845 Brook Street, Rocky Hill, CT 06067
**T** 860.563.0015
**ctgreenbank.com**

CONNECTICUT
**GREEN BANK**

July 15, 2016

Dear Connecticut Green Bank Board of Directors:

We have a regular meeting of the Board of Directors scheduled for Friday, July 22, 2016 from 9:00 to 11:00 a.m. in the Colonel Albert Pope Board Room of the Connecticut Green Bank at 845 Brook Street, Rocky Hill, CT 06067.

On the agenda we have the following items:

- **Consent Agenda** – We have several items, including the meeting minutes for June 17 and July 6, 2016, projects under $300,000, overview of the compliance Reporting for the Board of Directors and its committees for FY 2016, and an updated Succession Plan. Also as part of the Consent Agenda, we are informing you of all Professional Services Agreements valued over $75,000 in FY2016, signed in accordance with our operating procedures.

- **Strategic Discussions** – We are using this opportunity to highlight our recent participation in the US Department of Energy's SunShot Initiative and our recent engagement with the energy data visualization and GIS platform, Kevala. The SunShot Initiative Rooftop Solar Challenge incentivizes regional teams to make it easier and more affordable for Americans to go solar, reducing soft or "plug-in" costs by streamlining permit processes, updating planning and zoning codes, improving standards for connecting solar power to the electric grid, and increasing access to financing. Kevala is a data analytics tool that will allow us to geographically visualize the impact of the projects undertaken by the Connecticut Green Bank.

- **Important Documentation** – We are submitting our revised Comprehensive Plan (FY2017 and FY 2018) for review and approval by the Board. Please see the enclosed copy of the Comprehensive Plan. In addition, we submit the draft Evaluation Framework for the approval of the Board. This document establishes how we will review and assess our products and programs and the standards against which they shall be judged. Please see the enclosed copy of the Evaluation Framework.

- **Commercial, Industrial, and Institutional Sector Programs –** The staff of the Commercial, Industrial, & Institutional Sector will introduce the Energy-On-The-Line Program. This partnership with DECD is using C-PACE to reduce energy costs for manufacturers. Staff is requesting the use of dollars budgeted for interest rate buy-downs for the program. Additionally, staff are proposing a change to the existing lending facility with Hannon Armstrong. In order to streamline the process and reduce interest cost to CGB, staff is proposing that CGB advance the funds and be repaid by Hannon Armstrong on a monthly basis.

- **End of the Year Updates** – we have wrapped up our fifth fiscal year as the Connecticut Green Bank! We will be providing you with updates on the four sectors – Statutory and Infrastructure, Residential, Commercial and Industrial, and Institutional. Overall, it was another good year. We continue to build on our success and are demonstrating how the green bank model is working to increase and accelerate private investment and deployment of clean energy.

- **Other Business** – if we have any time left, and there are other business issues that the staff or members of the Board of Directors wants to raise, we will have time for that.

If you have any questions, comments or concerns, please feel free to contact me at any time.

We look forward to seeing you next week.

Sincerely,

Bryan Garcia
President and CEO

# AGENDA

Board of Directors of the
Connecticut Green Bank
845 Brook Street
Rocky Hill, CT 06067

Friday, July 22, 2016
9:00-11:00 a.m.

Staff Invited: George Bellas, Craig Connolly, Mackey Dykes, Brian Farnen, Bryan Garcia, Ben Healey, Dale Hedman, Bert Hunter, Kerry O'Neill, and Eric Shrago

1. Call to order

2. Public Comments – 5 minutes

3. Consent Agenda* – 5 minutes

    a. Approval of Meeting Minutes for June 17, 2016 and July 6, 2016*
    b. Under $300,000 and No More in Aggregate than $1,000,000*
    c. Board of Directors and Committees Report for FY 2016*
    d. Request for Approvals for PSA's Over $75,000 in FY 2016
    e. Succession Plan (FY 2017)

4. Board of Directors Strategic Discussions – 45 minutes

    a. SunShot Prize: Reducing "Soft Costs" for Residential Solar PV – 30 minutes
    b. Information and Visualization – 15 minutes

5. Important Documentation* – 30 minutes

    a. Comprehensive Plan (FY 2017 and FY 2018)*
    b. Evaluation Framework*

6. Staff Transaction Recommendations* – 20 minutes

    a. Commercial, Industrial, and Institutional Sector Program Transaction Recommendations

        i. Energy on the Line*
        ii. C-PACE Disbursement Cap*

7. Sector Updates and Progress to Targets for FY 2016* – 10 minutes

8. Other Business – 5 minutes

9. Adjourn

*Denotes item requiring Board action

Join the meeting online at https://global.gotomeeting.com/join/463250557

Or call in using your telephone:
Dial (408) 650-3123
Access Code: 463-250-557

Next Regular Meeting: Friday, October 21, 2016 from 9:00-11:00 a.m.
Connecticut Green Bank, 845 Brook Street, Rocky Hill, CT

CONNECTICUT
GREEN BANK

# Board of Directors Meeting

July 22, 2016

# Board of Directors

## Agenda Item #1

## Call to Order

# Board of Directors

## Agenda Item #2

## Public Comments

# Board of Directors

## Agenda Item #3

## Consent Agenda

# Consent Agenda
# Resolutions 1 through 3

- **Meeting Minutes** – approval of meeting minutes of June 17, 2016 and July 6, 2016
- **Under $300,000 and No More in Aggregate than $1,000,000** – memo to update board on transactions reviewed and approved by staff and clearing the queue for future transactions consistent with Comp Plan and Budget
- **Board of Directors and Committees Reports** – overview of governance for FY 2016
- **Approvals for PSA's Over $75,000** – overview of approvals per Operating Procedures for FY 2016
- **Succession Plan** – updated given recent changes with the departure of Genevieve Sherman and Andy Brydges and staff transitions with Mackey Dykes and Eric Shrago

# Consent Agenda
## No More in Aggregate than $1,000,000

| Project Name | Comprehensive Plan | Amount | Type |
|---|---|---|---|
| St. John Episcopal Church | C-PACE and SL2 | $159,296 | Benefit Assess. |
| Historical Society | C-PACE | $36,029 | Benefit Assess. |
| Snipsic Village | Multifamily – Affordable Pre-Development | $12,450 | Loan |
| **Total** | | **$207,775** | |

Approximately $208,000 in loans

# Board of Directors

## Agenda Item #4a – Strategic Discussions

## SunShot Prize

# SunShot Initiative at CGB

## U.S. DOE SunShot Initiative Rooftop Solar Challenge (2012-2016):

Incentivizes regional teams to reduce solar **non-hardware or "soft costs"** by streamlining permitting, zoning and interconnection.

- CGB awarded 2 rounds of funding under the Rooftop Solar Challenge I & II **totaling $842,000**

## SunShot Prize Race to 7-day Solar (2015-2017):

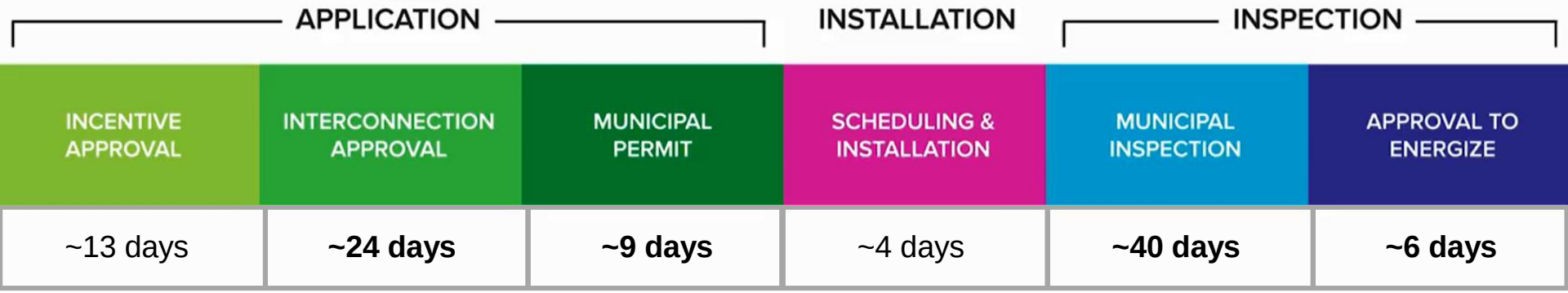
**2 Utilities, 7 Solar Installers, 10 Municipalities & CT Green Bank**

competing to make it faster and cheaper for CT residents to go solar and win a $3 million grand prize!

**Awarded $100,000 in Prizes so far!**

# Searching for Soft Costs in the Solar Project Timeline

**Hardware costs have declined 55% since 2011. "Soft costs" now account for ~50% of the system cost.**




Average Total Time: **78 Days**
Sample Ranged from **7- 238 days**

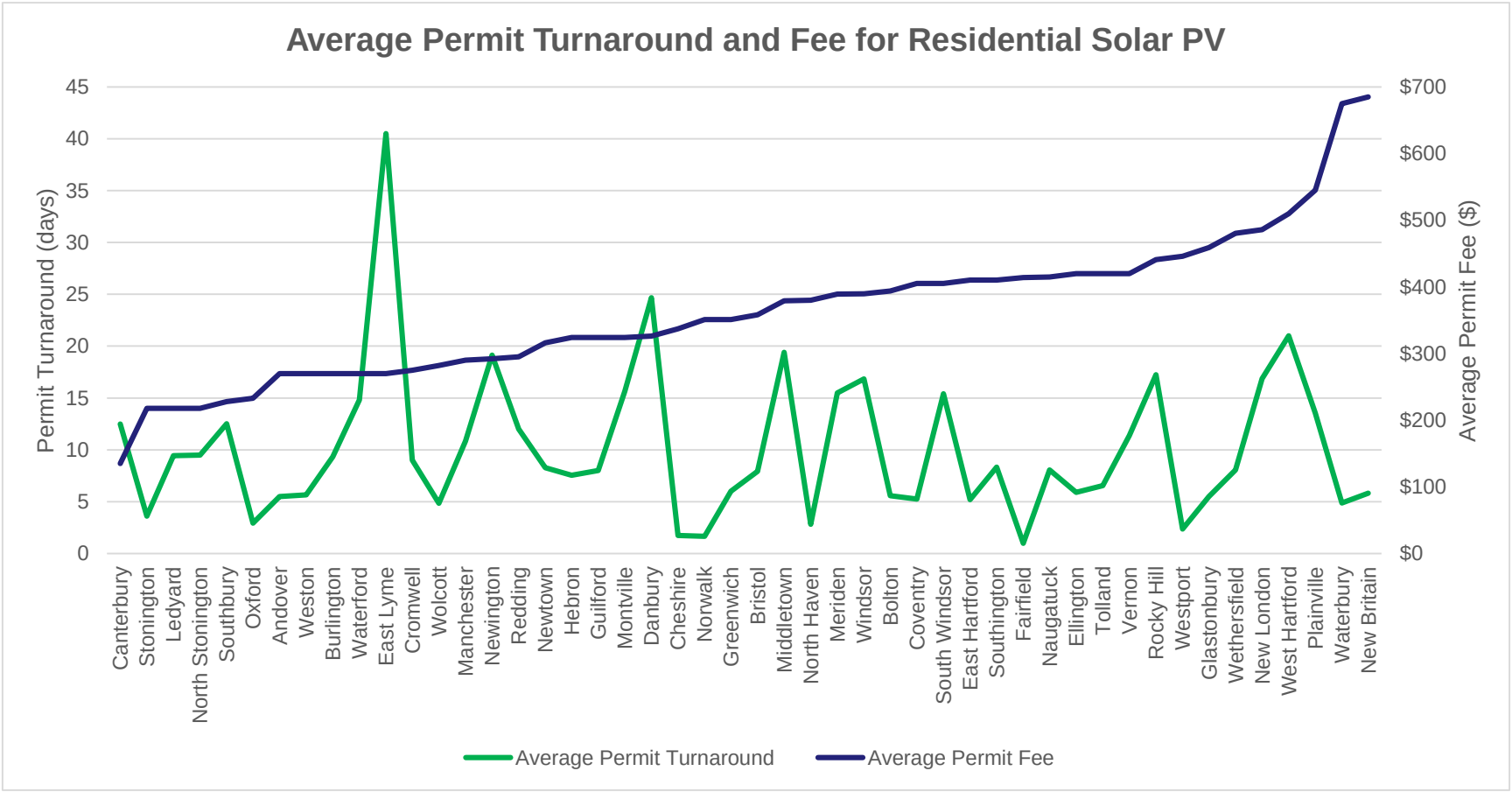


*Sample Size: 443 residential solar projects, permitted & interconnected 9/22/2015-6/18/2016

# Permitting- Time & Cost

CONNECTICUT GREEN BANK

***Doing the same thing, 169 different ways…***




**Local permitting variations can produce PV price differences of $0.18/W**

**For an average 7.6kW system in CT that's a difference of $1,368**

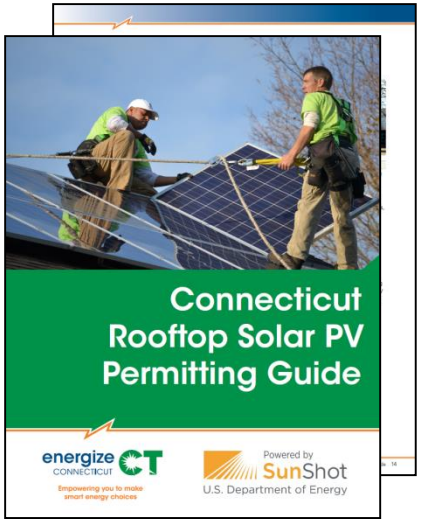
# Addressing Solar PV Permitting

## EDUCATION

- Over **420** code officials trained, over **700** fire officials trained on solar PV technologies

## RESOURCES

- CT Rooftop Solar PV Permitting Guide & docs released 2014, updated 2016




## PARTNERSHIP

- Partnerships with Office of the State Building Inspector, CT Building Officials Association
- **Yale CT Municipal Solar Scorecards 2016**
  [www.ctsolarscoreboard.com](http://www.ctsolarscoreboard.com)


## OUTREACH

- Individual consultations with towns on permitting improvements- custom solar PV permit packages for over 50 towns

# Utility Interconnection & Improvements

**2 Tracks for Residential Solar Interconnection Approval:**

| Certified Inverter | Fast Track |
|---|---|
| ≤10kW | ≥10kW – 2MW |
| $100 Fee | $500 Fee |
| $300k Liability Insurance | $300k - $2 million Liability Insurance |

- Both utilities accept applications electronically but fees must be paid by mail
- Manual calculation of whether project passes technical screens
  - Small projects that fail technical screens must go into lengthier Fast Track process

## Key Modifications to Interconnection Guidelines (2016):

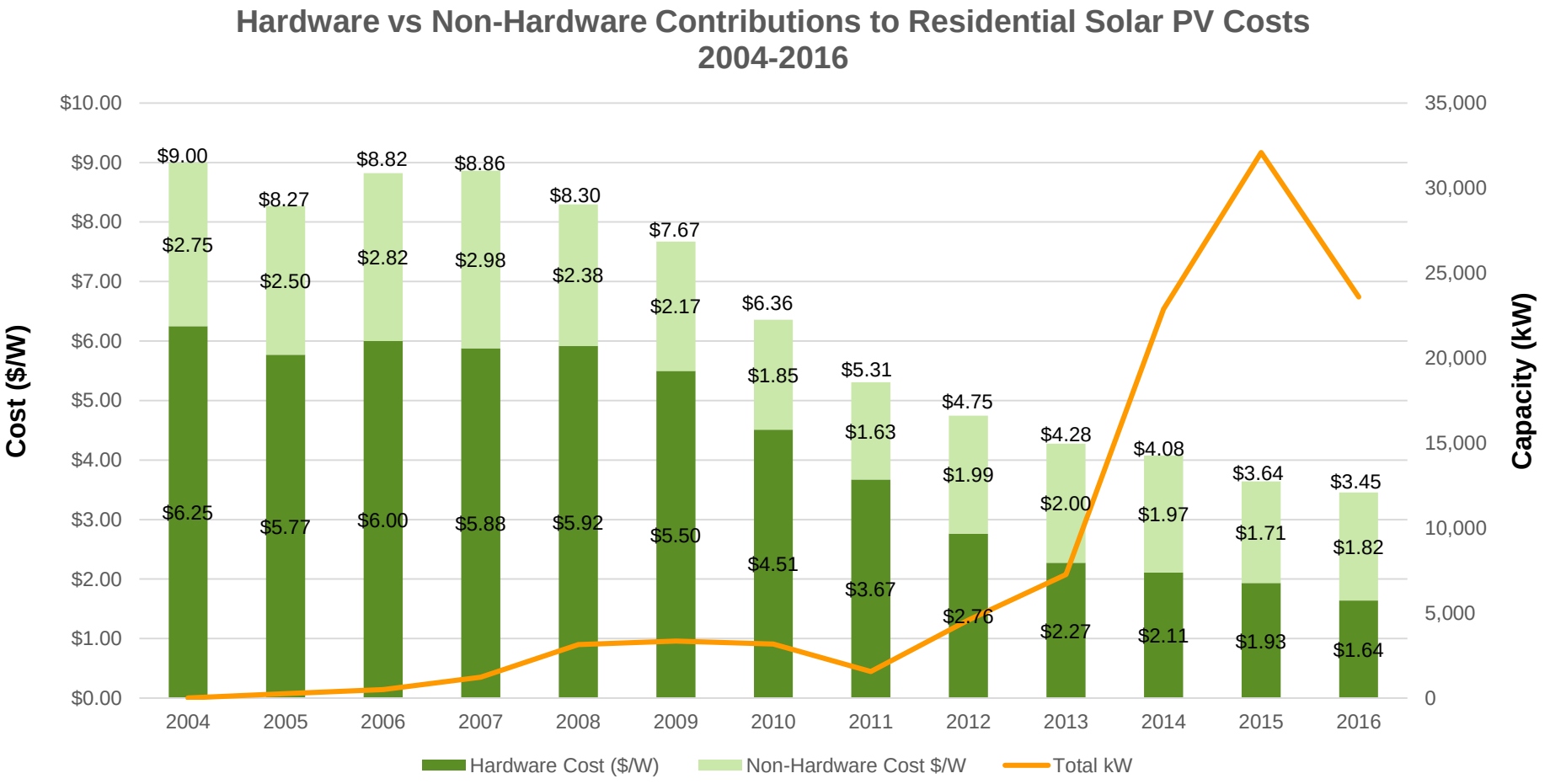
1. Increase 10kW threshold for Certified Inverter Track to 20kW
2. Eliminate $300,000 Proof of Insurance Requirement (barrier to LMI solar)
3. Modify Certified Inverter technical screens – capacity & voltage to allow up to 100% of transformer capacity (fewer projects kicked into Fast Track)

# Next Steps

## Future Focus Areas:

- Continue to improve utility interconnection & modernize processes
  - Expanded online application capabilities
  - Host capacity mapping and analysis
- Support installers in streamlining business operations and achieving greater process efficiency
- Continue to push municipalities towards greater consistency & streamlined procedures
  - Trainings for municipal code officials in fall 2016
  - Memo from State Building Inspector on solar permitting
  - Support wider adoption of online permitting systems

# Residential Solar In CT




Hardware costs have declined 55% since 2011 but soft costs now make up approximately 50% of the system cost. Many contributing factors to soft costs make them difficult to measure.

# Board of Directors

## Agenda Item #4b – Strategic Discussions Information and Visualization

# Green Bank Data Visualization with Kevala

- **Energy ecosystem visualization** – Collaborating with Kevala to develop an online tool to provide geographic visualization of the Green Bank's deployments and impact down to the project level
- **Linkages to grid and community characteristics** – Tool will leverage private and public datasets and quantify the Green Bank's impact in relation grid infrastructure and demographic and economic variables
- **Simple access to data tailored to stakeholder needs** – Unique Green Bank- and public-facing portals with customized levels of access to provide robust and transparent access to data while maintaining privacy

# Board of Directors

## Agenda Item #5a – Important Documentation
## Comprehensive Plan (FY 2017 and FY 2018)

# Comprehensive Plan
## Statutory Requirement

- **Sec. 16-245n** – …any amount in said fund may be used for expenditures that promote investment in clean energy in accordance with a comprehensive plan developed by it to foster the growth, development and commercialization of clean energy sources , related enterprises and stimulate demand for clean energy and deployment of clean energy sources that serve end use customers in the state…

- …(ii) support financing or other expenditures that promote investment in clean energy sources in accordance with a comprehensive plan developed by it to foster the growth, development, and commercialization of clean energy sources and related enterprises…

# Comprehensive Plan
## Key Components

- **Goals** – approved the four (4) goals at the last BOD meeting, including a new goal which focuses on energy burden and health and safety issues for LMI and distressed communities

- **Targets** – approved sector targets and overall organization (e.g., no less than 7,500 projects, $325 million of investment, and 70 MW)

- **Budget** – approved the operations budget (i.e., revenues and expenses) and the program budget (i.e., investments and incentives)

- **Document** – review and approve the contents of the Comprehensive Plan document, including Joint Committee inclusions

# Comprehensive Plan
# Joint Committee – EEB and CGB

1. **Governance** – voting members include Eric Brown (Chair), Diane Duva (Vice Chair), Amanda Fargo Johnson, John Harrity, and Norma Glover; non-voting members include Bryan Garcia, Bert Hunter, Ron Araujo, and Pat McDonnell

2. **Principle** – the EEB and CGB have a shared goal to implement state energy policy throughout all sectors and populations of Connecticut with continuous innovation towards greater leveraging of ratepayer funds and a uniformly positive customer experience.

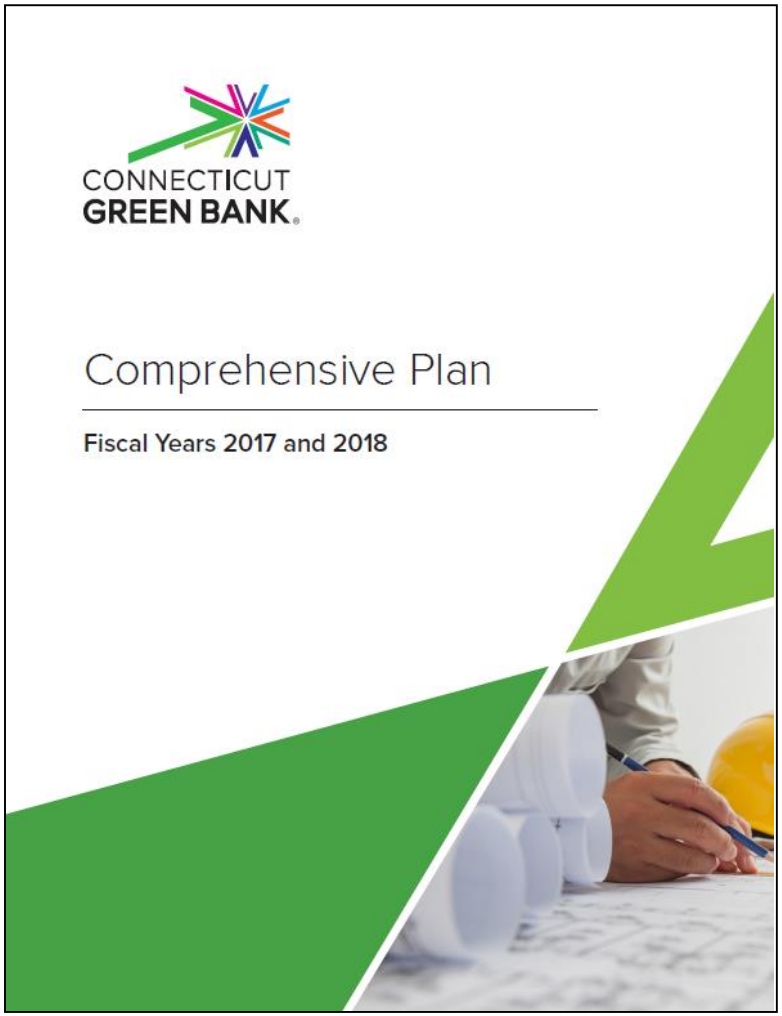
3. **Revised Goal** – ~~To reduce the reliance on grants, rebates, and other subsidies and move towards innovative low cost financing of clean energy deployment.~~ **To leverage limited public funds to attract multiples of private capital investment while returning and reinvesting public funds in clean energy deployment over time.**

4. **Joint Goals** – around five (5) areas, including single family, multifamily, government, small business, and medium and large business

5. **Evaluation Framework** – provided opportunity for the utilities and consultants to the EEB to provide feedback into the CGB's Evaluation Framework

# Comprehensive Plan Document Content

- **Executive Summary** – “big picture” on the role of the CT Green Bank
- **Organizational Overview** – vision, mission, goals, stakeholders, governance, organizational structure, and CAFR
- **Public Policy Overview** – key policies to support the implementation of clean energy deployment
- **Evaluation Framework** – new framework designed for green bond reporting
- **Financing** – from capitalization to Green Bank Network
- **Marketing** – from brand to Green Bank Playbook
- **Program Sectors** – Infrastructure, Residential, and Commercial, Industrial, and Institutional
- **Research and Development** – understand new market opportunities to become a catalyst
- **Budgets** – FY 2017 budget (approved)
- **Key Definitions** – to aid the reader



# Strategic Planning Discussion
# Offsite with the Board of Directors

1. **History** – facilitated offsite multiday strategic planning session at the Pocantico Conference Center of RBF in November of 2011

2. **Senior Team** – facilitated offsite one-day strategic planning session in Connecticut every other year (e.g., Lyman Orchards in 2013 and Shipman and Goodwin in 2015)

3. **Next Steps** – establish Strategic Planning Subcommittee to:
   A. Determine time and location
   B. Determine participants
   C. Determine format and agenda
   D. Determine deliverables

4. **Possible topics:**
   A. New Market Segments and opportunities
   B. Sustainable balance sheet

The New York Times

NEW YORK, WEDNESDAY, DECEMBER 31, 2014

Connecticut Green Bank sets the PACE for the Nation

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

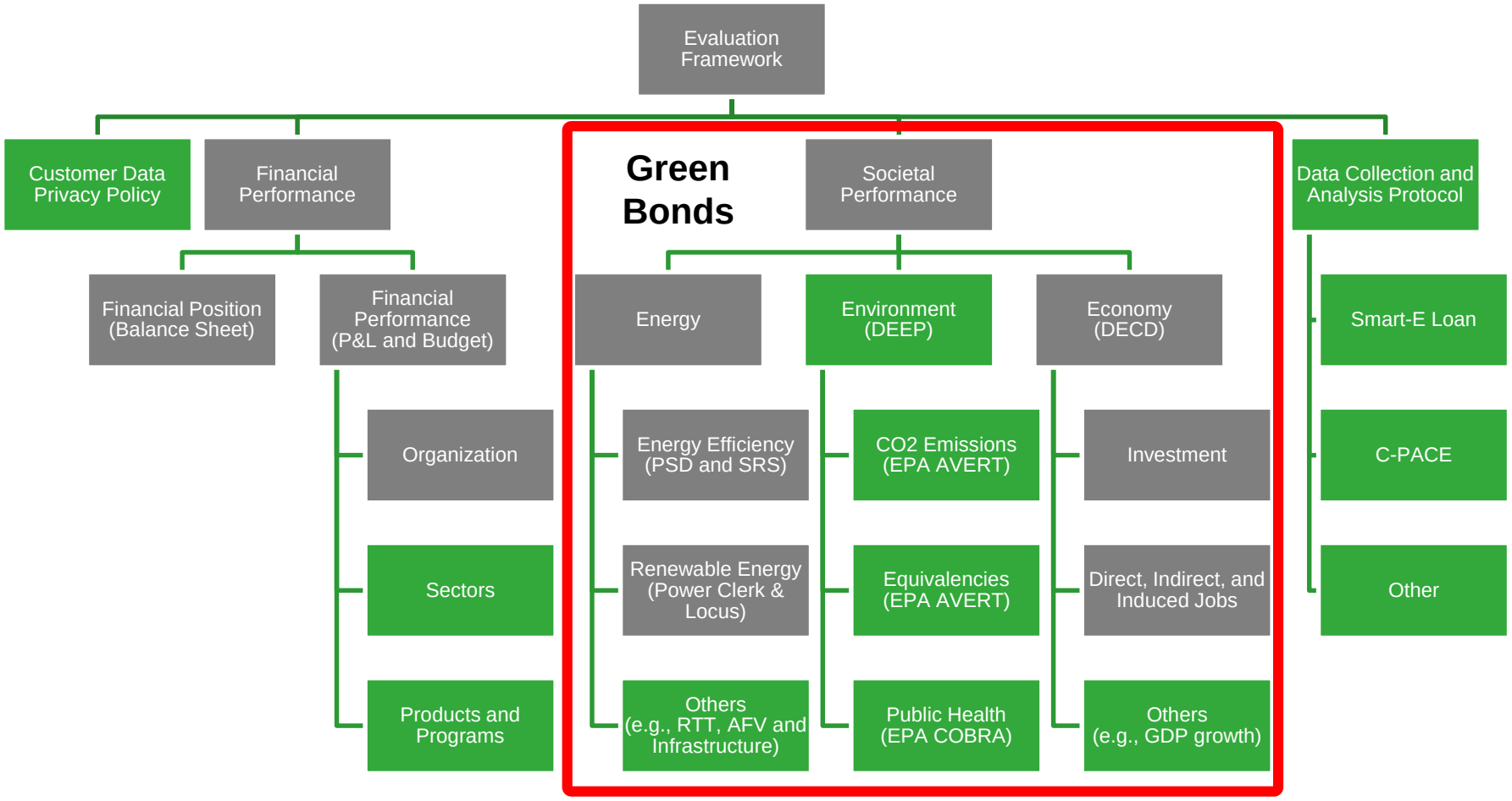
# Board of Directors

## Agenda Item #5a – Important Documentation Evaluation Framework

# Evaluation Framework Background

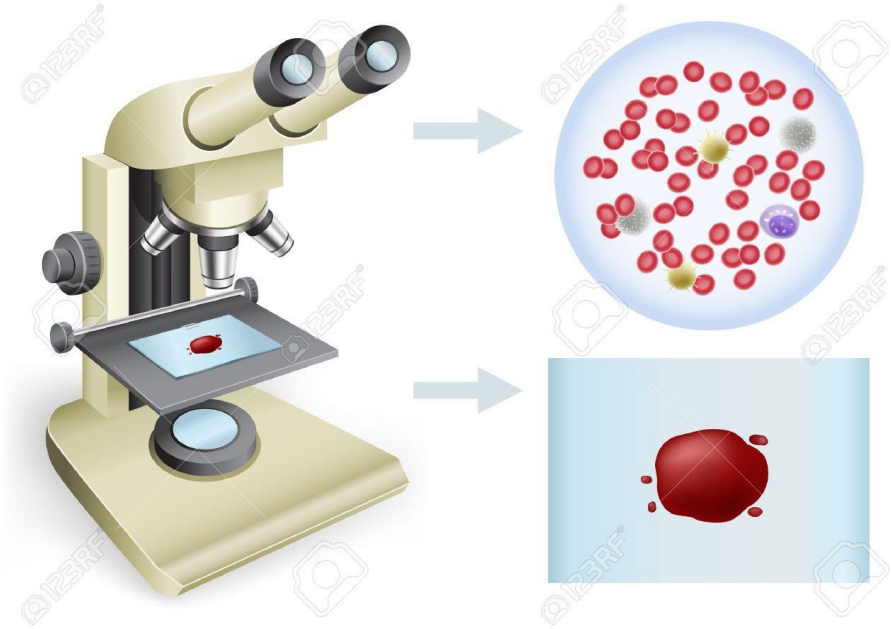
- **Qualified Contractors** – in a RFQ issued in August of 2013, the CGB qualified firms and individuals to assist it with program evaluation, measurement and verification – selected team of Opinion Dynamics and Dunsky Energy to assist us in developing an evaluation framework
- **Purpose** – the evaluation framework was developed to assist the CGB in presenting appropriate evaluation approaches to **estimate the impact and benefits** of its programs (i.e., CAFR – Non-Financial Statistics) and to **help it communicate them to key stakeholders**
- **Feedback** – received feedback from the CGB BOD, the utilities (i.e., Eversource Energy and Avangrid), consultants of the EEB through the Joint Committee of the CGB and EEB, and requested public comments through various webinars

# Evaluation Framework Architecture



# Evaluation Framework
## What it Isn't vs. What it Is

### What it Isn't



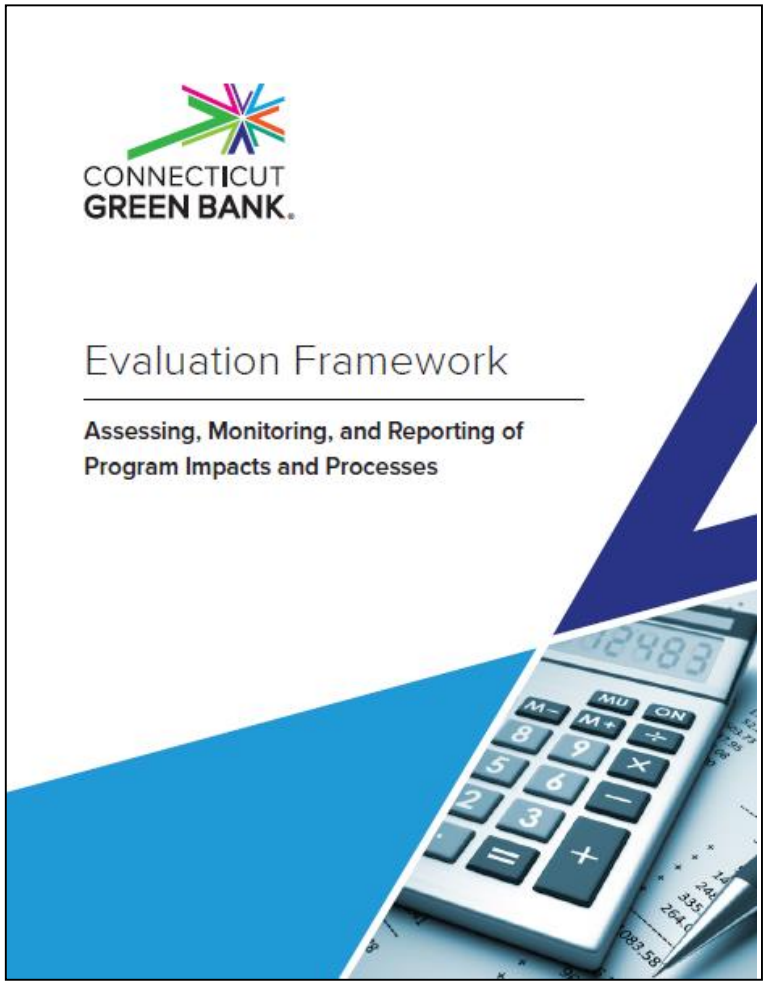
- Microscopic
- Goals
- Punitive
- Infrequent
- Incentive driven

### What it Is


- Macroscopic
- Stretch goals
- Management
- Continuous
- Mission driven

# Evaluation Framework Document Content

- **Contributors and Acknowledgements** – who helped put this together
- **Introduction** – objectives and framework elements
- **Program Logic Model** – three components, including Energize CT, green bank model, and societal impacts
- **Evaluation Plan Development** – from market baselines to evaluations
- **Net Impact Analysis and Cost Benefit Analysis** – what impact are we having with the resources and approaches that we are using
- **Appendices** – statutorily required reporting, indicators, data release forms, and sample cost-benefit analysis



# Evaluation Framework
## Statutorily Required Reporting

1. **Annual Report** – C.G.S. Section 1-123(a) deliver an annual report to the Governor, the Auditors of Public Accounts, Legislative Program Review and Investigations Committee. C.G.S. Section 245(f)(1) deliver an annual report to DEEP, Commerce Committee, and the E&T Committee, including activities undertaken in collaboration with EC&LMF.

