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

CONNECTICUT
GREEN BANK

October 13, 2017

Dear Connecticut Green Bank Board of Directors:

Happy Friday the 13th!!!

We have a regular meeting of the Board of Directors scheduled on Friday, October 20, 2017 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** – approval of the meeting minutes for the special meetings held on September 28 and October 3, 2017. There are also a number of other items for your review and approval including the restated redline FY 2017 progress to target memos for the Infrastructure, Residential, and Commercial, Industrial, and Institutional Sectors; memo for the FY 2017 Investment and Public Benefit Performance; 2018 committee meeting schedules; public health benefit methodology; financial statements for August of 2017; and FY 2018 Q1 progress to targets.

- **Committee Updates and Recommendations** – a number of items requiring discussion by the Board of Directors, including:

    a. **Audit, Compliance and Governance Committee** – a recommendation for the review and approval of the FY 2017 Comprehensive Annual Financial Report;

    b. **Budget and Operations Committee** – a recommendation to revise the compensation structure, making it more organized;

    c. **Deployment Committee** – a recommendation jointly with the ACG Committee to revise the under $300,000 and no more in aggregate than $1,000,000 investment policy; and

    d. **Joint Committee** – a report out of the working group progress to goals and proposed new goals going forward.

- **Other Business** – an update on the progress made to date from our Strategic Retreat (held in January), a new Green and Healthy Homes Initiative, and other business members of the Board or Staff would like to raise.

- **Executive Session** – for personnel related matters.

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, October 20, 2017
9:00-11:00 a.m.

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

1. Call to order

2. Public Comments – 5 minutes

3. Consent Agenda* – 5 minutes

   a. Approval of Meeting Minutes for September 28, 2017* and October 3, 2017*
   b. Infrastructure Sector Programs – Progress towards Targets through FY 2017 – Revised Memo (October 20, 2017)*
   c. Residential Sector Programs – Progress towards Targets through FY 2017 – Revised Memo (October 20, 2017)*
   d. Commercial, Industrial, and Institutional Sector Programs – Progress towards Targets through FY 2017 – Revised Memo (October 20, 2017)*
   e. Connecticut Green Bank – Investment and Public Benefit Performance from Clean Energy Projects from FY 2012 through FY 2017*
   f. Approval of Regular Meeting Schedules for 2018 for the Committees of the Board of Directors*
   g. Review and Approval of EPA Methodology for Public Health Benefits using COBRA*
   h. Financial Statements for August 2017
   i. FY 2018 Q1 Progress to Targets

4. Committee Updates and Recommendations* – 50 minutes

   a. Audit, Compliance, and Governance Committee* – 20 minutes

      i. Review and approval of FY 2017 Comprehensive Annual Financial Report – Financial Statistics Audit – 15 minutes
      ii. Review and approval of FY 2017 Comprehensive Annual Financial Report – Non-Financial Statistics Audit – 5 minutes

   b. Budget and Operations Committee* – 15 minutes

i. Proposed Revisions to Compensation Structure – 15 minutes

c. Deployment Committee* – 5 minutes

i. Proposed Revision to Under $300,000 and No More than $1,000,000 Investment Policy* – 5 minutes

d. Joint Committee of the Energy Efficiency Board and Connecticut Green Bank – 10 minutes

i. Update on Working Group Progress to Goals and Proposed New Goals – 10 minutes

5. Other Business – 15 minutes

a. Strategic Retreat – Progress to Date
b. Other Business

6. Executive Session – Personnel Matters – 15 minutes

7. Adjourn

*Denotes item requiring Board action

Join the meeting online at https://global.gotomeeting.com/join/707858269

Or call in using your telephone:
Dial (224) 501-3312
Access Code: 707-858-269

Next Regular Meeting: Friday, December 15, 2017 from 9:00-11:00 a.m.
Connecticut Green Bank, 845 Brook Street, Rocky Hill, CT

RESOLUTIONS

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

Friday, October 20, 2017
9:00-11:00 a.m.

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

1. Call to order

2. Public Comments – 5 minutes

3. Consent Agenda* – 5 minutes

   a. Approval of Meeting Minutes for September 28, 2017* and October 3, 2017*

   Resolution #1

   Motion to approve the minutes of the Board of Directors Meetings for September 28, 2017 and October 3, 2017.

   b. Infrastructure Sector Programs – Progress towards Targets through FY 2017 – Revised Memo (October 20, 2017)*
   c. Residential Sector Programs – Progress towards Targets through FY 2017 – Revised Memo (October 20, 2017)*
   d. Commercial, Industrial, and Institutional Sector Programs – Progress towards Targets through FY 2017 – Revised Memo (October 20, 2017)*
   e. Connecticut Green Bank – Investment and Public Benefit Performance from Clean Energy Projects from FY 2012 through FY 2017*

   Resolution #2

   WHEREAS, in July of 2011, the Connecticut General Assembly passed Public Act 11-80 (the Act), "AN ACT CONCERNING THE ESTABLISHMENT OF THE DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION AND PLANNING FOR CONNECTICUT'S ENERGY FUTURE," which created the Connecticut Green Bank (the "Green Bank") to develop programs to finance and otherwise support clean energy investment per the definition of clean energy in Connecticut General Statutes Section 16-245n(a);

WHEREAS, the Act directs the Green Bank to develop a comprehensive plan to foster the growth, development and commercialization of clean energy sources, related enterprises and stimulate demand clean energy and deployment of clean energy sources that serve end use customers in this state;

WHEREAS, on July 22, 2016, the Board of Directors of the Connecticut Green Bank approved a Comprehensive Plan for FY 2017 and FY 2018, including an annual budget and targets for FY 2017; and

WHEREAS, on July 21, 2017, the Board of Directors of the Connecticut Green Bank approved of the draft Program Performance towards Targets for FY 2017 memos for the Infrastructure, Residential, Commercial, Industrial, and Institutional sectors.

NOW, therefore be it:

RESOLVED, that Board has reviewed and approved the restated red-line Program Performance towards Targets for FY 2017 memos dated October 20, 2017, which provide an overview of the performance of the Infrastructure, Residential, Commercial, Industrial, and Institutional sectors with respect to their FY 2017 targets.

RESOLVED, that Board has also reviewed and approved the Investment and Public Benefit Performance memo dated October 20, 2017.

f. Approval of Regular Meeting Schedules for 2018 for the Committees of the Board of Directors*

Resolution #3

Motion to approve the Regular Committee Meeting Schedules for 2018 for the ACG Committee, B&O Committee, Deployment Committee, and Joint Committee.

g. Review and Approval of EPA Methodology for Public Health Benefits using COBRA

Resolution #4

WHEREAS, the Connecticut Green Bank, Connecticut Department of Energy and Environmental Protection (DEEP), and Connecticut Department of Public Health working with the U.S. Environmental Protection Agency (EPA) to assess the Co-Benefit Risk Assessment (COBRA) model to quantify public health benefits resulting from improved air quality with the deployment of clean energy;

WHEREAS, DEEP, DPH, and the EPA have demonstrated support for the environmental emissions methodology; and

WHEREAS, the Audit, Compliance, and Governance Committee at a meeting on October 11, 2017, reviewed and now recommends that the Board of Directors (the "Board") approve through the Consent Agenda the proposed Connecticut Green Bank, DPH, and DEEP Evaluation Framework – Societal Perspective – Public Health Benefit Methodology documentation;

NOW, therefore be it:

RESOLVED, that the Board approves the proposed Connecticut Green Bank DPH, and DEEP Evaluation Framework – Societal Perspective – Public Health Benefit Methodology documentation to be used for reporting, communication, and other purposes as deemed necessary.

h. Financial Statements for August 2017
i. FY 2018 Q1 Progress to Targets

4. Committee Updates and Recommendations* – 50 minutes

a. Audit, Compliance, and Governance Committee* – 20 minutes

i. Review and approval of FY 2017 Comprehensive Annual Financial Report – Financial Statistics Audit – 15 minutes

Resolution #5

WHEREAS, Article V, Section 5.3.1(ii) of the Connecticut Green Bank ("Green Bank") Operating Procedures requires the Audit, Compliance, and the Governance Committee (the "Committee") to meet with the auditors to review the annual audit and formulation of an appropriate report and recommendations to the Board of Directors of the Green Bank (the "Board") with respect to the approval of the audit report;

WHEREAS, the Committee met on October 11, 2017 and recommends to the Board the approval of the proposed draft Comprehensive Annual Financial Report (CAFR) contingent upon no further adjustments to the financial statements or additional required disclosures which would materially change the financial position of the Green Bank as presented.

