Quantified® Ventures

Hudson, Ohio
Green Infrastructure EIB

Kickoff Meeting

November 5, 2019

Attendees

Quantified Ventures

Musa Asad
Vice President

Ben Cohen
Director

Jason Lee
Associate Director

City of Hudson

Erin Schaad
Business Operations Manager

Jane Howington
City Manager

Thomas Sheridan
Assistant City Manager, Professional Services

Jeff Knoblauch
Assistant City Manger, Finance Director

Brad Kosco
City Engineer

Rhonda Kadish
Community Relations Manager

Agenda

1. Quantified Ventures and Outcomes-Based Financing Review
2. Environmental Impact Bond (EIB) Case Studies
3. Process and Timeline in Hudson
4. Discussion and Q&A
5. Initial Outcomes Analysis (*time pending*)

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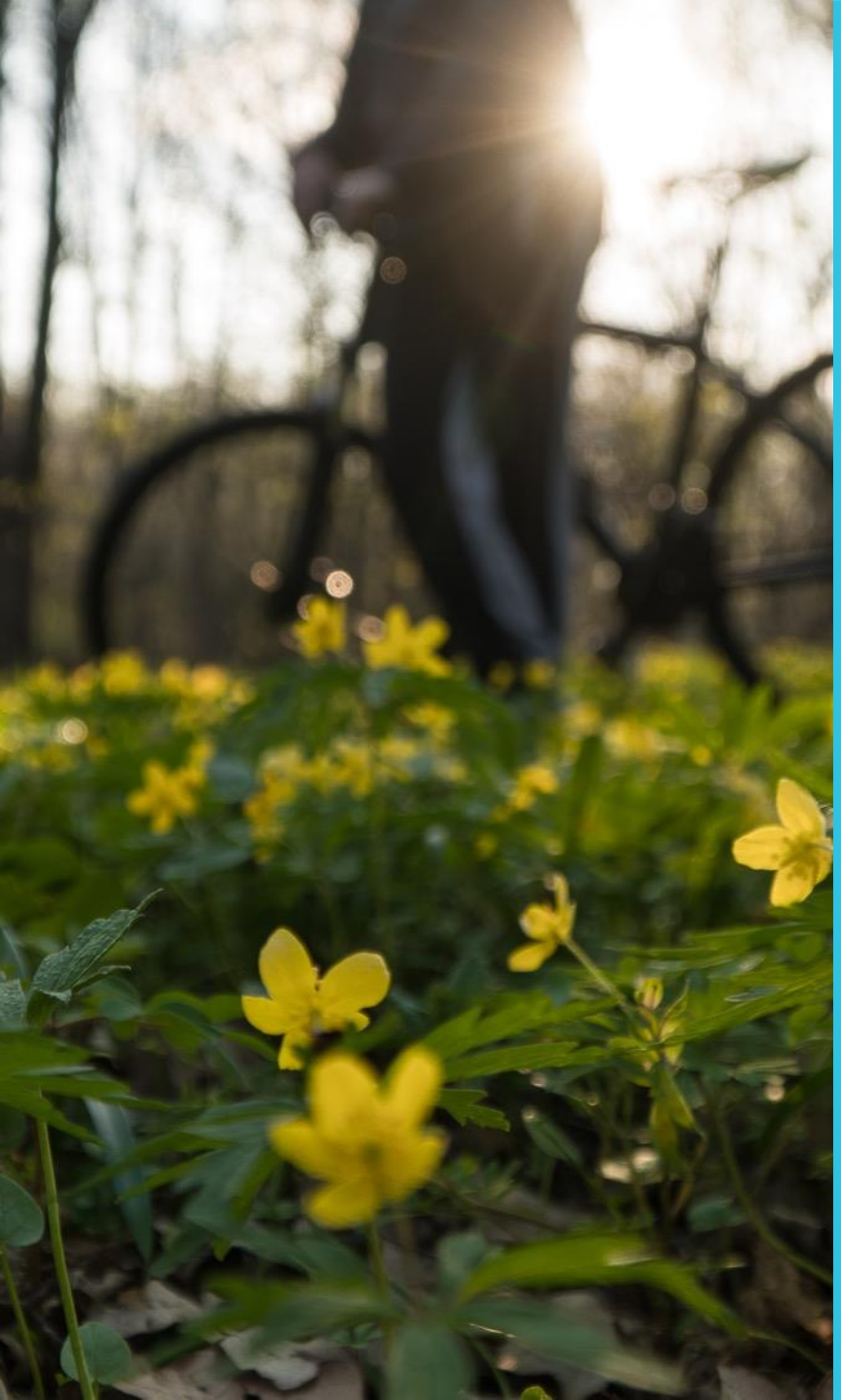


