



**coalition for green capital**

# **Growing Clean Energy Markets with Green Bank/ EIP Financing**

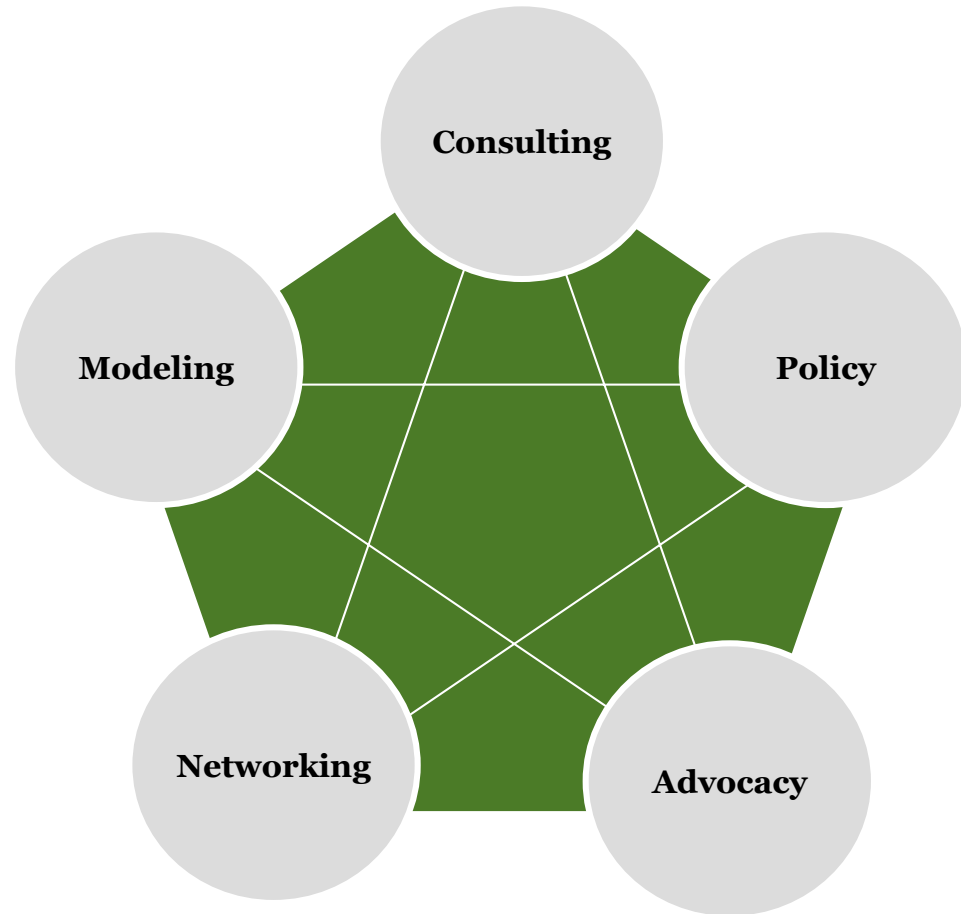
*Coalition for Green Capital  
Jeffrey Schub, Executive Director*

*NASEO Annual Meeting  
September 12, 2016*

# CGC provides expert support and advice to governments pursuing Green Bank creation

**CGC's mission** is to accelerate the transition to the clean energy economy by establishing Green Banks at the state, federal, and international levels.

- Nonprofit 501(c)(3) organization
- CGC's leaders have been driving Green Bank movement since '09
- Offices in DC & NYC
- Receives pro bono support from major international law firms

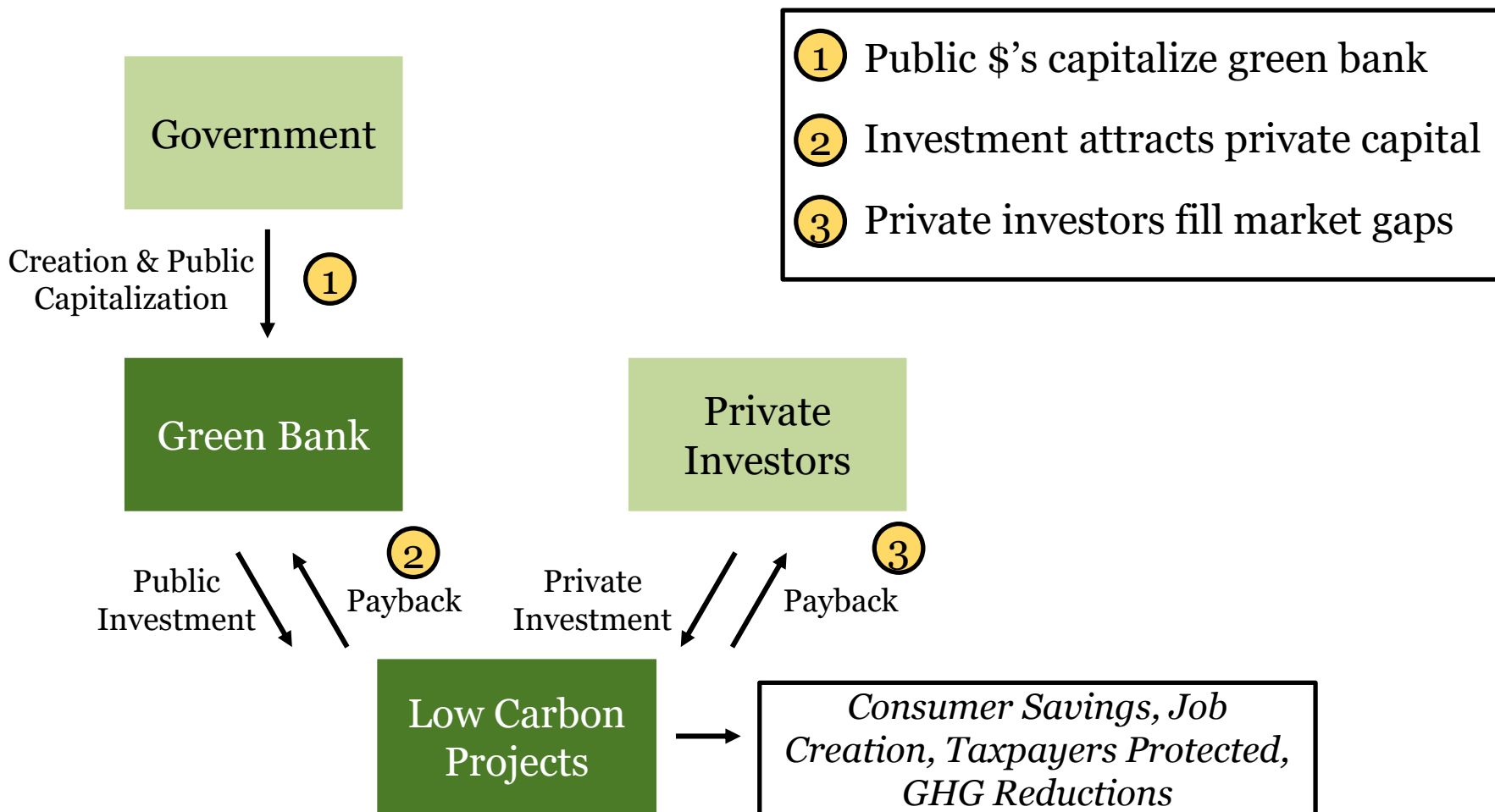


# CGC is leading expert and partner for governments to stand-up dedicated clean energy finance entities

---

- Helped design and create 6 Green Banks, which have catalyzed over \$1.5 billion in clean energy investment
- Actively working in over a dozen states in the U.S.
- Supporting federal efforts to create a National Green Bank
- Now working internationally with India and Ontario
- Leading the creation of the Global Green Bank Network in partnership with 6 Green Banks around the world

# Green Banks are public or quasi-public entities that channel public & private investment to clean energy



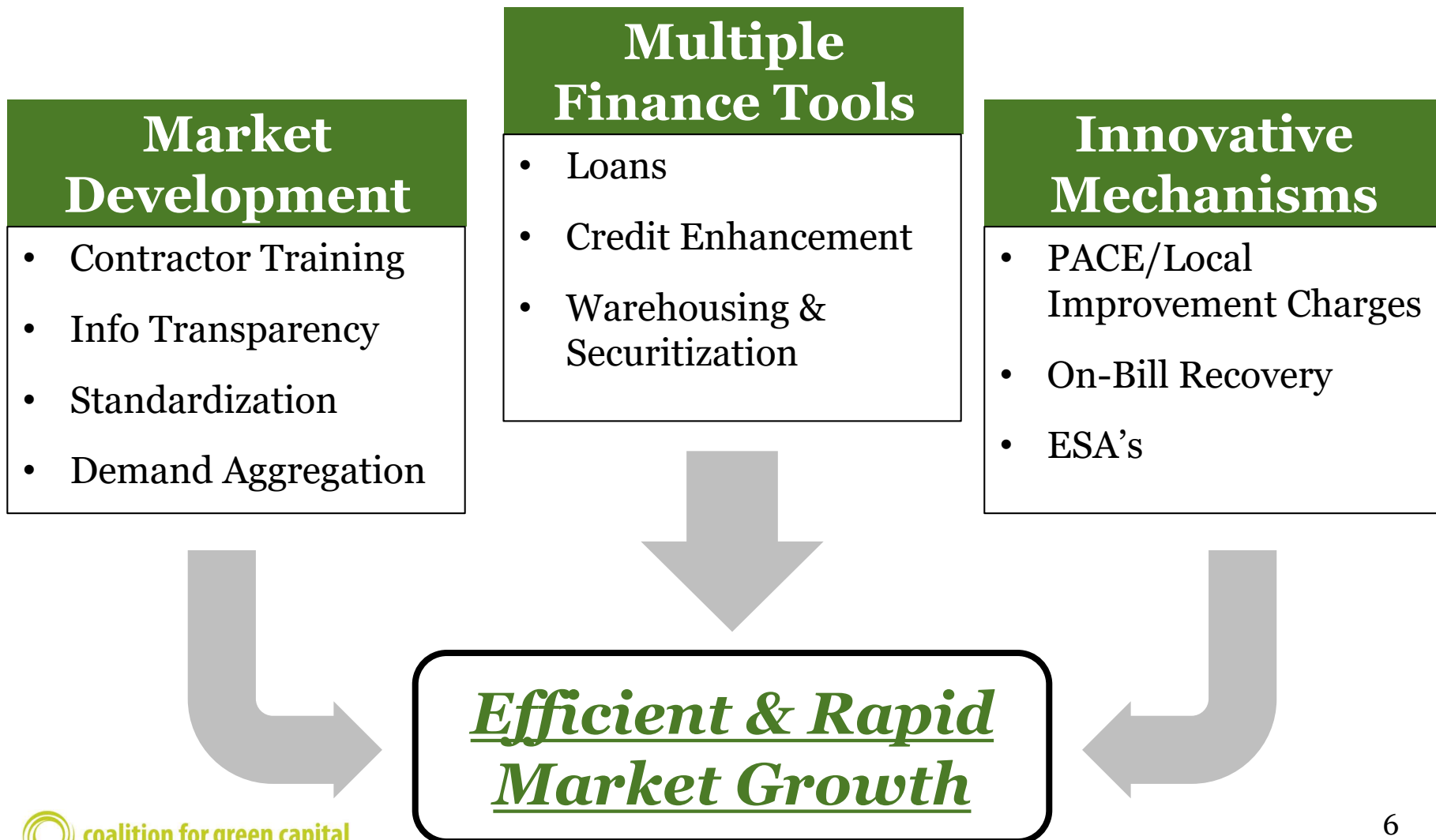
# Green Banks follow common principles, tailored to fit market needs & government objectives

