



CONNECTICUT  
**GREEN BANK**<sup>SM</sup>

# Connecticut Green Bank

## Comprehensive Plan

### Green Bonds US

Who Are We?

# Connecticut Green Bank

## About Us



- **Quasi-public organization** – Created by PA 11-80 (Section 99) and the successor to the Connecticut Clean Energy Fund
- **Focus** – Finance clean energy (e.g., renewable energy, energy efficiency, and alternative fuel vehicles and infrastructure) by leveraging public capital with multiples of private capital
- **Support** – from a variety of sources, including:
  - **State Support** – \$0.001/kWh surcharge (i.e., Clean Energy Fund) on electric ratepayer bills (about \$7-\$10 per household per year ≈ \$26 MM per year) and RGGI about \$3-5 MM per year (for renewable energy)
  - **Federal Support** – competitive solicitations (e.g., SunShot, USDA, etc.) and non-competitive resources (e.g., ARRA-SEP)
  - **Other Support** – issue “green bonds,” interest income, private capital (e.g., impact investors), and foundations (e.g., PRI’s)

# Connecticut Green Bank

## Mission Statement and Goals



Confront climate change and provide all of society a healthier and more prosperous future by increasing and accelerating the flow of private capital into markets that energize the green economy.

- Leverage limited public resources to scale-up and mobilize private capital investment in the green economy of Connecticut.
- Strengthen Connecticut's communities by making the benefits of the green economy inclusive and accessible to all individuals, families, and business.
- Pursue investment strategies that advance market transformation in green investing while supporting the organization's pursuit of financial sustainability.

# Connecticut Green Bank

## Sparking the Green Bank Movement



 **HARVARD Kennedy School**  
**ASH CENTER**  
for Democratic Governance  
and Innovation



★ **\$1 BILLION** ★  
CLEAN ENERGY  
INVESTMENT ACROSS THE  
STATE

THE CONNECTICUT  
INNOVATIONS IN AMERICAN GOVERNMENT  
AWARD

HARVARD Kennedy School  
ASH CENTER  
for Democratic Governance  
and Innovation



★ **13,000** ★  
NEW JOBS CREATED



★ **2.6 MILLION** ★  
TONS OF CO2 EMISSIONS  
REDUCED IN THE STATE

THE 2017 INNOVATIONS  
AWARD WINNER

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@HARVARDASH



"As cities and states across this country confront climate change, green banks can help mobilize more private investment and accelerate the growth of their local green energy economies"

★ **CONNECTICUT GOVERNOR DANIEL P. MALLOY** ★

THE CONNECTICUT GREEN BANK, THE 2017 INNOVATIONS IN AMERICAN GOVERNMENT AWARD WINNER

HARVARD Kennedy School  
ASH CENTER  
for Democratic Governance  
and Innovation

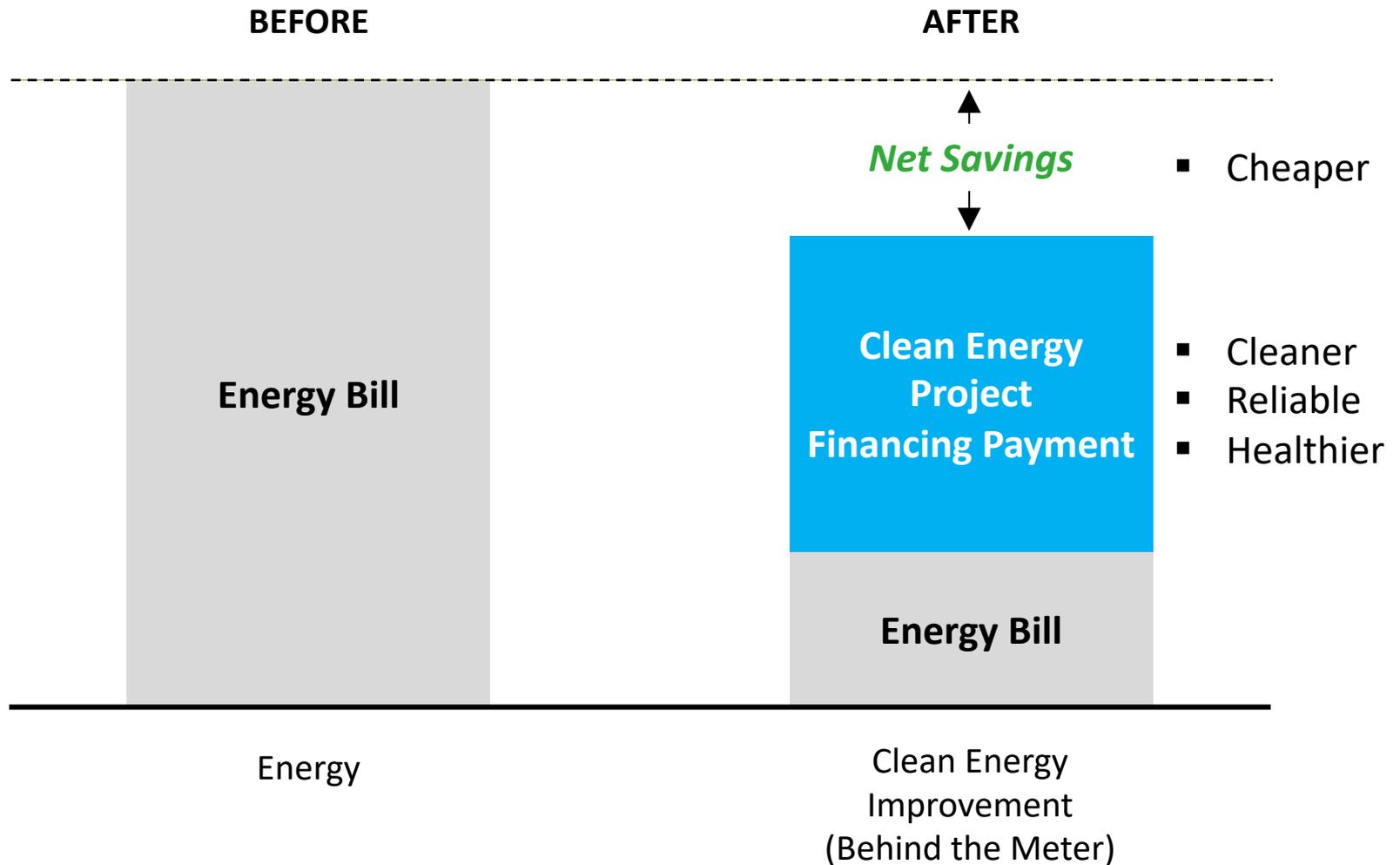
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@HARVARDASH