Quantified Ventures

Quantified Ventures is an **outcomes-based capital firm** that drives transformational health, social, and environmental impact.

Our Practice Areas

Forestry and Land Use

Urban and Coastal Resilience

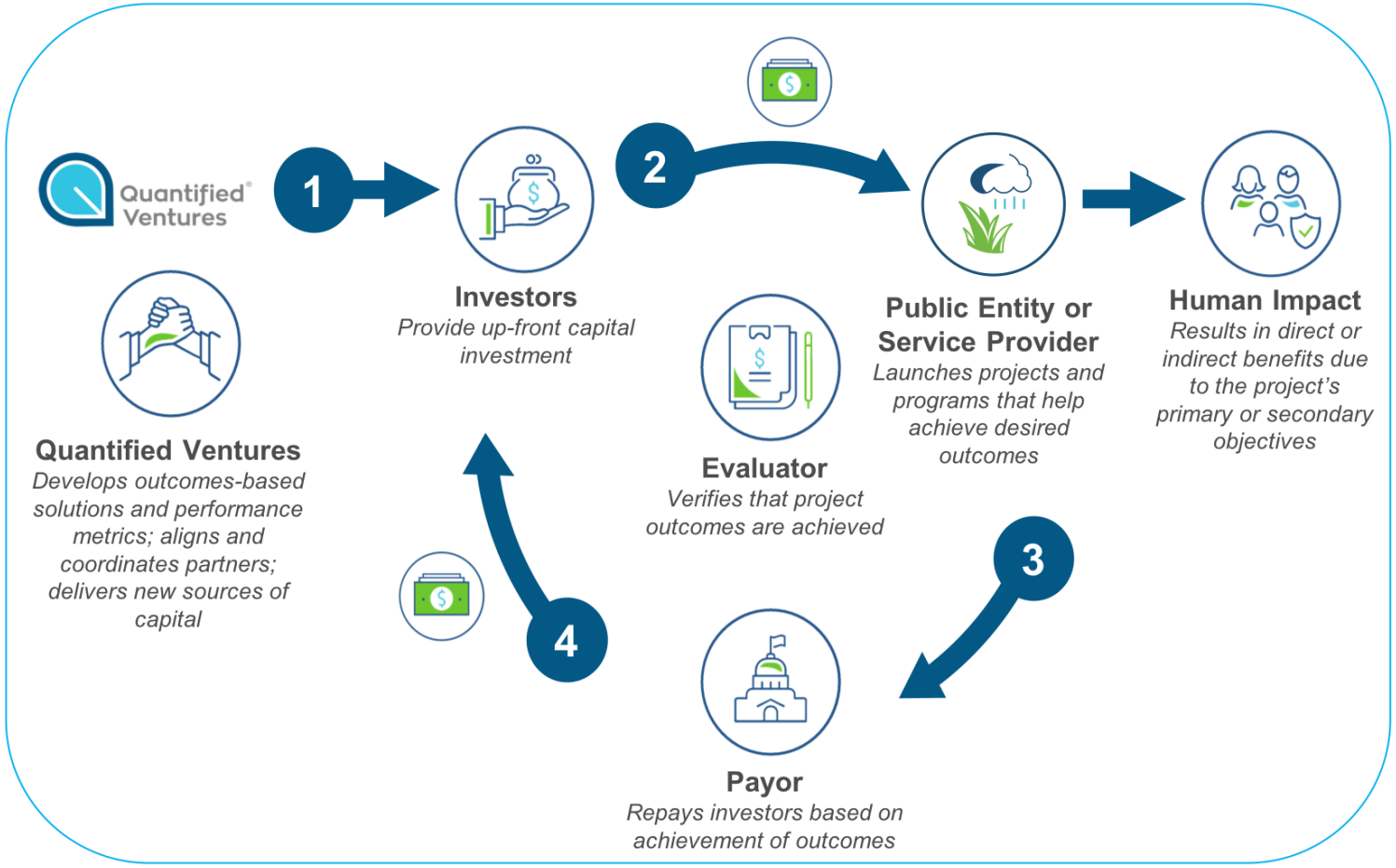
Agriculture

Health and Human Services

Benefits of Outcomes-Based Financing

- **Transfer performance risk** of innovative projects to investors
- **Access new sources of investment capital**
- **Showcase partners and their projects**, attracting internal and external support
- **Engage diverse and new stakeholders** benefitting from projects, potentially to contribute financing for them
- **Measure and track outcomes** through embedded performance evaluation
- **Build an evidence base** to inform future project planning

How does an Environmental Impact Bond (EIB) Work?



