How Green Banks Accelerate Clean Energy Investment

Energy Efficiency NOW

Alaska Housing Finance Corporation

29 March 2017

Agenda

CONNECTICUT GREEN BANK

- **What is the Connecticut Green Bank**
- **Green Bank Basics**
- **Green Bank Benefits / Impacts**
- **Project / Program Examples**
- **Green Bank Movement**

Connecticut Green Bank
About Us

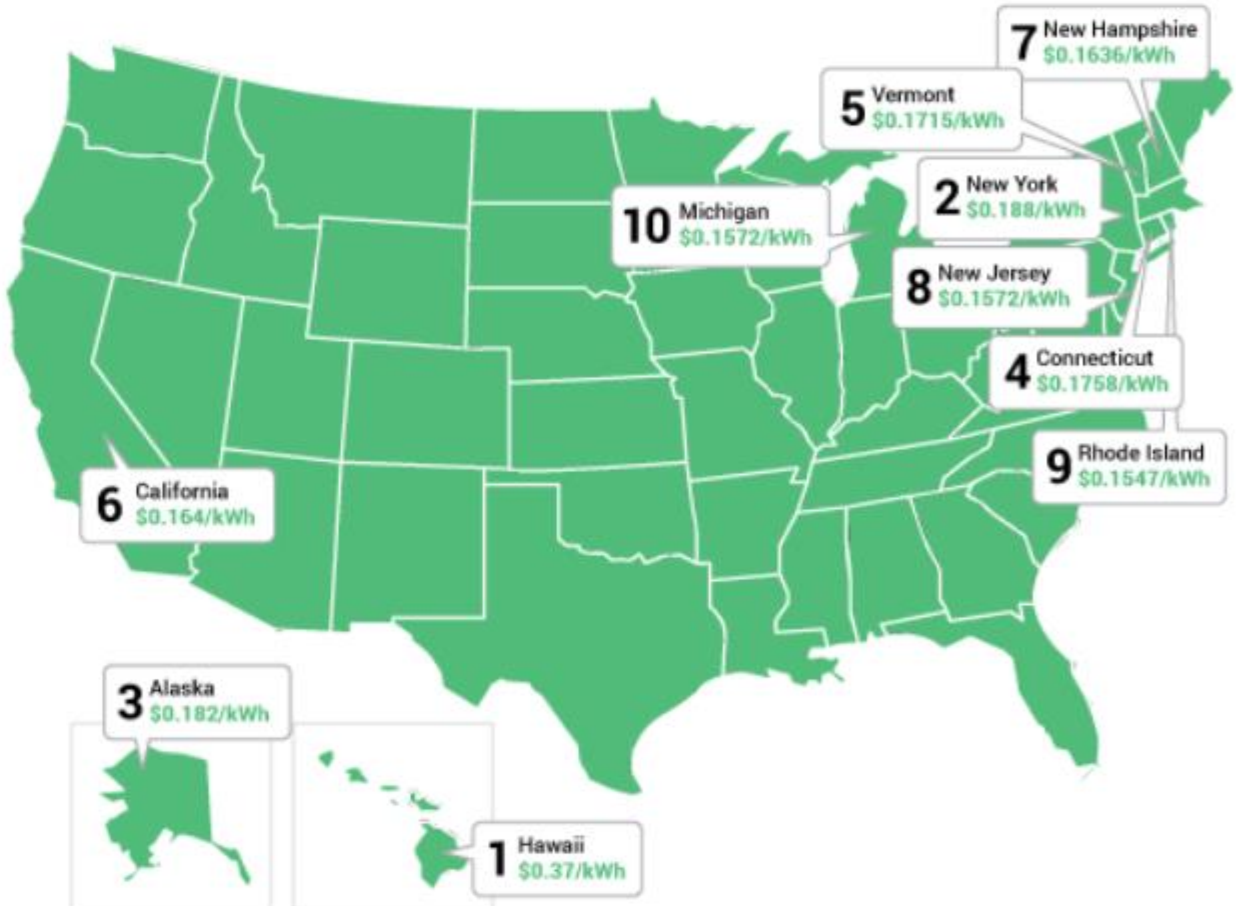
- **Quasi-public organization** – created 2011 and succeeded the Connecticut Clean Energy Fund (1999-2011) … with **~$60 MM**
- **Focus** – finance clean energy (i.e. renewable energy, energy efficiency, and alternative fuel vehicles and infrastructure)
- **Balance Sheet** – approximately **$175 MM** in assets **(growing)**
- **Support** – supported by
  - a $0.001/kWh surcharge on electric bills (~ $10 per household / year) … approximately **$27-30 MM / year** **(stable)**
  - A "CO^2 Cap & Trade" … approximately **$5 MM / year** **(stable)**
  - Portfolio Income … approximately **$2 - $3 MM / year** **(growing)**
  - Private capital, foundations, US Govt (i.e. SunShot & ARRA) – **(varies)**