# What Do We Do?

# Connecticut Green Bank



## Reduce Costs – Increase Customer Demand

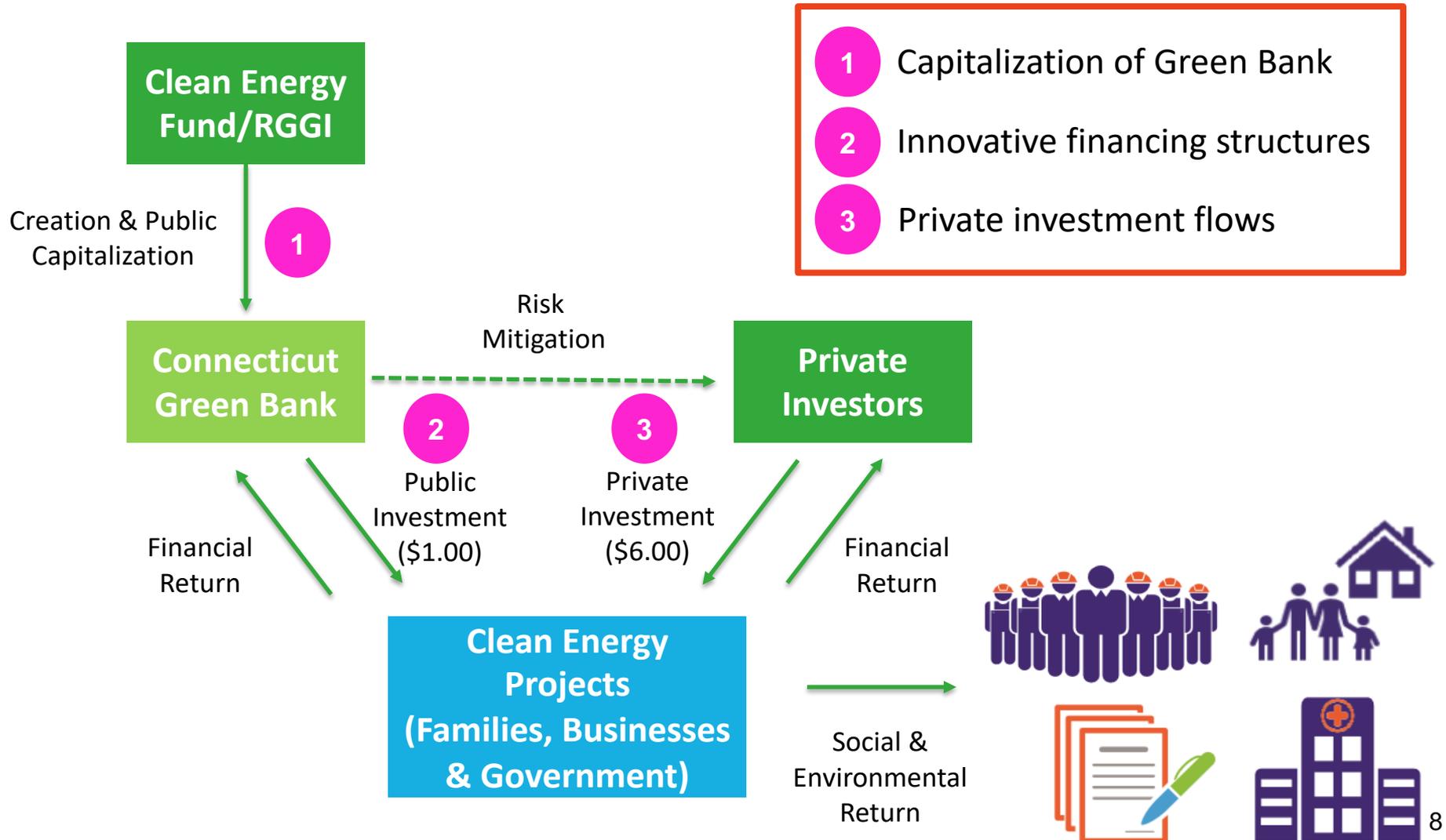


**REFERENCE**

Definition provided by the Coalition for Green Capital and adapted by the Connecticut Green Bank