2. **Quarterly Financial Cash Flow Reports** – C.G.S. Section 1-123(b) deliver quarterly report to OFA

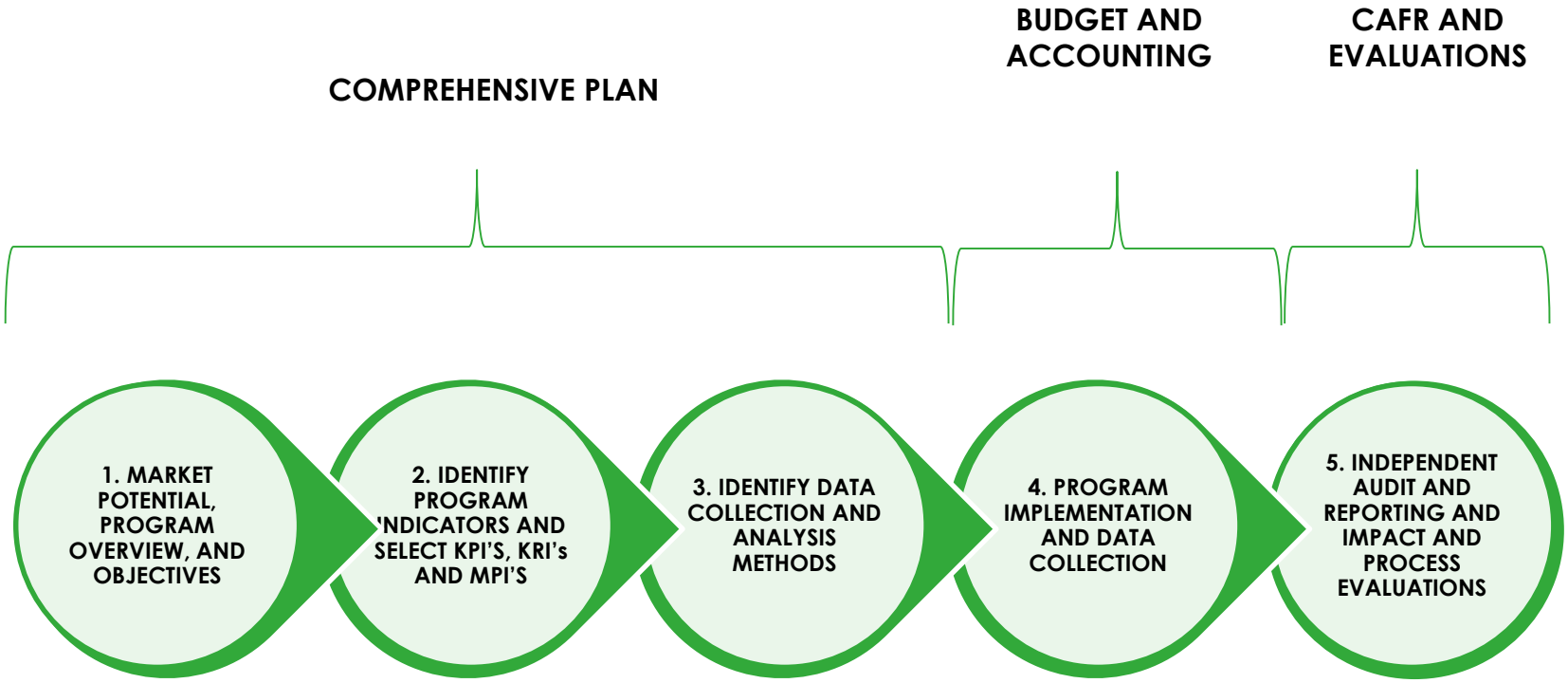
3. **Quarterly Personnel Status Reports** – C.G.S. Section 1-123(c) deliver quarterly report to OFA

4. **AD and CHP Report**– PA 15-152 report on AD program (i.e., January 1, 2018) to the Energy & Technology Committee, with copies to clerks of the Senate, OLR, and State Librarian

5. **REEEFA Report** – C.G.S. Section 16-245aa(d), annual report to E&T Committee

6. **RSIP Report** – C.G.S. Section 15-245ff, report every two years (i.e., January 1, 2017) to E&T Committee

# Evaluation Framework Development



# Board of Directors

## Agenda Item #6a – Commercial, Industrial, and Institutional Sector

## Energy on the Line

# Energy on the Line
## Overview

- Connecticut has some of the highest energy costs in the country and **over 10% of the states total energy consumption** is from the manufacturing sector.

- To assist manufacturers in maintaining a competitive position, and to help our stakeholders promote C-PACE to the sector, the Green Bank has developed ‘Energy on the Line’ with the goal of approving **at least 20 C-PACE projects** with manufacturers.

# Energy on the Line
## Overview

- Partnership with the **Department of Economic and Community Development** and the **Manufacturing Innovation Fund**

- Connecticut manufacturers who own their building and work with C-PACE to finance energy upgrades are eligible for **up to $50,000 for interest rate reduction**

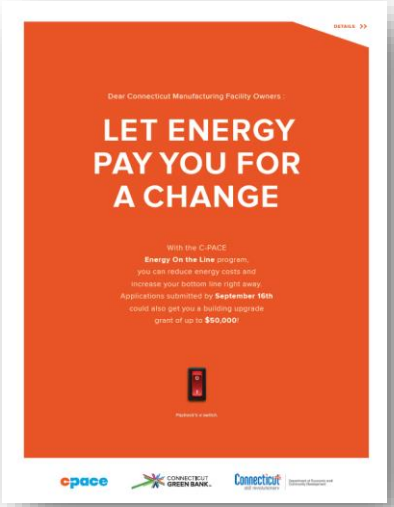
- **Technical help is available** for manufacturers to help them get started

# Energy on the Line
## Details

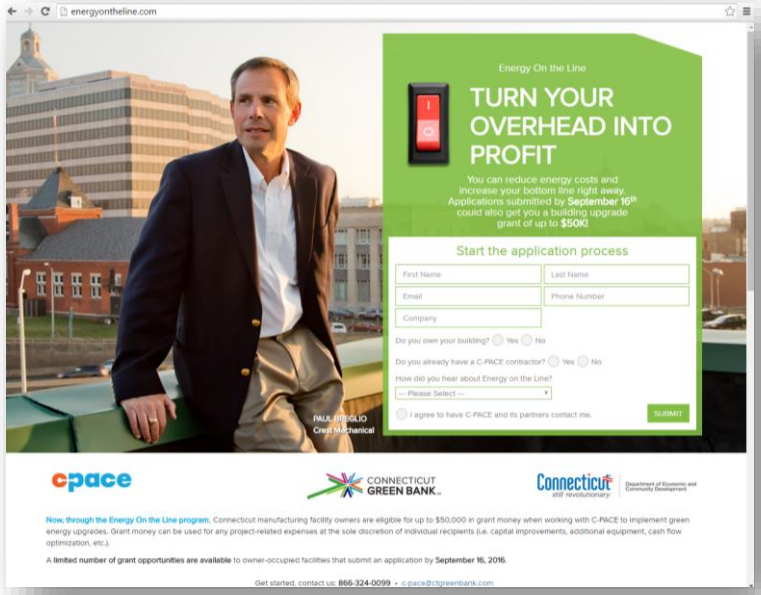
- Applications must be submitted by **September 16th**
- Funding is the **equivalent value of a 1% interest rate reduction** of the C-PACE loan. MIF will supply the first $40,000 of funding and, when applicable, CGB will provide up to $10,000 more.
- $800,000 in total DECD/MIF funding available and will be awarded on a **“first come, first served”** basis


# Energy on the Line
## Campaign Update

- PR, direct mail, digital ads, emails, sell sheets & website w/ lead intake form
- Technical assistance offered to building owners from relationship manager
- Outreach to NHMA, SMA and other trade groups
- Event support and attendance (NHMA dinner, panel at CBIA, Lesro press event, etc.)
- Coordination with more than 80 personnel, such as EDCs & Chambers of Commerce, including in East Hartford, Middletown, New Britain & New London
- Marketed through C-PACE contractors and by other C-PACE qualified capital providers




| New C-PACE Leads |
| --- |
| 46 |
| **Approved Project** |
| 1 |



# Energy on the Line
## Resolution

**RESOLVED**, the Green Bank Board of Directors (the "Board") authorizes grants to be made to eligible Connecticut manufacturers pursuant to the EotL Program as described in that certain memo to the Board dated July 15, 2016; and

**RESOLVED**, that the proper Green Bank officers are authorized and empowered to do all other acts and execute and deliver all other documents and instruments as they shall deem necessary and desirable to effect the above-mentioned legal instruments.

# Board of Directors

## Agenda Item #6b – Commercial, Industrial, and Institutional Sector
## C-PACE Disbursement Cap

# C-PACE Facility with Hannon Armstrong - Overview

- Since activation, Green Bank will have (through August) transferred ~$30 million worth of C-PACE transactions into HA C-PACE LLC ("HA C-PACE"), the financing partnership between Green Bank and Hannon Armstrong ("HA")
- **Benefits of HA C-PACE**
  - Stable funding source for project development
  - Private market/capital participation into CT energy projects
  - Savings/Net benefits delivered to local businesses, not-for-profits and multifamily properties
  - Reduced exposure of Green Bank capital:
    - Mostly **10%** Green Bank participation in HA C-PACE (9:1 leverage)

      vs. **20%** (or more) historical financing obligations (4:1 leverage)

- **Lessons Learned from HA C-PACE Ramp-Up**
  - Forecasting construction milestone/disbursement schedules
  - Administrative friction of simultaneously co-funding construction financing
  - The cost of private capital: "Negative Arbitrage"

# Construction Financing under HA C-PACE – Lessons Learned (1)

- From a **Financial Risk** perspective, there are two main variables in construction financing that are inter-related and that contribute towards successful project development:
  - Forecasting construction milestones and the associated capital/disbursements
  - Having flexible capital on hand to meet both (a.) disbursement schedules, and (b.) any changes to disbursement schedules caused by forecasting errors

- **Step 1: Solving for Flexible Capital**
  - **Challenge**: When HA C-PACE was first set up, staff envisioned simultaneous project co-funding during construction between Green Bank and HA in order to minimize Green Bank capital participation, but administrative friction prohibited efficient co-funding operations, jeopardizing project development
  - **Solution**: Creation of an account where HA pre-funds future construction disbursements, at Green Bank discretion, to be called on at appropriate construction milestones

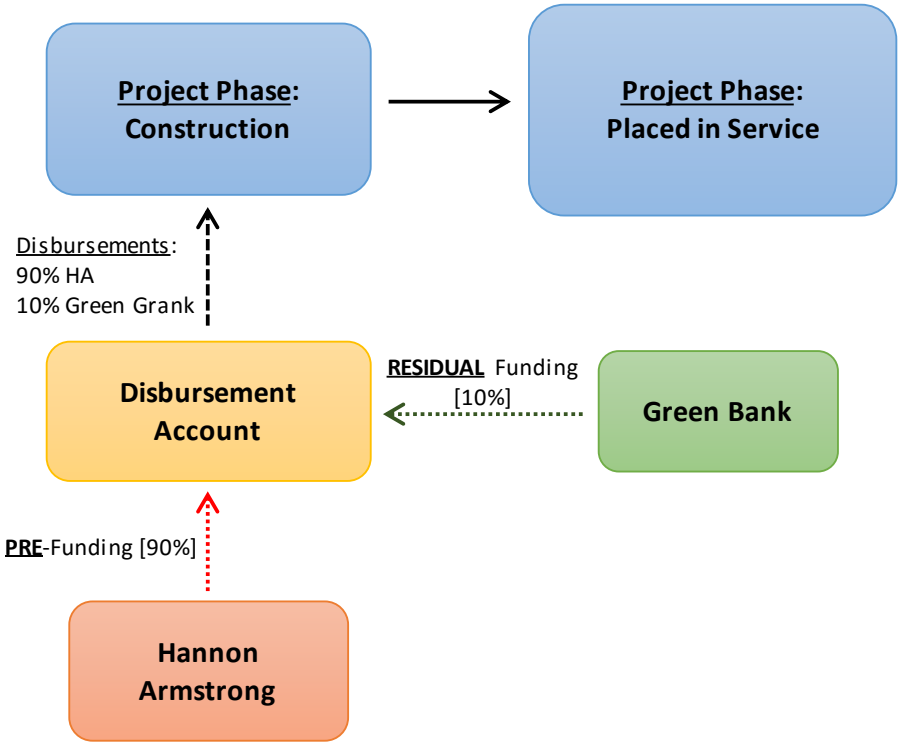
# Construction Financing under HA C-PACE – Lessons Learned (2)

- **Step 2: Solving for Forecasting Errors**
  - **Challenge**: In practice, staff has found it difficult to accurately forecast disbursements due to (i.) disbursement schedules that are less than fully synchronized with construction progress at the project level, (ii.) uncertainties around construction, (iii.) the timing of permits, (iv.) and other realities of construction financing
  - **Solution**: None. This is a reality of construction financing, and Green Bank as funding originator needs to ensure adequate funds at all times for disbursements

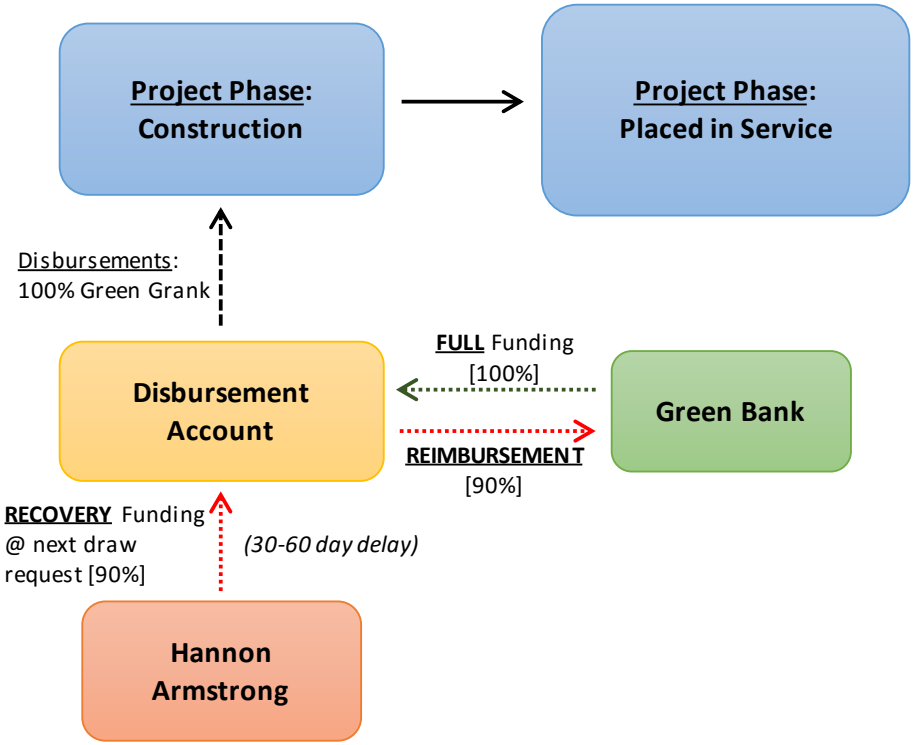
- **Step 3: Solving for Negative Arbitrage**
  - **Challenge**: HA charges interest on its funds as soon as they are deposited into the pre-funding account, regardless of when the actual capital disbursement occurs. Thus, given forecasting errors, pre-funding a construction account with HA's capital generates incremental funding cost to Green Bank (due to its subordinated lending position) because more project cash flows are diverted to HA as the senior lender
  - **Solution**: Have Green Bank fund 100% of each disbursement request, and then recover funds from HA – avoiding negative arbitrage altogether
  - **Risk Analysis**: Incremental risk is a receivable from HA (not project) but is ultimately backed by C-PACE lien

# Negative Arbitrage Solution – Diagrams

## Negative Arbitrage Scenario




## Solution Scenario



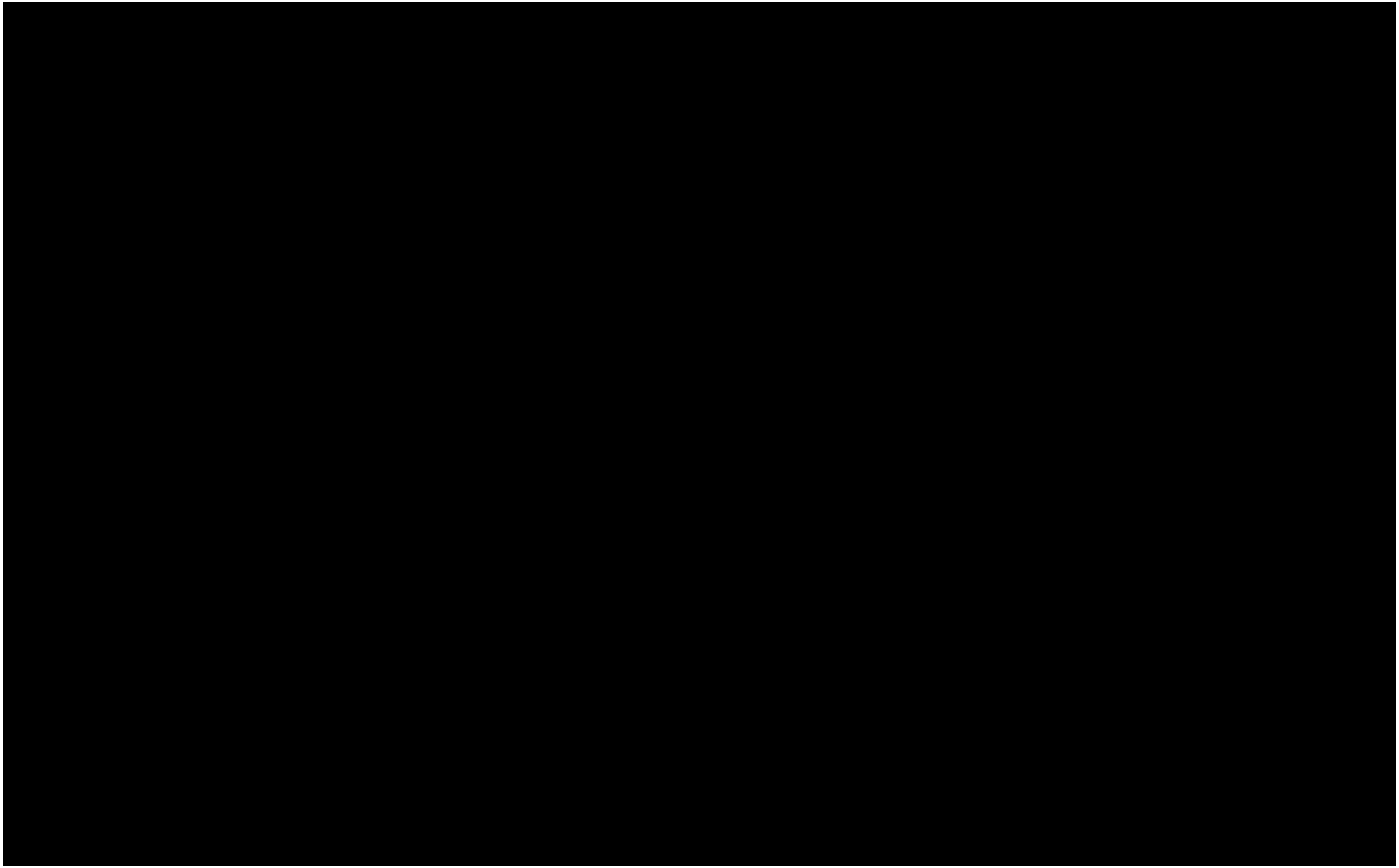
# HA C-PACE Working Capital Facility – Overview

- At its January 15, 2016 Meeting, the Board of Directors of the Green Bank (the "Board") authorized a $750,000 working capital facility (the "WC Facility") associated with HA C-PACE, which Green Bank can call upon as necessary to fund disbursements through the construction phase of C-PACE projects

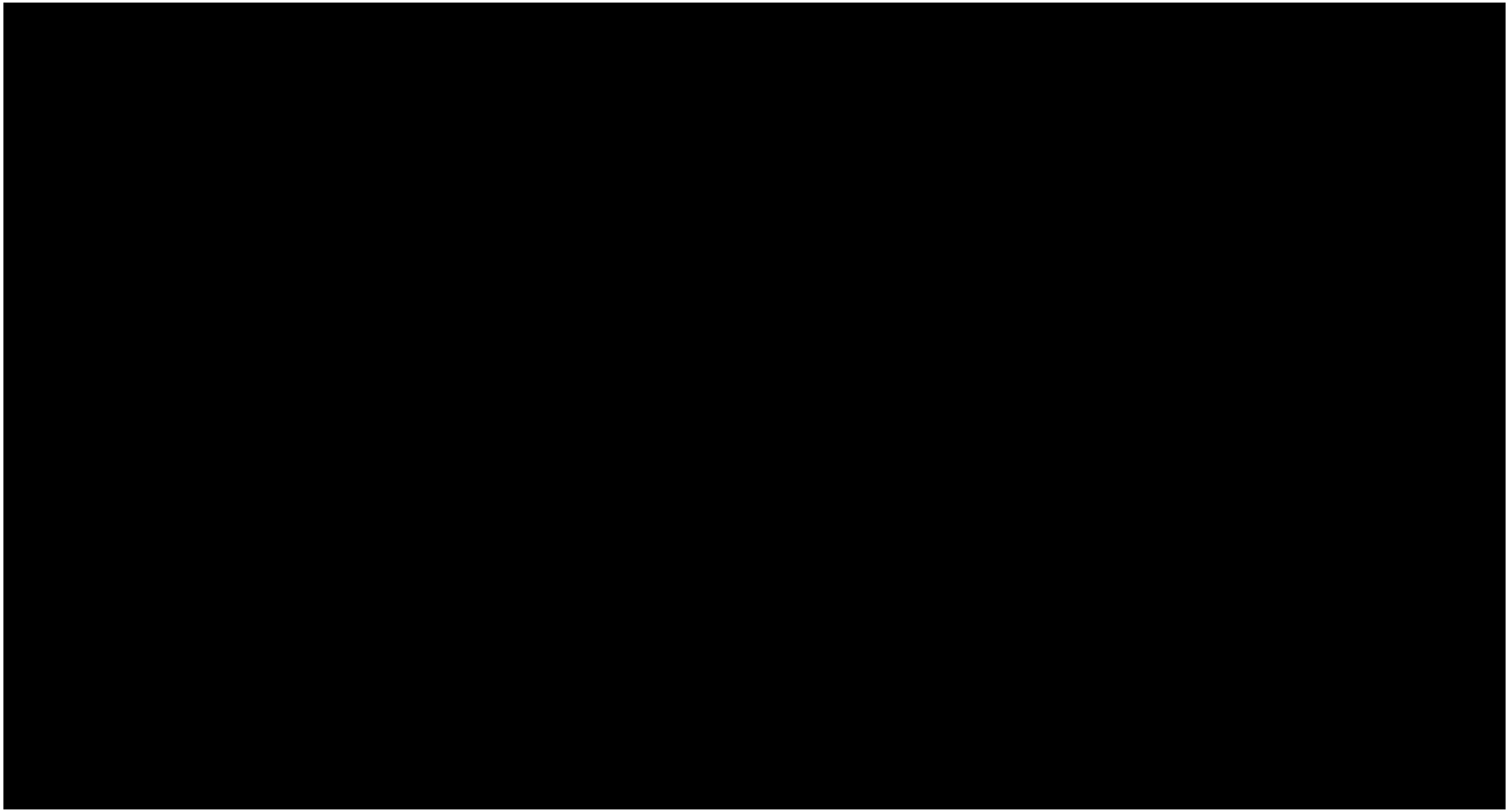
- At original approval of the WC Facility, and under the circumstances of construction co-funding between Green Bank and HA, $750,000 of Green Bank working capital could account for disbursements of up to $7.5 million (assuming a 90% HA contribution rate)

- Given that staff now believes it prudent for Green Bank to fund 100% of borrowing disbursement requests due to the administrative challenges of co-funding and the risk of negative arbitrage associated with HA pre-funding, Green Bank is limited by the cap on the WC Facility and could only have $750,000 of disbursements outstanding at any given time – which is inadequate for the C-PACE development pipeline.

# Green Bank WC Needs for HA C-PACE – Request



# Green Bank WC Facility Exposure – Risk Mitigants



# Board of Directors

## Agenda Item #7

## Sector Updates and Progress to Targets for FY 2016

# Program Targets Overview
# Year on Year

| | FY 2015 | | | FY 2016 | | |
|---|---|---|---|---|---|---|
| | **Target** | Actual | % Var | Target | Actual | % Var |
| Capital Deployed ($ MM) | $451.60 | $277.19 | (38.60) | $707.13 | $320.83 | (54.63) |
| Deployment (MW) | 55.5 | 66.5 | 19.80 | 119.5 | 73.7 | (38.33) |
| # Loans/Projects | 4,500 | 7,185 | 59.70 | 14,261 | 8,377 | (41.26) |
| Annual Saved (kMMBtu) | 1,429 | 229 | (84.00) | 1,038.0 | 306.2 | (70.50) |

# Statutory and Infrastructure Programs FY 2016 Targets and Progress

CONNECTICUT GREEN BANK

## *Installed Capacity (MW) and Annual Clean Energy Generated and Saved (MMBtu)*

| Program | Approved (but not yet Closed) | Q1 – Q4 Closed | FY 2016 Targets |
|---|---|---|---|
| CHP and AD | 9.5 / 700,542 | 1 / 44,949 | 9 / 273,186 |
| RSIP | 1.7 / 5,486 | 60.0 / 182,238 | 90 / 376,603 |
| **Total** | **31.2 / 706,028** | **61.0 / 227,188** | **99 / 649,789** |

## *Projects and Funding*

| Program | Approved (but not yet Closed) | Q1 – Q4 Closed | FY 2016 Targets | CGB Capital |
|---|---|---|---|---|
| Projects | 253 | 7,702 | 11,992 | |
| Capital Deployed | $ | $256,448,961 | $474,594,745 | $23,011,235 |

**REFERENCES**

Due to historically high average of approved projects moving to completion, RSIP projects are counted as closed upon approval.
Total Approved & Closed Projects = 100% RE.

# Residential Programs
# FY 2016 Targets and Progress

***Installed Capacity (MW) and Annual Clean Energy Generated and Saved (MMBtu)***

| Program | Approved (but not yet Closed) | Q1 – Q4 Closed | FY 2016 Targets |
|---|---|---|---|
| **Smart-E** | 0.2 / 885 | 0.9 / 5,869 | 1.8 / 20,491 |
| **CT Solar Lease (Residential)** | 0 / 0 | 3.8 / 12,475 | 3.4 / 14,845 |
| **Low Income** | 0 / 0 | 2.2 / 50,709 | 3 / 14,825 |
| **Multifamily** | 0.3 / 921 | 1.2 / 3,886 | 1.2 / 16,648 |
| **Total** | **0.5 / 1,806** | **8.1 / 72,939** | **9.4 / 66,809** |

***Projects and Funding***

| Program | Approved (but not yet Closed) | Q1 – Q4 Closed | FY 2016 Targets | CGB Capital |
|---|---|---|---|---|
| Projects | 98 | 1,036 | 2,162 | |
| Capital Deployed | $ 3,838,426 | $ 37,219,863 | $ 57,537,000 | $ 8,627,435 |

**REFERENCES**

Smart-E lender data is as of 05/31/2016.
Closed includes closed and completed.
Total Approved & Closed Projects = 8% EE, 83% RE, 4% Both and 5% unknown.

# Commercial and Industrial Programs FY 2016 Targets and Progress

CONNECTICUT GREEN BANK

***Installed Capacity (MW) and Annual Clean Energy Generated and Saved (MMBtu)***

| Program | Approved (but not yet Closed) | Q1 – Q4 Closed | FY 2016 Targets |
|---|---|---|---|
| **CT Solar Lease** | 0 / 0 | 2.9 / 9,604 | 0 / 0 |
| **C-PACE** | 0.8 / 8,452 | 3.1 / 44,774 | 9 / 160,000 |
| **Total** | **0.8 / 8,452** | **6 / 54,378** | **9 / 160,000** |

***Projects and Funding***

| Program | Approved (but not yet Closed) | Q1 – Q4 Closed | FY 2016 Targets | CGB Capital |
|---|---|---|---|---|
| Projects | 14 | 57 | 90 | |
| Capital Deployed | $ 5,556,562 | $ 35,977,353 | $ 53,000,000 | $11,583,806 |

**REFERENCES**

Closed includes closed and completed.