Connecticut
Microcosm of the United States

- **Region** – New England
- **Population** – 3,597,000
- **Gross State Product** – ~$225 B (#3 – 2015)
- **Buildings** – some of the oldest, most energy inefficient, and H&S issues
- **Energy Costs** – one of the highest electricity costs in USA
- **Grid Reliability** – 5 major storms in the past 5 years with unacceptable outages

Connecticut & Alaska

2 of the "Top 10 Most Expensive States for Electricity"

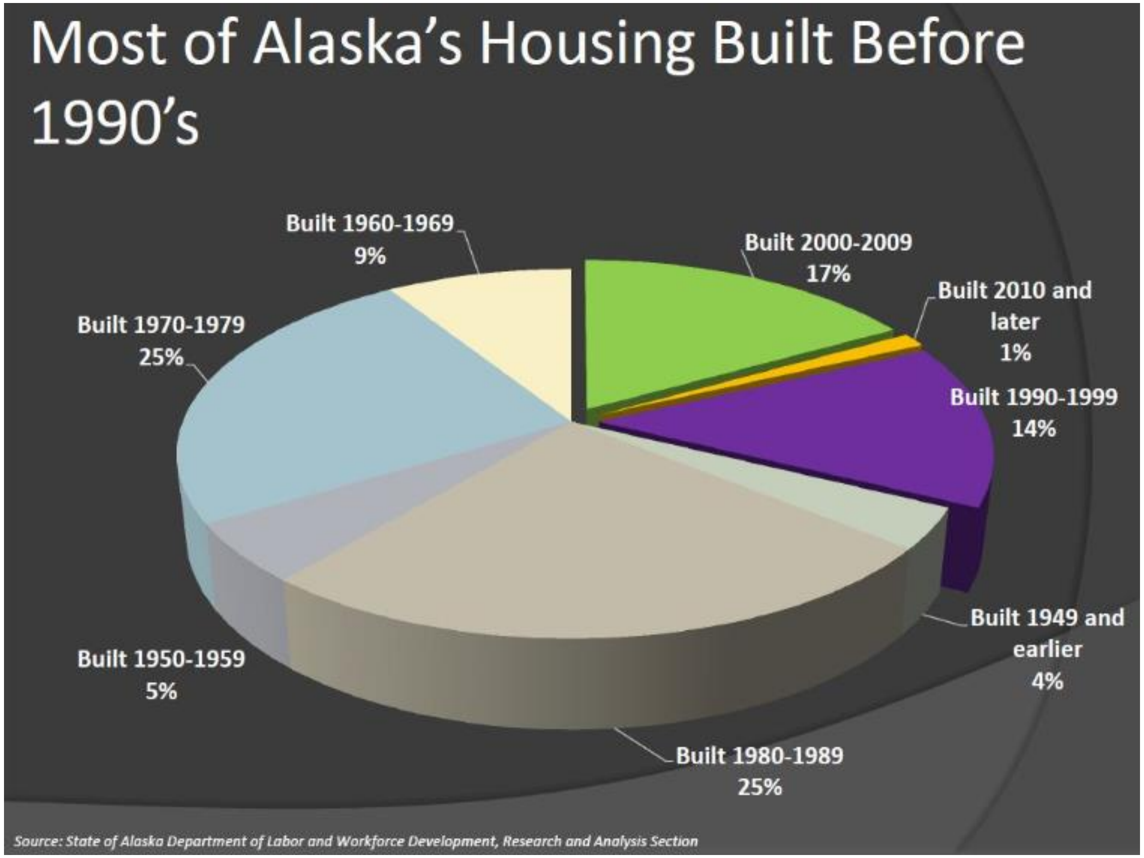


Connecticut & Alaska

Both have old building stock!