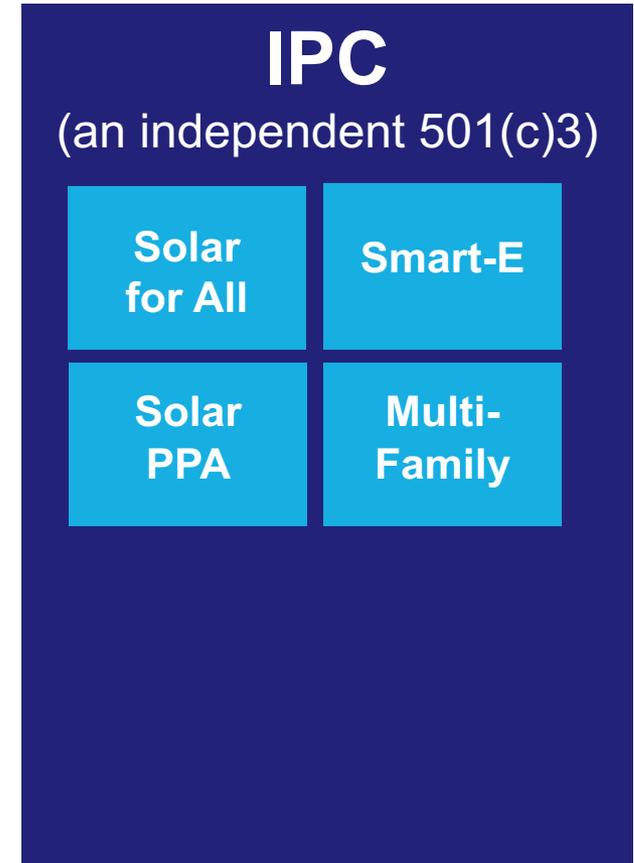
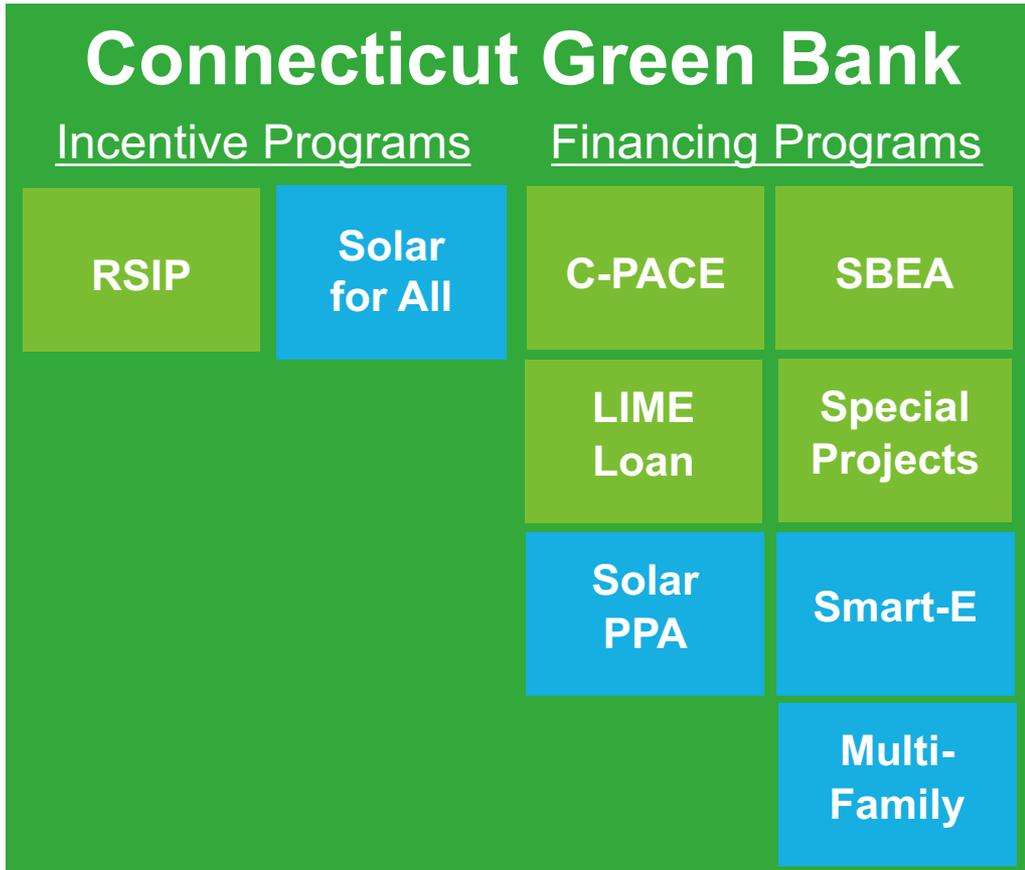
# Connecticut Green Bank

## Reduce Risk – Increase Supply of Private Capital



# Connecticut Green Bank

## Organizational Structure



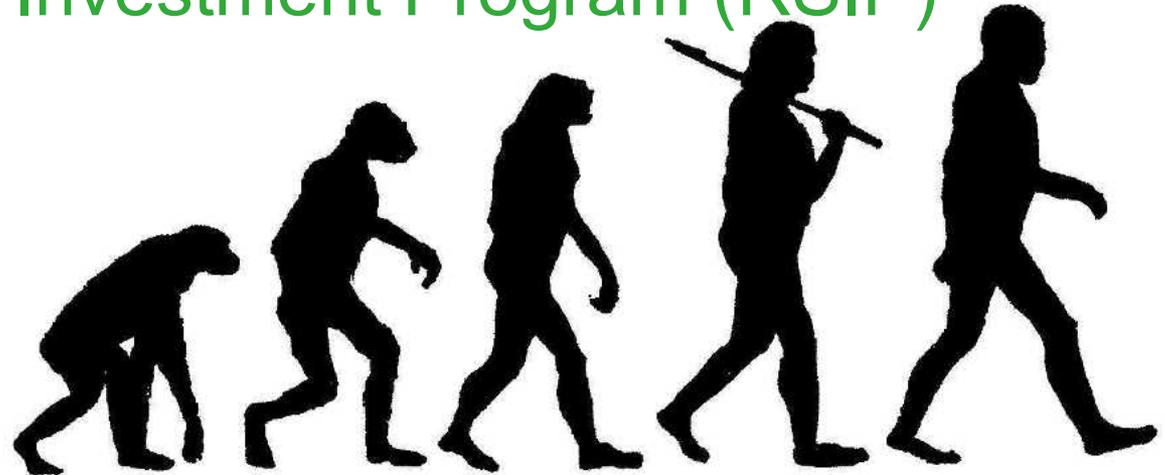
↑  
**Cost Recovered**

↑  
**Self Sustaining**  
(i.e., 5%@10 years)