---

## *Green Bank Guiding Principles of Operation*

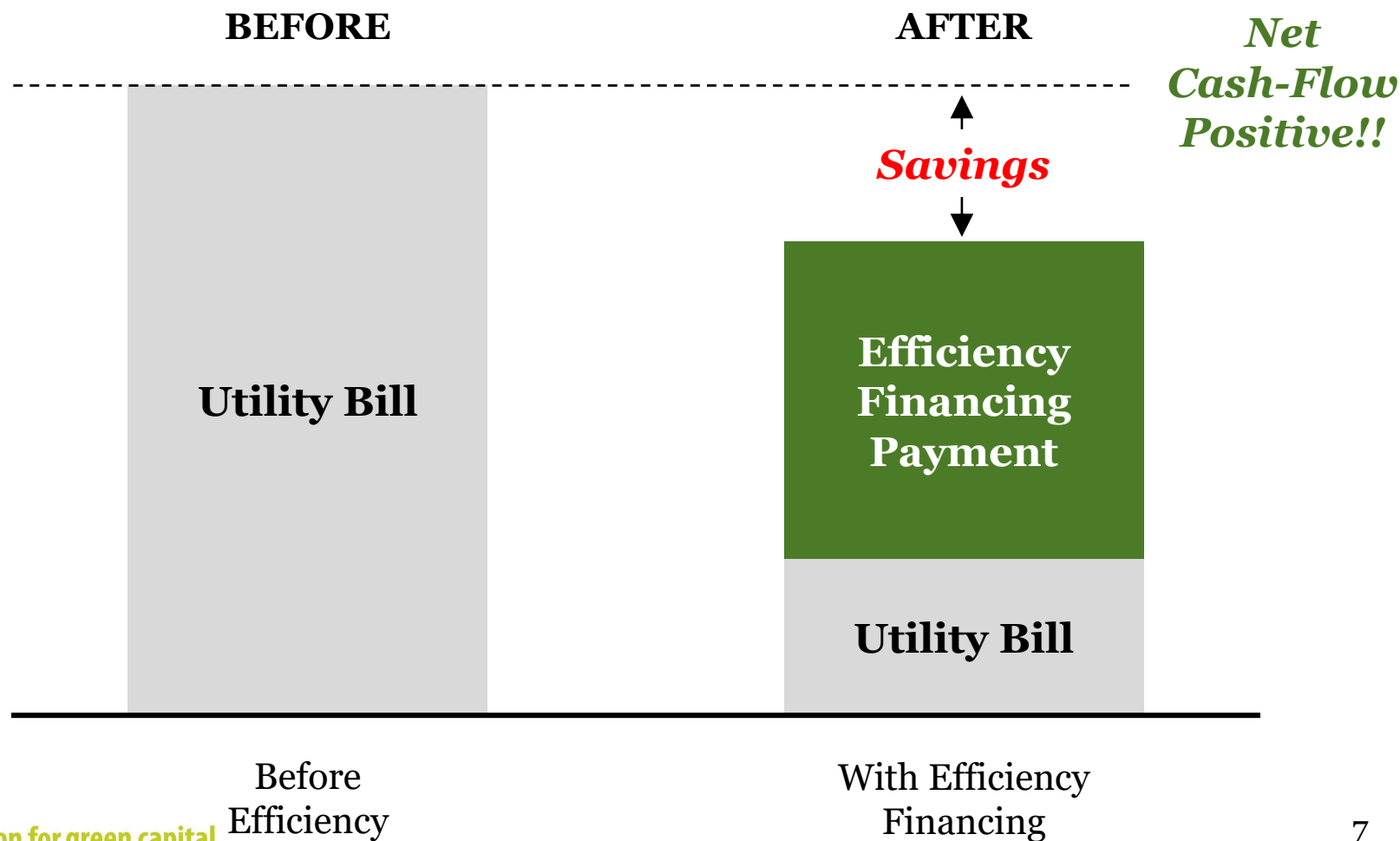
- Utilizes public dollars to leverage private capital
- Provides financing to underserved market sectors
- Is market-oriented, and aims to increase consumer protection, information transparency, and ease of adoption
- Is steadfast in the face of changing political landscape, budget changes, and administrative priorities
- Is a flexible and adaptable institution that reacts to market

# As a focused entity (not just a program) Green Banks use multiple strategies to achieve goals



# Financing structured so that borrower saves money from day one – payback period becomes irrelevant

---



# Green Banks are a win-win-win for consumers, businesses, investors and government

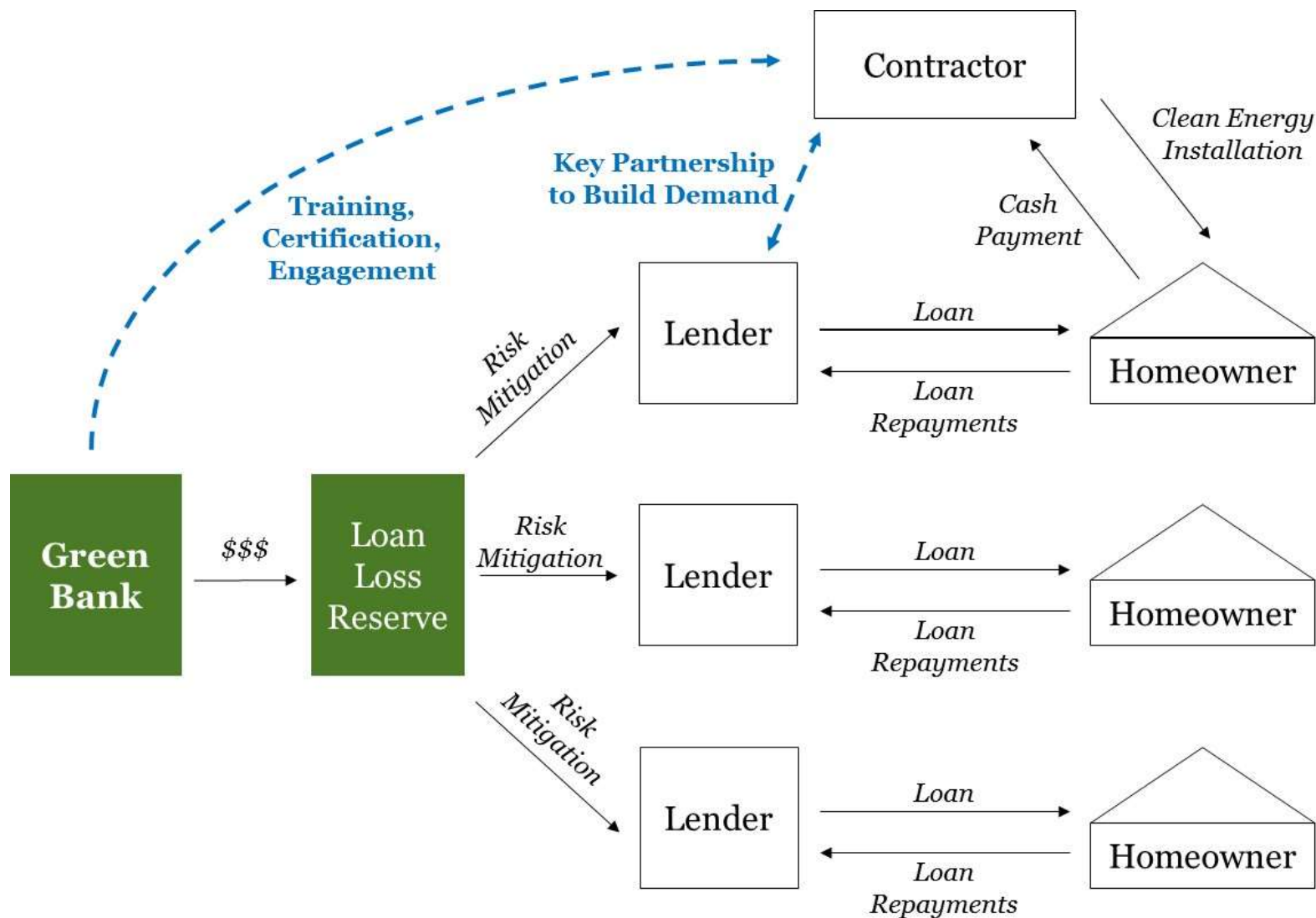
---

## Green Bank Benefits

- **Private Sector Leverage**
  - Financial tools designed to maximize the amount of private sector investment per public dollar used
- **Efficient Government**
  - Provide loans to preserve public capital & do deeper efficiency projects
  - Work in coordination with other agencies to maximize program value
- **Create Jobs & Economic Growth**
  - Clean energy financing enables demand for projects from contractors
  - Public private partnerships create investment opportunities for lenders
- **Put Money Back in Citizens' Pockets**
  - Less funding needed to support public financing than public grants
  - Reduced energy bills with efficiency, renewables create monthly savings

