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Green Banks: Leveraging Private Investment with Public Capital

NRRI Webinar
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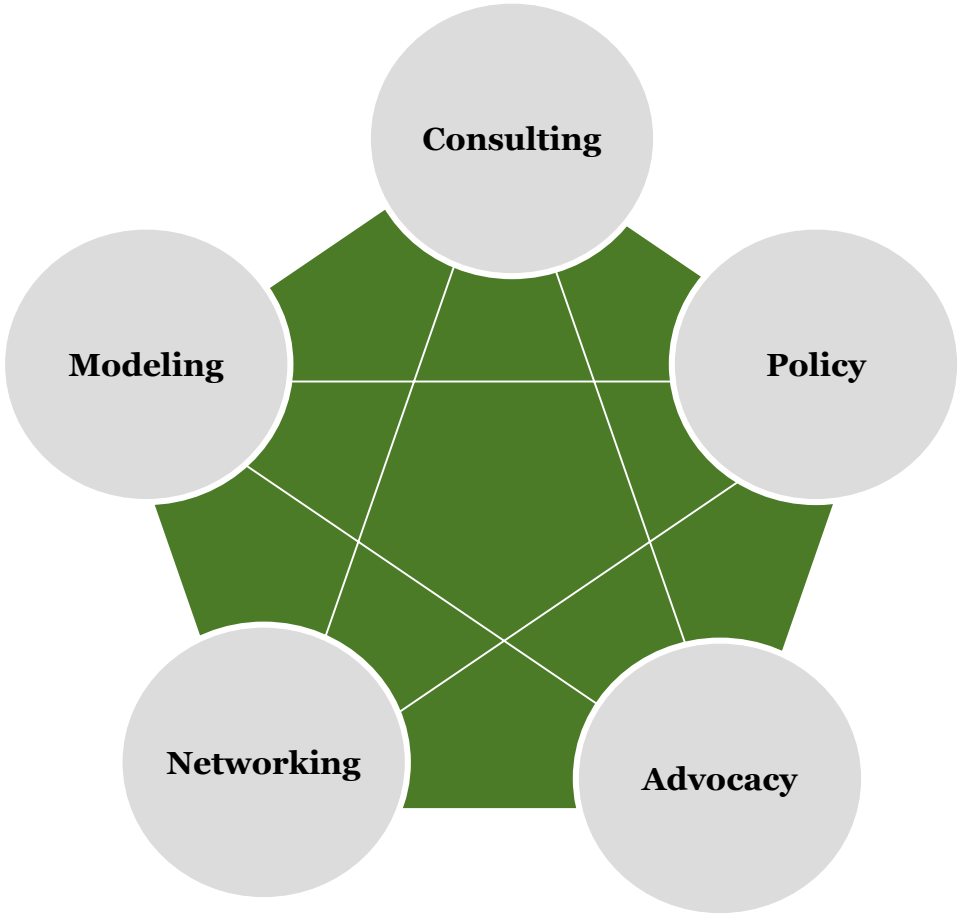
Coalition for Green Capital

CGC provides expert support and advice to governments exploring Green Bank creation

CGC's mission is to use government finance, regulatory, and legal power to accelerate move to clean power platform.

- Nonprofit 501(c)(3) organization
- CGC's leaders have been driving Green Bank movement since '09
- Offices in DC and NYC
- Receives pro bono support from Latham & Watkins LLP & Covington & Burling LLP



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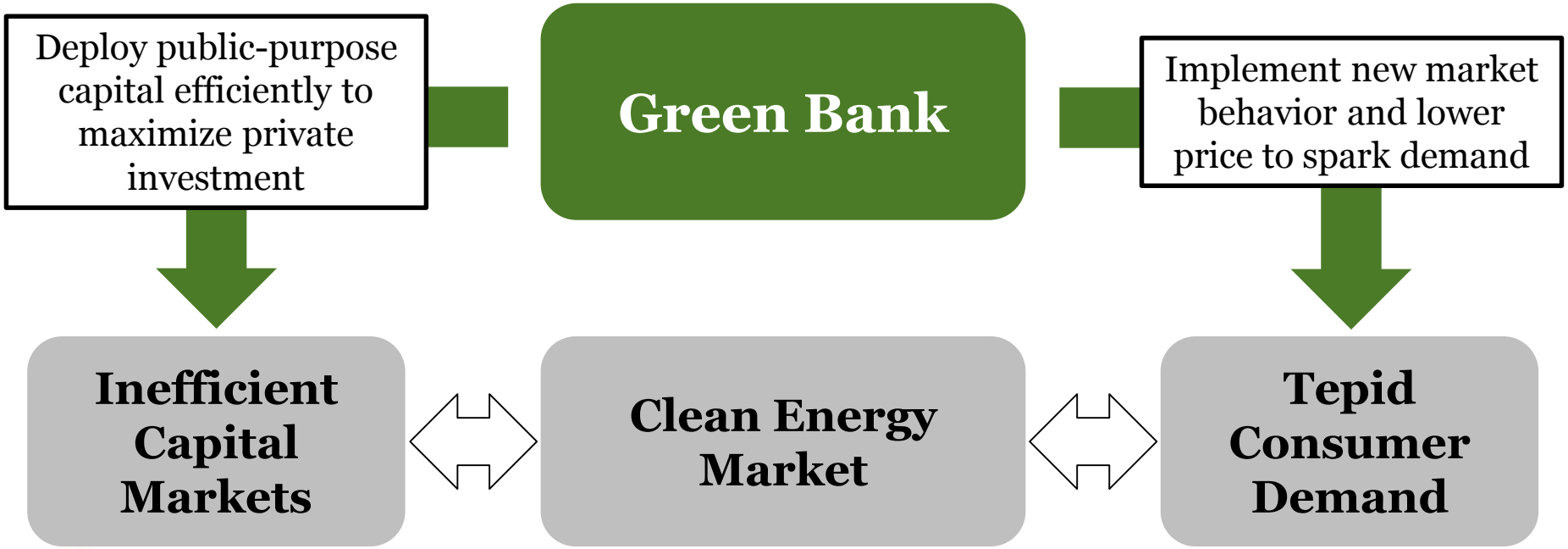
Green Banks fill the financing gap, draw in the capital needed to grow clean energy markets

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



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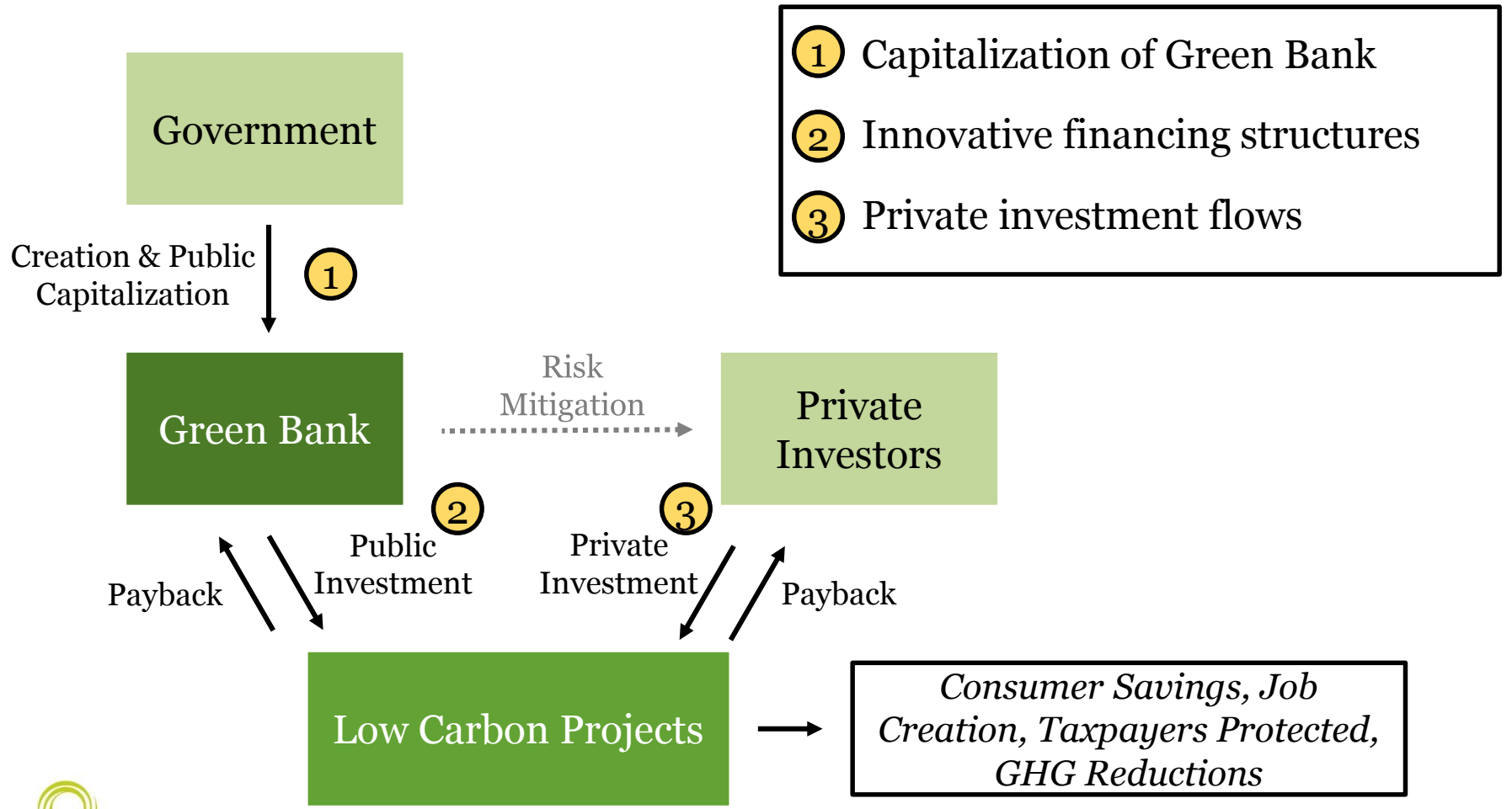
Green Bank is a public institution that channels public and private investment