↑  
**Operating Leverage, Social Return, and Investment Return Opportunity**

# Incentive Program

## Residential Solar Investment Program (RSIP)



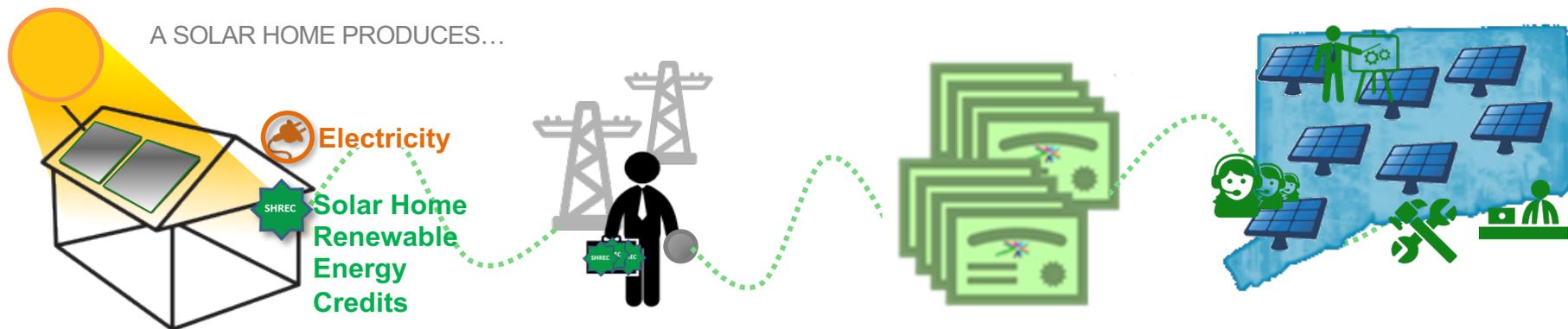
Policy Period	2004-2007	2008-2011	2012-2014 (PA 11-80)	2015-2019 (PA 15-194)	Post-RSIP (PA 18-50, 19-35 )
Period of Time (years)	4.0	4.0	3.0	4.5	Sustained Orderly Development
Approved Capacity (MW)	2.0	11.2	49.3	223.6	
Approved Capacity per year (MW/yr)	0.5	2.8	16.4	49.7	
Investment per Year	\$4.3 MM	\$19.9 MM	\$70.9 MM	\$187.2 MM	
Installed Cost – EPBB (\$/W)	\$8.63	\$6.85	\$4.42	\$3.77	
State Subsidy – EPBB (\$/W)	\$4.27	\$3.26	\$1.12	\$0.33	
Customer Cost – EPBB (\$/W)	\$4.36	\$3.81	\$3.30	\$3.43	
Retail Electric Rates (\$/kWh)	\$0.15	\$0.19	\$0.18	\$0.21	

### REFERENCES

RSIP data as of June 18, 2019 by calendar year for approved projects. 86% of approved projects are completed. Electricity rates from EIA

# Incentive Program (cont'd)

## Solar Home Renewable Energy Credits (SHRECs)



When panels produce electricity for a home, they also produce **Solar Home Renewable Energy Credits (SHRECs)**. The Green Bank provides upfront incentives through RSIP and collects all the SHRECs produced per statute (i.e., PA 15-194).

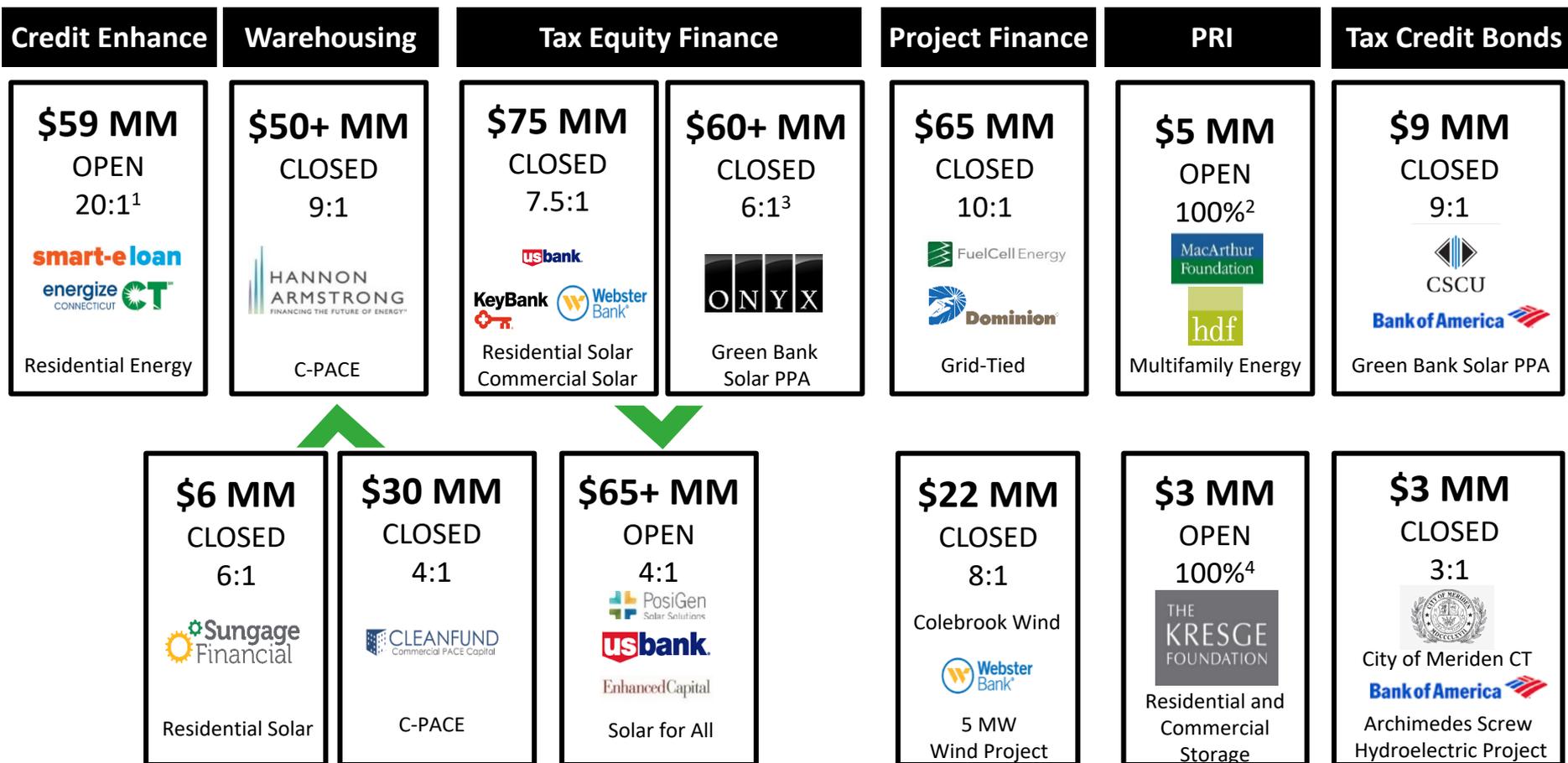
Utilities required to enter into **15-year Master Purchase Agreement (MPA) with the Green Bank to purchase the stream of SHRECs produced**. This helps utilities comply with their clean energy goals (i.e., Class I RPS).

