Connecticut Green Bank
Providing Easy Access to Affordable Capital

CPES and REEBA Co-Hosted Monthly Dinner
February 11, 2015
Remarks

- **Overview** – What is the Connecticut Green Bank?

- **Residential Market** – Building a Sustainable Market for Clean Energy in Our Homes

- **Commercial and Industrial Market** – Attracting Private Investment to Finance Clean Energy Improvements in Buildings

- **The Movement** – Leading the Green Bank Movement
Overview
What is the Connecticut Green Bank?
Challenge
Mobilizing Private Investment in Clean Energy

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

...CEFIA 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.
Case in Point
Residential Clean Energy Measures

▪ Enable energy efficiency improvements for at least 15% of single family homes in the state by 2020 – approximately 150,000 homes at $10,000 to achieve 20% energy reduction would require an investment of $1.5 billion.

▪ Support the conversion from oil to natural gas for at least 200,000 households in the state in 8 years – at $7,500 for an average cost of conversion with equipment for an estimated investment of $1.5 billion.

▪ Estimate potential market of over 150,000 households to install solar PV in the state – at an average cost of $30,000 per system would require an investment of $4.5 billion.
Connecticut Green Bank
Mission and Goals

Support the Governor’s and legislature’s energy strategy to achieve cleaner, cheaper and more reliable sources of energy while creating jobs and supporting local economic development.

Attract and deploy 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 reliance on grants, rebates and other subsidies and move towards innovative low-cost financing of clean energy deployment.
Connecticut Green Bank
Governance

Board of Directors
- President & CEO
  Bryan Garcia

Position
- Chair
  Catherine Smith
  DECD
- Vice Chair
  Rob Klee
  DEEP
- Secretary
  Matthew Ranelli
  Shipman & Goodwin

Committees
- B&O
  Rob Klee
  DEEP
- Deployment
  Reed Hundt
  Coalition Green Capital
- AC&G
  Matt Ranelli
  Shipman & Goodwin
- Joint CEEF-CGB
  Eric Brown
  CBIA

REFERENCES
Established Board of Directors in September of 2011 – bylaws, operating procedures, employee handbook, etc.
Connecticut Green Bank
Organizational Structure

Supply of Capital

- Statutory & Infrastructure
- Residential
- Commercial & Industrial
- Institutional

Demand of Capital

- Public Policy
- Integrated Resources Plan
- Comprehensive Energy Strategy
- C&LM Plan
- Comprehensive Plan
Residential Market
Building a Sustainable Market for Clean Energy in Our Homes
The Green Bank shall structure and implement a residential solar investment program, which shall result in a **minimum of thirty megawatts** of new residential solar photovoltaic installations located in this state **on or before December 31, 2022**, the annual procurement of which shall be determined by the authority and the **cost of which shall not exceed one-third of the total surcharge** collected annually.
Residential Solar PV
Green Bank Strategy

▪ **Lower Incentives** – create an open market for qualified installers to compete and decrease incentives through a “race to the rooftop” block structure to lessen market reliance on subsidies – reduced by ~60%

▪ **Lower Installed Costs** – hard-costs through data transparency (i.e. Market Watch Report); soft-costs through customer acquisition (i.e., Solarize), permitting (i.e., SunShot), and financing – reduced by ~30%

▪ **Increase Access to Private Capital** – provide local installers and customers with easy access to low-cost and long-term private capital (i.e., immediately cash flow positive) – over $175 MM loan-lease financing

▪ **Increase Demand** – support marketing (i.e., GoSolarCT, Solarize Connecticut, etc.) and financing – increased deployment and investment by ~2000% and doubled legislative target of 30 MW, 8 years ahead of schedule, and well below budget

**REFERENCES**
Market Watch Report data as of February 6, 2015
Residential Solar PV in Connecticut
2004 to 2015 (as of January 30, 2015)

$/W

Problem

Opportunity

REFERENCES
Market Watch Report (February 6, 2015)
Chart includes Solar City projects and kW, but not costs and incentives.
Reducing “Soft Costs”
Permitting and Customer Acquisition
Reducing “Soft Costs” (cont’d)
Financing and Public-Private Partnerships

At an event hosted by US Bank in San Francisco, Zach Boyers noted that US Bank has **completed 1.7 GW of solar PV projects** – about 1 GW has been commercial or utility scale solar, while 700 MW has been in residential. He noted that **their start** in doing billions of dollars of investment in the renewable energy space **commenced** with the **CT Solar Lease One - its transaction with the Connecticut Clean Energy Fund!**

Zach Boyers
CEO of US Bank’s CDC
October 9, 2014
CT Solar Lease Two
$60 MM Public-Private Partnership

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.
CT Solar Loan
$5 MM Crowd Fund to $100 MM Private Capital

- CT Solar Loan – 15-year loan offering for residential solar PV
  through Sungage Financial (partner of CT Green Bank)
- Warehouse – $5 million from Green Bank to sell $1 million to the crowd through Mosaic allowing qualified investors (i.e., accredited nationwide or unaccredited in CA and NY) to go solar
- Graduation – Sungage receives $100 MM commitment from DCU to expand CT offer to MA, NJ, and NY

Sungage Financial Secures $100 Million for Solar Loan Program

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.