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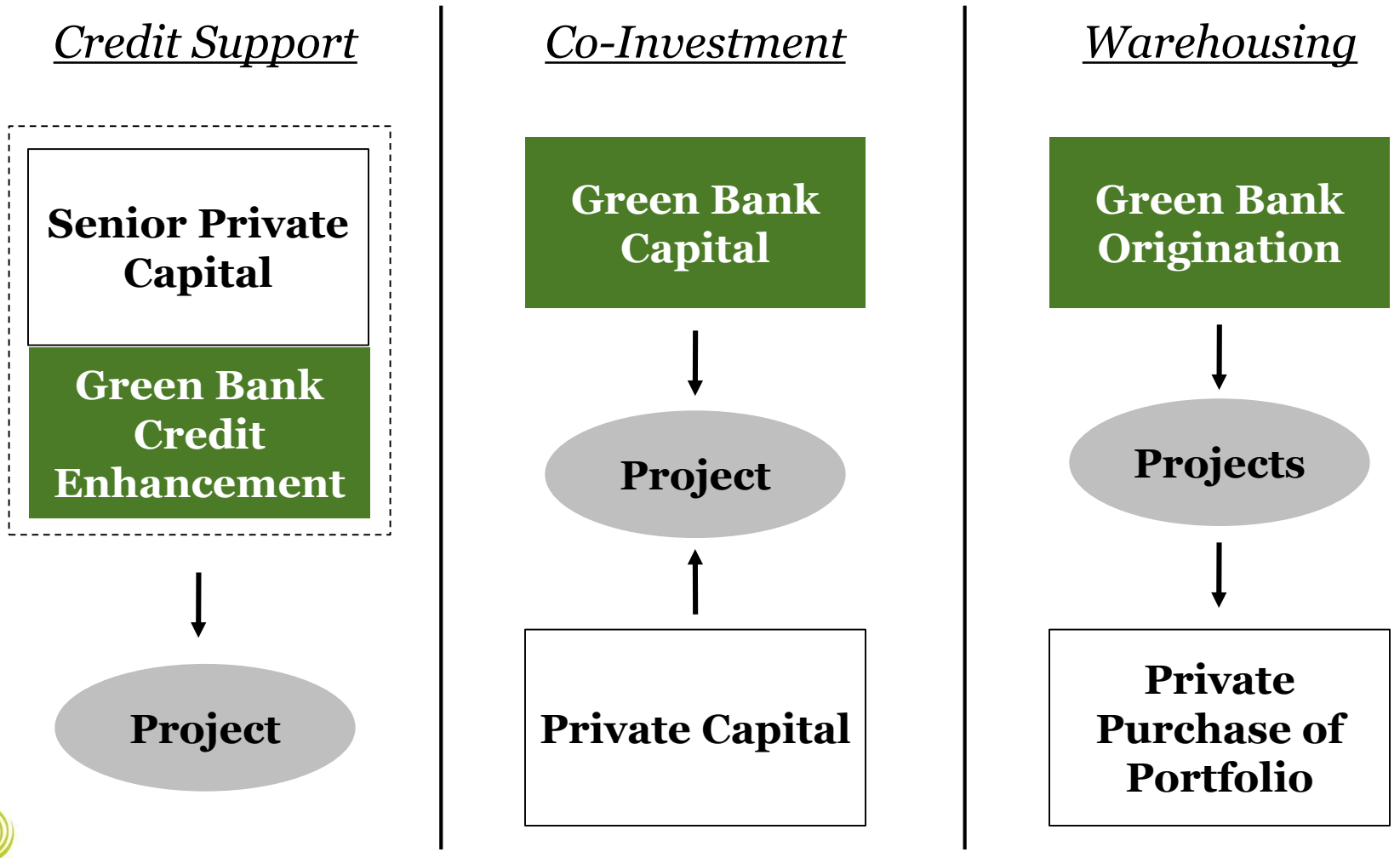
Use financing techniques to leverage multiple private dollars per public dollar



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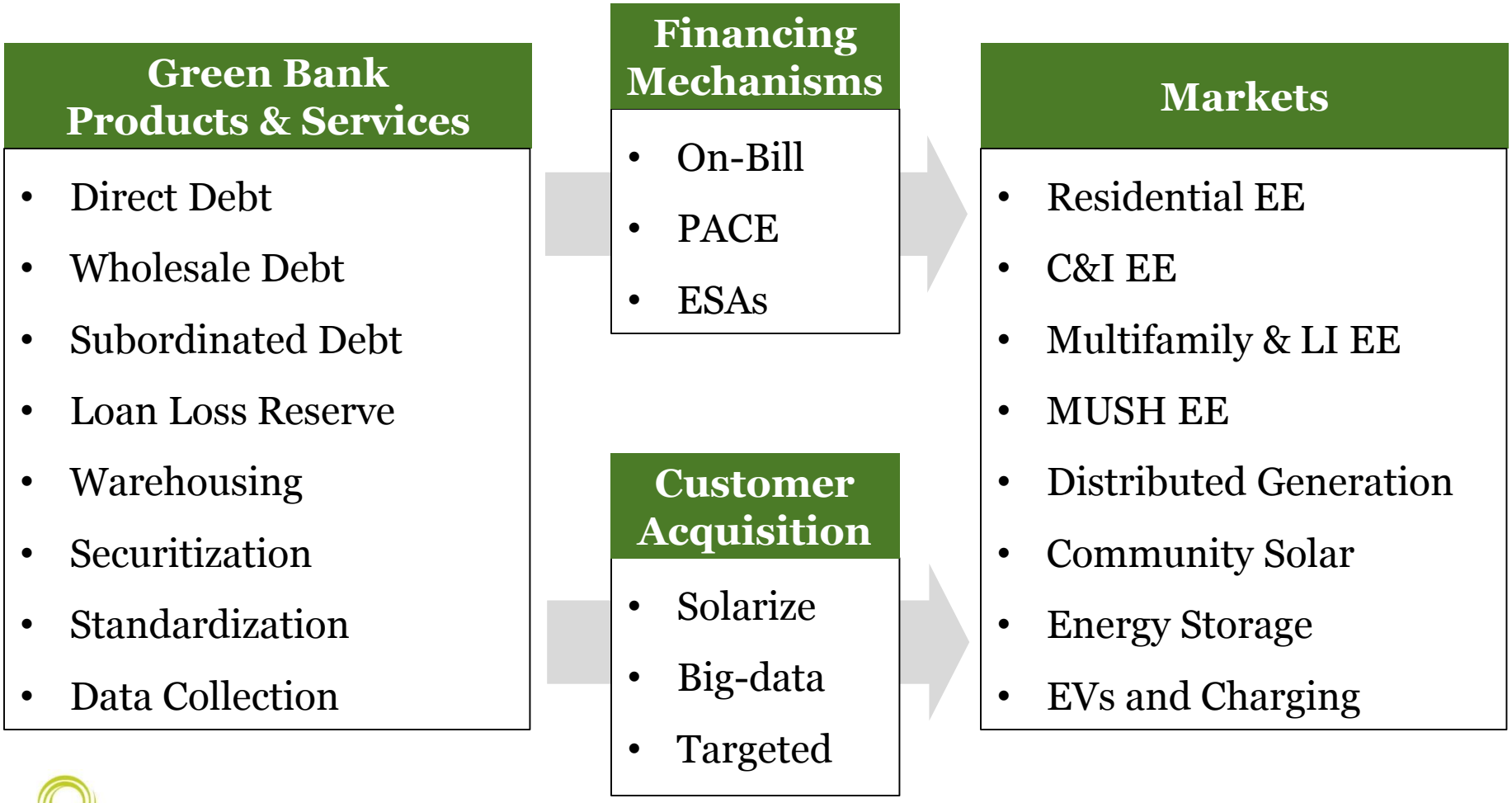
Range of financial tools, applied to prioritized markets, through innovative structures



