



# Connecticut Green Bank

Sparking a Movement to Accelerate  
the Growth of Green Energy

February 23, 2016



# Agenda



- **What is the Connecticut Green Bank** – why were we established and who are we
- **What are Programs and Products of the Connecticut Green Bank** – how do we structure programs and products to attract private investment and deploy green energy
- **What Impacts are being Achieved through the Connecticut Green Bank** – what societal benefits are being created through green energy deployment and what's next

# What is the Connecticut Green Bank?

# Connecticut Green Bank

## 1<sup>st</sup> Green Bank in the United States



*...transitioning programs away from government-funded grants, rebates, and other subsidies, and towards deploying private capital*

*...the Green Bank was established in 2011 to develop programs that will leverage private sector capital to create long-term, sustainable financing for energy efficiency and clean energy to support residential, commercial, and industrial sector implementation of energy efficiency and clean energy measures.*

# Focus of a Green Bank

## Clean Energy Finance

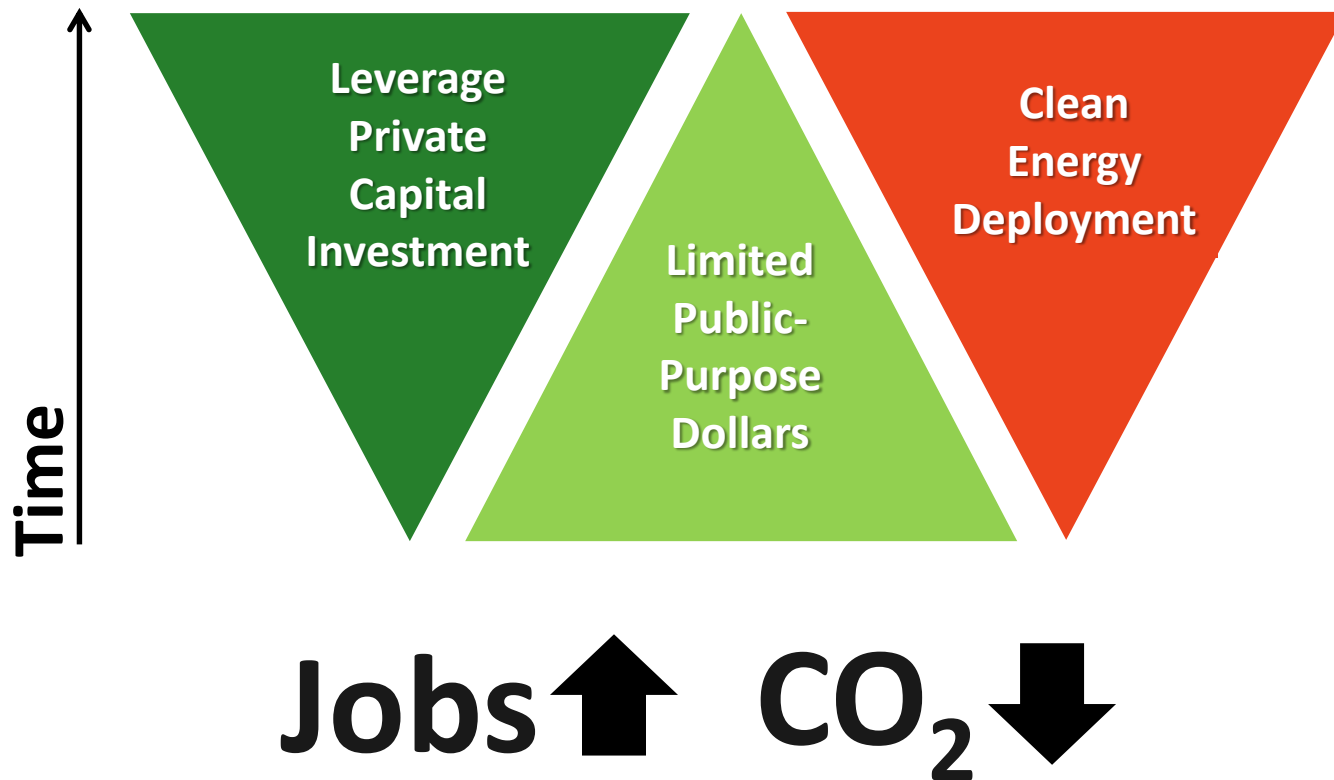


or



# Green Bank Model

## Public-Private Partnerships



# Connecticut Green Bank

## About Us



- **Quasi-public organization** – created by PA 11-80 and successor to the Connecticut Clean Energy Fund
- **Focus** – finance clean energy (i.e. renewable energy, energy efficiency, and alternative fuel vehicles and infrastructure)
- **Balance Sheet** – approximately \$120 million in assets
- **Support** – supported by a \$0.001/kWh surcharge on electric ratepayer bills (about \$10 per household per year) that provides approximately \$27-30 MM a year for investments, RGGI about \$5 MM a year for renewable energy, federal competitive solicitations (i.e. SunShot Initiative) and non-competitive resources (i.e. ARRA-SEP), private capital, and private foundations

# Connecticut Green Bank

## Mission and Goals



**Support the Governor's and Legislature's energy strategy to achieve cheaper, cleaner, and more reliable sources of energy while creating jobs and supporting local economic development**

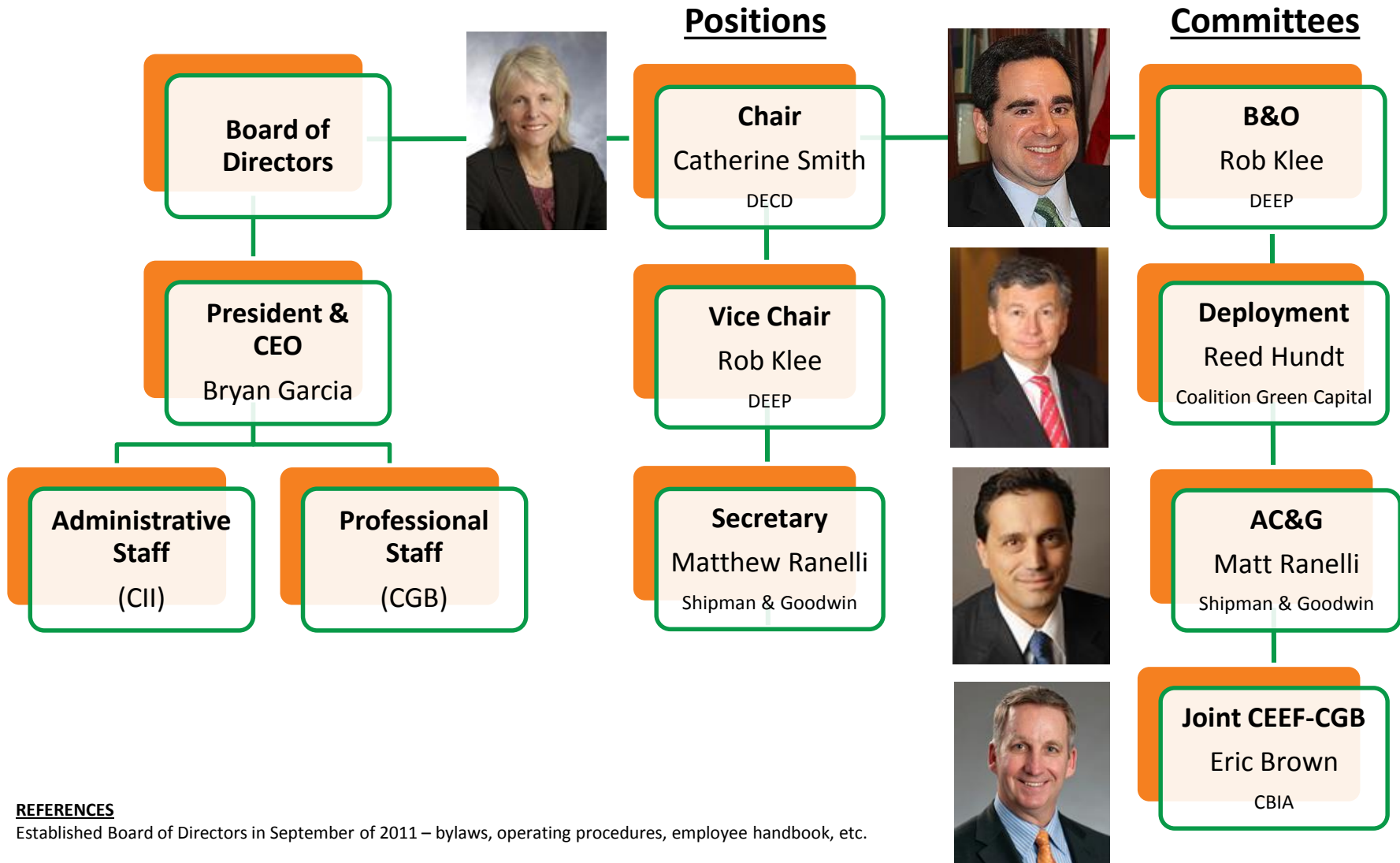
**Attract and deploy private capital to finance the clean energy goals for Connecticut**