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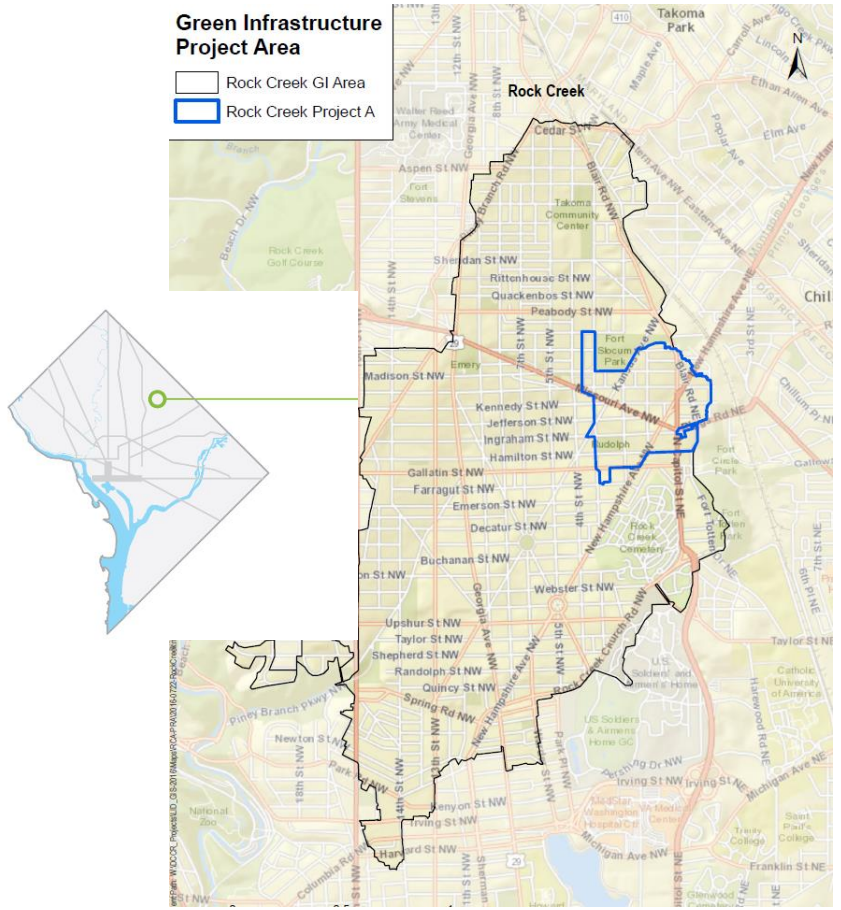
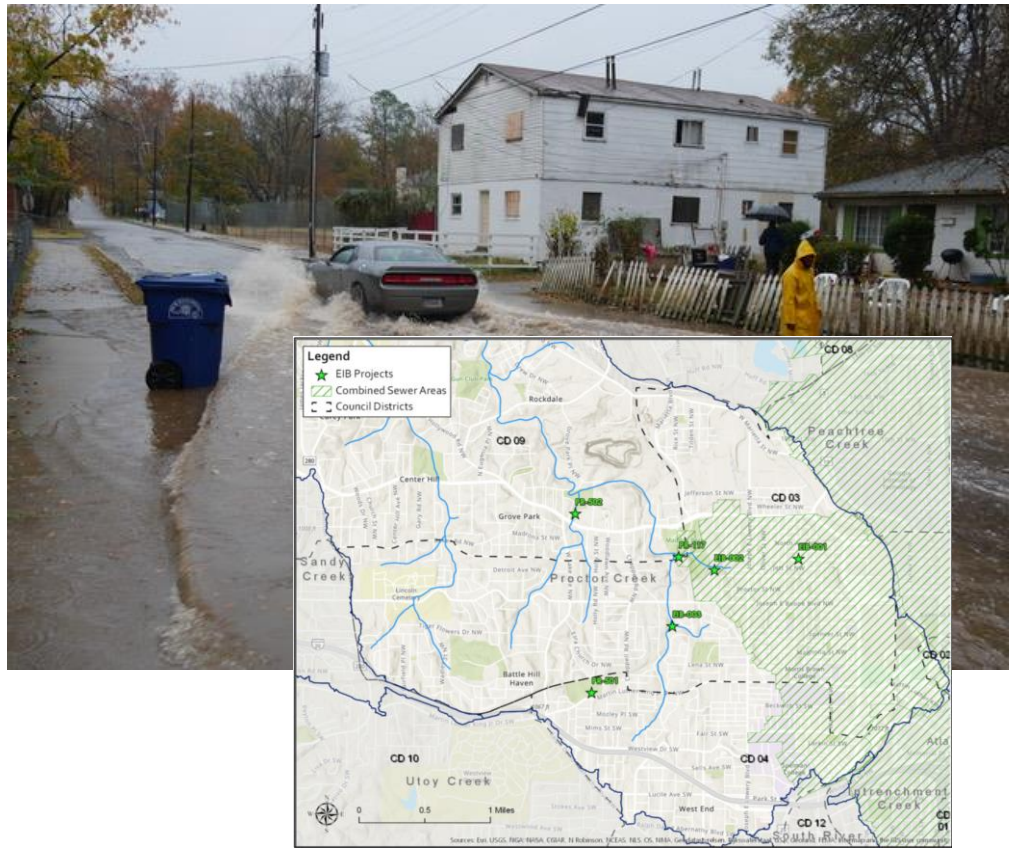
DC Water and Sewer Authority

- **Project:**
  - Replace planned grey infrastructure with green infrastructure alternatives
  - Manage the volume equivalent of 1.2” of runoff from 20 impervious acres
- **Desired outcome:** Reduction of CSOs into the Potomac River
- **Outcome metric:** Reduced flow in downstream sewer
- **Measurement:** % reduction in MG wet weather flow / average year
- **Evaluation method:** Flow meters in downstream sewer
- **Cost of evaluation:** <$100,000



Atlanta Department of Watershed Management



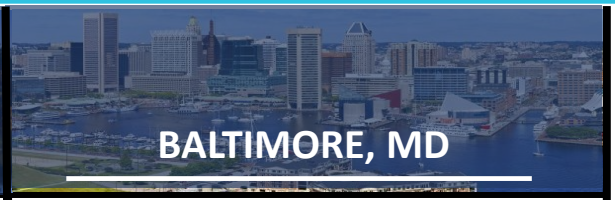
- **Project:**
  - Implement 6 GI projects in Proctor Creek Watershed
  - Manage stormwater in environmentally & economically distressed neighborhoods
- **Desired outcome:** Local flood resilience; water quality and other neighborhood improvements
- **Outcome metric:** Volume capture capacity
- **Measurement:** Total MG of volume capture capacity
- **Evaluation method:** “As-built” surveys aggregated across projects
- **Cost of evaluation:** ~ $100,000

