Financing Nature-Based Solutions Using Green Banks

Thur., 7/27

8:30–11 a.m. ET

Duke in DC
1201 Pennsylvania Ave. NW

Duke NICHOLAS INSTITUTE *for* ENERGY, ENVIRONMENT & SUSTAINABILITY

ENVIRONMENTAL POLICY INNOVATION CENTER

Moderator

Phoebe Higgins: Director of Markets, Environmental Policy Innovation Center

Panelists

Andrea Colnes: Deputy Director and Climate Fellow, New England Forestry Foundation; formerly the Director for Global Green Bank Development at the Coalition for Green Capital

Matthew Carney: Associate Director, Quantified Ventures

Lukin Jacob: Environmental Protection Specialist, DC Department of Energy & Environment

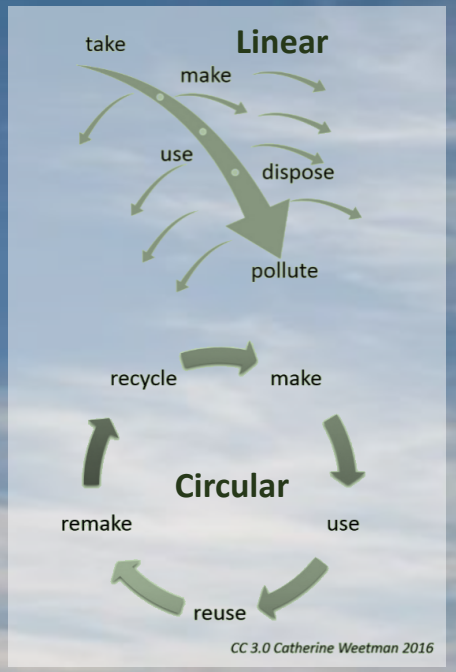
Matthew Johnson: Supervisory Environmental Protection Specialist, DC Department of Energy & Environment

Financing Climate Mitigation through Climate-Smart Forest Management
New England Forest-Climate Investment Fund

In the climate emergency, forests offer hope

IPCC **on** Carbon removal – Forests are key to limit warming to 2 ˚C and and climate-aligned forest management practices are identified as a central way to sequester and store carbon.

Private U.S. forests are climate-change mitigation powerhouses –US EPA 2022 Inventory of U.S. GHG Emissions, shows that 84% of current carbon sequestration is happening on private forestlands.



Opportunity

Forests have the potential to store immense amounts of carbon while:

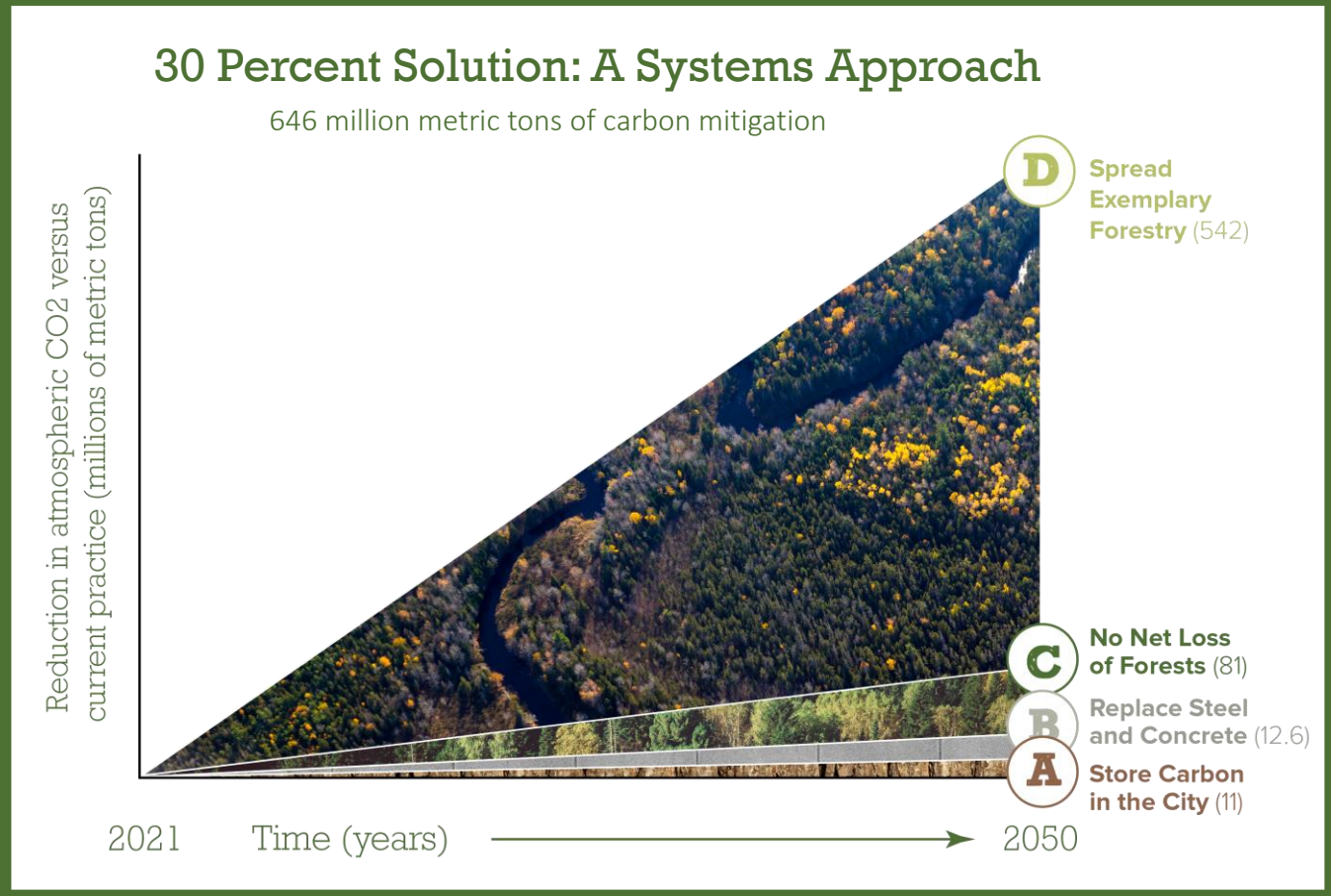
- supporting biodiversity
- providing low-carbon products for a sustainable bioeconomy.

The key is scalable systems to implement climate-smart the forestry practices that deliver carbon and biodiversity benefits.

UN IPCC August 2019 Special Report and April 2022 Climate Change 2022 Mitigation of Climate Change Summary for Policymakers

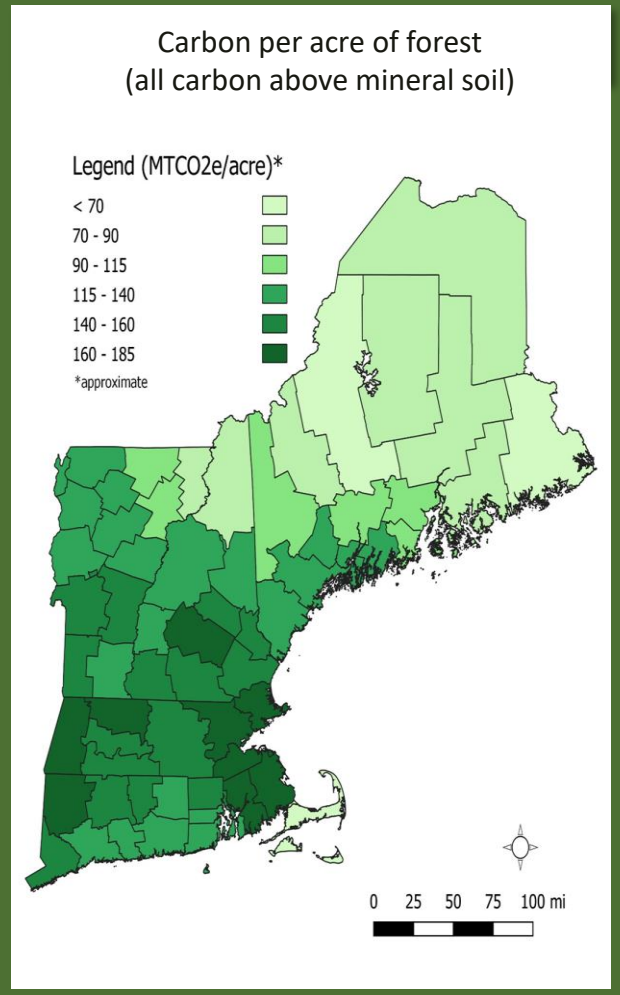
NEW ENGLAND FORESTRY FOUNDATION

30% Solution – In New England an Integrated Approach yields Nationally Significant Carbon Reductions



NEW ENGLAND FORESTRY FOUNDATION

Major Carbon Sequestration & Storage Opportunity



Northern New England: Commodity production of pulp for bioenergy and paper has reduced average stocking and degraded many forest lands.

Southern New England: Decline of wood products industry has resulted in reduced harvests, with greater and greater carbon stocking, particularly near developed areas.

Same original stand regenerated at 40 years ago after a clearcut, on the same site within 100 yards of one another