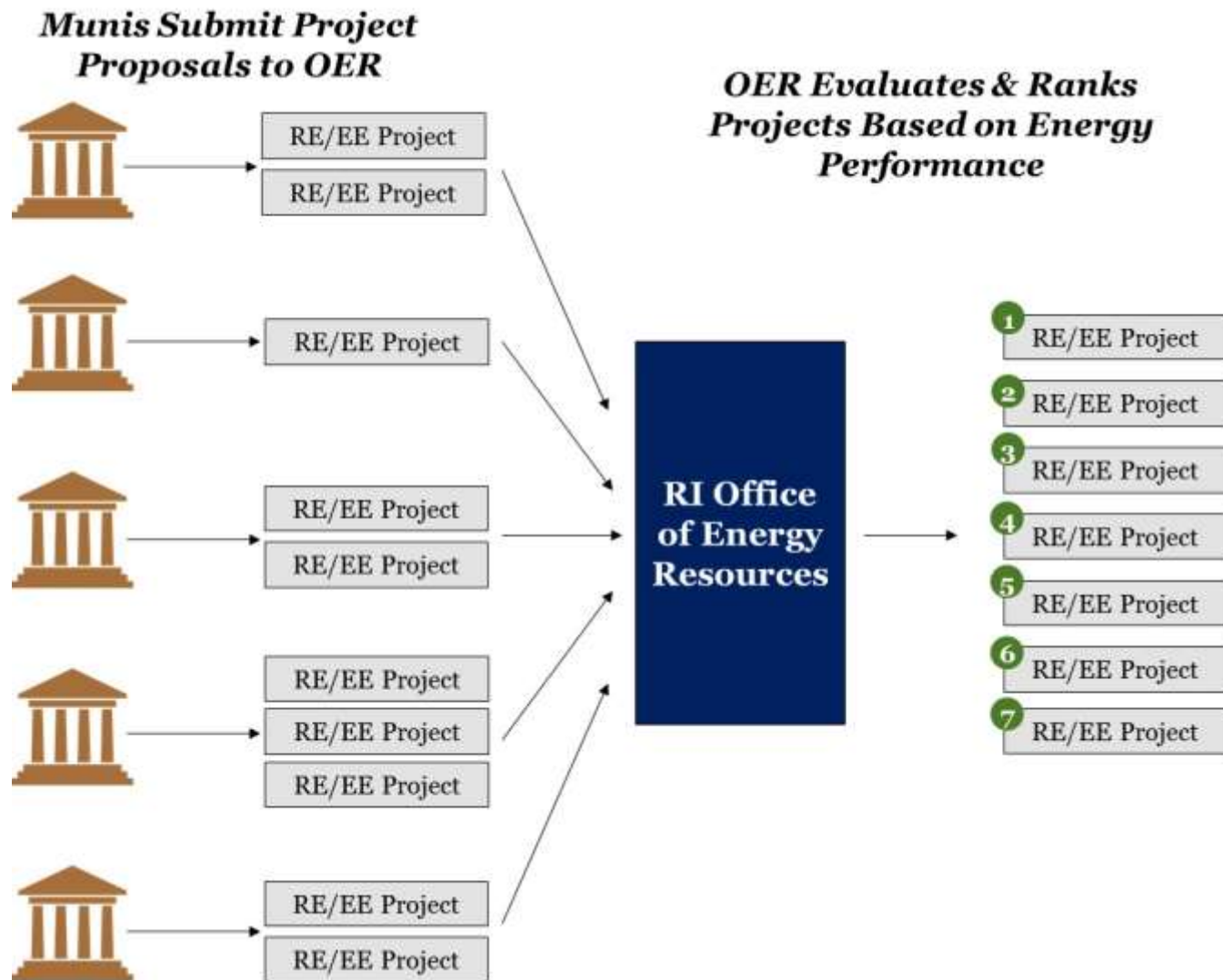


# Example: CT Green Bank sparks more retail private lending in residential efficiency with credit support



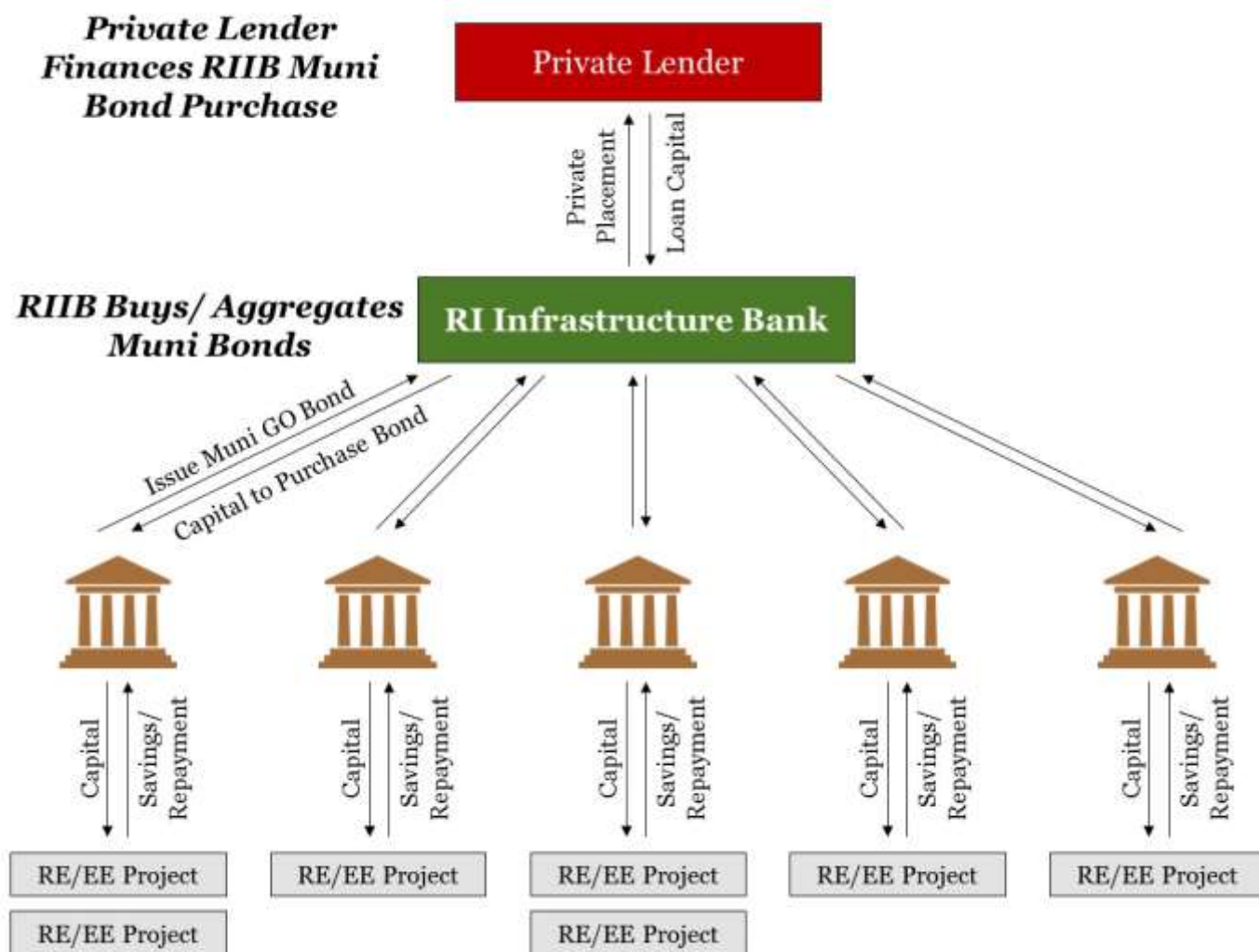
# Example: Rhode Island IBank shows power of GB aggregation to leverage private EE investment (1 of 2)

- Efficient Building Fund (EBF) run by RI Infrastructure Bank (state GB)
- Built to finance clean energy upgrades at muni buildings across the state
- First step of process is open RFP, where energy office (OER) evaluates and ranks projects



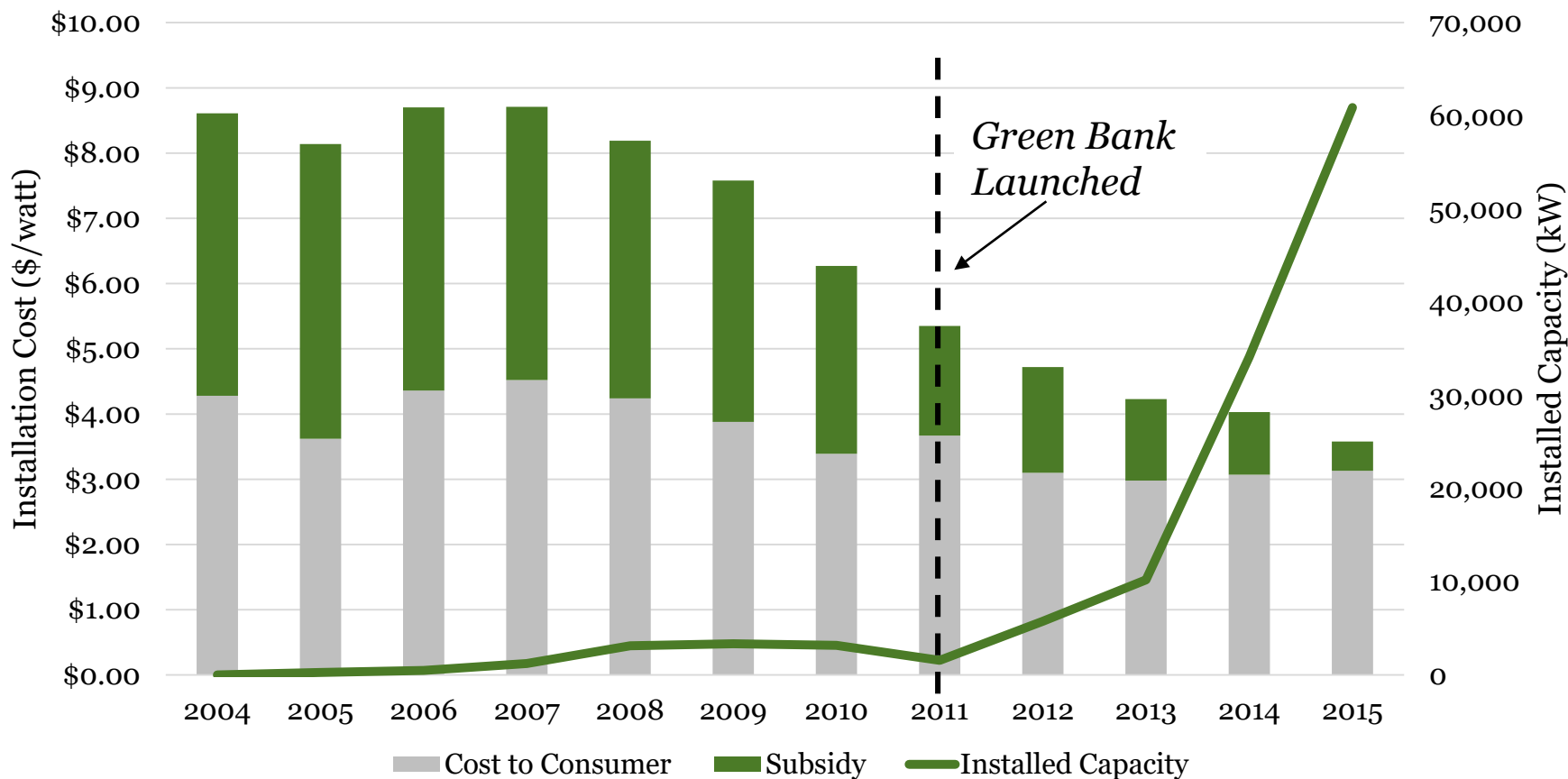
# Example: Rhode Island IBank shows power of GB aggregation to leverage private EE investment (2 of 2)

- Priority project list then send to RIIB to underwrite and finance
- RIIB buys muni GO debt from each sponsoring town.
- RIIB makes that purchase by borrowing from capital markets
- Meant to be a RIIB bond – but did private placement for short term debt



# Evidence from Connecticut, with longest-running Green Bank, shows that the model works

*CT Grows Residential Solar With More Financing While Reducing Subsidies*



Source: Energize CT, Residential Solar Investment Program, “Section 106 Data – Information on Installers and Costs – Updated April 1, 2016,” available at <http://www.energizect.com/your-home/solutions-list/residential-solar-investment-program>.