Baltimore Department of Public Works

- **Project:** 115 GI projects across Baltimore
- **Desired outcome:** Stormwater runoff reduction for MS4 compliance
- **Outcome metric:** Establishment of GI vegetation (biggest component of O&M)
- **Measurement:** Plant survival rate (%) over 5 years
- **Evaluation method:** Monthly surveys of GI sites w/ documentation
- **Cost of evaluation:** >$500,000

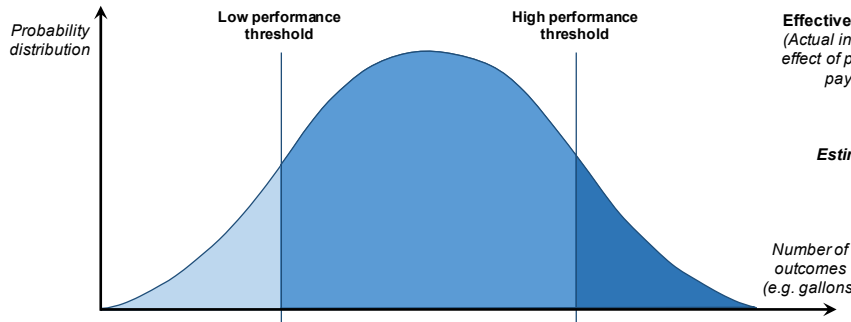
Photo by Will Parson/Chesapeake Bay Program

Summary of EIBs for Green Stormwater Infrastructure

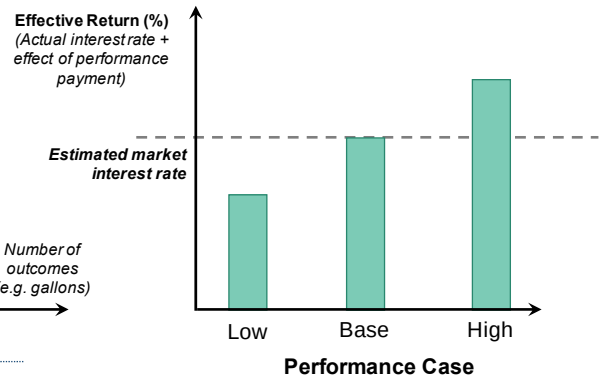
EIB Characteristics	 WASHINGTON, DC	 ATLANTA, GA	 BALTIMORE, MD
Primary Value Proposition of EIB	What is the cost-effectiveness of green vs. grey infrastructure for CSO reduction?	How can green infrastructure improve local flooding, water quality, and economic conditions?	What are the ongoing operational costs and viability associated with green infrastructure?
Outcome Metrics	Stormwater capture (*flow / runoff*)	Stormwater capture (*capacity / storage*)	Plant survivability
Evaluation	Flow meters in sewer	As-built surveys of all projects, added up	Monthly site surveys
Size	$25,000,000	$14,020,000	$6,200,000
Term	30 years (5 year re-tender)	10 years	7 years
Placement	Private	Limited Public	Private
Structure	3-tiered	2-tiered	3-tiered
Types of Projects	• Right of way planters • Bioretention on public parks	• Right of way planters • Bioretention on public parks • Stream & floodplain restoration	• Right of way planters • Bioretention on public parks • Stream & floodplain restoration • Impervious surface removal