**Develop and implement strategies that bring down the cost of clean energy in order to make it more accessible and affordable to consumers**

**Reduce the market's reliance on grants, rebates and other subsidies and move towards innovative low-cost financing of clean energy deployment**



# Connecticut Green Bank Governance

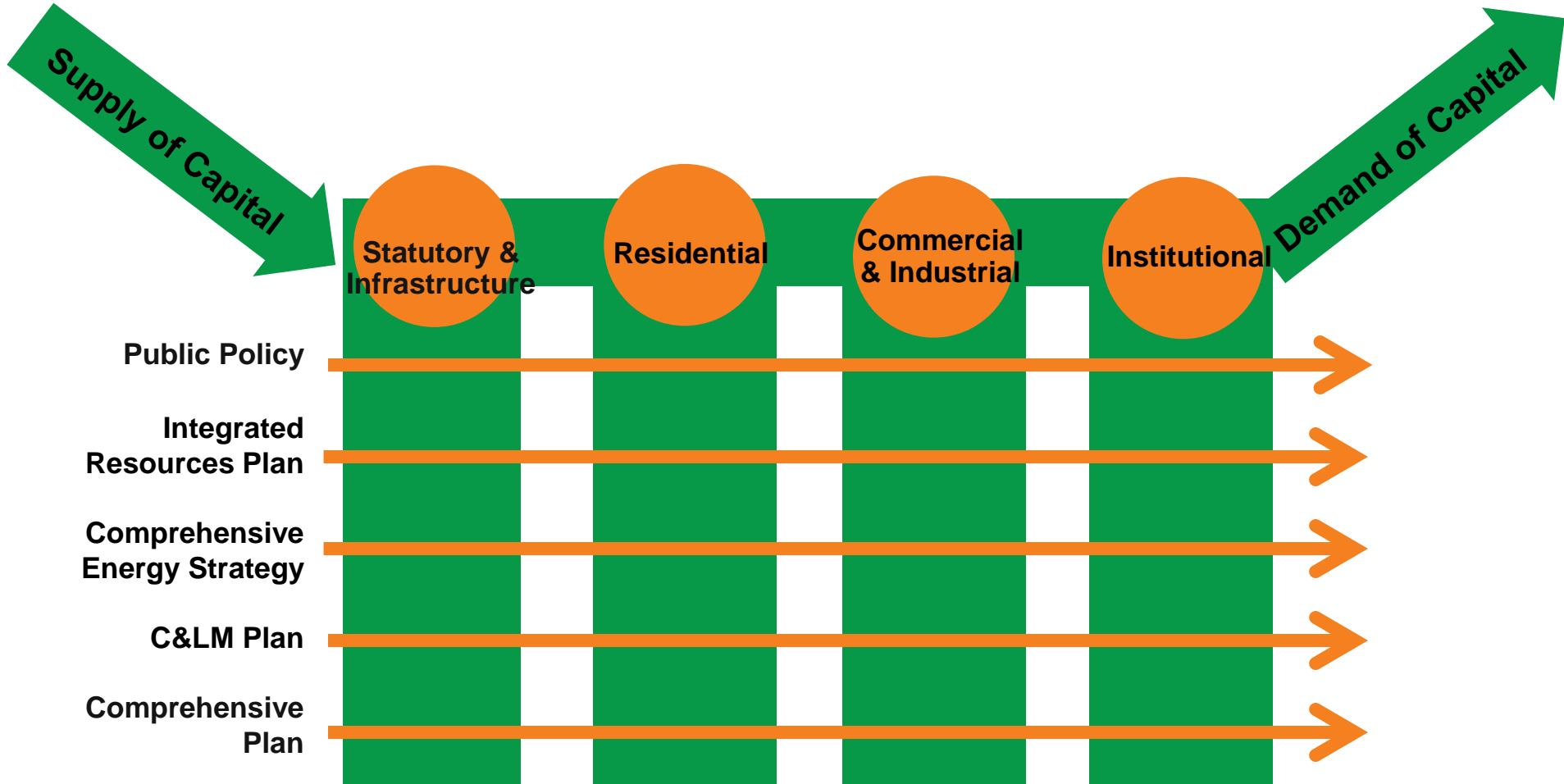


**REFERENCES**

Established Board of Directors in September of 2011 – bylaws, operating procedures, employee handbook, etc.

# Connecticut Green Bank

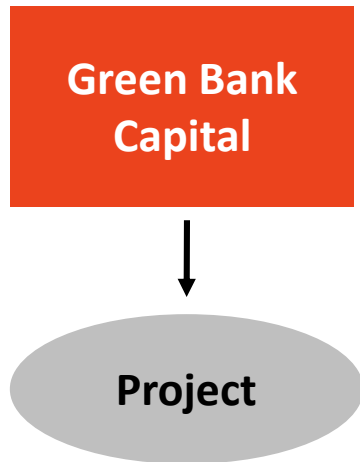
## Organizational Structure



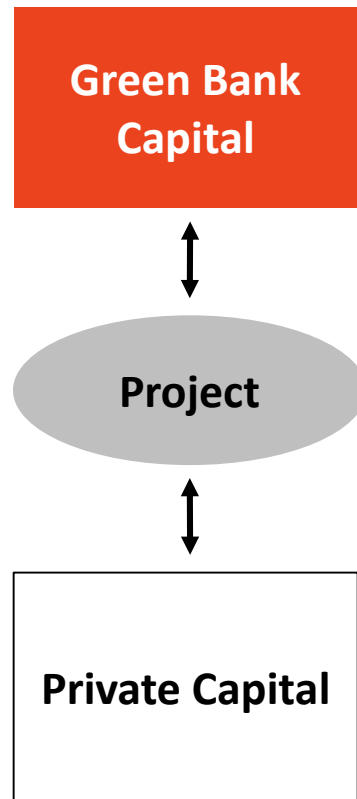
# What are Programs and Products of the Connecticut Green Bank?