# Operating Green Banks have already driven \$20 billion of investment, many more GBs in pipeline

## Operating Green Banks

National

UK GIB

Australia CEFC

Japan GFO

Malaysia GTFS

State/Local

NY Green Bank

CT Green Bank

RI  
Infrastructure  
Bank

CA CLEEN  
Center

HI Green  
Infrastructure  
Authority

Montgomery  
County, MD  
Green Bank

## Green Banks Or Similar in Development or Under Consideration

- India (National)
- Ontario, Canada
- Washington, DC
- Maryland
- Nevada
- Colorado
- Missouri
- Pennsylvania
- Vermont

# Green Bank Trends

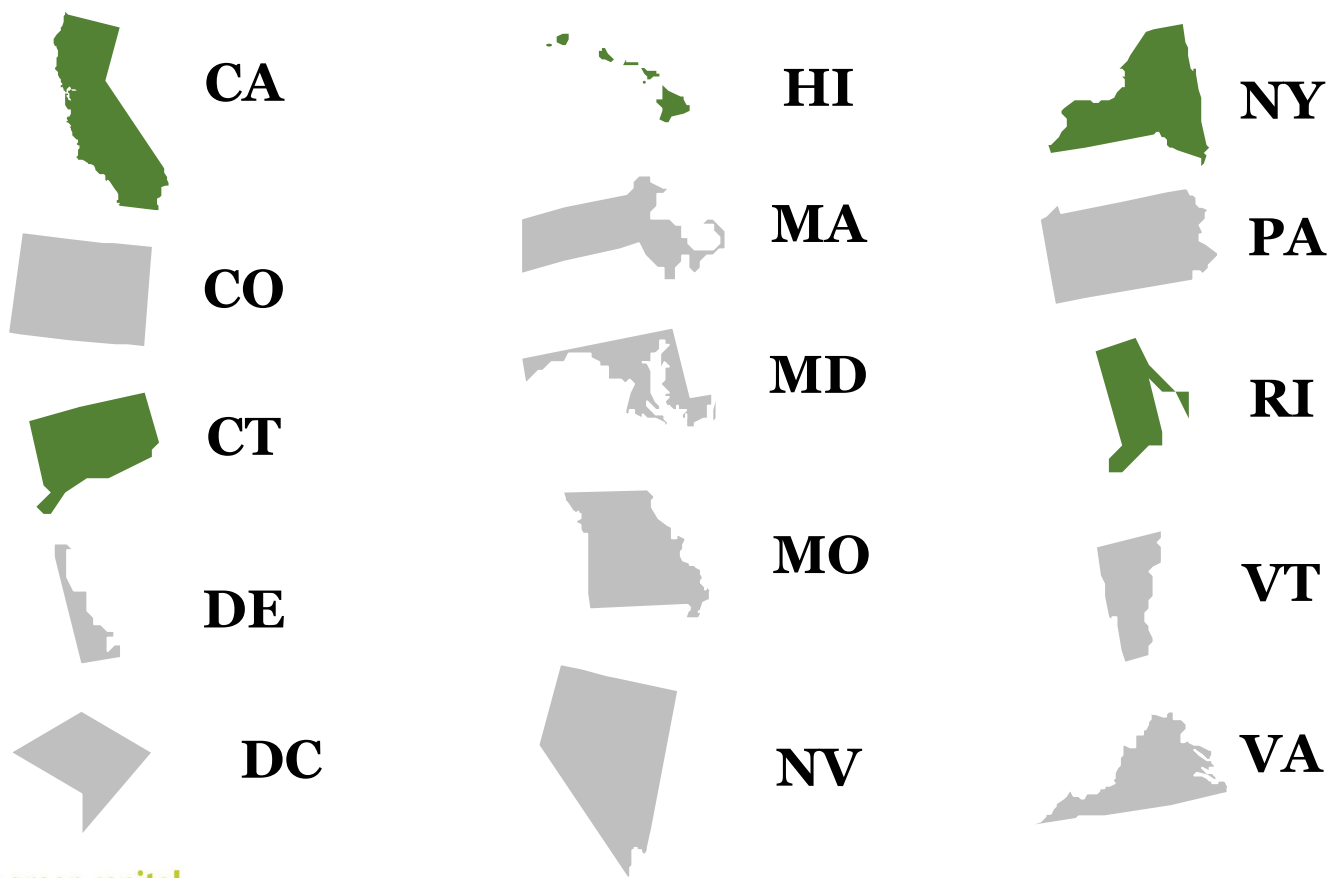
---

- Green Banks moving to new Purple & Red states
- Demand, demand, demand!!
- Must make clean energy accessible to all
- Federal government supports Green Banks
- Global recognition of Green Bank role after Paris

# Green Banks are spreading across US

---

## *CGC Now Working on Green Banks/EIPs in 15 states*



# Federal Green Bank Legislation re-introduced, taking the CT model nationwide

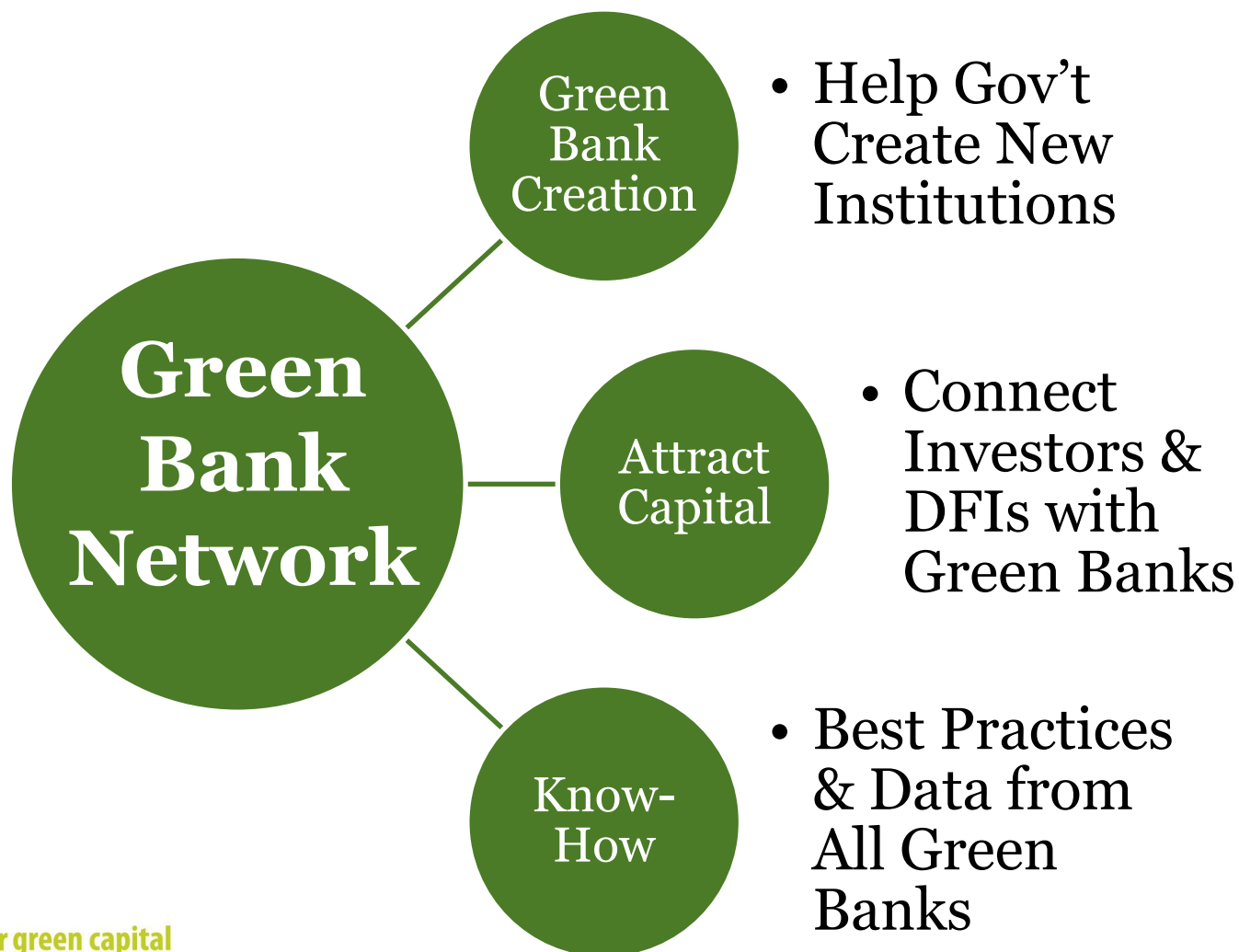
---

- Senator Chris Murphy (CT) and Rep. Chris Van Hollen (MD) introduced Green Bank Act of 2016
- Originally introduced in 2009 with strong bi-partisan support, passed House of Reps
- Bill updated based on success of CT, recognizes state role
  - The Federal Green Bank will be pass-through mechanism
  - *Will solely exist to capitalize regional/state/local entities*
  - If Green Bank meets federal definition, it is eligible for funding
  - Federal Green Bank will not do any direct project finance



# Global Green Bank Network just launched, hub for new Green Bank development, knowledge sharing

---





**coalition for green capital**

# Thank You & Appendix

Jeffrey Schub, Executive Director

Coalition for Green Capital

[Jeff@coalitionforgreencapital.com](mailto:Jeff@coalitionforgreencapital.com)

Twitter: @CGreenCapital

# Like car or house, hard to buy renewable energy or energy efficiency technology without financing

---



\$25,000

Upfront Cost  
with no  
Financing

Price



Upfront

Without financing  
for clean energy, you  
have to pay the  
entire cost upfront!

# Common public sector approach to stimulating clean energy markets is through rebates

---

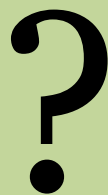


\$25,000

Rebates

Upfront Cost  
with no  
Financing  
after Grants

Price



Upfront

A rebate is nice,  
because it lowers the  
technology cost, but  
it still leaves huge  
upfront cost.  
Need financing!

For many large, fossil-fuel based projects, financing is ample – not so with renewables and efficiency

---

## Centralized Projects

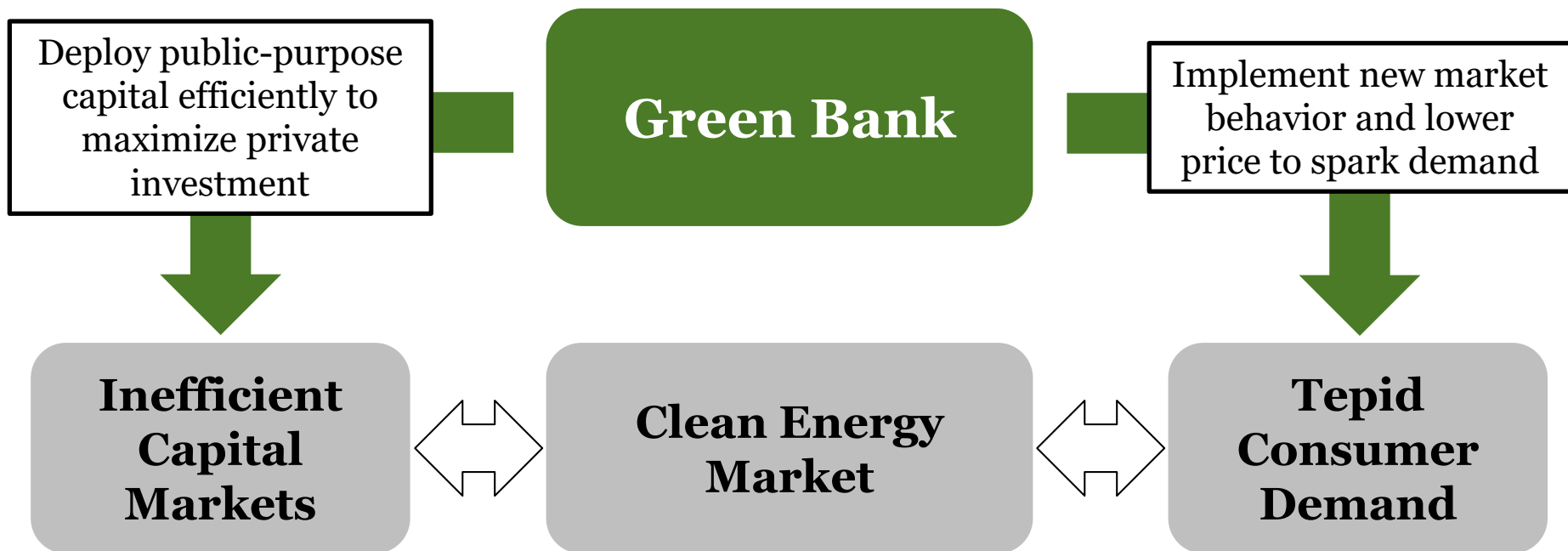
- Utility-scale
- Power directly to grid
- Strong credit
- Traditional project finance
- Relatively easy to finance

## Distributed Projects

- Smaller scale
- Scattered locations
- On-site energy use
- Varying credits
- Range of structures and approaches to finance

# Green Banks fill the financing gap and draw in the capital needed to make clean energy markets grow

*A Green Bank is a public financing authority that leverages private capital with limited public-purpose dollars to accelerate the growth of clean energy markets*