Design Considerations for Hudson

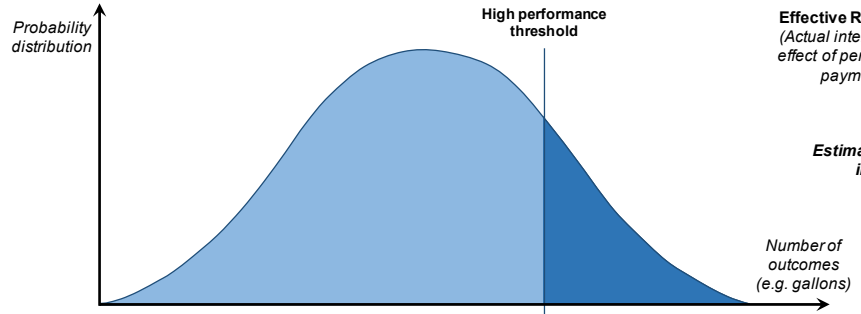
3-Tiered Structure
e.g. DC Water & Baltimore



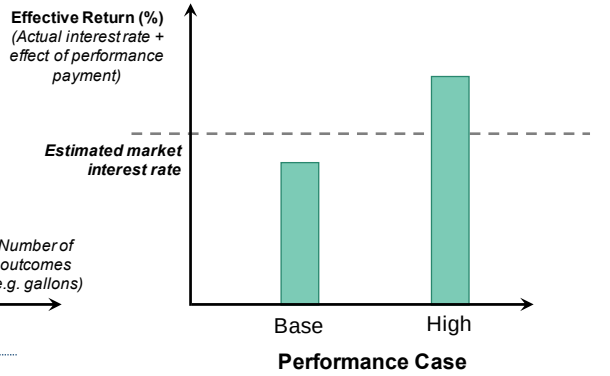
Performance:	Low	Base	High
Fixed (Actual) Interest Rate:	Market rate *(estimated)*	Market rate *(estimated)*	Market rate *(estimated)*
Additional Payment:	Investors to issuer	None	Issuer to investors



2-Tiered Structure
e.g. Atlanta DWM



Performance:	Base	High
Fixed (Actual) Interest Rate:	Below market rate *(estimated)*	Below market rate *(estimated)*
Additional Payment:	None	Issuer to Investors



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High-Level EIB Timeline

9 months

Q4 2019 — **Q3 2020**

Project Planning & Outcomes Identification (Nov, Dec)

Design Development (Dec, Jan, Feb)

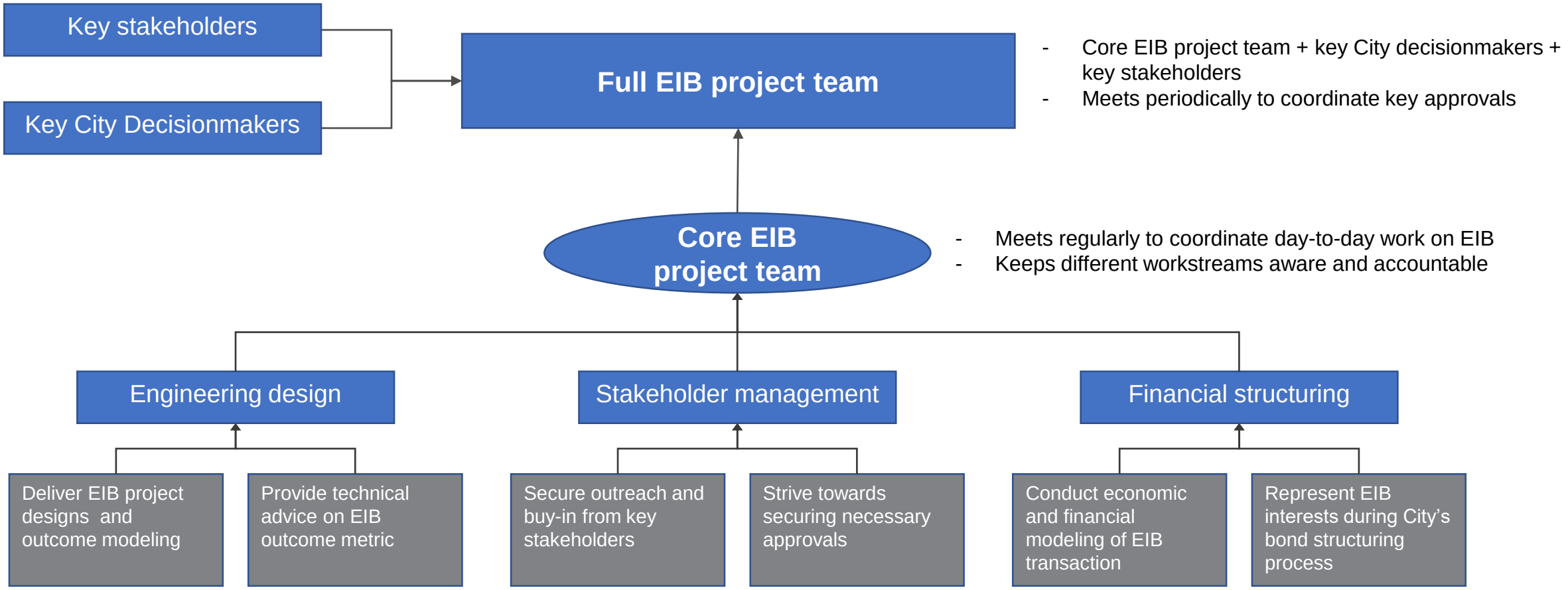
Transaction Modeling (Jan, Feb, Mar, Apr)