Old, Energy Inefficient Building Stock

CT has some of the oldest and most energy inefficient building stock



Green Bank Basics

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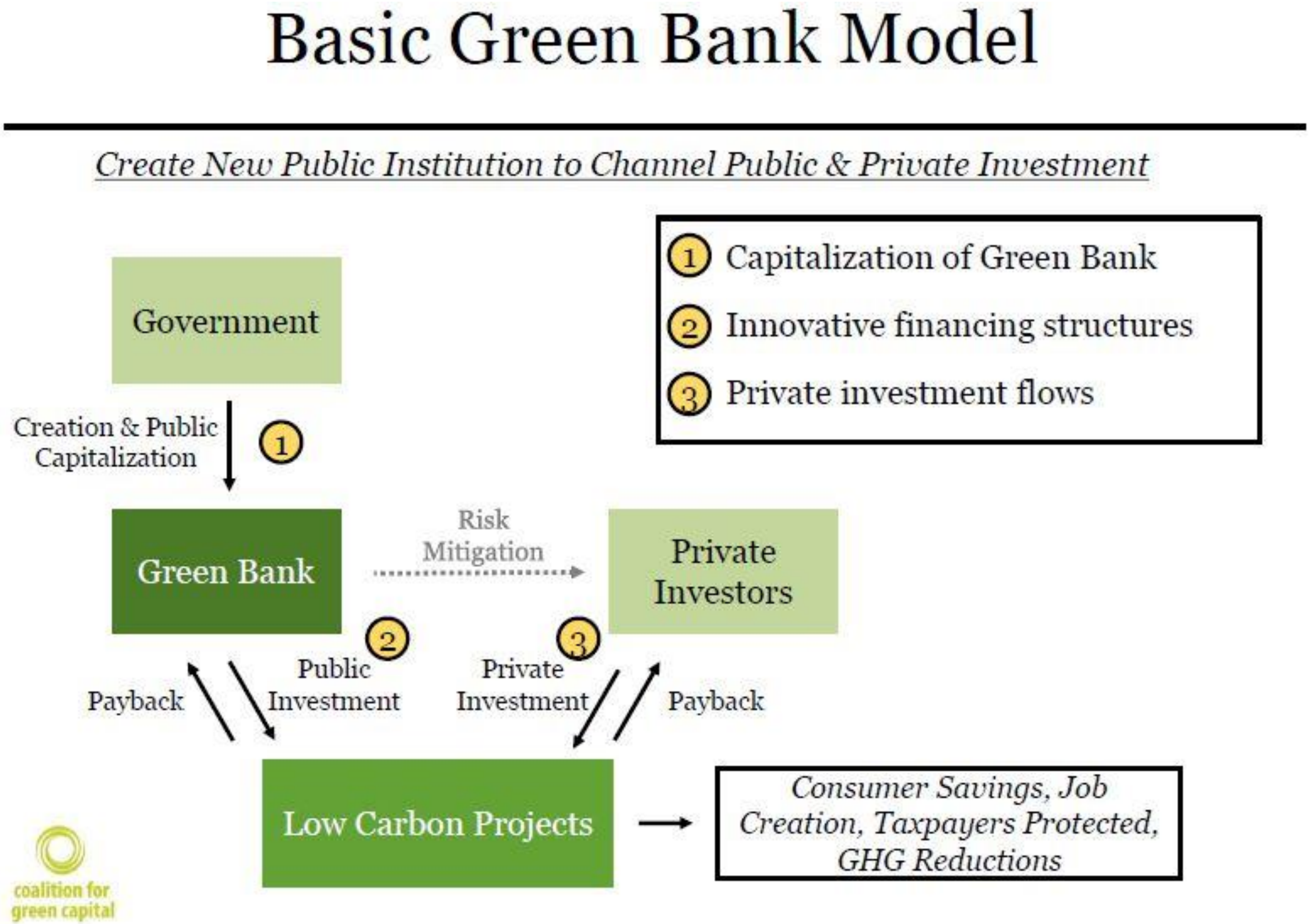