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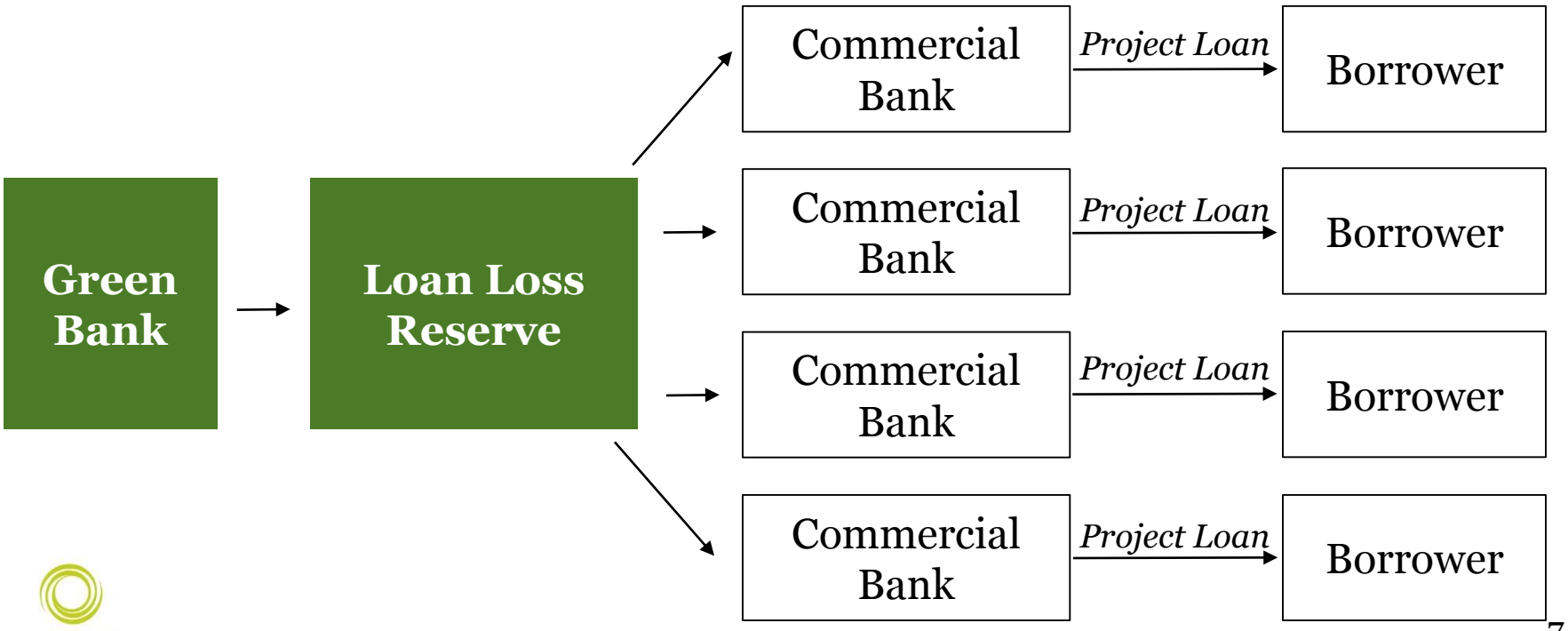
Example: Green Bank offers standard credit enhancement to retail lenders to serve market

- 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



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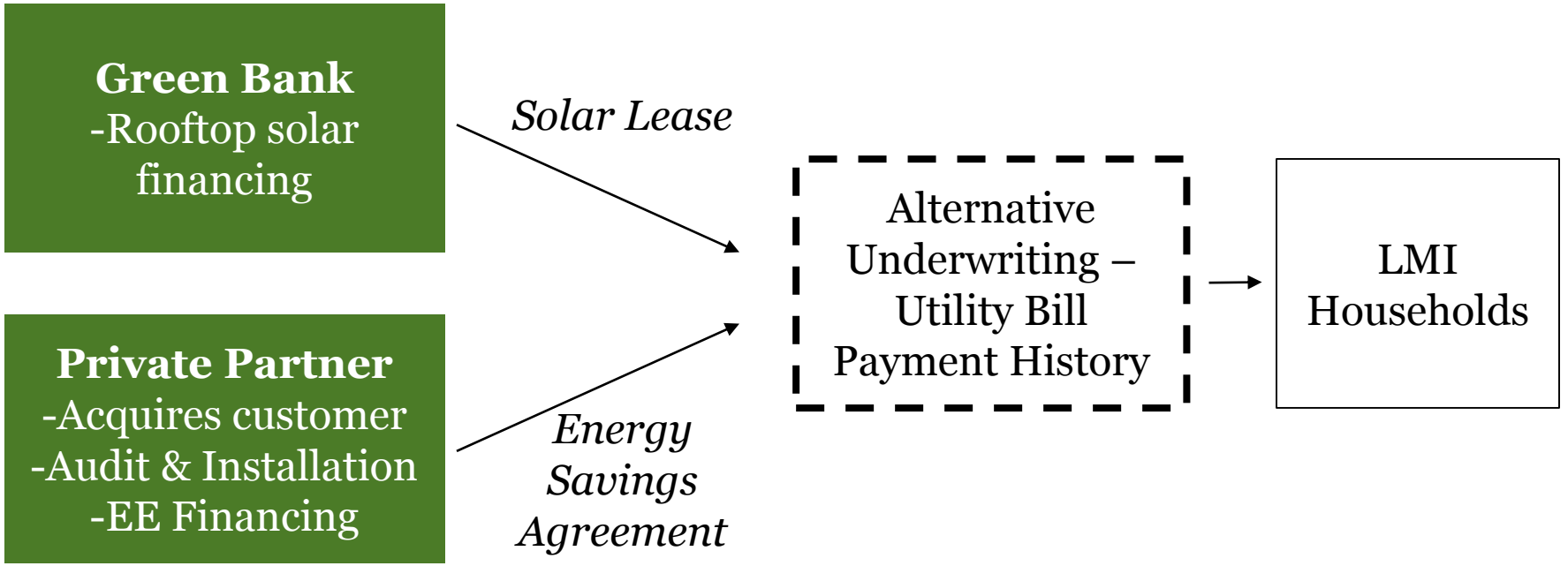
Example: GB creates programs tailored to low-moderate income with private partners