No Treatment

Pre-Commercial Thinning 20 Years Ago

NEW ENGLAND FORESTRY FOUNDATION

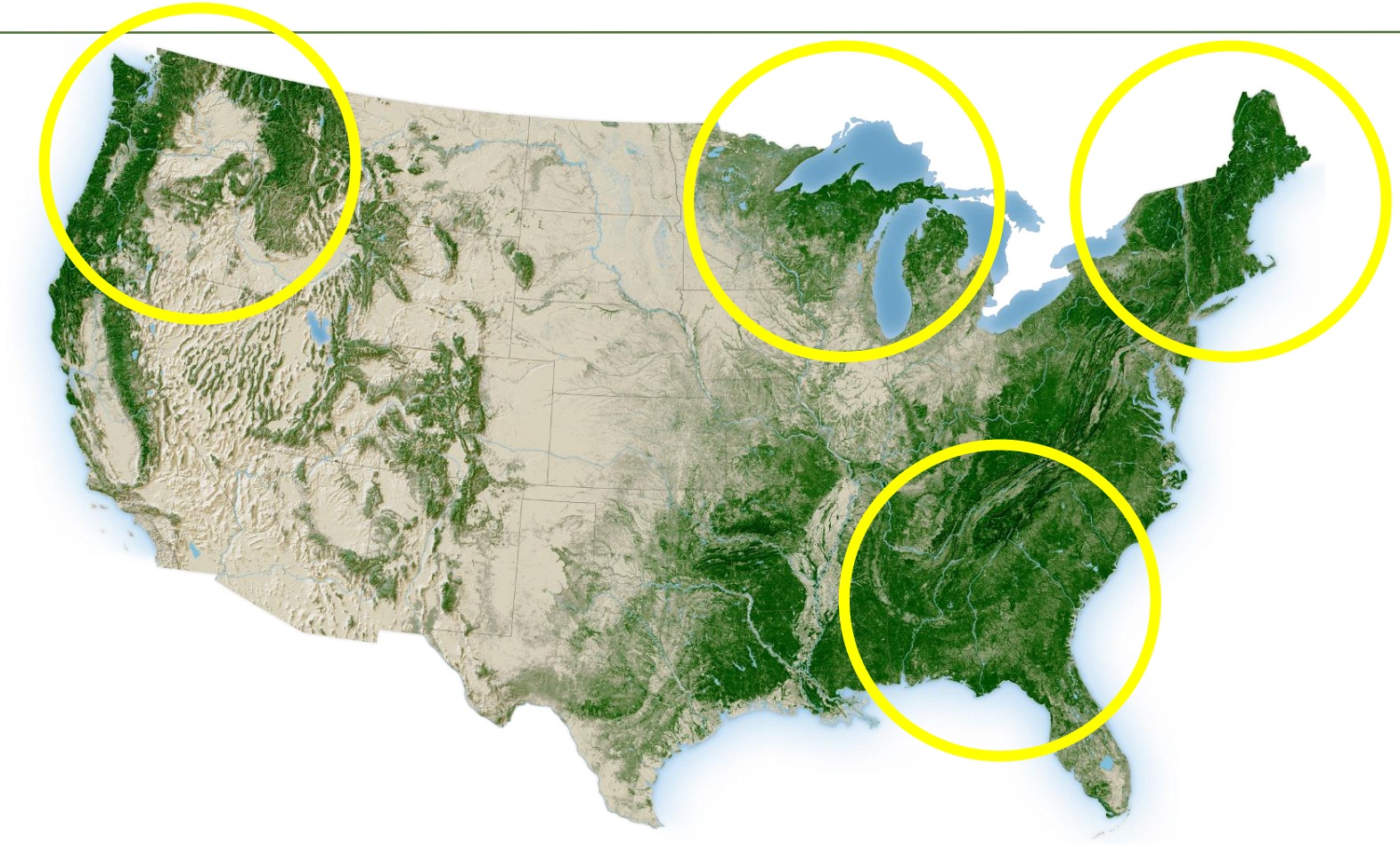
Carbon economy

Bioeconomy

UBC Media Relations; Credit: Acton Ostry, CC BY-NC 2.0

Photo courtesy of TimberHP

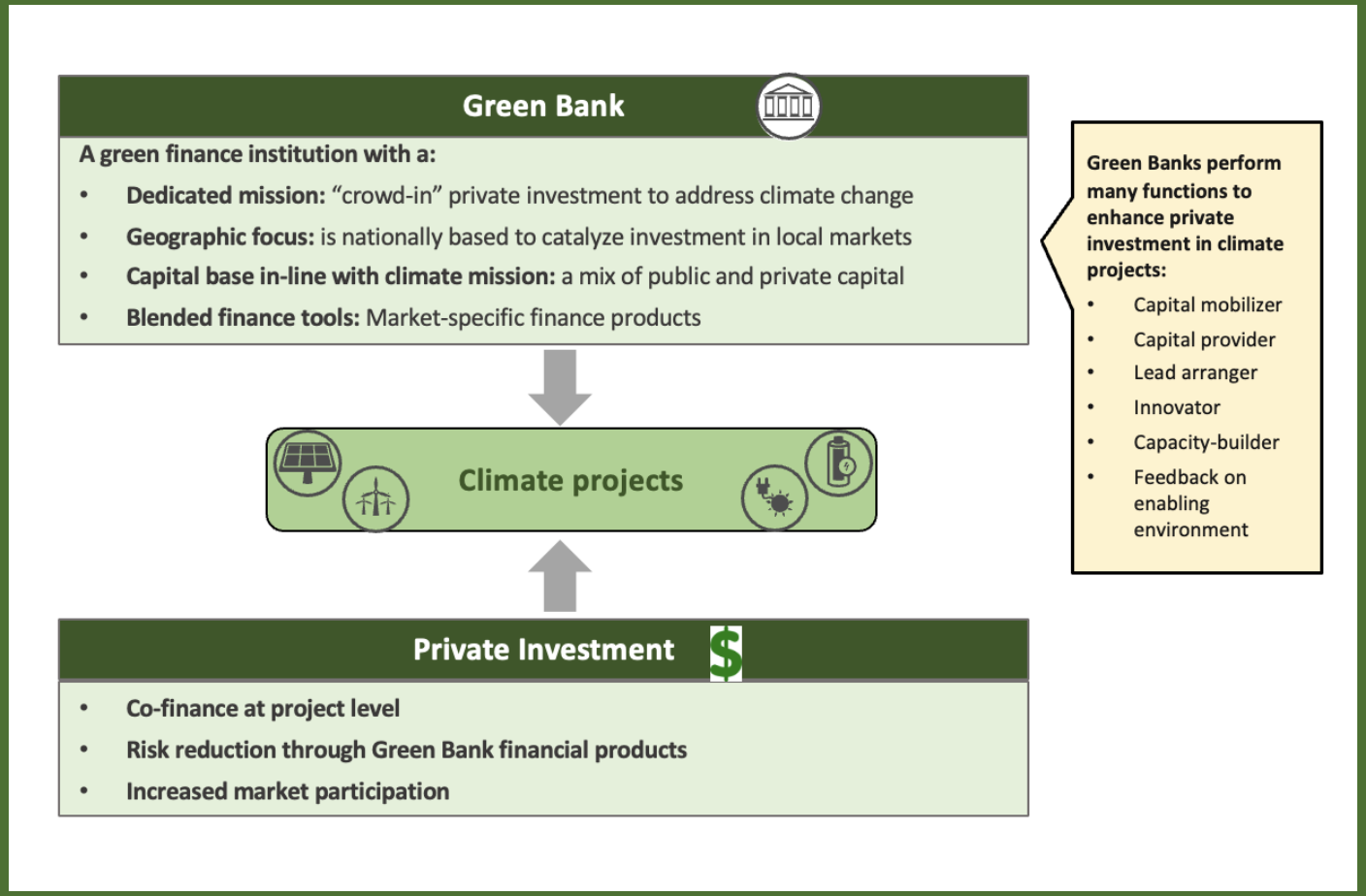
Forest Canopy Cover in the Contiguous United States



Source: United States Department of Agriculture (USDA) Forest Service

NEW ENGLAND FORESTRY FOUNDATION

Green Banks are catalytic, market-fit finance facilities designed to reduce risk and crowd in private investment

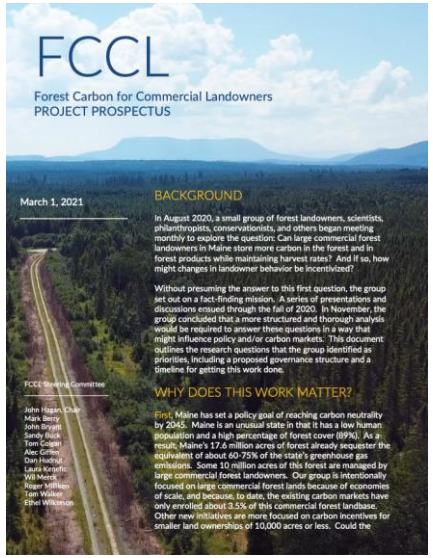


NEW ENGLAND FORESTRY FOUNDATION

New England Forest-Climate Investment Fund: Objectives, Approach and Outcomes

Stakeholders & Support

Concept emerged from the **Forest Carbon for Commercial Landowners** (FCCL) effort to address carbon storage opportunity on 7 million acres of privately owned commercial forestland in Maine.



Two guiding principles to achieve real reductions in atmospheric GHG levels:

- Storing more carbon in forests and in wood products
- Maintaining harvest levels – to avoid leakage vs exporting harvest/emissions elsewhere

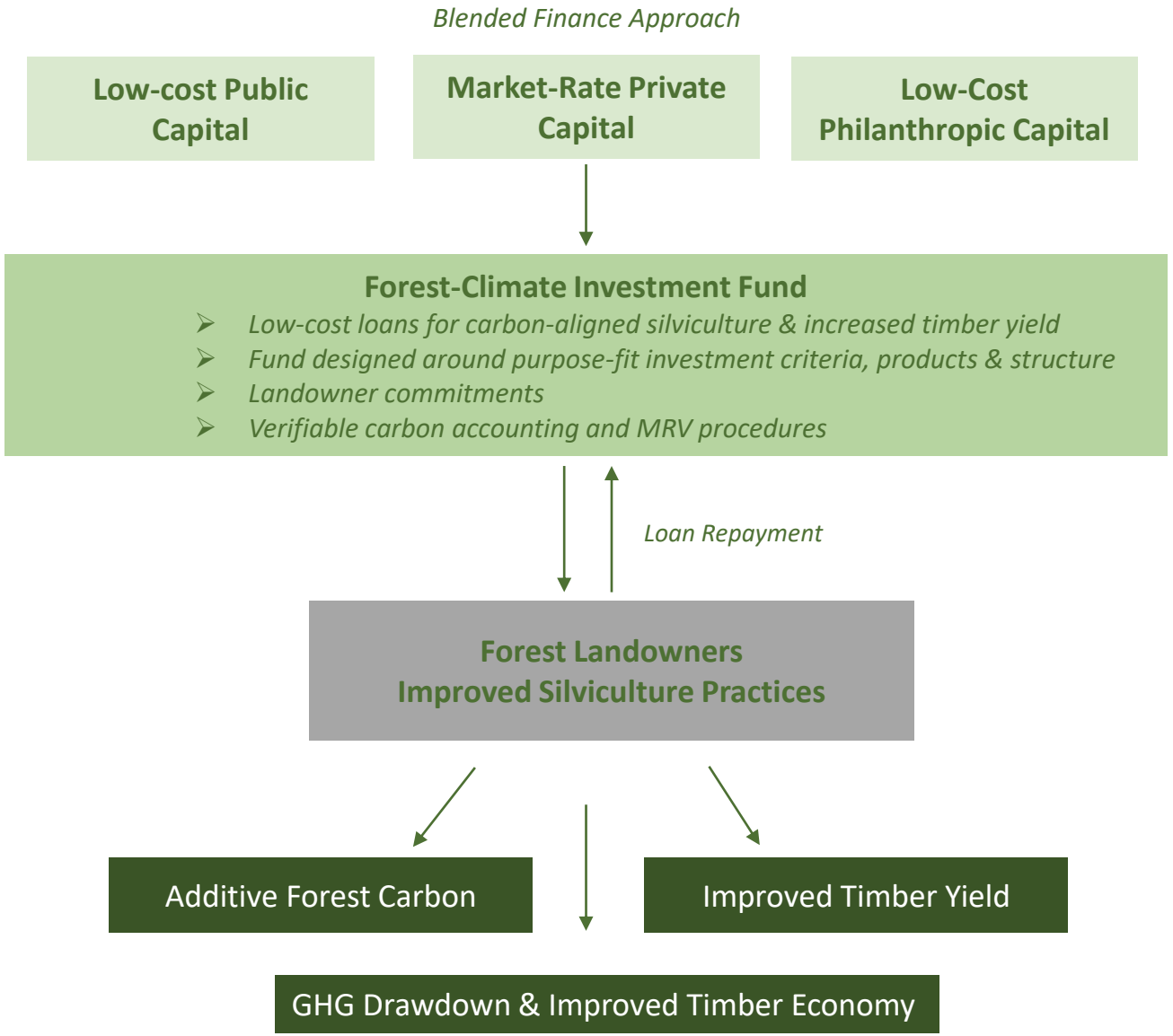
Structure, Capitalization & Outcomes

The Forest-Climate Investment Fund would:

- Provide low-cost affordable financing to landowners to implement climate-smart silvicultural practices
- Utilize a variety of financial products designed to make climate-smart forestry profitable for landowners and allow forests to grow to maturity, with repayment to the Fund upon harvest
- Utilize a blended finance approach, seeking capitalization from a dynamic mix of low-cost public and philanthropic sources and potentially attract market-rate capital as well.
- Increase quantity and quality of timber yields and increase carbon storage, in forest and in products.

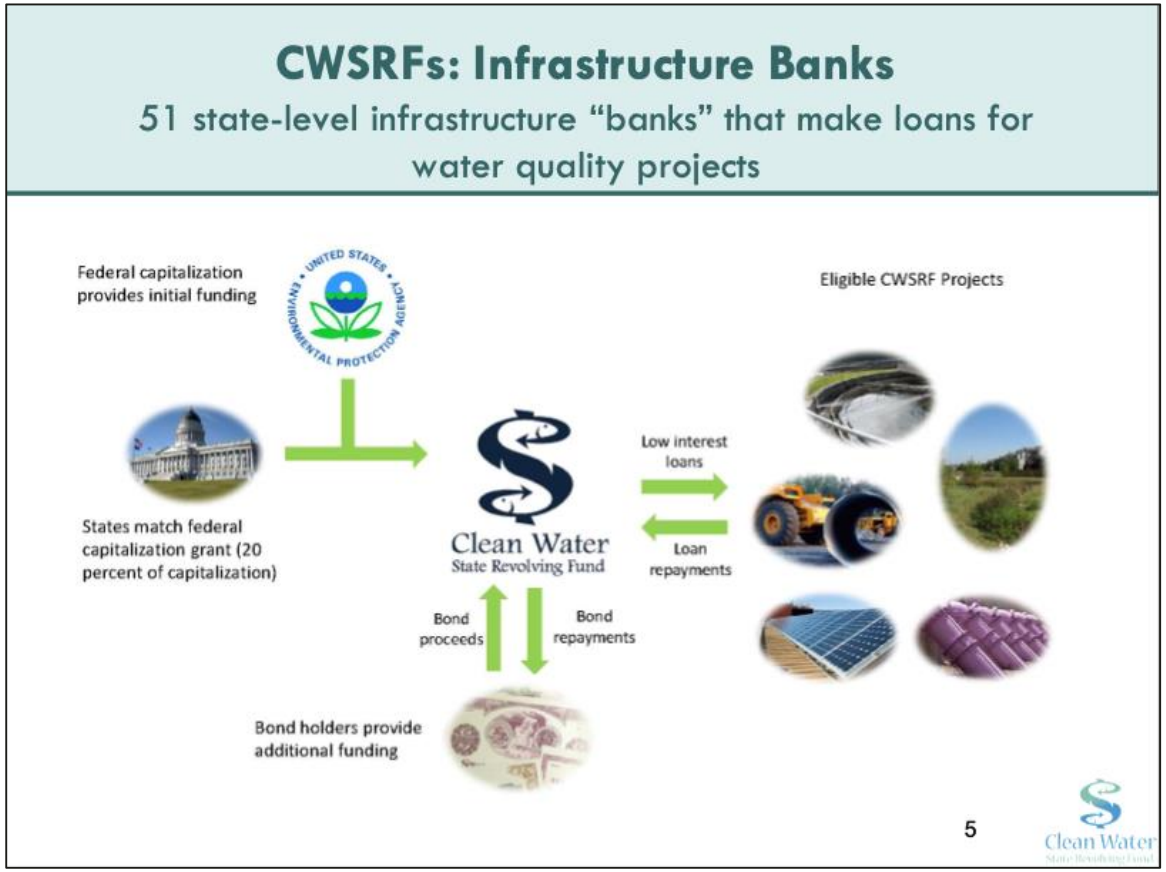
NEW ENGLAND FORESTRY FOUNDATION

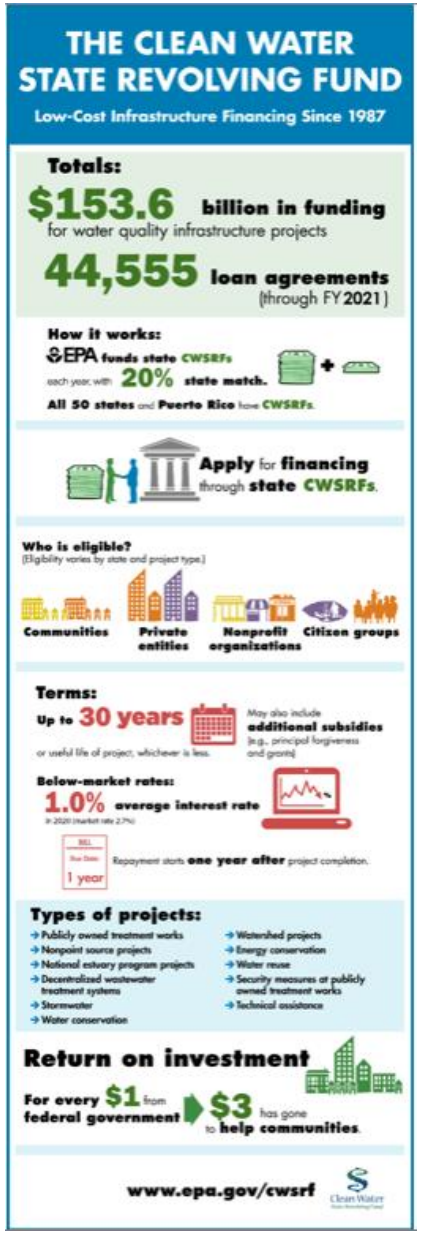
New England Forest-Climate Investment Fund Structure



