
One contract for \$8 M (2019)
- Not prescriptive of practice,
just had to be approved by MDE for
crediting towards MS4 permit
- Had to be on private property
- All “mitigation, natural resource, and
water quality improvement credits”
associated with the project belong to
the County



ANNOUNCEMENT
ANNE ARUNDEL COUNTY, MARYLAND
Annapolis, Maryland

FULL DELIVERY OF TURNKEY WATER QUALITY IMPROVEMENTS FY19
RFP NO. 19-019R
NOTICE TO OFFERORS

Elements	DC Water	RWF (PFS)	P.G. County CB-P3	Anne Arundel, Full-delivery (PFP)
Supply	Public land	Private land	Mix	Private land
Demand	Public utility	MS4s Public water /Private water Companies	MS4	MS4
Metric	Uniform (1.3"/20 acres)	Non-uniform (EIU)	Uniform (1" rainfall)	Non-uniform (multi-metric)
Investor role	Initial capital	Impact	None (SRF)	None (federal and state funds)
Efficiency gain	Liquidity	Admin/partnership leveraging, liquidity	Admin, O&M, overall project	Admin, overall project
Risk transfer	Shared public/private	Public to private	Public to private	Substantial from public to private

Challenges

- ▶ Regulator concurrence – stability
- ▶ Project evaluation rigor (not low cost but “best value”)
- ▶ Whole cost or life cycle cost for true project comparison – long run view
- ▶ Private land poses challenges public does not (perpetuity)
- ▶ Metrics and data analytics

Metrics Challenges

- ▶ EIU – environmental impact unit, bundle of services explicit
- ▶ Index – against forested, other HUC-12 loads
- ▶ Matrix of removal efficiencies (similar to low carbon methods, “carbon intensity”)

Suggestions from interviews

- ▶ Know what the parameters are that you are contracting services for
 - ▶ What are your areas to gain efficiency
 - ▶ What will cause a loss in efficiency
- ▶ Have the right people at the table at the right time
- ▶ Regulator dialog – examples and clear ask