# Green Bank plays dual role of increasing the flow of capital and building market to increase demand

---

## Financing Projects

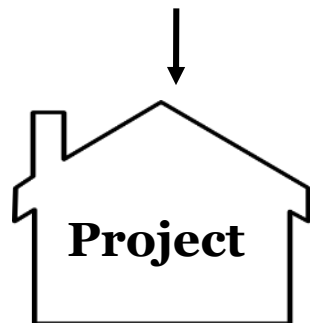
- Leverage public dollars
- Stimulate private investment
- Fill market gaps

## Generating Demand

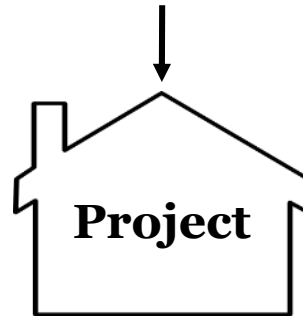
- Turn-key solutions
- Harmonized programs
- Local Community-based Marketing
- Trustworthy source of reliable consumer information
- Cross-agency coordination

# Green Banks are flexible institutions that can employ various financing methods to suit the need

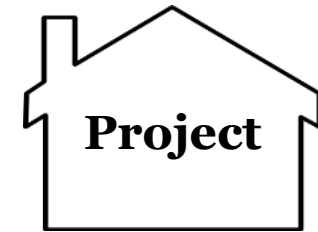
## a. Credit Support



## b. Co-Investment



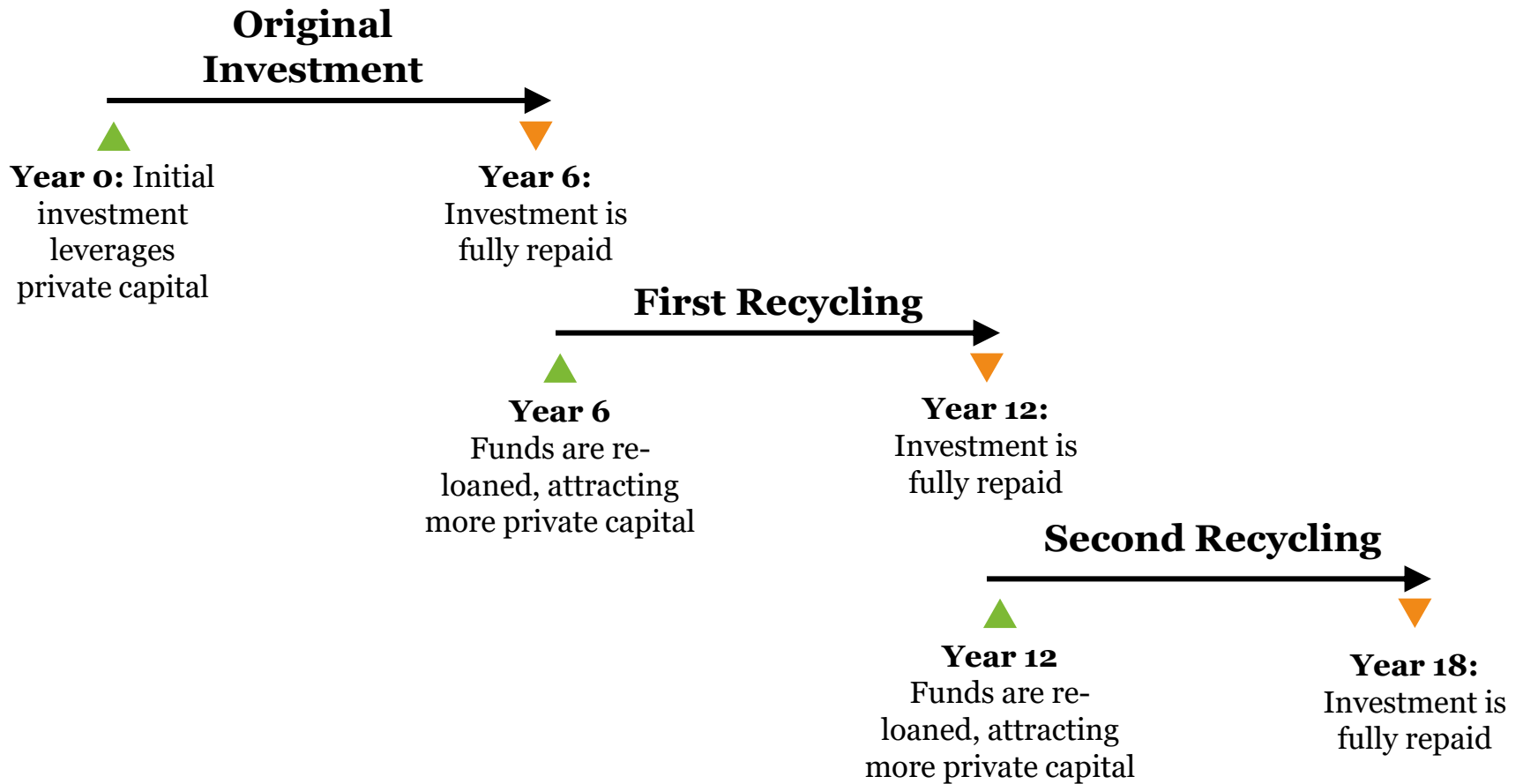
## c. Warehousing



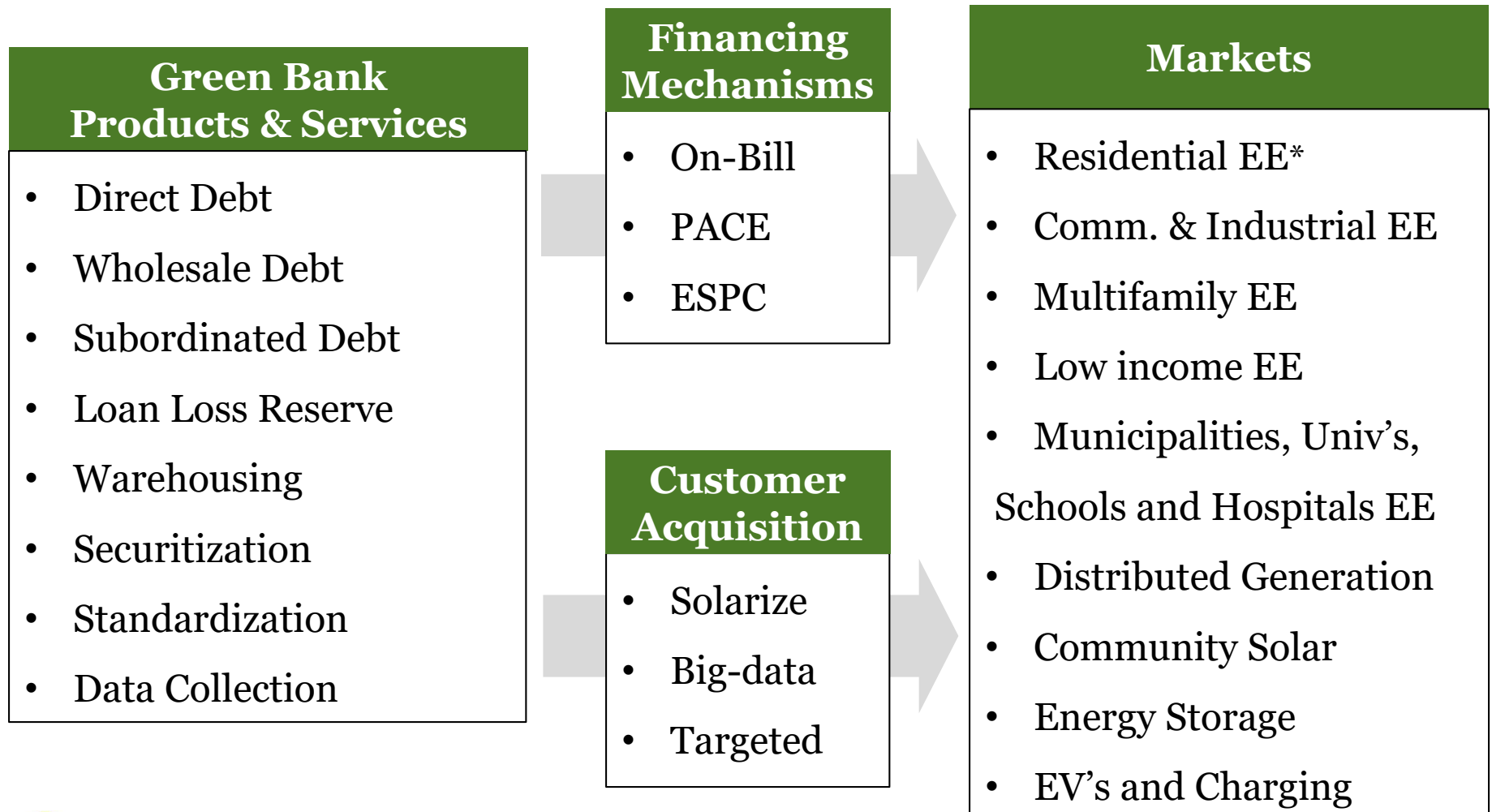


# Green Banks recycle capital, re-leveraging private investment multiple times

---

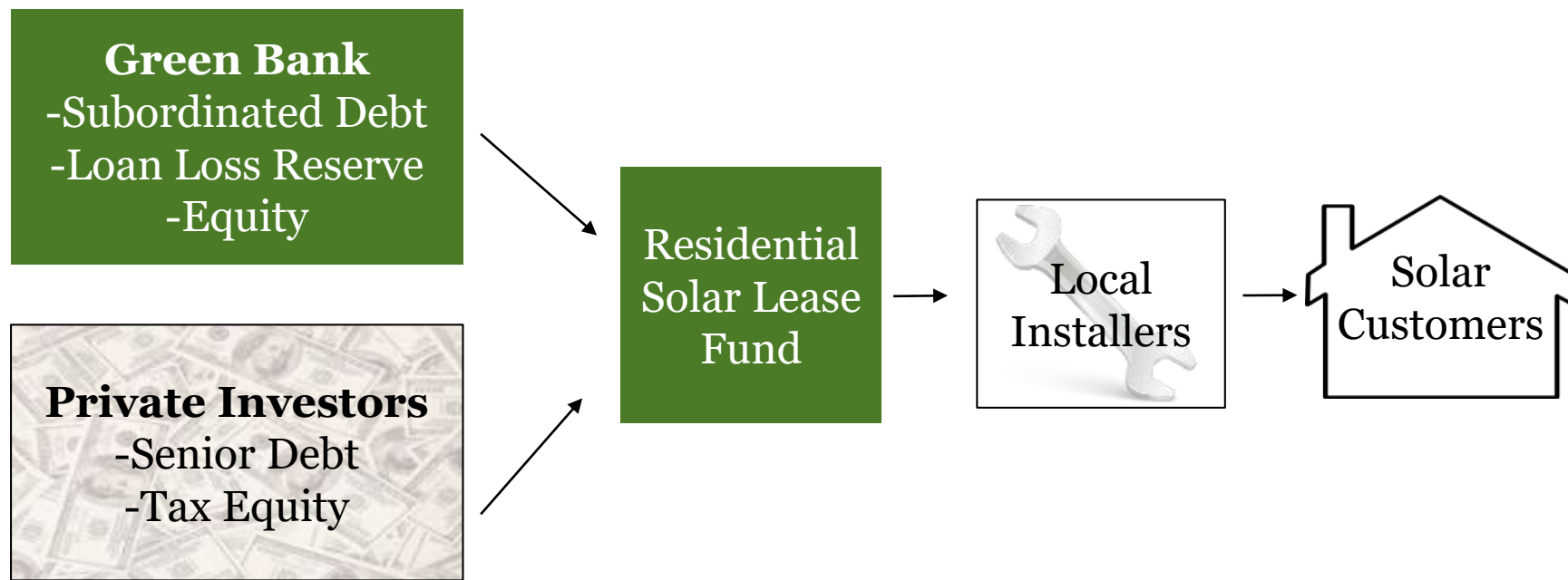