# What are Green Bank Products and Programs

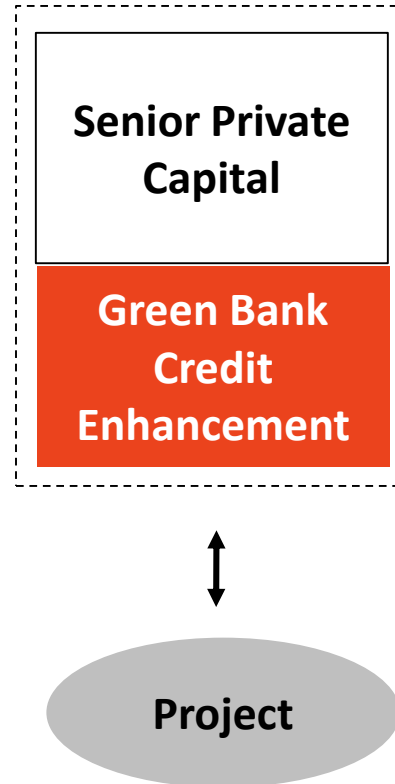
## Incentives



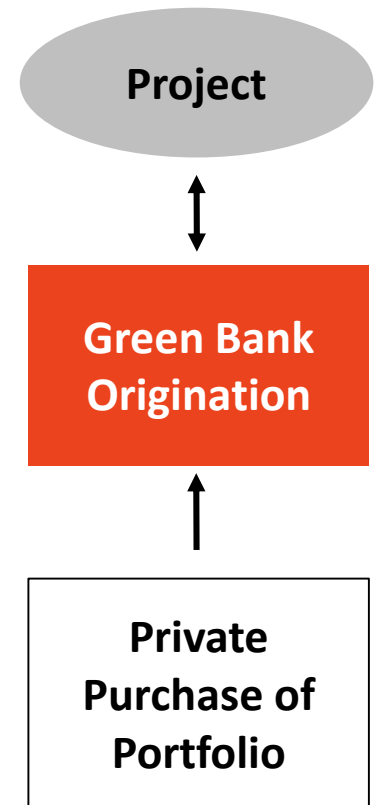
## Co-Investment



## Credit Support

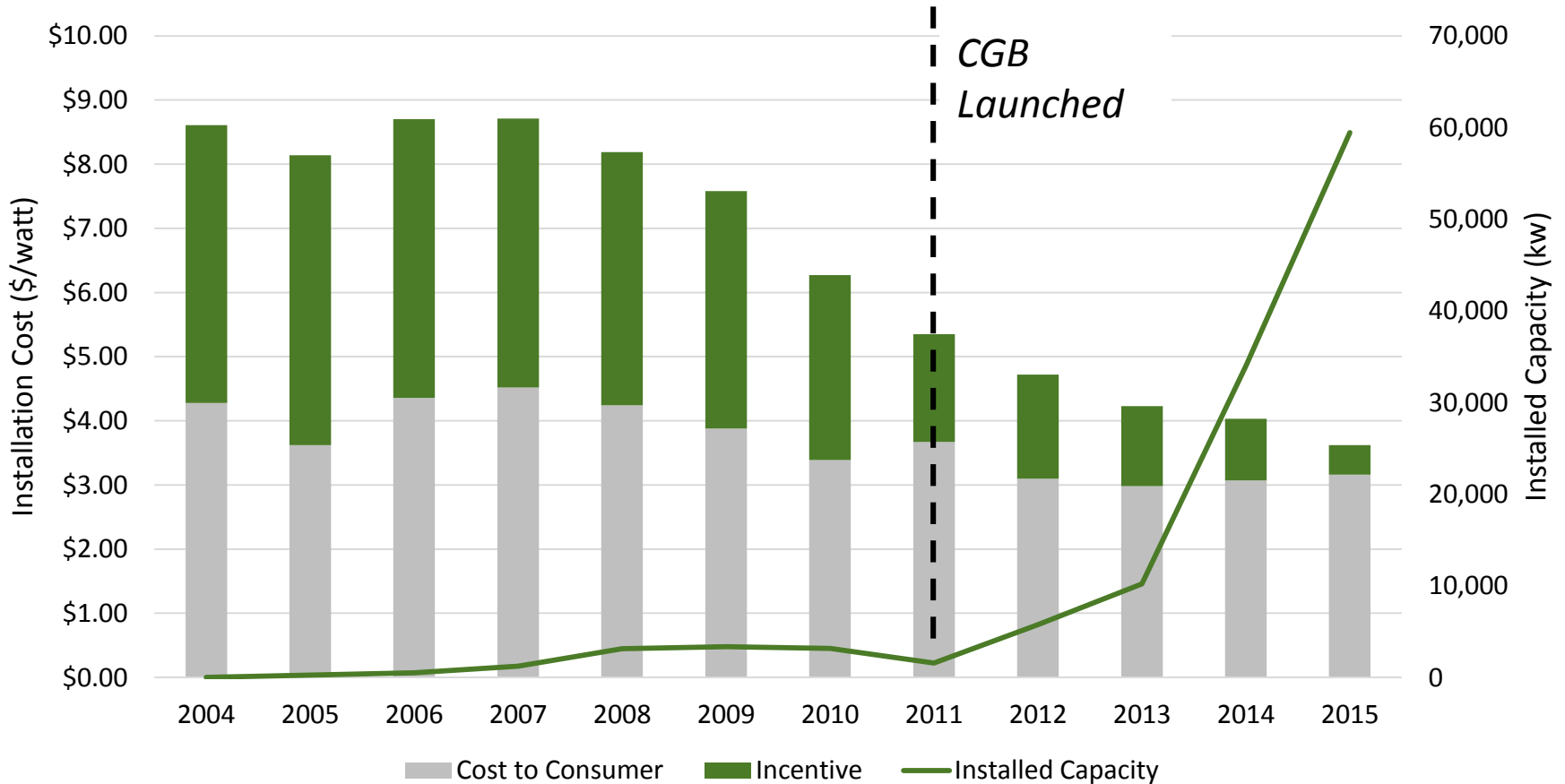


## Warehousing



# Incentives & Installed Capacity

## Residential Solar Investment Program



**REFERENCES**

Residential Solar Investment Program (RSIP) Market Watch Report of February 19, 2016