- 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



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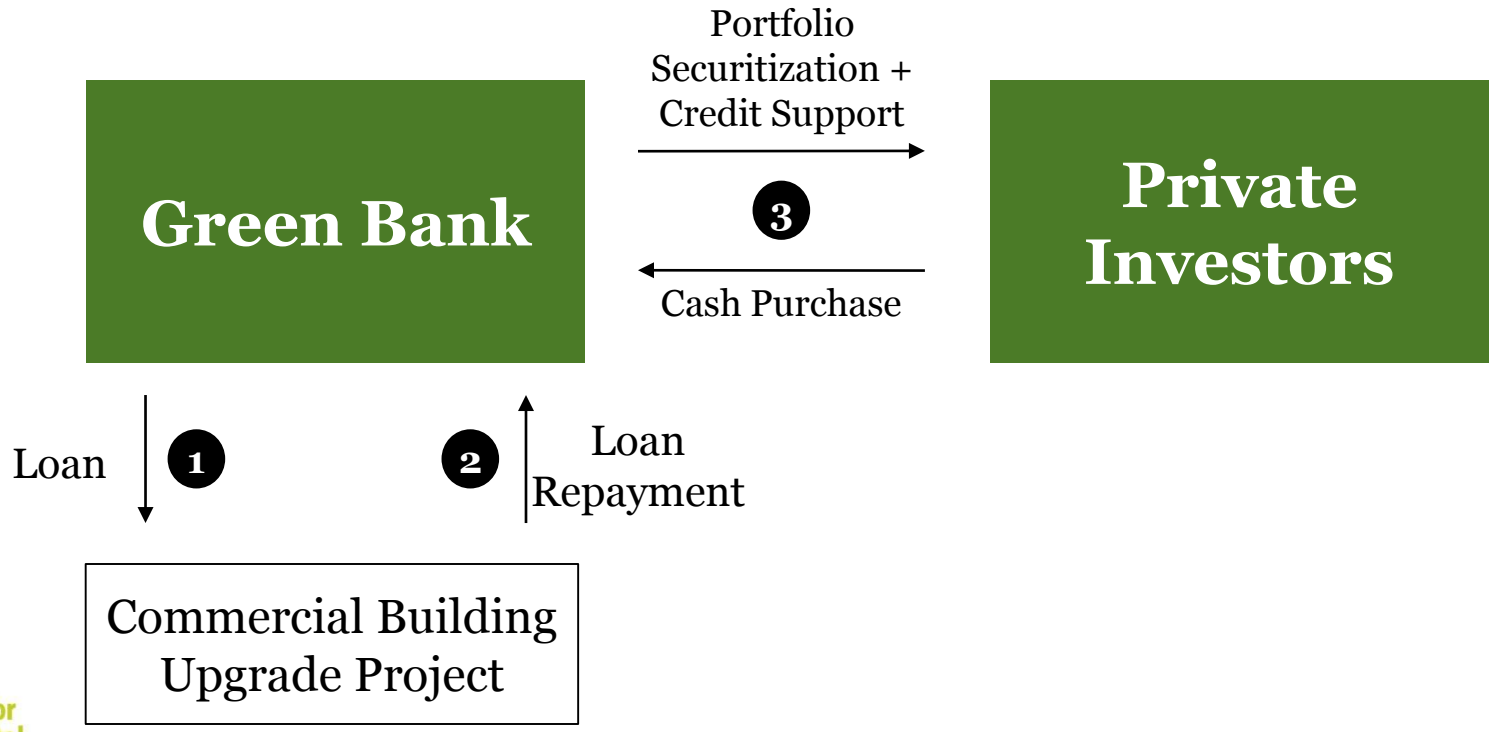
Example: Green Bank loan warehouse for SMB building upgrades, followed by private sale

- 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)



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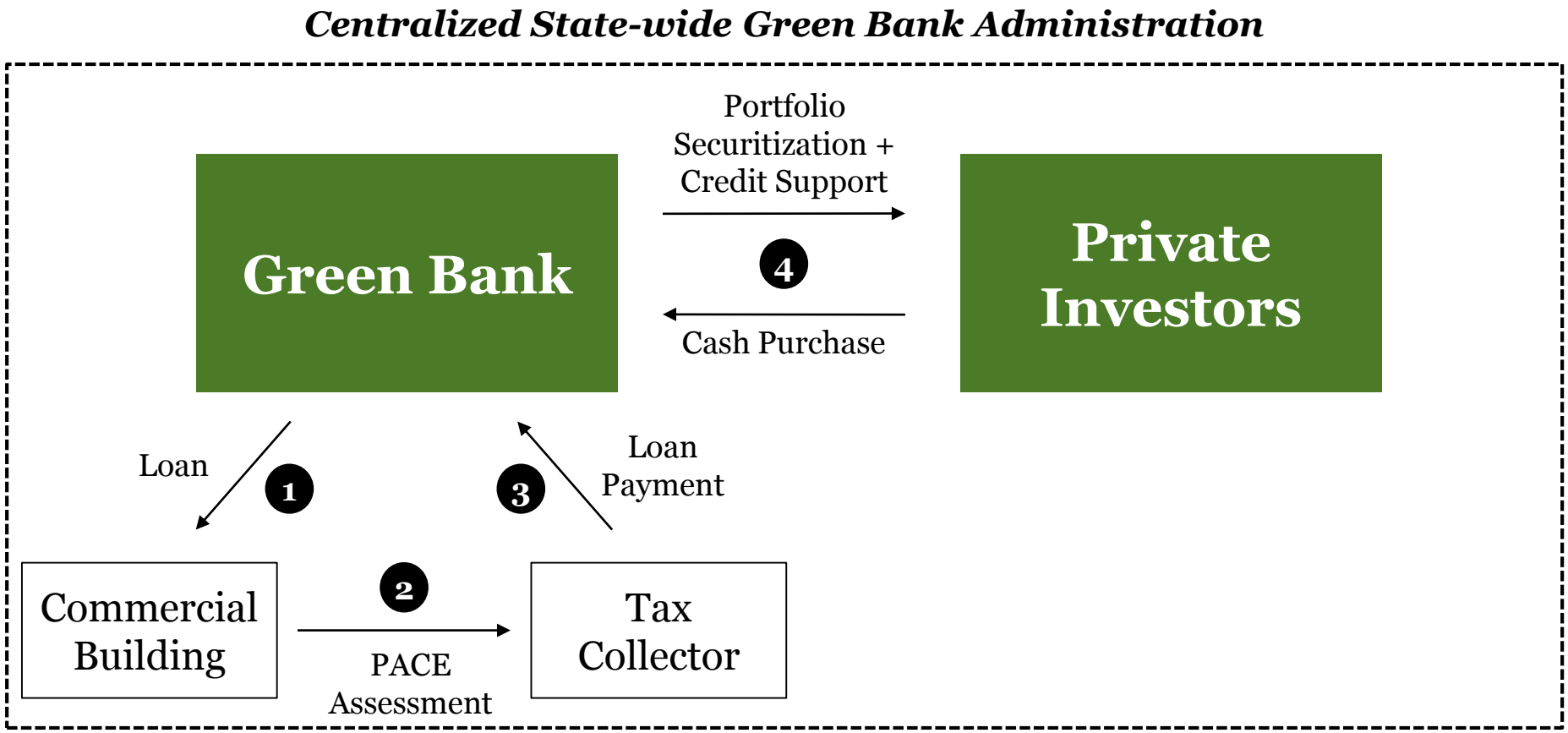
Example: CGB's C-PACE enables secure efficiency investment at scale