How Green Bank's Leverage Public Capital with More Private Capital

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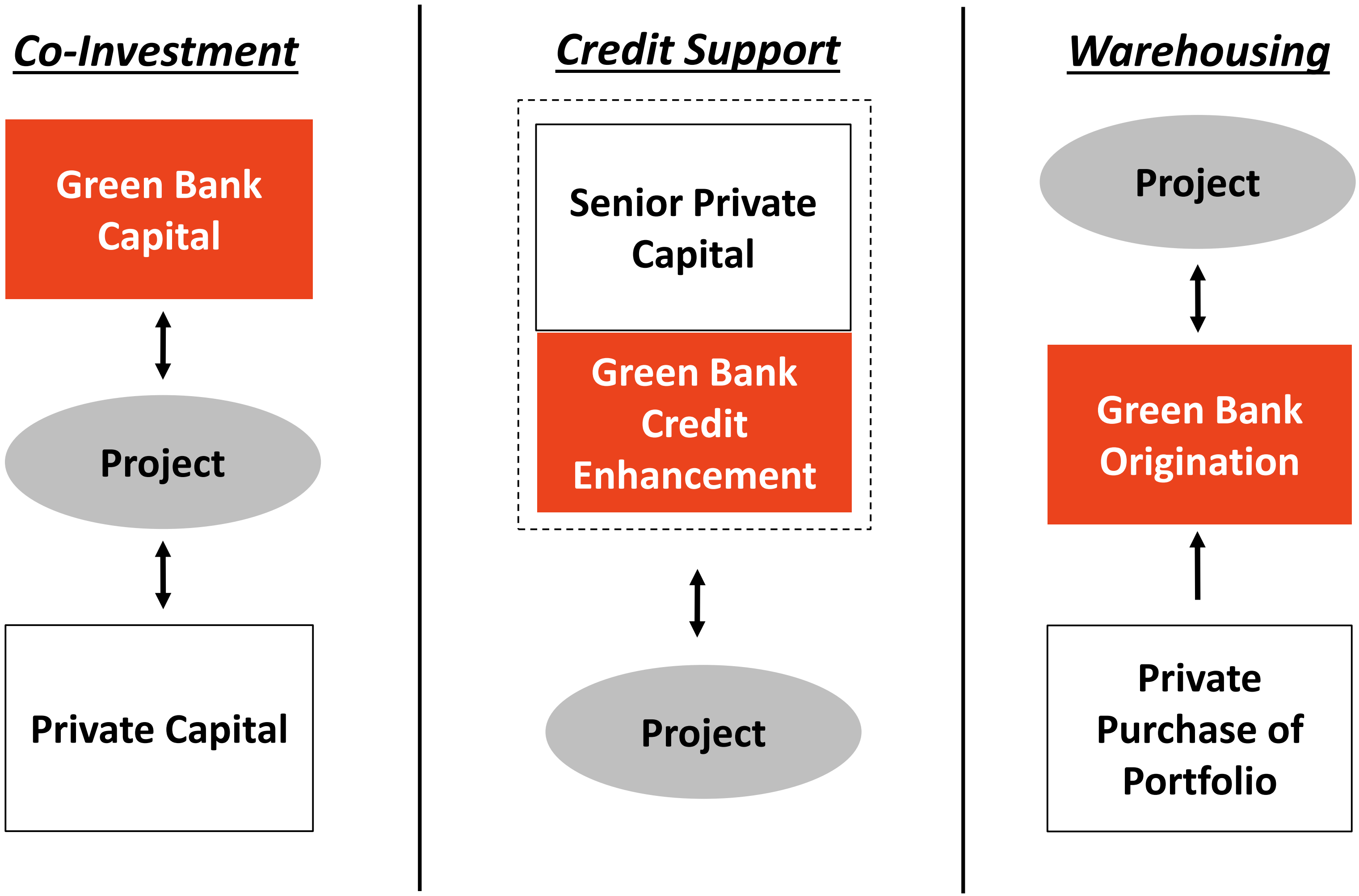

What Impacts are Being Achieved through the Connecticut Green Bank?

Connecticut Green Bank

Accelerate Green Energy Deployment

	FY 2000- FY 2011 (CCEF)	FY 2012- FY 2016+ (CGB) [1]
Model	VC and Subsidy	Financing
Years	11.00	5.25
Energy (MW)	43.1	208.2
Investment ($MM)	$349.2	***$1 Billion***
Leverage Ratio	1:1	3:1 to ***11:1***
% of Funds as Loans	10%	50%

Deploying **more** green energy at a **faster** pace while using ratepayer-taxpayer resources **responsibly**

REFERENCES

1. Approved, closed, and completed transactions

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Accelerate Green Energy Deployment

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Table 10. Project Performance – Clean Energy Approved, Closed, and Completed Projects in Connecticut (FY 2012-2016)

	# Projects	Investment (Project Cost)	Investment /Capita*	MW	Watts /Capita*	Annual MMBTU)	Total Job Years	Lifetime CO2 Emissions (tons)
Not Distressed	14,039	$616,511,153	$528.15	135.1	115.8	863,166	7,933	1,573,531
Distressed	4,728	$298,095,849	$123.86	57.0	23.7	1,089,678	3,655	609,933
Unknown	4	$1,221,600	-	0.2	-	609	5	2,315
Total	18,771	$915,828,602	$255.90	192.3	53.8	1,953,454	11,594	2,185,779
% Distressed	25%	33%		30%				