# Range of financial tools, applied to prioritized markets, through innovative structures



# Example: Connecticut's 'Residential Solar Tax Equity Fund' expands customer access to rooftop solar

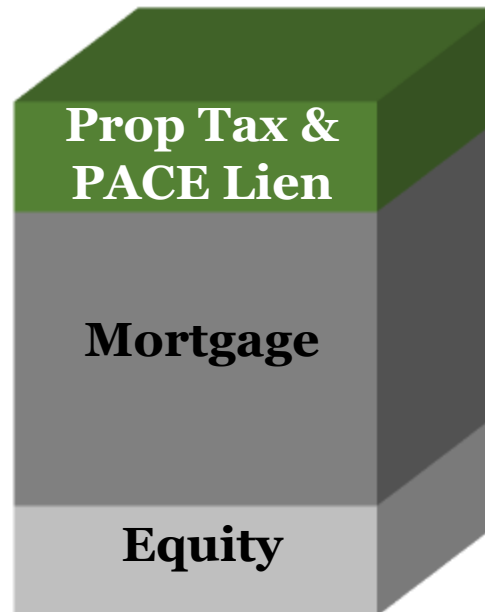
- Green Bank created unique public-private financing platform
- Product enables local developers to offer financing to customers who otherwise would have to pay all \$ upfront



*Example:* PACE financing is designed to increase lending security, make building investments appealing

---

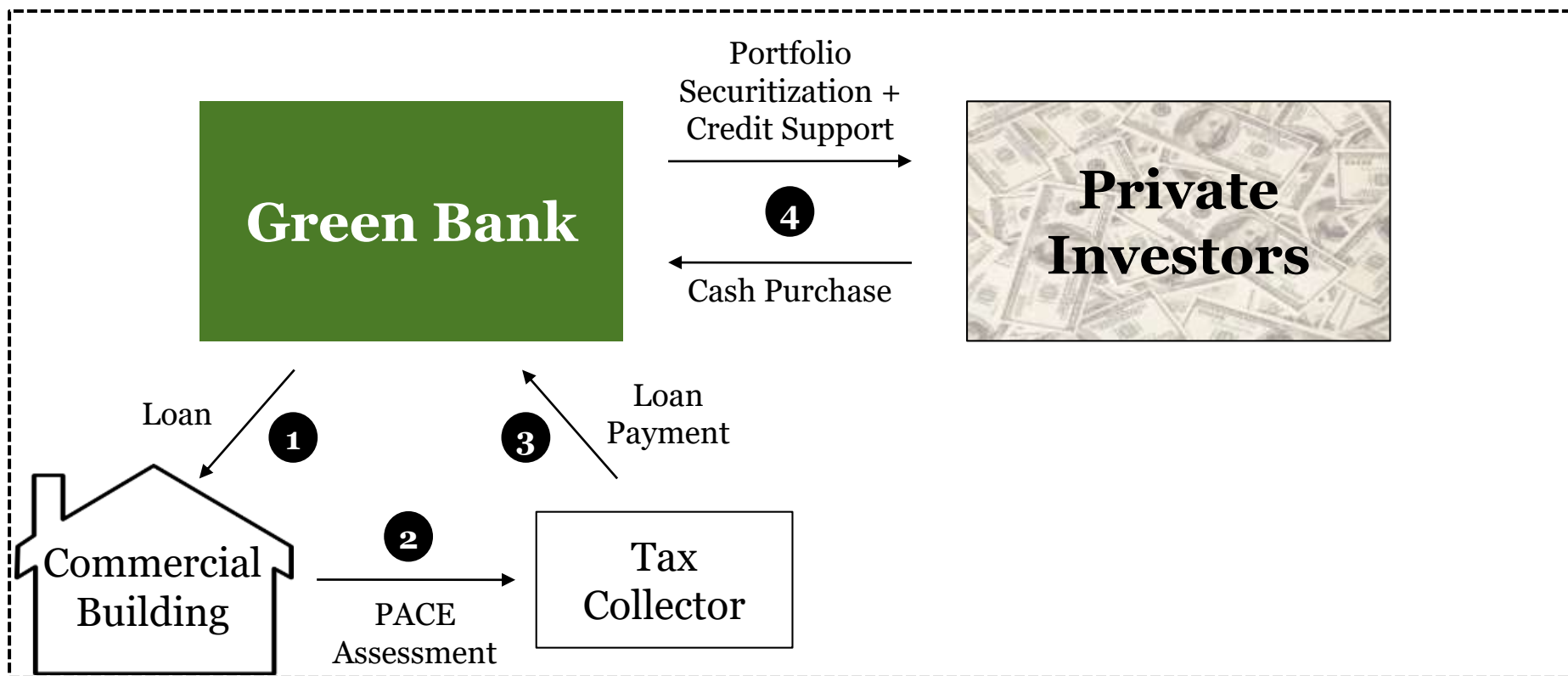
## ***Commercial Building Capital Stack***



- PACE is lower cost, longer term than commercial loan
- PACE repayments collected via tax assessment
- PACE lien seniority secures repayment
- PACE stays with property upon sale

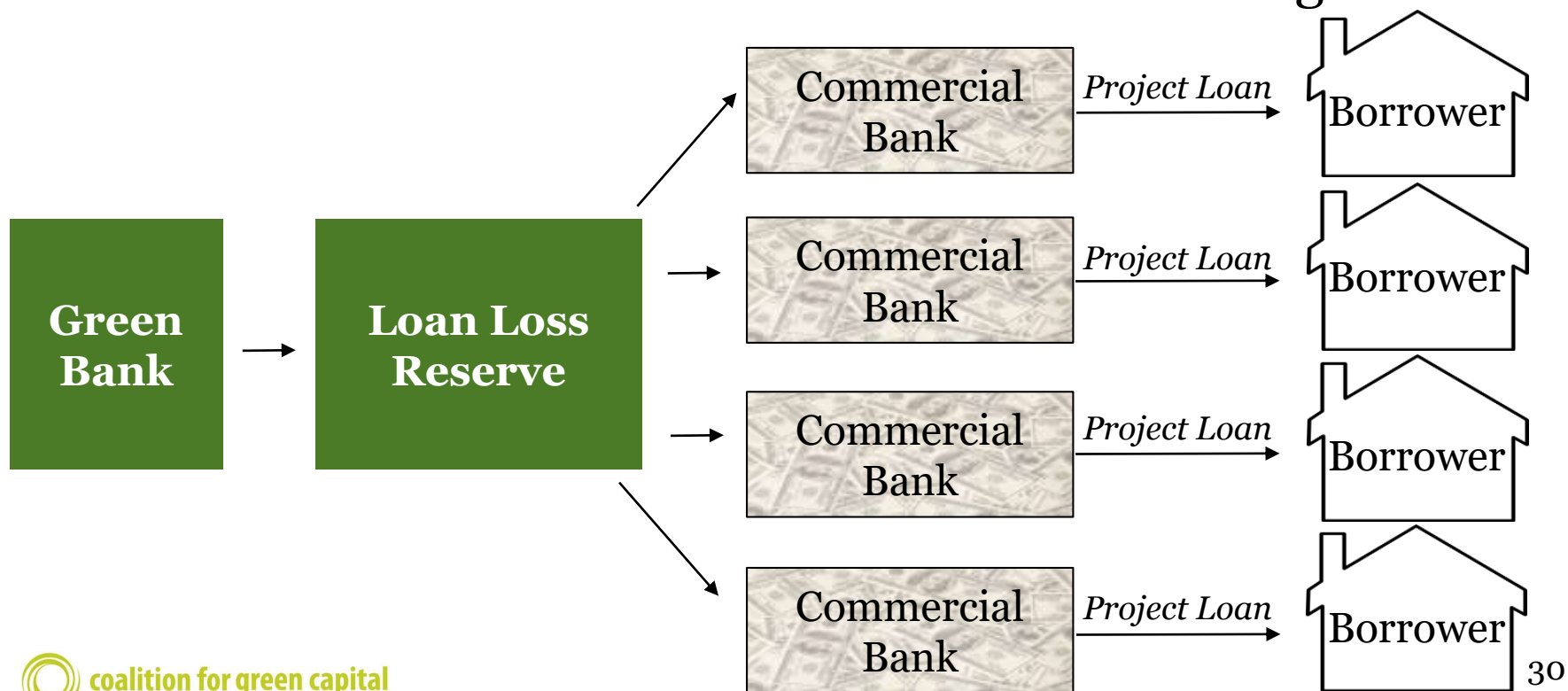
# Example: Connecticut's Commercial-PACE enables secure energy efficiency investment at scale

## Centralized State-wide Green Bank Administration



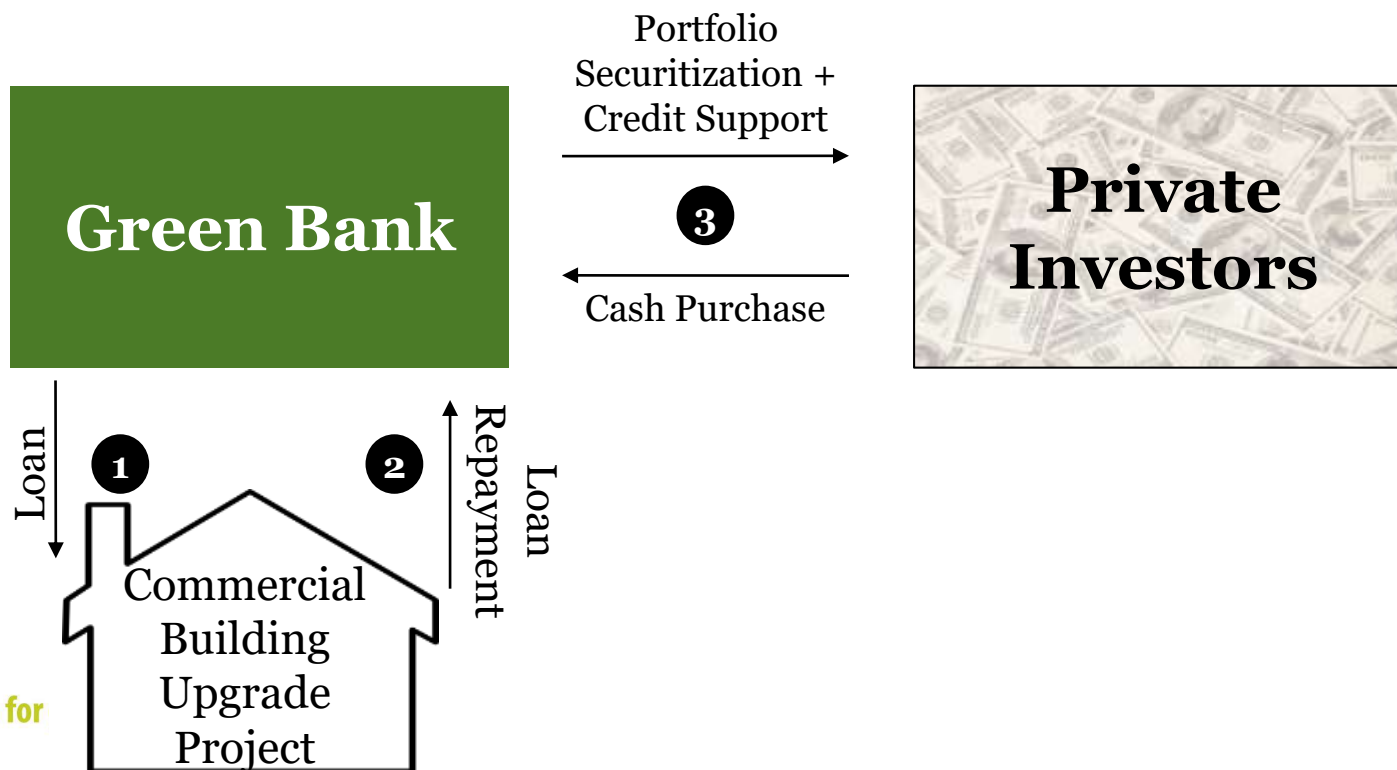
# Example: Green Bank offers standard credit enhancement to retail lenders to serve the market