**Green bonds are created** from the SHREC revenues received through the MPA and **sold to institutional** (i.e., pension funds, insurance companies, etc.) and **retail investors** (i.e., friends and family) to **receive proceeds upfront**.

The Green Bank uses the SHREC revenues and green bond proceeds to **support the RSIP incentives** (i.e., PBI and EPBB), **cover admin costs**, and **financing costs** to achieve **350 MW of solar PV deployment and development of local solar PV industry**

# Financing Programs

## Portfolio of Public-Private Partnerships



### REFERENCES

1. LLR yields high leverage – and it is 2<sup>nd</sup> loss and thus with no to low defaults, we haven't used to date. IRB's not considered in the leverage ratio.
2. Foundation PRI is to HDF, guaranteed by the CGB in the case of MacArthur Foundation.
3. Onyx Partnership has no upper limit and CGB currently has authorization to commit up to \$15mm.
4. Foundation PRI's are backed by CGB balance sheet
5. Data from Power BI through June 30, 2019

# Financing Program

## Energize CT Smart-E Loan



**smart-e loan**



<b>Market Segment</b>	<b>Residential Single Family</b> (Credit Enhancement)
<b>Product Summary</b>	Partnership with eleven (11) local community banks and credit union to provide easy access to affordable financing for comprehensive clean energy measures, including H&S. 5-20 year terms at rates ranging from 4.99-6.99% for \$500-\$40,000 of borrowing.
<b>Support Needed</b>	<ul style="list-style-type: none"> <li>Provide 2<sup>nd</sup> Loan Loss Reserve (LLR) up to 7.5% of losses</li> <li>EV pilot</li> </ul>
<b>CT Results</b>	3,804 projects for \$59.3 MM financed (with \$5.9 MM of IRB), 8.8 MW, 85% projects have EE



**PLUG IN!**

**Special Offer for Electric Vehicle buyers!**

LIMITED-TIME LOW RATES **0.99%** APR\*

NO MONEY DOWN

NCUA

**REFERENCES**

Data from Power BI through 6/30/19

# Financing Program

## Solar for All – Solar PV Lease and EE ESA



<b>Market Segment</b>	<b>Residential Single Family LMI (Co-Investment)</b>
<b>Product Summary</b>	Solar lease + energy efficiency package (fixed 20 years) to reduce energy burden with alternative underwrite/no credit score using community based marketing approach
<b>Support Needed</b>	<ul style="list-style-type: none"><li>▪ Good solar economics including tiered LMI incentive</li><li>▪ Municipal, community and nonprofit introductions</li><li>▪ Subordinated debt capital – if available, but not required</li></ul>
<b>CT Results</b>	2,430 leases for \$68.6 MM investment, 16.2 MW, 99.9% get EE (HES), 63% ESA, and reached 75% LMI



### REFERENCES

Data from Power BI through 6/30/19

# Financing Products

## Multifamily

<b>Market Segment</b>	<b>Naturally occurring and subsidized/regulated affordable housing (5+ units)</b> (Investment)
<b>Product Summary</b>	Pre-development and term financing products (including unsecured) for renewables, efficiency, storage, resiliency, health & safety and other building improvements
<b>Support Needed</b>	<ul style="list-style-type: none"> <li>▪ Overview of utility and state affordable housing program/ incentive landscape</li> <li>▪ Portfolio owner introductions</li> <li>▪ Municipal, community and nonprofit introductions</li> <li>▪ Subordinated debt capital – if available, but not required</li> </ul>
<b>CT Results</b>	95 loans for \$127.7 MM investment in EE, RE, and H&S



Save money on energy



Increase property value



Improve occupancy rates



Improve comfort and safety



### REFERENCES

Data from Power BI through 6/30/19

# Financing Program

## C-PACE

<b>Market Segment</b>	<b>Commercial, Industrial, Nonprofit and Multifamily</b> (Warehousing)
<b>Product Summary</b>	Commercial Property Assessed Clean Energy (C-PACE) applies a benefit assessment to a property to finance clean energy improvements with SIR>1
<b>Support Needed</b>	<ul style="list-style-type: none"> <li>• Capital to finance clean energy improvements</li> <li>• Contractors to install clean energy improvements</li> <li>• Supportive municipality</li> <li>• Supportive mortgage lender</li> </ul>
<b>CT Results</b>	270 projects for \$158.5 MM investment, 34.0 MW of RE, 32% projects have EE