* Calculated using the 2016 distressed community designations

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IMPACT! Public-Private Partnerships

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Investment Transactions

$65 MM	**$6 MM**	**$75 MM**	**$30 MM**	**$30 MM**	**$20 MM**
CLOSED	CLOSED	CLOSED	CLOSED	OPEN	OPEN
10:1	6:1	7.5:1	4:1	10:1[1]	4:1
FuelCell Energy; Dominion	Sungage Financial	usbank; KeyBank; Webster Bank	CLEANFUND Commercial PACE Capital	smart-e loan; energize CONNECTICUT; CT	PosiGen Solar Solutions; usbank; EnhancedCapital
Grid-Tied	Residential Solar	Residential Solar Commercial Solar	C-PACE	Residential Energy	Residential Solar & Energy Efficiency

$50-100 MM	**$5 MM**	**$60+ MM**	**$3 MM**	**$10 MM**	**$75 MM**
OPEN	OPEN	OPEN	TERM SHEET	TERM SHEET	IN PROCESS
9:1	100%[2]	6:1[3]	100%[4]	100%[4]	>20:1
HANNON ARMSTRONG FINANCING THE FUTURE OF ENERGY	MacArthur Foundation; CAPITAL FOR CHANGE	ONYX	THE KRESGE FOUNDATION	Bank of America	J.P.Morgan; EVERSOURCE ENERGY; AVANGRID
C-PACE	Multifamily Energy	Commercial Solar	Residential Storage Commercial Storage	Connecticut Green Bank	Small Business Energy Advantage

REFERENCES

1. LLR yields high leverage – and it is 2nd 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. The team expects to commit $5mm for the first $60-70mm.
4. Foundation PRI and commercial loan are backed by CGB balance sheet in the case of the Kresge Foundation and Bank of America respectively.

IMPACT! Connecticut Green Bank

Delivering Results for Connecticut

- **Investment** – mobilized over $1 billion of investment into Connecticut's clean energy economy so far
- **Jobs** – created 4,710 direct jobs and up to an estimated 12,500 total jobs, translating to an estimated 7.5% to 20% of total job creation in CT over the Green Bank's first 5 years.*
- **Energy Burden** – reduced the energy burden on over 20,000 households and businesses
- **Clean Energy** – deployed more than 200 MW of clean renewable energy helping to reduce 2.5 million tons of greenhouse gas emissions that cause climate change

REFERENCES

*62,500 private non-farm jobs created in the state over 5 years since Green Bank creation mid-2011. Green Bank statistics are in job-years; "total jobs" include direct, indirect and induced. CT DOL statistics are aggregated from monthly point-in-time estimates. CT Department of Labor - http://www1.ctdol.state.ct.us/lmi/privatesectoremployment.asp

Project / Program Examples

Support for Homeowners

Smart-E Loan
PosiGen Solar Lease and Efficiency Bundle

Smart-E Loan

- Residential, **1-4 unit** loan product for homeowners
- **Low-interest** financing with **flexible terms**
  - 5, 7, 10 and 12 year terms
  - Rates range from **2.99%** to 6.99%
- **40+** energy improvements can be financed
  - Boilers, Furnaces, Heat Pumps, Central Air, Insulation, Solar, EV Chargers and more!
- **Easy** application through eleven **local lenders**
- Borrow from $500 up to **$40,000**

www.energizect.com/smarte

Smart-E Loan (Credit Support)

$28 MM Loan Capital Available

- **Credit Support** – $2.5 MM "2nd loss" loan loss reserve attracts $28 MM of loan capital

Smart-E Loan
“Bundle” Special Offer

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smart-e loan

energize CONNECTICUT CT

- **Smart-E Bundle** **2.99%** interest rate at **5**, **7 or 10** years for qualifying projects with **multiple measures**

  - ✓ **Solar + Insulation**
  - ✓ **Solar + Energy Efficient Windows**
  - ✓ **Solar + EV Charger**
  - ✓ **Solar + High Efficiency HVAC (Any fuel type or heat pumps)**
  - ✓ **Insulation + Windows**

- “Credit” given for an eligible measure installed in last 5 years, with proof

- www.energizect.com/SmartEBundle

Smart-E Loan
Case Study – The Meyers

Residential 1-4 Owner Occupied
Low Income Portfolio

goSolarCT

- Residential Solar Investment Program
- Low-to-Moderate Income Performance Based Incentive for Third Party Owners
- More than double Step 9 incentive
- Income screen of 100% AMI or lower

