Connecticut Green Bank
Attracting Private Investment, Growing Our Economy, Creating Jobs, and Helping Our Communities Thrive

National Association of State Energy Officials
Updates from the Field – Green Banks
August 8, 2018
Connecticut Green Bank
Delivering Results for Connecticut

- **Investment** – mobilized over $1.3 billion of investment into Connecticut’s clean energy economy
- **Economic Development** – created nearly 16,000 total job-years – 6,200 direct and 9,700 indirect and induced, while raising nearly $50 million in state and local tax revenues
- **Energy Burden** – reducing the energy burden on over 30,000 households and businesses, including “beyond parity” for LMI solar
- **Environmental Protection** – deployed more than 285 MW of clean renewable energy helping to reduce over 4.6 million tons of greenhouse gas emissions that cause climate change

**Private investment drives economic growth**
Creates jobs, lowers energy costs, and reduces GHGs

**REFERENCES**
CT Green Bank data warehouse report from July 1, 2011 through June 30, 2018
Connecticut Green Bank
Business Units and Nonprofit “Spinoff”

Connecticut Green Bank
Incentive Business
- RSIP
- SHREC

Green Bank
Investment Business
- C-PACE
- SBEA
- PosiGen
- Nonprofit
- New Opps
- Special Projects

IPC
(an independent 501(c)3)
- SF/LMI PosiGen & Others
- Smart-E
- Comm Solar PPA
- MFAH
- Special Projects

Cost Recovered
Self Sustaining (i.e., 5%@10 years)
Operating Leverage, Social Return, and Investment Return Opportunity
Incentive Business
RSIP Incentive and SHREC Securitization

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

Utilities required to enter into 15-year contracts 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).

The Green Bank would then use the revenues from the 15-year fixed price contracts to support the RSIP incentives (i.e., PBI and EPBB), cover admin costs, and fund securitization or financing costs.

A public policy with 300 MW target will create more locally-sourced sustainable energy, helping make our power grid more secure and less congested, and also curb pollution.
# Investment Business

## Public-Private Partnerships

<table>
<thead>
<tr>
<th>Credit Enhance</th>
<th>Warehousing</th>
<th>Tax Equity Finance</th>
<th>Project Finance</th>
<th>PRI</th>
<th>Tax Credit Bonds</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>$45 MM</strong> OPEN 20:1&lt;sup&gt;1&lt;/sup&gt;</td>
<td><strong>$50+ MM</strong> OPEN 9:1</td>
<td><strong>$75 MM</strong> CLOSED 7.5:1</td>
<td><strong>$60+ MM</strong> OPEN 6:1&lt;sup&gt;3&lt;/sup&gt;</td>
<td><strong>$5 MM</strong> OPEN 100%&lt;sup&gt;2&lt;/sup&gt;</td>
<td><strong>$9 MM</strong> CLOSED 9:1</td>
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<td>Green Bank Solar PPA</td>
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<tbody>
<tr>
<td><strong>$6 MM</strong> CLOSED 6:1</td>
<td><strong>$30 MM</strong> CLOSED 4:1</td>
<td><strong>$35 MM</strong> OPEN 4:1</td>
<td><strong>$22 MM</strong> CLOSED 8:1</td>
<td><strong>$3 MM</strong> OPEN 100%&lt;sup&gt;4&lt;/sup&gt;</td>
<td><strong>$3 MM</strong> CLOSED 3:1</td>
</tr>
<tr>
<td>Residential Solar</td>
<td>C-PACE</td>
<td>Solar for All</td>
<td>Colebrook Wind</td>
<td>Residential and Commercial Storage</td>
<td>City of Meriden CT</td>
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<tr>
<td></td>
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<td></td>
<td>Archimedes Screw Hydroelectric Project</td>
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</tbody>
</table>

## 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.
Inclusive Prosperity Capital
Sparked by the Connecticut Green Bank

- **Foundation of Success** – mobilized over $1.3 billion of public and private capital deployed in Connecticut from 2012–2018 ($360 million in underserved markets)

- **Geographic Expansion** – $810 billion of renewable generation investment potential across the U.S. from 2018-2050 (Real 2017 $’s);

- **Cost Reductions & Scale** – origination expansion, geographic diversification, and operational efficiencies; and

- **Project Deployment & Risk-Adjusted Returns** – successful capitalization of underserved markets & credits with private capital at appropriate returns.
Inclusive Prosperity Capital
Fund Launch

- **Launch Date:** August 2018
- **Assets Under Management at Launch:** $20 million
- **Assets Under Management Year 1 Total Target Raise:** $75+ million
- **Key Contributors at Launch:** Connecticut Green Bank, Kresge Foundation, Hewlett Foundation, Calvert Impact Capital
- **Fund Leadership:** Seven (7) program and investment professionals transferring from the Connecticut Green Bank at launch
- **Unique Features:** In addition to capital injection, Connecticut Green Bank to provide full operational support of $10 million\(^1\) over first six (6) years of operation (no “going concern” risk)