SPARKED BY CONNECTICUT GREEN BANK

# Incentives (Marketing)

## Solarize Connecticut



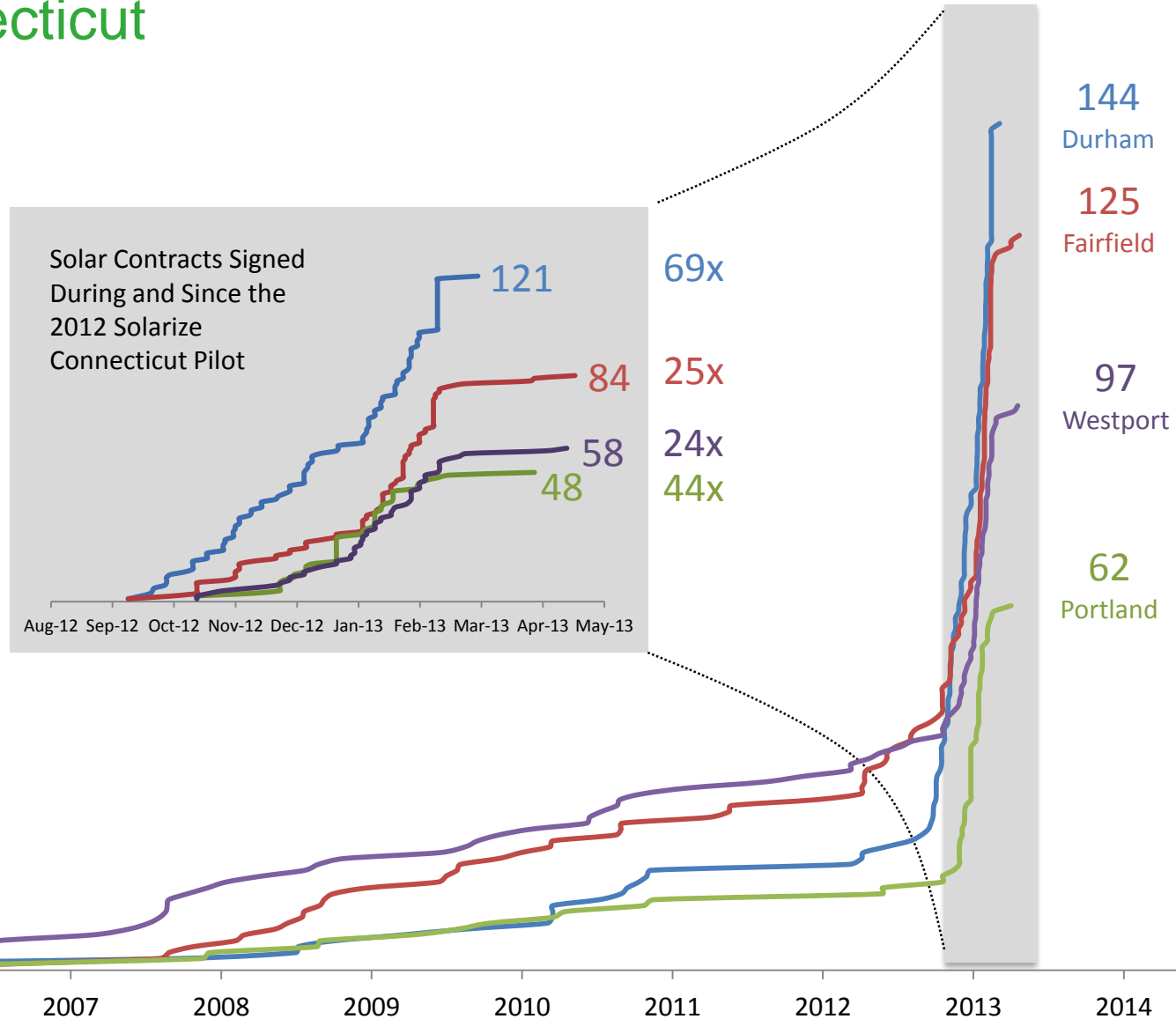
solarize  
connecticut

SPARKED BY **CONNECTICUT GREEN BANK**



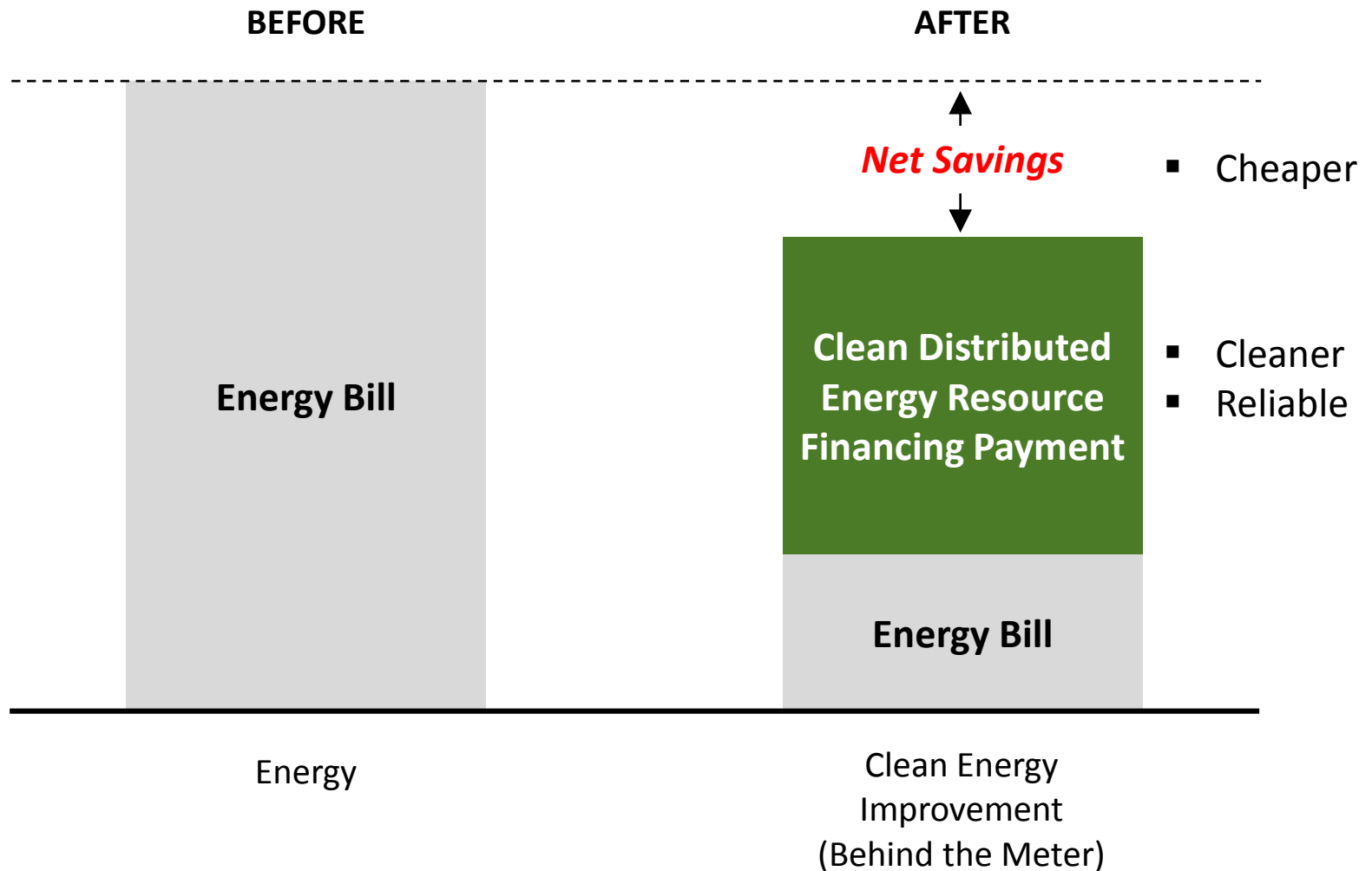
Let's Get Energy Smart.®

# Yale



# Financing

## Delivering Cheaper, Cleaner and More Reliable





### REFERENCE

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

# Residential Financing

## Go Solar CT and Smart-E Loan



|                          | <br>SPARKED BY CONNECTICUT GREEN BANK |  |                               | <br>SPARKED BY CONNECTICUT GREEN BANK |
|--------------------------|---|--|-------------------------------|--|
|                          | CT Solar Loan   | CT Solar Lease                                       | LMI Lease-ESA                 | Smart-E Loan   |
| Type                     | Co-Investment   | Co-Investment  | Co-Investment                 | Credit Support   |
| Approx. Amount Available | \$105.0 MM  | \$45.0 MM  | \$15.0-20.0 MM                | \$28.0 MM  |
| Eligible Technologies    | Solar PV  | Solar PV   | Solar PV<br>Energy Efficiency | Efficiency, Renewables,<br>Gas Conversions, Health<br>and Safety   |
| Ownership                | Yes   | No (option to purchase)                              | No                            | Yes  |
| Down Payment?            | Minimum of 5% of net installed cost   | Not required if installed cost is less than \$4.50/W | Not required                  | Not required   |
| Interest Rate            | 6.49% (15 years)  | N/A (20 years)                                       | N/A (20 years)                | Not to exceed 4.49% (5-yr), 4.99% (7-yr), 5.99% (10-yr), 6.99% (12-yr)   |



# CT Solar Loan (Co-Investment)

## \$5 MM Crowdfund to \$100 MM Private



Connecticut Green Bank

Digital Federal Credit Union

### Mosaic and Connecticut Team Up On Crowd Funding of Residential Solar

Mosaic has partnered with Connecticut Green Bank and Sungage Financial to package loans made to homeowners...

Michael Puttre (February 2014)

### Sungage Financial Secures \$100 Million for Solar Loan

Following its participating in the CT Green Bank solar loan program, the Boston startup is aiming to expand residential solar loans on the East Coast.