NEW ENGLAND FORESTRY FOUNDATION

Model on the Clean Water State Revolving Fund (CWSRF)





Federally and state funded (20% state match)

- State implemented and operated
- Flexibility in assistance provided
- Type of assistance: e.g., loans, refinancing, guarantees
- Loan terms: i.e., interest rate, repayment period, projects funded

NEW ENGLAND FORESTRY FOUNDATION

Leveraging Green Banks to Invest in Climate Resilience via Nature-Based Solutions

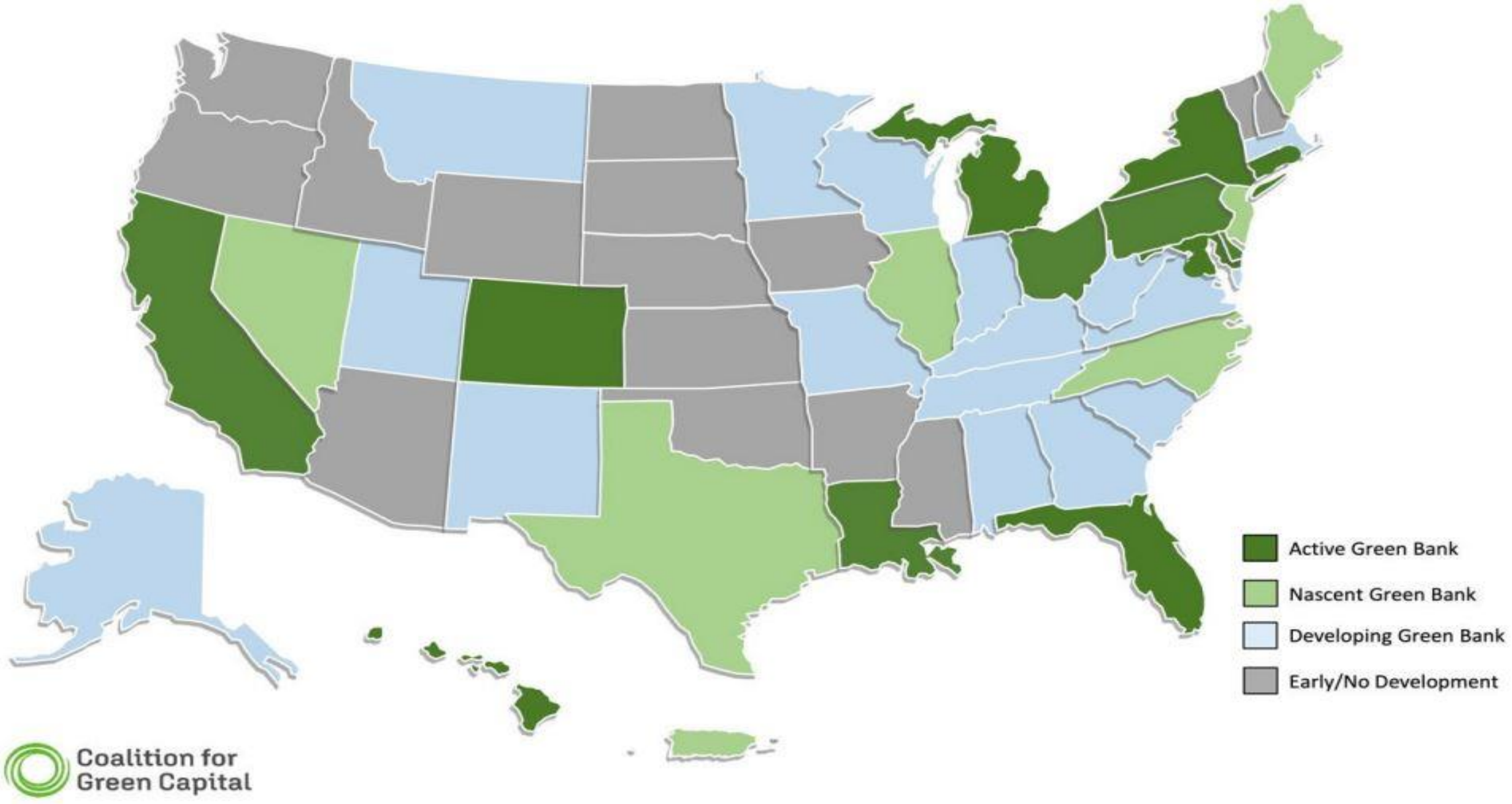
July 2023

Agenda

1. Challenges & Opportunities for Green Banks and NBS

2. Case Study Deep Dive #1 – Connecticut Green Bank

3. Case Study Deep Dive #2 – Soil & Water Outcomes Fund



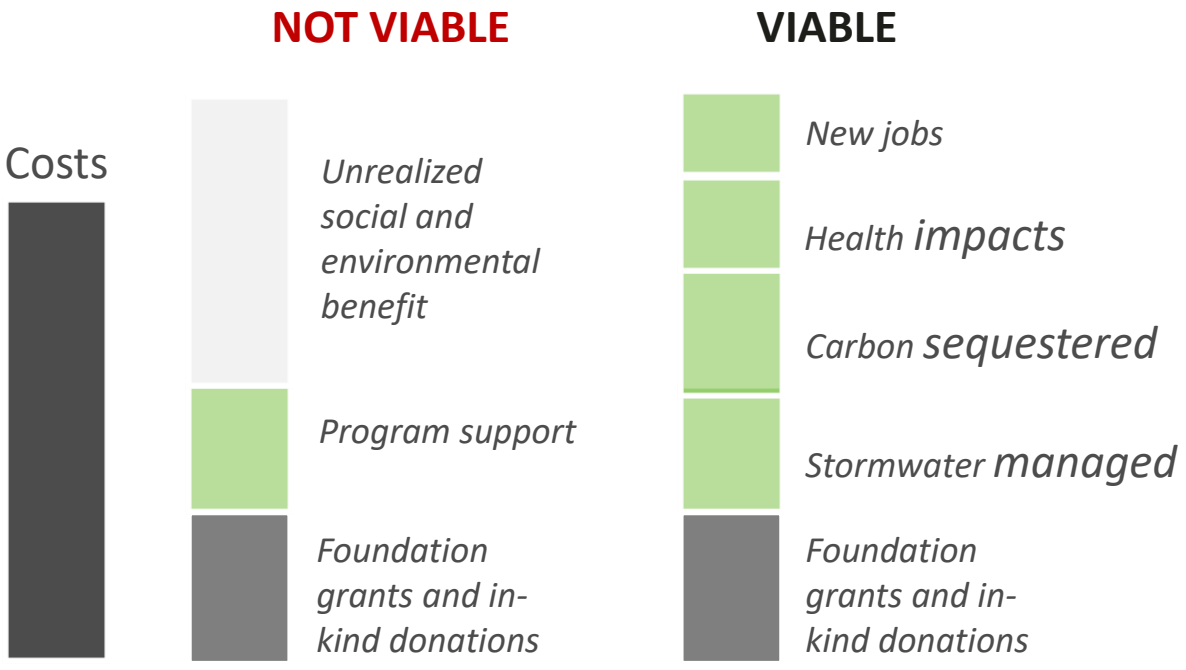
Challenges & Opportunities

Why should green banks be financing climate resilience?

Scale: NBS can provide 37% of the mitigation needed to achieve the Paris Agreement's 2030 targets.

Capital Stack: Variety of benefits and financing structures requires unique approach that pairs private and public capital.

Stacking Benefits



Financing Structures to Deliver ROI +Impact

Financial Capital Markets *Financial: Market Rate*	Equity	Debt	
Impact Investing Markets *Financial + Social*	ESG Screening	Mission-Related Investment	Program-Related Investment
Philanthropy & Giving Markets *Social: Below Market Rate*	Credit Enhancement	Reimbursable Grants / Loss Reserve	Grants / Philanthropy

Challenges & Opportunities for Green Banks & NBS

1. Nascent green banks focus primarily on residential solar and energy efficiency → New green banks can leapfrog timeline by mirroring mature green banks

2. Green banks are mostly clustered in densely populated East Coast states → States with new green banks will have different needs – especially in the West

3. NBS have fewer established revenue mechanisms → Additional resilience benefits = stacking funding from different sources

Challenges & Opportunities for Green Banks & NBS

4	There is concern about NBS' ability to quantify impacts and prove GHG reductions	→	Can highlight successful projects and normalize the direct purchase of outcomes
5	There is political desire to get GGRF $ deployed immediately	→	Need to be ready with pipeline of potential shovel-ready NBS projects

Case Studies

Examples for NBS + Climate Financing

Financing NBS can take many different forms…

Area	Revenue Generating Benefits	Financing Tools / Structures	QV Case Study
Agriculture	Water Quality, Carbon Sequestration	Outcomes Payments	Soil and Water Outcomes Fund
Land Conservation	Land Appreciation, Carbon Sequestration, Timber Sales	Investment Fund	Maine Mountain Collaborative
Parks & Recreation	Tax Revenues from Increased Tourism / Visitation	Revenue Sharing	Outdoor Recreation Council of Appalachia / Baileys Trail System
Water	Water Quality	Environmental Impact Bond	Washington, DC
Climate Adaptation	Coastal Flooding	Environmental Impact Bond	Hampton, VA
Environmental Markets	Species Habitat Protection	Mitigation Credits	BASF
Waste / Recycling	Reused Materials, Job Creation	Outcomes Payments	Urban Wood EIB

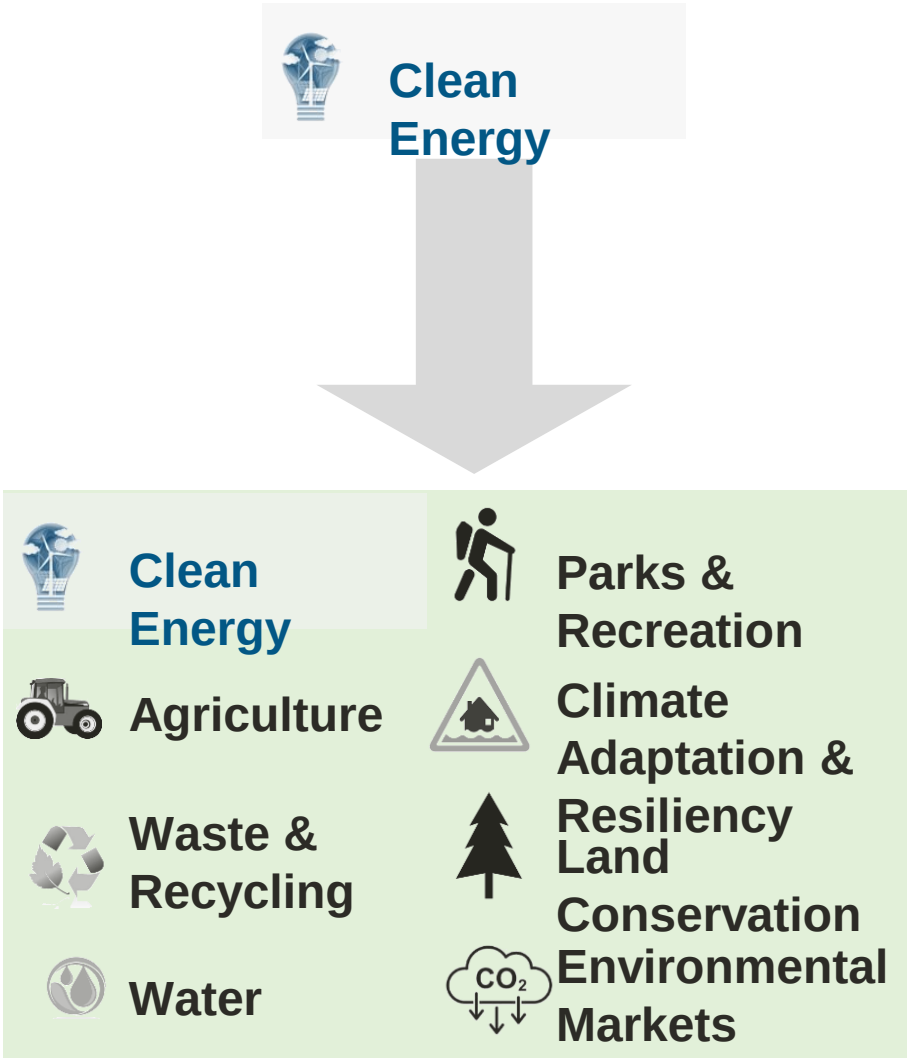
Connecticut Green Bank

SUMMARY

In 2021, Connecticut expanded the scope of the Connecticut Green Bank to not only finance residential solar and energy efficiency, but also projects related to water, agriculture, climate adaptation, land conservation, waste & recycling, and parks & recreation. QV led internal and external workshops, identified practices to be included in the Smart E-Loan program, and created a playbook of different financing mechanisms.