NOW, therefore be it:

RESOLVED, that the Board hereby recommends approval of the proposed draft Comprehensive Annual Financial Report (CAFR) contingent upon no further adjustments to the financial statements or additional required disclosures which would materially change the financial position of the Green Bank as presented.

ii. Review and approval of FY 2017 Comprehensive Annual Financial Report – Non-Financial Statistics Audit – 5 minutes

b. Budget and Operations Committee* – 15 minutes

i. Proposed Revisions to Compensation Structure – 15 minutes

Resolution #6

WHEREAS, per the Operating Procedures and Section VII Personnel Policies of the Connecticut Green Bank, grade classifications for each job title are established by the President, subject to Board approval,

WHEREAS, pursuant to the Succession Plan developed by the President of the Connecticut Green Bank, there is a need to conduct a market compensation analysis every 3 to 5 years,

WHEREAS, through a competitive Request for Proposals (RFP), the Connecticut Green Bank engaged KardasLarson to conduct a compensation study that benchmarks the current salaries of staff at the Connecticut Green Bank with other comparable public and private organizations to determine market competitiveness of compensation,

WHEREAS, the Budget and Operations committee has reviewed the results of the study prepared by KardasLarson and recommends their adoption by the Green Bank Board of Directors,

NOW THEREFORE the following be resolved

RESOLVED, the Connecticut Green Bank's Board of Directors recommends the approval of the grade classifications and salary ranges for the positions outlined in Attachment A.

c. Deployment Committee* – 5 minutes

    i. Proposed Revision to Under $300,000 and No More than $1,000,000 Investment Policy* – 5 minutes

Resolution #7

WHEREAS, pursuant to Section 5.3.1 of the Connecticut Green Bank (Green Bank) Bylaws, the Audit, Compliance & Governance (ACG) Committee is charged with the review and approval of, and in its discretion recommendations to the Board regarding, all governance and administrative matters affecting the Green Bank, including but not limited to matters of corporate governance and corporate governance policies;

WHEREAS, on January 18, 2013, the Board of Directors authorized 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 ("Staff Approval Policy for Projects Under $300,000");

WHEREAS, on July 18, 2014, the Green Bank Board of Directors approved of a recommendation brought forth by the ACG Committee and Deployment Committee to approve the authorization of Green Bank staff to evaluate and approve program 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 $1,000,000 from the date of the last Deployment Committee meeting; and

WHEREAS, that the Green Bank ACG Committee hereby recommended on October 10, 2017 that the Board of Directors adopt a resolution amending the Staff Approval

Policy to increase the program funding request for Projects Under $300,000 to $500,000 with an aggregate amount limit of $1,000,000 from the date of the last Deployment Committee meeting.

NOW, therefore be it:

RESOLVED, that the Green Bank Board of Directors approve amending the Staff Approval Policy to increase the program funding request for Projects Under $300,000 to $500,000 with an aggregate amount limit of $1,000,000 from the date of the last Deployment Committee meeting.

RESOLVED, that the Board of Directors approves the proposed draft revisions to the Green Bank Bylaws to effectuate the revised staff authorization amount of $500,000.

d. Joint Committee of the Energy Efficiency Board and Connecticut Green Bank – 10 minutes

    i. Update on Working Group Progress to Goals and Proposed New Goals – 10 minutes

5. Other Business – 15 minutes

    a. Strategic Retreat – Progress to Date
    b. Green and Healthy Homes Initiative
    c. Other Business

6. Executive Session – Personnel Matters – 15 minutes

7. Adjourn

*Denotes item requiring Board action

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Dial (224) 501-3312
Access Code: 707-858-269

Next Regular Meeting: Friday, December 15, 2017 from 9:00-11:00 a.m.
Connecticut Green Bank, 845 Brook Street, Rocky Hill, CT

CONNECTICUT GREEN BANK SM

Board of Directors Meeting

October 20, 2017

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 4

1. **Meeting Minutes*** – approval of meeting minutes of September 28, 2017 and October 3, 2017

2. **Progress to Target Memos for FY 2017*** – revised in redline the year-end progress to targets for infrastructure, residential, commercial, industrial, and institutional sectors for FY 2017

3. **Committee Meeting Schedules for 2018*** – ACG, B&O, Deployment, and Joint Committees schedules for 2018

4. **Public Health Benefit Methodology*** – use of EPA COBRA model to quantify outdoor air pollution reduction benefits through support from DEEP and DPH

- **Report Outs** –Financial Statements through August of 2017 and Q1 of FY 2018 Progress to Targets

Board of Directors

Agenda Item #4

Committee Updates and Recommendations

Board of Directors

Agenda Item #4ai

Audit, Compliance, and Governance Committee

FY 2017 CAFR

FY 2017 CAFR
Audit Results

- Audit of financial statements, notes and required supplementary information preformed by Blum Shapiro.
- Unmodified “clean” audit opinion will be issued.
- Report on internal control and compliance at the Financial Statement level will be issued to the Board.
- No material weaknesses or significant deficiencies in internal controls were identified.
- No instances of noncompliance with internal controls over financial reporting were identified.

FY 2017 CAFR
Audit Results (continued)

- A report will be issued to the Board with required Auditor Communications.
- No transactions were entered into during the year for which there is a lack of authoritative guidance or consensus.
- All significant transactions have been recognized in the financial statements in the proper period.
- Significant management estimates included in the financial statements:
  - ✓ Loan Loss Reserves
  - ✓ Interest rate swap valuation
  - ✓ Net pension liability
  - ✓ Asset retirement obligation for solar facilities under lease

FY 2017 CAFR
Audit Results (continued)

- Blum Shapiro informed the ACG Committee that they did not encounter significant difficulties in dealing with management in performing and completing the audit.
- No uncorrected misstatements were identified in connection with the audit of the financial statements for the fiscal year ended June 30, 2017.
- No disagreements between the auditors and management regarding financial accounting, reporting or auditing that would be significant to the financial statements were encountered.
- Blum Shapiro did not inform the ACG of any other audit findings or issues that required their attention.

FY 2017 CAFR
Audit Team Contact Information

Ronald W. Nossek, CPA – Engagement Partner

401-330-2743

rnossek@blumshapiro.com

Jessica Aniskoff, CPA – Engagement Manager

860-570-6451

janiskoff@blumshapiro.com

FY 2017 CAFR
Financial Highlights

Net Position (in 000's))

	2017	2016	2015
Cash-unrestricted	37,148	48,072	39,894
Cash-resticted	22,063	9,750	8,799
Program Investments	53,648	45,768	52,937
Capital assets, net	61,510	58,115	26,971
Other assets	16,885	15,124	8,972
Total Assets	**191,254**	**176,829**	**137,573**
Deferred Outflows of Resources			
Deferred amount for pensions	9,978	2,575	1,670
Total deferred outflows of res.	**9,978**	**2,575**	**1,670**
Liabilities			
Operational liabilities	17,587	17,379	11,098
Pension liabilities - GASB 68	25,245	16,096	14,900
Long term debt	29,737	18,567	3,546
Total liabilities	**72,569**	**52,042**	**29,544**
Net Position			
Invested in capital assets	561	656	501
Restricted Net Position:			
Non-expendable	60,027	58,709	32,468
Restricted - energy programs	16,843	5,295	4,344
Unrestricted	51,232	62,702	71,854
Total Net Position	**128,663**	**127,362**	**109,167**

FY 2017 CAFR
Financial Highlights

Changes in Net Position (in 000's)

	2017	2016	2015
Utility remittances	26,404	26,605	27,234
RGGI -renewables	2,393	6,482	5,631
RGGI-energy efficiency	-	-	10,953
REC sales	2,571	2,654	1,474
Other revenue	2,599	2,047	1,002
Total Revenues	**33,967**	**37,788**	**46,294**
Grant and incentive payments	17,085	10,645	10,627
Program administration exp.	16,824	16,497	11,504
General and administrative exp.	5,725	4,706	3,117
Total Operating Expenses	**39,634**	**31,848**	**25,248**
Operating Income	**(5,667)**	**5,940**	**21,046**
Non-Operating Revenues (Exp)			
Interest earned	3,144	3,016	2,312
Interest expense	(1,222)	(731)	(119)
Other non-operating revenues(exp)	(963)	(2,023)	(2,404)
Capital contributions,net	6,009	11,993	6,739
Payments to State of CT	--	--	(19,200)
Net Change	**1,301**	**18,195**	**8,374**
Net Position Beginning of Year	127,362	109,167	100,793
Net Position at End of Year	**128,663**	**127,362**	**109,167**