Total Approved & Closed Projects = 32% EE, 53% RE and 14% Both.

# Institutional Programs
# FY 2016 Targets and Progress

CONNECTICUT GREEN BANK

***Installed Capacity (MW) and Annual Clean Energy Generated and Saved (MMBtu)***

| Program | Approved (but not yet Closed) | Q1 – Q4 Closed | FY 2016 Targets |
|---|---|---|---|
| **CT Solar Lease (Institutional)** | 0 / 0 | 1.5 / 4,769 | 2 / 8,369 |
| **LBE – State** | 0 / 0 | 0 / 0 | 0 / 228,000 |
| **LBE - Municipal** | 0 / 0 | 0 / 0 | 0 / 56,250 |
| **Institutional Off-Credit ESA** | 0 / 0 | 0 / 0 | 0 / 28,750 |
| **Total** | **0 / 0** | **1.5 / 4,769** | **2 / 321,369** |

***Projects and Funding***

| Program | Approved (but not yet Closed) | Q1 – Q4 Closed | FY 2016 Targets | CGB Capital |
|---|---|---|---|---|
| Projects | 0 | 6 | 10 | |
| Capital Deployed | $ - | $ 4,248,157 | $ 6,000,000 | $ 1,104,521 |

**REFERENCES**

Closed includes closed and completed.
Total Approved & Closed Projects = 100% RE.

# Metrics and Data Transparency: Data Warehouse

- Current metrics are one size fit all
- All reporting is manual
- Its hard to join data from different systems and account for overlap between programs
- Creation of a Data Warehouse will allow us to create and track more data, enabling us to track program specific metrics.
- We will automate data collection, reporting, and dashboards

# Board of Directors

## Agenda Item #8

## Other Business

- Statutory and Infrastructure Sector
- Microgrid Project – Bridgeport (UPDATE)
- R-PACE Policy – White House (UPDATE)
- Green Bank Act 2016 (UPDATE)

# Bridgeport Microgrid Project Overview

- Install (3) 265kW natural gas-fired CHP units to support a microgrid installation for the City of Bridgeport:
  - Bridgeport Town Hall - Police Station - Senior/Community Center
  - ***UPDATE - City Council approved the second amendment to the ESA earlier this month – demonstrates support for the project***
- Selected by Green Bank staff pursuant to RFP under the CHP Pilot Program (Public Act 11-80, Section 103)
- Deployment Committee approved a $502,860 subordinate loan at 2% interest rate for 20-years (March 3, 2015)
- First Niagara Bank Senior Loan (Net): $3,838,635
- DEEP awarded a microgrid grant of $2,975,000 to the City of Bridgeport and the developers (Bridgeport Microgrid LLC)
  - ***UPDATE - DEEP Grant extended through July 2017***
- Approved by UI for Virtual Net Metering so additional municipal facilities can use the excess generation (cap of $379,680)

# UPDATE / Senior Loan Modification

- BoD (at 6/17/16 meeting) approved loan agreement modification – allows Green Bank to make multiple advances during the construction period, prior to COD, provided that

$$\frac{\textbf{Aggregate CGB Advances}}{\textbf{Total CGB Loan Facility}} \leq \frac{\textbf{Aggregate Sr Advances}}{\textbf{Total Sr Loan Facility}}$$

- REASON FOR UPDATE
  - Sr Lender (FNFG) requests flexibility to ensure enough funds to finish project in the event of cost overruns:
    - Additional 10% by FNFG during construction period ONLY

      (once the construction loan converts to term, the amount would not be subject to increase – only a refinance of the PBO)
    - FNFG wants flexibility to increase margin (up to 100bps)
    - Overall DSCR / Impact on CGB
      - As is: **1.63x**
      - With "max loan" + additional 100bps margin: **1.30x**
    - Closing anticipated within days

- Staff is reporting out to Board / Confirm we're OK

# Resolution Approved 6-17-16

**WHEREAS**, this proposed microgrid power generation system project (Project) meets the requirements of the statutorily mandated Combined Heat and Power (CHP) Pilot program set forth under Public Act 11-80, Section 103, which is administered by the Connecticut Green Bank (Green Bank);

**WHEREAS**, the Project was selected by Green Bank staff pursuant to a request for proposals under the statutorily mandated CHP Pilot program and approved by the Deployment Committee on March 3, 2016 (the "Original Approval"); and

**WHEREAS**, subsequent to the Original Approval, certain material changes were negotiated between the Project, the senior lender providing additional capital to the Project and Green Bank, namely:

Green Bank is able to make multiple advances during the construction period, i.e., prior to Commercial Operation Date, provided that the Project shall have received advances from the senior lender such that the ratio of the aggregate amount of such senior loan advances to the maximum principal amount permitted to be drawn from the senior lender equals or exceeds the ratio of the aggregate amount of Green Bank advances (including any advance then being requested) to the maximum principal amount of the Green Bank loan and provided further that no advance shall be made later than July 1, 2017.

The maturity date of the Green Bank loan will be 20 years from the earlier of: (a) the date that is twenty (20) years from the date on which the final advance of the Green Bank loan is made; (b) acceleration of maturity upon an event of default or other mandatory prepayments as set forth in the Subordinated Loan agreement; or (c) the date of the consummation and closing of any sale of the Project to a non-affiliated third party. Repayment commences the first month following the final advance with each of the 240 monthly payments being in the form of fully amortizing level payments of principal and interest (mortgage-style basis).

**NOW**, therefore be it:

**RESOLVED,** that the Board of Directors authorizes the President of the Green Bank and any other duly authorized officer of the Green Bank to execute and deliver a sub-debt loan in the amount of $502,860, to be funded from the CHP Pilot program budget, and with terms and conditions consistent with the memorandum and term sheet submitted to the Deployment Committee dated February 23, 2015 and as revised by the memorandum to the Board of Directors dated June 17, 2016; and

**RESOLVED**, that the proper the Green Bank officers are authorized and empowered to do all other acts and execute and deliver all other documents and instruments as they shall deem necessary and desirable to effect the above-mentioned legal instruments.

# Other Business
## R-PACE and Green Bank Act

- **R-PACE** – federal guidance issued through the White House (Kerry O'Neill)
- **Green Bank Act of 2016** – led by Congressman Van Hollen and Senator Murphy to create a National Green Bank (Reed Hundt)

# Board of Directors

## Agenda Item #9

## Adjourn

**CONNECTICUT GREEN BANK**
**Board of Directors**
Draft Minutes
Friday, June 17, 2016

A regular meeting of the Board of Directors of the **Connecticut Green Bank (the "Green Bank")** was held on June 17, 2016 at the office of the Connecticut Green Bank, 845 Brook Street, Rocky Hill, CT, in the Colonel Albert Pope board room.

1. **Call to Order:** Rob Klee, Vice Chairperson of the Green Bank and Commissioner of the Department of Energy and Environmental Protection ("DEEP"), called the meeting to order at 9:06 a.m. Board members participating: Bettina Bronisz, State Treasurer's Office, Norma Glover, Patricia Wrice, John Harrity, Reed Hundt (by phone), Tom Flynn (by phone), and Rob Klee, Vice Chairperson of the Green Bank and Commissioner of the Department of Energy and Environmental Protection ("DEEP").

   Members Absent: Matthew Ranelli, Kevin Walsh, Catherine Smith, & Mun Choi

   Staff Attending: Bert Hunter, , George Bellas, Brian Farnen, Nick Zuba, Matt Macunas, Mackey Dykes, Bryan Garcia, Kerry O'Neill (by phone), Dale Hedman (by phone), Rick Ross, Mariana Trief (by phone), Laura Fidao, Joe Buonannata, Alex Kovtunenko, Jeevan Ramoo, Regan Richmond, Geoff Willard, John D'Agostino, Craig Connolly, Bryant Ebright, Ryan Shelby, Francesco Biancardi, Kim Stevenson, and Mike Yu.

2. **Public Comments**

   There were no public comments

3. **Consent Agenda**

   **a. Approval of Meeting Minutes for April 22, 2016**

   Bryan Garcia explained there is a proposed edit on page 3 under item 6. Removal of Bettina Bronisz.

   **Resolution #1**

   Motion to approve the minutes of the Board of Directors Meeting for April 22, 2016.

   **b. Under $300,000 and No More in Aggregate than $1,000,000**

   Bryan Garcia explained the Sand Road Animal Hospital will be moved to the C-PACE transactions. It will be discussed later in the meeting.

Rob Klee had a question about Project 150 with a $10 grant. Brain Farnen explained why that $10 grant is within that project to meet a statutory requirement for Fuel Cell Energy to sell energy to the utility.

**Resolution #2**

**WHEREAS,** on January 18, 2013, the Connecticut Green Bank (the "Green Bank") Board of Directors (the "Board") authorized the Green Bank staff to evaluate and approve funding requests less than $300,000 which are pursuant to an established formal approval process requiring the signature of a Green Bank officer, consistent with the Green Bank Comprehensive Plan, approved within Green Bank's fiscal budget and in an aggregate amount not to exceed $500,000 from the date of the last Deployment Committee meeting, on July 18, 2014 the Board increase the aggregate not to exceed limit to $1,000,000 ("Staff Approval Policy for Projects Under $300,000"); and

**WHEREAS**, Green Bank staff seeks Board review and approval of the funding requests listed in the Memo to the Board dated June 17, 2016 which were approved by Green Bank staff since the last Deployment Committee meeting and which are consistent with the Staff Approval Policy for Projects Under $300,000;

**NOW**, therefore be it:

**RESOLVED,** that the Board approves the funding requests listed in the Memo to the Board dated June 17, 2016 which were approved by Green Bank staff since the last Deployment Committee meeting. The Board authorizes Green Bank staff to approve funding requests in accordance with the Staff Approval Policy for Projects Under $300,000 in an aggregate amount to exceed $1,000,000 from the date of this Board meeting until the next Deployment Committee meeting.

**c. Approval of Modification of Internal Control Procedure CGB 101* – Purchasing and Accounts Payable, and CGB 102 – Consulting and Advisory Services to reflect the hiring of Eric Shrago, Director of Operations, to replace Mackey Dykes, COO**

**Resolution #3**

**WHEREAS**, on May 25, 0216 the Connecticut Green Bank Audit, Compliance and Governance Committee recommended to the Board of Directors approval of the proposed revisions to Internal Control Procedures CGB101, CGB102 and CGB103.

**NOW**, therefor be it:

**RESOLVED**, that the Connecticut Green Bank Board of Directors (the "Board") hereby approves the proposed revisions to Internal Control Procedures CGB101, CGB102 and CGB103 outlined in the Memo dated June 10, 2016 (along with attachments) which was submitted to the Board.

**d. Approval of CT SL2 LLC audited financial statements issued May 11, 2016**

**Upon a motion requested by Rob Klee, so moved by John Harrity and seconded by Norma Glover the board unanimously approved the items in the Consent Agenda.**

**Resolution #4**

**WHEREAS**, on May 25, 2016 the Connecticut Green Bank Audit, Compliance and Governance Committee recommended to the Board of Directors approval of the CT SL2 LLC audited financial statements issued on May 11, 2016.

**NOW**, therefor be it:

**RESOLVED**, that the Green Bank Board of Directors hereby approves the proposed CT SL2 LLC audited financial statements issued May 11, 2016.

## 4. President's Update

Bryan Garcia provided an update and discussed the hiring of Eric Shrago. Commissioner Klee stated that he is a great addition to the Green Bank team and requested that his resume be distributed to the Board. Bryan Garcia introduced the summer interns. The interns are Bryant Ebright, Ryan Shelby, Kristie Beahm, Reagan Richmond, Geoff Willard, Jeevan Ramoo, and Francesco Biancardi.

Bryan Garcia stated that the Green Bank has partnered with the Environmental Defense Fund on C-PACE. He stated that the EDF Climate Corps Fellow are trying to understand the efficiency and clean energy opportunities for businesses while trying to get companies to take those measures through C-PACE financing. He stated that this is a pilot for the Green Bank.

## 5. Board of Directors Strategic Discussions

### a. Alternative Fuel Vehicles and Infrastructure

Bryan Garcia provided an overview on the "clean energy" definition and study of alternative fuel vehicles and infrastructure. Mike Yu provided a more in depth overview and introduced Nick from Atlas Public Policy. He advised that staff have been working with Nick for approximately 6 months on the study. Matt Macunas discussed the study and what Nick has brought to the study.

Nick provided an overview of the 50-page report from the study. He explained that there are two phases of the study. One being, which alternative fuels and vehicles are out there, and the other being, which ones might make the most sense for the Connecticut Green Bank to support strategically.

Nick stated that they started with comprehensive data collection to summarize what is happening in Connecticut. He explained that they had identified four criteria, near term feasibility,

performance, cost effectiveness, and local economic impact. He explained that transportation is the largest source of emissions, with 40% being light duty vehicles. He stated that 95% of the stock of vehicles in the state is light duty vehicles.

Reed Hundt questioned if 10% of the cars account for 30% of the miles driven. Nick stated that the data on how people travel is quite dated. He explained that the last survey done was in 2009. Nick stated that on a daily use basis,the majority of driver travel less than 50 miles per day.

Commissioner Klee stated that the study highlights the fact that there are certain cars that account for a disproportionate number of miles, and that perhaps these should be the focus for the Green Bank. Nick stated that if Connecticut is to have a chance of meeting its 2050 GHG reduction targets, it must looks towards addressing the larger transportation sector in addition to targeting heavy use vehicle sectors. He stated that if Connecticut is going to get to scale on emissions reductions, they need to try to electrify the broad spectrum and bring costs down across the board. He advised that, looking toward the long-term, the entire light duty transportation needs to be close to zero emissions, and that this comprehensive and broad market transformation should be a focus for the State.

John Harrity questioned if zero emissions counted as going to the source of electricity. Nick stated that no, it's from the tailpipe. He stated that the advantage of electrifying transportation is decarbonizing the electric grid.

Nick stated that by electrifying transportation they are getting extra electricity and hydrogen available for the long term for light duty. He stated that for medium and heavy duty vehicles the best option is renewable natural gas. He provided an overview of the environmental performance of passenger vehicles. He stated that the only way to get emission reductions in the long term is with electricity and hydrogen.

Nick stated that for cost effectiveness for passenger vehicles, electricity came to the top. He stated that for delivery trucks and tractor trailers, electricity and biodiesel were the best options. Bryan Garcia stated that the current cost of energy is about $0.20 per KWh. He stated that the levelized cost of energy (LCOE) for residential solar PV if you include the state and federal incentives the LCOE is approximately $0.12 KWh per customer. He stated that they are trying to get to $3.00 per watt, from $3.40/W where the LCOE is $0.16/kWh without any state or federal incentives. He stated that when you decarbonize the transportation sector with solar PV, you can get to a fuel price that's cheaper than both gasoline and electricity, hopefully without any state or federal incentives.

Nick discussed passenger vehicles and their lifetime cost and abatements. He stated that with incentives, some EV cars have a lower cost of ownership, as measured by the present value of costs over their lifetimes, than their equivalent but conventional fuel counterparts. In these cases, the higher purchase price of an EV relative to a conventional car is offset by lower lifetime fuel and maintenance costs. This present value calculations doesn't even factor in the benefit to society of reduced emissions, it's purely reflecting the dollars and cents to the driver. Pat Wrice stated that the purchase of some of those types of vehicles is very expensive. She asked if that was factored in. Nick stated that the cost of ownership is the cost of everything to own the car.

He stated that over time, people save money because the cost of fuel and maintenance is much lower.

John Harrity stated that Connecticut has a fair amount of people that are working on Green Energy. Nick stated that the local the local economic impact will happen if more people buy these types of cars in the state. He stated that electricity makes the most sense in passenger vehicles. He stated that Federal incentives also help the state. Commissioner Klee stated that for EVs, the fueling infrastructure is most likely at a person's home and that they don't have to build out a whole network.

Nick stated that the conclusion is combining stable fuel prices with the advances in technology, considering battery prices have declined by 70% that this all combines to be cost effective, while reducing emissions from the transportation sector. He stated that auto makers are investing billions into this technology. He stated that policy is already in place to support this at the state level.

Bryan Garcia discussed fuel prices. He stated that the future is decarbonizing the fuel source – the electric grid. Commissioner Klee questioned what the right way for the Connecticut Green Bank to participate in this space.

John Harrity questioned what the impact would be on greenhouse gases. Nick stated that, while electrification of transportation in and of itself wouldn't be enough for Connecticut to meet its GHG reduction targets, if you want to have a chance of meeting these targetson, electrification needs to be done (i.e., work on passenger and light duty vehicles), along with working on heavy duty. Bert Hunter stated that most of the heavy transport just passes through Connecticut. Nick stated that it will be hard for Connecticut to have a strong impact on heavy duty (since most of these vehicles pass through the state), but there is a lot of light duty.

Bettina Bronisz asked if the Let's Go CT transportation initiative plays into this at all. Commissioner Klee stated that that has more of a focus on transit. John Harrity questioned how frequently the passenger car stock turns over. Nick stated that it's the longest in history, something over 11 years. Bryan Garcia stated that the "clean energy" definition by which the Green Bank operates does not consider transit and questioned at some future point whether or not it should.

Nick stated that they are trying to mirror the success of the other programs of the Connecticut Green Bank. He stated that they are dividing the state up into regions and that the car dealers need to be engaged. He stated that they need to figure out a way to get them on board. Commissioner Klee stated that the state rebate program provides an incentive for dealers to move cars.

## 6. Committee Recommendations

### a. Budget and Operations Committee – Approval of FY 2017 Budget and Targets

Commissioner Klee discussed the fact that the Budget and Operations Committee had been very busy honing in on goals and targets. He stated that they are presenting a package to the Board and recommending approval.

Bryan Garcia discussed the Comprehensive Plan and the fact that they are setting realistic goals as opposed to stretch goals and targets, which was the practice in the past. He explained that the Comprehensive Plan focuses on innovation. He stated that the Green Bank has strong revenues for the upcoming fiscal year, with more REC sales and interest income and the fact that expenses are flat from year to year. He advised that this is a very extensive and comprehensive document. He stated that staff have provided it to the Joint Committee. He stated that the Green Bank staff is working with the DEEP team and that they want to make sure that everything is aligned.

Bryan Garcia stated that they are proposing some modifications to the goals and an addition of one goal. He stated that they want to make it clear to the market that one of the goals is to deploy private capital. They want to leverage limited public funds in an effort to attract more private capital. They also want to develop and implement strategies to bring down the cost of clean energy. The fourth goal (the one being added) is to support affordable and healthy buildings in low to moderate income and distressed communities. Commissioner Klee agreed that the fourth goal is a good addition.

Bryan Garcia stated that there are number of models that use grants or incentives. He stated that when the market becomes reliant on subsidies, then during bad years when subsidies aren't available the markets start to crash. He stated that the modification of one of the goals is a less threatening and constructive way of presenting it. He stated that the approach to supporting the market is buying down the installed costs and trying to calibrate the level of incentive that's necessary. Tom Flynn questioned if they are going to address further ideas for distressed communities. Bryan Garcia stated that this is the guiding principle.

Bryan Garcia discussed the proposed targets for the upcoming fiscal year. He stated that they are looking to support no less than 7500 projects requiring the investment of no less than $325 million. He stated that they are looking to deploy at least 70 MW's of clean energy. With respect to the statutory sector, Bryan Garcia noted that there is an expectation that one or more contractors will begin to transition away from the RSIP and towards using the Class I RPS as a mechanism to access incentives. And thus, the statutory sector has a range for its goals considering this uncertain, but welcomed future market scenario.

Kerry O'Neill discussed the shift from single family to low income. She stated that they no longer offer the Solar Lease product. She stated that they do have the SMART E Loan and Posigen. She stated that they allow them to impact more low to moderate income communities. She stated that all of the outreach is focused on the affordable space. Kerry O'Neill stated that they don't need to be credit enhancing those areas anymore. She stated that they can put their dollars elsewhere. Tom Flynn questioned what that

does to the risk profile. Kerry O'Neill stated that there are no new programs, the numbers are all preexisting programs.

John Harrity stated that they need to be doing community solar. Pat Wrice stated that Operation Fuel is statewide, but that they need to figure out how to get those technologies into the more rural towns. Bryan Garcia stated that the Green Bank is open to working with developers on shared solar and that there is an RFP open that DEEP administers.

Mackey Dykes discussed Commercial Industrial and Institutional sector. He stated that on the CPACE side they are hovering around where they have been in terms of goals. He stated that they should be able to generate enough projects to hit the goals set. He stated that the goals are a little bit higher than in the past. John Harrity questioned if the category included Lead by Example. Mackey Dykes stated that it has in the past, but he doesn't know how long it's going to take.

George Bellas discussed the investment side. He stated that the schedule will indicate the actual dollar amount of loans for various programs. He stated that in Connecticut Green Bank program loans staff expects to disperse $17.9 million. He stated that staff needs to make provisions for loan losses to set up a reserve in the event of losses. He stated that to date, there have been no losses or defaults. He stated that the new Solar Lease 3 Program will focus on the Commercial Lease Program. He stated that staff is projecting having to fund about $3.6 million. Bert Hunter stated that Finance has an RFP out for the Commercial Lease Program / Solar Lease 3 and that the numbers George Bellas was referring to should be perceived as a high water mark (maximum use of Green Bank capital) at this time. George Bellas stated that staff is looking to support some C-PACE programs. He stated that incentives include funds that will be covered through the SHREC Program.

Bryan Garcia discussed the incentive to get municipalities to use clean energy – the Clean Energy Communities Program. He stated that they are going to be closing this program out by the end of the year. He stated that they are going to transition to what the state is doing. He stated that Clean Energy Business Solutions is also being closed out and going to support economic development projects. He stated that they are trying to push all of those old transactions off of the books, going forward.

George Bellas discussed revenues. He stated that they have budgeted $39.9 million for FY17, which is an increase of about $3 million. He stated that there will be no SHREC sales in 2016. He stated that they are projecting a slight decrease in utility customer's assessment revenues. He stated that expenses are flat for 2017. He stated that the largest variance is a reduction in Program Development and Administration. Kerry O'Neill stated that there were one-time events that have been completed. George Bellas stated that there is an increase of about 57% for Consulting and Advisory, which is, in part, related to work concerning privacy concerns and data warehousing.

Norma Glover discussed CPACE and how they are going to handle the competition. Commissioner Klee stated that there are new entrants into the market. He stated that

they're building up a new set of contractors. He stated that it's a good investment because it keeps increasing the scale. He stated that they can invest in creating the next set of contractors. He stated that this is a key effort to focus on this year. Bryan Garcia discussed Research and Development. He stated that they will scale up investments. George Bellas stated that there will be no increases in staff. Bryan Garcia discussed the merit increase of up to 3% - versus 6% in the past – and the recent outreach from OPM to quasi-publics on COLA, merit, benefits, and budgets.

**Upon a motion made by Norma Glover, and seconded by John Harrity, Resolution 5 passed unanimously.**

**Resolution #5**

**WHEREAS**, on June 7th, 2016 the Connecticut Green Bank Budget and Operations Committee recommended that the Green Bank Board of Directors approve the Fiscal Year 2017 Budget and Targets; and

**WHEREAS**, on June 7th, 2016 the Connecticut Green Bank Budget and Operations Committee recommended that the Connecticut Green Bank Board of Directors authorize Connecticut Green Bank staff to extend the professional services agreements (PSAs) currently in place or adopt new PSAs with:

I. Archaeological & Historical Services, Inc.
II. The Cadmus Group, Inc.
III. Clean Power Research LLC
IV. Cortland Capital Markets Services, LLC
V. EnergySage, Inc.
VI. Lamont Financial Services Corporation
VII. Locus Energy, LLC
VIII. METIS Financial Network, Inc.
IX. New Ecology Inc.
X. Opinion Dynamics Corporation
XI. SmartPower, Inc.
XII. Sustainable Real Estate Solutions, Inc.
XIII. WegoWise, Inc.
XIV. Yale University

For fiscal year 2017 with the amounts of each PSA not to exceed the applicable approved budget line item.

**NOW**, therefor be it:

**RESOLVED**, that the Connecticut Green Bank Board of Directors hereby approves: (1) the FY 2017 Budget and Targets and, (2) the fourteen PSAs listed above, as both items were recommended by the Connecticut Green Bank Budget and Operations Committee.

**b. Audit, Compliance and Governance Committee – Approval of Audit RFP Process and Firm Selection**

George Bellas discussed the RFP for Professional Services. He stated that they are recommending Blum Shapiro through 2018. He stated that the Audit, Compliance, and Governance Committee was in agreement.

**Upon a motion made by Norma Glover, and seconded by Bettina Bronisz, Resolution 6 passed unanimously.**

**Resolution #6**

**WHEREAS**, on May 25, 2016 the Audit, Compliance and Governance Committee recommended to the Board of Directors approval of Blum Shapiro to perform professional audit services for the Connecticut Green Bank (Green Bank) for the fiscal years 2016, 2017 and 2018 and further instructed that staff seek additional clarification and pricing concessions from Blum Shapiro.

**NOW**, therefor be it:

**RESOLVED**, that the Green Bank Board of Directors hereby approves Blum Shapiro to perform professional audit services for the Green Bank for the fiscal years 2016, 2017 and 2018.

## 7. Staff Transaction Recommendations

### a. Residential Sector Programs Transaction Recommendations

#### i. CHIF LIME Loan

John D'Agostino discussed the Loan Program Reauthorization. He stated that to date they have closed 16 projects for $4.4 million. He stated that $1.4 million in projects has been submitted. He stated that they are adjusting the program terms to meet the market. He stated that they've seen a number of contractors in the market. They are trying to align the requirements that are currently in place with the demand. He stated that the expectation is to take the number of projects completed and double them.

**Upon a motion made by Norma Glover, and seconded by Bettina Bronisz, Resolution 7 passed unanimously.**

**Resolution #7**

**WHEREAS**, the Connecticut Green Bank (Green Bank) selected the Capital for Change (C4C) under Green Bank's competitive solicitation process for the Clean Energy Financial Innovation Program and subsequently entered into negotiations with Green Bank that led to the development of the C4C Low Income Multifamily Energy (LIME) Loan Program ("the Program");

**WHEREAS**, on March 7th, 2014, Green Bank's Deployment Committee approved funding for the LIME Loan program in an amount of not-to-exceed $1,000,000 in capital financing, and $300,000 for a Loan Loss Reserve (Credit Enhancements) through the use of repurposed ARRA-SEP program funds, or ratepayer funds, if necessary; and

**WHEREAS**, at a regular meeting of the Board of Directors ("Board") held on April 25, 2014, the Board approved the Program;

**WHEREAS**, C4C has developed a pipeline of potential projects for financing under the Program;

**NOW**, therefore be it:
**RESOLVED**, that the Board approves the extension of the not-to-exceed

$1,000,000 funding to capitalize and support the Program;

**RESOLVED**, that the $1,000,000 in funds advanced under the Program shall be supported by the previously approved $300,000 worth of Credit Enhancements, plus an additional $325,000 of Credit Enhancements from unused CT Solar Lease II ARRA- SEP funds for a total of $625,000 of Credit Enhancements;

**RESOLVED**, that the President of Green Bank; and any other duly authorized officer of Green Bank, is authorized to execute and deliver, any contract or other legal instrument necessary to effect the Program on such terms and conditions as are materially consistent with the memorandum submitted to the Green Bank Board on February 28th, 2014 and as modified by the June 10, 2016 memorandum to align the loan terms with market project demand for financing; and

**RESOLVED**, that the proper Green Bank officers are authorized and empowered to do all other acts and execute and deliver all other documents as they shall deem necessary and desirable to effect the above-mentioned legal instrument.

**b. Commercial and Industrial Sector Program Transaction Recommendations**

**i. Clean Energy Business Solutions Transaction – Conair**

Mackey Dykes discussed Conair and that this project has been in the works for over two years. He stated that they are requesting a $1 million Clean Energy Solutions Energy Grant. He stated that the Connecticut Green Bank's funding will be used to pay for a new chiller and new boilers, which will save over $4.5 million over the life of the measures. He stated that the work had already been done but that Conair had completed the overall renovation with the hopes of receiving this and other assistance from DECD. The CEBS funding is a grant, not a forgivable loan.

**Upon a motion made by Norma Glover, and seconded by Bettina Bronisz, Resolution 8 passed unanimously.**

**Resolution #8**

**RESOLVED,** that the President of the Green Bank and any other duly authorized officer of the Green Bank is authorized to execute and deliver a Clean Energy Business Solutions financial assistance award of $1,000,000, to Conair Corporation; and

**RESOLVED**, that the proper Green Bank officers are authorized and empowered to do all other acts and execute and deliver all other documents and instruments as they shall deem necessary and desirable to effect the above-mentioned legal instrument not later than three months from the date of this resolution.

### ii. C-PACE Transaction – Canaan

Mackey Dykes discussed the Canaan CPACE project. He stated that there are great financials and plenty of debt coverage,. He stated that it's an ideal CPACE project, a comprehensive project incorporating solar PV with energy efficiency measures, done by a trusted contractor partner.

**Upon a motion made by Pat Wrice, and seconded by Norma Glover, Resolution 9 passed unanimously.**

**Resolution #9**

**WHEREAS**, pursuant to Section 16a-40g of the Connecticut General Statutes, as amended, (the "Act"), the Connecticut Green Bank (the "Green Bank") is directed to, amongst other things, establish a commercial sustainable energy program for Connecticut, known as Commercial Property Assessed Clean Energy ("C-PACE");

**WHEREAS**, the Green Bank Board of Directors (the "Board") has approved a $40,000,000 C-PACE construction and term loan program;

**WHEREAS**, the Green Bank seeks to provide a **$425,527** construction and (potentially) term loan under the C-PACE program to David G. Sandefer & Cynthia L. Sandefer, the building owners of 136 Sand Rd., Canaan, Connecticut (the "Loan"), to finance the construction of specified clean energy measures in line with the State's Comprehensive Energy Strategy and the Green Bank's Strategic Plan; and

**WHEREAS**, the Green Bank may also provide a short-term unsecured loan (the "Feasibility Study Loan") from a portion of the Loan amount, to finance the feasibility study or energy audit required by the Act, and such Feasibility Study Loan would become part of the Loan and be repaid to the Green Bank upon the execution of the Loan documents.

**NOW**, therefore be it:

**RESOLVED**, that the President of the Green Bank and any duly authorized officer of the Green Bank is authorized to execute and deliver the Loan in an amount not to be greater than one hundred ten percent of the Loan amount with terms and conditions consistent with the memorandum submitted to the Board dated June 15, 2015, and as he or she shall deem to be in the interests of the Green Bank and the ratepayers no later than 120 days from the date of authorization by the Board;

**RESOLVED**, that before executing the Loan, the President of the Green Bank and any other duly authorized officer of the Green Bank shall receive confirmation that the C-PACE transaction meets the statutory obligations of the Act, including but not limited to the savings to investment ratio and lender consent requirements; and

**RESOLVED**, that the proper the Green Bank officers are authorized and empowered to do all other acts and execute and deliver all other documents and instruments as they shall deem necessary and desirable to effect the above-mentioned legal instruments.