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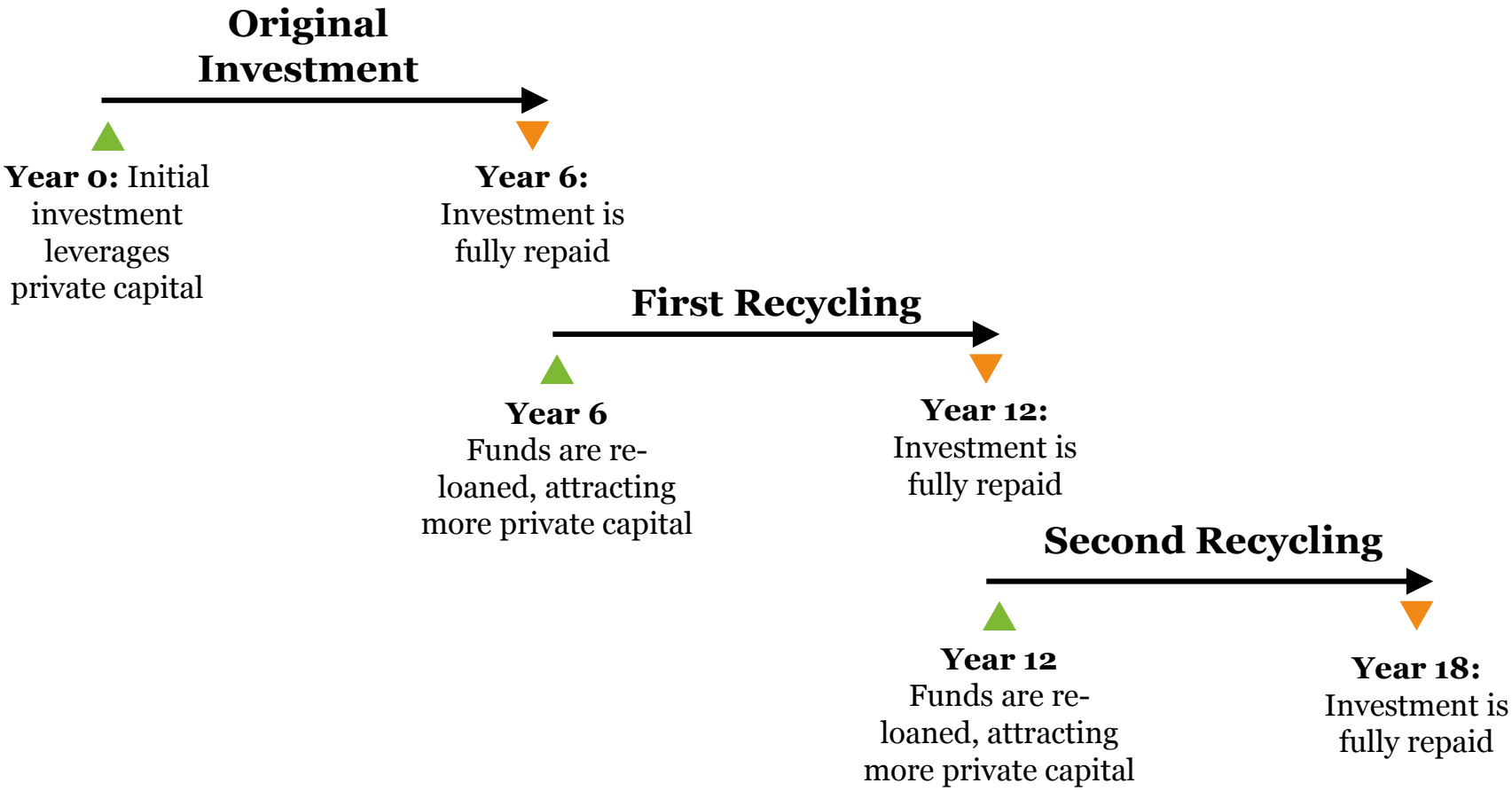
Green Banks recycle capital, re-leveraging private investment multiple times



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Green Bank doesn't just create financing products with private sector – it delivers products to customers

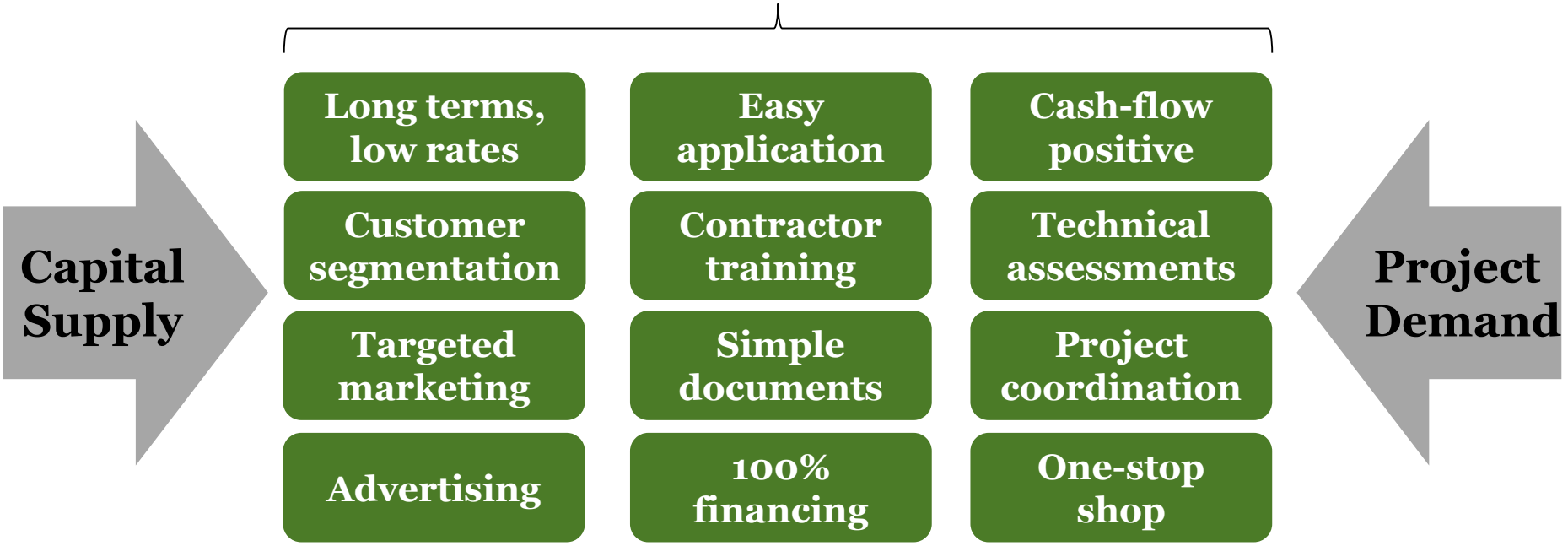
Financing Products *NOT* Useful to Customers

- Residential EE loan at 10% interest rate and 4 year term
- Commercial building upgrade loan with max loan size of $10,000
- Residential solar financing product with no outreach to contractors for channel marketing
- Multifamily EE financing with 1 year underwriting process
- LMI loan product that requires 680 FICO SCORE
- Whole-home upgrade with PV & EE with no savings calculation

Simply making capital available is not effective – it must be packaged attractively and marketed to create demand.

Green Banks help bridge the long gap between capital supply and demand for clean energy

Green Bank Market Development Activity Bridges Gap Between Supply & Demand



All of this activity must occur to reduce barriers to demand – some can be done by Green Bank, some done by private partners

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Green Banks are quickly spreading across U.S.

Green Banks Operating Or Under Development/Consideration

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Multiple paths to create a Green Bank

Route to Green Bank	Example
Legislation	Connecticut Green Bank – Created through bi-partisan legislation that repurposed existing quasi-public entity
Regulation	New York Green Bank – Created using ratepayer dollars that required approval of public utility regulator
Administrative Action	California CLEEN Center – Created by Governor within Infrastructure Bank, using existing bonding authority

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Several possibilities for Green Bank organizational placement

- What existing structure can Green Bank be part of?
  - Energy office, Treasurer, clean energy non-profits, finance agencies
  - Do these entities have legal ability to create new subsidiaries? Can they perform Green Bank actions? If not, need to pass law.
- Pros & Cons of new vs. existing entity

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Green Bank placement may define available capital sources

Capitalization Sources - New or Repurposed

Regulatory Surcharge	**Cap-and-Trade or RPS Revenue**	**Issue Bonds**
Legislative Appropriations	**Unused State Investment Funds**	**Federal Resources (USDA / DOE)**

- Want to get most accessible funds with lowest cost
- Ideally, funds are protected & stable for long-term strategy
- Seek most funds with least political resistance

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Green Bank increases the flow of capital *and* generates demand to build self-sufficient market over time

Provide capital to low return, but critical projects

Offer public capital that *attracts private capital* to produce more total investment

Make it easier for private capital to enter markets by *incurring portions of transaction costs*, including project sourcing, marketing, analysis, and convening

Focus on *lowering energy costs* in all projects, which isn't a goal for private capital

Institutional *repository for expertise* in public funding for clean energy, permits government to transfer expertise to private sector through partnerships

Enable governments to rationalize (*simplify*) existing clean energy programs

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Green Bank is 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
- **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
- **Create Jobs & Economic Growth**
  - Clean energy financing enables demand for projects from contractors
  - Public private partnerships create investment opportunities for lenders
- **Efficient Government**
  - Provide loans to preserve public capital & do deeper efficiency projects
  - Work in coordination with other agencies to maximize program value

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Thank You

Comments and Questions:
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Green Banks operating around the world

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Sources: OECD, "Green Investment Banks – Policy Perspective."