Edgar Meza (November 2014)

Agreement (NJ, FL, NY, TX)

Monthly Loan Payment  
Loan Agreement

Customer

# CT Solar Lease (Co-Investment)

## \$60 Million Fund



Connecticut Green Bank

Sub Debt  
Equity  
Loan Loss Reserve  
PBI (incentive)  
Developer services

Debt Syndicate led by First Niagara



Debt



## greentechmedia:

### Connecticut's Green Bank: A Model for Public-Private Renewables Partnerships?

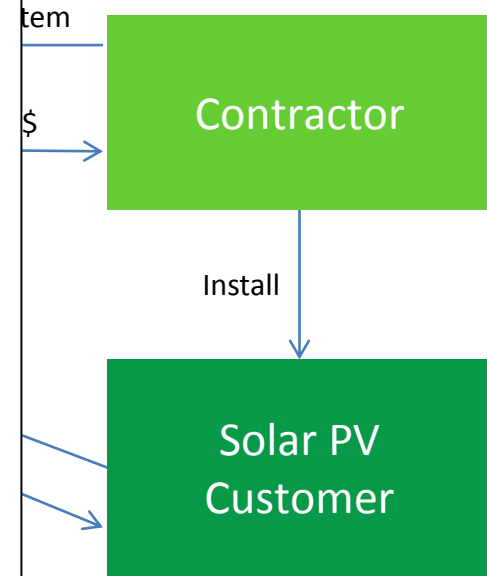


Fostering competition among installers and goodwill among taxpayers

Breaking Energy, Conway Irwin  
July 8, 2013

Connecticut's Clean Energy Finance and Investment Authority (CEFIA) -- the state's Green Bank, and the first of its kind in the country -- has established a new solar financing system in a bid to expand capacity in the state. CT Solar Lease II seeks to avoid some of the most frequently cited criticisms of renewable energy finance, in that it uses less and recovers more taxpayers' funds, as well as fosters market competition.

Lease provides local in important sales tool, customers benefit from simple, no-money-down financing and peace of mind.



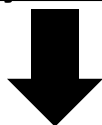
# Low to Moderate Income Focus

## Residential Solar PV

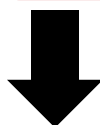


| Income Level (AMI) | # of Census Tracts | Tract Households | # of Projects | Installed Capacity (kW) | Projects per 1,000 Households | Watts/ Tract Households |
|--------------------|--------------------|------------------|---------------|-------------------------|-------------------------------|-------------------------|
| Less than 60%      | 167                | 230,064          | 779           | 4,648                   | 3.4                           | 20.2                    |
| 60-80%             | 108                | 198,334          | 1,489         | 9,830                   | 7.5                           | 49.6                    |
| 80-100%            | 146                | 262,551          | 3,088         | 21,559                  | 11.8                          | 82.1                    |
| 100-120%           | 173                | 290,198          | 5,146         | 38,565                  | 17.7                          | 132.9                   |
| More than 120%     | 230                | 378,045          | 6,885         | 54,105                  | 18.2                          | 143.1                   |
| <b>Total</b>       | <b>824</b>         | <b>1,359,192</b> | <b>17,387</b> | <b>128,707</b>          | <b>12.8</b>                   | <b>94.7</b>             |

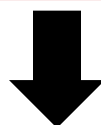
For LMI to reach non-LMI market penetration, solar PV deployment in less than 60% AMI, 60-80% AMI, and 80-100% AMI **would have to increase by approximately 6 times, 2.5 times and 1.5 times respectively**



10



3



2

### REFERENCES

Note – projects include both Connecticut Clean Energy Fund and Connecticut Green Bank.

# PosiGen (Co-Investment)

## \$15-\$20 MM Fund



**Home**  
(New Haven – Oil Heat)



\$59,250 HHI  
\$2,963 Energy Costs

**5.0% HHI on  
Energy Costs**

**Solar PV**  
(Lease)



Up to \$85/month Lease  
\$427 Energy Savings

**4.3% HHI on  
Energy Costs**

**Energy Efficiency**  
(ESA)



Up to \$15/month ESA  
Energy Savings

Additional Savings  
\$543

**3.4% HHI  
on Energy Costs**

### REFERENCES

Note – analysis examines 20-year lease for a 6-kW system at an \$85 monthly cost and an additional \$15 for energy efficiency measures through a 20-year energy savings agreement with (i.e., HES core services plus insulation) expected energy savings. Based on oil-heated home in New Haven.









START SAVING

SOLAR SOLUTIONS

# Smart-E Loan (Credit Support)

## \$28 MM Loan Capital Available



COREPLUS CREDIT UNION



- **Rates** – competing on not-to-exceed interest rates (4 lenders)
- **Terms** – offering up to 12-year terms (5 lenders)
- **Amount** – several offering up to \$40,000 and down to \$500 (2 lenders)
- **Lower Credit** – offering loans for FICO scores between 640-679 (5 lenders)
- **Measures** – predominantly HVAC, hot water, and solar PV... and supports healthy home too
- **Credit Support** – \$2.5 MM 2<sup>nd</sup> loan loss reserve to attract \$28 MM of loan capital

# C-PACE (Warehousing) Public-Public-Private Partnership



- An innovative and affordable way for businesses, manufacturers and non-profits to **pay for green energy upgrades**. C-PACE covers **up to 100% of project costs** with **no money down** and is repaid as a **long-term assessment on the property**. C-PACE allows owners to **immediately increase cash flow**.

Private capital may provide 100% upfront, low-cost, long-term funding, cash flow positive

Repayment of benefit assessment through property taxes

A senior C-PACE lien is put on the property and stays regardless of ownership

In C-PACE, commercial property owners pay back their loans using the savings created by the energy projects. As a requirement of the program, the energy savings must exceed the cost of the loan payments, creating positive cash flow.

“That is what drives repayment of loans. How can that not be good?” - Tom Mongellow of the Connecticut Bankers Association

*CT Banks Move into Green Financing*  
Hartford Business Journal  
November 25, 2013



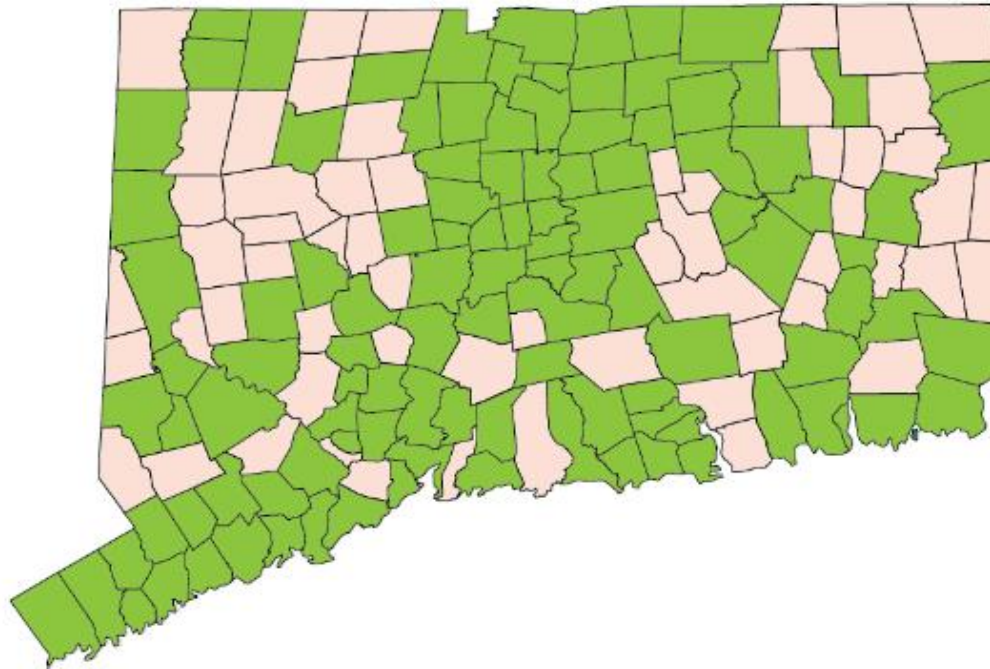
# C-PACE

Nearly 90% “Open for Business”



## More Green Communities

112 participating cities and towns can use C-PACE to fuel economic development, make their community cleaner and help their citizens thrive.