### REFERENCES

Data from Power BI through 6/30/19

# Financing Program

## Green Bank Solar PPA

<b>Market Segment</b>	<b>Small/medium commercial, MUSH, affordable housing, nonprofits, community assets (Co-Investment)</b>
<b>Product Summary</b>	3 <sup>rd</sup> party solar power purchase agreement, backed by C-PACE lien where possible
<b>Support Needed</b>	<ul style="list-style-type: none"> <li>▪ Good solar economics for C&amp;I</li> <li>▪ Local solar installer &amp; project developer introductions</li> <li>▪ Municipal, community and nonprofit introductions</li> <li>▪ Subordinated debt capital – if available, but not required</li> </ul>
<b>CT Results</b>	123 PPAs closed/completed, \$102.6 MM, and 33.1 MW

### green bank solar ppa



#### REFERENCES

Data from Power BI through 6/30/19

# Special Project

## New England Hydropower

<b>Market Segment</b>	<b>Virtual Net Metering – Municipality</b> (Investment)
<b>Project Summary</b>	Long-term PPA (i.e., 30+ years) for behind the meter (VNM) for this run-of-the-river hydro facility in Meriden – first of its kind in the U.S.
<b>Support Needed</b>	<ul style="list-style-type: none"> <li>▪ Project finance</li> <li>▪ Support for start-up developer using European technology</li> <li>▪ Working capital (Webster Bank), construction financing (Key Bank), and green bonds (BAML)</li> </ul>
<b>CT Results</b>	\$3 MM investment using federal CREBs and 193 kW hydro project



# Special Project

## Food Waste to Energy AD Project

<b>Market Segment</b>	<b>Project Finance</b> (Co-Investment)
<b>Project Summary</b>	Provided long-term subordinated debt (i.e., 15 years) at low interest rate (i.e., 2%) for 20% of the capital structure to finance the 1 <sup>st</sup> AD project of its kind in CT
<b>Support Needed</b>	<ul style="list-style-type: none"><li>▪ Links to food waste collection policy (PA 11-127)</li><li>▪ Attracted local lender as a senior debt provider (i.e., Peoples Bank) along with equity and tax equity</li></ul>
<b>CT Results</b>	\$10 MM project, 1 MW, diverts organic materials from waste stream while producing renewable energy



# Why Do We Do It?





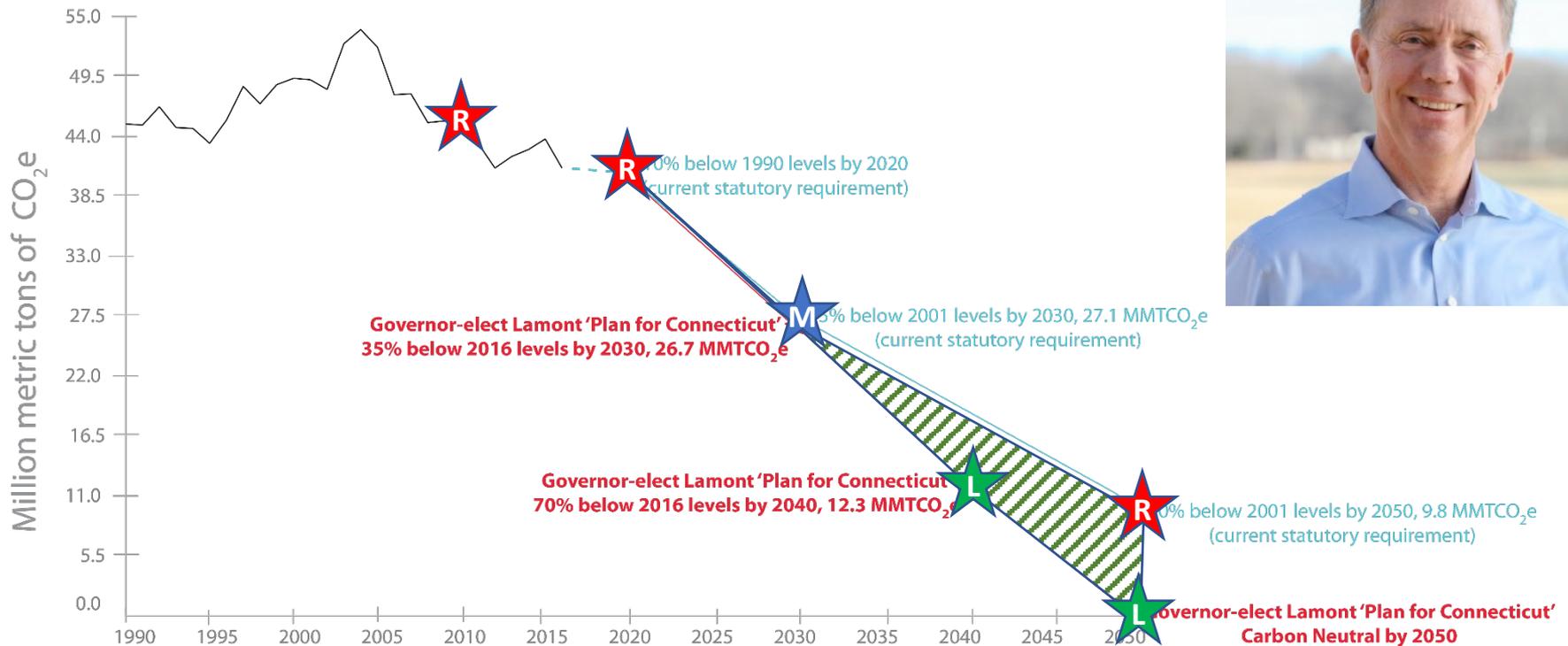






# Gubernatorial Leadership

## Confront Climate Change in Connecticut



*“These targets are tougher than required under the Paris Agreement, but are achievable, measurable goals that will guide our state’s energy and environmental policy.”*