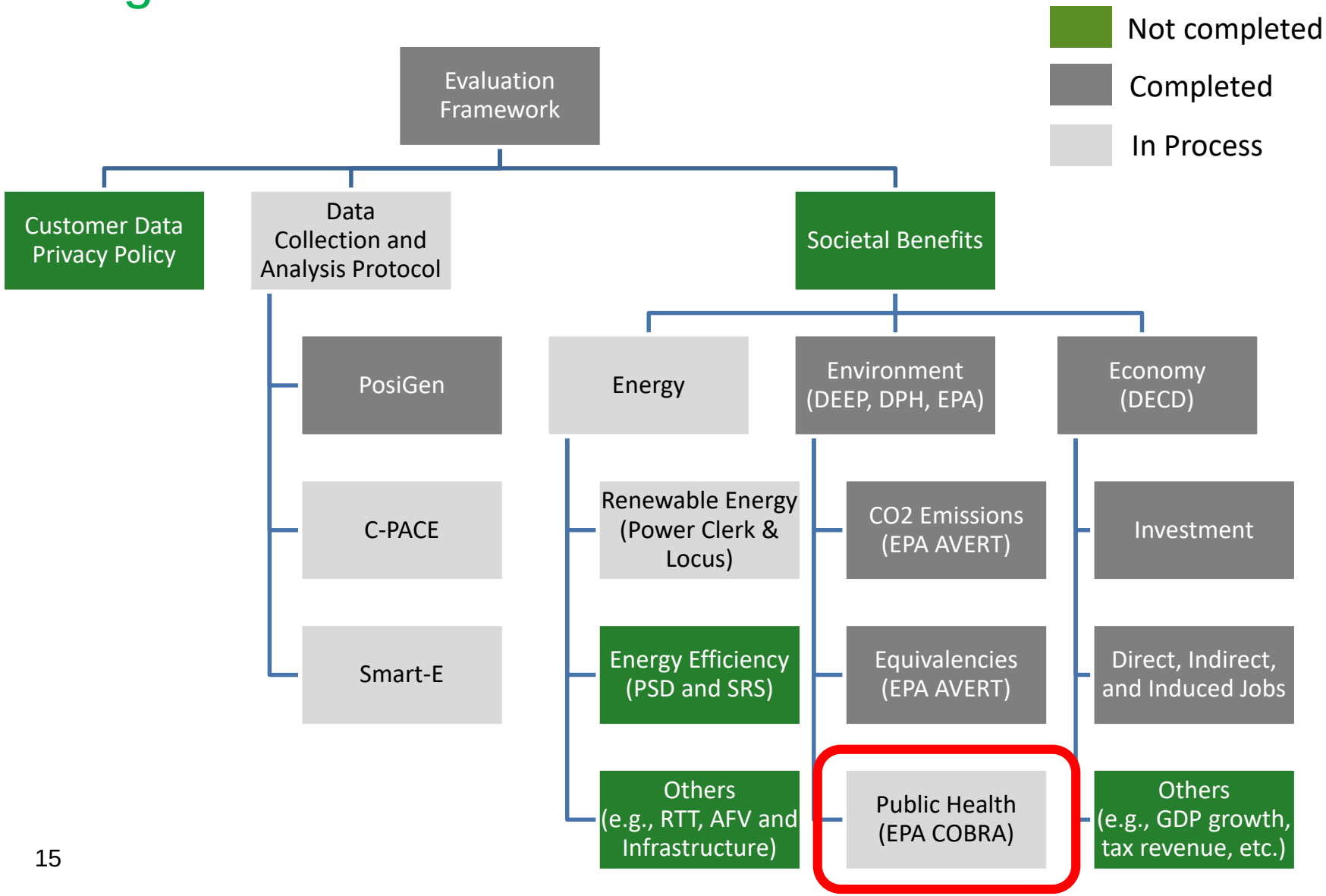
Board of Directors

Agenda Item #4aii

Audit, Compliance, and Governance Committee

FY 2017 CAFR (Non-Financial Statistics)

Evaluation Framework
Progress to Date



CAFR

Non-Financial Statistics – Review by SustainAbility

- **Metrics Benchmark & Guidance –** Benchmark of three companies compared metrics (financial & investment and social & environmental) used along with analysis of the methodologies, transparency, verification and stakeholder engagement.
- **Reporting Benchmark & Guidance** – Benchmark of four companies/examples evaluated the effectiveness of impact reporting communications with a specific focus on written reports and how metrics are portrayed.
- **Independent Review of Metrics and Methodologies** – Review of metrics reported and methodologies used represent best practices and demonstrate a high degree of transparency.

Board of Directors

Agenda Item #4b

Budget and Operations Committee

CONNECTICUT GREEN BANK

Board of Directors

Agenda Item #4c

Deployment Committee

Deployment Committee

Under $300,000 and No More than $1 MM

- Issue raised at Deployment Committee meeting
- Proposed to ACG Committee – increase staff authorization from $300K to $500K due to the increased funding request amounts per project, especially within the C-PACE and Solar Lease programs.
- Green Bank has operationalized increased standardization with the relevant financing documents, underwriting and technical review for such programmatic projects that are consistent with Comprehensive Plan and Budget.
- CGB Bylaw Update for Consistency (only proposed revision to governance docs for 2017)

CONNECTICUT GREEN BANK

Board of Directors

Agenda Item #4d

Joint Committee

Joint Committee
Chair and Vice Chair Feedback

- **Overview** – by statute, there is a Joint Committee of the Energy Efficiency Board (EEB) and Connecticut Green Bank (CGB)
  - ✓ Eric Brown (Chair), Diane Duva (Vice Chair), and includes John Harrity and Amanda Fargo Johnson

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

- **Working Groups** – comprised of staff from utilities, CGB, and EEB consultants for single family, multifamily, government, and small, medium, and large business

Board of Directors

Agenda Item #5

Other Business

More Clean Energy Deployment

Good for the Economy

CONNECTICUT GREEN BANK

Combined Sector REMI Output

Combined Sector Economic & Fiscal Impact (2020 – 2030)			
	35% Midterm Target	55% Midterm Target	55% +Aggressive 2030 Renewables
Economic or Fiscal Variable	**Average Level & % Change**	**Average Level & % Change**	**Average Level & % Change**
Total Employment (Jobs)	16,000 0.65%	26,000 1.0%	25,000 1.0%
State GDP (millions current $)	$2,000 0.6%	$3,800 1.0 %	$3,500 0.9%
State Revenue (millions current $)	$105 0.4%	$175 0.6%	$155 0.5%
State Expenditure (millions current $)	$120 0.5%	$160 0.6%	$180 0.7%

Strategic Retreat
Progress to Date

Idea	Report or Action	Status	Action to Take
Build relationship with the utilities and EEB	SML	Ongoing	Continue identifying program opportunities for co-investment
Create a private entity	ML	Ongoing	Investigate how a private entity may help us achieve more
Address operational issues	SML	Ongoing	Identify areas for operational improvements and changes
Catalyze new markets to support GC3	ML	Complete – Ongoing	Develop new programs for RTT, ZEV, and grid-tied RE
Support B/S by expanding existing programs	S	Complete	Increase investments in existing programs
Adding presentation of the financial statements	SM	Complete	Provide non-GAAP presentation of financial statements

REFERENCES

Term of Action or Report – Short-Term (S) is within the next 3 months (April 28, 2017), Medium-Term (M) is between 3 to 6 months (June to July 2017), and Long-Term (L) is 6 to 12 months (December 15, 2017).

Strategic Retreat
Progress to Date (cont'd)

Idea	Report or Action	Status	Action to Take
Develop proactive legislative strategy	SML	Ongoing	Work with Chair on strategy and communication
Lead the Green Bank Movement	SML	Ongoing	A number of actions, including: ▪ Pursue investment in BAML and message nationally (Almost Complete) ▪ Support Green Bank Network (Ongoing) and Green Bank Academy (Ongoing) ▪ Support federal Green Bank Act or other legislation (Ongoing)

Making **steady progress** across the board following the strategic retreat of the Board of Directors in January of 2017

REFERENCE
Term of Action or Report – Short-Term (S) is within the next 3 months (April 28, 2017), Medium-Term (M) is between 3 to 6 months (June to July 2017), and Long-Term (L) is 6 to 12 months (December 15, 2017).