### c. Statutory and Infrastructure Transaction Recommendations

#### i. District Heating Project* – Bridgeport

Bert Hunter discussed the District Heating Project. He explained that the Board had already approved $89,000 in a feasibility loan (which was also contributed to by several other initial stakeholders) that is fully drawn and $338,000in a pre-development loan and about $64,000 is outstanding presently. He noted that this loan is matched with $2 in investment by the developers for every $1 in loan from Green Bank. He noted that the project has made considerable progress during the past year and one half. He stated that the UI Fuel Cell will supply heat to the University of Bridgeport located nearby. He stated that much of the equipment is Denmark sourced material which allows the project to be eligible for support by the Danish export credit bank. Bettina Bronisz asked if waste energy will come back in at a later point. Bert Hunter stated that it will at a later stage but that with the fuel cell coming on line, it was a better match to get the University of Bridgeport portion of the loop going. He stated that it results in about 80% reduction in greenhouse gases, with no incremental fuel use since the idea is to recover waste heat, allowing users on the thermal loop to cease their use of fossil fuel (mostly natural gas) for heat energy. He stated that they're looking at an initial Private Activity Bond of about $9 million. He stated that the project will end up with about a $40 million Private Activity Bond once all phases are completed. He stated that this project should qualify for tax exempt issuance, meaning that the interest received by the investor would be tax exempt. He stated that if they do not pass the Reimbursement Resolution, there would be no

date to set for when costs could be reimbursed through the bonds. Brian Farnen stated that there is limited liability to the Connecticut Green Bank pursuant to the resolution and we will be acting as a conduit issuer. Bert Hunter stated that repayment is strictly from the revenue from contracts associated with the loop. He stated that staff will be working with legal counsel to ensure that the Connecticut Green Bank will be fully protected. He stated that the risk of the project is assumed by the bond holders.

**Upon a motion made by Norma Glover, and seconded by Bettina Bronisz, Resolution 10 passed unanimously.**

**Resolution #10**

**WHEREAS**, NuPower Thermal Bridgeport LLC, a Connecticut limited liability company (the "Company"), has requested that the Connecticut Green Bank (the "Issuer"), provide assistance in funding the costs of installing and constructing a district thermal loop in downtown Bridgeport, Connecticut, including all piping and other needed equipment, that will serve academic, municipal and commercial buildings through the delivery of hot and chilled water to these buildings (the "Project') through the issuance of tax-exempt debt in an amount up to $40,000,000 (the "Bonds"); and

**WHEREAS**, the Internal Revenue Service has promulgated regulations (the "Regulations") under the Internal Revenue Code of 1986, as amended (the "Code") that govern the allocation of the proceeds of tax-exempt debt issued to reimburse expenditures made for governmental purposes paid by a borrower of tax-exempt debt, prior to the issuance of such debt; and

**WHEREAS**, such Regulations set forth the circumstances under which allocations of proceeds to reimburse such expenditures shall be treated as an expenditure of proceeds of the Bonds on the date of such allocations; and

**WHEREAS**, generally, in order to satisfy the Regulations and be able to reimburse expenditures (except for certain de minimis expenditures and preliminary costs as defined in the Regulations) with the proceeds of tax-exempt debt, the Company and the Issuer must, among other things, declare not later than sixty (60) days after the date of any such expenditure, a reasonable official intent to so reimburse such expenditures with the proceeds of tax-exempt debt; and

**WHEREAS**, the Company has approved a resolution declaring its official intent to reimburse such expenditures with the proceeds of tax-exempt debt; and

**WHEREAS**, the purpose of this official intent resolution is to provide objective evidence that on the date of this declaration, the Issuer intends to reimburse prior expenditures paid by the Company for the Project, solely from the proceeds of such tax-exempt debt and otherwise without recourse to the Issuer.

**NOW THEREFORE**, be it resolved that:

1. The Issuer reasonably expects to reimburse expenditures made for governmental purposes in connection with the Project and paid by the Company (the "Expenditures").
2. The Issuer reasonably expects to make such reimbursements of Expenditures, solely from the proceeds of the Bonds and otherwise without recourse to the Issuer, within eighteen (18) months after the date of any such Expenditures or the date the Project is placed in service or abandoned, whichever is later, but in no event more than three (3) years after the Expenditures are paid. The maximum principal amount of the Bonds is not expected to exceed $40,000,000.
3. This resolution is the Issuer's declaration of official intent made pursuant to Section 1.150-2 of the Regulations.

**ii. Microgrid Project (Revision)* – Bridgeport**

Rick Ross discussed the Mircrogrid Project in Bridgeport. He stated that the Connecticut Green Bank had approved the loan for about $503,000 at 2% for twenty years. He stated that the developer is receiving a $3 million DEEP grant. He stated that staff is asking the Board to approve the borrower to draw on the loan prior to the commercial operation date ("COD") vs one draw following COD. The purpose would be to fund construction payments together with the developer receiving construction financing from the senior lender. The funds will be used for construction loan payables and funding of the $300,000 escrow account. After the grant by DEEP the loan from the senior lender would be $3.8 million.

Bert Hunter explained that as between Green Bank and senior lender, everything will be kept proportional to the amounts of the respective loan facilities. The advances are never going to get out of step with the senior lender in terms of proportionality. The maturity originally was to have been keyed off of the first advance, but it will now be keyed off of the final advance, with the same level payments structure as before.

Commissioner Klee stated that this is a development that has a key element with the City of Bridgeport. He questioned if they have confidence and assurances, because they want to be certain that the Green Bank dollars are going toward project, each step of the way.

John Harrity questioned why they are interested in this project if it doesn't have an impact on energy use. Bert Hunter stated that they are interested in it for the resiliency benefits and that it is part of the DEEP Program. Bryan Garcia stated that this project came through their CHP Pilot Program, which was a grant program required through legislation.

**Upon a motion made by Bettina B, and seconded by Pat Wrice, with an abstention by John Harrity, Resolution 11 passed.**

**Resolution #11**

**WHEREAS**, this proposed microgrid power generation system project (Project) meets the requirements of the statutorily mandated Combined Heat and Power (CHP) Pilot program set forth under Public Act 11-80, Section 103, which is administered by the Connecticut Green Bank (Green Bank);

**WHEREAS**, the Project was selected by Green Bank staff pursuant to a request for proposals under the statutorily mandated CHP Pilot program and approved by the Deployment Committee on March 3, 2016 (the "Original Approval"); and

**WHEREAS**, subsequent to the Original Approval, certain material changes were negotiated between the Project, the senior lender providing additional capital to the Project and Green Bank, namely:

1. Green Bank is able to make multiple advances during the construction period, i.e., prior to Commercial Operation Date, provided that the Project shall have received advances from the senior lender such that the ratio of the aggregate amount of such senior loan advances to the maximum principal amount permitted to be drawn from the senior lender equals or exceeds the ratio of the aggregate amount of Green Bank advances (including any advance then being requested) to the maximum principal amount of the Green Bank loan and provided further that no advance shall be made later than July 1, 2017.

2. The maturity date of the Green Bank loan will be 20 years from the earlier of: (a) the date that is twenty (20) years from the date on which the final advance of the Green Bank loan is made; (b) acceleration of maturity upon an event of default or other mandatory prepayments as set forth in the Subordinated Loan

agreement; or (c) the date of the consummation and closing of any sale of the Project to a non-affiliated third party. Repayment commences the first month following the final advance with each of the 240 monthly payments being in the form of fully amortizing level payments of principal and interest (mortgage-style basis).

**NOW**, therefore be it:

**RESOLVED,** that the Board of Directors authorizes the President of the Green Bank and any other duly authorized officer of the Green Bank to execute and deliver a sub-debt loan in the amount of $502,860, to be funded from the CHP Pilot program budget, and with terms and conditions consistent with the memorandum and term sheet submitted to the Deployment Committee dated February 23, 2015 and as revised by the memorandum to the Board of Directors dated June 17, 2016; and

**RESOLVED**, that the proper the Green Bank officers are authorized and empowered to do all other acts and execute and deliver all other documents and instruments as they shall deem necessary and desirable to effect the above-mentioned legal instruments.

### iii. NEHC Hydro Facility (Revision)* - Meriden

Marianna Trief discussed New England Hydropower. She stated that they are asking the Board for authorization to create a special purpose entity (SPE), fully controlled by the Connecticut Green Bank. Norma Glover questioned if they are making this because of the recent Legislation changes. Brian Farnen stated that this change in structure is pursuant to the recently enacted legislation and it is a lot cleaner than how we handled this in the past with Connecticut Innovations as a 1% owner of the (SPE). He stated that it's really a housekeeping matter to keep in line with the language of the Statute. Bettina Bronisz questioned how this special entity will guarantee backstopping of the SCRF. Bert Hunter stated that the Connecticut Green Bank will establish the reserve required by the SCRF. John Harrity questioned how many homes this project will power. Bert Hunter stated approximately 50 homes.

**Upon a motion made by Bettina B, and seconded by Pat Wrice, Resolution 12 passed.**

**Resolution #12**

**WHEREAS**, in accordance with (1) the statutory mandate of the Connecticut Green Bank ("Green Bank") to foster the growth, development, and deployment of clean energy sources that serve end-use customers in the State of Connecticut, (2) the State's Comprehensive Energy Strategy and (3) Green Bank's Comprehensive Plan for Fiscal Years 2015 and 2016 (the "Comprehensive Plan"), Green Bank continuously aims to drive private capital investment into clean energy projects;

**WHEREAS**, pursuant to the development of a small hydroelectric facility at the Hanover Pond Dam on the Quinnipiac River in Meriden ("Project"), on February 26, 2016 the Green Bank Board of Directors (the "Board") authorized:

i) construction financing in an amount not to exceed $3.1 million,

ii) a working capital guaranty in an amount not to exceed $300,000

to New England Hydropower Company ("NEHC"), the project developer, under the Green Bank's existing working capital facility partnership with Webster Bank; and,

iii) term financing based on the following

a. the issuance of New Clean Renewable Energy Bonds ("CREBs") in an amount not to exceed $3,100,000, and

b. securing the issuance of CREBs utilizing the Special Capital Reserve Fund ("SCRF") subject to further Board approval; and

**WHEREAS,** Green Bank staff recommends that the Board authorize the creation of a Special Purpose Entity that will be wholly owned by the Green Bank;

**WHEREAS**, Green Bank staff now recommends that the Board authorize an increase in the working capital guaranty afforded to NEHC in connection to the Project under the Green Bank's existing working capital facility partnership with Webster Bank; and

**WHEREAS**, Green Bank staff now recommends the Green Bank to issue a guaranty to a third party lender for construction finance for the Project instead of a loan by the Green Bank as originally contemplated by staff and authorized by the Board on February 26, 2016.

**NOW**, therefore be it:

**RESOLVED**, that the Green Bank may increase the amount of its working capital guaranty under the Green Bank's existing working capital facility partnership with Webster Bank, for draws made by NEHC solely in connection with this Project and in an amount not to exceed $600,000 and may issue a guaranty to a third party lender for construction finance for the Project as more completely described in a memorandum to the Board of Directors dated April 15, 2016 and as revised on April 20, 2016;

**RESOLVED**, that the proper Green Bank officers are authorized and empowered to do all other acts and execute and deliver all other documents and instruments as they shall deem necessary and desirable to effect the above-mentioned legal instruments.

## 8. Other Business

## 9. Adjourn

**Upon a motion made by Norma Glover, and seconded by Bettina Bronisz, the meeting was adjourned at 11:06 a.m.**

Respectfully Submitted,

_____

Rob Klee, Vice Chairperson

**CONNECTICUT GREEN BANK**
**Board of Directors**
Draft Minutes
Wednesday, July 6, 2016

A special meeting of the Board of Directors of the **Connecticut Green Bank (the "Green Bank")** was held on July 6, 2016 at the office of the Connecticut Green Bank, 845 Brook Street, Rocky Hill, CT, in the Colonel Albert Pope board room.

Staff Attending: Bert Hunter (by phone), Brian Farnen, Ben Healey (by phone), Bryan Garcia, and Mariana Trief (by phone).

Board Members: Rob Klee, Reed Hundt, Tom Flynn, Matthew Ranelli, Catherine Smith, Mun Choi and Bettina Bronisz

Others Attending: Michael Kerr



1. **Call to Order:** Commissioner Smith called the meeting to order at 4:33 p.m. Board members participating: Bettina Bronisz, State Treasurer's Office, Reed Hundt (by phone), Tom Flynn (by phone), and Rob Klee, Vice Chairperson of the Green Bank and Commissioner of the Department of Energy and Environmental Protection ("DEEP"), and Mun Choi. She turned the meeting to Bryan Garcia to lead the agenda.

   Members Absent: John Harrity, Patricia Wrice, Norma Glover, and Kevin Walsh

2. **Public Comments**

   There were no public comments

3. **Staff Transaction Revision Recommendation**

   a. **New England Hydropower (Hannover Pond Project)**

   Ben Healey discussed the 200KW facility in Meriden, CT. He gave an overview of the Hanover Pond Project and discussed the items brought to the board at the previous meeting. Ben explained that they have pushed closing with the lender (First Niagara Bank) to next week to get new approvals from the Board.

   Ben explained that they are coming to the board for new approvals due to an increase in cost. The reason for the increase is because the circuits on the originally planned interconnection for the project were being stressed, and that the interconnection needed to be moved a substantial distance to the west. Also the prevailing wage requirements associated with the federally subsidized bond financing were not accounted for in the original discussion. As a result of these and other miscellaneous factors, the total cost of the project was driven up by about a million dollars.

Reed Hundt asked about the wage requirements.

Ben Healey explained that the bonds – as a result of the Federal Government subsidy being received – have so-called "prevailing wage" requirements and that all electricians must get paid *x* and all laborers must get paid *y* per hour.

Ben Healey explained that they are coming to the board prior to construction and are asking the Board for an increase in the guaranty offered to First Niagara of $800,000. Additionally, staff is requesting up to $1.4 million in funding from the Green Bank balance sheet as a term commitment in year 21 the Green Bank balance sheet will begin to be repaid, thanks to an extension of the "base period" of the PPA with the City of Meriden (through year 30) in addition to an existing option to extend the PPA through year 40. This base period of the project has sufficient revenue to pay back the Green Bank.

Bettina Bronisz explained that she reviewed the cash flows and saw negative earnings in the first couple of years, but suggested that with a restructuring of the principal repayment profile, this would be an easy fix. Bert Hunter agreed and noted that staff is in the process of refining the principal repayment profile with Bank of America, the proposed buyer of the bonds.

Ben Healey discussed the risks to the Green Bank, which included the upfront costs, and the revenue risks. The risks are considered by staff to be well within reason. Ben Healey also discussed the benefits of hydro power to the board.

**Upon a motion called by, Commissioner Smith, seconded by Matthew Ranelli the board voted unanimously to pass resolution 1.**

**Resolution #1**

**WHEREAS**, in accordance with (1) the statutory mandate of the Connecticut Green Bank ("Green Bank") to foster the growth, development, and deployment of clean energy sources that serve end-use customers in the State of Connecticut, (2) the State's Comprehensive Energy Strategy and (3) Green Bank's Comprehensive Plan for Fiscal Years 2015 and 2016 (the "Comprehensive Plan"), Green Bank continuously aims to drive private capital investment into clean energy projects;

**WHEREAS**, pursuant to the development of a small hydroelectric facility at the Hanover Pond Dam on the Quinnipiac River in Meriden ("Project"), at its February 26 and April 22, 2016 meetings the Green Bank Board of Directors (the "Board") previously authorized:

1. i) a guaranty to a third party lender for construction financing in an amount not to exceed $3.1 million,
2. ii) a working capital guaranty in an amount not to exceed $600,000 to New England Hydropower Company ("NEHC"), the project developer, under the Green Bank's existing working capital facility partnership with Webster Bank; and,
3. iii) term financing based on the following prerequisites:
   a. issuing CREBs in an amount not to exceed $3,100,000; and,

b. securing the issuance utilizing the Special Capital Reserve Fund ("SCRF") subject to further Board approval; and

iv) the creation of a Special Purpose Entity that will be wholly owned by the Green Bank, to own, operate and manage the Project, as required by CREBs.

**WHEREAS**, Green Bank staff now recommends that the Board authorize (1) an increase to the Green Bank's construction finance guaranty in an amount not to exceed $3,900,000; (2) funding from the Green Bank's balance sheet in an amount not to exceed $1,400,000 in addition to the already approved term financing through the issuance of CREBs; and, (3) an extension of up to 24 months to the repayment schedule of NEHC's working capital guaranty under the Green Bank's existing working capital facility partnership with Webster Bank.

**NOW**, therefore be it:

**RESOLVED**, that the Green Bank is authorized to (1) increase the Green Bank's construction finance guaranty in an amount not to exceed $3,900,000; (2) provide funding from the Green Bank's balance sheet in an amount not to exceed $1,400,000 in addition to the already approved term financing through the issuance of CREBs; and, (3) issue an extension up to 24 months to the repayment schedule of NEHC's working capital guaranty under the Green Bank's existing working capital facility partnership with Webster Bank;

**RESOLVED**, that staff is directed to submit to the Board for approval all relevant requests in respect of the issuance of the CREBs, including any revisions to expected costs to complete the Project and matters related to securing the bonds with the SCRF; and

**RESOLVED**, that the proper Green Bank officers are authorized and empowered to do all other acts and execute and deliver all other documents and instruments as they shall deem necessary and desirable to effect the above-mentioned legal instruments.

## 4. Adjourn

Commissioner Smith adjourned the meeting at 4:55PM.

**Upon a motion made by Matthew Ranelli and seconded by Bettina Bronisz the board unanimously voted to adjourn the meeting.**

Respectfully Submitted,

_____

Catherine Smith, Chairperson

845 Brook Street, Rocky Hill, CT 06067
T 860.563.0015
ctgreenbank.com

CONNECTICUT GREEN BANK

# Memo

**To:** Board of Directors of the Connecticut Green Bank – Deployment Committee of the Connecticut Green Bank

**From:** Bryan Garcia (President and CEO)

**Date:** July 22, 2016

**Re:** Approval of Funding Requests below $300,000 – Update

---

At the July 18, 2014 Board of Directors (BOD) meeting of the Connecticut Green Bank ("Green Bank") it was resolved that the BOD approves the authorization of Green Bank staff to evaluate and approve funding requests less than $300,000 which are pursuant to an established formal approval process requiring the signature of a Green Bank officer, consistent with the Comprehensive Plan, approved within Green Bank's fiscal budget and in an aggregate amount not to exceed $1,000,000 from the date of the last Deployment Committee meeting. This memo provides an update on funding requests below $300,000 that were evaluated and approved. During this period, 3 projects were evaluated and approved for funding in an aggregate amount of approximately $208,000. If members of the board would be interested in the internal documentation of the review and approval process Green Bank staff and officers go through, then please request it.

---

| | |
|---|---|
| **Project Name:** | **St. John Episcopal Church – 734 Fairfield Ave** |
| **Amount:** | **$159,296** |
| **Comprehensive Plan:** | **CPACE** |

**Description**

The property at 734 Fairfield Ave is a non-profit Episcopal Church located in Bridgeport, CT (the "Property"). The Property is owner-occupied by The Society of St. John's Parish ("St. John's Episcopal Church") and was purchased by the current owner in 1872.

The proposed investment is a C-PACE transaction ("C-PACE Project") under which the Connecticut Green Bank ("Green Bank") would provide construction financing (at a per annum 5.0% interest rate) and a 15-year term loan commitment (at a per annum 5.5% interest rate), in the amount of **$159,296** to support the following **energy efficiency measures** in the Property: **new boilers, insulation, LED lighting and distribution fans**. The Property owner

is also pursuing financing through a Power Purchase Agreement ("PPA") from the **Green Bank's Solar Lease 2 Fund ("SL2")** for a **52.38 kW Rooftop Solar PV system** ("SL2 Project"). The PPA will be secured by a CPACE benefit assessment lien on the owner's property.

The **SIR** for the proposed C-PACE Project over the useful lifetime of measures is **1.03** and the SIR for the SL2 Project is 1.67. The SIR of the combined measures (energy efficiency financed through C-PACE and Solar PV financed through SL2) is 1.27. The average **DSCR** of the C-PACE Project is 1.77 and the DSCR of the combined C-PACE Project and SL2 project is 1.54. With the C-PACE Project the **LiTV for the property** will be **3.3%;** and, as there is no existing mortgage, the **LTV is also 3.3%**; both are well below the underwriting ceilings of 90% LTV and 35% LiTV respectively.

Staff has examined the financials of St. John's Episcopal Church and found the non-profit to be in good health with a positive EBITDA over the past two years of operations. Though positive, its EBITDA is modest, which is common for non-profit entities. St. John's Episcopal Church also holds a significant $1.3 million endowment. The savings generated from the energy efficiency measures and solar project are greater than the CPACE assessment and PPA payment thereby ensuring a DSCR greater than 1 throughout the term of the C-PACE Project and SL2 Project. From a financial perspective, given the DSCR greater than 1 over the financing term, long operating history of St. John's Episcopal Church, substantial endowment and positive EBITDA, staff has confidence the property owner will have sufficient cash flow to service the C-PACE Benefit Assessment and SL2 PPA Benefit Assessment.

The contractor for the energy efficiency measures will be JK Energy Solutions ("JKS") a leading provider based out of Watertown, CT that provides energy efficient facility upgrades. The contractor for the Solar PV will be Direct Energy Astrum Solar - a North American retailer founded in 1986 that provides energy and energy services.

**Taking all of these factors into account, staff recommends the C-PACE Project for approval, pursuant to the Project Approval Form for projects under $300,000**.

---

**Project Name:** **Deep River Historical Society, Deep River**

**Amount:** **$36,029**

**Comprehensive Plan:** **CPACE**

**Description**

The property at 245 Main Street consists of two buildings across 10.5 acres of land in Deep River, CT (the "Property"). The Property is owned by Deep River Historical Society, Incorporated ("DRHS"), a non-profit entity founded in 1938 that collects and preserves the history of the Town of Deep River.

The proposed investment is a C-PACE transaction under which the HA C-PACE LLC would provide construction financing in the amount of **$36,029,** at a per annum 5.0% interest rate, converting to a 10-year term loan post construction, at an interest rate of 5.0% per annum. The financing will support a variety of energy efficiency measures including HVAC, lighting, and building envelope measures. The Connecticut Green Bank (the "Green Bank"), as a

subordinated lender to HA C-PACE LLC, would fund 10% of the financing, amounting to $3,603. The remaining 90% would be funded by Hannon Armstrong. Notwithstanding the foregoing, the Green Bank may advance above its 10% portion for logistical ease, and any funding in excess of this 10% will be repaid by a subsequent senior advance.

The project's **SIR** over the useful life of measures is **2.93** and is expected to generate total gross savings of $134,319 over the effective useful life. With this C-PACE loan, the **LiTV for the property will be 4.6%.** There is no mortgage on the Property, so the LTV is 4.6% as well. Given the size and credit characteristics of the project, it falls within the **expedited underwriting** bucket established by HA C-PACE LLC.

Staff has examined the financials of the Borrower and found them to be in good health for a non-profit. Operating income was positive over the last two years.

There are various contractors for the project, which will be managed by DRHS.

**Taking all of these factors into account, staff recommends the project for approval, pursuant to the Project Approval Form**.

---

**Project Name:** **Snipsic Village, Ellington**

**Amount:** **$12,450**

**Comprehensive Plan:** **Multi Family**

**Description**

Snipsic Village is located on Main St. in Ellington, CT and consists of 8 tenant buildings. Snipsic Village is an existing 42 unit affordable housing complex owned by the Ellington Housing Authority. New units of affordable housing are being considered at that site.

The project anticipates planning for the renovation/substantial rehabilitation of the 42 existing units with improvements to heating and cooling systems, energy efficient appliance updates, investigation of solar opportunities and building envelope improvements, among other improvements. The project application also anticipates a Green Charrette for both the rehabilitation of the existing units and the design of the new units.

The loan request of $12,450 is to fund 75% of predevelopment costs of $16,600. These costs consist of New Ecology Inc.'s quotes for a "Rehabilitation Audit": $8,800 for the existing units; and $7,800 for a "Design Charrette" for both the existing and planned units.

| | | | | | |
|---|---|---|---|---|---|
| Total Amount: | $12,450 | Interest Rate: | 0% | Term: | 24 months |
| $/unit of CGB exposure: | | $296 (existing units only, as new units are speculative) | | | |

845 Brook Street, Rocky Hill, CT 06067
T 860.563.0015
ctgreenbank.com

CONNECTICUT GREEN BANK

# Memo

**To:** Board of Directors of the Connecticut Green Bank

**From:** Brian Farnen, CLO and General Counsel, Matt Ranelli, Chair of the Audit, Compliance and Governance Committee

**Date:** July 22, 2016

**Re:** Overview of Compliance Reporting and the Board of Directors and Committees for FY 2016

---

## Overview

This memo provides a summary report of the FY 2016 governance as it pertains to the Board of Directors and its Committees. For an overview of the governance process, please see the Bylaws of the Connecticut Green Bank.

This summary report also includes Statement of Financial Interest (SFI) filing requirements, report filings that are statutorily required by the Connecticut General Assembly for the Connecticut Green Bank, and review of governance documents (i.e., bylaws, operating procedures, etc.).

Pursuant to Section 16-245n of the General Statutes of Connecticut, the powers of the Connecticut Green Bank are vested in and exercised by the Board of Directors that is comprised by eleven voting and two non-voting members each with knowledge and expertise in matters related to the purpose of the organization (see Table 1).

**Table 1. Composition of the Board of Directors of the Connecticut Green Bank**

| Position | Name | Status | Voting |
|---|---|---|---|
| Commissioner of DECD (or designee) | Catherine Smith | Ex Officio | Yes |
| Commissioner of DEEP (or designee) | Rob Klee | Ex Officio | Yes |
| State Treasurer (or designee) | Bettina Ferguson | Ex Officio | Yes |
| Finance of Renewable Energy | Reed Hundt | Appointed | Yes |
| Finance of Renewable Energy | Kevin Walsh | Appointed | Yes |
| Labor Organization | John Harrity | Appointed | Yes |
| R&D or Manufacturing | Mun Choi | Appointed | Yes |
| Investment Fund Management | Norma Glover | Appointed | Yes |
| Environmental Organization | Matthew Ranelli | Appointed | Yes |
| Finance or Deployment | Tom Flynn | Appointed | Yes |
| Residential or Low Income | Pat Wrice | Appointed | Yes |
| President of the Green Bank | Bryan Garcia | Ex Officio | No |
| Board of Connecticut Innovations | (unfilled)[1] | Ex Officio | No |

[1] It should be noted that Catherine Smith and Mun Choi currently serve on the Connecticut Innovations Board of Directors.

**Board of Directors**
The Board of Directors of the Connecticut Green Bank is comprised of eleven (11) ex officio and appointed voting members, and two (2) ex officio non-voting members. A quorum for a meeting of the Board of Directors is six (6) voting members at each meeting. The leadership of the Board of Directors, includes:

- **Chair** – Catherine Smith, Commissioner of DECD (designated as the Chair of the Connecticut Green Bank by Governor Malloy)
- **Vice Chair** – Rob Klee, Commissioner of DEEP (voted in by his peers of the Connecticut Green Bank Board of Directors)
- **Secretary** – Matthew Ranelli, Partner at Shipman and Goodwin (voted in by his peers of the Connecticut Green Bank Board of Directors)
- **Staff Lead** – Bryan Garcia, President and CEO

For FY 2016, the Board of Directors of the Connecticut Green Bank met nine (9) times, including six (6) regularly scheduled meetings and three (3) special meetings (see Table 2).

**Table 2. Summary of Board of Directors Meetings for FY 2015**

| Date | Regular or Special Meeting | Attendees / % Attendance | # of Resolutions Approved[2] |
|---|---|---|---|
| July 17, 2015 | Regular | 7 / 78% | 7 |
| September 23, 2015 | Special | 7 / 70% | 1 |
| October 16, 2015 | Regular | 6 / 60% | 9 |
| December 18, 2015 | Regular | 9 / 82% | 6 |
| January 15, 2016 | Regular | 9 / 82% | 5 |
| February 26, 2016 | Special | 8 / 73% | 4 |
| March 3, 2016 | Special | 10 / 91% | 1 |
| April 22, 2016 | Regular | 9 / 82% | 5 |
| June 17, 2016 | Regular | 7 / 64% | 11 |
| **Total** | 3 Special Meetings<br>6 Regular Meetings<br>**9 Total Meetings** | **76%** | **49** |

Overall, the attendance for each meeting established a quorum – 6 of the 11 voting members present – in order to enable business decisions, and on average there were 8 of 11 members present at each meeting, of which 40% attended on average by phone.

For a link to the materials from the Board of Directors meetings that is publicly accessible – click here.

*Statement of Financial Interest*
It is required by state ethics laws that senior-level staff (i.e., Director level and above) and members of the Board of Directors annually file a Statement of Financial Interest (SFI). With respect to the 2016 SFI filing – required by May 2, 2016 – the Connecticut Office of State Ethics received the following from the Connecticut Green Bank (see Table 3):

[2] Excludes approval of meeting minutes.

**Table 3. Summary of State of Financial Interest Filings with the Office of State Ethics for FY 2015**

| | Number of SFIs Submitted | % Submitted on Time |
|---|---|---|
| Senior Staff | 10 | 100% |
| Board of Directors | 7 | 100% |

Of the SFIL filings by Senior Staff and the Board of Directors, 16 were filed online and 1 was submitted in writing. On June 23, 2016, the Connecticut Green Bank received a letter from Carol Carson, Executive Director of the Office of State Ethics congratulating us "for the timely submission of 100% of the 2015 Statements of Financial Interests," where 80% of state agencies, offices, commissions, and quasi-publics achieved 100% compliance.

---

## Audit, Compliance and Governance Committee

The Audit, Compliance and Governance Committee (ACG Committee) of the Connecticut Green Bank is comprised of three (3) ex officio and appointed voting members. A quorum for a meeting of the ACG Committee is two (2) voting members at each meeting. Note, that if there aren't enough voting members of the ACG Committee present at a meeting, then the Chair and/or Vice Chair of the Connecticut Green Bank can participate in the meeting to establish a quorum. The leadership of the ACG Committee, includes:

- **Chair** – Matthew Ranelli, Partner and Shipman and Goodwin (designated as the Chair by Catherine Smith)
- **Members**[3] – John Harrity and Pat Wrice (designated as a member of the Committee by Catherine Smith)
- **Staff Lead** – Brian Farnen, CLO and General Counsel

For FY 2016, the ACG Committee of the Connecticut Green Bank met two (2) times, both regularly scheduled meetings (see Table 4).

**Table 4. Summary of Audit, Compliance and Governance Committee Meetings for FY 2015**

| Date | Regular or Special Meeting | Attendees / % Attendance | # of Resolutions Approved |
|---|---|---|---|
| December 4, 2015 | Regular | 2 / 66% | 2 |
| May 25, 2016 | Regular | 3 / 100% | 3 |
| **Total** | 2 Regular Meetings<br>**2 Total Meetings** | **83%** | **5** |

Overall, the attendance for each meeting established a quorum – 2 of the 3 voting members present – in order to enable business decisions, of which 0% attended on average by phone.

For a link to the materials from the ACG Committee meetings that is publicly accessible – click here.

[3] Note – the Chair and/or Vice Chair of the Board of Directors of the Connecticut Green Bank can attend the Audit, Compliance, and Governance Committee meeting to establish a quorum

*Review of Governance Documents and Statutory Reporting*
With respect to annual review of governance documents and statutory reporting, the following applies:

- Annual review by the ACG Committee of the Governance Documents (i.e., Bylaws, Operating Procedures, and Statement of Purpose) completed on December 4, 2015.

- As a result of state auditor findings in FY 2014, we are tracking statutory responsibilities and reporting with a checklist attached hereto as Exhibit A.

---

## Budget and Operations Committee

The Budget & Operations Committee (B&O Committee) of the Connecticut Green Bank is comprised of three (3) ex officio and appointed voting members. A quorum for a meeting of the B&O Committee is two (2) voting members at each meeting. Note, that if there aren't enough voting members of the B&O Committee present at a meeting, then the Chair and/or Vice Chair of the Connecticut Green Bank can participate in the meeting to establish a quorum. The leadership of the B&O Committee, includes:

- **Chair** – Rob Klee, Commissioner of DEEP (designated as the Chair by Catherine Smith)

- **Members**[4] – Mun Choi and Norma Glover (designated as a member of the Committee by Catherine Smith)

- **Staff Lead** – Mackey Dykes, VP and COO

For FY 2016, the B&O Committee of the Connecticut Green Bank met three (3) times, all three (3) were regularly scheduled (see Table 5).