# Connecticut Green Bank

## Vision Statement



...a world empowered  
by the renewable energy  
of community



### REFERENCES

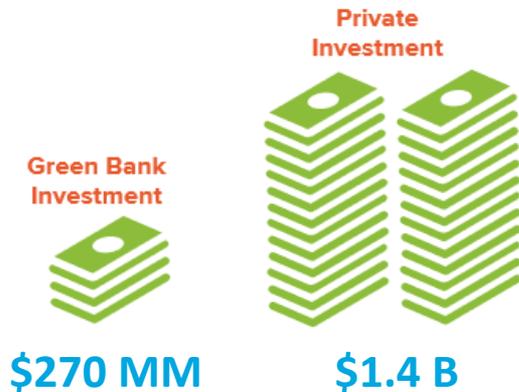
Vision Statement inspired by the Innovations in American Government Awards at the Ash Center of Harvard University's Kennedy School of Government, Maya Angelou's "On the Pulse of Morning," and the powerful words of Mary Evelyn Tucker on "inclusive capitalism".

# Connecticut Green Bank



## Impact Investment – Social and Environmental

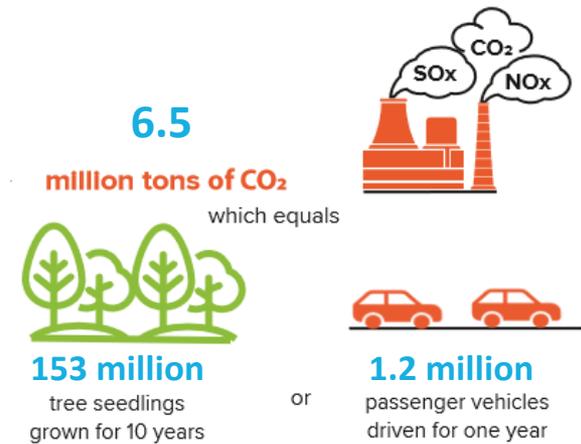
### INVESTMENT



### ECONOMIC DEVELOPMENT



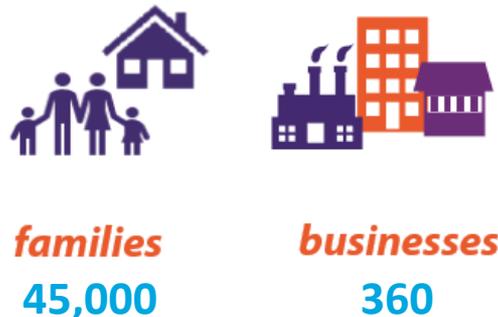
### ENVIRONMENTAL PROTECTION



### TAX REVENUES



### ENERGY BURDEN REDUCED



### PUBLIC HEALTH SAVINGS

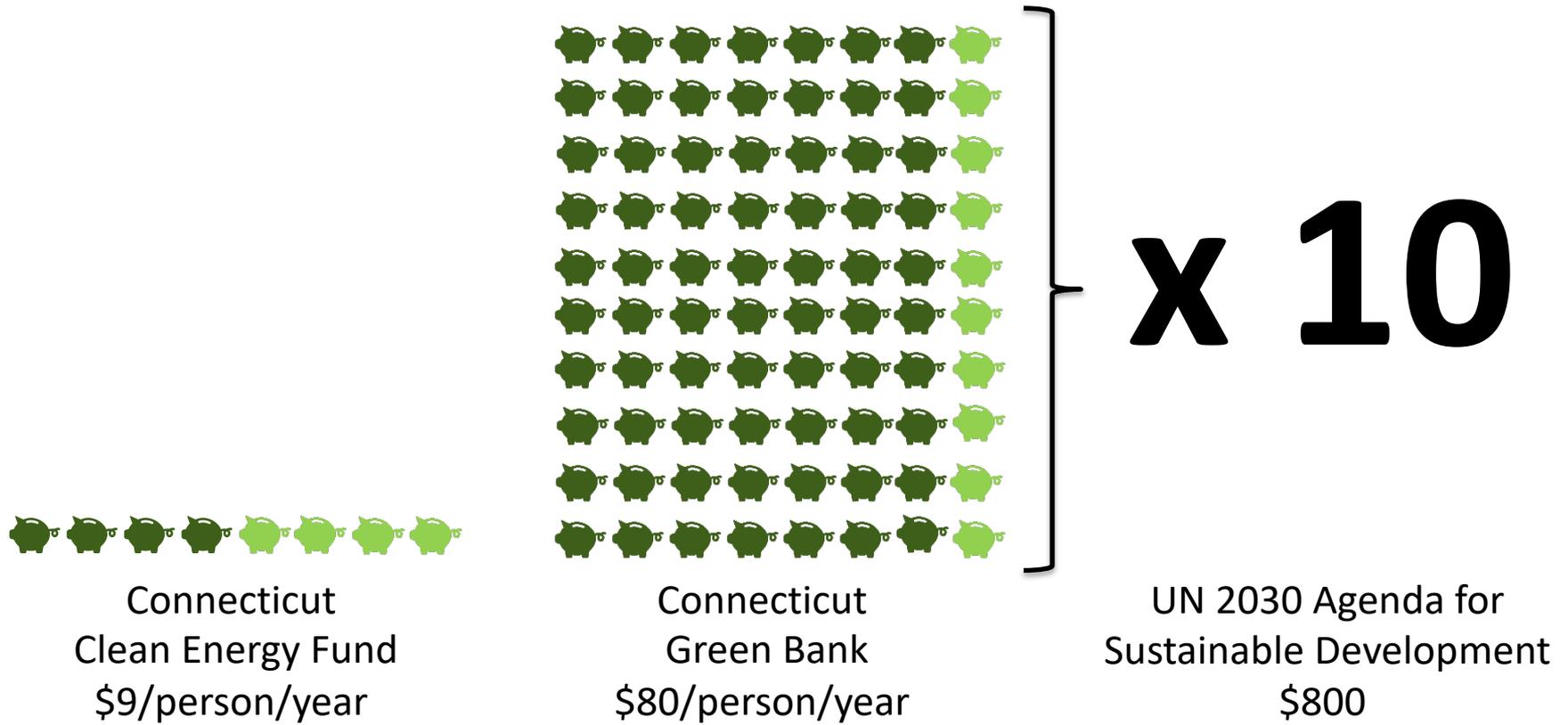


#### REFERENCES

Connecticut Green Bank Data Warehouse – July 1, 2011 through June 30, 2019

# Increase Investment From 1 to 2 Orders of Magnitude

-  = \$1 in public investment in clean energy per person per year
-  = \$1 in private investment in clean energy per person per year



**REFERENCES**

1. CT Population = 3,600,000. US Population = 321,400,000. World Population = 7,500,000,000.
2. CCEF Annual Investment = \$32 MM (1:1). CGB Average Annual 4-Year Investment = \$280 MM (6:1). UN Report = \$6 T assuming \$90 T over 15-years (i.e., since 2016).