CGC leads market, legal analysis & stakeholder engagement to facilitate Green Bank creation

CONNECTICUT GREEN BANK

NY GREEN BANK

California Infrastructure and Economic Development Bank

Connecticut Green Bank

- Policy advocacy and stakeholder engagement prior to legislation
- Development of legislative strategy and drafting of bill
- Implementation and guidance of org and product strategy
- On-going advisory work – CEO Reed Hundt is active board member

New York Green Bank

- Advocated for GB policy
- Developed business plan
- Assessed market needs through interviews
- Modeled financial products

CA CLEEN Center

- Created stakeholder working group to lead advocacy
- Drove legislation that led to formation by Governor Brown
- Advising program formation

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CGC work in progress - Many more states are on path to creation

Montgomery County, MD – Green Bank Implementation

- Providing pro bono guidance to newly created county Green Bank
- 4-month consulting project to identify financing gaps & barriers to adoption
- Will recommend specific financing and market development solutions for new GB

Washington, DC – Green Bank Viability Report

- Launching new study for DC government to assess Green Bank opportunity
- Will include recommendations on products, structures & capitalization sources

Rhode Island, Maryland, Nevada & Others – Recent Developments

- Working with Rhode Island Treasurer to roll out new Infrastructure Bank
- Advising Maryland's legislatively-directed Green Bank study & business plan
- Conducting legislatively-directed Green Bank study for Nevada energy office
- Advising Delaware Sustainable Energy Utility on Green Bank expansion
- Advancing Vermont Green Bank plan and products based on 4-month assessment

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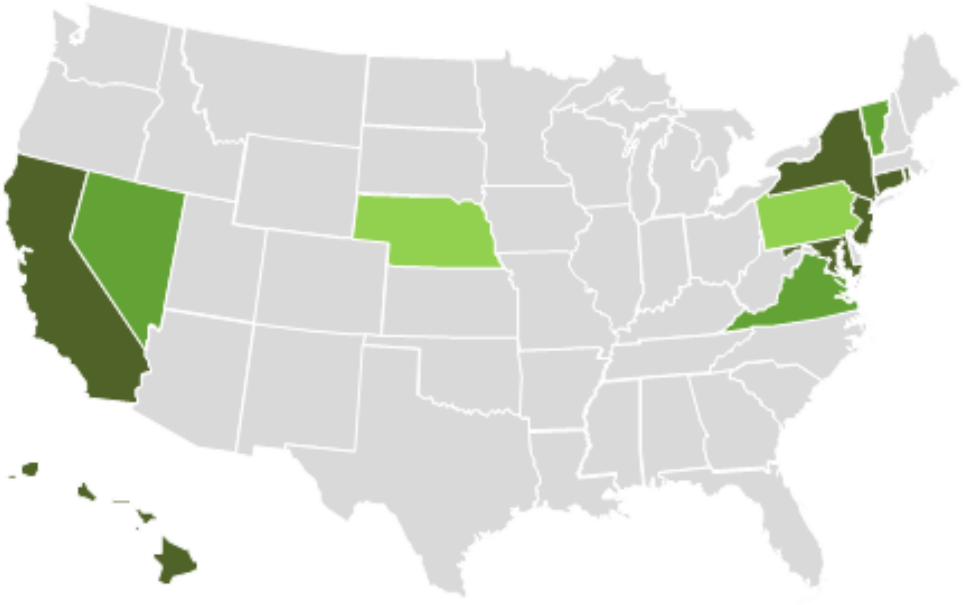
Interest in Green Banks is growing across the country

Established Institutions

1. Connecticut Green Bank
2. Hawaii Green Infrastructure Authority
3. New York Green Bank
4. New Jersey Energy Resilience Bank
5. California CLEEN Center (IBank)
6. Rhode Island Infrastructure Bank
7. Montgomery County (MD) Green Bank



States with Active Initiatives to Explore Concept

8. Maryland – Legislation for Study & Task Force
9. Nevada – Legislation for GB Study
10. Vermont – Govt Steering Committee
11. Virginia – Gov's Climate Change Commission
12. D.C. – Energy Office Study

States With Related Programs

13. NE Dollar & Energy Saving Loan
14. Pennsylvania HELP
15. WHEEL

Varying capitalization sources and org structures, common principles and objectives

	Institution	Eligible Technology	Key Products	Source of Funds and Initial Capital	Oversight/Structure	Staff
1	**Connecticut Green Bank**	• Solar, fuel-cell, geothermal, biomass • Energy efficiency	• C-PACE • Smart-E loan • Solar Lease II • Solar Loan	• RGGI funds, utility bill surcharge • ~$35M per year	• Quasi-public • Independent board of directors	• 33
2	**Hawaii Green Infrastructure Authority**	• Solar (primary focus) • Energy efficiency	• Solar leases for LMI and non-profit sector, paired with on-bill recovery	• $150 million bond issuance backed by ratepayer fee	• PUC oversight • Econ Development Agency administration	• 5
3	**New York Green Bank**	• Renewable energy • Energy efficiency • Clean transportation	• Issued RFP for private sector financial intermediaries	• $350 million in capital from RGGI & bill surcharge, up to $1 billion in 2025	• PSC oversight • Division of state energy office	• 12
4	**New Jersey Energy Resilience Bank**	• Combined heat and power • Fuel cells • Off-grid solar backup	• Water treatment. wastewater plants • Hospitals, healthcare facilities • Transportation and transit infrastructure	• $200M of disaster relief funds from US HUD	• Jointly administered by PUC and NJ Economic Development Authority	• 5

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Varying capitalization sources and org structures, common principles and objectives

	Institution	Eligible Technology	Key Products	Source of Funds and Initial Capital	Oversight/Structure	Staff
5	**California CLEEN Center**	• Efficiency (first priority) • Renewable generation	• SWEEP (MUSH market efficiency) • CEEP (commercial market efficiency)	• Pre-existing bonding authority of the state IBank	• Division of state Infrastructure Bank • Governor appoints the board	• TBD
6	**Rhode Island Infrastructure Bank**	• Renewables • Efficiency • Grid and demand-side upgrades	• Commercial & Residential PACE Program • Efficient Buildings Fund for municipal buildings	• $3M from RGGI • $2M from ARRA • $2M from ratepayers • QECBs • General bonding authority	• Body politic of the state • Governor appoints board	• 12
7	**Montgomery County Green Bank**	• Renewable energy • Energy efficiency • Grid and demand-side upgrades	• TBD	• $20M from utility merger settlement	• Independent non-profit • Has official designation, bylaws and board as defined by county	• TBD

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1 CGB offers a diverse suite of products, focus on solar and energy efficiency

Overview

- Established 2011 through Public Act 11-80
- $48M initial funding from repurposed system benefit charges
- Green Bank was created by repurposing existing agency

Milestones Achieved[1]

- Catalyzed $663M of investment
- Achieved private: public leverage ratio as high as of 10:1
- Created and induced over 8,000 jobs in 4 years
- Installed over 130 MW of capacity since inception.

Product	Description	Results
Smart-E loan	• Loan loss reserve for local banks allows for loan terms, can target lower FICO scores	• $2.5M of public funds enables $30M of private investment in clean energy through credit enhancement
C-PACE	• Commercial energy efficiency and clean energy loans • Repayment through tax assessment • Secured by lien on property	• Over $100M in deals • Private investor purchased first $27M of C-PACE transactions • Raised new public-private warehouse to increase loan volume
Solar Lease II	• Green Bank acts as a solar developer, pooling many leases to utilize depreciation and ITC, attracts private funds, open to FICO scores ≥ 640	• $60M total funding (5:1 ratio private to public dollars) • Will fund rooftop solar PV systems on about 1,500 homes and 40 businesses
Solarize	• Outreach through community networks, tiered pricing, and temporary monopoly for installer	• Lowered installation cost 30% • 1/5 interested customers signed contracts • Doubled amount of solar in communities
Solar Loan	• 15-year solar loan to finance installation of solar PV systems • Green Bank acts as warehouse	• $4.9M approved ($3.25M closed, $1.35M funded) • Assisted 230 homeowners

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Sources: 2013 Annual Report. "Connecticut's Green Bank: Energizing Clean Energy Finance."