CT Green and Healthy Homes Research Project - Convening

CONNECTICUT GREEN BANK

Board of Directors

Agenda Item #6 – Executive Session

CONNECTICUT GREEN BANK

Board of Directors

Agenda Item #7 – Adjourn

CONNECTICUT GREEN BANK
Board of Directors
Draft Minutes
Thursday, September 28, 2017

1. Call to Order

Catherine Smith (by phone), Chairperson of the Green Bank, called the meeting to order at 3:02 p.m. Board members participating: Eric Brown, John Harrity (by phone), Matt Ranelli (by phone), Betsy Crum (by phone), Rob Klee, Bettina Broniz (by phone), Reed Hundt (by phone), and Kevin Walsh (by phone)

Members Absent: Tom Flynn and Gina McCarthy

Staff Attending: Bryan Garcia, Brian Farnen, Eric Shrago, Cheryl Samuels, Alex Kovtunenko, George Bellas, Matt Macunas, Chris Magalhaes, Laura Fidao, Anthony Clark, Joe Buonannata, Mike Yu (by phone), Bert Hunter (by phone), Ben Healey (by phone), and Kerry O'Neill (by phone)

Others Attending: Guy West from Clean Water Fund

2. Public Comments

There were no public comments.

3. Consent Agenda

Resolution #1

Motion to approve the minutes of the Board of Directors Meeting for July 21, 2017.

4. Staff Transaction Recommendations

a. Commercial, Industrial, and Institutional Sector Program & Transaction Recommendation

i. Oxford - C-PACE Transaction

Mackey Dykes provided an overview on the Oxford C-PACE Transaction. He explained that this is a retail location, and is envisioned to be a large development. He explained that this project falls within the standard underwriting guidelines. He stated that this a 15-year loan at 5.5% with a 10% contingency built into the approvals. He stated that they are requesting a 15% contingency. He advised that if the costs were to increase, they would stay within the underwriting guidelines.

Kevin Walsh questioned the Loan to Value ratio, Mackey Dykes explained the Loan to Value ratio and stated it is 78.6%. Kevin Walsh questioned what the Green Bank is offering that the market will not do – asking why the Green Bank is needed. Mackey Dykes stated that it's the rates and term through C-PACE and that traditional banks are not offering the same. He stated that there are other specialized lenders in CT using C-PACE, but that they are staying in the market until they see increased lending by traditional lenders. Kevin Walsh questioned if there is a goal of the Green Bank to sell it down. Mackey Dykes stated that yes, through the partnership with Hannon-Armstrong. He stated that this deal will be placed into that warehouse. He stated that they are trying to work with them to streamline the process.

Bettina Broniz questioned if they up the contingency from 10% to 15%, what does that do to the debt service coverage ratio. Mackey Dykes stated that he does not have those specific numbers right now, but that it will still be above one.

Upon a motion made by Betsy Crum, and seconded by John Harrity the Board voted unanimously in favor of the request.

Resolution #2

WHEREAS, pursuant to Section 157 of Public Act No. 12-2 of the June 12, 2012 Special Session of the Connecticut General Assembly and as amended (the "Act"), the 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");

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 $486,157 construction and (potentially) term loan under the C-PACE program to Oxford Town Center, LLC., the building owner of 300 Oxford Road, Oxford, 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 C-PACE authorizing statute, 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 other duly authorized officer of the Green Bank is authorized to execute and deliver the Loan and, if applicable, a Feasibility Study Loan in an amount not to be greater than one hundred fifteen percent of the Loan amount with terms and conditions consistent with the memorandum submitted to the Board dated September 21, 2017, 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 of Directors;

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.

ii. Woodbridge – C-PACE Transaction

Mackey Dykes discussed the Woodbridge C-PACE project. He stated that they had previously done a project there and that the JCC is coming back to do another project. He stated that there are two components. One is another Solar PPA, which would go on the roof, but that there will be a C-PACE loan to cover the new roof to support the solar. He stated that this will be an associated measure with that Solar PPA.

Commissioner Smith questioned how the interest rate is chosen for projects. Mackey Dykes stated that it is determined solely by the terms. He stated that they have a schedule of each year.

Matt Ranelli questioned the cost of the roof upgrade being done under C-PACE and if the project savings are being done under a separate PPA. Mackey Dykes stated that that is correct from a program standpoint. He stated that for projects they can count energy measures that are done under different assessments. He stated that from a customer standpoint, it's all one overall project.

Matt Ranelli questioned if the PPA is a condition precedent to the C-PACE funding, or if they are all tied together once the roof goes on. Mackey Dykes stated that the PPA is executed before they release the money for the roof. Brian Farnen stated that you can't have the roof project without the PPA. He stated that they can add that to the C-PACE funding.

Betsy Crum questioned if they go back and see how projects have played out in terms of cost savings. Mackey Dykes stated that yes, they work with the customers and collect utility bills to compare to the projections. He stated that more than 90% of the projects are performing at least to the expectations.

Commissioner Klee questioned if there was any benefit that this is piggybacking off of the existing project. Mackey Dykes no, that they are pretty different. Commissioner Klee asked if there were any infrastructure upgrades. Mackey Dykes stated that he is not aware of any.

Matt Ranelli questioned the SIR and asked if it was typical. Mackey Dykes stated that it has to be over 1. Eric Brown stated that you want it to be 1.2 for a cushion.

Upon a motion made by Matt Ranelli, and seconded by Commissioner Klee the Resolution passed unanimously.

Resolution #3

WHEREAS, pursuant to Section 157 of Public Act No. 12-2 of the June 12, 2012 Special Session of the Connecticut General Assembly and as amended (the "Act"), the 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");

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 $302,667 construction and (potentially) term loan under the C-PACE program to The Jewish Federation of Greater New Haven, Inc., the building owner of 360 Amity Road, Woodbridge, 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 C-PACE authorizing statute, 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 other duly authorized officer of the Green Bank is authorized to execute and deliver the Loan and, if applicable, a Feasibility Study 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 of Directors dated September 21, 2017, 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 of Directors;

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.

iii. Private Capital for Small Business Energy Advantage Program

Anthony Clark provided an overview of the Small Business Energy Advantage Program. He stated that it is a partnership to recapitalize the program with a cheaper source of capital than utility provided capital at the present time. He stated that the utilities and CGB have made significant progress for the SBEA Program in identifying capital to lower the cost of financing. He stated that SBEA is available to small businesses, the State and Municipalities for small energy efficiency projects. He stated that it is 0% interest rate to the borrower with the Connecticut Energy Efficiency Fund ("CEEF") subsidizing the interest costs. SBEA customers have up to four years for repayment. Bettina Broniz questioned the availability to Municipalities. Anthony Clark stated that they can have up to $500,000 in financing open at one time.

Anthony Clark stated that the CEEF provides support for the Fund. He stated that in recent years the Fund has had $25 - $30 million in annual loan funds. He stated that the average loan is about 40 months. He stated that the loans in the program are high-performing, with less than 1% default in any given year. He stated that CEEF reimburses the utilities for their cost of capital provided to the program for loans and any loan losses. He stated that CEEF also pays the administrative expenses for running the Program. He stated that the capital going in on the utility side, especially Eversource, is very expensive. He stated that overall, this Fund will lower the cost of the capital going into the Program and therefore reduce the cost of the buy down paid by the CEEF by several million dollars over the next 5 years.

Laura Fidao stated that the terms were negotiated with JP Morgan to provide the funding for the special purpose vehicle ("SPV") that will make the loans to the SBEA customers. She stated that the facility is for a one-year term, with the ability to draw for one year and an annual renewal thereafter. She stated that of the $30 million in total capital, $27 million will be coming from JP Morgan, and 10% or $3 million will be coming from the Green Bank. She stated that the cost of capital from JP Morgan is 3.8% at the present time but is pegged to LIBOR and will change as LIBOR changes. The Green Bank equity will be charging a capital charge of 3.5%. There will be a 0.25% per annum fee on the capital available under the facility that is not drawn by customer loans. To protect against the potential for the SBEA program to be defunded, the interest rate buy-down will be pre-funded for each loan at the point that the loan is made. She stated that there is no loan loss reserve required since the Green Bank is providing $3 million in "first loss" capital for the SPV for the benefit of the senior lender – JP Morgan. She stated that the Green Bank's role in addition to the $3 million in capital is to manage the SPV and in addition to the $3 million in first loss capital, the Green Bank will provide up to $750,000 for liquidity purposes. She stated that in the event that the CEEF budget falls short, the Green Bank will provide support under the liquidity facility of $750,000. She stated that the loan proceeds will be issued from the SPV instead of the utilities, so this will result in the customer loans being booked on the SPV's balance sheet rather than the utilities, which is the situation at the present time. She stated that they don't anticipate any losses to the Green Bank funds because the CEEF undertaking for loan losses and interest rate buydown funds is remaining in place for the program. She stated that if there is a raid on the CEEF Fund, there could be a loss of the Green Bank funds. She stated that the $3 million and any of the $750,000 advanced for liquidity purposes would then be at risk.