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)

Edgar Meza (November 2014)
Solar Home Renewable Energy Credit
Create Jobs – Grow the Economy – Save on Energy Costs

A SOLAR HOME PRODUCES...

When panels produce electricity for a home, they will also produce Solar Home Renewable Energy Credits (SHRECs). The Green Bank collects all the SHRECs produced.

Utilities would enter into 15-year contracts with the Green Bank to purchase the stream of SHRECs produced from residential solar systems for RPS policy compliance.

The Green Bank would then use the revenues from the 15-year fixed price contracts to continue attracting private investment into the residential solar market through the RSIP program.

A SHREC policy for over 300 MW will attract over $1 billion of private investment in residential solar in CT, contribute $532 million to the state economy, create 6,000 job-years, and save ratepayers estimated $68 million in energy costs from the Class I RPS policy.

REFERENCES
1. Connecticut Center for Economic Analysis at the University of Connecticut (February 10, 2015)
2. Sustainable Energy Advantage (February 10, 2015) – energy cost savings based on IRP assumptions of RPS compliance costs
Energize Connecticut Smart-E Loan
Comprehensive Energy Strategy Product

- **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)
- **Volume** – about 350 loans totaling over $5 million – $14,000/loan
- **Measures** – predominantly HVAC, hot water, and solar PV
Commercial and Industrial Market
Attracting Private Investment to Finance Clean Energy Improvements in Buildings
Commercial PACE (C-PACE)  
Public Policy

- An innovative financing structure that enables commercial, industrial, and multi-family property owners to access financing for qualified energy upgrades and repay through a benefit assessment on their property tax.

Private capital may provide 100% upfront, low-cost, long-term funding.

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

REFERENCES
Public Act 12-2 Section 157. CGS Section 16a-40g.
Commercial PACE (C-PACE)
Green Bank Strategy

- **Onboard Communities** – engage cities and towns to enable, collect, and remit benefit assessment – 105 towns with over 85% of market now “open for business”
- **Attract Capital** – enlisted 20 capital providers, but no origination – launched $40 MM warehouse and then $30 MM securitization to catalyze market…RFP for private warehouse of between $50-$100 MM
- **Train Contractors** – over 100 companies trained – 34 with approved projects
- **Acquire Customers** – launched PACE Setters campaign; closed on 53 deals for $34.4 MM and approved another 39 deals for $36.7 MM in 45 communities
Commercial PACE (C-PACE)
Natural Gas Conversion (Non-Profit Organization)

- **City** – Bridgeport
- **Building Type** – Church
- **Terms** – 10 years @ 5.0%
- **Project Cost** – $54,576
- **Utility Incentive** – $3,460
- **Financing** – $51,116
- **Assessment** – $6,506/yr.
- **Cost Savings** – $13,678/yr.
- **Savings** – $136,776 lifetime
Commercial PACE (C-PACE)
Energy Efficiency (Commercial Office Space)

- **City** – Bridgeport
- **Building Type** – Office Space
- **Terms** – 20 years @ 5.5%
- **Project Cost** – $2,462,000
- **Utility Incentive** – $469,317
- **Financing** – $1,992,683
- **Assessment** – $166,563/yr.
- **Cost Savings** – $241,900/yr.
- **Savings** – $6,047,504 lifetime
Commercial PACE (C-PACE)
Renewable Energy (Industrial Manufacturer)

- City – Hartford
- Building Type – Manufacturing
- Terms – 20 years @ 5.5%
- Project Cost – $170,000
- Utility Incentive – ZREC
- Financing – $145,000
- Assessment – $12,044/yr.
- Cost Savings – $20,934/yr.
- Savings – $418,690 lifetime
Commercial PACE (C-PACE)
Catalyst for Private Investment

In a ‘Watershed’ Deal, Securitization Comes to Commercial Efficiency

Connecticut’s green bank executes the first securitization of commercial efficiency assets.