PosiGen Solar Solutions

- $27 MM Solar for All campaign
- Solar Lease and Energy Efficiency Energy Services Agreement
- HES or HES-IE (direct install EE) leveraged
- Alternative underwrite
- Community partnerships

smart-e loan / Capital for Change

- Low interest
- Unsecured loan
- 40+ measures (EE and RE)
- 580+ FICO, 50% DTI (waived for 680% FICO, offered through CDFI)
- 25% of loan for health and safety upgrades

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PosiGen Solar Solutions

- **Solar PV Progress** – 835 installations in 17 months for 5.8 MW of solar PV deployment
  - ✓ $55-$100 solar PV lease payment/month for 20 years
  - ✓ 71% of contracts are LMI*
  - ✓ 62% of customers move forward (suitable)
- **Energy Efficiency Progress**
  - ✓ 99.9 % of households installing solar PV undertake Direct Install EE measures
  - ✓ 66% of households also undertake "deeper" energy efficiency projects * (e.g., insulation, thermostats, etc.) through $10 ESA payment/month for 20 years
- **Community Campaigns** – in Bridgeport, Hartford, New Haven, New London
- **Jobs** – 62 current CT based Employees

Support for Multifamily Property Owners

Technical Assistance
Pre-Development Loans
Project Financing

Multifamily Programs - What we do

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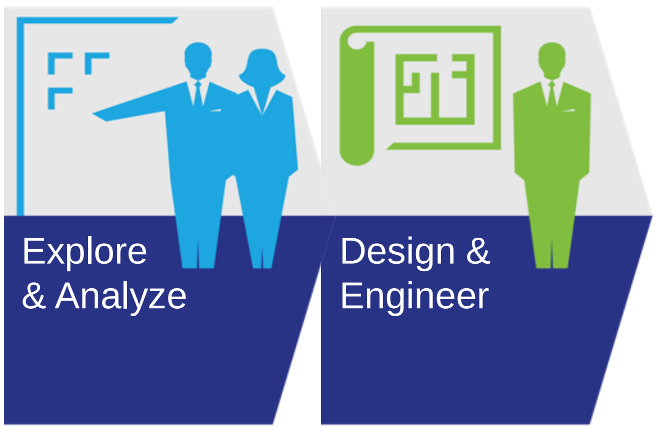
We help multifamily housing building owners:

- Save money on energy
- Increase property value
- Improve occupancy rates
- Improve comfort and safety

Resources to Get You Started on the Right Path

Pre-Development Resources



Benchmark CT
- Free energy benchmarking resource

Sherpa Loan
- Designated service provider
- Standardized process & fee schedule

Navigator Loan
- Client managed contractor(s)
- Customized technical services

www.ctgreenbank.com/multifamily

Energy Upgrade Financing

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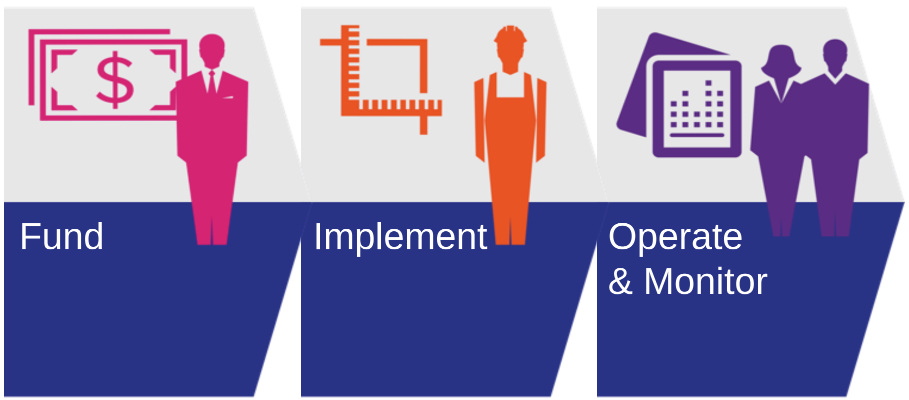
Project Financing



LIME
- Low Income Multifamily Energy
- Affordable
- Unsecured

Solar
- Solar projects only
- Commercial solar lease

C-PACE
- Commercial Property Assessed Clean Energy

Gap Financing
- Flexible low-cost financing
- Energy & health/safety

www.ctgreenbank.com/multifamily

Case Study

www.ctgreenbank.com/multifamily

Support for Business Owners, Not-For-Profits, Municipalities & Schools

C-PACE
& Solar Lease Program

What is C-PACE?