OUTCOMES

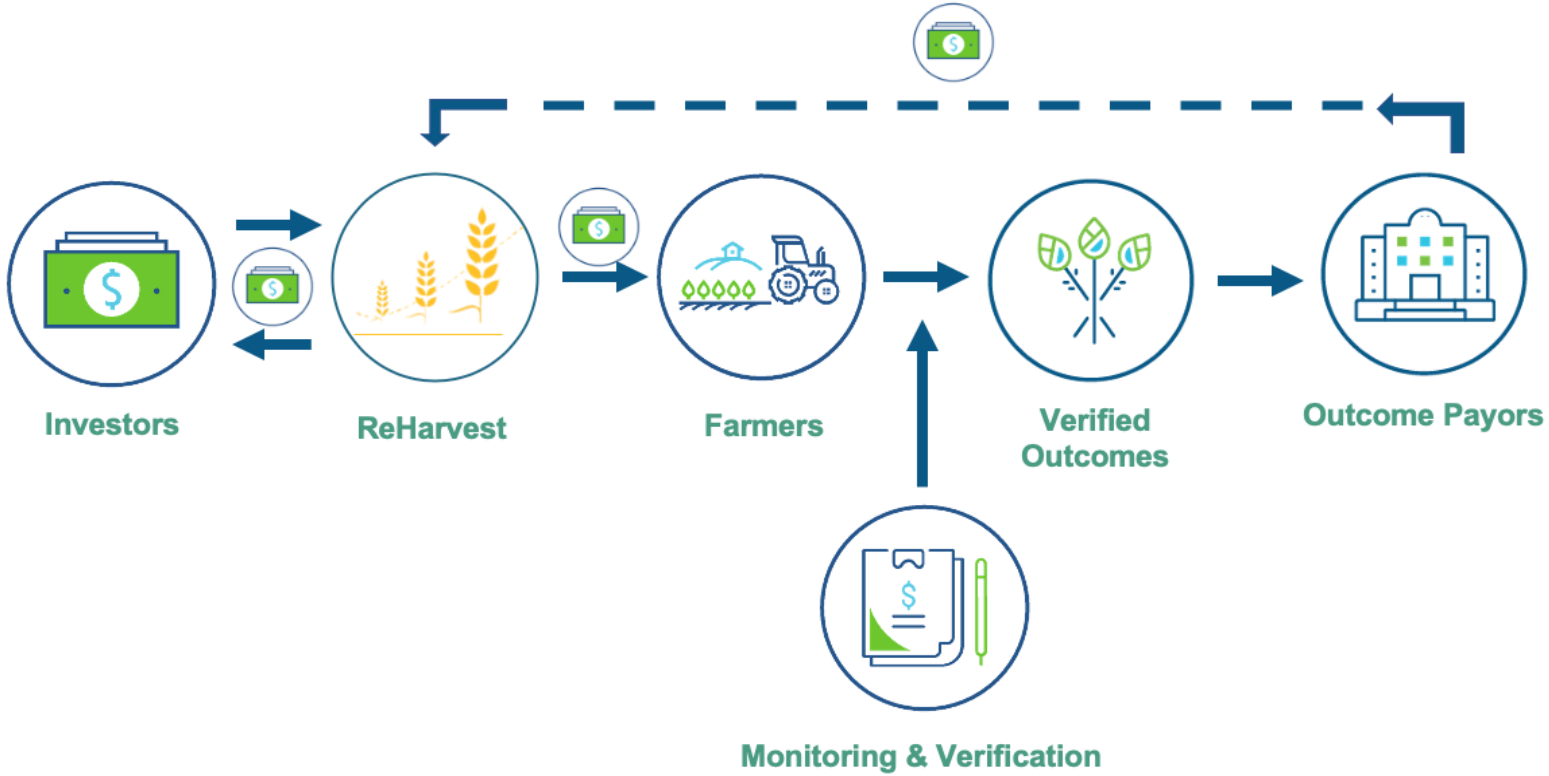
- ✓ Education sessions with CGB staff
- ✓ Workshops with CGB and relevant state agencies
- ✓ Internal capacity building
- ✓ Financial structuring & guidance



Soil and Water Outcomes Fund

SUMMARY

Quantified Ventures launched this Fund to provide financial incentives directly to farmers who implement regenerative agricultural practices that yield positive environmental outcomes like carbon sequestration and water quality improvements. These outcomes are then sold to corporate beneficiaries looking to offset their carbon footprint or public entities seeking to improve and safeguard water quality.



OUTCOMES

- **Environmental Outcomes (2021):** 111,500 tons CO2e sequestered, 1,900,000 lbs. nitrogen and 112,400 lbs. of phosphorus pollution avoided
- **Leveraging Private Capital:** Won $185 million from USDA Climate-Smart program, leveraging additional $60 million in private sector capital

Green Bank Financing in the Stormwater Retention Credit (SRC) Market

Accelerating GI Retrofits to Protect the District's Waterways

Lukin Jacob

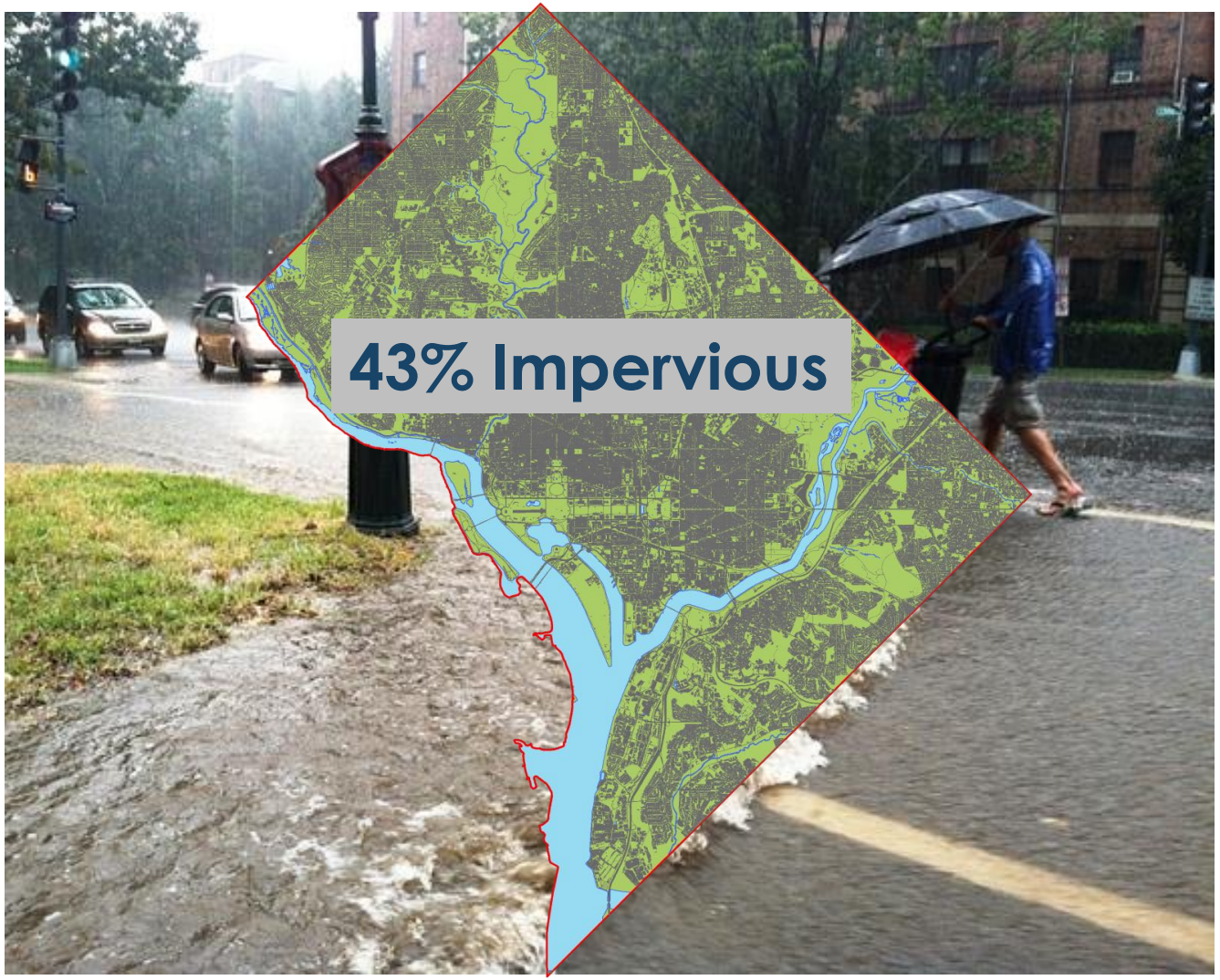
Department of Energy & Environment

August 9, 2023

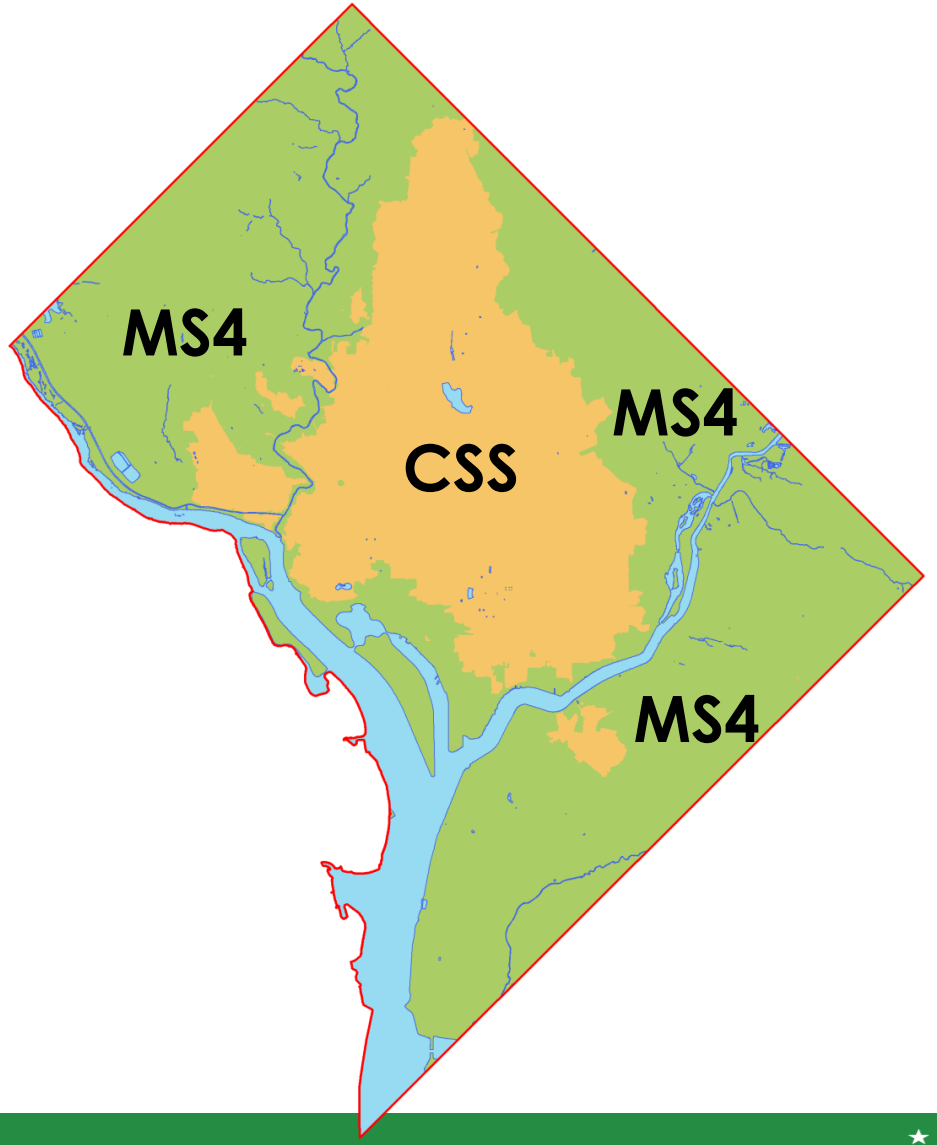
AGENDA

- Program Overview
- Models for Green Infrastructure Financing
- Questions

STORMWATER CHALLENGES IN THE DISTRICT



STORMWATER CHALLENGES IN THE DISTRICT



REGULATIONS ENABLE CREDIT MARKET

- Stormwater Rule requires re/development projects to manage stormwater with GI
  - Annual retention requirement
  - Compliance flexibility via off-site retention
- Off-site retention met with stormwater retention credits (SRCs)
- 1 SRC = 1 gallon of retention/year

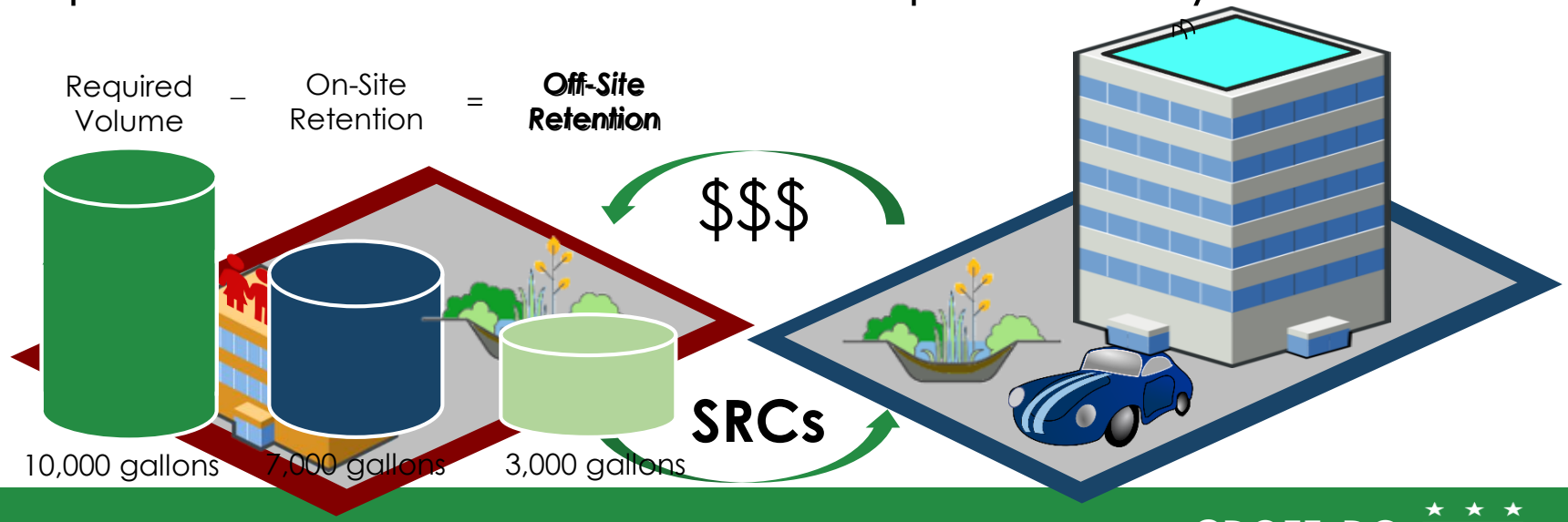
EXAMPLE SRC TRANSACTION

Demand

Supply

Market Transaction

- Development has 10,000-gallon stormwater management requirement:
  - Installs GI with 7,000-gallon capacity
  - Chooses amenities & opts for a 3,000-gallon off-site retention volume (Offv)
- SRC Aggregator partners with local nonprofit in MS4:
  - Installs voluntary GI with 6,000-gallon capacity
  - Generates 18,000 SRCs in 1st SRC certification cycle (certify 3 years at a time)
- Condo development purchases 18,000 SRCs & complies for 6 years