- Green Bank defines terms of loan loss reserve and risk-mitigation mechanism for residential EE & RE loans
- Banks enter market with reduced risk and offer good terms



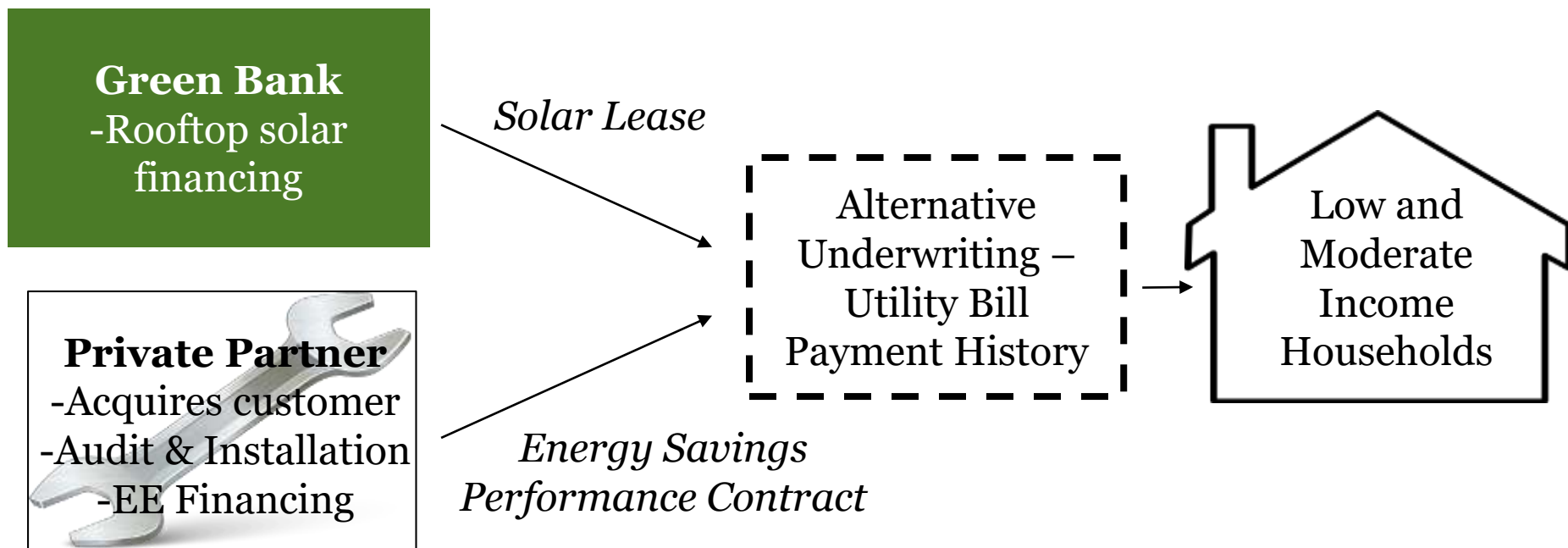
# Example: Green bank loan warehouse for small business building upgrades

- Green Bank directly issues loans for project, and builds portfolio that has scale, diversified risk
- Then sells portfolio to private investor to recycle capital
- Good for projects too small for PACE (<\$100k)



## *Example:* Green Bank can work with private partners to create programs tailored to low-moderate income

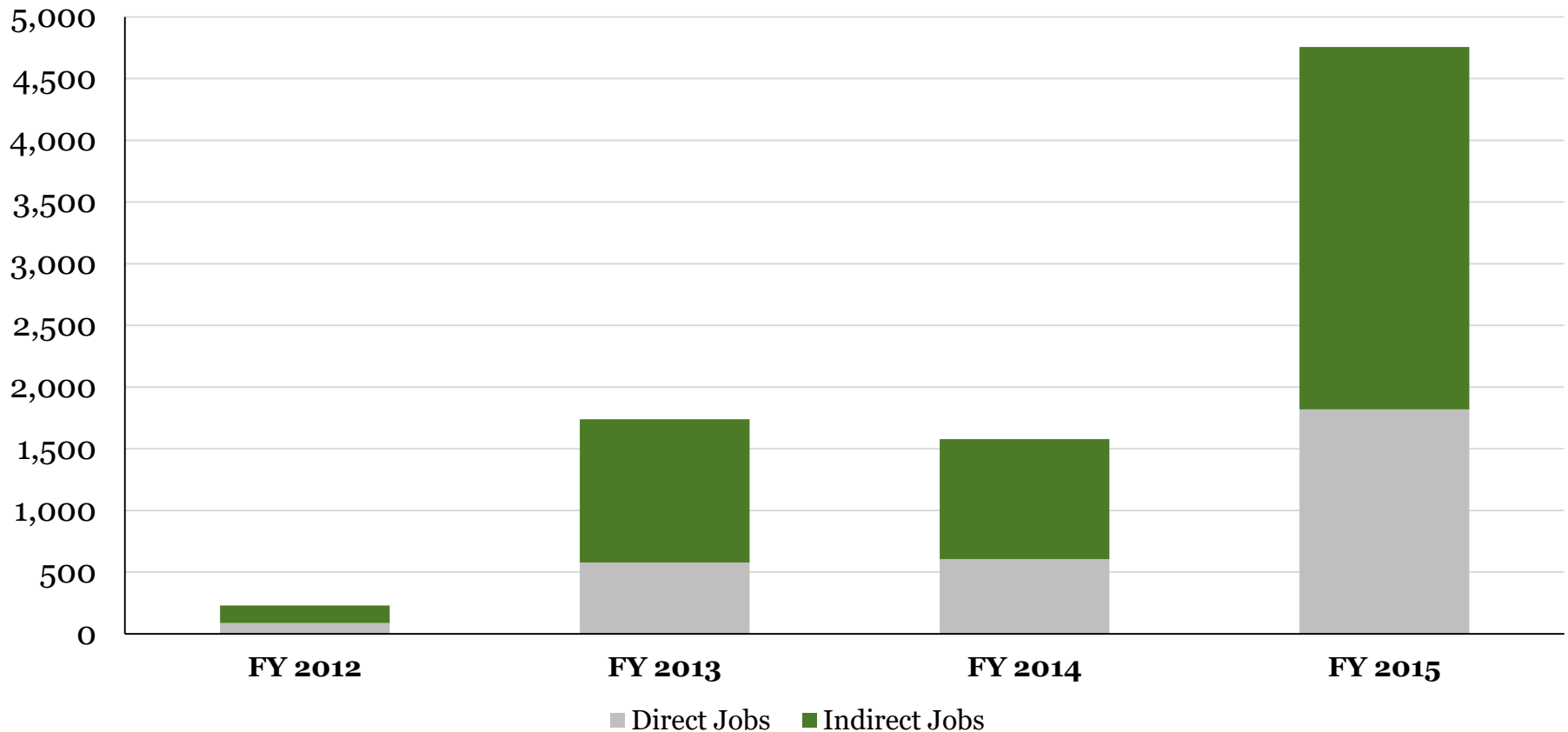
- Green Bank offers solar financing, coordination with relevant agencies, and market info
- Private party installs simple efficiency package, then solar, through single financing repayment – cash flow positive





# Green Banks drive job creation

## Jobs Created Due to Connecticut Green Bank



Source: Connecticut Green Bank Comprehensive Annual Financial Report, FY 2015, available at <http://spark2.cronindev.com/wp-content/uploads/2015/11/Connecticut-Green-Bank-2015-CAFR.pdf>.

# Customers Benefitted

---

“I am just elated...I love the fact that the **monthly payments are consistent**, whether it's month number one or month number 200, it is the same and to me that **just means a lot.**”

-Susan Young, first customer of new Connecticut Green Bank's Low-Moderate Income product

“Our congregation sang praises on another level when we announced the planned improvements. Now that the **boiler is replaced**, everybody comes in with a smile because they are thrilled **it's warm enough to hold church services** in the winter.”

Jenice Thompson, Co-Pastor, Calvary Temple Christian Center

Sources: Dixon, Ken, “Malloy touts solar energy savings,” CTPost, July 21, 2015, available at: <http://www.ctpost.com/news/article/Malloy-touts-solar-energy-savings-6397928.php>.  
Connecticut Green Bank Annual Report, FY 2014, available at [http://www.ctgreenbank.com/wp-content/uploads/2015/12/AnnualReport\\_FINAL\\_5.4.15-SinglePages.pdf](http://www.ctgreenbank.com/wp-content/uploads/2015/12/AnnualReport_FINAL_5.4.15-SinglePages.pdf)

# Governments Meeting Goals

---

“Connecticut’s innovative programs are **reducing energy costs** for households of all income levels, [and] creating local jobs. Commonsense policy is moving our state forward on multiple—and critical—fronts. Through these public-private partnerships and forward-thinking approaches, we are scaling clean energy deployment in Connecticut as we **grow jobs.**” -Governor Malloy, Connecticut

“Smart and **innovative financing is crucial** to developing renewable energy resources [...] Here in New York, we have made great progress with NY Green Bank, and we are joining with other leaders to continue **spurring the growth of a clean energy economy.**”

-Governor Cuomo, New York

Sources: Connecticut Green Bank Press Release, “Governor Malloy Attends Kick-Off Event for Solar For All in New Haven,” January 20, 2016.  
Green Bank Network Press Release, available at:  
<https://www.nrdc.org/media/2015/151207-1>

# Private Sector Engaged

---

“Rural communities represent a vast, underserved market for renewable energy across the U.S. and beyond...Today’s announcement represents an inflection point for our industry; with this **new access to affordable project finance capital**, distributed wind is now positioned to grow rapidly and meet customer demand for **affordable wind energy** in these communities.” -Russel Tencer, CEO of United Wind upon receiving construction loan financing from the New York Green Bank

“We were able to help another family to **save money**, save energy, and **live more comfortably**. That’s what we do!”