### REFERENCES

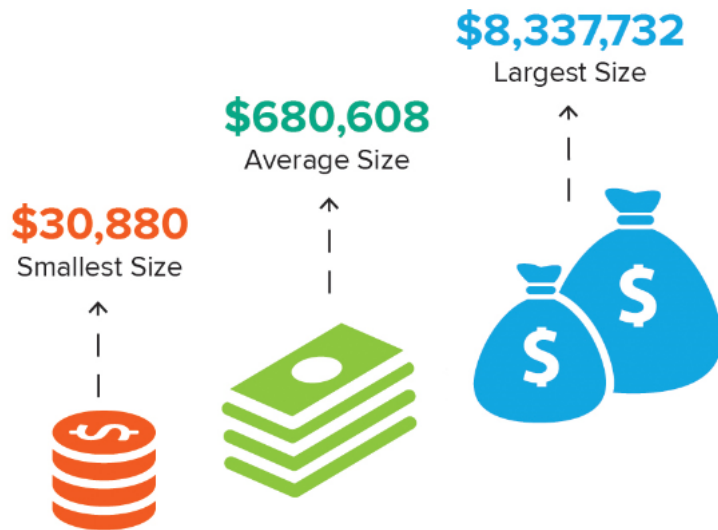
Pace SETTERS News for Q4 of 2015

# C-PACE

## Project Sizes and Shapes

### All Sizes of Projects

C-PACE can bring virtually any green energy project, small or large, from a vision to a reality.



### All Shapes of Properties

From manufacturing facilities to YMCAs all commercial properties are eligible to use C-PACE for an energy saving project.



#### REFERENCES

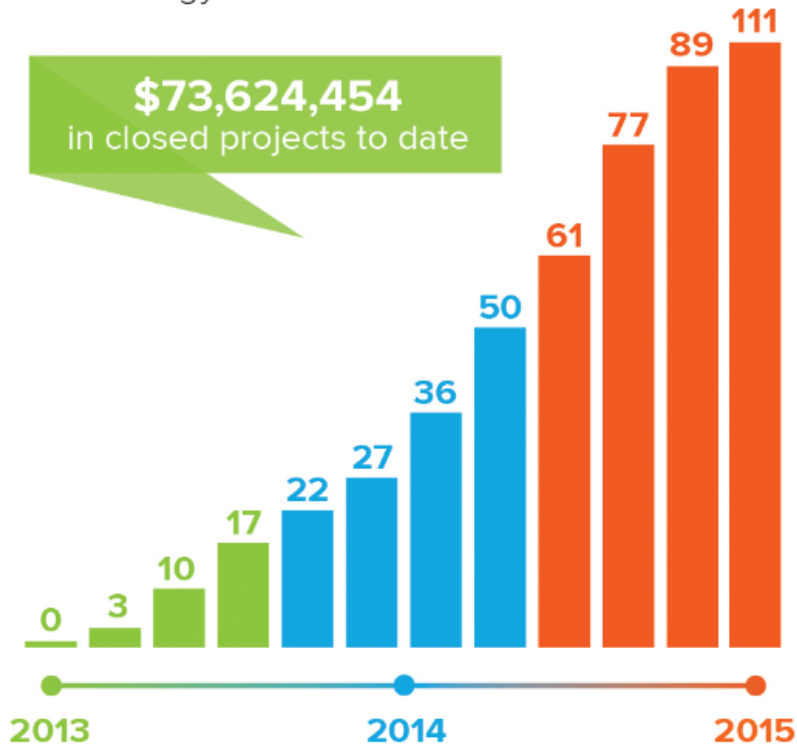
Pace SETTERS News for Q4 of 2015. Note, the largest transaction of \$8,337,732 was financed by Clean Fund through C-PACE.

# C-PACE

## Closed and Types of Projects

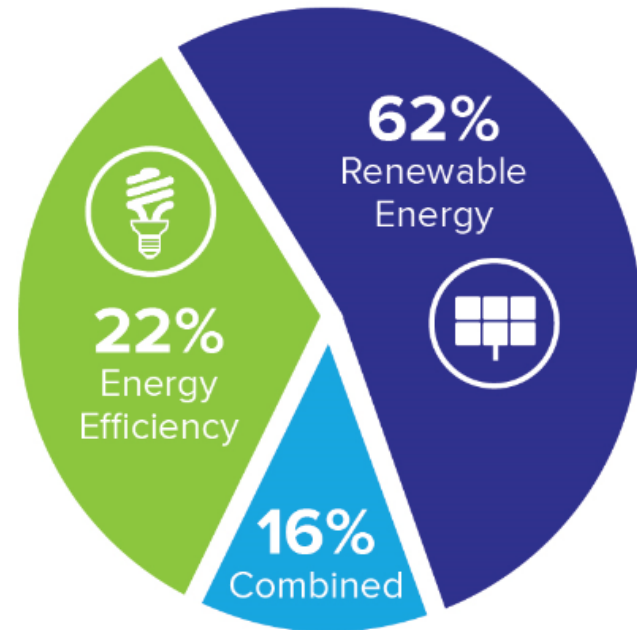
### Closed Projects

Funded projects are increasing every quarter as more building owners take action to reduce their energy costs and increase NOI.



### All Types of Green Energy

From simple boiler replacements to solar C-PACE works for any upgrade that reduces energy costs.



#### REFERENCES

Pace SETTERS News for Q4 of 2015

# C-PACE (Warehousing) Public-Public-Private Partnership



Connecticut  
C-PACE

C-PACE  
Benefit  
Assessment

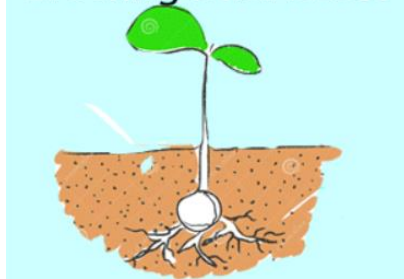
paceSETTER

paceSETTERS

**monitor**daily  
The Independent Voice of Equipment Finance

## Hannon Armstrong Provides \$100 MM Funding for Commercial Clean Energy

### Growing Businesses



[The Connecticut Green Bank](#) and [Hannon Armstrong](#) have reached an agreement that will increase the deployment of energy efficiency, solar and other clean energy projects throughout the Connecticut commercial and industrial sector.

December 28, 2015

Be a paceSETTER. Get started at [C-PACE.com](#)

Be a paceSETTER. Get started at [C-PACE.com](#)

Be a paceSETTER. Get started at [C-PACE.com](#)

enact CT **cpace**

enact CT **cpace**

enact CT **cpace**

cut  
bank

Class C Bonds  
(10%)

Funding  
Instruments &  
Markets

Bonds

# MacArthur Foundation

## Affordable Multifamily PRI



- ▶ Green Bank has partnered with the Housing Development Fund to win a \$5 million MacArthur Foundation Program Related Investment for Connecticut to support (at least) three new lending programs focused on affordable multifamily energy upgrades, including:
  - ▶ Energy Opportunity Assessment Loan Fund – pre-development costs
  - ▶ Healthy Homes Loan Fund – health & safety measures
  - ▶ Finish Line Loan Fund – gap financing
- ▶ Through HDF, that funding is immediately available for pre-development purposes
  - ▶ Flexible underwriting for low-cost, minimal-risk loans to assist property owners in exploring energy upgrade opportunities
  - ▶ See [www.ctgreenbank.com/multifamily](http://www.ctgreenbank.com/multifamily) to learn more