Nick Lombardi
May 19, 2014

Securitization, the holy grail of energy efficiency finance, has finally arrived in the commercial sector.
Commercial PACE (C-PACE) Standard Offer

- Expanding access to private capital originators and financiers – an “Open Market” for C-PACE financing
- Draft Term Sheet
  - Outline key material terms of the originating and funding relationship between the Program Administrator (Connecticut Green Bank) and the Capital Provider
  - Enable private capital providers to fund transactions through C-PACE mechanism
- For more information, go to the “About Us” section at www.c-pace.com
The Movement
Leading the Green Bank Movement
Role of a Green Bank
Sustainable Clean Energy Marketplace

- Clean Energy Deployment
- Private Investment
- Public Dollars

Jobs↑ GHG↓
Connecticut Green Bank
Strategic Vision

To lead the green bank movement by accelerating private investment in clean energy deployment in Connecticut to achieve economic prosperity, create jobs, promote energy security and address climate change.
“Through the New York Green Bank, we will leverage public dollars to attract private sector investment into building a new clean energy economy that will help make our state greener and create jobs…With this initiative, we will promote job growth and business development, improve resiliency and air quality, and lower costs for consumers while providing them with greater choices and value for their money.”

When fully capitalized, the Green Bank is expected to have a $1 billion balance sheet.
New Jersey Energy Resilience Bank Joins the Movement (2014)

“The launch of the Energy Resilience Bank, the first of its kind in the nation to focus on resilience, is yet another effort of the Christie Administration to increase energy resilience at critical facilities throughout New Jersey…Increasing energy resilience, whether through the Energy Resilience Bank, the BPU approved resiliency improvement measures implemented by utility companies or NJ’s Clean Energy Program, will minimize the potential impacts of future widespread power outages due to major storms like Superstorm Sandy.”

The bank is capitalized with $200 million through a federal Community Development Block Grant for Disaster Recovery as a result of Superstorm Sandy.
Green Bank Movement
United States
Green Bank Act of 2014
$50 Billion Federal Green Bank Modelled after CT

113th CONGRESS
2d Session

H. R. 4522

To establish the Green Bank to assist in the financing of qualified clean energy projects and qualified energy efficiency projects.

IN THE HOUSE OF REPRESENTATIVES
APRIL 30, 2014
Mr. Van Hollen (for himself, Mr. Berman, Ms. Esty, Mr. Himes, Mr. Connolly, Ms. Norton, Ms. Slaughter, and Mr. Langevin) introduced the following bill; which was referred to the Committee on Ways and Means, and in addition to the Committee on Energy and Commerce, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned.

A BILL
To establish the Green Bank to assist in the financing of qualified clean energy projects and qualified energy efficiency projects.

S. 2271

To establish the Green Bank to assist in the financing of qualified clean energy projects and qualified energy efficiency projects.

IN THE SENATE OF THE UNITED STATES
APRIL 30, 2014
Mr. Murphy (for himself and Mr. Blumenthal) introduced the following bill; which was read twice and referred to the Committee on Finance.

A BILL
To establish the Green Bank to assist in the financing of qualified clean energy projects and qualified energy efficiency projects.
International Green Bank Summit
Bringing Together Clean Energy Financing Institutions

- Hosted by the New York Green Bank in New York City at Bloomberg from Nov. 17-18, 2015
- Participants included Australian Clean Energy Finance Organization, CTGB, Greentech Malaysia, Hawaii GEMS Program, Japanese Green Finance Organization, NJERB, NYCEEC, NYGB, UKGIB, and others
- Green banks expect to deploy over $15 billion in capital, which could be leveraged to over $40 billion in total investment over the next 5 years
- Purpose was to discuss how to advance emerging clean energy markets by harnessing commercial practices, mobilizing private sector participation, and adopting a common framework to encourage public-private partnerships
## Green Bank Model Works
Deploying More Faster through Private Investment

<table>
<thead>
<tr>
<th></th>
<th>FY 2000-FY 2011 (CCEF)</th>
<th>FY 2012-FY 2014 (CGB)</th>
<th>FY 2015 (YTD) (CGB)</th>
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<tbody>
<tr>
<td><strong>Model</strong></td>
<td>Subsidy</td>
<td>Financing</td>
<td>Financing</td>
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<td><strong>Years</strong></td>
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<td>6 months</td>
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<td><strong>Energy (MW / Life. GWh)</strong></td>
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<td>65.3 / 3,189</td>
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<td><strong>Total Investment ($ MM)</strong></td>
<td>$349.2</td>
<td>$350.2</td>
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<td><strong>Ratepayer Investment ($ MM)</strong></td>
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<td><strong>Investment as Loans (%)</strong></td>
<td>9</td>
<td>57</td>
<td>-</td>
</tr>
</tbody>
</table>

**REFERENCES**
Approved, closed, and completed for FY 2015 for Q1 and Q2
Connecticut Green Bank
Realizing the Future

GREEN BANK promise in Connecticut

ROCKY HILL, CT – The Connecticut Clean Energy Finance and Investment Authority has proved that the green bank model is working. Through the Commercial Property Assessed Clean Energy (C-PACE) program...

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 cleantechology 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.
Thank You!

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