# Moral Capital Mobilization

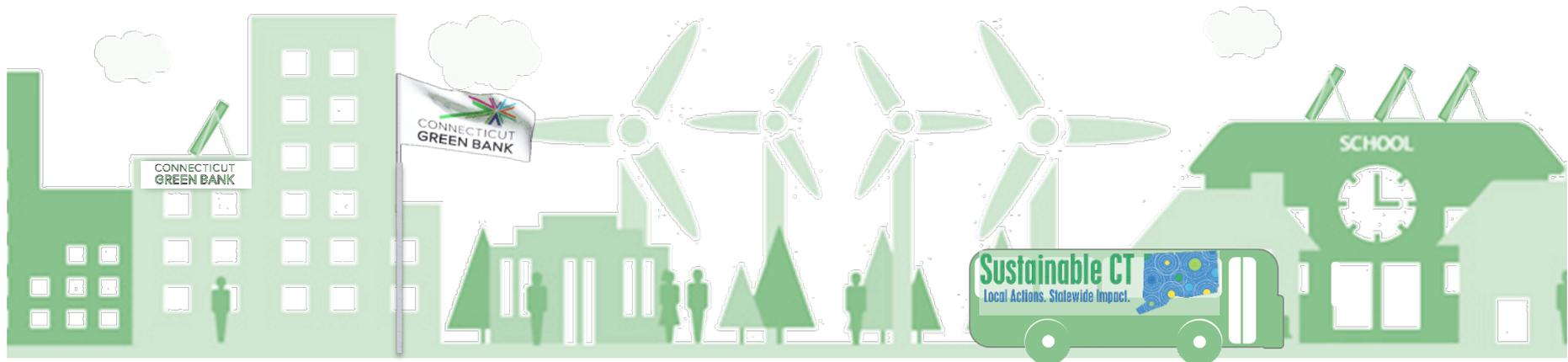
## Green Bonds US



Partnership with Sustainable CT



Mini Green Bonds



# Connecticut Green Bank

## FY 2020 Targets

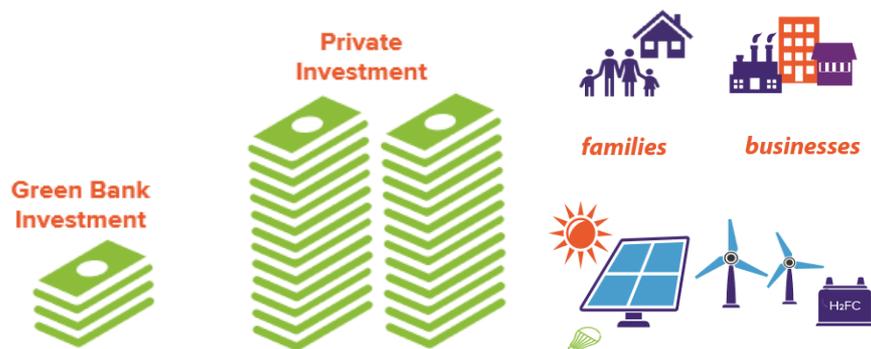


### Incentive Programs

Program / Product	Projects	Total Investment	Installed Capacity (kW)
RSIP	7,059	\$214,200,000	60,000
EEP – Battery Storage <sup>1</sup>	500	\$5,500,000	2,000
<b>Total</b>	<b>7,559</b>	<b>\$219,700,000</b>	<b>62,000</b>

### Financing Programs

Products / Projects	Projects	Total Investment	Installed Capacity (kW)
C-PACE	56	\$22,000,000	5,600
Green Bank Solar PPA	34	\$28,125,000	12,700
SBEA	1,000	\$20,000,000	-
Smart-E Loan	540	\$7,182,000	500
Solar for All	615	\$17,202,165	4,200
Multifamily Predev	2	\$140,000	-
Multifamily Term	9	\$1,493,000	300
Multifamily Catalyst	2	\$110,000	-
Strategic Investments	2	\$7,500,000	-
<b>Total</b>	<b>2,240</b>	<b>\$98,427,165</b>	<b>21,000</b>



In FY 2020, the Connecticut Green Bank will **invest \$53.4 MM** in incentive and financing programs to **attract \$245.2 MM in private investment** to **support over 9,000 projects** and **over 75 MW of clean energy** deployment



# Thank You

## **Connecticut Green Bank**

845 Brook Street, Rocky Hill

300 Main Street, 4<sup>th</sup> Floor, Stamford

(860) 563-0015

[www.ctgreenbank.com](http://www.ctgreenbank.com)