Sue Dombrowski, CorePlus Federal Credit Union

Sources: United Wind Press Release, “United Wind Secures \$13.5M Financing for Major Expansion of its WindLease Program,” October 8, 2015  
Connecticut Green Bank Annual Report, FY 2014, available at [http://www.ctgreenbank.com/wp-content/uploads/2015/12/AnnualReport\\_FINAL\\_5.4.15-SinglePages.pdf](http://www.ctgreenbank.com/wp-content/uploads/2015/12/AnnualReport_FINAL_5.4.15-SinglePages.pdf)

# Green Banks operating around the world



# Each government takes a different path to Green Bank creation, choosing suitable funding & structure

	Connecticut	New York
<b>Objective</b>	Create a dedicated institution that will deploy cheap and clean energy by financing mature clean energy technologies	Create a dedicated finance institution to animate private capital markets and increase total investment in clean energy
<b>Conditions</b>	<ul style="list-style-type: none"> <li>• Existing quasi-public grant-making entity with mixed mission</li> <li>• Large annual system benefit charge collected from ratepayers.</li> <li>• Newly elected governor sought to reform state energy apparatus</li> <li>• Bipartisan support for action</li> </ul>	<ul style="list-style-type: none"> <li>• Large existing state energy agency already had legal authority to provide financing</li> <li>• Large annual system benefit charge collected from ratepayers</li> <li>• Strong Governor support from the outset</li> <li>• Regulator controlled money</li> <li>• Unclear legislative path</li> </ul>
<b>Solution</b>	<u>Repurpose existing entity</u> into green bank through <u>legislation</u> , funded with a portion of the existing system benefit charges and RGGI proceeds	Create <u>new green bank division</u> of existing state energy agency and <u>petition regulator</u> to repurpose system benefit charge to capitalize the green bank

# ...More examples of Green Bank creation

	Rhode Island	Montgomery County, MD
<b>Objective</b>	Spark economic growth, create jobs and lower energy costs by deploying clean energy with financing mechanisms	Create a dedicated clean energy finance institution to reduce emissions, lower energy costs and help meet County environmental goals
<b>Conditions</b>	<ul style="list-style-type: none"> <li>• Newly-elected Governor campaigned on platform for green bank</li> <li>• Minimal desire to create new institution</li> <li>• Existing system benefit charge not a viable pool of funds</li> <li>• Governor sought quick action</li> </ul>	<ul style="list-style-type: none"> <li>• No desire to create new government institution</li> <li>• Quasi-public instrumentality would require state approval</li> <li>• County's electric utility in the midst of a large merger</li> <li>• No pool of existing public funds</li> </ul>
<b>Solution</b>	Through annual <u>budget bill</u> , expanded <u>existing quasi-public</u> water financing authority to become state infrastructure bank. Modest start-up funding paired with existing <u>bonding authority</u> .	Legislation directing an <u>independent non-profit be incorporated</u> to receive County's designation as the Green Bank. Funded by <u>utility-merger settlement</u> payment, negotiated by County with utility to secure County merger approval.

# Growing number of Green Banks around the U.S., in addition to national GBs in UK, Australia, & Japan

Institution	Eligible Technology	Key Products	Source of Funds	Initial Capital	Structure/Oversight	Staff
<b>Connecticut Green Bank</b>	<ul style="list-style-type: none"> <li>• Solar, fuel-cell, geothermal, biomass</li> <li>• Energy efficiency</li> </ul>	<ul style="list-style-type: none"> <li>• C-PACE</li> <li>• Smart-E loan</li> <li>• Solar Lease II</li> <li>• Solar Loan</li> </ul>	<ul style="list-style-type: none"> <li>• Utility bill surcharge</li> <li>• RGGI funds</li> </ul>	~\$35M per year	<ul style="list-style-type: none"> <li>• Independent quasi-public</li> <li>• Board of Directors, appt by Governor &amp; Legislature</li> </ul>	33
<b>Hawaii Green Infrastructure Authority</b>	<ul style="list-style-type: none"> <li>• Solar (primary focus)</li> <li>• Energy efficiency</li> </ul>	<ul style="list-style-type: none"> <li>• Solar leases for LMI and non-profit sector, paired with on-bill recovery</li> </ul>	<ul style="list-style-type: none"> <li>• Bond issuance backed by ratepayer fee</li> </ul>	\$150 M	<ul style="list-style-type: none"> <li>• Independent quasi-public</li> <li>• PUC oversight</li> </ul>	2
<b>New York Green Bank</b>	<ul style="list-style-type: none"> <li>• Renewable energy</li> <li>• Energy efficiency</li> <li>• Clean transportation</li> </ul>	<ul style="list-style-type: none"> <li>• Issued RFP for private sector financial intermediaries</li> </ul>	<ul style="list-style-type: none"> <li>• Utility bill surcharge</li> <li>• RGGI funds</li> </ul>	\$218.5 M	<ul style="list-style-type: none"> <li>• PSC oversight</li> <li>• Division within state energy office (NYSERDA)</li> </ul>	12



# Varying capitalization sources and org structures, common principles and objectives

Institution	Eligible Technology	Key Products	Source of Funds	Initial Capital	Structure/Oversight	Staff
<b>California CLEEN Center</b>	<ul style="list-style-type: none"> <li>• Efficiency (first priority)</li> <li>• Renewable generation</li> </ul>	<ul style="list-style-type: none"> <li>• MUSH market efficiency</li> <li>• Commercial market efficiency</li> </ul>	<ul style="list-style-type: none"> <li>• Pre-existing bonding authority of the state IBank</li> </ul>	~\$40M	<ul style="list-style-type: none"> <li>• Division of CA Infrastructure Bank</li> <li>• Board of Directors, appt by Governor</li> </ul>	~5
<b>Rhode Island Infrastructure Bank</b>	<ul style="list-style-type: none"> <li>• Renewables</li> <li>• Efficiency</li> <li>• Grid and demand-side upgrades</li> </ul>	<ul style="list-style-type: none"> <li>• Commercial &amp; Residential PACE Program</li> <li>• Efficient Buildings Fund for muni's</li> </ul>	<ul style="list-style-type: none"> <li>• RGGI</li> <li>• ARRA</li> <li>• Ratepayers</li> <li>• QECBs</li> <li>• Bonding authority</li> </ul>	~\$7 M	<ul style="list-style-type: none"> <li>• Independent quasi-public</li> <li>• Board of Directors, appt by Governor</li> </ul>	12
<b>Montgomery County Green Bank</b>	<ul style="list-style-type: none"> <li>• Renewables</li> <li>• Energy efficiency</li> <li>• Grid and demand-side upgrades</li> </ul>	<ul style="list-style-type: none"> <li>• TBD</li> </ul>	<ul style="list-style-type: none"> <li>• Settlement from utility merger negotiation</li> </ul>	\$20 M (TBD)	<ul style="list-style-type: none"> <li>• Independent non-profit</li> <li>• Board of Directors, partial Council approval</li> </ul>	TBD

# CGC supports governments in multiple ways to conceive of concept, design institution & implement

## Connecticut Green Bank – Concept Development & Implementation

- CGC worked with government to develop concept, gain buy-in, draft legislation
- Serve on Board, design products, provide strategic guidance, share best practices

## New York Green Bank – Business Plan Development

- Drafted NYGB Business Plan after Governor announced plan to create Green Bank
- Built financial model and made business case to regulator to fund the Green Bank

## Washington, D.C. – Green Bank Viability Report

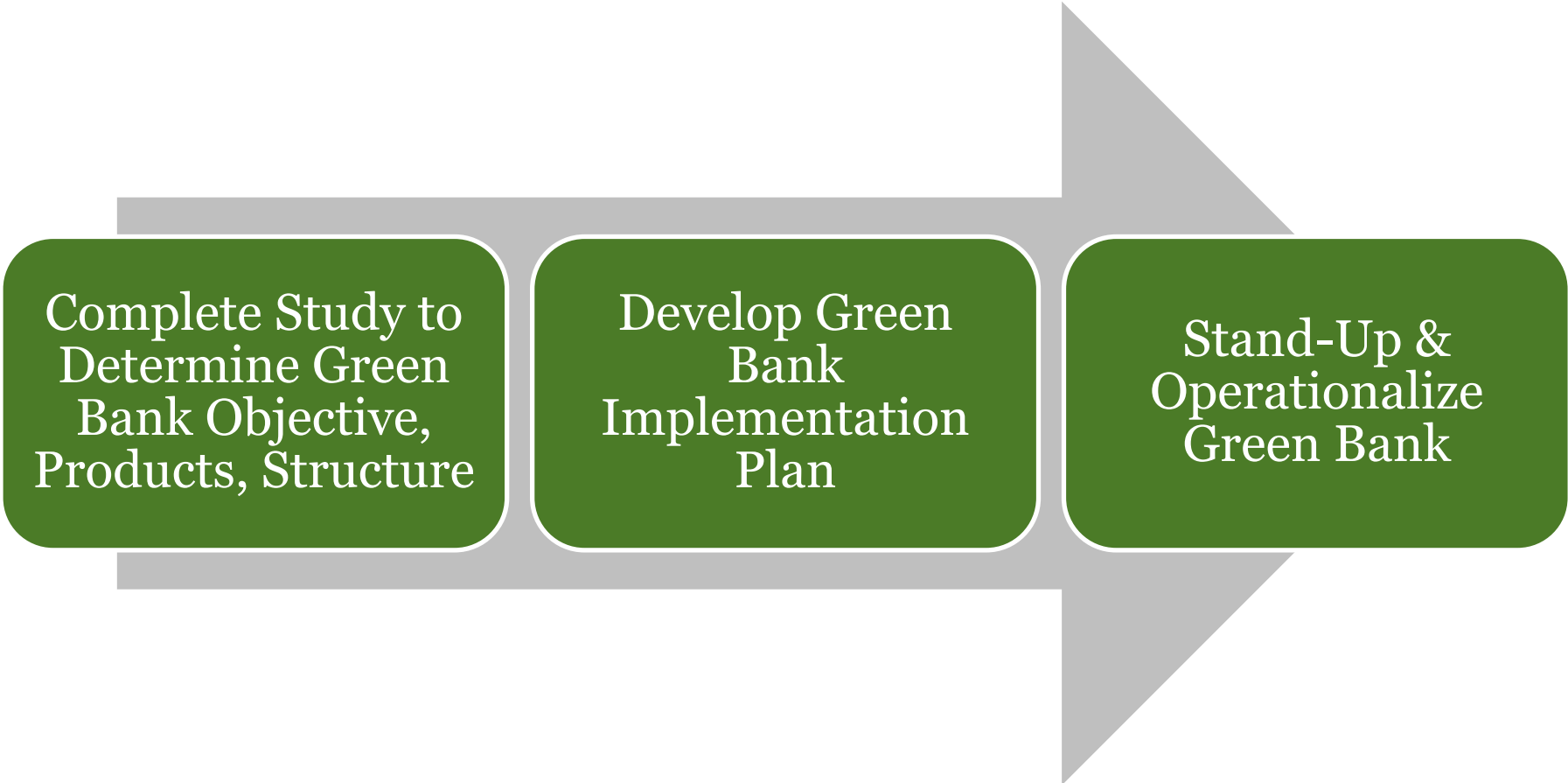
- Completed formal study for D.C. government to explore need for Green Bank
- Identify finance opportunities and appropriate model, to be implemented this fall

## Nevada – Legislatively Directed Green Bank Assessment

- Policymakers looking for non-partisan solutions to lower energy cost, grow economy
- Completed study of opportunity and outlined implementation plan

# Potential Roadmap for Green Bank Creation

---



Complete Study to  
Determine Green  
Bank Objective,  
Products, Structure

Develop Green  
Bank  
Implementation  
Plan

Stand-Up &  
Operationalize  
Green Bank

Study like those completed with other governments can identify right GB model & solutions

---

**Hypothetical Scope of Work for  
Green Bank Study**

- Task 1 – Review Current Market & Existing Policies
- Task 2 – Summary of Existing Green Banks
- Task 3 – Stakeholder Interviews & Engagement
- Task 4 – Identify Finance & Market Gaps
- Task 5 – Summarize Green Bank Need
- Task 6 – Recommended Institutional Model & Products
- Task 7 – Green Bank Impact Analysis
- Task 8 – Implementation Guidance