Structuring and Closing (Apr, May, Jun, Jul)

Tasks involved

1. Concept designs; EIB outcome metric selection
2. Engineering design development; outcomes modeling
3. Economic and financial modeling; initial EIB structure recommendation
4. Investor marketing, drafting bond documents, city approvals, final pricing

Sample: EIB project management framework



Next Steps

- Confirm department leads (City of Hudson)
- Convene core project team (Quantified Ventures)
- Establish regular schedules for core and leadership teams (Hudson + Quantified Ventures)
- Draft and approve EIB project plan (Quantified Ventures + project team)
- Initiate outcomes discussion (Quantified Ventures + project team)

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Questions and Discussion

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Outcome Metrics and Performance Payments

- EIB ties payments to performance
- Performance is evaluated using pre-defined outcome metrics
- What makes a good outcome metric?

1. Quantifiable and cost-effective to measure
2. Valid proxy for main project outcome(s)
3. Compelling to stakeholders, especially Hudson leadership
4. Time horizon fits investors and City preferences
5. Independent of manipulation by EIB payor(s)
6. Able to be monitored and verified by third-party

City of Hudson – Proposed EIB Projects

Project name	Description	Benefits
Owen Brown / Morse Road Floodplain Improvement ($2.13 MM)	Increase flood plain storage downstream of Owen Brown Street bridge along Brandywine Creek tributary.	▪ **Water Quality** via wetland/FEMA floodplain enhancement, microhabitat creation and stream bank stabilization. ▪ **Storm Water Management** via increased floodplain storage.
Barlow Community Center Lake and Dam Improvements ($1.72 MM)	Increase flood storage of approx. 9.5 acre-feet. ODNR-regulated dam upgrades to meet compliance and water quality enhancements	▪ **Storm Water Management** via increased lake storage and smart technology for pre-storm valve upgrades. ▪ **Regulatory Compliance** to meet Ohio Department of Natural Resources (ODNR) Dam requirements. ▪ **Water Quality** via bioswale/micro pool or other applicable water quality best management practices.
S. Main Street at Norfolk Southern RxR Storm Sewer Improvement ($1.1 MM)	Redirect flows that flood roadway on S. Main Street (SR 91) that inhibit safety forces access to southerly portion of City during flood events.	▪ **Storm Water Management** via redirect of storm water flows to existing wetland at Veteran's Way Park. ▪ **Water Quality** via wetland enhancements.
Colony Park Storm Management Pond Expansion ($3.06 MM)	Increase detention to two storm water management ponds at Colony Park and install new storm sewer to redirect flows to ponds.	▪ **Storm Water Management** via redirected flows to expanded detention ponds at Colony Park. ▪ **Water Quality** via applicable best management practices.