1 CT's Solar Lease 2 (SL2) program provides local installers with financing offering

Program Overview

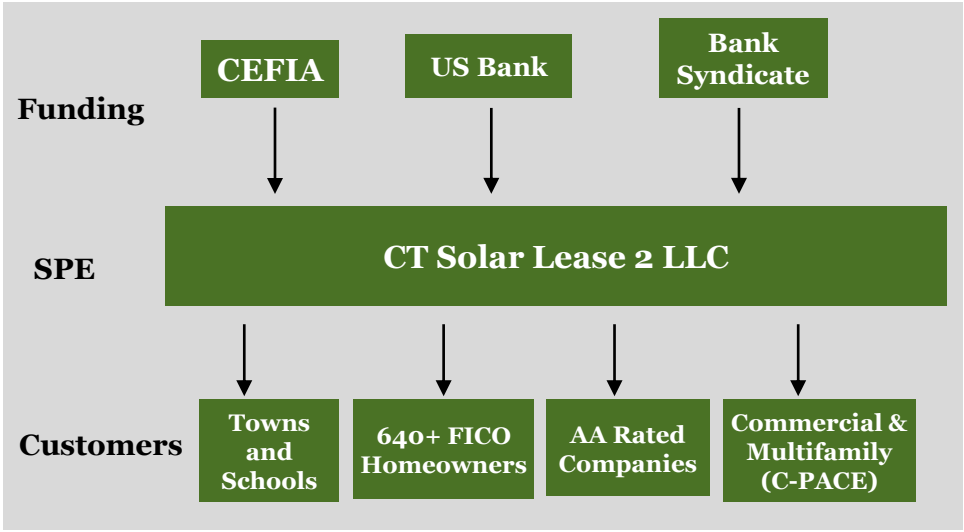
- In SL2, Green Bank acts as solar developer:
  - Establishes special purpose entity (SPE)
  - Uses federal and state incentives
  - Acquires tax equity from US Bank in order to utilize investor tax credits
  - Pools many smaller leases
- Allows property owners to lease Solar PV and solar hot water systems
- Property owners make lease payments over 20 years, opportunity to purchase system at 5 years

Milestones Achieved

- Funded projects will generate 14,000 kW annually and create more than 1,000 jobs
- Green Bank provided $9.5M public funding to attract $50M of private capital
- Assurant provides comprehensive insurance and warranty management
- Works with syndicate of local banks and financiers including: US Bank, First Niagara, Webster, Liberty, and Peoples United

Financial Structure

- Expect sponsor equity IRR of 9% from 2014 to 2034
- 20-year term for subordinated debt at a 2% yield with level payments of principal and interest starting in 2015
- Repurposed ARRA-SEP funds of up to $3.5M with a coverage ratio of 200%
- Performance-based incentive of $15.2M over 9 years from 2029 through 2034
- Overall IRR ~2%



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1 CT transition from grants to loans brings leverage, spike in total clean energy investment

Connecticut Grant-Making Authority versus Connecticut Green Bank

	FY 2000 – FY 2011 (CCEF)	FY 2012 – FY 2014 (CGB)	FY 2015 (CGB)
Model	Subsidy	Financing	Financing
Years	11	3	1
Energy (MW)	43.1	65.3	62.6
Investment ($MM)	$350	$350	$365
Leverage Ratio	1:1	5:1	5-10:1
Investment % Loans	9%	57%	77%

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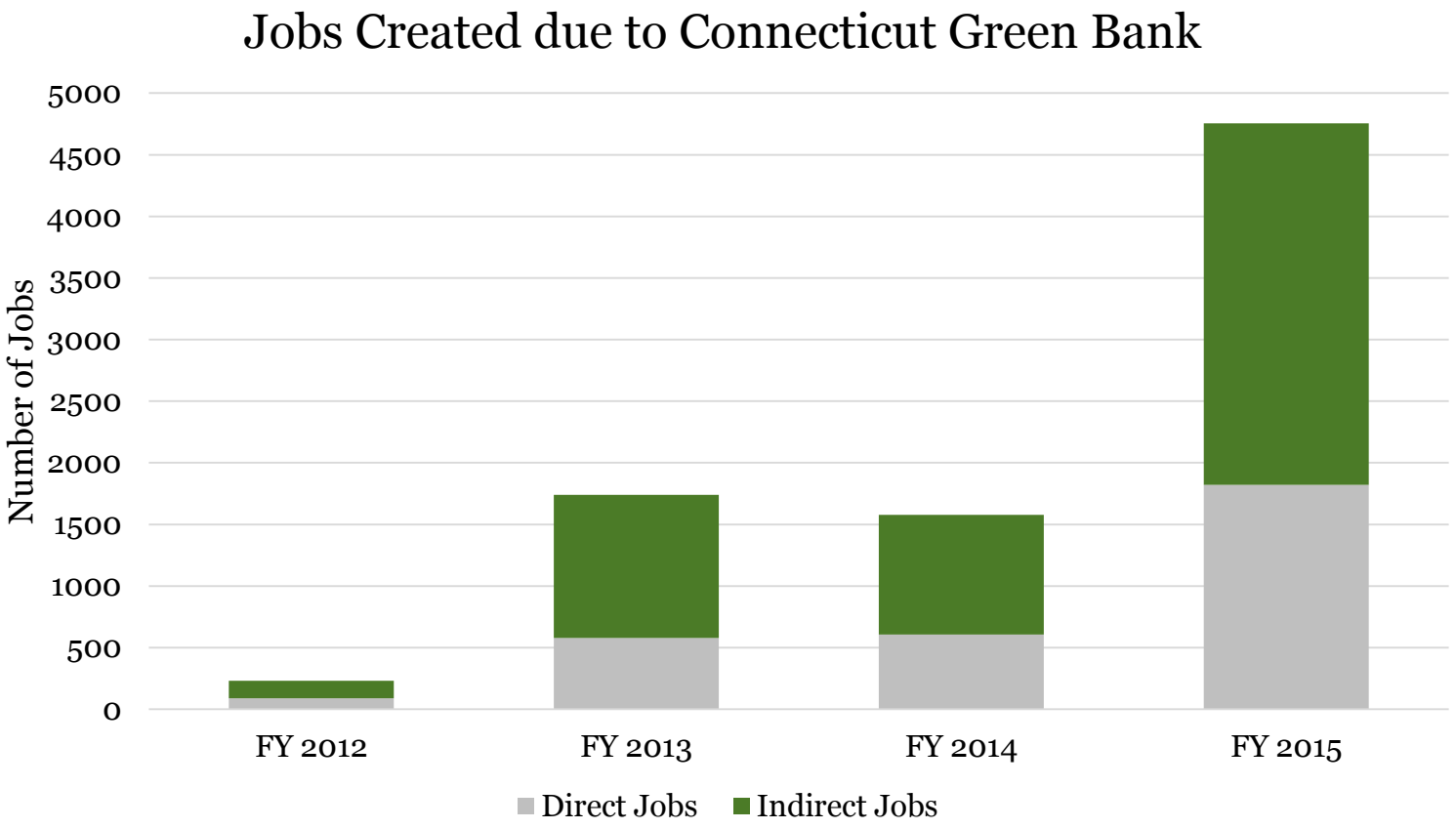
1 CT Green Bank drives job creation



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.

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2 Hawaii GEMS program targets underserved markets for low-cost residential solar financing

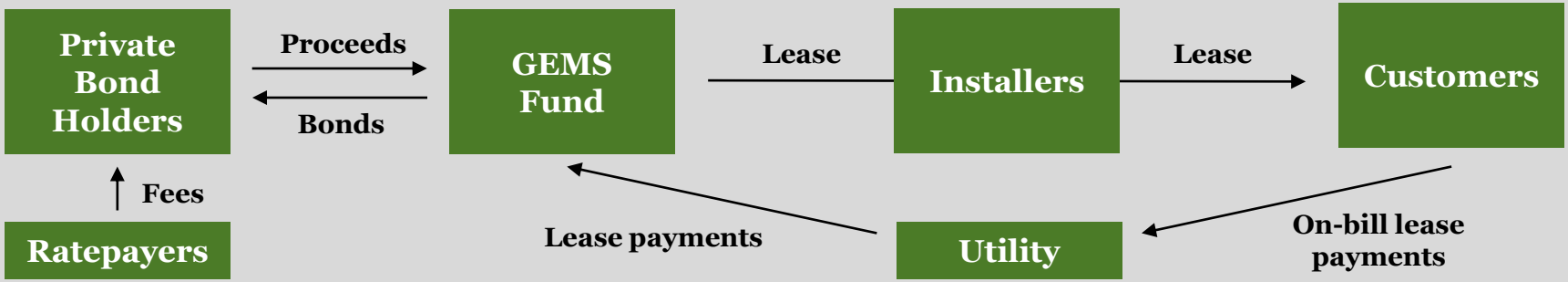
Overview

- Established June 2013 through Act 211
- $150M initial funding through rate-reduction bonds
- Provides lease financing for local installers
- Will be overseen by Green Infrastructure Authority Staff within Department of Business, Economic Development, and Tourism (DBEDT)
- Seeks to fill market gaps by targeting low-moderate income segments, renters, non-profits

Financial Structure[1]

- $150M from rate-reduction bonds, secured by Green Infrastructure Fee
- Fee will be added to utility ratepayer bills, other fees will be reduced to offset the cost of the new fee
- Bonds not tied to state's credit rating
- Proceeds paired with private tax-equity investment
- Distributed solar leases provided through installers
- Repaid directly or through on-bill repayment
- Lease repayments do not repay bond holders

Green Energy Market Securitization Program Structure



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Source: 1) "DBEDT Files Applications with PUC to Implement Green Energy Market Securitization Program," DBEDT Press Release.