Commissioner Klee questioned if there would only be losses under a failure of the CEEF if there were defaults on the loans. Laura Fidao stated yes, but that they will have that year's CEEF budget to reimburse those losses to the fund. She stated that if CEEF is not there, then losses in excess of this budget would be absorbed by Green Bank capital.

Bettina Broniz questioned the $5.5 million of the Green Bank equity as the program grows, and when that would be requested, and if staff would come back to the Board for that. Laura Fidao stated that the request for the first year of the facility is for $3 million. She stated that under normal circumstances they would assume that each year they will issue approximately $28 million worth of loans. She stated that the facility will expand incrementally each year. She stated that their estimates are that by year 5 the facility size will rise to about $55 million. She stated that staff will come back to the Board for a slight increase each year as the facility is renewed by JP Morgan. She stated that they could also go back to the market to source other capital in the later years.

Reed Hundt questioned if any of the Committees of the Green Bank had reviewed this in advance. Laura Fidao stated no. Reed Hundt stated that there are a lot of questions to be asked and that this should have gone through a Committee first. He questioned what problems they are trying to resolve. Anthony Clark stated that the SBEA Program touches about 1800 customers a year. He stated that the challenge is the cost of providing financing is quite high, because of the cost of capital. He stated that also, both utilities have expressed interest in not serving as financial institutions. Reed Hundt questioned what Eversource's interest rate was. Anthony Clark stated that in the new structure there is no need for Eversource or UI capital. He stated that currently they get paid 10.57% after tax. He stated that this will free up utility monies to be put into other projects. He stated that there's about $200 million flowing into CEEF to support clean energy each year. He stated that by reducing the buy down cost, they can reach more customers because they have freed up monies to buy down their financing. Due to time constraints and additional questions by the Board, this item was tabled for a special meeting to be scheduled in the near term.

b. Finance Transaction Recommendation

i. Clean Renewable Energy Bonds for CSCU Solar Projects

Bert Hunter provided a high-level overview of the CSCU Solar Projects. He stated that these projects are using the financing structure that the Green Bank perfected with the financing of the hydroelectric facility for the City of Meriden. That facility used financing supported by the New Clean Renewable Energy Bond (or "CREBs") program of the US Treasury and resulted in a green bond being issued by the Green Bank to Bank of America. Using that same financing structure, staff are focusing on Connecticut State Colleges in developing solar PV projects for state facilities. He stated that under CREBs, the ownership title must be held by the Green Bank. He stated this is being done in combination with "Current" – a GE Company. He stated that, as before, Bank of America is the intended purchaser of the Clean Renewable Energy Bonds. However, unlike the CREBs purchased by Bank of America for the Meriden hydroelectric facility which were backed by the State's Special Capital Reserve Facility (or "SCRF"), the CREBs being issued for these solar PV projects would not be backed by the SCRF since the technology is familiar to Bank of America. He stated that this is being done on the basis of the creditworthiness of the State facilities plus a limited performance undertaking from the Green Bank which is being backed up by the GE company.

Bert Hunter stated that Bank of America is are looking to the cash flows under the PPAs that are being paid to the Green Bank. He stated that the total amount financed is $8.5 million. He stated that the Green Bank exposure is not to exceed $1.2 million. He stated that the term of the PPA is 20 years.

Eric Brown questioned if there was an audit to be performed on the building. Bert Hunter stated that he is not able to confirm that. Brian Farnen stated that they do

not mandate that they perform an audit as these are often large sophisticated commercial counterparties that often have their own energy consultants and energy efficiency programs.

Eric Brown questioned if the savings ratios are determined down the road. Laura Fidao stated that the Solar System would have already been designed. Commissioner Klee stated that these are all behind the meter projects, not necessarily tied to a specific building.

Upon a motion made by Matt Ranelli, and seconded by Bettina Broniz with an abstention from Kevin Walsh, the Resolution passed.

Resolution #5

WHEREAS, the Connecticut State College and University ("CSCU") system has signed Power Purchase Agreements with General Electric, Inc. for a portfolio of behind-the-meter solar installations at various CSCU campuses across the state (the "Portfolio");

WHEREAS, Banc of America Public Capital Corp ("BAPCC") has extensive energy and tax credit bond financing expertise, has indicated interest in financing the Portfolio via New Clean Renewable Energy Bonds ("CREBs") and received a reduced interest rate through the Public Utilities Regulatory Authority.

WHEREAS, the Connecticut Green Bank ("Green Bank") would be considered a Qualified Issuer and Qualified Owner under CREBs, and each of the projects within the Portfolio would qualify as a Qualified Renewable Energy Facility (as all of those terms are defined under regulations issued by the Internal Revenue Service);

WHEREAS, Green Bank staff recommends that the Green Bank Board of Directors ("Board") approve of financing the Portfolio using a combination of ratepayer capital and CREBs proceeds, in an amount not to exceed $10,550,000, as a strategic selection and award because of the special capabilities of BAPCC to provide capital at attractive rates for tax credit bond financing, the uniqueness of the Portfolio, and the strategic innovation associated with securing the Green Bank's CREBs allocation.

NOW, therefore be it:

RESOLVED, that the Green Bank Board hereby approves an appropriation and bond authorization of not more than $9,350,000 to finance the Portfolio, including costs associated with ownership of the Project (as required under CREBs

regulations), as a strategic selection and award pursuant to Green Bank Operating Procedures Section XII;

RESOLVED, that the Green Bank may provide ratepayer capital, in the form of equity to finance the Portfolio as required for the successful structuring of the CREBs issuance, in an amount not to exceed $1,200,000;

RESOLVED, that the President of the Green Bank and any other duly authorized officer is authorized to proceed with the prerequisites to the issuance of CREBs in an amount not to exceed $9,350,000 with terms and conditions consistent with the memorandum submitted to the Board dated September 27, 2017, and as he or she shall deem to be in the interests of the Green Bank and the ratepayers no later than 405 days from the date of authorization by the Board, provided that staff will submit for Board approval all resolutions required to approve all relevant documentation (such as an indenture of trust) required for the actual issuance of bonds;

RESOLVED, that the Green Bank Board hereby declares the Green Bank's official intent that payment of Portfolio construction and financing costs may be made from temporary advances of other available funds of the Green Bank, and that the Green Bank reasonably expects to reimburse such advances from the proceeds of the CREBs financing in an amount not to exceed $9,350,000; 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.

j. Residential Sector Program Recommendation

i. Smart-E Loan with IRB's for EV Cars Pilot

Kerry O'Neill provided an overview of the pilot program for the EV Cars. She stated that they are coming to the Board for approval of the Pilot. She stated that they have been working with DEEP and CARA to promote more EV's on the road in Connecticut. She stated that the cars that are turned in now are going to California and New York to be resold. This Pilot will allow them to capture these vehicles at the end of their lease to keep them in Connecticut. She stated that they estimate about 370 – 450 vehicles can be captured. She stated that there is a big opportunity to cross-sell these vehicles to an EV customer, using the Smart E bundle. She stated that they are asking the Board to approve a program that allows the Green Bank to partner with Smart E Credit Unions. She stated that the Green Bank money will really only be used for interest rate buy down. Commissioner Klee stated that they are looking for ways to make the whole business model greener, and this is a small, but interesting step.

Eric Brown questioned if there is an opportunity in terms of fleets. Kerry O'Neill stated that the budget allocation for this year is only for the consumer side. She stated that in keeping with that, this Pilot is not designed to address fleets.

Kerry O'Neill stated that the Credit Unions will provide the entire financing. She stated that the Green Bank will not be providing any capital financing. Kevin Walsh stated that there is a tremendous amount of EV vehicles that come into the market. He stated that Connecticut doesn't allow direct selling of those vehicles. Kerry O'Neill stated that the dealers have no financing available. She stated that they send those vehicles to auction. She stated that they have an opportunity to capture those vehicles at the lot. She stated that this program would allow Tesla's to be financed through the Credit Unions.

Betsy Crum stated that they can learn a lot from this Pilot. John Harrity stated that they need to deal with transportation if they are going to address Carbon Emissions.

Upon a motion made by Betsy Crum, and seconded by Commissioner Klee, with an abstention from Reed Hundt, the Resolution passed.