**Table 5. Summary of Budget and Operations Committee Meetings for FY 2015**

| Date | Regular or Special Meeting | Attendees / % Attendance | # of Resolutions Approved |
|---|---|---|---|
| February 5, 2016 | Regular | 2 / 66% | 1 |
| May 25, 2016 | Regular | 3/100% | 0 |
| June 7, 2016 | Regular | 2/66% | 1 |
| **Total** | 1 Special Meeting<br>3 Regular Meetings<br>**4 Total Meetings** | **77%** | **2** |

Overall, the attendance for each meeting established a quorum – 2 of the 3 voting members present – in order to enable business decisions, and on average there were 2 of 3 members present at each meeting, of which 30% attended on average by phone.

For a link to the materials from the B&O Committee meetings that is publicly accessible – click here.

---

[4] Note – the Chair and/or Vice Chair of the Board of Directors of the Connecticut Green Bank can attend the Audit, Compliance, and Governance Committee meeting to establish a quorum

## Deployment Committee

The Deployment Committee of the Connecticut Green Bank is comprised of four (4) ex officio and appointed voting members. A quorum for a meeting of the Deployment Committee is three (3) voting members at each meeting. Note, that if there aren't enough voting members of the Deployment Committee present at a meeting, then the Chair and/or Vice Chair of the Connecticut Green Bank can participate in the meeting to establish a quorum. The leadership of the Deployment Committee, includes:

- **Chair** – Reed Hundt, CEO of the Coalition for Green Capital (designated as the Chair by Catherine Smith)
- **Members**[5] – Bettina Ferguson (ex officio per bylaws), Matthew Ranelli[6], and Pat Wrice (designated as a member of the Committee by Catherine Smith)
- **Staff Lead** – Bryan Garcia, President and CEO, and Bert Hunter, EVP and CIO

For FY 2016, the Deployment Committee of the Connecticut Green Bank met five (5) times, including two (2) regularly scheduled meetings and three (3) special meeting (see Table 6).

**Table 6. Summary of Deployment Committee Meetings for FY 2015**

| Date | Regular or Special Meeting | Attendees / % Attendance | # of Resolutions Approved |
|---|---|---|---|
| July 14, 2015 | Special | 3 / 75% | 2 |
| August 17, 2015 | Special | 4 / 100% | 6 |
| September 22, 2015 | Regular | 3 / 75% | 5 |
| November 20, 2015 | Special | 4 / 100% | 1 |
| February 9, 2016 | Regular | 3 / 75% | 2 |
| **Total** | 3 Special Meetings<br>2 Regular Meetings<br>**5 Total Meetings** | **85%** | **16** |

Overall, the attendance for each meeting established a quorum – 3 of the 4 voting members present – in order to enable business decisions, and on average there were 3 of 4 members present at each meeting, of which 100% attended on average by phone.

For a link to the materials from the Deployment Committee meetings that is publicly accessible – click here.

---

## Joint Committee of the EEB and the CGB

Pursuant to Section 16-245m(d)(2) of the Connecticut General Statutes, there is hereby created a Joint Committee of the Energy Efficiency Board (EEB) and the Connecticut Green Bank. Per bylaws established and approved by the EEB and the Connecticut Green Bank, the Joint Committee is comprised of four (4) appointed and voting members, one (1) ex officio and voting member, and four (4) ex officio and non-voting members. A quorum for a meeting of the Joint Committee is three (3) voting members at each meeting. The leadership of the Joint Committee, includes:

[5] Tracey Babbidge designee for Rob Klee on 7/14/15 & Katie Dykes designee for Rob Klee 8/17/16
[6] Matthew Ranelli, Partner and Shipman and Goodwin for 11/20/15 & 2/9/16 only

- **Chair** – Eric Brown, Attorney with CBIA (voted in by his peers of the EEB and the Connecticut Green Bank)

- **Vice Chair** – Diane Duva, DEEP (voted in by her peers of the EEB and the Connecticut Green Bank)

- **Secretary** – Bryan Garcia, Connecticut Green Bank, and Craig Diamond, Connecticut Energy Efficiency Fund (voted in by their peers of the EEB and the Connecticut Green Bank)

- **Members**[7] – Bryan Garcia (non-voting), Norma Glover, Bert Hunter (non-voting), and John Harrity (designated as members of the Committee by Catherine Smith)

- **Staff Lead** – Bryan Garcia, President and CEO of the Connecticut Green Bank

For FY 2016, the Joint Committee of the EEB and the Connecticut Green Bank met five (5) times, including four (4) regularly scheduled meetings and one (1) special meeting (see Table 7).

**Table 7. Summary of Joint Committee Meetings for FY 2015**

| Date | Regular or Special Meeting | Attendees / % Attendance Voting | Non-voting (CGB) | # of Resolutions Approved |
|---|---|---|---|---|
| July 22, 2015 | Regular | 4 / 80% | 4 / 100% | - |
| September 8, 2015 | Special | 5 / 100% | 4 / 100% | 2 |
| October 28, 2015 | Regular | 5 / 100% | 3 / 75% | 1 |
| January 20, 2016 | Regular | 5 / 100% | 4 / 100% | - |
| April 20, 2016 | Regular | 2 / 40% | 4 / 100% | - |
| **Total** | 1 Special Meetings<br>4 Regular Meetings<br>**5 Total Meetings** | **84%** | **95%** | **3** |

Overall, the attendance for each meeting established a quorum – 3 of the 5 voting members present – in order to enable business decisions, and on average there were 4 of 5 members present at each meeting, of which <1% attended on average by phone.

For a link to the materials from the Joint Committee meetings that is publicly accessible – click here.

[7] Note – these members are representatives from the Connecticut Green Bank.

# EXHIBIT A

845 Brook Street, Rocky Hill, CT 06067
**T** 860.563.0015
**ctgreenbank.com**

CONNECTICUT GREEN BANK

| **Connecticut Green Bank** | **Statutory Reporting Requirement Checklist** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Report Coordinator: Matt Macunas** | | | | | | | | | | | | | |
| | | Date Filed with OFA: | | | | | | | | | | | |
| | | FY14 | | | | FY15 | | | | FY16 | | | |
| | Individual Responsible for Filing with OFA | 9/30/2013 | 12/31/2013 | 3/31/2014 | 6/30/2014 | 9/30/2014 | 12/31/2014 | 3/31/2015 | 6/30/2015 | 9/30/2015 | 12/31/2015 | 3/31/2016 | 6/30/2016 |
| Section 1-123 subsection( b ): Quarterly Financial Cash Flow Report. Such Report shall include, but not be limited to, for each fund and account of the agency: (1) The beginning fiscal year balance;(2) all funds expended and all revenue collected by the end of the quarter; and (3) total expenditures and revenues estimated at the end of the fiscal year. | G. Bellas | 03/14/14 | 03/14/14 | 04/21/15 | 04/21/15 | 06/16/16 | 06/16/16 | 06/16/16 | 0616/2016 | 05/31/16 | 05/31/16 | 05/31/16 | |
| Section 1-123 subsection ( c ): Quarterly Personnel Status Report. Such report shall include, but not be limited to: (1) The total number of employees by the end of the quarter. | C. Baisden | 06/17/14 | 06/17/14 | 06/17/14 | 08/05/14 | 10/02/14 | 01/12/15 | 04/12/15 | 07/09/15 | 10/09/15 | 01/08/16 | 03/31/16 | 07/05/16 |
| | | Date Filed with: | | | | | | | | | | | |
| | | FY14 | | | | FY15 | | | | FY16 | | | |
| | Individual Responsible for Filing of Complete Report | Governor | Auditors of Public Accounts | Legislative Program Review and Investigations Committee (2 copies) | | Governor | Auditors of Public Accounts | Legislative Program Review and Investigations Committee ( 2 copies) | | Governor | Auditors of Public Accounts | Legislative Program Review and Investigations Committee ( 2 copies) | |
| Section1 -123 subsection ( a ): Annual Report 245n(f)(1) The board shall issue annually a report to the Department of Energy and Environmental Protection reviewing the activities of the Connecticut Green Bank in detail and shall provide a copy of such report, in accordance with the provisions of section 11-4a, to the joint standing committees of the General Assembly having cognizance of matters relating to energy and commerce. The report shall include a description of the programs and activities undertaken during the reporting period jointly or in collaboration with the Energy Conservation and Load Management Funds established pursuant to section 16-245m. | M. Dykes | 12/30/2014 | 12/30/2014 | 12/30/2014 | 12/30/2014 | 12/31/2015 | 12/31/2015 | 12/31/2015 | 12/31/2015 | | | | |
| Section 16-245aa subsection (d): CGB shall report on the effectiveness of the Renewable Energy and Efficient Energy Finance program to the joint standing committee of the General Assembly having cognizance of matters relating to energy [REEFA UPDATE to E&T CLERK] | B. Garcia | January 1, 2013 | January 1, 2014 | January 1, 2015 | January 1, 2016 | | | | | | | | |
| | Date Filed: | 2/8/2013 | 1/15/2014 | 15-Mar-2015 | 12/23/2015 | | | | | | | | |
| Section 16-245ff report by January 1, 2017 and every two years thereafter to the Legislative Energy and Technology Committee on its progress toward deploying 300 MW of residential solar PV | | | | | | | | | | | | | |

845 Brook Street, Rocky Hill, CT 06067
T 860.563.0015
ctgreenbank.com

CONNECTICUT GREEN BANK

# Memo

**To:** Board of Directors of the Connecticut Green Bank

**From:** Brian Farnen, Loyola French, and Bryan T. Garcia

**Date:** July 22, 2016

**Re:** Overview of Requests for Approvals for Professional Services Agreements over $75,000 for FY 2016 per Operating Procedures

---

**Overview**

This memo provides a summary report of the requested approvals for those Professional Services Agreement ("PSA") with a not-to-exceed amount of over $75,000 in the 2016 fiscal year ("FY2016"). This approval process is outlined in Section IX (ii) of the Connecticut Green Bank Operating Procedures, as follows:

> "(ii) for such contracts requiring an expenditure by the Green Bank over seventy-five thousand dollars ($75,000) and up to and including one hundred fifty thousand dollars ($150,000) over a period of one (1) fiscal year, the President and the Chairperson must both approve the expenditure, and (iii) for such contracts requiring an expenditure by the Green Bank of over one hundred fifty thousand dollars ($150,000), such contract shall, whenever possible, be awarded on the basis of a process of competitive negotiation where proposals are solicited from at least three (3) qualified parties. To the extent permitted by any contract for administrative support and services between the Green Bank and Connecticut Innovations, Incorporated, professional services may also be provided by consultants and professionals selected by and under contract to Connecticut Innovations, Incorporated, subject to appropriate cost sharing. The provisions of Section 1-127 of the General Statutes shall apply to the engagement of auditors by the Green Bank".

Green Bank staff requested a total of fourteen PSAs, or amendments to existing PSAs, with not-to-exceed amounts over the $75,000 threshold for FY2016, for a total amount of $2,884,980. Approval for seven of the fourteen were requested, and subsequently granted, by Commissioner Smith (see Table 1), with the other seven gaining approval of the full Board of Directors, as either a one-time approval or as strategic selections for FY 2016 at the 6/19/15 BOD meeting (see Table 2). This number is consistent with that of FY 2015 when approval was sought for thirteen PSAs and/or amendments over $75,000, for a total amount of $3,730,050[1], with eight being approved by direct request of Commissioner Smith and approval for the

[1] This includes Cronin and Company PSA 5088, marketing consultant for Residential, and Commercial and Industrial programs, in the amount of $1,400,000.

remaining five being granted by the full Board. A breakdown of the agreements for FY2016 follows.

---

**Table 1. FY 2016 PSAs over $75,000 approved by Commissioner Smith**

| Date | Agreement | Division / Program | Amount |
|---|---|---|---|
| 9/3/2015 | CohnReznick PSA 5093 1st Amendment | Investment / Residential & C&I | $100,000 |
| 11/9/2015 | Navigant Consulting PSA 5186 | Corporate / EM&V | $80,000 |
| 1/7/2016 | Cronin & Company PSA 5088 | Corporate / Marketing | $400,000 |
| 1/7/2016 | Verse Group PSA 5159 1st Amendment | Corporate / Marketing | $575,000 |
| 1/7/2016 | Drink Caffeine PSA 5160 1st Amendment | Corporate / Marketing | $560,000 |
| 6/6/2016 | Cortland PSA 5007 3rd Amendment | Program C&I / CPACE | $163,360 |
| 6/28/2016 | Navigant PSA 5186 1st Amendment | Corporate /EM&V | $86,720 |

**Table 2. FY 2016 PSAs over $75,000 approved by Green Bank BOD**

| Date | Agreement | Division / Program | Amount |
|---|---|---|---|
| 7/8/2015 | METIS PSA 5028 1st Amendment | Program / Residential Solar | $375,000 |
| 7/10/2015 | Clean Power Research PSA 5071 2nd Amendment | Program / Residential Solar | $780,400 |
| 7/10/2015 | Locus Energy PSA 5072 1st Amendment | Program / Residential Solar | $634,500 |
| 7/13/2015 | SmartPower PSA 5083 1st Amendment | Corporate / Marketing | $515,000 |
| 7/14/2015 | New Ecology PSA 5157 | Program/ Residential MF | $280,000 |
| 12/22/2015 | SmartPower PSA 5083 2nd Amendment | Corporate / Marketing | $760,000 |
| 3/22/2016 | Sustainable R. E. Solutions PSA 5206 | Program / C&I - CPACE | $465,312 |

## U.S. Department of Energy SunShot Initiative Rooftop Solar Challenge

The U.S. Department of Energy SunShot Initiative Rooftop Solar Challenge incentivizes regional awardee teams to make it easier and more affordable for Americans to go solar. By streamlining permit processes, updating planning and zoning codes, improving standards for connecting solar power to the electric grid, and increasing access to financing, teams will clear a path for rapid expansion of solar energy and serve as models for other communities across the nation. The Rooftop Solar Challenge is part of the SunShot Initiative, which strives to make solar energy fully cost-competitive with other forms of energy by the end of the decade.

In 2012 the Connecticut Green Bank was awarded $482,000 through Rooftop Solar Challenge I, to lead the Sun Rise New England – Open for Business project team in identifying solar PV "soft cost" reduction opportunities in Connecticut. In 2013 the Green Bank joined the New England Solar Soft Cost Reduction Partnership, led by the Clean Energy States Alliance, under Rooftop Solar Challenge II to further implement tools and strategies for reducing solar soft costs in Connecticut. The Green Bank received $364,000 in funding under this award.

Over the past four years the Green Bank has undertaken various initiatives to achieve the goals of the SunShot Initiative, including:

- Publication of a Final Project Report for Rooftop Solar Challenge Round I
- Development and publication of the CT Rooftop Solar PV Permitting Guide which includes numerous tools and strategies for municipal permitting and planning and zoning
- Partnerships with the CT Office of the State Building Inspector, Connecticut Building Officials Association, Solar Connecticut, and CT's utility companies
- Passage of a local solar PV permitting law through Public Act 15-194
- Solar PV training for over 400 municipal code officials and 750 fire officials
- Individual assistance to municipalities to improve processes and regulations that impact solar PV
- Partnership with Yale University on the Municipal Solar Score Cards – a statewide ranking of municipal efforts to encourage solar PV deployment through community engagement and streamlined permitting procedures.

**For more information on the resources and tools developed by the Connecticut Green Bank under the SunShot Initiative Rooftop Solar Challenge visit: www.energizect.com/sunrisene.**

**To see the full CT Municipal Solar Scorecards visit: www.ctsolarscoreboard.com.**

For more information on the SunShot Initiative Rooftop Solar Challenge visit: http://energy.gov/eere/sunshot/rooftop-solar-challenge.

## U.S. Department of Energy SunShot Prize: Race to 7 Day Solar

The U.S. Department of Energy SunShot Prize Race to 7 Day Solar aims to motivate local governments, communities, solar companies and electric utilities to collaborate towards improving the "going solar" experience from permit to plug-in for all Americans. This competition offers a total of $4.5 million in cash awards to the teams that are the most successful in reducing permit to plug-in times for small PV systems (≤100 kW).

In Connecticut, it can take several months to complete a single residential solar PV installation due to inefficient processes and uncoordinated administrative requirements for permitting, inspecting and interconnecting solar PV. In August 2015 a Green Bank led team of installers, municipalities and the state's investor-owned utilities were accepted into the SunShot Prize competition to speed up the time it takes to complete small-scale solar projects in the state. The Connecticut SunShot Prize team is working to reduce the total time taken to complete solar PV projects to a target of 7 days.

Five teams from across the country were accepted into the competition, which runs from September 22, 2015 to March 17, 2017. The Connecticut team was one of only three participants to meet all competition milestones thus far, **receiving $100,000 in awards and the title of "Change Prize Champion."** Connecticut is now in the running for a $3 million grand prize, or a $1 million second place prize in the competition.

The Connecticut team is working to reduce the amount of time taken to complete solar PV projects by collaborating with all stakeholder groups to achieve the following improvements:

- Updated utility Interconnection Guidelines that remove unnecessary requirements for interconnection approval
- Modernized utility practices for interconnection applications
- Expanded use of online permitting across partner municipalities
- Streamlined business practices and greater operating efficiency for solar contractors

**For information on the solar PV installation process and contributing factors to project timelines, watch this short video produced by the Green Bank:**
**https://www.youtube.com/watch?v=_2zwVc_pQgg**

For more information on the SunShot Prize Race to 7 Day Solar visit:
http://energy.gov/eere/sunshot/sunshot-prize-race-7-day-solar

# Connecticut Green Bank

## Kevala wireframes - Version 1.1 (Color)

## Board Mailing
## July 2016

CONNECTICUT GREEN BANK powered by kevala+

find a geographic area

export help

terrain satellite

programs

substations

## programs

**Commercial, Industrial & Institutional**

| | |
|---|---|
| Number of projects | xx |
| Installed Capacity (MW) | xx,xxx |
| Clean energy produced (MWh) | xxx |
| Energy Generated/Saved (MMBtu) | xx |
| Total Green Bank Investment ($) | xx,xxx |

- C-PACE
- Commercial CT Solar Lease

| | |
|---|---|
| Installed Capacity (MW) | xx,xxx |
| Clean energy produced | xxx |
| Energy Generated/Saved | xx |
| Subsidies ($) | xx,xxx |
| Credit enhancement ($) | xx,xxx |
| Loans or Leases ($) | xxx,xxx |
| Total Green Bank | xx,xxx |
| Private capital ($) | xxx,xxx |

**Residential**

- CT Solar Loan
- Smart-E Loan
- Resi CT Solar Lease
- Multifamily

...

**Statutory & Infrastructure**

...

CONNECTICUT GREEN BANK powered by **kevala+**

find a geographic area

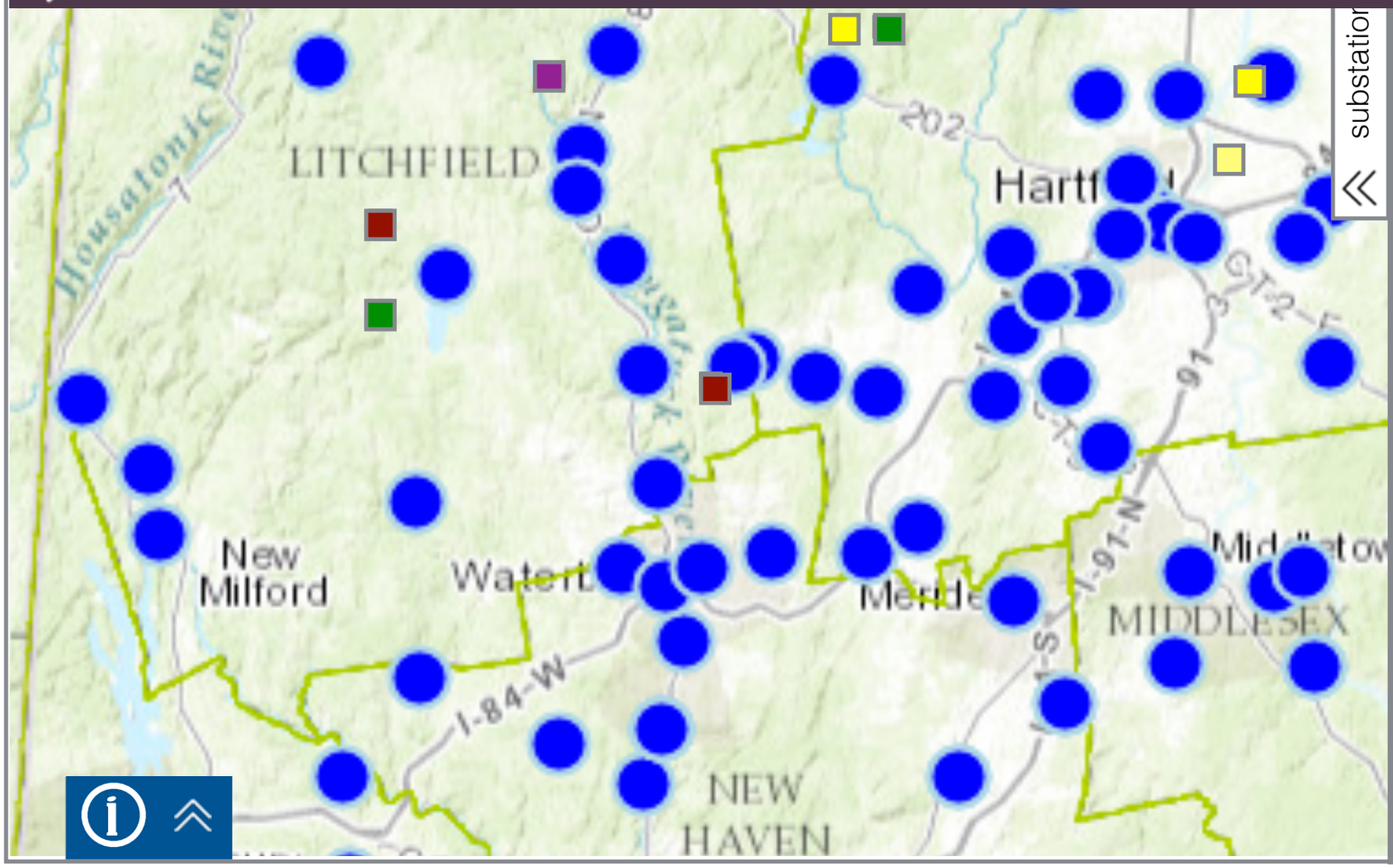
export help

**Create a new filter** Filter on Field Relation Value add

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Filter on | **Programs** | Field | **Residential** | Relation | **Equal to** | Value | **Residential** |
| AND OR | Filter on | **Projects** | Field | **CGB investment** | Relation | **Greater than** | Value | **100,000** |
| AND OR | Filter on | **Projects** | Field | **Private investment** | Relation | **Less than** | Value | **800,000** |

**clear all**

3




substation

| | |
|---|---|
| Installed Capacity (MW) | xx,xxx |
| Clean energy produced | xxx |
| Energy Generated/Saved | xx |
| Subsidies ($) | xx,xxx |
| Credit enhancement ($) | xx,xxx |
| Loans or Leases ($) | xxx,xxx |
| Total Green Bank | xx,xxx |
| Private capital ($) | xxx,xxx |

- **Residential**
  - CT Solar Loan
  - Smart-E Loan
  - Resi CT Solar Lease
  - Multifamily
  - ...
- **Statutory & Infrastructure**
  - ...

CONNECTICUT GREEN BANK powered by kevala+

find a geographic area

export help

terrain satellite

+ -

## Residential

**CT Solar Loan Program**

| | |
|---|---|
| Installed Capacity (MW) | xx,xxx |
| Locational value ($/MW/Year) | xx.xx |
| Clean energy produced (MWh) | xxx |
| Energy Generated/Saved (MMBtu) | xx |
| Total Green Bank Investment ($) | xx,xxx |
| Private capital ($) | xxx,xxx |

learn more

programs

substations

CONNECTICUT GREEN BANK powered by kevala+

Results for: Litchfield County

export help

terrain satellite

programs

substations

learn more

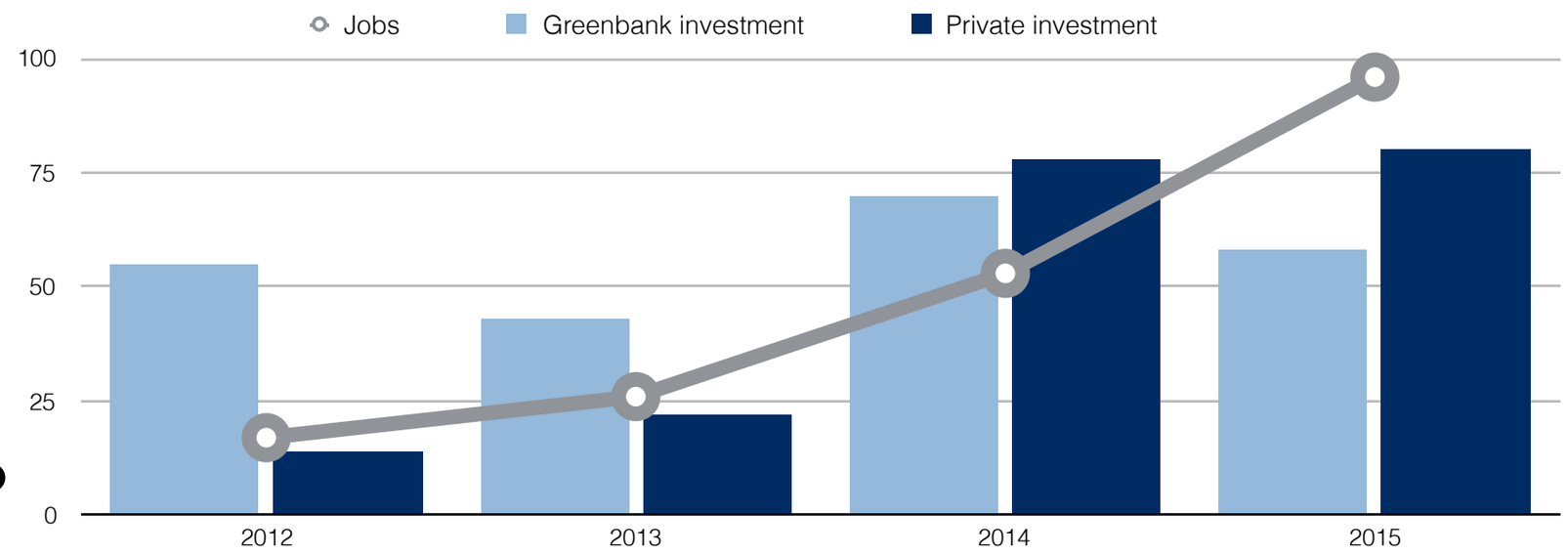
Energy Economy Environment Demographics

Litchfield County 2012-2015

3,561
Jobs created

$400K
CGB investment

$850K
Private investment



845 Brook Street, Rocky Hill, CT 06067
T 860.563.0015
ctgreenbank.com

CONNECTICUT GREEN BANK

# Memo

**To:** Connecticut Green Bank Board of Directors

**From:** Mackey Dykes, Vice President, Commercial and Industrial Programs

**CC:** Bryan Garcia, President and CEO; Eric Shrago, COO; Brian Farnen, General Counsel and CLO

**Date:** July 15, 2016

**Re:** Energy on the Line

---

## BACKGROUND

Connecticut has the second highest energy costs in the country. The manufacturing sector accounts for over 10% of the states total energy consumption. In order to maintain their competitive position, manufacturers need to reduce their energy cost. In February of 2016, the Connecticut Green Bank ("Green Bank") partnered with the Department of Economic and Community Development ("DECD") through its the Manufacturing Innovation Fund ("MIF") to create and administer the Energy on the Line campaign for the purpose of incentivizing eligible Connecticut manufacturers to undertake energy-saving improvements to their buildings (the "EotL Program"). Through the EotL Program, manufacturers who finance an energy savings project using C-PACE will receive a grant to buy-down the cost of the project and improve their cash-flow over the life of the assessment. EotL Program grants are equivalent to a one percent (1%) interest rate buy-down of the C-PACE financing, up to $50,000. DECD provided $800,000 in funding to Green Bank for such grants, to be used for the first $40,000 of any individual grant. For any project eligible for the full $50,000, Green Bank will provide the remaining funds (not to exceed an additional $10,000 per project).

The goal of the program is to approve at least 20 C-PACE projects, for nearly $14 million of C-PACE funding, by April 24, 2017 (one year from the launch of the program on April 24, 2016). More details on the program can be found in the Energy on the Line Procedures and Guidelines (Attachment A).

## STATUS

The initiative has been promoted through a number of channels including outreach to economic development coordinators in municipalities across the state, especially in those towns and cities with a high concentration of manufacturers. In addition, chambers of commerce and trade groups (such as the New Haven Manufacturing Association, Smaller Manufacturing Association, etc.) have served as allies in promoting the program to their members. Program details have been communicated to key channels partners, including C-PACE contractors and capital providers, extending the reach of the program.

The campaign is supported through a website (www.EnergyontheLine.com) for lead intake, a collateral system, and an integrated marketing campaign. PR efforts have generated stories on manufacturing companies using green energy and on the EotL Program campaign in the New Haven Register, New London Day, Hartford Business Journal, CT Post, Commercial Record and on WTNH. Direct marketing efforts to building owners include direct mail, digital advertisements, and email marketing.

To date, the EotL Program has generated 42 leads for C-PACE financing in various stages. These lead stages range from initial conversations with building owners to educate them on EotL Program & C-PACE financing, conducting energy audits and "walk-throughs" of their buildings to identify energy improvement opportunities, and working with contractors to create a project scope inclusive of energy savings from proposed energy conservation measures.

**PROPOSAL**

All administrative, marketing and interest rate buy-down/grant dollars were included in the FY17 Commercial and Industrial budget. Staff is seeking authority to disburse the interest rate buy-down/grant funding through the EotL Program.

**RESOLUTIONS**

**WHEREAS**, Pursuant to Section 157 of Public Act No. 12-2 of the June 12, 2012 Special Session of the Connecticut General Assembly (the "Act"), Connecticut Green Bank ("Green Bank") is directed to, amongst other things, establish a commercial sustainable energy program for Connecticut, known as Commercial Property Assessed Clean Energy ("C-PACE"), and Green Bank established the C-PACE program;

**WHEREAS**, In February of 2016, Green Bank partnered with the Department of Economic and Community Development ("DECD") through its the Manufacturing Innovation Fund ("MIF") to create and administer the Energy on the Line campaign for the purpose of incentivizing manufacturers to undertake energy-saving improvements to their buildings (the "EotL Program"); and

**WHEREAS,** through the EotL Program, eligible manufacturers who finance an energy savings project using C-PACE may receive a grant to buy-down the cost of such project and improve their cash-flow over the life of the C-PACE assessment.

**WHEREAS**, such grants will be equivalent to a one percent (1%) interest rate buy-down of the C-PACE financing, up to $50,000.

**WHEREAS**, DECD provided $800,000 in funding to Green Bank for such grants, to be used for the first $40,000 of any individual grant.

**NOW**, therefore be it:

**RESOLVED**, the Green Bank Board of Directors (the "Board") authorizes grants to be made to eligible Connecticut manufacturers pursuant to the EotL Program as described in that certain memo to the Board dated July 15, 2016; and

**RESOLVED**, that the proper Green Bank officers are authorized and empowered to do all other acts and execute and deliver all other documents and instruments as they shall deem necessary and desirable to effect the above-mentioned legal instruments.

Submitted by: Mackey Dykes, Vice President, Commercial, Industrial and Institutional Programs

# Manufacturing Innovation Fund
# Energy on the Line Program
*Procedures and Guidelines*

**Introduction**

Connecticut has the second highest energy costs in the country. The manufacturing sector accounts for over 10% of the states total energy consumption. In order to help manufacturers maintain their competitive position, manufacturers need to reduce their long-term costs of energy. The Energy on the Line Program (the Program) was created for the purpose of incentivizing manufacturers to undertake energy improvements to their buildings in order to make their businesses more competitive by lowering energy costs.