SRC PRICE LOCK PROGRAM DE-RISKS INVESTMENT IN GI

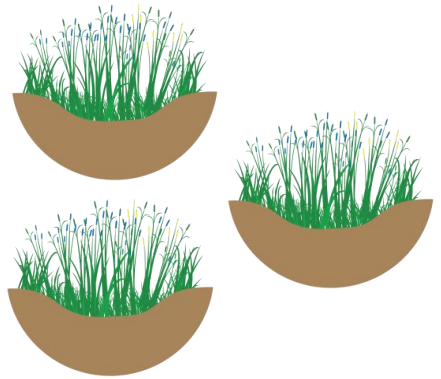
Funding Sources

Funds invested to build GI

SRC Aggregators

Funds deployed to build GI

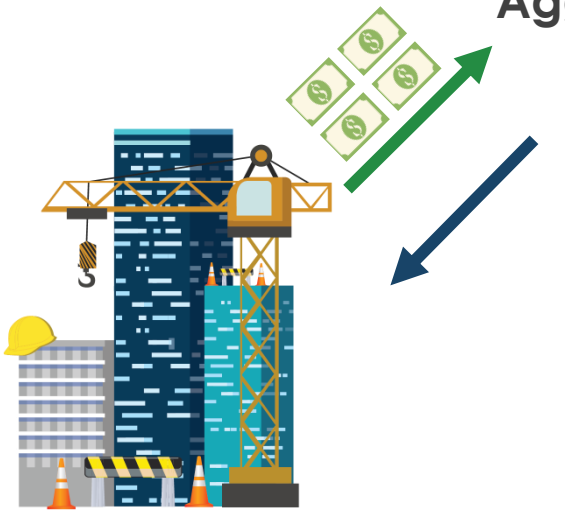
SRCs generated by GI



Land Owners

Payback Scenario 1:
Sell SRCs in Marketplace w/ DOEE-subsidized price

$$$



Regulated Project w/ Off-site Retention Volume (Offv)

+

Subsidy

SRC Price Lock Program

Payback Scenario 2:
Sell SRCs to DOEE

$$$

SRC PRICE LOCK PROGRAM DE-RISKS INVESTMENT IN GI

Funding Sources

Payback Scenario 1:
Sell SRCs in Marketplace w/ DOEE-subsidized price

$$$

Challenges:

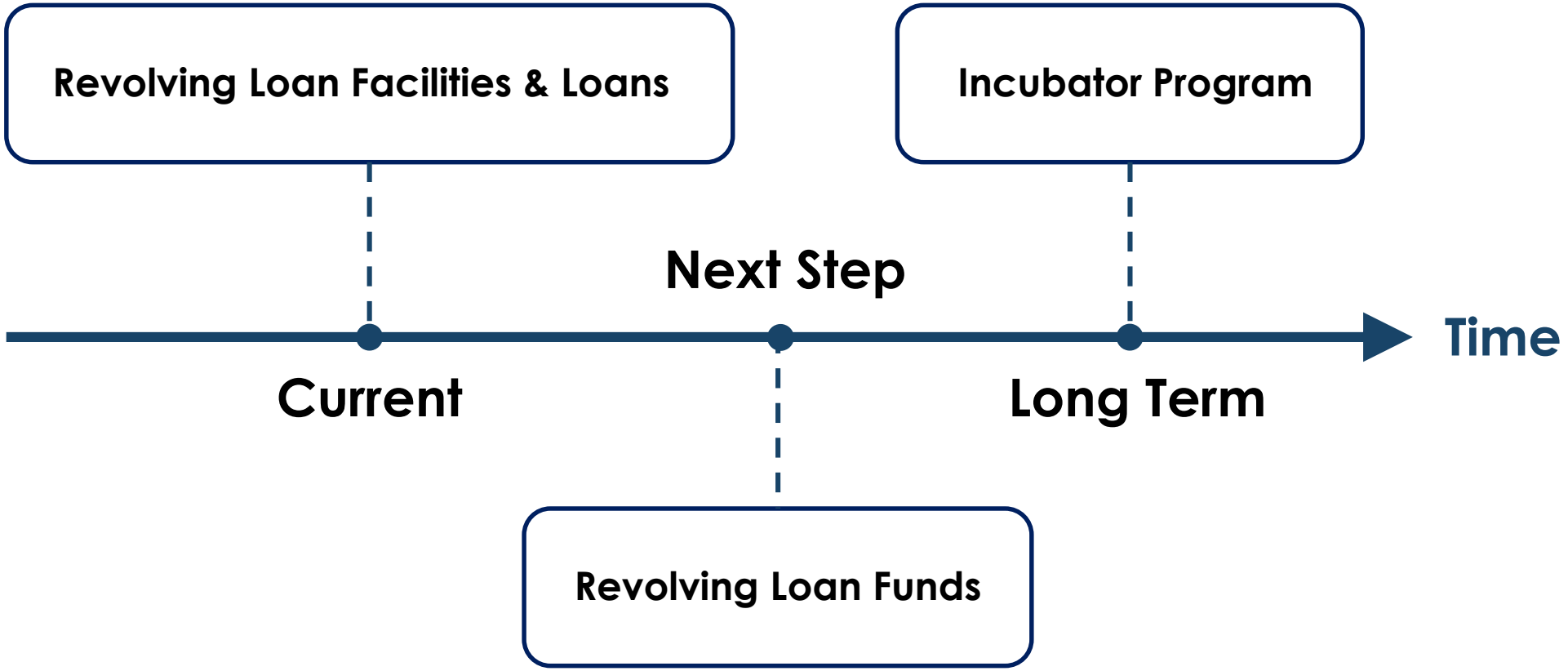
- Traditional loans can make projects infeasible
  - High-interest loans
- Timing issues (e.g., grants, pay-back schedule)

DC Green Bank

- Mission alignment and public interest
- SRC market understanding
- Willingness to prioritize local environmental gains over financial returns

GREEN BANK INVESTMENT IN GREEN INFRASTRUCTURE

3 MODELS FOR DC GREEN BANK FINANCING



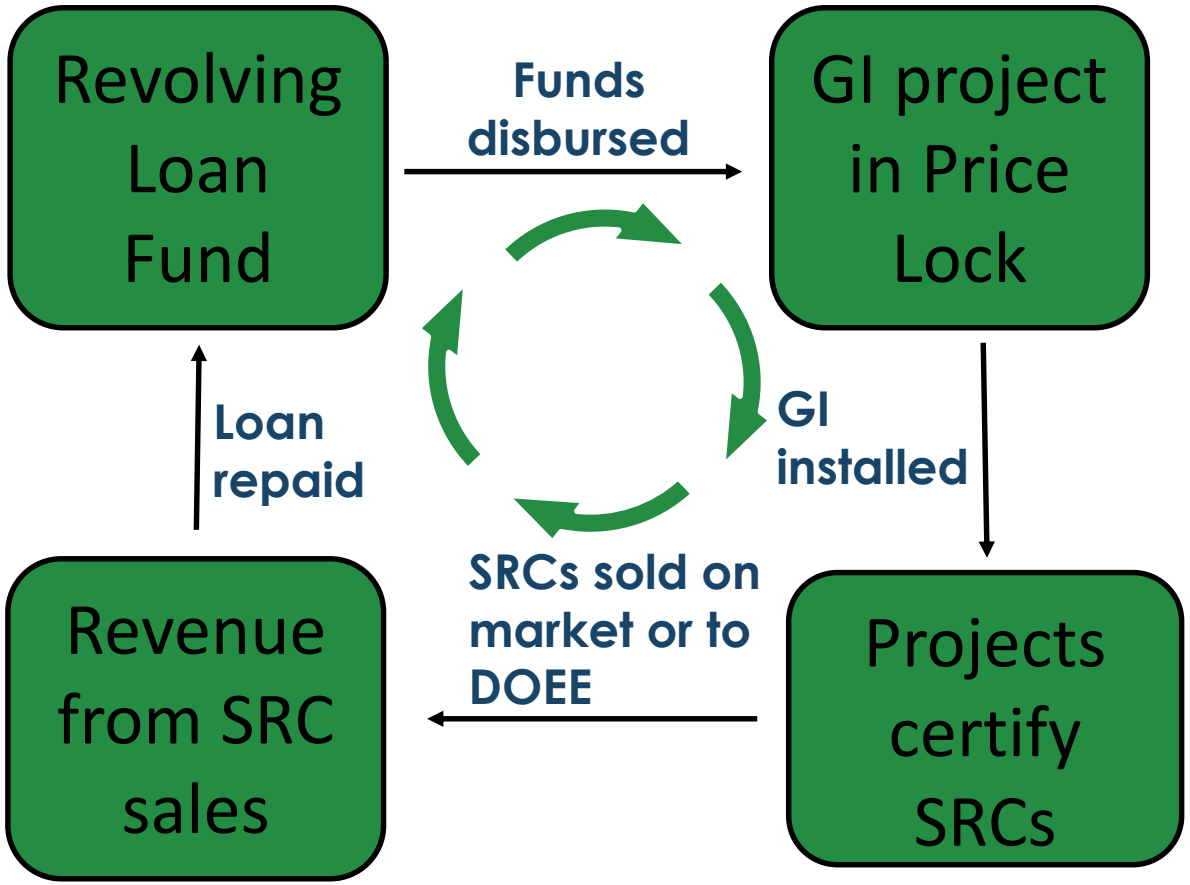
CURRENT MODEL: REVOLVING LOAN FACILITIES AND LOANS

- Agreement between DCGB and SRC aggregator
- Funding contingent (so far) on pre-existing Price Lock agreement with DOEE
- "Internal" revolving loan fund
  - Fixed pool of funds
  - Aggregator delivers # projects over # years
  - Funds recirculated for more projects as loan(s) repaid

DC Green Bank And Rainplan Announce A $2,000,000 Deal To Support Commercial And Residential Stormwater Management Projects