Resolution #6

WHEREAS, the Connecticut Green Bank (the "Green Bank") is established and authorized pursuant to Conn. Gen. Stat. Section 16-245n to, among other things, develop programs to finance and otherwise support clean energy investment in residential projects per the definition of clean energy in Conn. Gen. Stat. Section 16- 245n(a);

WHEREAS, in July of 2017, the Connecticut Department of Energy and Environmental Protection ("DEEP") released the Draft Comprehensive Energy Strategy ("CES") for Connecticut that includes a focus on electric vehicles and their use to increase zero emission vehicle-miles-traveled in the state;

WHEREAS, in June of 2017, the Green Bank Board of Directors (the "Board") approved the FY18 budget that included $500,000 allocated to a new consumer EV program; and

WHEREAS, in May of 2013, Green Bank launched the Smart-E Loan program, statewide as of November 2013, with currently 11 local lenders providing low cost and long-term financing for measures that are consistent with the state energy policy and the implementation of the CES.

NOW, therefore be it:

RESOLVED, that the Green Bank Board of Directors (the "Board") approves a pilot interest rate buydown program to be known as Smart-E for EVs Pilot Loan Program, as more particularly described in that certain memorandum and attached program guidelines submitted to the Board dated September 21, 2017. The budget of the Smart-E for EVs Pilot Loan Program will be $500,000, consistent with the Board approved FY18 budget.

5. Adjourn

Upon a motion made by Bettina Broniz, and seconded by Betsy Crum, the Board of Directors Meeting was adjourned at 4:29 p.m.

Respectfully Submitted,

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Catherine Smith, Chairperson

CONNECTICUT GREEN BANK
Board of Directors
Draft Minutes
Tuesday, October 3, 2017

1. Call to Order

Bryan Garcia called the meeting to order at 5:03 p.m. Board members participating: Eric Brown (by phone), Bettina Broniz (by phone), Matt Ranelli (by phone), Rob Klee (by phone), Reed Hundt (by phone), Betsy Crum (by phone), Catherine Smith (by phone), and John Harrity (by phone)

Members Absent: Kevin Walsh, Tom Flynn, and Gina McCarthy

Staff Attending: (all by phone) Laura Fidao, Bryan Garcia, Bert Hunter, Mackey Dykes, Eric Shrago, Anthony Clark, Brian Farnen, Chris Magalhaes and Cheryl Samuels

2. Public Comments

There were no public comments.

3. Staff Transaction Recommendations

a. Commercial, Industrial, and Institutional Sector Program & Transaction Recommendation

i. Private Capital for Small Business Energy Advantage Program

Bryan Garcia provided a high-level overview of the SBEA Program. He discussed the statutory requirement of the Energy Efficiency Board and the Board of Directors of the Connecticut Green Bank coordinating on programs through the Joint Committee and one of their main goals, that being "To identify and engage alternative capital sources to lower the cost of and increase opportunities for project financing."

Anthony Clark discussed the key benefits of the new solution that they are proposing. He stated that the EEB is looking to develop a more cost-efficient way to provide loans to small business customers. He stated that the idea is to lower the cost of capital for money into the Program. He stated that under the current model funding is coming from a mix of utility shareholder capital and some ratepayer money from the CEEF. He stated that the Green Bank together with Eversource and UI (the "Utilities") and upon the advice of the EEB issued an RFP to capital providers. He stated that the facility that has been created helps to achieve the goals of bringing in private capital at a lower cost. He stated that this facility will maintain a similar origination structure. He stated that CEEF support pays for the loan loss reimbursement and the

interest rate buy down since the loan to the customers are without interest. He stated that there is not a stringent credit underwriting process – one that is based purely on bill payment history which has served the program well. He stated that historically, defaults have not been much above 1%.

Laura Fidao discussed the structure that is being proposed for the Board's approval. She stated that the Green Bank will provide $3 million subordinated capital and JP Morgan will provide $27 million as the senior lender. She stated that although the project origination process which is managed between the Utilities and the contractors remains much the same, the customer will sign a loan agreement with the LLC instead of with the Utility (as is the program practice at present). The LLC will then make the payments to the contractor after project completion and confirmation of project completion by the Utilities. It is these payments to the contractors that represent the proceeds of the loans to the customers. She stated that customer loans under the new arrangements will still be repaid on the bill. She stated that the utilities will transfer the funds collected from customer payments back to the LLC. She stated that the LLC will be in charge of the administration of the capital and cash flows. She stated that the LLC will calculate the interest cost reimbursement from CEEF. Any administrative costs will also be reimbursed by CEEF, as well as loan losses. She stated that the savings or benefits of this program are the cost of capital savings. She stated that the administrative costs will increase slightly but the loan losses are forecasted to remain the same. She stated that overall, the initial 5-year period there will be a savings of $2.8 million. However, as the financing facility is in place for a few years, the annual savings are expected to stabilize at about $1.7 million per year.

Mackey Dykes stated that the Green Bank sees opportunities that once they have this flexible capital in place the Green Bank and the Utilities could explore expanding parameters of the program. He stated that a joint goal is to start going after deeper savings, and making SBEA a more flexible financing product could help achieve this goal.

Matt Ranelli stated that they should push the utilities as part of the Joint Committee, to expand the on-bill financing to expand offerings for customers through accessing private capital through the Green Bank. He stated that they need to explore and address Board of Education's so that they can also access this capital as easily as others.

Reed Hundt stated that this is a great model. He questioned why the Green Bank would only hold 10% of the facility. Mackey Dykes stated that JP Morgan had made the request that a loan loss reserve be put into place. As the structure changed at the request of the Utilities, the Green Bank proposed an equity contribution to accommodate these requests. He stated that a question has come up about why the Green Bank is not bearing the loan loss reserve for

this fund. He stated that they think that it is an appropriate question given the Green Bank's role of providing financing. He stated that if the Green Bank is to think about taking on more risk, we need think about ways to earn more return to compensate for that added risk and other related matters (terms and conditions, for instance). He stated that this is a large topic and now is not the time to try to reorient the structure. He stated that this will be a topic of conversation at the next EEB Meeting. Commissioner Klee stated that those are all great points for future evolutions, but not at the present where the focus should be on closing this transaction with lower cost capital. Eric Brown requested that the EEB members be briefed on the topic. Mackey Dykes stated that they will do that.

Upon a motion made by Reed Hundt, and seconded by Matt Ranelli, the motion passed unanimously.

Resolution #1

WHEREAS, pursuant to Conn. Gen. Stat. Section 16-24n the Connecticut Green Bank ("Green Bank") has a mandate to develop programs to finance clean energy investment for small business, industrial, and municipal customers in the State;

WHEREAS, recapitalizing the Small Business Energy Advantage ("SBEA") program with private sector capital is a recognized priority in the Green Bank's Comprehensive Plan and is a goal of the CT Energy Efficiency Board and Green Bank Joint Committee;

WHEREAS, The Connecticut Light and Power Company d/b/a Eversource Energy and The United Illuminated Company (together, the "Utilities") have requested the Green Bank's assistance sourcing low cost private sector capital;

WHEREAS, the Green Bank released a Request for Proposals for Small Business Energy Advantage Program Alternative Financing Solutions (the "RFP") on November 14, 2016;

WHEREAS, JP Morgan Chase responded to the RFP with a comprehensive and flexible solution offering the lowest cost capital to recapitalize the SBEA program;

WHEREAS, Green Bank staff has selected JP Morgan Chase's proposal to recapitalize the SBEA program and now recommends that the Green Bank support the recapitalized SBEA facility by creating and managing a special

purpose vehicle (the "SPV") for the new fund structure, committing $3 million in an equity contribution to the fund structure (the "Equity Contribution"), and providing up to $750,000 of capital for short-term liquidity purposes (the "Liquidity Capital"), and;

WHEREAS, the Utilities will continue to make funding available from the Connecticut Energy Efficiency Fund ("CEEF") to reimburse interest expenses, loan losses, and administrative costs associated with the recapitalized SBEA program.

NOW, therefore be it:

RESOLVED, that the President of the Green Bank and any other duly authorized officer of the Green Bank, is authorized to execute and deliver agreements to establish the Equity Contribution, Liquidity Capital, and SPV with terms and conditions consistent within the memorandum submitted to the Board dated September 21, 2017, and as he or she shall deem to be in the interests of the Green Bank and the ratepayers no later than 270 days from the date of authorization by the Board; 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. <u>Adjourn</u>

Upon a motion made by Bettina Broniz, and seconded by Matt Ranelli, the meeting was adjourned at 5:31 p.m.