According to a recent survey by the Connecticut Business and Industry Association,[1] businesses prefer incentives that offer zero money down and energy savings that exceed monthly payments on debt service to support investments in energy efficiency and renewable energy projects. Through the Manufacturing Innovation Fund (MIF), an upfront grant will be provided to support clean energy projects financed through the Connecticut Green Bank's (CGB) Commercial Property Assessed Clean Energy Program (C-PACE).[2] Through C-PACE, building owners are provided with 100% upfront financing for clean energy projects where the energy improvements deliver immediate positive cash flow to the building owner.

**Program Goals**

The following are the goals of the Program:

1. Deliver positive cash flow to the manufacturer by expected energy cost savings exceeding annual repayment of C-PACE financing.
2. Lower energy consumption by 30 to 100 percent per participating manufacturer after the project construction is complete.
3. Approve at least 20 projects by one year from program launch.

**Program Metrics**

- Number of participating manufacturers that submit initial application for Energy on the Line – Goal: 120
- Number of participating manufacturers that undertake an energy audit – Goal: 50
- Number of approved Energy on the Line projects – Goal: 20
- Total project investment
- Total expected savings to manufacturers
- Energy consumption before and after

[1] 2015 E2 Member Survey by CBIA Energy and Environment Committee

[2] www.c-pace.com

**Program Description**

C-PACE is an innovative and affordable way for manufacturers to pay for clean energy improvements on their properties. C-PACE financing covers 100% of the project costs with no money down and is repaid as a long-term assessment on the property. C-PACE not only makes clean energy accessible, but it also allows property owners to immediately increase cash flow to their bottom-line and improve their buildings value. C-PACE can bring virtually any clean energy project, whether small (e.g., $30,000) or large (e.g., $3 million), from a vision to a reality. From manufacturing facilities to commercial real estate, C-PACE provides financing for energy savings projects, including, but not limited to energy efficiency, renewable energy, microgrids, and industrial process improvements. Through a growing network of contractors and communities throughout the state, C-PACE financing will be made available to finance energy improvements by participating manufacturers.

To incentivize manufacturers to finance energy improvement projects through C-PACE, the Program will provide an upfront grant to the project. The amount of the upfront grant will be determined based on the size of the clean energy improvement project.

**Program Components**

The following three program components describe how the Program works:

1. **Getting Started** – manufacturer works with a contractor and relationship manager to develop a project plan; manufacturer submits project plan and application with the assistance of the relationship manager to C-PACE; and the application is reviewed and approved by the Connecticut Green Bank.

2. **Getting Project Done** – Connecticut Green Bank contacts municipality to place C-PACE benefit assessment on the property; C-PACE financing is closed and grant funding from MIF goes to the company or the contractor for clean energy improvements; and clean energy improvement project begins with the contractor.

3. **Paying It Off** – once the project is completed, the manufacturer saves money on their energy bills as energy savings exceed the C-PACE benefit assessment; manufacturer repays improvements through a benefit assessment charge on the municipal tax bill; and through improved property, the manufacturer enjoys more cash flow and lower operating costs.

**Administrative Structure**

The Connecticut Green Bank will administer the program with the funding from the DECD for the following tasks:

- Act as a fiduciary agent for DECD
- Develop and administer a web-based application

- Develop, fund and implement a marketing and outreach program
- Perform program eligibility evaluations of applicants per the C-PACE program guidelines and MIF requirements
- Oversee the distribution and expenditure of funds
- Monitor and verify the status of approved projects
- Report on impact results
- Work with DECD to:
    - To conduct outreach and promote to the manufacturing industry
    - Update and implement program guidelines as appropriate

**Type of Assistance**

Through the program, eligible manufacturers will receive an upfront grant for a clean energy improvement project financed through C-PACE.

**Maximum Award Amount**

To incentivize manufacturers finance energy improvement projects through C-PACE, the Program will utilize $800,000 in MIF funds to provide an upfront grant to the project of up to a maximum of $40,000.[3] CGB will contribute up to $10,000 of grant funding for larger projects that qualify up to a combined total of $50,000. Since the size of the grant is based on the amount of the C-PACE financing, the minimum grant is based on the smallest possible C-PACE loan, $30,000 for 10 years, which yields a grant of $1,385.

**Matching Requirement**

There is no matching requirement for participating manufacturers. It should be noted that participating manufacturers will be able to leverage available state and federal incentives, including, but not limited to:

- **State Incentives** – provided by the electric distribution companies for energy efficiency (i.e., through the Connecticut Energy Efficiency Fund) and renewable energy (i.e., through the Zero Emission Renewable Energy Credit and Low Emission Renewable Energy Credit); and

- **Federal Incentives** – provided by the Internal Revenue Service for investment tax credit and accelerated depreciation.

**Eligible Activities and Participants**

Participating manufacturers may use the upfront grants provided through the Program to support the project costs for a C-PACE financed clean energy improvement project installed on the property.[4]

[3] This is equivalent to a 1% interest rate buy-down on a 20-year $500,000 loan.

[4] For more details on eligible clean energy improvement projects, go to http://www.cpace.com/assets/pdf/Program_Guidelines.pdf

Manufacturers located in a C-PACE municipality that own their building are eligible for the program. If a manufacturer is in a town that has not adopted C-PACE, the Connecticut Green Bank will work with the town to join the program. For more information on eligible cities and towns, please visitwww.cpace.com/townscities.

**Ineligible Activities**
The program has specifically identified the following activities as ineligible use of the funds:

- Debt restructuring
- Ongoing operational costs
- Loan payments
- Costs related to the sale or disposal of business assets
- Lobbying

Fund used through the Program can only be applied to reduce the installation costs of the clean energy improvements being financed through C-PACE.

**Marketing and Outreach**
The Connecticut Green Bank will coordinate with the DECD to market and promote the program to assist in maintaining an active pipeline of applicants.

**Application Procedure**

- Manufacturer or their contractor submit an application online at www.cpace.com
- CGB reviews application for eligibility and gives pre-approval
- Manufacturer and contractor undertakes an energy audit and define project scope
- CGB reviews project scope to ensure it meets C-PACE requirements and determines amount of Energy on the Line grant
- CGB issues term sheet for C-PACE loan and Energy on the Line grant
- CGB underwrites C-PACE loan and gives final approval to loan and grant
- At C-PACE loan closing, CGB pays out Energy on the Line grant

**Payment**
CGB will pay out the Energy on the Line grant at the closing for the C-PACE loan. The manufacturer will receive the terms of the grant in both the term sheet and financing/grant agreement that is signed at closing.

**Monitoring and Compliance**
CGB will submit quarterly reports to DECD on program progress and funding. CGB will submit a final report upon program completion.

**Liability and Delegation**

Compliance with the requirements of the Program is the sole responsibility of the participating manufacturer to which the funds were awarded. The Connecticut Green Bank's obligation is to monitor for compliance with the requirements of the Program and does not make it liable for the business owner's non-compliance.

845 Brook Street, Rocky Hill, CT 06067
T 860.563.0015
ctgreenbank.com

CONNECTICUT GREEN BANK

# Memo

**To:** Connecticut Green Bank Board of Directors

**From:** Mackey Dykes, Director, Commercial and Industrial Programs; Bert Hunter, EVP and CIO; Ben Healey, Director; and Michael Yu, Senior Manager, Clean Energy Finance

**CC:** Bryan Garcia, President and CEO; Eric Shrago, COO; Brian Farnen, General Counsel and CLO; Mackey Dykes, Director, Commercial and Industrial Programs;

**Date:** July 15, 2016

**Re:** Internal Working Capital Accounts for C-PACE Facility with Hannon Armstrong

---

**BACKGROUND**

Over the past six months, the Connecticut Green Bank (the "Green Bank") has sold two tranches of C-PACE Benefit Assessment Liens ("BAL"), totaling over $15 million in face value, to HA C-PACE LLC ("HA C-PACE") under the partnership established between the Green Bank and Hannon Armstrong ("HA"). Staff is currently working on a third tranche that is expected to total over $10 million in BAL.

At its January 15, 2016 meeting, the Board of Directors of the Green Bank (the "Board") authorized a $750,000 working capital facility (the "WC Facility") associated with HA C-PACE. Per the Board's approval, the WC Facility associated with the Green Bank's HA partnership has a not-to-exceed amount of $750,000, which the Green Bank can call upon as necessary to fund disbursements through the construction phase of C-PACE projects.

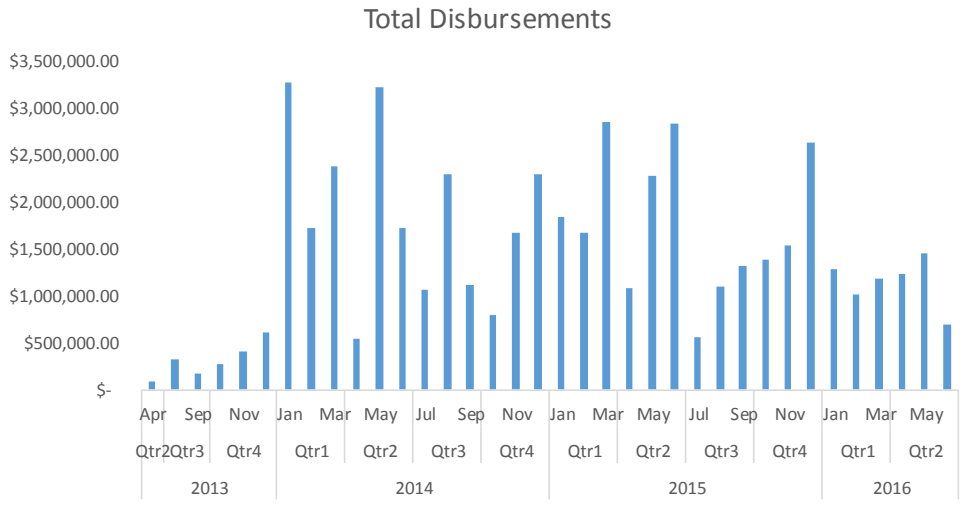
When HA C-PACE was initially set up, staff envisioned that HA would simultaneously co-fund their respective advances to C-PACE borrowers during construction, which would significantly reduce calls on the Green Bank's balance sheet. However, in practice, it proved administratively difficult for the Green Bank and HA to co-fund in an efficient and timely manner, and in order to prevent delays to construction, the two sides structured an approach such that HA pre-funded, at the Green Bank's direction, an account to cover these future disbursements. The benefit of HA pre-funding disbursements is that it limits the Green Bank's own funding to its pro rata (i.e., generally 10%) share of each advance, reducing pressure on the Green Bank's balance sheet as originally envisioned. However, HA charges interest on its funds as soon as they are deposited into the account, regardless of when the disbursement to contractors occurs. As such, timely and accurate forecasting of disbursements is essential to preventing a negative drag on the Green Bank's return, which includes the excess cash after the repayment of HA's senior debt. To the extent disbursements follow soon after HA funding, this negative arbitrage is minimal. But in practice, staff has found it difficult to accurately forecast disbursements due to disbursement

schedules that are less than fully synchronized with construction progress at the project level, uncertainties around construction, the timing of permits, and the other realities of construction financing.

Having operationalized co-funding and pre-funding, staff has now found greater success with the Green Bank fully funding a disbursement request from a C-PACE borrower, even in excess of our pro rata financing share vis-à-vis HA, and then recovering the necessary amount from HA (most often in the Green Bank's next monthly call on their capital), to restore the pro rata financing balance to which the parties have agreed. For example, in a deal that has a 90% advance rate from HA, if a borrower requests a disbursement of $100,000 on August 15, 2016, the Green Bank will use its balance sheet to fund 100% of that $100,000, and then have HA fund its share, or $90,000, on September 1, 2016, in order to reimburse the Green Bank and bring the Green Bank down to its 10% share. In essence, by having the Green Bank first disburse construction funds and then having HA backfill with its share, there is no risk of negative arbitrage and no harm arising from projects that encounter delays.

Given the administrative challenges associated with co-funding and the risk of negative arbitrage associated with pre-funding, staff believes that it is prudent for the Green Bank to fund 100% of borrower disbursement requests during the construction of C-PACE projects, and then have HA fund its share of the relevant disbursements the following month. Nonetheless, as noted above, staff did not originally anticipate that pre-funding would be the de facto method of disbursements when the original WC Facility was sized. As such, staff recommends that the Board authorize an upsizing of the WC Facility to accommodate the widespread adoption of this process.

Historically (that is, since the inception of the C-PACE program in 2013), the Green Bank has averaged $1.5 million per month in disbursements, with peaks months reaching $3.3 million:




*Average monthly disbursement:* ***$1.5 million***
*Highest monthly disbursement:* ***$3.3 million***

Given the learning experiences over the last six months and across three tranches of deals, staff envisions the need for an upsized WC Facility to allow for operational flexibility under this new partnership. Of course, such disbursements could temporarily take Green Bank staff above its existing authority to make capital commitments (that is, $300,000 at the staff level; $2,500,000 at the Deployment Committee level; or as authorized at the Board level), and therefore staff recommends that the Board authorize staff to draw upon the WC Facility **above existing authorization levels, but not to exceed $3.3 million in total, solely to address this short-term (that is, within 30-60 days) need, and that funds utilized by the WC Facility not get counted against existing authority limits, but instead be considered advances which are "at risk" to HA C-PACE, and in reality Hannon Armstrong who is obligated to fund the replenishment under our agreements**. With $420 million in equity capital and more than $330 million in cash and equivalents (as of 3/31/16), the level of credit risk exposure for the Green Bank is limited. To be clear, the term financing exposure of the Green Bank, after HA repayment of the pro rata exceedance amount within a month or so of disbursement, would still never exceed the amount authorized at the staff, Deployment Committee, or Board level.

**PROPOSAL**

The Board previously authorized $750,000 in a WC Facility for the HA C-PACE financing program. Staff now recommends increasing the "not-to-exceed" amount of the WC Facility to $3,300,000, in line with maximum historical monthly disbursement levels. To be clear, adopting this proposal would include granting staff authority to exceed existing capital commitment authorization levels, but only within strict guidelines and with the credit risk exposure being against a receivable from Hannon Armstrong, and further enhanced by the related C-PACE benefit assessment liens. That is, this approach solely contemplates the short-term use of funds that would be deployed for operational reasons (that is, to keep projects under construction moving forward smoothly), with HA's pro rata share of the funds (i.e., generally 90%) quickly returned to the Green Bank on a monthly basis.

**RESOLUTIONS**

**WHEREAS**, Pursuant to Section 157 of Public Act No. 12-2 of the June 12, 2012 Special Session of the Connecticut General Assembly (the "Act"), Connecticut Green Bank ("Green Bank") is directed to, amongst other things, establish a commercial sustainable energy program for Connecticut, known as Commercial Property Assessed Clean Energy ("C-PACE"), and Green Bank established the C-PACE program;

**WHEREAS**, on December 17, 2015, Green Bank closed on a financing facility with HASI OBS OP A LLC, a Maryland limited liability company ("HA"), and HA C-PACE LLC, a Delaware limited liability company ("HA C-Pace") in support of the C-PACE program and in order to fund C-PACE transactions (the "HA Facility");

**WHEREAS**, at its January 15, 2015 meeting, the Green Bank Board of Directors ("Board") authorized a $750,000 working capital facility associated with the Green Bank's C-PACE partnership with HA;

**WHEREAS**, under the HA Facility, the Green Bank is permitted to advance more than its pro rata share of funds to C-PACE borrowers during construction in order to avoid disruption in construction activities; and

**WHEREAS**, Green Bank staff has attempted various ways to operationalize the construction financing partnership for C-PACE borrowers under the HA Facility within existing constraints and found such alternatives inefficient or costly.

**NOW**, therefore be it:

**RESOLVED**, that the Board authorizes a working capital facility associated with the HA Facility in an amount not to exceed $3,300,000 in aggregate for the purpose of allowing the Green Bank to make advances to HA C-Pace for construction disbursements to C-PACE borrowers in excess of the Green Bank's pro rata share of such financing, which exceedance amount will then be recovered under the terms of the HA Facility;

**RESOLVED**, that this authorization expressly includes the ability for the proper Green Bank officers to commit capital in excess of existing authorization levels solely for the purpose of providing short-term construction financing advances to C-PACE borrowers under the terms of the HA Facility, and with the expectation of monthly repayment via the HA Facility, and for no other purpose whatsoever; and

**RESOLVED**, that the proper Green Bank officers are authorized and empowered to do all other acts and execute and deliver all other documents and instruments as they shall deem necessary and desirable to effect the above-mentioned legal instruments.

Submitted by: Bryan Garcia, President and CEO; Bert Hunter, EVP and CIO; Mackey Dykes, Director, Commercial and Industrial Programs; Ben Healey, Director, Clean Energy Finance, and Michael Yu, Senior Manager, Clean Energy Finance.

845 Brook Street, Rocky Hill, CT 06067
T 860.563.0015
ctgreenbank.com

CONNECTICUT GREEN BANK

# Memo

**To:** Connecticut Green Bank Board of Directors

**From:** Lucy Charpentier (Manager of EM&V), Bryan Garcia (President and CEO), and Eric Shrago (Director of Operations)

**Date:** July 22, 2016

**Re:** Q4 Progress to Targets

---

The following memo outlines Connecticut Green Bank (CGB) progress to combined Q1, Q2, Q3, and Q4 goals for fiscal year 2016 as of June 30, 2016, the end of the fourth quarter. To date, the Connecticut Green Bank has invested $41.7 million of its resources in FY 2016 to attract $271 million of private capital resources – for a total investment through Q4 of FY 2016 of $309 million. Of the $41.7 million of resources invested by the Connecticut Green Bank $21.0 million was in grants,[1] $2.2 million in credit enhancements,[2] and $18.5 million in financing.

**Statutory and Infrastructure Sector**

The Statutory and Infrastructure sector is below its target for the fiscal year due to slower growth than anticipated in the Residential Solar Investment Program (RSIP). Given that we had set a high FY 2016 target of 90.0 MW due to the anticipated wind down of the federal ITC at the end of 2015 – which didn't occur, but was instead extended to 2022 – the market didn't grow as quickly as we would have thought. Despite slower than anticipated growth, the RSIP program delivered nearly 20% more residential solar PV deployment (i.e., 60.0 MW in FY 2016 vs. 50.5 MW in FY 2015). Although the program did not hit the target (i.e., 90.0 MW), the market is still experiencing growth.

The Anaerobic Digester and Combined Heat and Power programs have five (5) approved projects – 1 closed in FY 2015. These projects represent over $71million in total capital deployed, 9.5 MWs of clean energy deployed, and nearly 700,000 of MMBtus saved.

*Table 1. Infrastructure Sector Q4 Cumulative Progress to Targets*

| | # Projects | | Capital Deployed[3] | | MW | | MMBTU | |
|---|---|---|---|---|---|---|---|---|
| | Closed | Target | Closed | Target | Closed | Target | Closed | Target |
| CHP and AD | 1 | 5 | $10,500,000 | $71,725,000 | 1.0 | 9.0 | 44,949 | 273,186 |
| RSIP | 7,701 | 11,987 | $245,948,961 | $402,869,745 | 60.0 | 90.0 | 182,238 | 376,603 |
| **CGB Total** | **7,702** | **11,992** | **$256,448,961** | **$474,594,745** | **61.0** | **99.0** | **227,188** | **649,789** |

[1] Of the $21.0 million invested in grants, $21.0 million was through the Residential Solar Investment Program. Per PA 15-194, all of the incentives and administrative costs provided through the RSIP will be recovered through the sale of Solar Home Renewable Energy Credits to the electric distribution companies for Class I RPS compliance.

[2] Including credit enhancements of $2.2 million for IRBs ($0.2 million) and LLRs ($2.0 million)

[3] Capital Deployed represents the Gross System Cost

**Residential Sector**

Multifamily and Low Income Loans/Leases have both had slower timelines to launch products in the market, impacting projected volume. However, Multifamily has a robust deal pipeline from pre-development activity and targeted outreach events and community partnerships which should yield approvals in the coming fiscal year. The low income lease (PosiGen) launched its third (i.e., Hartford ) of three planned community campaigns (i.e., including Bridgeport and New Haven) this past quarter, additional community partnerships coming online in the faith community and with Operation Fuel.

Smart-E has not seen the growth that we anticipated in FY16. Table 3 outlines our Smart-E channels and anticipated volume. The CHIF/HES channel has significantly underperformed, despite significant amounts of work with the utilities to coordinate our programs and drive financing through the HES program. The HVAC channel is well below target primarily due to the competition in the market from the ratepayer-subsidized EnergizeCT Heating Loan, however lower fuel oil prices and a mild winter have also contributed. The solar channel has felt the effects of the ITC uncertainty and the continued growth in the lease/PPA model versus ownership, although this channel is beginning to pick up a bit over the last few months.

As shown in the Market Transformation portion of Table 2, we are beginning to see results from prior product spin-offs to 100% private capital.

*Table 2. Residential Sector Q4 Cumulative Progress to Targets*

| | # Projects | | Capital Deployed[4] | | MW | | MMBTU | |
|---|---|---|---|---|---|---|---|---|
| | Closed | Target | Closed | Target | Closed | Target | Closed | Target |
| Low Income Loans/Leases | 333 | 606 | $9,843,865 | $13,750,000 | 2.2 | 3.1 | 6,316 | 14,825 |
| Multifamily (term only)[5] | 27 | 43 | $5,898,400 | $11,500,000 | 1.2 | 1.2 | 3,886 | 16,649 |
| Smart-E | 202 | 1,062 | $4,126,598 | $16,287,000 | 0.9 | 1.7 | 5,858 | 20,491 |
| Solar Lease | 473 | 451 | $17,341,000 | $16,000,000 | 3.8 | 3.5 | 12,475 | 14,845 |
| **CGB Total** | **1,035** | **2,162** | **$37,209,863** | **$57,537,000** | **8.1** | **9.5** | **28,536** | **66,810** |
| DCU-Sungage (Solar PV Loan)[6] | 185 | - | $5,542,999 | - | 1.7 | - | 5,575 | - |
| Sunnova (Solar PV Lease)[7] | 156 | - | $3,513,637 | - | 1.1 | - | 3,630 | - |
| **Market Transformation & CGB** | **1,376** | | **$46,266,499** | **$57,537,000** | **11.0** | **9.5** | **37,741** | **66,810** |
| Multifamily Pre-Dev | **5** | | | **$48,650** | | | | |

[4] Capital Deployed represents the Amount Financed

[5] The process for collecting energy data for a portion of the multifamily portfolio is still being built so some savings and clean energy production is not reported here

[6] The follow-on product that graduated from the CT Solar Loan

[7] The follow-on product that replaced the CT Solar Lease

*Table 3. Smart-E Channel Breakout*

| | # Projects | |
|---|---|---|
| Channels | Closed | Target |
| **Smart-E** | **202** | **1,062** |
| *CHIF/HES* | 3 | 600 |
| *Existing EE/HVAC* | 97 | 235 |
| *Solar (some with EE)* | 98 | 227 |
| *Other* | 4 | - |

**Commercial, Industrial and Institutional Sectors**

As in the residential sector, we see 100% private capital providers entering the market and driving growth. However, growth is less than planned for, especially for CGB funded projects. The CI&I team is launching several initiatives to grow the pipeline of projects, including the manufacturing-focused Energy on the Line campaign and the contractor-focused Projected Accelerator Service. The team is also working to grow the market by bringing in more private capital providers, including Bank of America and the Sustainable Funding Energy Program for non-profit organizations.

In December, CGB closed on an agreement with Hannon Armstrong (NYSE: HASI) to provide up to $100 million for C-PACE projects. The 9:1 leverage warehouse facility will allow CGB to continue to grow C-PACE while transitioning to a fully privately-funded market.

*Table 4. Commercial and Industrial Q4 Cumulative Progress to Targets*

| | # Projects | | Capital Deployed[8] | | MW | | MMBTU[9] | |
|---|---|---|---|---|---|---|---|---|
| | Closed | Target | Closed | Target | Closed | Target | Closed | Target |
| CPACE | | | | | | | | |
| *CGB*[10] | 30 | 88 | 19,237,376 | $53,000,000 | 4.7 | 9.0 | 24,845 | - |
| *Clean Fund*[11] | 1 | - | $8,337,732 | - | - | - | 23,601 | - |
| *GreenWorks Lending*[12] | 20 | - | $9,822,384 | - | 1.3 | - | 5,566 | - |
| Commercial Lease | 6 | 10 | $4,248,157 | $6,000,000 | 1.5 | 2.0 | 4,769 | 8,400 |
| **Total** | **57** | **98** | **$41,645,649** | **$59,000,000** | **7.5** | **11.0** | **58,782** | **-** |

**Institutional Sector**

The Institutional sector is below its targets due to continued delays in closing LBE projects. The three active LBE projects at State agencies are still under active consideration.

[8] Capital Deployed represents the higher of Gross System Cost or Amount Financed

[9] The process for collecting energy savings data for 3rd party transactions is still being built so savings are not reported here

[10] Includes Commercial Leases using CPACE financing

[11] A standard offer provider approved to provide 100% of direct C-PACE financing

[12] A standard offer provider approved to provide 100% of direct C-PACE financing

*Table 5. Institutional Sector Q4 Cumulative Progress to Targets*

| | # Projects | | Capital Deployed | | MW | | MMBTU | |
|---|---|---|---|---|---|---|---|---|
| | Closed | Target | Closed | Target | Closed | Target | Closed | Target |
| Institutional Off-Credit ESA | - | 2 | - | $1,000,000 | - | - | - | 28,750 |
| LBE – Municipal | - | 3 | - | $20,000,000 | - | - | - | 56,250 |
| LBE – State | - | 4 | - | $95,000,000 | - | - | - | 228,000 |
| Solar Lease* | - | - | - | - | - | - | - | - |
| **CGB Total** | **-** | **9** | **-** | **$116,000,000** | **-** | **-** | **-** | **262,375** |

*Commercial Solar Lease has been moved to the Commercial & Industrial sector.

**Connecticut Green Bank – Progress to Targets through Q4 of FY 2016**

The following is a breakdown of total progress to targets through Q4 of FY 2016 for closed and completed projects (see Table 6).

*Table 6. Q4 Cumulative Progress to Targets*

| | # Projects | | Capital Deployed | | MW | | MMBTU | |
|---|---|---|---|---|---|---|---|---|
| | Closed | Target | Closed | Target | Closed | Target | Closed | Target |
| CI&I | 57 | 98 | $41,645,649 | $59,000,000 | 7.5 | 11.0 | 58,782 | 8,400 |
| Residential | 1,376 | 2,162 | $46,266,499 | $57,537,000 | 11.0 | 9.5 | 37,741 | 66,810 |
| Infrastructure | 7,702 | 11,992 | $256,448,961 | $474,594,745 | 61.0 | 99.0 | 227,188 | 649,789 |
| Institutional | - | 9 | - | $116,000,000 | - | - | - | 313,000 |
| **CGB/Market Transformation Total[13]** | **8,377** | **14,261** | **$320,832,5** | **$707,131,745** | **73.7** | **119.5** | **306,229** | **1,037,999** |

* It should be noted that 240 projects totaling $88.1 million of investment and 11.8 MW of renewable energy and 721,000 MMBtu's have been approved and are in the pipeline. To continue to make progress on our annual target, the Connecticut Green Bank needs to continue to build its pipeline of transactions as well as move approved transactions to closed and completed before they count.

For comparison purposes, in FY 2015, there was $361.0 million of approved, closed and completed projects[14] – of which $296.2 million were closed and completed.

Since the inception of the Connecticut Green Bank in July of 2011 and through Q4 of FY 2016, there has been $915.5 million of investment in clean energy through approved, closed and completed projects of the Connecticut Green Bank. We expect to hit $1 billion in the summer of 2016!

[13] Adjusted to avoid double counting (excludes duplicates for RSIP projects using residential financing products, residential low income leases (Posigen) projects within RSIP and MFH using CPACE)

[14] FY 2015 Comprehensive Annual Financial Report

845 Brook Street, Rocky Hill, CT 06067
T 860.563.0015
ctgreenbank.com

CONNECTICUT GREEN BANK

# Memo

**To:** Board of Directors of the Connecticut Green Bank

**From:** Lucy Charpentier, Bryan Garcia, Dale Hedman, and Eric Shrago

**Cc** Mackey Dykes, Brian Farnen, and Bert Hunter

**Date:** July 22, 2016

**Re:** Statutory and Infrastructure Sector Programs – Program Performance towards Targets for FY 2016

---

## Overview

Public Act 11-80, *An Act Concerning the Establishment of the Department of Energy and Environmental Protection and Planning for Connecticut's Energy Future*, requires that the Connecticut Green Bank (Green Bank) to develop and implement several programs to support the deployment of solar photovoltaic (PV), combined heat and power (CHP), and anaerobic digester (AD) technologies. Alongside this act, through the Comprehensive Energy Strategy (CES) released by the Department of Energy and Environmental Protection (DEEP), there is the goal of delivering cleaner, cheaper and more reliable sources of energy through the deployment of in-state renewable energy sources, including the need for more microgrids.

For a description of the programs and the TAM and SAM, please see the Comprehensive Plan for Fiscal Years 2015 and 2016.

---

## Performance Targets and Progress

With respect to the Comprehensive Plan approved by the Board of Directors of the Green Bank on July 17, 2015, the following are the performance targets for FY 2016 and progress made to targets for the Statutory and Infrastructure Sector Programs (see Table 1).

**Table 1. Program Performance Targets and Progress Made to the Comprehensive Plan for FY 2016 (as of June 30, 2016)**

| Key Metrics | Program Performance Targets | Program Progress[1] |
|---|---|---|
| Capital Deployed | $474,594,745 | $256,448,961 |
| Investment at Risk[2] | $42,074,000 | $23,011,235 |
| Private Capital | $432,520,745 | $233,437,726 |

[1] Includes only closed and completed transactions

[2] Includes funds from the Clean Energy Fund, RGGI allowance revenue, repurposed ARRA-SEP funds, and other resources that are managed by the Green Bank that are committed and invested in subsidies, credit enhancements, and loans and leases.

| | | |
|---|---|---|
| Deployed (MW) | 99.0 | 61.0 |
| # of Loans/Projects | 11,992 | 7,702 |
| Annual Generated/Saved (MMBtu) | 649,789 | 227,188 |

## Statutory and Infrastructure Sector Programs

The following are overviews of the Statutory and Infrastructure Sector Programs being implemented and the contributions towards the achievement of the targets noted in the Comprehensive Plan.

- **Residential Solar Investment Program** – $21.6 million in subsidies[3] from the Green Bank has attracted $230.7 million of funds from other sources. Of the 7,919 residential solar PV projects supported through the program 7,701 of the projects are either completed or under construction and 218 of the projects are approved (see Table 2).[4] This is resulting in the deployment of 61.7 MW of installed capacity – 60.0 MW from completed or under construction projects (i.e., approved and in process) and 1.7 MW of submitted, but not yet approved projects. This results in the creation of 1,416 direct job years (and 2,280 indirect and induced job years) and the reduction of 713,182 tons of $CO_2$ emissions over the life of the projects.

**Table 2. RSIP Overview for FY 2016 (as of June 30, 2016)**

| Program Data | Approved and In Process | Completed | Total Submitted |
|---|---|---|---|
| Projects | 4,098 | 3,603 | 7,919 |
| Installed Capacity (MW) | 32.1 | 27.9 | 61.7 |
| Clean Energy Produced (MWh)[5] | 672,328 | 662,948 | 1,375,473 |
| Combined Energy Generated & Saved (MMBtu)[6] | 91,759 | 90,479 | 187,724 |
| Subsidies ($'s) | $10,659,905 | $10,353,927 | $21,595,263 |
| Credit Enhancement ($'s) | - | - | - |
| Loans or Leases ($'s) | - | - | - |
| Total Green Bank Investment ($'s) | $10,659,905 | $10,353,927 | $21,595,263 |
| Private Capital ($'s) | $120,526,916 | $104,408,212 | $230,670,578 |

The residential solar PV market in Connecticut has seen a dramatic improvement over the past several years (see Figure 1). Installed costs have decreased by over 60% from a high of $8.70/W in 2007 to $3.30/W today. Incentives have decreased by over 90% from a high of $4.52/W in 2005 to $0.34/W today.