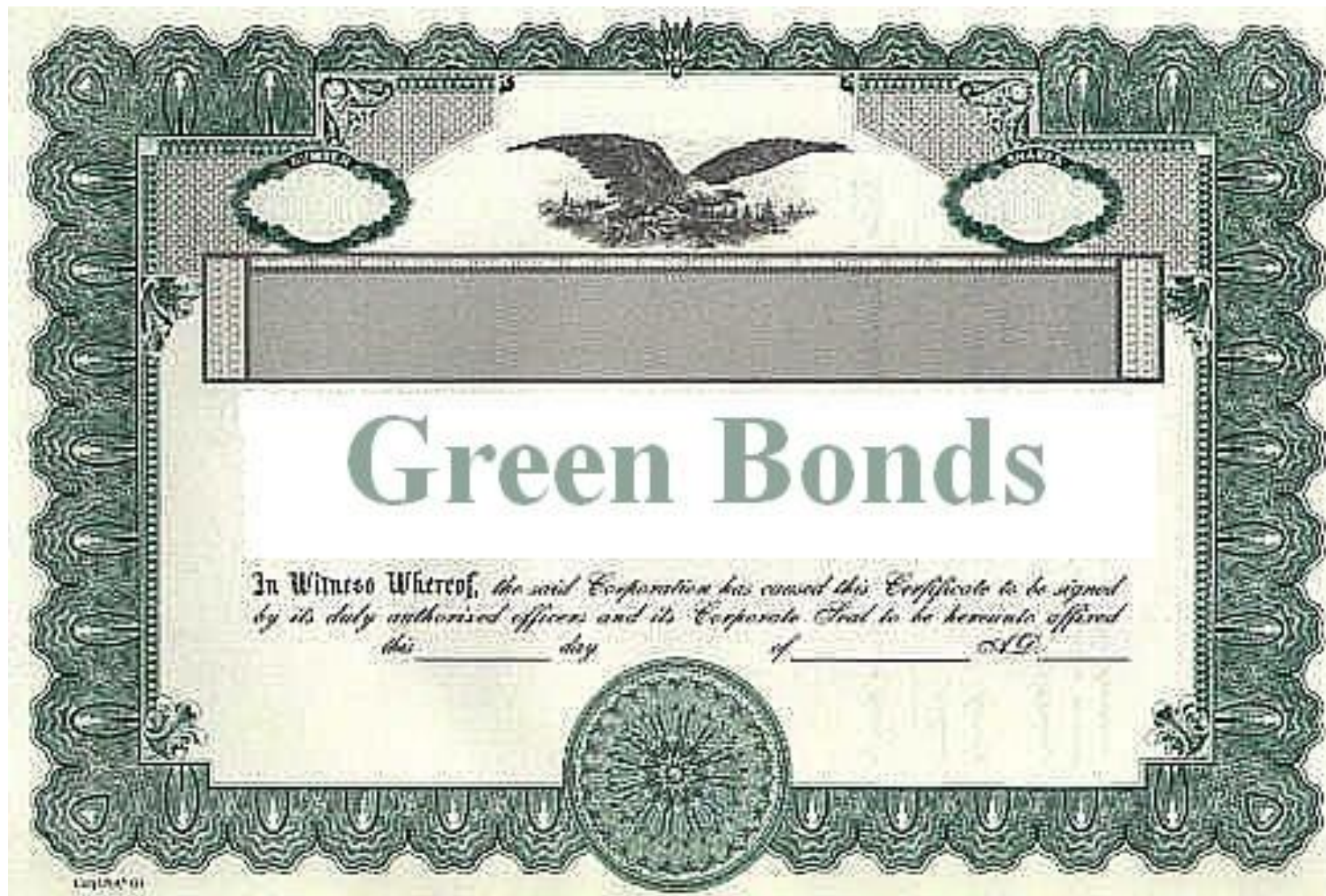


Housing  
Development  
Fund



# Green Bank 2.0

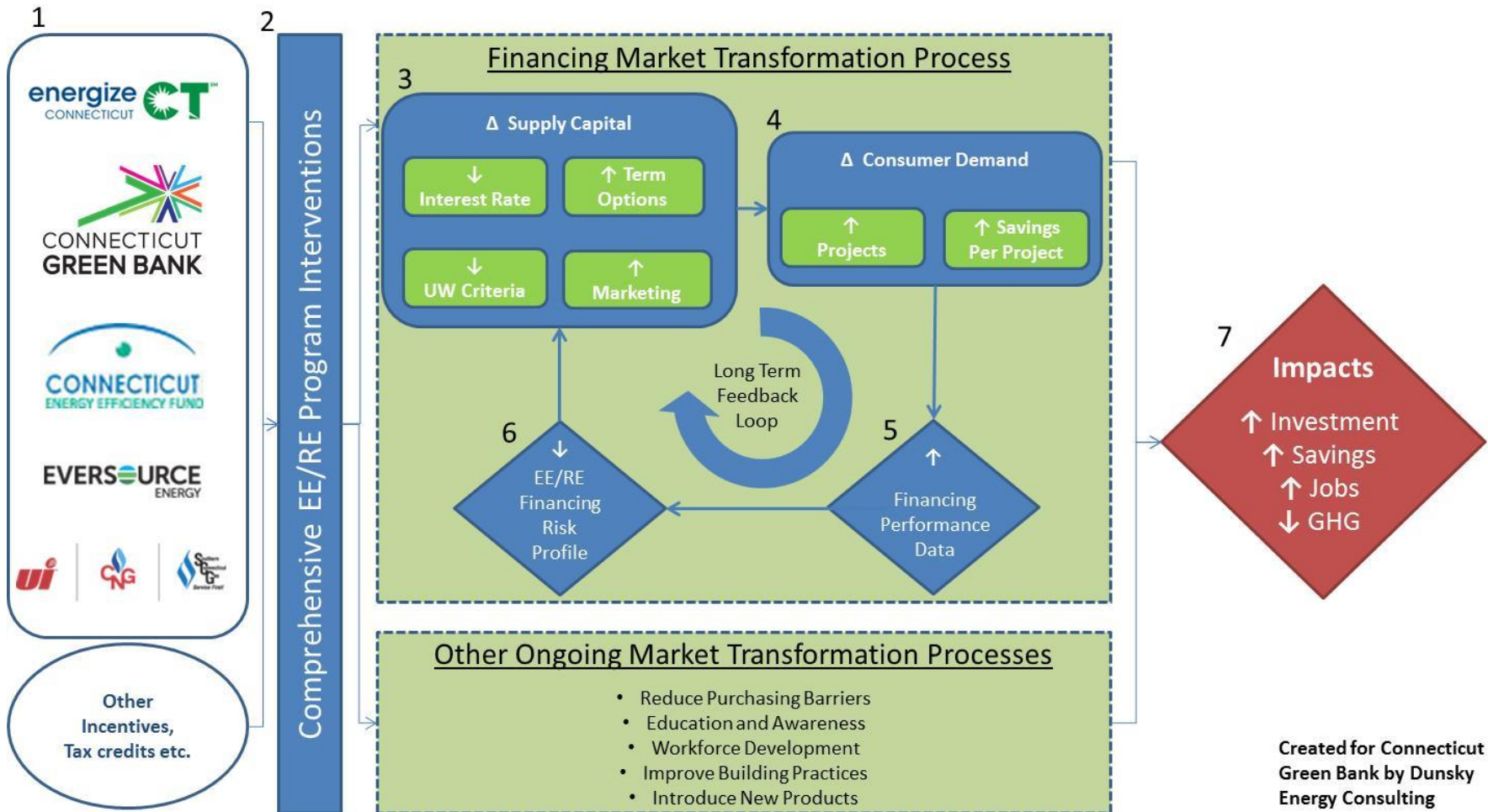
## Green Bonds Coming in 2016



# What Impacts are Being Achieved through the Connecticut Green Bank?

# Evaluation

## Program Logic Model (DRAFT)



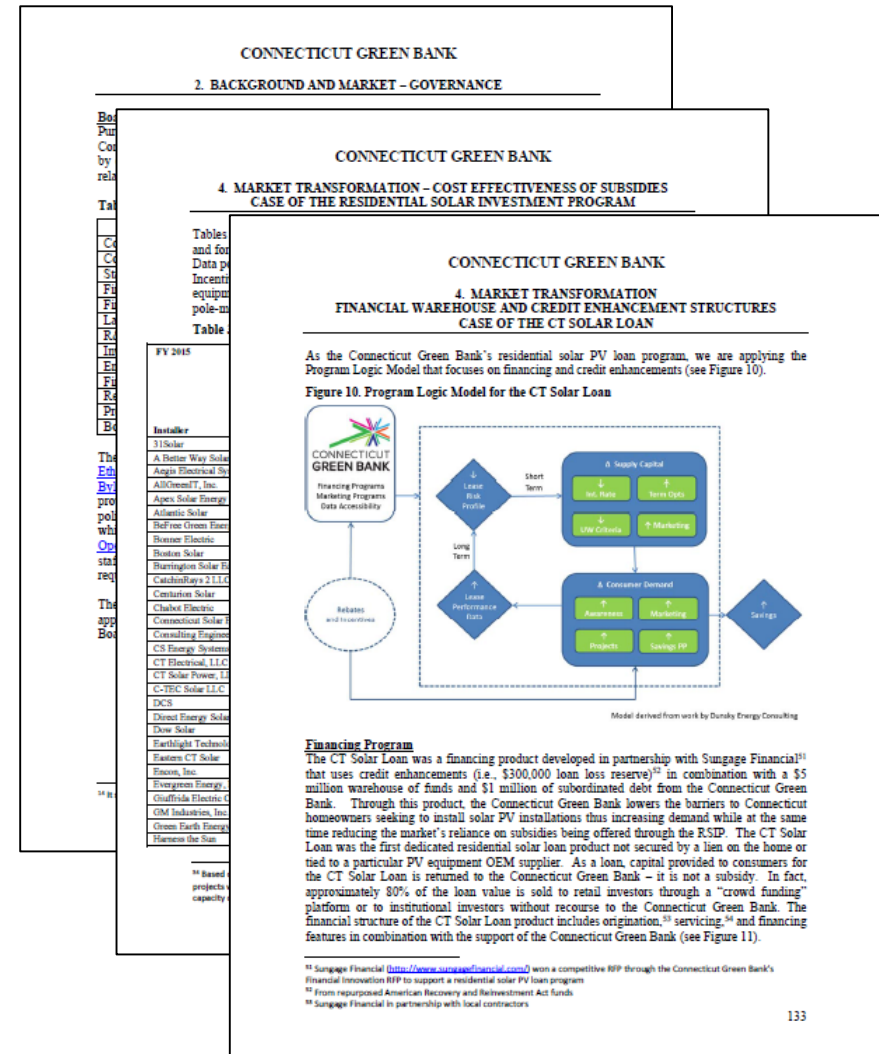


# Gold Standard in Reporting

## Comprehensive Annual Financial Report



- FY 2015** – filed Comprehensive Annual Financial Report (CAFR) to Government Finance Officers Association (GFOA). Seeking recognition in governmental accounting and financial reporting.
- Financial Statistics** – audited financial statements for the organization
- Non-Financial Statistics** – public benefit outputs and outcomes from the organization’s activities



# Connecticut Green Bank



## Accelerate Green Energy Deployment

|                            | FY 2000-<br>FY 2011<br>(CCEF) | FY 2012-<br>FY 2015<br>(CGB) <sup>1</sup> | FY 2016<br>Targets<br>(CGB) <sup>2</sup> |
|----------------------------|-------------------------------|---|--|
| <b>Model</b>               | Subsidy                       | Financing                                 | Financing                                |
| <b>Years</b>               | 11.00                         | 4.00                                      | 1.00                                     |
| <b>Energy (MW)</b>         | 43.1                          | 134.5                                     | 110.0                                    |
| <b>Investment (\$MM)</b>   | \$349.2                       | \$663.2                                   | \$670.0                                  |
| <b>Leverage Ratio</b>      | 1:1                           | 3:1                                       | 10:1                                     |
| <b>% of Funds as Loans</b> | 10                            | 56  | 80                                       |

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

### REFERENCES

1. Comprehensive Annual Financial Report for FY 2015 for approved, closed, and completed transactions