Respectfully Submitted,

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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

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

CC: Mackey Dykes, Brian Farnen, and Bert Hunter

Date: October 20, 2017

Re: Infrastructure Sector Programs – Program Performance towards Targets for FY 2017 - Restated

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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) 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 2017 and 2018.

Performance Targets and Progress

With respect to the Comprehensive Plan approved by the Board of Directors of the Green Bank on July 22, 2016 and revised on January 20, 2017,[1] the following are the performance targets for FY 2017 and progress made to targets for the Infrastructure Sector Programs (see Table 1) as of June 30, 2017.

[1] For mid-year revisions to budget and targets, see "Q2 Progress to Targets" memo of January 11, 2017 on page 190 – click here

Table 1. Program Performance Targets and Progress Made to the Comprehensive Plan for FY 2017

Key Metrics	Program Performance Original Targets (as of 07/22/16)	Program Performance Revised Targets (of 01/20/17)	Program Progress[2]	% of Goal
Capital Deployed[3]	$300,302,000	$191,165,071	$141,469,762	74%
Investment at Risk[4]			$13,370,444	
Private Capital[5]			$128,099,318	
Deployed (MW)	66.2	49.0	39.7	81%
# of Loans/Projects	6,379	6,001	5,025	84%
Leverage Ratio			10.6	

In summary, for Infrastructure Sector Programs in FY 2017, there were 5,025 projects (achieving 84% of the goal) requiring $141.5M of investment (achieving 74% of the goal) that led to the deployment of 39.7 MW of clean energy deployed (achieving 81% of the goal), that delivered a leverage ratio of about 11:1 for private to public funds invested.

Executive Summary for the Infrastructure Sector Programs

The following is a bulleted executive summary of the Infrastructure Sector Programs:

- RSIP milestones since program inception: Over 170 MW approved (more than 50% of 300 MW policy target), nearly 145 MW completed, $100M invested in incentives at 7:1 leverage across all steps
- SHREC Master Purchase Agreement approved by PURA and executed with EDCs
- SHREC aggregation process approved by PURA and Transaction Confirmation Agreement executed with EDCs for the 2017 Tranche, including 2015 and 2016 Vintage SHRECs
- Sale of 40,000 CGB residential and commercial Class I RECs (i.e., non-SHREC RECs)
- Quantum Biopower Southington AD plant achieved commercial operation
- Completed DOE SunShot Rooftop Solar Challenge project and SunShot Prize competition, achieving stabilization of residential solar PV soft costs at about 50% of total costs and improvement in associated processes
- DOE SolSmart technical advisor contract winner ($19K) to continue work with municipalities on solar PV permitting and zoning improvements

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[2] Includes only closed transactions

[3] Capital Deployed is used to measure Investment actuals to targets and it includes fees related to financing costs and adjustments for Fair Market Value which are not included in the Gross System Cost. It represents: the Fair Market Value for Commercial/Residential Leases, the Amount Financed or Gross System Cost (whichever is greater) for CPACE, the Amount Financed for Residential financing products and the Gross System Cost for all other programs.

[4] 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.

[5] Private Investment is based on the Gross System Cost and includes adjustments related to financing costs or Fair Market Value.

- DOE SunShot grant award of $162K over three years to inform LMI research and strategy

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Infrastructure Sector Programs

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

- **Residential Solar Investment Program** – $13.1 million in subsidies[6] from the Green Bank has attracted $128.3 million of funds from other sources.

Table 2. RSIP Overview for FY 2017

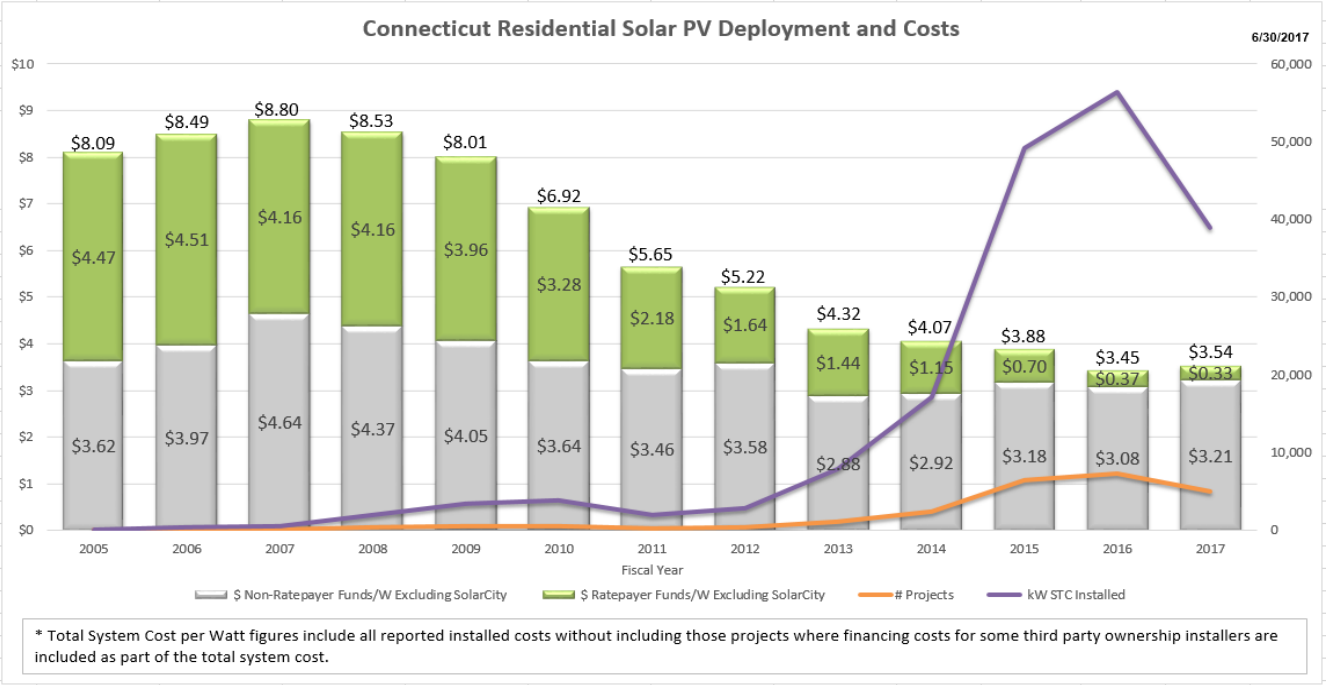
Program Data	Submitted but not Closed	Closed[7]	Total
Projects	124	5,024	5,148
Installed Capacity (MW)	1.1	38.9	40.0
Lifetime Clean Energy Produced (MWh)	30,458	1,108,319	1,138,777
Annual Combined Energy Generated & Saved (MMBtu)	4,157	~~161,159~~151,263	~~165,316~~155,420
Subsidies ($'s)	$276,962	$12,867,584	$13,144,546
Credit Enhancement ($'s)	$0	$0	$0
Loans or Leases ($'s)	$0	$0	$0
Total Green Bank Investment ($'s)	$276,962	$12,867,584	$13,144,546
Private Capital ($'s)	$3,065,090	$125,200,786	$128,265,876
Direct Job Years	17	538	555
Indirect & Induced Job Years	13	704	717
Lifetime Tons of CO2 Emissions	17,122	623,022	640,144

The residential solar PV market in Connecticut has seen a dramatic improvement over the past decade (see Figure 1). Installed costs have decreased by over 60% from a high of $8.80/W in 2007 to $3.54/W in FY17. Incentives have decreased by over 90% from a high of $4.51/W in 2006 to $0.33/W today.

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

[7] Based on nearly 10-years of historical experience, 91% of projects approved result in project completions.

Figure 1. Installed Cost ($/W – Y1 Axis) and Installed Capacity (kW – Y2 Axis) by Fiscal Year



Since RSIP's inception in FY12, installed costs have decreased 32%, incentives have decreased 80%, and capacity additions increased over 1200% from 2.9 MW in FY12 to 38.9 in FY17.