3 New York Green Bank focused on catalyzing private wholesale financial markets for clean energy

Program Overview

- Established in January 2014
- $350M in funding from system benefits charge and RGGI, will increase to $1B
- Part of New York State Energy Research & Development Authority
- Focus on financing projects that have difficulty accessing financing
- First investments used $49M in public funds to leverage $170M in private capital

Financing Approach

- Issued an open market solicitation to private sector lenders, investors, and other industry participants
- Solicitation is very broad, open to both investors and clean energy project developers
- Constantly receives submissions, including resubmissions by previous applicants

Financial Structure

Guiding Principles	Eligible Technology	Eligible Financial Products
• Enhance private sector participation • Partner with existing market participants • Operate exclusively in wholesale markets • Does not provide grants or subsidies • Recycles public capital	• Renewables (e.g., solar, wind, hydro, thermal, bioenergy, tidal) • Energy efficiency • Combined heat power • Electric vehicle infrastructure • Fuel cells • Anaerobic Digestion • Offshore wind	• Credit enhancements (e.g., reserve account, junior interest) • Loans (e.g., mezzanine, subordinated, or senior) • Warehousing with the likelihood of being taken out by private third parties

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4 New Jersey Energy Resilience Bank applies similar principles to resiliency in response to Sandy

Program Overview

- Proposed by Governor Christie in 2013
- Capitalized by $200M from Community Development Block Grant-Disaster Recovery Funds allocated to New Jersey by U.S. Department of Housing and Urban Development
- Goal to finance resilient power projects to protect against power outages during weather events
- Has authority to make loans, give grants, and provide credit enhancements for bond issuances and private financing

Target Markets

- Water treatment plants; wastewater treatment plants
- Hospitals and long term care facilities
- Colleges and universities; state and county correctional Institutions
- Multifamily housing; primary and secondary schools that serve as community shelters during disasters
- Other facilities that serve as community shelters during disasters
- Transportation and transit infrastructure

Early Program Guidelines

- Initial focus will be on waste water treatment facilities
- Energy Resilience Bank (ERB) will offer up to 90% of funding; remaining from private sector
- 80% of ERB funds will be loans; 20% will be grants; a quarter of loan can be forgiven
- Eligible technologies include CHP, Fuel Cells and Batteries & Inverters for solar systems (not actual panels)

Recently created state and county institutions are now ramping up

	State	Current Status
5	**California CLEEN Center**	• Created by executive action within Governor's Infrastructure Bank • Will operate like a Green Bank, filling financing gaps and investing in partnership with private sector • Will use existing bonding authority, entirely self-sufficient • First programs will be SWEEP and CEEP, to provide long-term, low-cost financing for energy upgrades for MUSH market and commercial market buildings • CLEEN Center business plan outlines future objectives of financing renewables and other sectors
6	**Rhode Island Infrastructure Bank**	• Created through bi-partisan budget legislation • Built from existing Clean Water Finance Agency – given expanded responsibility to address clean energy, named Infrastructure Bank • First two roles are centralized state-wide PACE administration, and creation of municipal building upgrade financing program • Capitalized with small pieces of money from multiple sources, including bond issuances.
7	**Montgomery County Green Bank**	• Legislation passed unanimously by County Council • Working Group will determine GB activities and markets • Will be a designated 501(c)(3) non-profit • Capitalized $20M from Exelon as part of Pepco merger settlement

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Recently created state and county institutions are now ramping up

	State	Current Approach & Status
8	**Maryland**	• At legislative, direction, Maryland Clean Energy Center completed study of the need for a state Clean Energy Finance Initiative in 2015. • Upon completion of study, government formed official Task Force of department heads to design implementation strategy
9	**Nevada**	• State legislature passed SB360 in summer 2015, directing interim legislative committee on energy and state energy office to investigate need and potential creation of a Green Bank
10	**Vermont**	• Dept. of Employment and Economic Development, Dept. of Commerce, Dept. of Agriculture have launched assessment of need and role of a state Clean Energy Finance Initiative
11	**Virginia**	• Governor's Climate Change & Resilience Committee advanced the creation of a state Green Bank as the number one recommendation to the governor based on Committee deliberations in 2015
12	**District of Columbia**	• District energy office is conducting formal study and assessment for Green Bank creation in nation's capital to support achievement of large environmental and energy goals. Study completed spring 2016.

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13 States with similar finance programs 14 demonstrate success in offering low-cost loans

	Nebraska's Dollar & Energy Saving Loan: Limited Product Menu, But Great Outreach	Pennsylvania's Keystone Home Energy Loan Program (HELP): Standardization
Overview	• Established 1990 • Funds have revolved from $24M to $74M • 28,000 projects to date • Maintained default rate of 0.08%	• Established 2008 • $20M initial funding from Pennsylvania State Treasury • By 2011, Keystone had financed $52.4M (7,966 loans)
Program	• Interested borrowers approach local financial institution, which approves projects and coordinates with the Nebraska State Energy Office (NSEO) • NSEO provides 65%–75% of funding at 0% interest, private lending institution provides remainder at 2.5%–3.5% • NSEO works with 286 local Nebraska lending institutions in all 93 counties	• Underwriting standards follow Fannie Mae • Leverages AFC First's network of 1,800 approved contractors • Tiered rate structure offers borrowers more attractive financing for deeper energy retrofits • Keystone HELP sold $29M to a syndicate of private banks[1] • WHEEL[2] aggregates loans, attracts institutional investors, creates secondary market
Lessons Learned	• Market through local lending institutions • Allow private banks to keep returns • Lending institutions take the risks • State energy office helps customer calculate energy savings	• Partner with private sector administrator • Leverage contractor networks • Align with contractor incentives so contractors are encouraged to advertise program • Standardize underwriting standards

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1) Had to create special purpose vehicle to get rating.
2) "WHEEL" stands for Warehouse for Energy Efficiency Loans.

15

WHEEL works across states to aggregate energy efficiency financial products

	Warehouse for Energy Efficiency Loans (WHEEL)
Overview	• Came out of Pennsylvania's Keystone HELP Loan program • Provides lower-cost financing for residential energy efficiency • Uses public capital as credit enhancement to secure private debt • Open financing platform that any state may enrol in as a sponsor by contributing subordinate or credit-enhancing capital to the pool
Program	• A collaboration between Renewable Funding, State of Pennsylvania Treasury, Citigroup Global Markets, and the Energy Programs Consortium that utilizes the RenewFund financing platform to deploy institutional capital for state and utility programs • Warehouse facility funded by Citigroup and Pennsylvania Treasury • Low/no cost subordinate capital provided by state sponsor using by ARRA, utility, and other funds • Warehouse repaid via issuance of an investment grade security • Unsecured loans; 640+ FICO; Up to 10 year terms • Return provided to sponsors who participate in WHEEL, based on actual defaults and repayment levels.

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1) Had to create special purpose vehicle to get rating.
2) "WHEEL" stands for Warehouse for Energy Efficiency Loans.

…and around the world

National Initiatives

UK Green Investment Bank
- Established 2012
- $4.7B initial capital

Clean Energy Finance Corporation
- 2013 launch
- $10B initial capital

Malaysia Green Technology Financing Scheme
- Established 2010
- $1B loan to be used until 2015

Japan Green Fund
- Created 2013
- $14M annually from cap and trade revenues

Conclusions Drawn from the OECD International Conference on Green Investment Banks (GIBs)

Role of GIBs	• Investment activities to mobilize private capital • Encourage co-investment in clean energy projects from institutional investors
How GIBs Work	• Leverage public expenditures to encourage private capital markets to make loans and investments in clean energy markets
Target Sectors	• Clean Energy, energy efficiency • Ecosystem adaption • Electric vehicles and air quality

CGC led the Green Investment Bank discussion at OECD's Green Investment Finance Forum in Paris in 2014 & 2015. At the event former U.S. Vice President Al Gore called on all OECD members to establish CEFIs.

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