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100% low-cost, long-term financing for cost saving energy upgrades

Paid back over time via property assessment; remains with property

Energy cost savings create more competitive property

Assessment structure allows costs to be passed through to tenants

C-PACE provides building owners with:

1. Confidence
2. Control *and*
3. Comfort

Commercial-PACE
DEEP Retrofits

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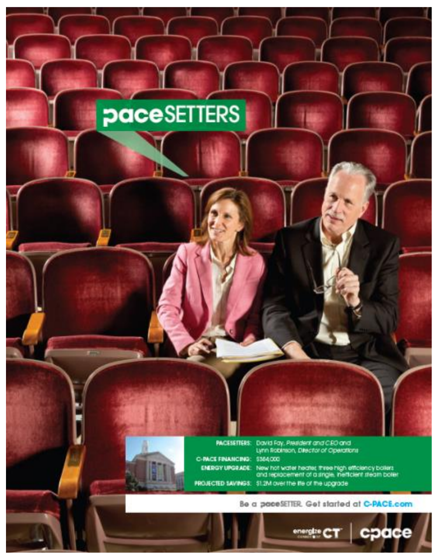

- 82 cities and towns and opted into the program – over 85% of the market
- 200+ contractors trained
- 20 qualified capital providers
- 17 mortgage lenders have provided consent
- $40 million warehouse – $25 million in deals approved
- 33 transactions approved ($700 K average size) – saving between 40-50% energy consumption
- **Sold $30 million – first securitization of commercial energy efficiency projects**

Commercial-PACE
Case Study – Calvary Temple

Commercial-PACE
Case Study – 855 Main St Bridgeport

CT Solar Lease 2

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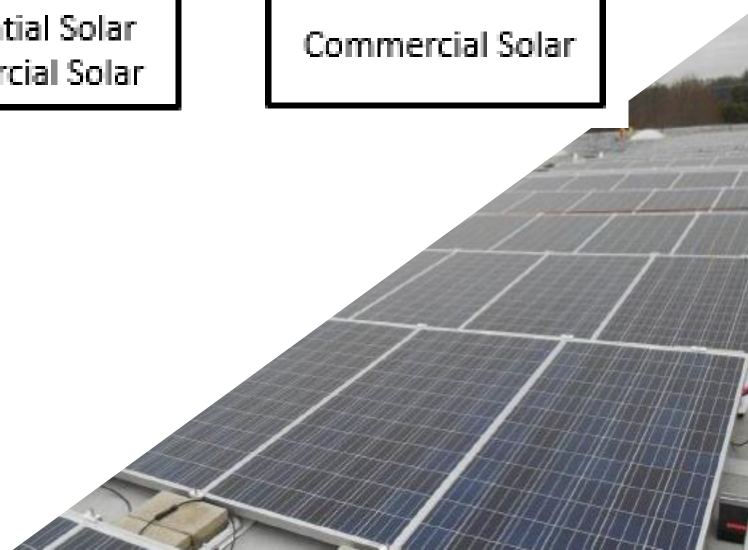
CT Solar Lease 1 – nation’s first residential PV financing program to combine ratepayer funds with private capital to leverage federal incentives

CT Solar Lease 2 (“SL2”)

- Residential
- Commercial:
  - Municipalities & Public Schools
  - Non-profit organizations*
    - Community Centers / YM-YWCAs
    - Private / Charter Schools
    - Houses of Worship
  - “Mid-market” commercial entities*
    - CRE: Office buildings, shopping centers / retail
    - Heavy to light industrial
    - Etc!!