**NOTES**

1. Of this total, $6 million will run through Inclusive Prosperity Capital, while $4 million will be expenses covered directly by the Connecticut Green Bank
Inclusive Prosperity Capital
Support for Connecticut Green Bank

- **Solar for All** – single family residential solar PV lease and EE ESA targeted at LMI HH in partnership with PosiGen

- **Green Bank Solar PPA** – small to medium commercial, MUSH, affordable housing, and nonprofits solar PPA in partnership with tax equity and debt providers

- **Affordable Multifamily Housing** – multifamily energy efficiency, renewable energy, and health and safety financing from predevelopment to term in partnership with MacArthur Foundation

- **Smart-E Loan** – single family residential energy efficiency, renewable energy, and health and safety in partnership with local community banks and credit unions
Thank You

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Connecticut Green Bank
Economic Engine

1. Attract Private Investment

2. Into Programs Designed to Lower the Energy Burden for Ratepayers

- Homeowners
- Businesses
- Institutions
3. Apply Innovative Financing Tools to Deploy Public and Private Capital

- **INVESTMENT**
  Green Bank attracts philanthropic institutions and commercial banks to directly invest in our programs.

- **CO-INVESTMENT**
  Green Bank initiates public-private partnerships that co-invest in clean energy projects and programs.

- **CREDIT SUPPORT**
  Green Bank provides local community banks with loan loss reserves, which allow them to offer affordable financing.

- **INCENTIVES**
  Green Bank strives to reduce reliance on incentives by increasing private investment and capital deployment.

- **SEURITIZATION**
  Green Bank demonstrates the viability of innovative programs, which in turn attract private investment.

4. Educate and Activate Consumers with Ratepayer-focused Marketing Strategies

- **LOWER ENERGY COSTS for HOMES & BUSINESSES**
- **CREATE JOBS**
- **DEPLOY CLEAN ENERGY**
- **IMPROVE ELECTRIC INFRASTRUCTURE**
- **REDUCE GHG EMISSIONS**
- **IMPROVE HEALTH & SAFETY IN BUILDINGS**

5. **ACCELERATE** THE GROWTH OF CLEAN ENERGY BENEFITS TO CONNECTICUT™

*Benefits since the creation of the Connecticut Green Bank in 2011*
Connecticut Green Bank
Mission and Goals

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

- Attract and deploy private capital investment to finance the clean energy policy goals for Connecticut.

- Leverage limited public funds to attract multiples of private capital investment while reinvesting public funds over time.

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

- Support affordable and healthy homes and businesses in distressed communities reduce energy burden and address health & safety.
Green Bank Model Basics
Reduce Risk – Increase Supply of Capital

1. Capitalization of Green Bank
2. Innovative financing structures
3. Private investment flows

Government

Creation & Public Capitalization

Green Bank

Risk Mitigation

Public Investment

Private Investment

Low Carbon Projects

Private Investors

Payback

Reduce Energy Burden, Job Creation, Taxpayer Revenues, GHG Reductions, Public Health Benefits

REFERENCE
Definition provided by the Coalition for Green Capital and adapted by the Connecticut Green Bank
Green Bank Model Basics
Reduce Costs – Increase Customer Demand

BEFORE

Energy Bill

AFTER

Net Savings

- Cheaper
- Cleaner
- Reliable
- Healthier

Clean Distributed Energy Resource Financing Payment

Energy Bill

Clean Energy Improvement (Behind the Meter)

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

▪ **Quasi-public organization** – Created in 2011 and successor to the Connecticut Clean Energy Fund (which was administered by Connecticut Innovations).

▪ **Focus** – Finance clean energy (i.e. renewable energy, energy efficiency, and alternative fuel vehicles and infrastructure).

▪ **Balance Sheet** – Approximately $190 million in assets and $130 million net position – leverage ratio from 3:1 to 12:1

▪ **Public Support** – Supported by a $0.001/kWh surcharge on electric ratepayer bills (about $7-$10 per household per year) that provides approximately $27 MM a year for investments, RGGI about $3 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

Governance

Board of Directors

Chair
Catherine Smith
DECD

Vice Chair
Rob Klee
DEEP

Secretary
Matthew Ranelli
Shipman & Goodwin

Member
Denise Nappier
Treasurer
State of Connecticut

Member
Thomas Flynn
Coral Drive Partners

Member
John Harrity
Connecticut State
Council of Machinists

Member
Betsy Crum
Women’s Institute for Housing & Economic Development

Member
Gina McCarthy
Former Head of the EPA

Committees

B&O
John Harrity
Connecticut State Council of Machinists

Deployment
Rob Klee
DEEP

AC&G
Matthew Ranelli
Shipman & Goodwin

Joint CEEF-CGB
Eric Brown
CBIA

REFERENCES
Established Board of Directors in September of 2011 – bylaws, operating procedures, employee handbook, etc.
## Investment Business
### C-PACE (Example)