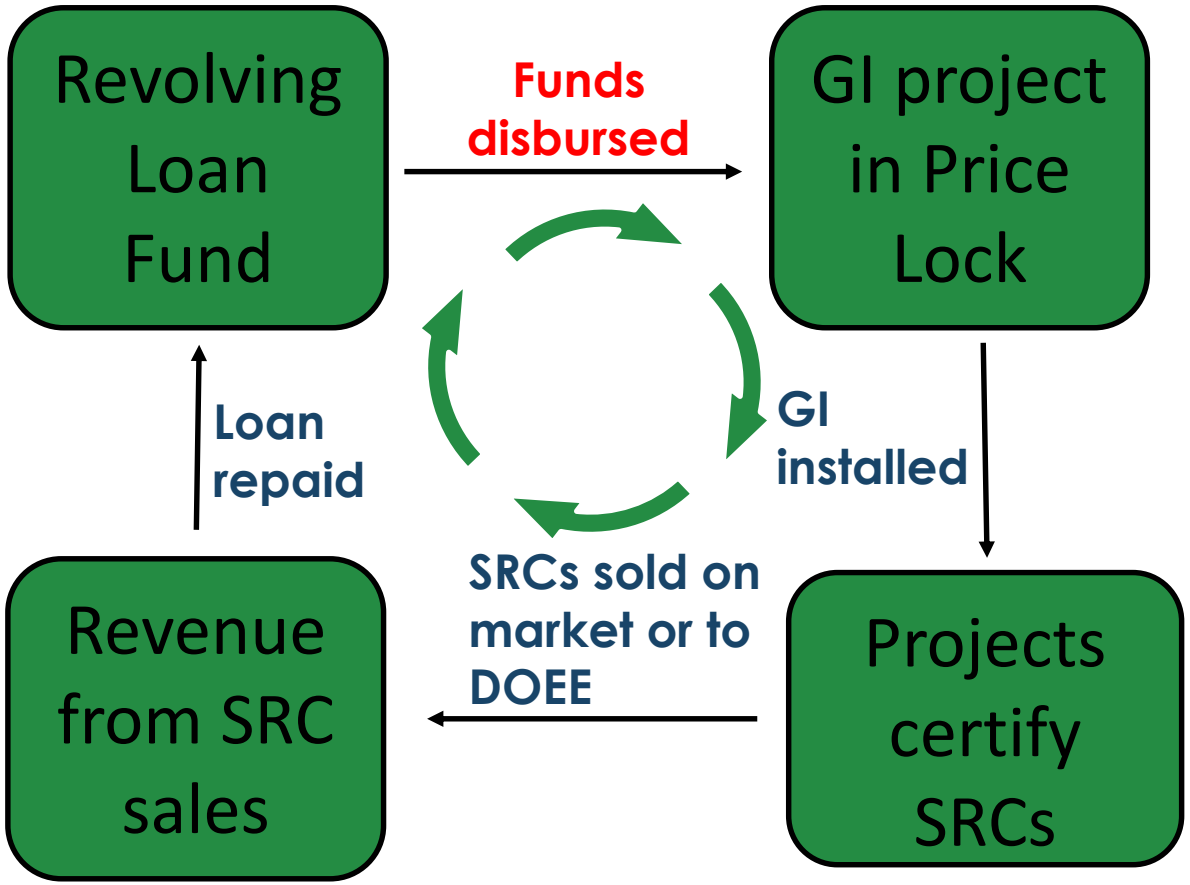
AUGUST 31, 2022

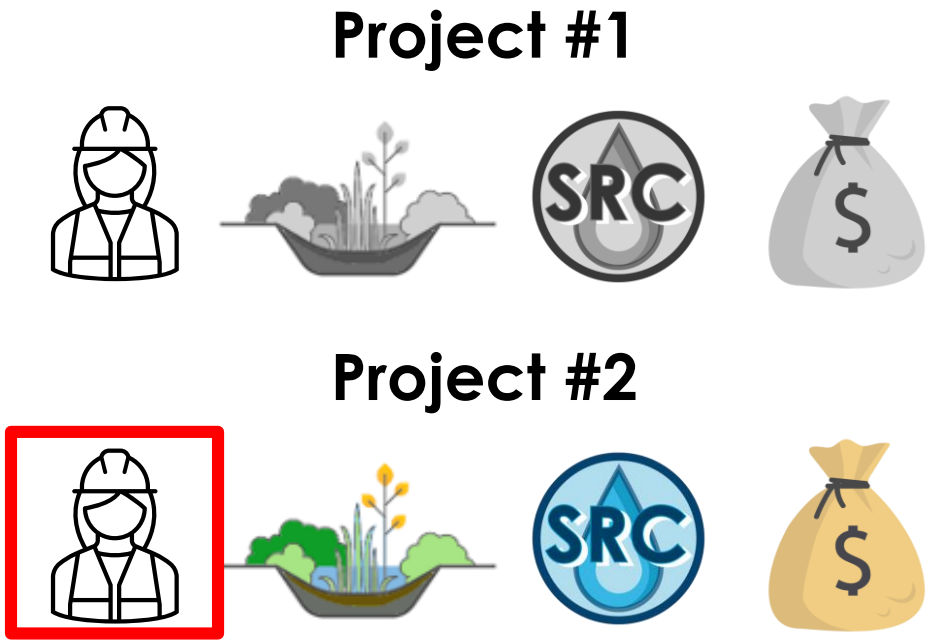
ESTABLISHING A FAVORABLE REVOLVING LOAN FUND



Project #1

ESTABLISHING A FAVORABLE REVOLVING LOAN FUND





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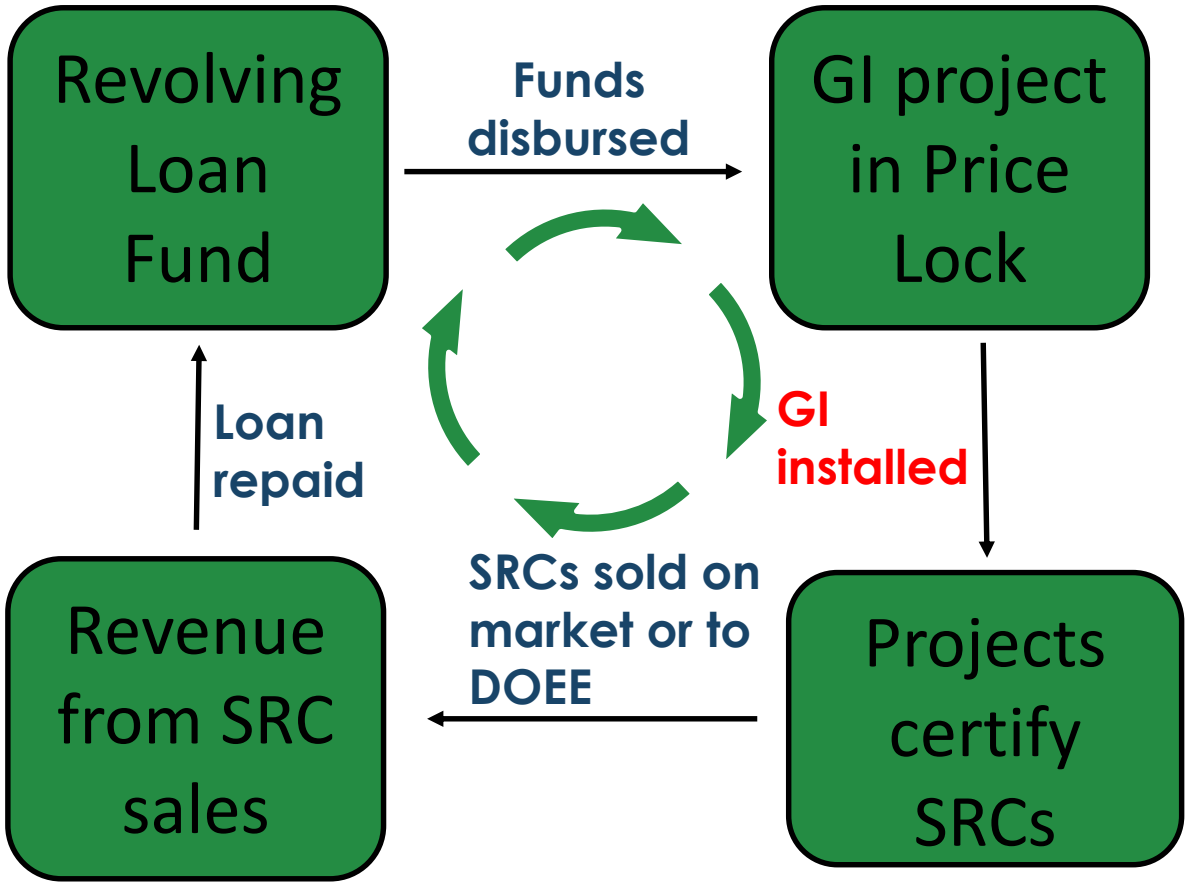

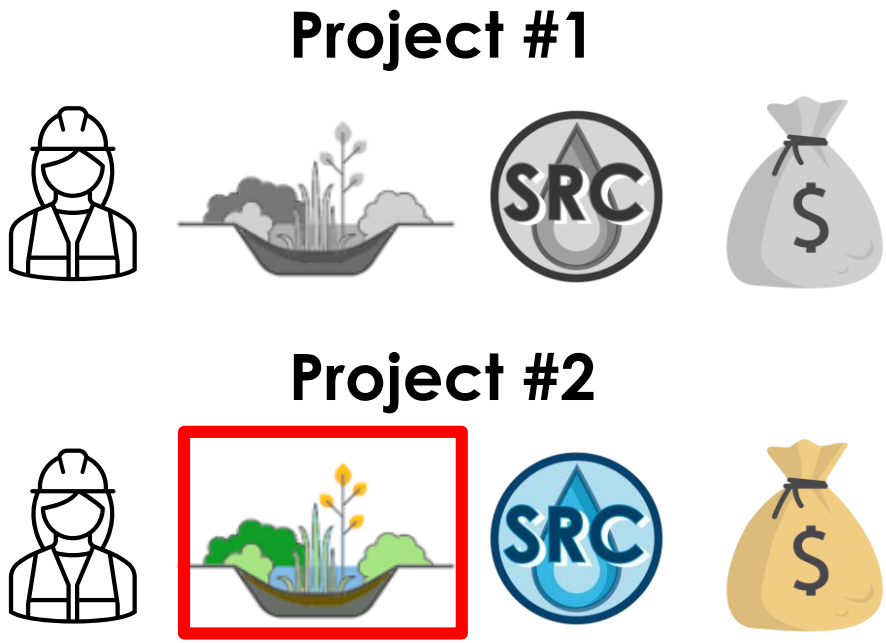

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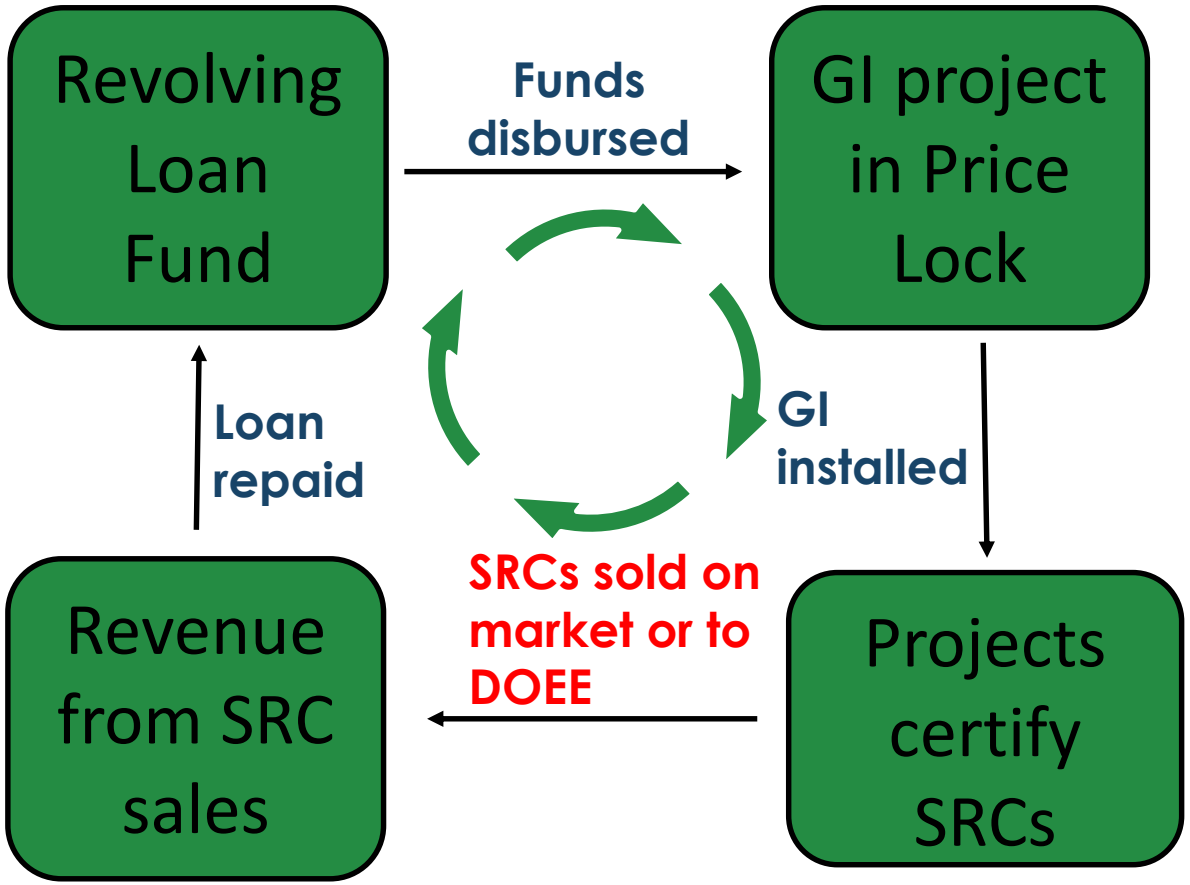