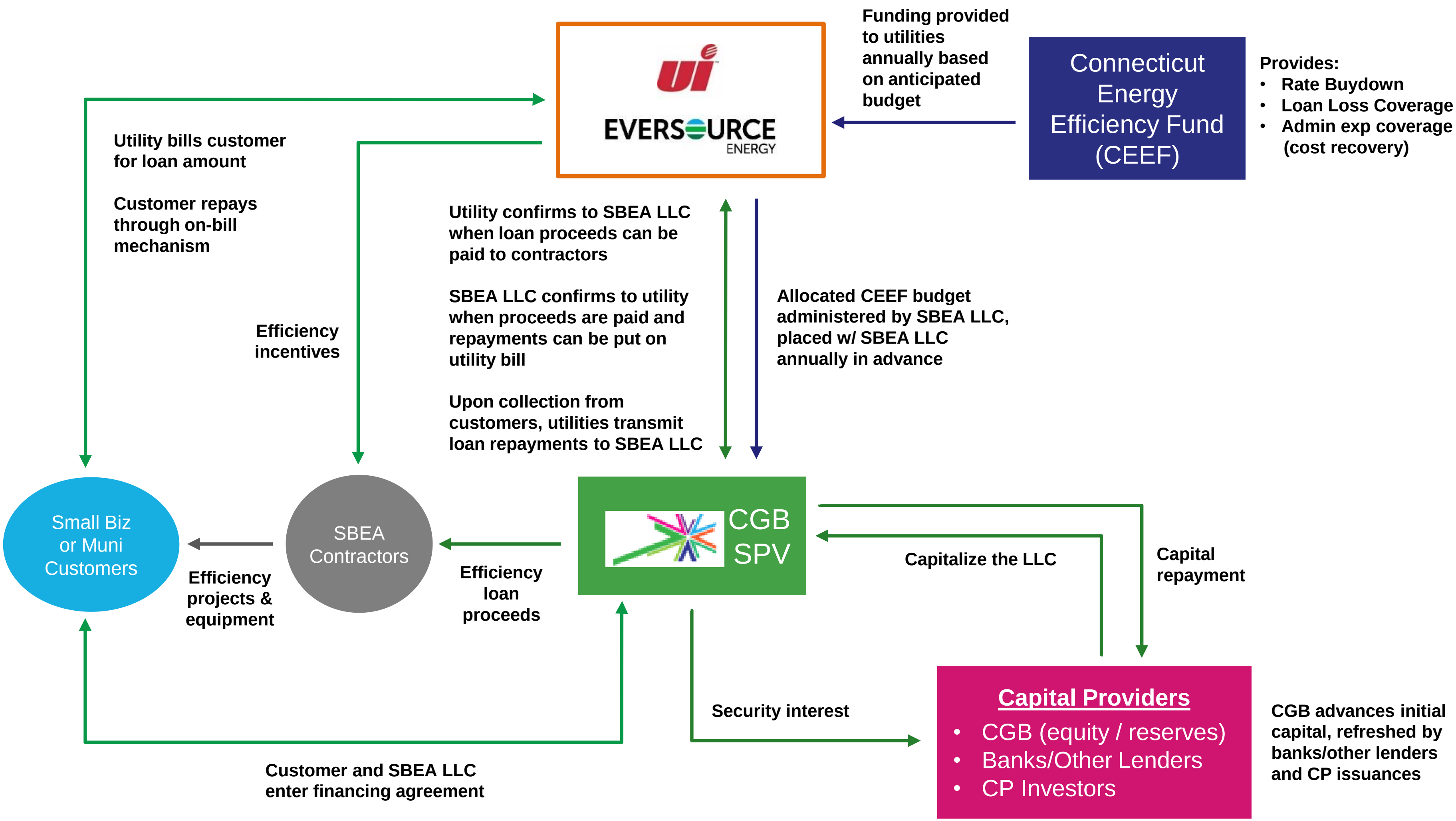
$75 MM
CLOSED
7.5:1
usbank
KeyBank
Webster Bank
Residential Solar
Commercial Solar

$60+ MM
OPEN
6:1[3]
ONYX
Commercial Solar



SBEA Program Funding Structure

(Small Business Energy Advantage)



CHP Projects
Micro Grids

- Section 103 of PA 11-80 (grants, loans, or PPAs)
- Several CHP projects in development – Norwalk Hospital, Wesleyan University, and Brown's Farm (Stamford)
- System efficiency > 50%
- Produce onsite clean energy – electricity and heat
- Long-term PPA's, virtual net metering, and other policies
- **CTGB to provide subordinated debt to attract equity, tax equity, and senior lenders**

Green Bank Movement

Green Bank Movement

CT Leadership Nationally and Globally

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MOTHERBOARD VICE

How Green Banks Could Save the World

By Meredith Rutland Bauer
November 28, 2016

With environmental groups worried that a Donald Trump presidency could slow the implementation of renewable energy in the US, some clean energy advocates are turning to green banks for funding.

GREEN BANK NETWORK

NRDC NATURAL RESOURCES DEFENSE COUNCIL

coalition for green capital

GREEN BANK ACT OF 2016

S 3382

HR 5802

Trump Infrastructure Plan

Working with ACORE, CDFA and others

Include clean energy transmission, distribution, and generation as infrastructure and grid modernization is key

Advocate for inclusion of an infrastructure green bank patterned after Green Bank-style financing (i.e., financing that leverages public resources to mobilize private investment in infrastructure)

Public Private Partnerships

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INNOVATE EDUCATE ACTIVATE ACCELERATE

Thank you!

Questions?

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