2. Board approved targets for FY 2016

# U.S. Investment Needed Avoid Climate Disaster



- The Center for American Progress estimates that the U.S. needs at least \$200 billion in renewable and efficiency investment annually for 20 years to reduce carbon emissions and avert climate disaster.

## Green Growth

A U.S. Program for Controlling Climate Change  
and Expanding Job Opportunities

Robert Pollin, Heidi Garrett-Peltier, James Heintz, and Bracken Hendricks September 2014

# Connecticut Green Bank

## An NRDC and CGC Observation

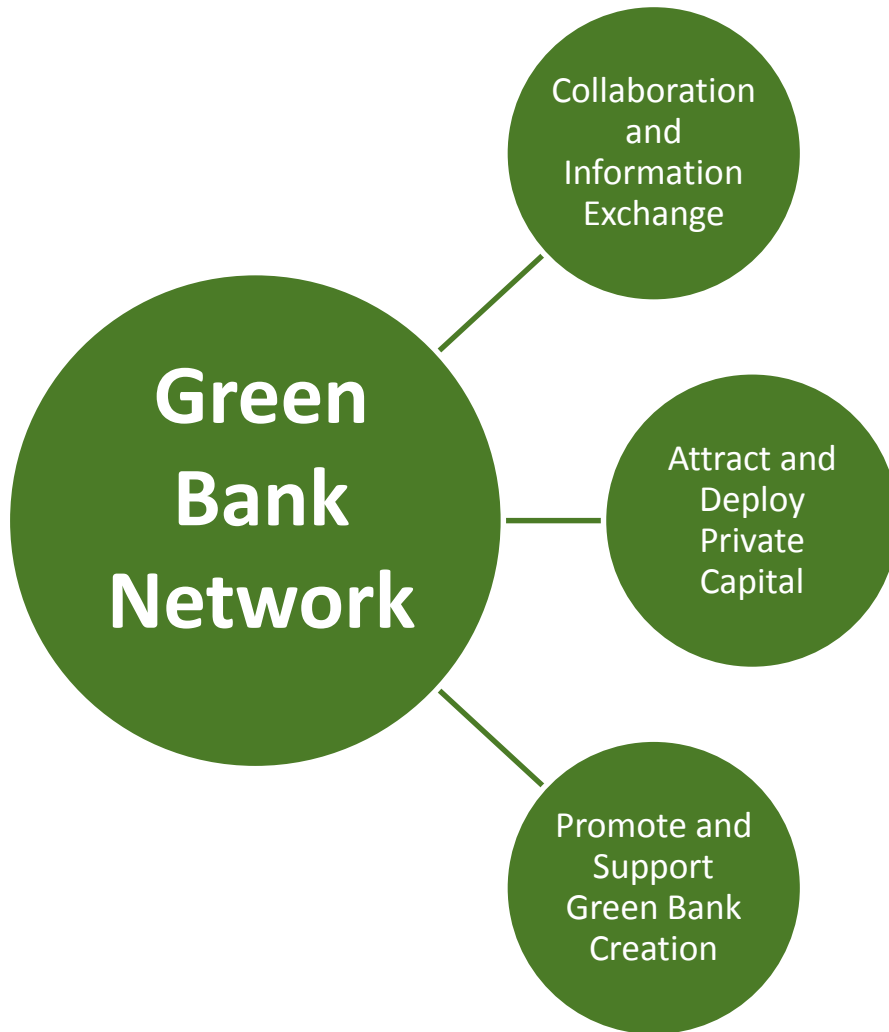


- **Based on Connecticut** and its market size, growth rate, and public-private leverage ratio, we estimate that **a Green Bank in every state in America** would **yield \$200 billion in national annual investment within 5 years**, with 90% of the funds coming from private sources and all taxpayer contributions returned over 10 to 20 years.



# Green Bank Network

## Join the Green Bank Network



**REFERENCE**

Information provided by the Coalition for Green Capital

# Realizing the Future

## Public Service Can Lead a Movement



Ha

# THE WALL STREET JOURNAL.

FRIDAY, MAY 9, 2014

## Goldman's Cleantech Activities Receive a Presidential Shout Out

MOUNTAINVIEW, CA – Goldman Sachs Group Inc.'s work financing and investing in clean-technology companies drew a mention Friday from President Barack Obama. "We've got public banks like Connecticut's Green Bank and private banks like Goldman Sachs ready to invest billions in renewable energy," the president Friday said during a speech at a Wal-Mart in Mountain View, Calif.



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Energy (C-PACE) program...

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pro

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Energy F  
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energy th





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

INNOVATE   EDUCATE   ACTIVATE   ACCELERATE

# Thank You

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