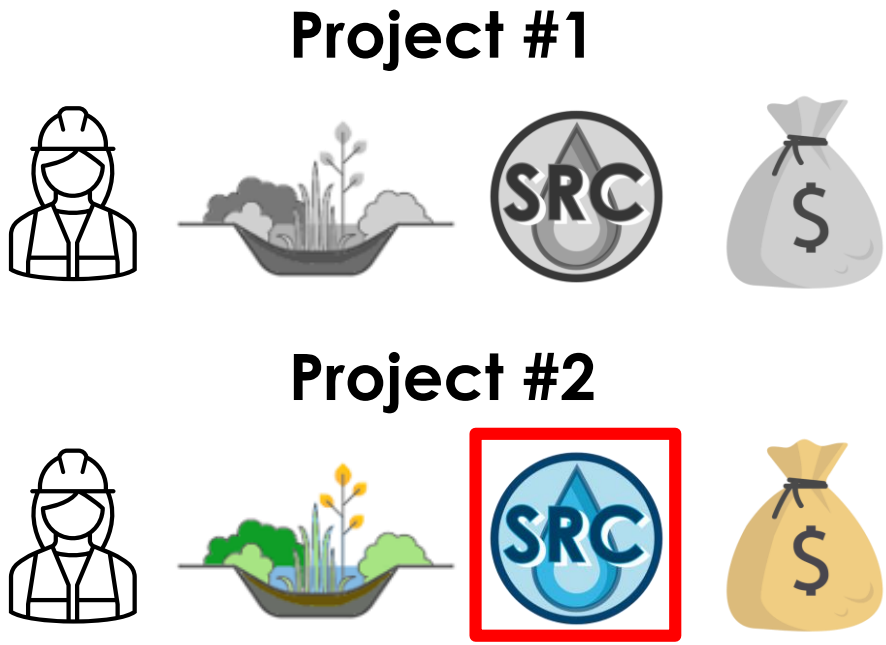

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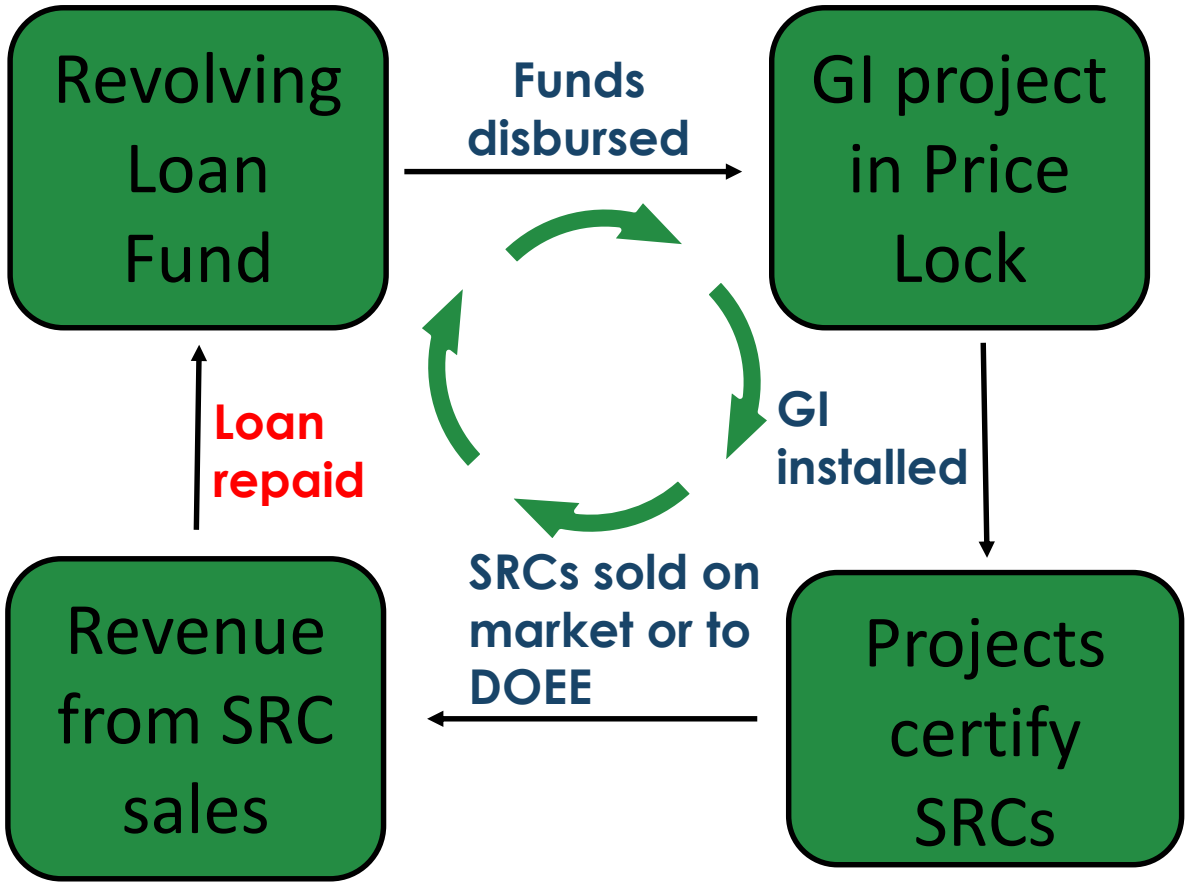

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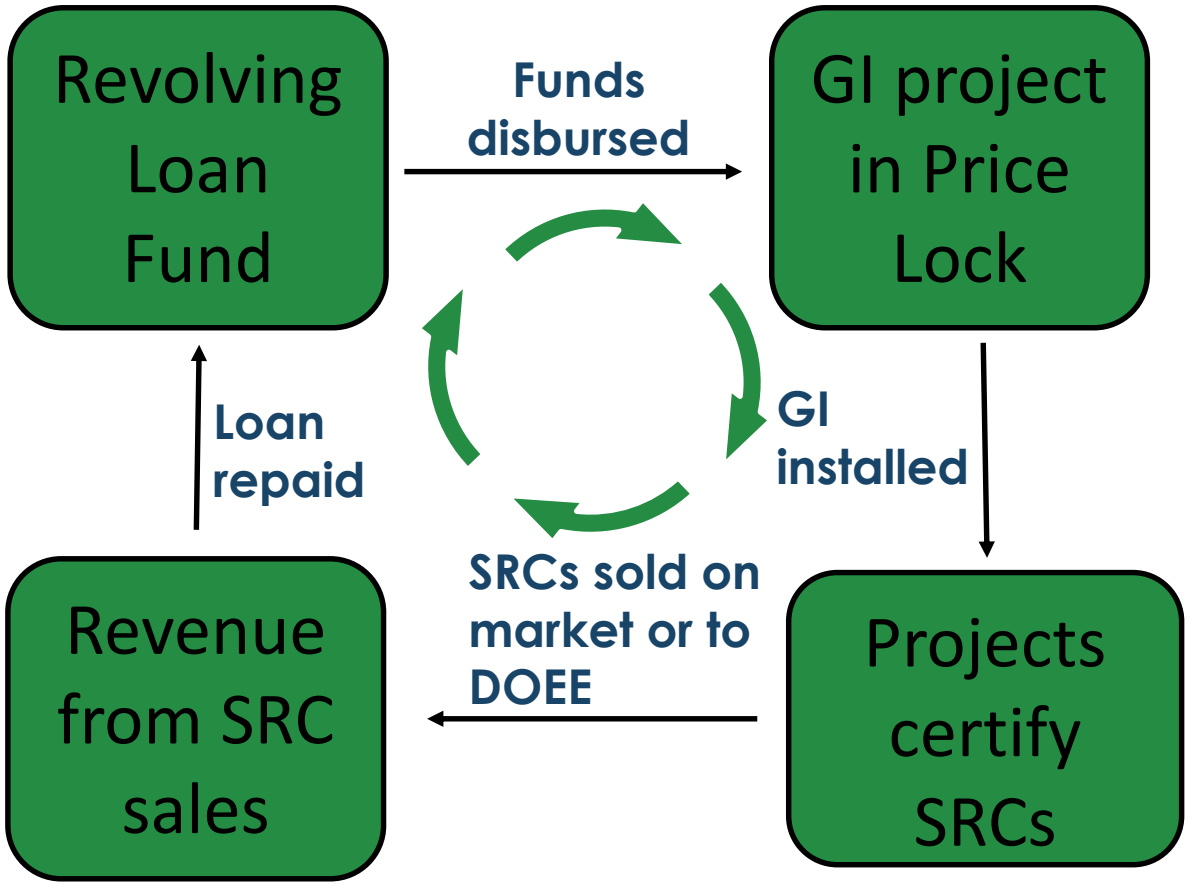
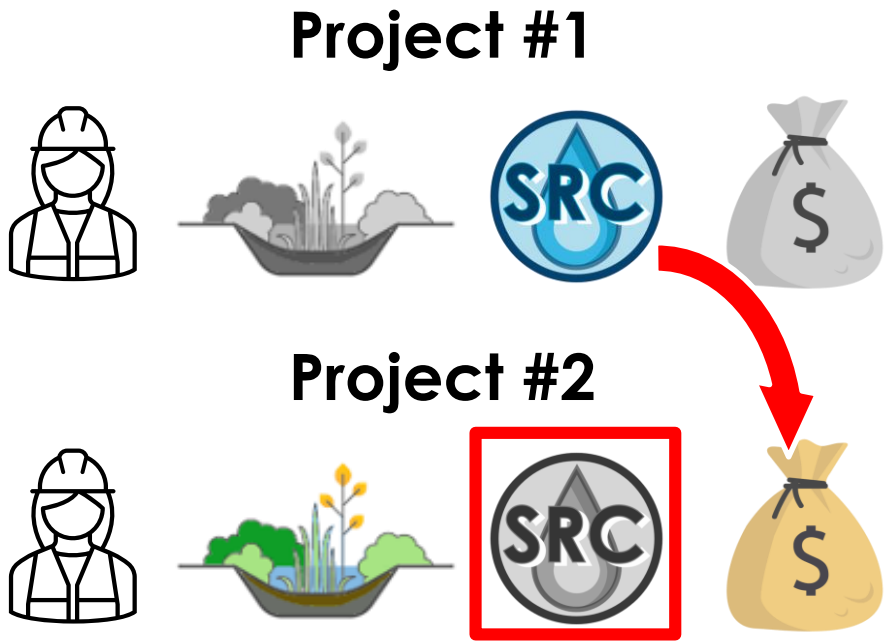




INCUBATOR PROGRAM FOR AN EQUITABLE SRC MARKET

Goal:

Build capacity and prioritize local, minority-owned businesses

Status:

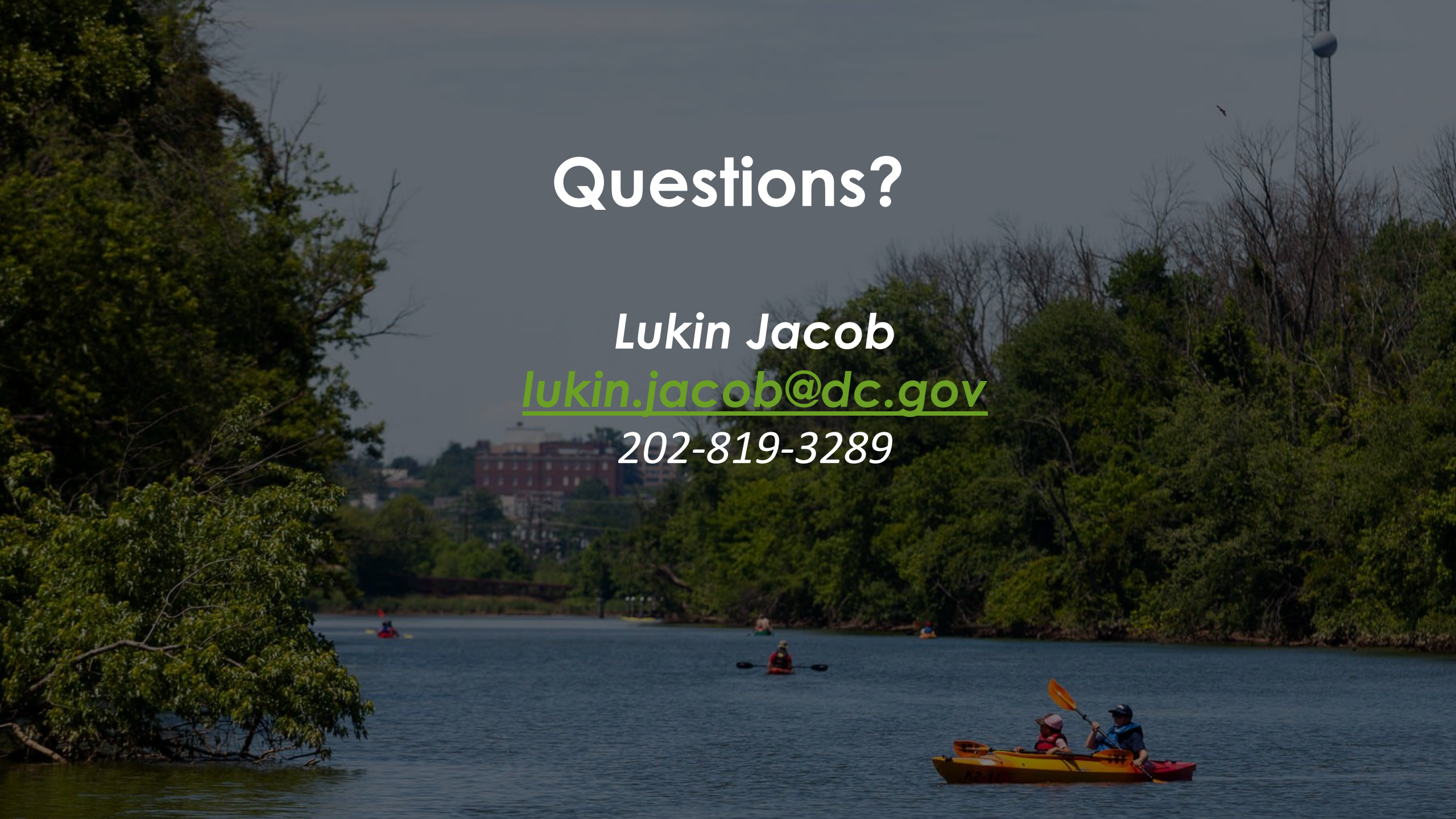
Future consideration

How would work:

- DOEE fully covers costs of 1-2 projects
- Establish partnerships to expand capacity and grow experience
- Increase access to financing from DCGB, traditional bank, self-finance
- Maximizes return for local businesses and strengthens market
- Aligns with local, green economic development and EJ goals

DC GREEN BANK FINANCING SCENARIOS

SRC Aggregator	Repayment Method	Key Considerations	What Makes Financing Easier?
• Has Price Lock	• Market sales • DOEE as last resort	• Few • DOEE performs SRC Aggregator due diligence	• Experienced SRC Aggregator
• No Price Lock • No long-term purchase agreement	• Market sales	• SRC Aggregator experience • SRC price volatility	• DOEE funding • Experienced SRC Aggregator • Predictable market behavior
• No Price Lock • Has long-term purchase agreement	• Market sales	• Quality of buyer • Potential buyer performs SRC Aggregator due diligence	• Contract with experienced buyer



Questions?