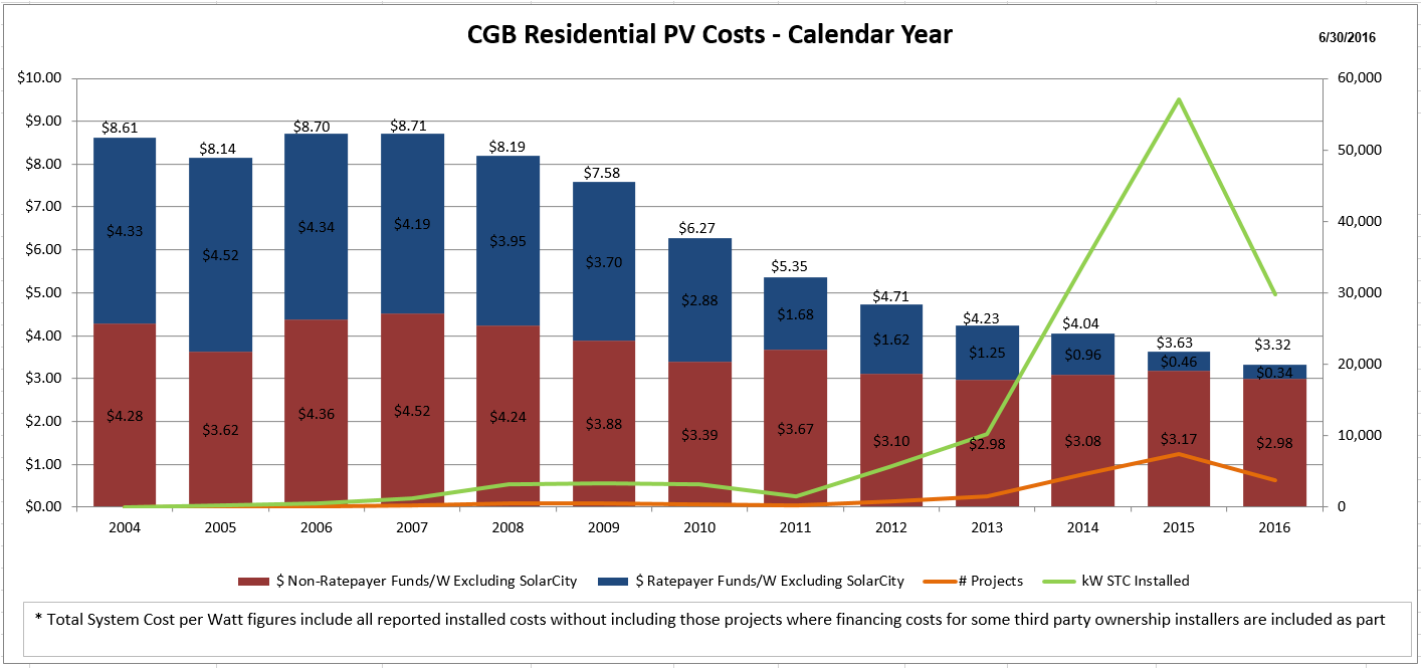
[3] Note the distribution of EPBB and PBI and the 6-year payout of the PBI.

[4] Based on nearly 10-years of historical experience, [91%] of projects approved result in project completions. (1,170 cancellations / 13,130 applications that are currently In Progress or Completed)

[5] Over the life of the measure(s)

[6] First year of the measure(s)

**Figure 1. Installed Cost ($/W – Y1 Axis) and Installed Capacity (kW – Y2 Axis) by Fiscal Year (as of June 30, 2016)**




- **<u>CHP and AD Pilot Programs</u>** – $0 in subsidies, $0 in credit enhancements, and $13.4 million in loans for a total Green Bank investment of $13.4 million. Of the $13.4 million of Green Bank investment in these projects (see Tables 3 and 4), $66.5 million of private capital has been attracted to support them. This has resulted in 2 CHP projects totaling 3.3 MW of installed capacity – approved only – and 4 AD projects totaling 7.2 MW of installed capacity – 1 of which closed in FY 2016.

**Table 3. CHP Pilot Program Overview for FY 2016 (as of June 30, 2016)**

| Program Data | Approved | Closed not yet Complete | Closed and Completed | Total |
|---|---|---|---|---|
| Projects | 2 | - | - | 2 |
| Installed Capacity (MW) | 3.3 | - | - | 3.3 |
| Clean Energy Produced (MWh)[7] | 301,992 | - | - | 301,992 |
| Combined Energy Generated & Saved (MMBtu)[8] | 423,180 | - | - | 423,180 |
| Subsidies ($'s) | - | - | - | - |
| Credit Enhancement ($'s) | - | - | - | - |
| Loans or Leases ($'s) | $1,502,860 | - | - | $1,502,860 |
| Total Green Bank Investment ($'s) | $1,502,860 | - | - | $1,502,860 |
| Private Capital ($'s) | $6,898,532 | - | - | $6,898,532 |

[7] Over the life of the measure(s)

[8] First year of the measure(s)

**Table 4. AD Pilot Program Overview for FY 2016 (as of June 30, 2016)**

| Program Data | Approved | Closed not yet Complete | Closed and Completed | Total |
|---|---|---|---|---|
| Projects | 3 | 1 | - | 4 |
| Installed Capacity (MW) | 6.2 | 1.0 | - | 7.2 |
| Clean Energy Produced (MWh)[9] | 505,101 | 82,283 | - | 587,384 |
| Combined Energy Generated & Saved (MMBtu)[10] | 277,362 | 44,949 | - | 322,311 |
| Subsidies ($'s) | - | - | - | - |
| Credit Enhancement ($'s) | - | - | - | - |
| Loans or Leases ($'s) | $11,860,109 | $1,997,403 | - | $13,857,512 |
| Total Green Bank Investment ($'s) | $11,860,109 | $1,997,403 | - | $13,857,512 |
| Private Capital ($'s) | $51,139,891 | $8,502,597 | - | $59,642,488 |

For a breakdown of the use of Green Bank resources for Statutory and Infrastructure Sector Programs (see Table 5).

**Table 5. Distribution of Green Bank Funds Invested in Projects and Programs through Subsidies, Credit Enhancements, and Loans and Leases for FY 2016 (as of June 30, 2016)**[11]

| Program | Subsidies | Credit Enhancements | Loans and Leases | Total |
|---|---|---|---|---|
| RSIP | $21,013,832 | - | - | $21,013,832 |
| CHP | - | - | - | - |
| AD | - | - | $1,997,403 | $1,997,403 |
| **Total** | **$21,013,832** | **-** | **-** | **$23,011,235** |

Of the $23.0 million of Green Bank resources invested, over 90% was in subsidies. It should be noted that because of the passage of PA 15-194, that all subsidies, administrative costs, and other expenses for the RSIP are to be recovered through the price and sale of 15-year renewable energy credits through a master purchase agreement between the Green Bank and the electric distribution companies (i.e., Eversource Energy and Avangrid).

Of these programs, the following is a breakdown of their contributions made thus far towards the performance target and the human resources required to implement them (see Table 6):

**Table 6. Program Progress Made in FY 2016**[12]

| Key Metrics | RSIP | CHP and AD Program | Total Program Progress |
|---|---|---|---|
| Date of Program Approval | Feb 2012 | Feb 2012 | |
| Date of Program Launch | Mar 2012 | Jun/Dec 2012 | |
| Ratepayer Capital at Risk | $21,013,832 | $1,997,403 | $23,011,235 |
| Private Capital | $224,935,129 | $8,502,597 | $233,437,726 |

[9] Over the life of the measure(s)

[10] First year of the measure(s)

[11] Includes only closed and completed transactions

[12] Includes only closed and completed transactions

| | | | |
|---|---|---|---|
| Deployed (MW) | 60.0 | 1.0 | 61.0 |
| # of Loans/Installations | 7,701 | 1 | 7,702 |
| Lifetime Production (MWh) | 1,335,276 | 82,283 | 1,417,558 |
| Annual Generated/Saved (MMBtu) | 182,238 | 44,949 | 227,188 |
| Full Time Equivalent Staff | 6.5 | 3.3 | 9.8 |

---

## "Top 5" Headlines

The following are the "Top 5" headlines for the statutory and infrastructure sector programs for FY 2016:

1. Connecticut's first commercial wind farm powers up in Colebrook
   New Haven Register
   ... "took passion ... and some serious money ... before there was any iron in the ground."

2. Connecticut Green Bank To Approve 100th Megawatt Of Residential Solar By Year's End
   Solar Industry
   More than 15,000 Connecticut homes have gone solar and will generate a majority of their electricity with solar energy.

3. Green Bank Invests $2M in Southington Digester Project
   Hartford Business Journal
   The Southington facility will be the first of its kind in Connecticut…

4. Study Shows Differences In Municipal Support For Residential Solar Power
   Hartford Courant
   The Yale study looked at how much solar capacity has actually been installed in a municipality, how easy it is to get local permits for solar power, and whether a city or town offers information and assistance to homeowners going solar.

5. Connecticut Green Bank Partners With Utilities, Contractors And Municipalities To Compete In SunShot Prize
   Solar Industry Magazine
   The team will aim to install 1 MW of solar PV in participating municipalities by January 2016 and 3 MW by March 2016.

---

## Lessons Learned

Based on the implementation of the Statutory and Infrastructure Sector Programs, the following are the lessons learned:

- Leases and PPA financing have become increasingly important tools for the independent installers. We are working to bring third-party owners and independent installers together via partnership agreements.

- Homeowners need more information on solar PV system design to make an informed decision on size of a system that makes the most economic sense for their needs. We will be working with Marketing to develop a campaign that effectively help homeowners with their decision to adopt solar.

- Exogenous impacts outside our and developers' control (e.g. permitting, site control) are impediments to completing Anaerobic Digesters and CHP projects on a timely basis. We are working on our mitigation of these risks.

---

## Infrastructure Sector Programs FY 2017 Targets

Of the 2 programs being implemented in the Infrastructure Sector Programs, the following is a breakdown of the key targets for each program (see Table 7):

**Table 7. Number of Projects, Capital Deployed, and Clean Energy Deployed (MW)**

| Program | # of Projects | Capital Deployed | Clean Energy Deployed (MW) |
|---|---|---|---|
| RSIP | 6,377-8,500 | $210,800,000-$282,302,000 | 48.5-64.6 |
| AD | 1 | $18,000,000 | 1.6 |
| **Total** | **6,378-8,501** | **$228,800,000-300,302,000** | **50.1-66.2** |

To achieve these targets, the Infrastructure Sector Programs will focus its programmatic expenses in the following areas:

- **New Marketing Initiative to educate customers around solar installations.** GoSolarCT.com is an initiative of the Connecticut Green Bank. To give consumers more tools for going solar the smart way, GoSolarCT has partnered with EnergySage, the nation's leading online marketplace for solar, to connect them with Connecticut Green Bank-eligible solar contractors who will compete for your business. Through this unique partnership, they will be able to compare solar quotes from multiple pre-screened contractors online.

- **Partnering with 3rd party providers and capital providers to give installers more options to sell potential customers.** When the CT Solar Lease 2 closed to residential customers, the ability for small installers to offer leases to customers diminished. CGB is working with lease financiers to offer leasing solutions that installers can offer customers as a way to compete with larger, vertically integrated third-party-owner/installers.

- **Continue process efficiencies for RSIP application approvals.** Connecticut Green Bank has an open RFP for a replacement of PowerClerk, the core software for the RSIP program used by contractors and CGB for determining incentives. The new software will address efficiency issues in the existing process and allow for scale. Additionally, the team internally is focused on increasing transparency and improving the workflow.

- **Continue efforts around consumer protection**. To better support consumers of solar PV, the Green Bank is updating its GoSolarCT.com website to provide consumers with a trusted information source. Other consumer protection efforts include partnering with the Connecticut Department of Consumer Protection, Office of Consumer Counsel, and Attorney General's offices to address consumer complaints and coordinate trainings for contractors on licensing requirements, and serving on the Advisory Committee of the federally funded

Sustainable Solar Education Project led by the Clean Energy States Alliance to develop resources on solar PV consumer protection and related topics.

845 Brook Street, Rocky Hill, CT 06067
T 860.563.0015
ctgreenbank.com

CONNECTICUT GREEN BANK

# Memo

**To:** Board of Directors of the Connecticut Green Bank

**From:** Lucy Charpentier, Bryan Garcia, Kerry O'Neill, and Eric Shrago

**Cc** Mackey Dykes, Brian Farnen, and Bert Hunter

**Date:** July 22, 2016

**Re:** Residential Sector Programs – Program Performance towards Targets for FY 2016

---

## Overview

Public Act 11-80 (PA 11-80), *An Act Concerning the Establishment of the Department of Energy and Environmental Protection and Planning for Connecticut's Energy Future*, requires that the Connecticut Green Bank (Green Bank) develop and implement several programs to finance and otherwise support clean energy investment in residential projects to promote deep energy efficiency retrofits, renewable energy deployment, and fuel and equipment conversions in single-family and multifamily homes across the state.

For a description of the programs and the TAM and SAM, please see the Comprehensive Plan for Fiscal Years 2015 and 2016.

---

## Performance Targets and Progress

With respect to the Comprehensive Plan approved by the Board of Directors of the Green Bank on July 17, 2015, the following are the performance targets for FY 2016 and progress made to targets for the Residential Sector Programs (see Table 1).

**Table 1. Program Performance Targets and Progress Made to the Comprehensive Plan for FY 2016 (as of June 30, 2016)**

| Key Metrics | Program Performance Targets | Program Progress[1] |
|---|---|---|
| Capital Deployed | $57,537,000 | $40,793,681 |
| Investment at Risk[2] | $14,400,000 | $8,578,785 |
| Private Capital | $43,137,000 | $32,214,896 |

[1] Includes only closed and completed transactions

[2] Includes funds from the Clean Energy Fund, RGGI allowance revenue, repurposed ARRA-SEP funds, and other resources that are managed by CEFIA that are committed and invested in subsidies, credit enhancements, and loans and leases. Does not include commitments for the $600,000 guarantee for Connecticut Housing Investment Fund (now called Capital for Change) to support their recapitalization from Webster Bank for residential 1-4 energy lending, including Smart-E lending, or the $5,000,000 guarantee to Housing Development Fund for the repayment of the MacArthur Foundation program related investment.

| Key Metrics | Program Performance Targets | Program Progress[1] |
|---|---|---|
| Deployed (MW) | 9.4 | 8.1 |
| # of Loans/Projects | 2,162 | 1,036 |
| Annual Generated/Saved (MMBtu) | 66,810 | 72,939 |

## Residential Sector Programs

The following are brief descriptions of the progress made under the Comprehensive Plan for FY 2016 in the Residential Sector Programs

- **Energize CT Smart-E Loan** – a credit enhancement program that uses repurposed ARRA-SEP funds as a loan loss reserve and interest rate buy down to attract private capital from local credit unions and community banks. The product provides low interest (i.e. 4.49-6.99%) unsecured loans at long terms (i.e. between 5 to 12 years) for technologies that are consistent with the goals of the Comprehensive Energy Strategy and includes special offers of 2.99% rates for installing multiple eligible measures or converting to natural gas (see Table 2).

**Table 2. Energize CT Smart-E Loan Overview for FY 2016 (as of June 30, 2016)**[3]

| Program Data | Approved | Closed not yet Complete | Closed and Completed | Total |
|---|---|---|---|---|
| Projects | 93 | 38 | 165 | 296 |
| Installed Capacity (MW) | 0.2 | 0.2 | 0.7 | 1.1 |
| Clean Energy Produced (MWh)[4] | 3,329 | 3,799 | 17,414 | 24,542 |
| Combined Energy Generated & Saved (MMBtu)[5] | 885 | 1,192 | 4,677 | 6,754 |
| Subsidies ($'s) | - | - | - | - |
| Credit Enhancement ($'s) | - | $977,824 | $197,197 | $1,175,021 |
| Loans or Leases ($'s) | - | | - | |
| Total Green Bank Investment ($'s)[6] | | $977,824 | $197,197 | $1,175,021 |

[3] The lender data is as of May 2016. We will restate this number on a revised memo once data is received by all lenders this summer.
[4] Over the life of the measure(s)
[5] First year of the measure(s)
[6] Based on the Objective Functions for the Smart-E Loan, the credit enhancement for the second loss reserve represents 7.5% of the value of the local lender loans for Class A loans (FICO of >680) or 15% of the value of the local lender loans for Class Be loans (FICO of 640-679). This is the actual loan loss reserve position as of 6/30/2016 and also includes $246,045 for interest rate buydowns disbursed during the fiscal year.

| Program Data | Approved | Closed not yet Complete | Closed and Completed | Total |
|---|---|---|---|---|
| Private Capital ($'s) | $1,813,870 | $1,077,209 | $4,268,039 | $7,159,118 |

The Smart-E Loan program is estimated to have created 46 direct and 74 indirect and induced jobs years and 11,033 tons of CO2 emissions reduced over the life of the projects.

- **CT Solar Lease** – a lease program that uses repurposed ARRA-SEP funds as a loan loss reserve and debt and equity from Green Bank approved by the Board of Directors to attract private capital from a syndicate of local lenders and tax equity to provide homeowners with FICO scores of 640 and above with a no upfront financing option for residential and commercial solar – note the data below applies to residential only (see Table 3).

**Table 3. CT Solar Lease Overview for FY 2016 (as of June 30, 2016)**

| Program Data | Approved | Closed not yet Complete | Closed and Completed | Total |
|---|---|---|---|---|
| Projects | - | 35 | 438 | 473 |
| Installed Capacity (MW) | - | 0.3 | 3.6 | 3.8 |
| Clean Energy Produced (MWh)[7] | - | 6,497 | 84,911 | 91,409 |
| Combined Energy Generated & Saved (MMBtu)[8] | - | 887 | 11,589 | 12,475 |
| Subsidies ($'s) | - | - | - | - |
| Credit Enhancement ($'s)[9] | - | $72,320 | $942,128 | $1,014,449 |
| Loans or Leases ($'s)[10] | - | $208,305 | $2,555,748 | $2,764,053 |
| Total Green Bank Investment ($'s) | - | $280,625 | $3,497,877 | $3,778,502 |
| Private Capital ($'s) | - | $1,102,613 | $13,528,256 | $14,630,868 |

The CT Solar Lease program is estimated to have created 103 direct and 165 indirect and induced jobs years and 47,395 tons of CO2 emissions reduced over the life of the projects.

- **Low Income** – an innovative solar PV lease and efficiency energy savings agreement financing model provided by PosiGen and, supported by a $5 million subordinated debt investment, with an additional $5 million option from the Green Bank, into a total fund of $27 million to support 1,000 homes with a focus on the low-to-moderate income market segment utilizing alternative underwriting approaches that examine factors such as bill payment history and bad debt and bank databases (see Table 4). All projects include light weatherization and efficiency provided by HES or HES-IE.

[7] Over the life of the measure(s)

[8] First year of the measure(s)

[9] Based on the Objective Functions for the CT Solar Lease, the loan loss reserve credit enhancement represents about 5.85% of the value of the lease.

[10] Based on the Objective Functions for the CT Solar Lease, the loan financing represents about 15.89% of the value of the lease.

**Table 4. Low Income Overview for FY 2016 (as of June 30, 2016)**

| Program Data | Approved | Closed not yet Completed | Closed and Completed | Total |
|---|---|---|---|---|
| Projects | - | 288 | 45 | 333 |
| Installed Capacity (MW) | - | 1.9 | 0.3 | 2.2 |
| Clean Energy Produced (MWh)[11] | - | 39,295 | 6,985 | 46,280 |
| Combined Energy Generated & Saved (MMBtu)[12] | - | 43,126 | 7,583 | 50,709 |
| Subsidies ($'s) | - | - | - | - |
| Credit Enhancement ($'s) | - | - | - | - |
| Loans or Leases ($'s) | - | - | - | - |
| Total Green Bank Investment ($'s) | - | - | - | - |
| Private Capital ($'s) | - | $8,519,825 | $1,324,040 | $9,843,865 |

The Low Income programs are estimated to have created 51 direct and 83 indirect and induced jobs years and 23,996 tons of CO2 emissions reduced over the life of the projects.

- **Multifamily** – offerings for both the affordable and market rate multifamily segments include pre-development loan programs supported by Green Bank capital and term financing options such as the Low Income Multifamily (LIME) loan offered by Connecticut Housing Investment Fund (CHIF, now called Capital for Change) and supported by $1,000,000 of seed capital and $300,000 of ARRA-SEP funds for a loss reserve, a credit enhancement fund for gap financing supported by Green Bank capital, and C-PACE and solar lease options, leveraging the C&I sector programs (see Table 5). Affordable pre-development loans and gap financing are offered with Housing Development Fund (HDF) as a result of a $5 million program related investment from MacArthur Foundation where the Green Bank provides a guaranty to HDF for repayment of the MacArthur investment.

**Table 5. Multifamily (Term Financing[13]) Overview for FY 2016 (as of June 30, 2016)**

| Program Data | Approved | Closed not yet Completed | Closed and Completed | Total |
|---|---|---|---|---|
| Projects | 5 | 27 | - | 32 |
| Installed Capacity (MW) | 0.3 | 1.2 | - | 1.5 |
| Clean Energy Produced (MWh)[14] | 6,751 | 28,476 | - | 35,227 |
| Combined Energy Generated & Saved (MMBtu)[15] | 921 | 3,886 | - | 4,807 |
| Subsidies ($'s) | - | - | - | - |
| Credit Enhancement ($'s) [16] | - | $300,000 | - | $300,000 |

[11] Over the life of the measure(s)
[12] First year of the measure(s)
[13] Additional predevelopment loan activity for FY16 includes: 5 approved loans for $505,700 and 5 closed loans for $48,650. This activity gets reflected in the table when projects move to the installation and construction phase.
[14] Over the life of the measure(s)
[15] First year of the measure(s)
[16] This is the actual loan loss reserve position of the LIME loan as of 6/30/2016

| | | | | |
|---|---|---|---|---|
| Loans or Leases ($'s) | $2,192,339 | $3,325,262 | - | $5,517,601 |
| Total Green Bank Investment ($'s) | $2,192,339 | $3,625,262 | - | $5,817,601 |
| Private Capital ($'s) | $906,691 | $2,394,739 | - | $3,301,430 |

The Multifamily programs are estimated to have created 26 direct and 42 indirect and induced jobs years and 18,265 tons of CO2 emissions reduced over the life of the projects.

For a breakdown of the use of Green Bank resources for Residential Programs – see Table 6.

**Table 6. Distribution of Green Bank Funds Invested in Projects and Programs through Subsidies, Credit Enhancements, and Loans and Leases for FY 2016 (as of June 30 2016)**[17]

| Program | Subsidies (i.e. Buy-Downs) | Credit Enhancements | Loans and Leases | Total |
|---|---|---|---|---|
| Smart-E Loan | - | $1,175,021 | - | $1,175,021 |
| CT Solar Lease | - | $1,014,449 | $2,764,053 | $3,778,502 |
| Low Income | - | - | - | - |
| Multifamily | - | $300,000 | $3,325,262 | $3,625,262 |
| Total | - | $2,489,470 | $6,089,315 | $8,578,785 |

Of the $8.3 million of Green Bank resources invested, 0% was in subsidies, 26% was in Credit Enhancements, and 74% was in Loans and Leases. Of these programs, the following is a breakdown of their contributions made thus far towards the performance target and the human resources required to implement them (see Table 7):

**Table 7. Program Progress Made for FY 2016 (as of June 30, 2016)**[18]

| Key Metrics | Smart-E | CT Solar Lease | Low Income | Multifamily[19] | Total Program Progress |
|---|---|---|---|---|---|
| Date of Program Approval | Nov 2012 | Jun 2013 | Jun 2015 | Oct 2013 – Oct 2015 | |
| Date of Program Launch | Nov 2013 | Sep 2013 | Jul 2015 | Oct 2013 – Oct 2015 | |
| Ratepayer Capital at Risk | $1,175,021 | $3,778,502 | - | $3,625,262 | $8,578,785 |
| Private Capital | $5,345,423 | $14,630,868 | $9,843,865 | $2,394,739 | $32,214,896 |
| Deployed (MW) | 0.9 | 3.8 | 2.2 | 1.2 | 8.1 |
| # of Loans/Installations | 203 | 473 | 333 | 27 | 1,036 |
| Lifetime Production (MWh) | 21,213 | 91,409 | 46,280 | 28,476 | 187,378 |
| Annual Generated/Saved (MMBtu) | 5,869 | 12,475 | 50,709 | 3,886 | 72,939 |
| Full Time Equivalent Staff | 2.54 | 1.28 | 1.71 | 4.48 | 10.01 |

[17] Includes only closed and completed transactions

[18] Includes only closed and completed transactions

[19] Multifamily is a collection of individual programs, each with their own approval and launch dates.

## Market Transformation

The following are products that "graduated" from the Connecticut Green Bank and serve as example of the green bank model at work – demonstrating market transformation.

- **Sungage Financial & Digital Federal Credit Union** – in partnership with a servicer (i.e. Sungage Financial), a 15-year solar loan product – called the CT Solar Loan – was offered to a range of credit quality consumers (no less than 680 FICO) interested in solar PV through October of 2014. A specialty product designed for solar PV, interest rates are affordable at 6.49% and the CT Solar Loan may re-amortize after the ITC is received by the borrower to ensure the positive cash flow of energy savings from solar PV exceeding the debt service of the loan. This product is the 1st to "graduate" from the Green Bank's support with Sungage Financial receiving a $100 million financial commitment from the Digital Federal Credit Union for residential solar PV loans to support projects in Connecticut as well as California, Florida, Massachusetts, New Jersey, New York, and Texas. This is an example of the green bank model at work – true market transformation (see Table 8).

**Table 8. Sungage and DFCU Overview for FY 2016 (as of June 30, 2016)**

| Program Data | Approved | Closed not yet Complete | Closed and Completed | Total |
|---|---|---|---|---|
| Projects | 117 | 185 | - | 302 |
| Installed Capacity (MW) | 1.1 | 1.7 | - | 2.8 |
| Clean Energy Produced (MWh)[20] | 26,716 | 40,846 | - | 67,562 |
| Combined Energy Generated & Saved (MMBtu)[21] | 3,646 | 5,575 | - | 9,221 |
| Private Capital ($'s) | $4,471,367 | - | $6,874,525 | $11,345,892 |

- **Sunnova** – In the first quarter of FY16 the CT Solar Lease expended its fund allocation for residential projects and took its last application. Instead of raising another residential solar lease fund, the Green Bank recognized that the private market for solar financing had evolved substantially and issued an RFP for private solar financing companies to become a preferred provider serving independent and regional installers operating in our RSIP program. Sunnova responded to the RFP and was selected to offer solar leases and PPAs to eligible installers at terms substantially similar to the CT Solar Lease, but requiring no credit enhancement from the Green Bank. We facilitated introductions and trainings for Sunnova with RSIP installers in July, 2016. While Sunnova was the only company to take advantage of this preferred status offered by the RFP, we observed other solar financing providers supporting installers who had been using CT Solar Lease. This is another example of the green bank model at work with market transformation (see Table 9).

[20] Over the life of the measure(s)

[21] First year of the measure(s)

**Table 9. Sunnova Overview for FY 2016 (as of June 30, 2016)**

| Program Data | Approved | Closed not yet Complete | Closed and Completed | Total |
|---|---|---|---|---|
| Projects | - | 15 | 141 | 156 |
| Installed Capacity (MW) | - | 0.1 | 1.0 | 1.1 |
| Clean Energy Produced (MWh)[22] | - | 2,508 | 24,092 | 26,600 |
| Combined Energy Generated & Saved (MMBtu)[23] | - | 342 | 3,288 | 3,630 |
| Private Capital ($'s) | - | $335,112 | $3,178,525 | $3,513,637 |

Between the Green Bank's current products and those that have graduated in the marketplace, the following is a breakdown for Residential Programs – see Table 10.

**Table 10. Program and Market Progress Made for FY 2016 (as of June 30, 2016)**[24]

| Key Metrics | Green Bank Products | Market Transformation | Total Product and Market Progress |
|---|---|---|---|
| Ratepayer Capital at Risk | $8,578,785 | $0 | $8,578,785 |
| Private Capital | $32,214,896 | $10,388,163 | $42,603,059 |
| Deployed (MW) | 8.1 | 2.8 | 10.9 |
| # of Loans/Installations | 1,036 | 341 | 1,377 |
| Lifetime Production (MWh) | 187,378 | 67,447 | 254,824 |
| Annual Generated/Saved (MMBtu) | 72,939 | 9,205 | 82,144 |

## "Top 5" Headlines

The following are the "Top 5" headlines for residential sector programs for FY 2016:

1. Malloy touts solar energy savings
   CTpost
   "I am just so elated," she said of her latest $27.85 bill from United Illuminating…"

2. CT Green Bank crowdfunds $1M in solar loans
   Hartford Business Journal
   The **Green Bank** packaged $1 million of its loan programs and sold that bundle to solar crowdfunding platform Mosaic.

3. Connecticut Green Bank Joins Partnership to Ease Middle-Class Energy Costs
   The Commercial Record

[22] Over the life of the measure(s)
[23] First year of the measure(s)
[24] Includes only closed and completed transactions

The MacArthur funds enable the **Connecticut Green Bank** and the Housing Development Fund to tackle these challenges…

4. Solar PV and the Smart-E loan
   WFSB - Better Connecticut
   "The **Smart-E program**. We're working with local lenders and it's really easy to get a loan…"

5. Connecticut Program Makes Solar Affordable for Low-Income Families
   Inside Climate News
   Faith groups and churches are working with a third-party solar provider to spread renewable energy to people who normally could not afford it.

---

## Lessons Learned

Based on the implementation of the Residential Sector Programs thus far, the following are the key lessons learned:

- **Ramping up activity in hard to reach low-to-moderate (LMI) single family and affordable multifamily markets is slower than we would like, but momentum is building** – While it has been true in any of the new products we've launched in the residential sector, it's been all the more a factor in our products targeting harder to reach markets.
  - In the **single family LMI space, PosiGen experienced delays** in getting mobilized for the three community campaigns as well as growing pains as it expanded its operations here in CT, while simultaneously expanding into other new markets. It took them longer to staff up than they anticipated, particularly in positions that were focused on building relationships with community groups serving the target demographic. However, starting in early 2016, we began to see consistent growth in the pipeline as the campaigns finally got under way in earnest, and we've been working closely with the management team to position their outreach and operations for continued growth.
  - **Uptake has also been slower than we'd like for our affordable multifamily programs**, due to long project development and decision making cycles, owner knowledge and capacity (often operating on a shoestring and with other more pressing competing priorities), and housing & energy consultants and contractors limited in their capacity to take a whole building approach needed to scope, define and implement deeper measures. Many projects require a great deal of technical assistance and hand holding to push through the process, and lean heavily on Green Bank staff for expertise. However, the recently launched pre-development programs are showing a lot of promise and are a way to meet the challenges in the sector. The LIME Loan is also starting to take off – and we've learned how critically important it is to have a non-secured loan product that can be layered on top of existing debt with multiple requirements/restrictions.

- **We are making inroads in solar penetration for the LMI market, but there is still much work to do** – We began tracking our penetration of solar PV in the residential space back in 2014 which highlighted the significant disparity between deployment in lower income census tracts versus higher income tracts. Since then, through focused messaging to solar installers regarding customer opportunities in the LMI market, the introduction of the LMI RSIP incentive, and the PosiGen partnership, we have seen solid

increases in the rate of solar in lower income census tracts (e.g., projects per 1000 household in <60% AMI census tracts are 5 times lower than >100% AMI census tracts now, vs 10 times lower in 2014). In the affordable multifamily sector, we've gone from no activity for solar on housing projects to 15 in this last fiscal year through the first round of Solarize for CHFA's State Sponsored Housing Portfolio. Our focused initiatives in these markets are beginning to pay off, but are still in the early stages.