<table>
<thead>
<tr>
<th>Market Segment</th>
<th>Commercial, Industrial, Nonprofit and Multifamily</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Summary</strong></td>
<td>Commercial Property Assessed Clean Energy (C-PACE) applies a benefit assessment to a property to finance clean energy improvements with SIR&gt;1</td>
</tr>
</tbody>
</table>
| **Support Needed** | • Capital to finance clean energy improvements  
• Contractors to install clean energy improvements  
• Supportive municipality  
• Supportive mortgage lender |
| **CT Results** | 232 projects for $135.9 MM investment and $220.5 MM in savings over the life of the projects |
# Investment Business

## Bridgeport Fuel Cell Park (Example)

<table>
<thead>
<tr>
<th>Market Segment</th>
<th>Grid-Tied Procurement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Summary</strong></td>
<td>Long-term power and REC purchase agreement through Project 150 (PA 05-01). 2\textsuperscript{nd} largest fuel cell power plant in the world. Technology manufactured in CT and site located on brownfield in a distressed municipality.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Support Needed</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Project finance</td>
<td></td>
</tr>
<tr>
<td>▪ “Back levered” financing to the developer to attract buyer for the project (i.e., buyer demanded a cash reserve fund for O&amp;M)</td>
<td></td>
</tr>
</tbody>
</table>

| CT Results | 15 MW fuel cell project totaling $125 MM investment creating nearly 140 jobs |
## Investment Business
### New England Hydropower (Example)

<table>
<thead>
<tr>
<th>Market Segment</th>
<th>Virtual Net Metering - Municipality</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Summary</strong></td>
<td>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.</td>
</tr>
</tbody>
</table>
| **Support Needed** | ▪ Project finance  
▪ Support for start-up developer using European technology  
▪ Working capital (Webster Bank), construction financing (First Niagara), and green bonds (BAML) |
| **CT Results** | 193 kW hydro project using federal CREBs |
## Investment Business
### Food Waste to Energy AD Project (Example)

<table>
<thead>
<tr>
<th>Market Segment</th>
<th>Project Finance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Summary</strong></td>
<td>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&lt;sup&gt;st&lt;/sup&gt; AD project of its kind in CT</td>
</tr>
</tbody>
</table>
| **Support Needed**  | ▪ Links to food waste collection policy (PA 11-127)  
▪ Attracted local lender to finance the remainder of the project as a senior debt provider (i.e., Peoples Bank) along with equity and tax equity |
| **CT Results**      | Diverts organic materials from waste stream while producing renewable energy |
## Investment Business w/ IPC

Solar Lease and Energy Efficiency ESA (Example)

<table>
<thead>
<tr>
<th>Market Segment</th>
<th>Residential Single Family LMI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Summary</strong></td>
<td>Solar lease + energy efficiency package (fixed 20-25 years) to reduce energy burden with alternative underwrite/no credit score using community based marketing approach</td>
</tr>
<tr>
<td><strong>Support Needed</strong></td>
<td>▪ Good solar economics including tiered LMI incentive&lt;br&gt;▪ Municipal, community and nonprofit introductions&lt;br&gt;▪ Subordinated debt capital – if available, but not required</td>
</tr>
<tr>
<td><strong>CT Results</strong></td>
<td>1,615 leases for $44.5 MM investment, 99.9% get EE (HES), 63% ESA, and 63% LMI</td>
</tr>
</tbody>
</table>
# Investment Business w/ IPC

Green Bank Solar PPA (Example)

<table>
<thead>
<tr>
<th>Market Segment</th>
<th>Small/medium commercial, MUSH, affordable housing, nonprofits, community assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Summary</td>
<td>3rd party solar power purchase agreement, backed by C-PACE lien where possible</td>
</tr>
</tbody>
</table>
| Support Needed       | ▪ Good solar economics for C&I  
                        ▪ Local solar installer & project developer introductions  
                        ▪ Municipal, community and nonprofit introductions  
                        ▪ Subordinated debt capital – if available, but not required |
| CT Results           | 94 PPAs closed/completed, $69.3 MM, and 22.7 MW                                  |
Investment Business w/ IPC
Affordable Multifamily Housing (Example)

<table>
<thead>
<tr>
<th>Market Segment</th>
<th>Naturally occurring and subsidized/regulated affordable housing (5+ units)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Summary</td>
<td>Pre-development and term financing products (including unsecured) for renewables, efficiency, storage, resiliency, health &amp; safety and other building improvements</td>
</tr>
</tbody>
</table>
| Support Needed | ▪ Overview of utility and state affordable housing program/incentive landscape  
▪ Portfolio owner introductions  
▪ Municipal, community and nonprofit introductions  
▪ Subordinated debt capital – if available, but not required |
| CT Results | 73 loans for $72MM impacting ~5,400 units |
### Market Segment
- **Residential Single Family**

### Product Summary
- 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.

### Support Needed
- Provide 2nd Loan Loss Reserve (LLR) up to 7.5% of losses
- EV pilot

### CT Results
- 2,942 projects for $51.8 MM financed with $5.9 MM of Interest Rate Buydowns (IRB)