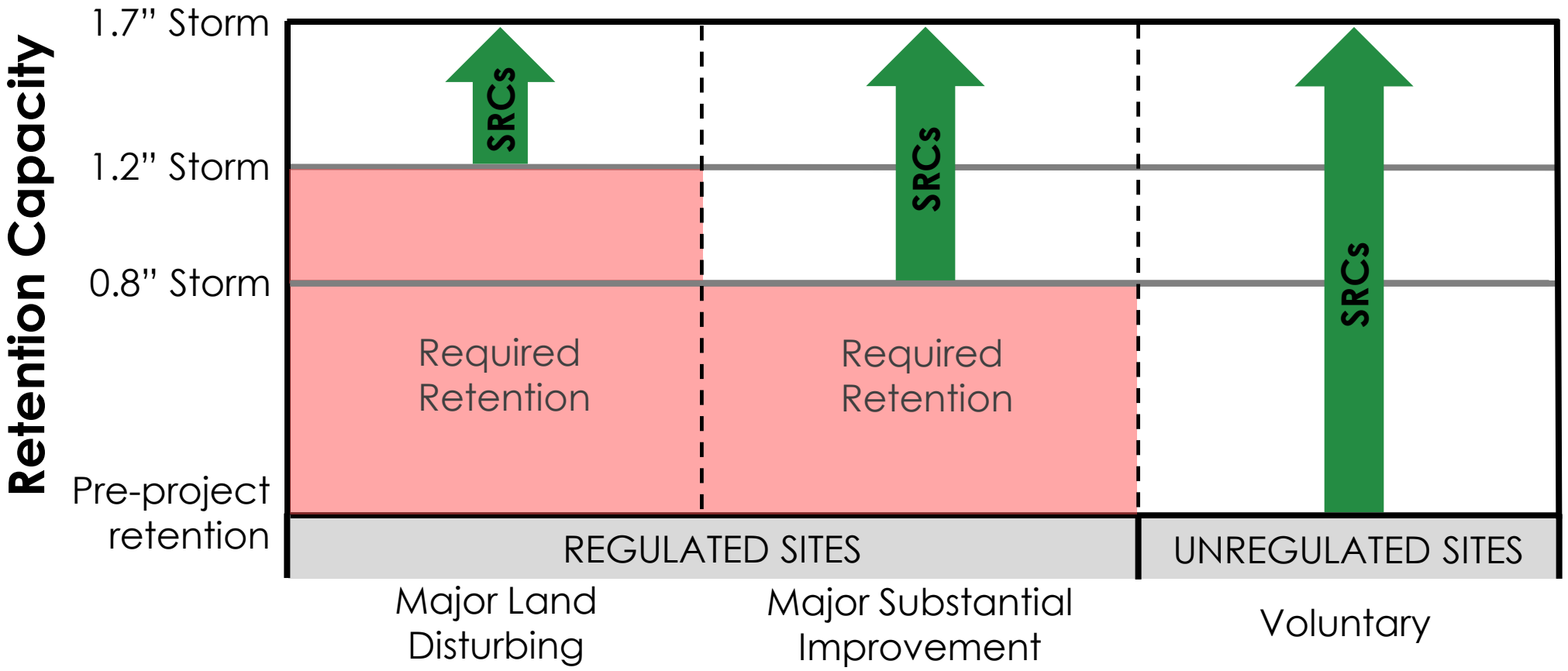
Lukin Jacob

lukin.jacob@dc.gov

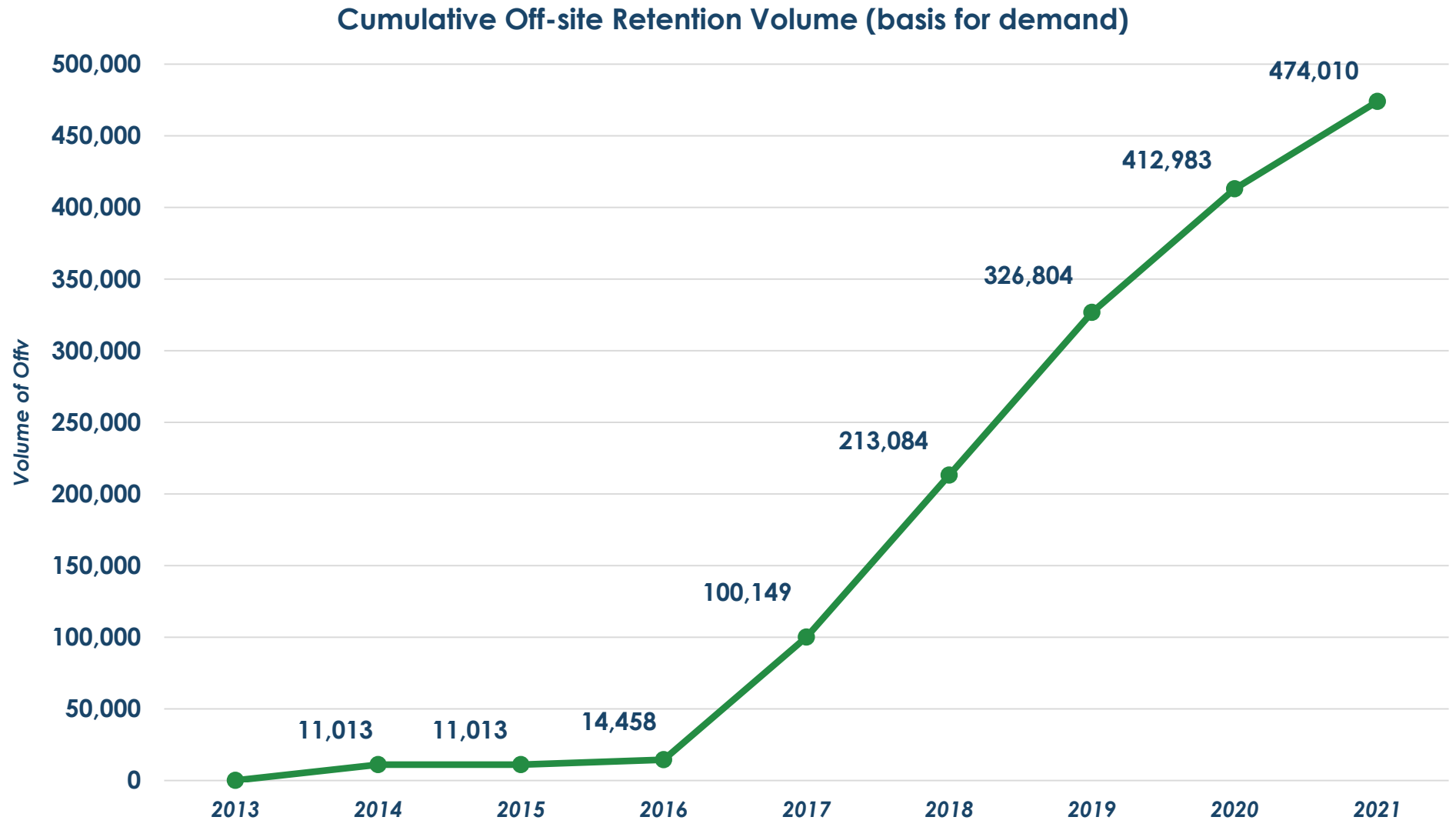
202-819-3289

ADDITIONAL SLIDES

HOW SRCs ARE GENERATED



CUMULATIVE DEMAND GROWS EACH YEAR



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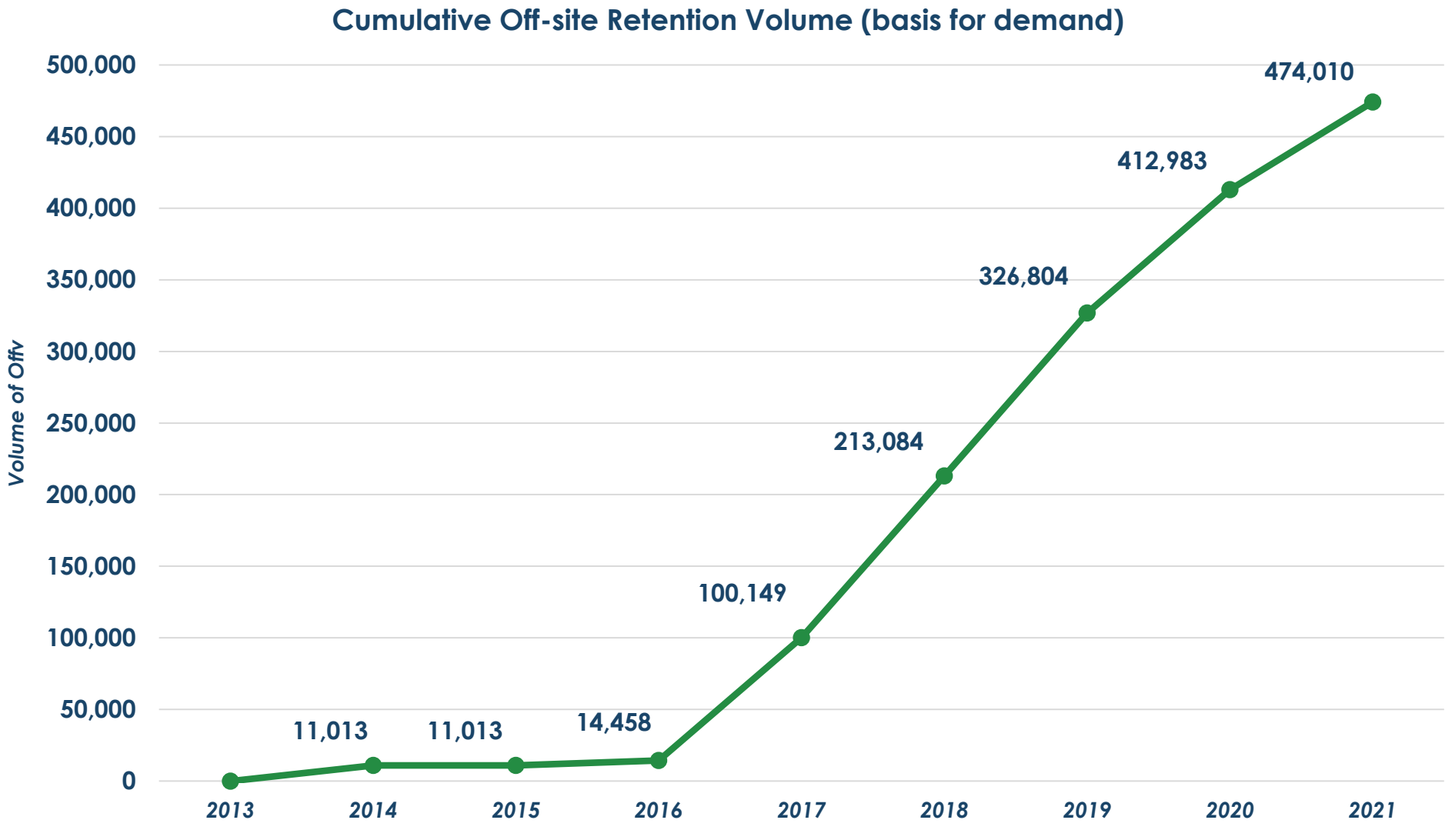
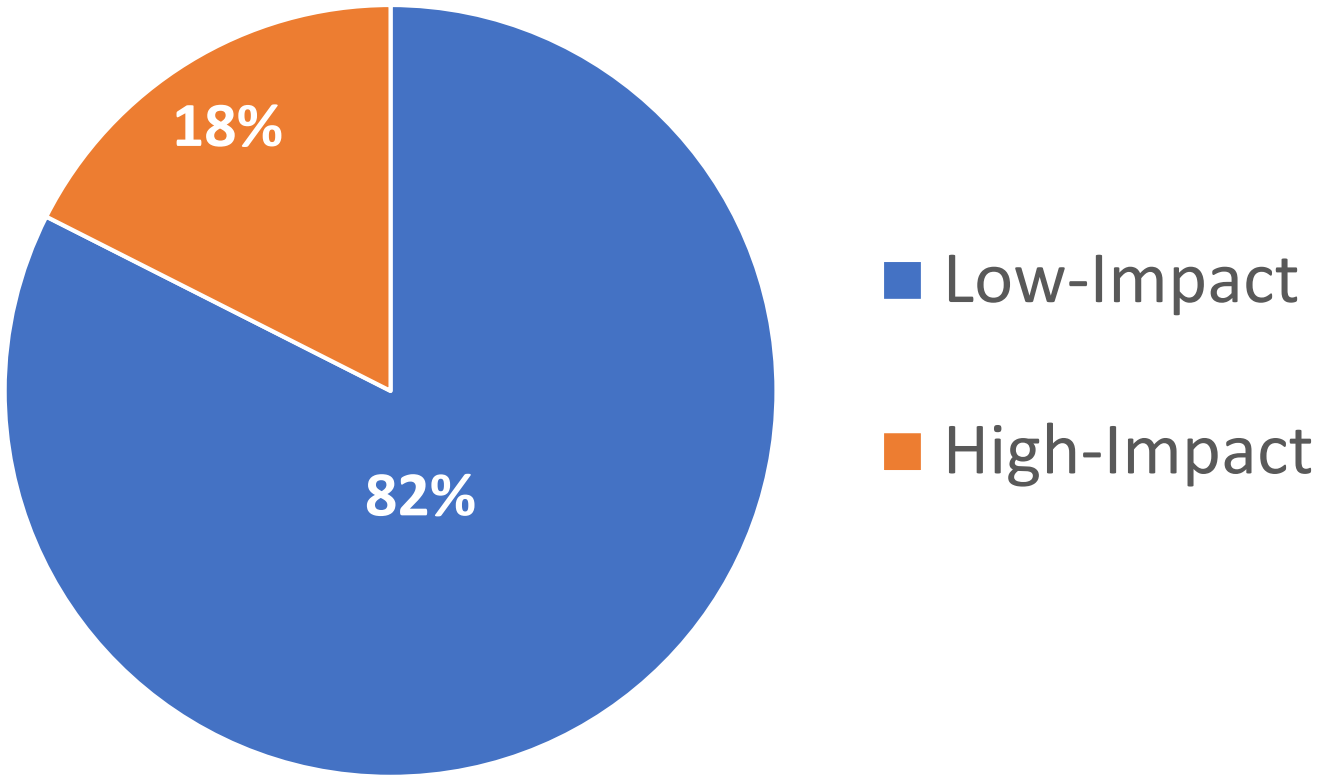


Demand from only ~15% of eligible projects

MOST CREDITS FOR SALE ARE LOW-IMPACT (JUNE 2023)



RULE CHANGES EXPECTED TO CHANGE MARKET DYNAMICS

- Regulatory updates:
  - Require purchase of high-impact SRCs (i.e., voluntary credits in MS4)
  - Establish 1-time compliance option
- Expected effects:
  - Reduce total supply of SRCs on market
  - Increase demand of high-impact SRCs
  - Bring future investment in GI into the present

QUESTIONS?