- **Stakeholder work in the affordable multifamily market is a significant time commitment and results come slowly, but they do come and they are transformative when they are realized** – Staff has invested significant time and resources in our CHFA and Department of Housing (DOH) relationships over the last three years and this year saw several key developments that impact the entire CHFA pipeline and much of the DOH pipeline including CHFA integrating energy goals into its agency policy statement; a new utility incentive process whereby all projects must seek energy incentives (as a result of the LEAN process); and Passive House and higher energy standards being pushed by CHFA. We've provided leadership to help raise the bar in this sector, resulting in the state housing agencies requiring applicants to compete and drive to higher energy performance standards (akin to raising the building code). Even though we are not ultimately financing many of these housing agency deals, our work has had greater market impact on the multifamily sector since the ecosystem of providers to CHFA and DOH properties also serve the broader affordable multifamily market.

- **Solar as a gateway to energy efficiency is gaining traction** – We continued to see momentum in the Smart-E Bundle where again this year solar bundles dominated. Additionally, the PosiGen model is showing great promise for even wider spread integration of efficiency and solar. 100% of PosiGen projects get light weatherization efficiency (through HES or HES-IE), and 64% of customers take the energy savings agreement for deeper efficiency measures. This is in contrast to 26% of HES customers going deeper. Coupling solar and efficiency at the point of sale is attractive to customers.

- **Smart-E is still competing with subsidized capital and has unrealized growth in the utility/Home Energy Solutions channel which could be a risk in keeping lenders engaged over the long term** – like last year, the EnergizeCT Heating Loan is still in the market and draining HVAC business. Additionally, we had expected 600 loans from the utility/HES channel which did not materialize since the lender for that channel, CHIF (now called Capital for Change) was delayed a full year in coming onto the Smart-E platform. Liberty Bank did not come back into the program after a planned hiatus due to a systems upgrade, and another lender with lower rates raised them back up to the maximum, due to lack of volume/competitive pressure. However, we did see one new lender proactively join the program, Mutual Security Credit Union, and another community bank express renewed interest in joining. Lender engagement will continue to be a concern until volume builds.

- **Product development approaches that use our capital or credit enhancements and partners' origination and operations capabilities are ideal to ensure scalability** – The challenges in managing the operations of CT Solar Lease have taught us the value in approaching new products differently. As we developed solutions for LMI solar (PosiGen) and the entire multifamily product suite we are not taking on the operations burden in-house, but working with partners who will do that. The R-PACE program design contemplates the same model.

- **<u>The Green Bank is viewed as the authority on residential solar, even for areas we don't have purview over (e.g., consumer protection issues, real estate transactions involving solar)</u>** – As residential solar continue to grow and inevitable challenges arise with consumer protection issues, bad actors in the contractor space, and more home sales involving solar, a variety of stakeholders sought out the Green Bank to field concerns, (including high profile media inquiries, Department of Consumer Protection, Office of Consumer Counsel, realtor groups, etc.). The Green Bank must continue to be a resource to stakeholders, coordinating where it makes sense, but not take on more than is appropriate.

---

## Residential Sector Programs FY 2017 Targets

Of the 4 program areas being implemented in the Residential Sector Programs, the following is a breakdown of the key targets for each program (see Table 11):

**Table 11. Number of Projects, Capital Deployed, and Clean Energy Deployed (MW)**

| Program | # of Projects | Capital Deployed | Clean Energy Deployed (MW) |
|---|---|---|---|
| Smart-E Loan | 538 | $9,039,000 | 1.1 |
| LMI Leases and ESAs | 500 | $15,250,000 | 3.4 |
| Multifamily Term Loans | 55 | $12,310,000 | 0.9 |
| Multifamily Predevelopment Loans | 36 | $570,000 | N/A |
| **Total** | **1,093** | **$36,599,000** | **5.4** |

Note that Multifamily Predevelopment Loan activity is not included in the Total and that the Multifamily Program targets are concentrated in the affordable housing space, as that is where staff time and resources are concentrated for FY17.

To achieve these targets, the Residential Sector Programs will focus its programmatic expenses in the following areas:

- **<u>Driving Demand/Marketing Innovation</u>** –
  - **Smart-E**
    - Ensuring Capital for Change is a success in the utility/HES channel and the credit-challenged customer segment
    - Marketing efficiency to homeowners who are in the process or have already gone solar in the RSIP, using the Bundle offer
    - Contractor engagement strategies such as the co-op marketing program delivered through an online platform; a new mobile app to support selling upgrades with financing; recapturing HVAC contractors
    - Lender pilots for tailored marketing campaigns
  - **LMI pipeline support for PosiGen and Affordable Multifamily Programs**
    - Pay for performance pilots working with nonprofits or other key stakeholders to drive demand through their networks

- "Road show" for predevelopment loan programs to drive pipeline for term financing, including partnering with private lenders who will market to their own client base for their term products (rationale: our resources will help them source high quality deals that cash flow, and are larger since they include energy upgrades)
- Priming the multifamily pipeline with our Benchmark CT initiative with CHFA and Wegowise to benchmark 1800 buildings and identify best prospects for energy investments
- Solarize Round 2 with CHFA for solar on housing authorities
- Community campaigns with geographically targeted outreach and technical assistance for multifamily, converting leading owners into champions for programs and creating "communities of practice"

- **Capacity Building for Multifamily Pipeline Development** – we are still early in our experience in financing projects in this sector and we continue to see a significant need for high touch technical assistance for projects that have complex existing capital stacks and/or complicated project and technology assessment challenges, particularly on deep energy upgrades. We also continue to see a need to support the integration work with the utility processes to continue our LEAN work. Ongoing training is also needed, particularly around how to approach deeper energy improvements, for our housing agency partners, nonprofit developers and a variety of professional service providers in the market. We have developed a stable of trusted consultants that are assisting us in working through case-by-case project challenges and developing and delivering training. This work supports building the capacity of both owners to ask the right questions around energy and high quality firms that will serve owners' needs and successfully deliver on more complex projects.

- **Investigation of Sustainable Scaling Models for the LMI Market** – This will include exploration of integrated funding and delivery models for the remediation of health and safety issues which prevent a significant percentage of energy upgrades from moving forward in the LMI single family and affordable multifamily market segments. We will also seek to run a pilot in one community or neighborhood, potentially leveraging HUD HOME or CDBG funds. This will also include exploration of leveraging the "community design center" concept to incorporate clean energy activities at the neighborhood/grass roots level.

- **Real Estate Ecosystem Engagement** – realtor and lender engagement to educate about the programs and resources available for making clean energy improvements. We also plan to conduct a study on home values for homes with and without energy upgrades.

- **Processing Support** – Continue development of the Metis data platform for single family products and implement Salesforce for multifamily programs.

845 Brook Street, Rocky Hill, CT 06067
T 860.563.0015
ctgreenbank.com

CONNECTICUT GREEN BANK

# Memo

**To:** Board of Directors of the Connecticut Green Bank

**From:** Lucy Charpentier, Mackey Dykes, Bryan Garcia, and Eric Shrago

**Cc** Brian Farnen and Bert Hunter

**Date:** July 22, 2016

**Re:** Commercial and Industrial Sector Programs – Program Performance towards Targets for FY 2016

---

## Overview

Pursuant to Public Act 12-2, the Connecticut Green Bank ("Green Bank") launched the Commercial and Industrial Property Assessed Clean Energy (C-PACE) program in January 2013. C-PACE is a statutorily mandated program that was the primary commercial and industrial (C&I) financing product in the comprehensive plan and budget for fiscal years 2015 and 2016.

For a program description and information on the Total Addressable Market and Serviceable Addressable Market (SAM), please see the FY 2015 and FY 2016 Comprehensive Plan.

---

## Performance Targets and Progress

With respect to the Comprehensive Plan approved by the Board of Directors of the Green Bank on July 17, 2015, the following are the performance targets and the progress made in FY 2016 for the Commercial and Industrial Sector Programs (see Table 1).

**Table 1. Program Performance Targets and Progress Made to the Comprehensive Plan for FY 2016 (as June 30, 2016)**

| Key Metrics | Program Performance Targets | Program Progress[1] |
|---|---|---|
| Capital Deployed | $53,000,000 | $35,977,353 |
| Investment at Risk[2] | $6,530,000 | $11,583,806 |
| Private Capital | $46,470,000 | $24,393,546 |
| Deployed (MW) | 9.0 | 6.0 |
| # of Loans/Projects | 88 | 51 |
| Annual Saved (MMBtu) | - | 54,013 |

[1] Includes only closed and completed transactions

[2] Includes funds from the Clean Energy Fund, RGGI allowance revenue, repurposed ARRA-SEP funds, and other resources that are managed by the Connecticut Green Bank that are committed and invested in subsidies, credit enhancements, and loans and leases.

In January 2013, the Green Bank introduced the C-PACE program. C-PACE is one of the country's first statewide programs to provide 100 percent upfront financing for energy upgrades to commercial, industrial and nonprofit buildings. Under this program, property owners obtain financing needed to make key energy improvements, and then repay it as a benefit assessment charge on their property tax bill. Because the payments can be spread over a period of up to 25 years, owners save on energy costs immediately and for years to come. The financed improvements increase the building's value, while preserving the building owner's capital and credit lines for core investments.

C-PACE financing is available for a wide range of clean energy and energy efficiency improvements, including new boilers and chillers, upgraded insulation, new windows or solar installations. Energy audits and construction costs can also be financed through C-PACE. C-PACE has been a notable success in deploying clean energy throughout the state. 122 Connecticut municipalities, together accounting for over 90 percent of the state's commercial and industrial square footage, have signed onto the program. For initial C-PACE debt funding, the Green Bank established a $40 million warehouse facility using the Green Bank's balance sheet. Working with its group of qualified capital providers, the Green Bank auctioned its first group of transactions to Clean Fund and secured private capital to purchase the initial $30 million portfolio of transactions that the Green Bank would originate. At the end of 2015, the Green Bank entered into a $100 million public-private partnership with Hannon Armstrong to create a warehouse to provide debt to projects. Having proved the warehouse model with its own balance sheet, the Green Bank can now continue it without pledging as large a portion of public funds.

---

## Commercial and Industrial Sector Programs

The following are brief descriptions of the progress made under the last comprehensive plan in the Commercial and Industrial Sector Programs

- **C-PACE** – Commercial Property Assessed Clean Energy (C-PACE) is an innovative financing program that is helping commercial, industrial and multi-family property owners access affordable, long-term financing for smart energy upgrades to their buildings (see Table 2).

**Table 2. C-PACE Overview for FY 2016 (as of June 30, 2016)**

| Program Data | Approved | Closed Not Yet Complete | Closed and Completed | Total |
|---|---|---|---|---|
| Projects | 14 | 29 | 14 | 57 |
| Installed Capacity (MW) | 0.8 | 2.0 | 1.1 | 3.9 |
| Clean Energy Produced (MWh)[3] | 5,101 | 27,210 | 18,783 | 51,094 |
| Energy Saved (MMBtu)[4] | 8,435 | 16,572 | 28,045 | 53,052 |
| Subsidies ($'s) | - | - | - | - |
| Credit Enhancement ($'s) | - | - | - | - |
| Loans or Leases ($'s) | - | $5,688,840 | $1,092,973 | $6,781,813 |
| Total Green Bank Investment ($'s) | - | $5,688,840 | $1,092,973 | $6,781,813 |

[3] Over the life of the measure(s)
[4] First year of the measure(s)

| Program Data | Approved | Closed Not Yet Complete | Closed and Completed | Total |
|---|---|---|---|---|
| Private Capital ($'s) | $5,556,562 | $7,683,989 | $12,095,878 | $25,336,429 |

Overall, the implementation of C-PACE has been steady and progress continues to grow. The C-PACE program is estimated to have created 190 direct and 304 indirect and induced jobs years and reduced 130,317 tons of CO2 emissions over the life of the projects.

- **CT Solar Lease (Commercial)** – a loan-lease program that provides public and private funding through the Connecticut Solar Lease Program to provide Power Purchase Agreements (PPAs) for solar PV to creditworthy commercial and industrial end-users of electricity (see Table 3). This program will support solar PV projects between 50-200 kW in size – with an average size of 75 kW.

**Table 3. CT Solar Lease Overview for FY 2016 (as of June 30, 2016) – for For-Profit Organizations Only**

| Program Data | Approved | Closed Not Yet Complete | Closed and Completed | Total |
|---|---|---|---|---|
| Projects | - | 7 | 1 | 8 |
| Installed Capacity (MW) | - | 2.9 | TBD | 2.9 |
| Clean Energy Produced (MWh)[5] | - | 60,327 | 692 | 61,019 |
| Energy Saved (MMBtu)[6] | - | 9,302 | 94 | 9,396 |
| Subsidies ($'s) | - | - | - | - |
| Credit Enhancement ($'s) | - | - | - | - |
| Loans or Leases ($'s)[7] | - | $4,753,727 | $48,266 | $4,801,993 |
| Total Green Bank Investment ($'s) | - | $4,753,727 | $48,266 | $4,801,993 |
| Private Capital ($'s) | - | $4,567,306 | $46,374 | $4,613,680 |

The CT Solar Lease (Commercial) program is estimated to have created 26 direct and 39 indirect and induced jobs years and reduced 31,638 tons of CO2 emissions over the life of the projects.

For a breakdown of the use of the Green Bank resources for Commercial and Industrial Programs, see table 4 below.

**Table 4. Distribution of Green Bank Funds Invested in Projects and Programs through Subsidies, Credit Enhancements, and Loans and Leases for FY 2016 (as of June 30 2016)**[8]

| Program | Subsidies | Credit Enhancements | Loans and Leases | Total |
|---|---|---|---|---|
| C-PACE | - | - | $6,781,813 | $6,781,813 |
| CT Solar Lease | - | - | $4,801,993 | $4,801,993 |
| **Total** | **-** | **-** | **$11,583,806** | **$11,583,806** |

[5] Over the life of the measure(s)
[6] First year of the measure(s)
[7] Based on the Objective Functions for the CT Solar Lease, the loan financing represents about 26% of the value of the lease.
[8] Includes only closed and completed transactions

Of the $11.6 million of Connecticut Green Bank resources invested, 0% was in subsidies, 0% was in Credit Enhancements, and 100% was in Loans and Leases.

Of these programs, the following is a breakdown of their contributions made thus far towards the performance target and the human resources required to implement them (see Table 5):

**Table 5. Program Progress Made in FY 2016 (as of June 30, 2016)**[9]

| Key Metrics | C-PACE | Commercial Lease | Total Program Progress |
|---|---|---|---|
| Date of Program Approval | Sep 2012 | Jun 2013 | |
| Date of Program Launch | Jan 2013 | Sep 2013 | |
| Ratepayer Capital at Risk | $6,781,813 | $4,801,993 | $11,583,806 |
| Private Capital | $19,779,867 | $4,613,680 | $24,393,546 |
| Deployed (MW) | 3.1 | 2.9 | 6.0 |
| # of Loans/Installations | 43 | 8 | 51 |
| Lifetime Production (MWh) | 45,993 | 61,019 | 107,012 |
| Annual Saved (MMBtu) | 44,617 | 9,396 | 54,013 |
| Full Time Equivalent Staff | 6.8 | 1.3 | 8.1 |

## Top Headlines

The following are the top headlines for the Commercial and Industrial Sector programs for FY 2016:

Connecticut Green Bank Inks $100m Funding Deal
Hartford Business Journal
(Connecticut Green Bank) has signed an agreement with Maryland-based Hannon Armstrong to provide up to $100 million in financing for green energy projects…

CPACE unveils manufacturer, multi-family perks
Hartford Business Journal
it will bundle more than $8 million in private funds to match $800,000 from the Department of Economic and Community Development's manufacturing innovation fund.

Bridgeport's Wade's Dairy ready to double in size
CTpost
“This is a big, big project for us,” he said. “It will set the stage for the fifth generation of the family to take over.”

The Real Story, Connecticut Green Bank
Fox61
Mackey Dykes talks with Jenn Bernstein about marketplace growth and how you can access affordable options.

[9] Includes only closed and completed transactions

## Lessons Learned

Based on the implementation of the Commercial and Industrial Sector Programs thus far, the following are the key lessons learned:

- **Invest in Contractors** – contractors are the main source of projects for the program. Early work in training and supporting contractors yielded a small first class of contractors who understand C-PACE and are doing projects. However, in order to grow the market and continue building demand for the Hannon Armstrong warehouse (as many of the first class of contractors have moved to other lenders), more investment in recruiting, training and supporting contractors is necessary.

- **Long Sales Cycle** – moving projects through the C-PACE pipeline can take a year a more. This learning is bearing out in new C-PACE programs around the country. Educating building owners, working with them through the upgrade and then financing decision-making process, and scoping projects takes time. Given these timelines, meeting our goals requires working multiple channels at once and building a pipeline with multiple projects in all stages of the process.

- **Subsector Focus** – campaigns such as "Energy on the Line" allow for targeted messaging and focused marketing efforts, which has higher yields than approaching the entire market at once. The C-PACE program should continue and pilot new ways of running subsector campaigns.

- **Open Market Success** – the open market concept, opening the C-PACE platform up to allow private lenders to lend directly to building openers, is working. With no public dollars being invested, the open market is yielding a growing amount of projects. However, it's growing slowly so there is still a role for CGB capital to play to continue the success of the program, especially in investing efforts to bring in new contractors.

## Commercial, Industrial, and Institutional Sector Programs FY 2017 Targets

Of programs being implemented in the Commercial, Industrial, and Institutional Sector Programs, the following is a breakdown of the key targets (see Tables 6):

**Table 6. Number of Projects, Capital Deployed, and Clean Energy Deployed (MW)**

| Program | # of Projects | Capital Deployed | Clean Energy Deployed (MW) |
|---|---|---|---|
| C-PACE | 79 | $45,550,000 | 11.1 |
| CT Solar Lease | 15 | $11,500,000 | 3.7 |
| **Total** | **94** | **$56,800,000** | **14.8** |

To achieve these targets, the Commercial, Industrial, and Institutional Sector Programs will focus its programmatic expenses in the following areas:

- **Contractors** – through efforts such as updating our C-PACE trainings and the newly-launched Project Accelerator Service, the program will recruit, train and support new contractors and help them source and develop projects.

- **Demand** - the program will explore new ways to partner with contractors and new strategic channel partners (i.e. BOMA, CoreNet, Connecticut Sustainable Business Council, etc.) to raise awareness of C-PACE and source projects. This will also include the deployment of specialized campaigns (i.e. Solarize for commercial and industrial) to give select contractors the opportunity to source new deals

- **New Lease Fund** – due to the success of the commercial and institutional portion of SL2, CGB will create a third fund dedicated to these sectors.

- **New Products and Markets** – the team will continue to pursue new market segments and to develop alternative financing products such as energy service agreements (ESAs) to meet the financing gaps in the market not met by C-PACE.

    - In FY16, the Green Bank funded a pilot ESA for the Bridgeport International Academy (BIA) after BIA was unable to finance their energy efficiency project through C-PACE. We will use performance data from that project and our ongoing engagement with building owners, contractors, ESA market leaders, and capital providers to determine the viability of a Green Bank ESA product.

    - The Green Bank is working on several fronts with the utilities to improve the complementarity of our programs and products. We are currently focused on working with UI/Avangrid and Eversource to bring more and cheaper capital into the Small Business Energy Advantage financing program.

845 Brook Street, Rocky Hill, CT 06067
T 860.563.0015
ctgreenbank.com

CONNECTICUT GREEN BANK

# Memo

**To:** Board of Directors of the Connecticut Green Bank

**From:** Lucy Charpentier, Bryan Garcia, and Eric Shrago

**Cc** Mackey Dykes, Brian Farnen, and Bert Hunter

**Date:** July 22, 2016

**Re:** Institutional Sector Programs – Program Performance towards Targets for FY 2016

---

## Overview

As part of Connecticut Green Bank's (Green Bank) goal of attracting and deploying capital to finance the clean energy goals of Connecticut, we have initiated institutional sector programs to support the State and its efforts to work with municipalities and schools through the Department of Energy and Environmental Protection's "Lead by Example" program and also to provide assistance to universities, hospitals, and other important non-profit organizations.

For program descriptions and information on the Total Addressable Market and Serviceable Addressable Market (SAM), please see the FY 2015 and FY 2016 Comprehensive Plan.

---

## Performance Targets and Progress

With respect to the Comprehensive Plan approved by the Board of Directors of the Green Bank on July 17, 2015, the following are the performance targets for FY 2016 and progress made to targets for the Institutional Sector Programs (see Table 1).

**Table 1. Program Performance Targets and Progress Made to the Comprehensive Plan for FY 2016 (as of June 30, 2016)**

| Key Metrics | Program Performance Targets | Program Progress[1] |
|---|---|---|
| Capital Deployed | $122,000,000 | $4,248,157 |
| Investment at Risk[2] | $1,810,000 | $1,104,521 |
| Private Capital | $120,090,000 | $3,143,636 |
| Deployed (MW) | 2.0 | 1.5 |
| # of Loans/Projects | 19 | 6 |
| Annual Saved (MMBtu) | 321,400 | 4,769 |

[1] Includes only closed and completed transactions

[2] Includes funds from the Clean Energy Fund, RGGI allowance revenue, repurposed ARRA-SEP funds, and other resources that are managed by CEFIA that are committed and invested in subsidies, credit enhancements, and loans and leases.

## Institutional Sector Programs

The following are brief descriptions of the progress made under the last comprehensive plan in the Institutional Sector Programs

- **CT Solar Lease (Institutional)** – a loan-lease program that provides public and private funding through the Connecticut Solar Lease Program to provide Power Purchase Agreements (PPAs) for solar PV to creditworthy institutional end-users of electricity (see Table 2). This program will support solar PV projects between 50-200 kW in size – with an average size of 75 kW.

- **Table 2. CT Solar Lease Overview for FY 2016 (as June 30, 2016) – For Non-Profit Organizations Only**

| Program Data | Approved | Closed not yet Completed | Closed and Completed | Total |
|---|---|---|---|---|
| Projects | - | 5 | 1 | 6 |
| Installed Capacity (MW) | - | 1.1 | 0.4 | 1.5 |
| Clean Energy Produced (MWh)[3] | - | 25,871 | 9,075 | 34,946 |
| Energy Saved (MMBtu)[4] | - | 3,531 | 1,238 | 4,769 |
| Subsidies ($'s) | - | - | - | - |
| Credit Enhancement ($'s) | - | - | - | - |
| Loans or Leases ($'s)[5] | - | $832,261 | $272,260 | $1,104,521 |
| Total CEFIA Investment ($'s) | - | $832,261 | $272,260 | $1,104,521 |
| Private Capital ($'s) | - | $2,368,743 | $774,893 | $3,143,636 |

The CT Solar Lease (Institutional) program is estimated to have created 14 direct and 23 indirect and induced jobs years and reduced 18,119 tons of CO2 emissions over the life of the projects.

- **Lead by Example** – The State of Connecticut created a standardized ESPC Program for use by state agencies and municipalities, as required by Connecticut General Statutes 16a-37x. The Green Bank has provided assistance to the Department of Energy and Environmental Protection (DEEP) in the implementation of the ESPC program. The program is intended to help state and municipal governments implement a portfolio of comprehensive energy savings measures with no upfront capital. The costs of the energy retrofits are paid for by guaranteed future savings from utility and maintenance budgets.

  ESPC projects will be implemented by Qualified Energy Service Companies (QESPs) that are on contract with the State of Connecticut to implement ESPC projects for municipalities and state agencies and have committed to follow the rules and guidelines of the ESPC program. In addition, project hosts will receive technical support from a pool of pre-qualified professional energy engineers that are available to review and interpret the QESPs work during the project development and contracting process. Program and technical support for both state and municipal project sponsors includes assistance in

[3] Over the life of the measure(s)
[4] First year of the measure(s)
[5] Based on the Objective Functions for the CT Solar Lease, the loan financing represents about 26% of the value of the lease.

evaluating projects, defining eligible conservation and renewable energy measures, monitoring and verifying the energy savings, qualifying additional technical service providers, and managing data.

The Lead By Example program has not closed on financing for any projects to date; however, the Green Bank has been and remains actively involved in identifying acceptable sources of financing for projects at state facilities.

For a breakdown of the use of CGB resources for Institutional Programs, see table 3 below.

**Table 3. Distribution of Green Bank Funds Invested in Projects and Programs through Subsidies, Credit Enhancements, and Loans and Leases for FY 2015 (as of June 30, 2015)**[6]

| Program | Subsidies | Credit Enhancements | Loans and Leases | Total |
|---|---|---|---|---|
| CT Solar Lease | - | - | $1,104,521 | $1,104,521 |
| LBE | - | - | - | - |
| **Total** | **-** | **-** | **$1,104,521** | **$1,104,521** |

Of the $1.1 of Connecticut Green Bank resources invested, 100% was in the form of Loans through the CT Solar Lease program.

Of these programs, the following is a breakdown of their contributions made thus far towards the performance target and the human resources required to implement them (see Table 4):

**Table 4. Program Progress Made for FY 2016 (as of June 30, 2016)**[7]

| Key Metrics | CT Solar Lease | Lead By Example | Total Program Progress |
|---|---|---|---|
| Date of Program Approval | June 2013 | - | - |
| Date of Program Launch | Sept 2013 | - | - |
| Ratepayer Capital at Risk | $1,104,521 | - | $1,104,521 |
| Private Capital | $3,143,636 | - | $3,143,636 |
| Deployed (MW) | 1.5 | - | 1.5 |
| # of Loans/Installations | 6 | - | 6 |
| Lifetime Production (MWh) | 34,946 | - | 34,946 |
| Annual Saved (MMBtu) | 4,769 | - | 4,769 |
| Full Time Equivalent Staff | 0.5 | 2.5 | 3.0 |

## "Top" Headlines

The following are the "Top" headlines for institutional sector programs for FY 2016:

Voluntown Elementary School solar project complete
Norwich Bulletin

[6] Includes only closed and completed transactions
[7] Includes only closed and completed transactions

"It's already produced enough electricity to power 40,000 light bulbs"

JCC of Greater New Haven unveils solar carport
New Haven Register
…the JCC of Greater New Haven unveiled its new solar carport Thursday — the largest in New England

---

## Lessons Learned

Based on the implementation of the Institutional Sector Programs thus far, the following are the key lessons learned:

- **Process Hurdles Remain** – the Green Bank continues to work with the state agencies involved to resolve the process questions and challenges posed by introducing performance contracting.
- **Demand and Need Is There** – state agencies recognize the opportunity to address much needed deferred maintenance issue as well as reduce energy bills that performance contracting represents
- **Access to Capital** – the Green Bank is ready and prepared to assist the state in providing it with access to capital for LBE projects when ready.

Note, all future institutional sector programs will now be led by the Commercial, Industrial, and Institutional Sector.

845 Brook Street, Rocky Hill, CT 06067
T 860.563.0015
ctgreenbank.com

CONNECTICUT GREEN BANK

# Project Memo

**To:** Connecticut Green Bank Board of Directors

**From:** Dale Hedman, Director, Statutory & Infrastructure Programs; Rick Ross, Associate Director, Statutory & Infrastructure Programs; Chris Magalhaes, Senior Manager, Clean Energy Finance

**CC:** Bryan Garcia, President and CEO, Bert Hunter, EVP & CIO, Mackey Dykes, VP, Commercial and Industrial Programs, Brian Farnen, General Counsel & CLO, and Eric Shrago, Chief Operating Officer

**Date:** July 18, 2016

**Re:** Bridgeport MicroGrid Project Loan Subordination Agreement and Finance Close Updates – Report Out

---

## Project Summary

As discussed in the updated Project Memo dated June 17, 2016, the City of Bridgeport is working with Bridgeport MicroGrid LLC to develop a microgrid that will provide islanding capability, electricity and thermal energy services to Bridgeport Town Hall and two adjacent buildings: a police station at 300 Congress Street and a Community/Senior Center located at 263 Golden Hill Street in Bridgeport (the "Project").

The Project consists of three 265 kW natural gas Combined Heat & Power (CHP) units, for a total of 795kW of capacity. The average load of the proposed microgrid is estimated to be 300kW with a peak load of 700kW. Existing diesel generators located at the Police Headquarters will be used as redundant generation capacity for the microgrid. The microgrid distribution infrastructure will remain sized, designed and installed to handle 1.8MW of generation for future expansion, to enable additional capacity for other facilities to take advantage of the microgrid.

The City of Bridgeport has entered into a 20-year Energy Service Agreement (the "ESA") with Bridgeport MicroGrid LLC for the electricity and thermal energy produced by the system. The ESA will provide the cash flow necessary to finance the Project.

Bridgeport MicroGrid, LLC has requested a subordinated loan for the Project from the Green Bank in the amount of $502,860, at a 2% interest rate for 20 years. The outstanding principal and interest amount will be payable monthly commencing on the first payment date of the Subordinated Loan. The Project will also be supported by a $6,813,635 senior loan from

First Niagara Bank ("FNFG"), which will be bought down to $3,838,635 at the end of the construction period after the application of a $2,975,000 DEEP grant to the loan principal.

Funding for the Project is part of the Green Bank's CHP incentive pilot program, and the Green Bank is using the $450/kW incentive to buy down the interest rate on the Green Bank's subordinate loan to 2%. The Project was selected by Green Bank staff pursuant to a request for proposals under the statutorily mandated Combined Heat and Power (CHP) Pilot program set forth under Public Act 11-80 and originally approved by the Green Bank Deployment Committee on March 3, 2015 (the "Original Approval").

## Project Updates

This memorandum provides updates on the project in the following ways:

**ESA**

FNFG and Green Bank have worked together to modify the ESA to limit the financial risk to project lenders, putting the project in a better position for financial close. Specifically, the modifications to the ESA address and correct for the following items:

- DEEP Grant funds will now be directly deposited from the city of Bridgeport to an account held by FNFG in order to facilitate the buy-down of FNFG principal
- Specific date references are updated to reflect the passage of time and new project timelines
- Clarification is provided for [ESA] termination payments to lenders, making clear the payments required to satisfy each lender's position upon contractual disengagement between the city of Bridgeport and Bridgeport Microgrid, LLC
- The names of current lenders, FNFG and Green Bank respectively, are now added to the ESA, making clear Green Bank's position and requirements as a lender in the Project

**Subordination Agreement**

FNFG and Green Bank have also coordinated on a subordination agreement that outlines the relationship between senior and subordinate lenders as it pertains to the Project and the ESA (the "Subordination Agreement"). The Subordination Agreement protects Green Bank's position as the subordinate lender, while permitting some flexibility for FNFG to lend up to 10% more in additional principal and to adjust the interest rate by up to 1.00%. This flexibility allows FNFG to account for, and lend against, potential contingencies and cost over-runs that may occur during the construction period. Green Bank staff accepts and is comfortable with such flexibility given an updated sensitivity analysis which results in acceptable cash coverage of Green Bank debt service payments, in the form of a Debt Service Coverage Ratio ("DSCR"), under a downside scenario where FNFG exercises both a 10% increase in loan principal and a 1.00% increase in interest rate.

## Sensitivity Analysis (Financial Risk)

Under a base case scenario for the FNFG loan, where there is no additional principal added and no interest rate increase on the loan, the net FNFG loan (after application of the DEEP Grant) is $3,838,635 and the interest rate is 4.03% ("Base Case FNFG Loan"). The Base Case FNFG Loan results in a minimum DSCR of 1.44x and an average (over the financing term) DSCR of 1.63x to Green Bank.

Under a downside (from a Green Bank risk perspective) scenario for the FNFG loan, where principal outstanding is increased by 10% before the DEEP Grant buy-down and the interest rate on the loan increases by 1.00%, the net FNFG loan (after application of the DEEP Grant) is $4,519,999 and the interest rate is 5.03% ("Downside FNFG Loan"). The Downside FNFG Loan results in a minimum DSCR of 1.15x and an average (over the financing term) DSCR of 1.30x to Green Bank.

In terms of financial risk to Green Bank, both scenarios produce minimum and average DSCR's above the required threshold of 1.10x.