RSIP capacity additions decreased 31% from 56.4 MW in FY16 to 38.9 MW in FY17. FY17 deployment of 38.9 MW is 18% or 8.5 MW lower than the FY17 target of 47.4 MW. Factors contributing to this gap include:

- A decrease in electricity rates from July through December 2016[8]
- Nationwide flattening/slowdown in the residential solar PV market in CY16, including:
  - Changes in the third-party ownership landscape, with major companies struggling with profitability and customer acquisition costs, resulting in business model changes, market exits, and bankruptcies;
  - Market flattening expected to continue in most markets except emerging markets and those with high incentives; and
  - In Connecticut, Solar City withdrew from RSIP, NRG withdrew from the state and eventually from residential solar PV in favor of commercial and utility scale PV, and several large companies participating in RSIP went bankrupt including Sungevity, One Roof, and Sun Edison
- Solarize program transitioned to the private sector with SmartPower partnering with local installers on a "pay for performance" model
- Installers have said that "low hanging fruit" customers have been taken

[8] Eversource's generation rate dropped from 9.555 cents/kWh to 6.606 cents/kWh in July 2016, then increased to 7.874 cents/kWh in January 2017. During the same timeframe, Avangrid's generation rate decreased from 10.7358 cents/kWh to 8.0224 cents/kWh, then increased to 9.2641 cents/kWh.

CT's largest residential solar PV market player with over 40% share in prior years, Solar City exited RSIP in calendar year 2016 with plans to aggregate and monetize the renewable energy credits (RECs) themselves. They appear to be continuing to install systems in Connecticut but are registering the systems in Massachusetts as Class I renewable resources and monetizing the RECs in the Massachusetts market. These approximately 450 projects represent roughly 3.5 MW, assuming an average step 10 project size of 7.7 kW, and there may have been other Solar City projects installed in CT in FY17 that are not accounted for. The Solar City exit from RSIP was a large factor in the RSIP falling short of its target, though other company exits and bankruptcies and additional factors outlined above also contributed.

Despite national and local challenges and the exit of major players, existing and new entrants have been steadily picking up the slack, with Sun Run, Vivint, Posigen, SunPower, Sunnova, and Ross Solar the RSIP market leaders in FY17. Many local companies continue to maintain a strong presence, though some have shifted more business toward commercial projects due to richer incentives available through the ZREC program. The market appears to have stabilized at a rate of between 3.1 and 3.6 MW of RSIP submissions per month since March 2017. Green Bank staff will continue to monitor market trends and will consider whether increasing marketing efforts may be helpful in FY18.

The Green Bank has been successful in implementing the SHREC in accordance with Public Act 15-194 and Public Act 16-212[9] The Green Bank and the state's electric distribution companies (EDCs) together negotiated a master purchase agreement (MPA) for SHRECs and submitted a unified MPA draft to PURA. PURA created docket number 16-05-07 and issued the docketed final decision on January 25, 2017, approving the MPA. The MPA was executed by the EDCs in February 2017; it requires the Green Bank to sell and the EDCs to purchase the EDCs' Buyer's Percentage Entitlement of SHRECs associated with the electricity produced by qualifying RSIP projects[10]. The Buyer's Percentage Entitlement is 80% for Eversource and 20% for United Illuminating.

In addition, a SHREC aggregation process was approved by PURA, allowing RSIP to obtain Class I REC certifications for RSIP projects in the 2017 Tranche.[11] On July 1, 2017, the Green Bank and the EDCs executed Transaction Confirmation Agreements for the 2017 Tranche, listing all RSIP projects in the tranche, representing a total, aggregate installed capacity of 47.176 MW-DC for 2015 and 2016 vintage SHRECs.

It should be noted that all subsidies, administrative costs, and other expenses for the RSIP are to be cost recovered through the pricing and sale of SHRECs as specified in the MPA between the Green Bank and the EDC's. Tranche 1, including 2015 and 2016 vintage SHRECs were priced at $50 per REC over the 15-year MPA.

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[9] PA 15-194: https://www.cga.ct.gov/2015/act/pa/pdf/2015PA-00194-R00HB-06838-PA.pdf, and PA 16-212: https://www.cga.ct.gov/2016/act/pa/pdf/2016PA-00212-R00SB-00366-PA.pdf.

[10] "SHREC Project" means a qualifying residential solar PV system, which is a solar photovoltaic project that (i) receives funding from the CT Green Bank [and for which the incentive was approved January 1, 2015 or later], (ii) is certified by PURA as a Class I renewable energy source, as defined in subsection (a) of CGS Section 16-1, (iii) emits no pollutants, (iv) is located on the customer-side of the revenue meter of a one-to-four family home, (v) serves the distribution system of an EDC, and (vi) which is capable of producing SHRECs.

[11] "Tranche" for a given year, shall include all SHRECs generated by SHREC Projects that were not included in a prior Tranche that first begin producing SHRECs in time to be included in the Trading Period for the first quarter of such year. For example, the 2017 Tranche will include all SHRECs created in NEPOOL GIS on July 15, 2017 and thereafter in accordance with NEPOOL GIS Operating Rules for the duration of the Tranche Delivery Term.

For a breakdown of RSIP project volume and investment by census tracts categorized by Area Median Income (AMI) bands and Distressed Communities as designated by DECD, see Tables 3 and 4. It should be noted that RSIP is not an income targeted program.

Table 3. RSIP Activity in Metropolitan Statistical Area (MSA) Area Median Income (AMI) Bands

Fiscal Year Closed	MSA AMI Band	# of Project Units	% Project Distribution	Investment (Gross System Cost)	% Investment Distribution	Installed Capacity (MW)	% MW Distribution	Total Owner Occupied 1-4 Unit Households	% Total Household Distribution	Project Units / 1,000 Total Households	Investment / Total Household	Watts / Total Household
2017	<60%	707	14%	17,609,501	13%	4.5	12%	64,361	7%	11.0	$273.61	70.4
2017	60%-80%	779	16%	19,090,287	14%	5.4	14%	96,305	11%	8.1	$198.23	56.1
2017	80%-100%	992	20%	26,882,997	20%	7.5	19%	164,873	19%	6.0	$163.05	45.8
2017	100%-120%	965	19%	26,998,694	20%	7.8	20%	184,613	21%	5.2	$146.24	42.1
2017	>120%	1,569	31%	47,142,883	34%	13.6	35%	352,621	41%	4.4	$133.69	38.5
2017	**Total**	**5,012**	**100%**	**137,724,361**	**100%**	**38.8**	**100%**	**862,773**	**100%**	**5.8**	**$159.63**	**45.0**
Total	<60%	1,728	8%	43,900,089	6%	10.7	6%	64,361	7%	26.8	$682.09	166.6
Total	60%-80%	2,491	11%	67,895,665	10%	17.1	10%	96,305	11%	25.9	$705.01	177.4
Total	80%-100%	4,090	18%	125,123,375	18%	30.1	17%	164,873	19%	24.8	$758.91	182.7
Total	100%-120%	5,328	24%	170,501,497	24%	40.8	24%	184,613	21%	28.9	$923.56	221.0
Total	>120%	8,977	40%	304,348,365	43%	73.6	43%	352,621	41%	25.5	$863.10	208.9
Total	**Total**	**22,614**	**100%**	**711,768,991**	**100%**	**172.4**	**100%**	**862,773**	**100%**	**26.2**	**$824.98**	**199.8**

Table 4. RSIP Activity in Distressed Communities

Fiscal Year Closed	Distressed	# of Project Units	% Project Distribution	Investment (Gross System Cost)	% Investment Distribution	Installed Capacity (MW)	% MW Distribution	2010 Census Population	% Population Distribution	Investment / Capita	Watts / Capita	2010 Census Households	% Household Distribution	Investment / Household	Watts / Household
2017	Yes	1,857	37%	$46,025,148	33%	13.0	33%	1,167,312	33%	$39.43	11.1	445,638	33%	$103.28	$29.13
2017	No	3,167	63%	$92,043,222	67%	26.0	67%	2,406,785	67%	$38.24	10.8	925,449	67%	$99.46	$28.04
2017	**Total**	**5,024**	**100%**	**$138,068,370**	**100%**	**38.9**	**100%**	**3,574,097**	**100%**	**$38.63**	**10.9**	**1,371,087**	**100%**	**$100.70**	**$28.39**
Total	Yes	5,930	26%	$166,518,868	23%	41.2	24%	1,167,312	33%	$142.65	35.3	445,638	33%	$373.66	$92.41
Total	No	16,696	74%	$545,594,133	77%	131.3	76%	2,406,785	67%	$226.69	54.5	925,449	67%	$589.55	$141.86
Total	**Total**	**22,626**	**100%**	**$712,113,000**	**100%**	**172.5**	**100%**	**3,574,097**	**100%**	**$199.24**	**48.3**	**1,371,087**	**100%**	**$519.38**	**$125.79**

- **CHP and AD Pilot Programs** – Of the $13.4 million of Green Bank investment in these projects (see Tables 5 and 6), $58.0 million of private capital has been attracted to support them.

Table 5. CHP Pilot Program Overview for FY 2017

Program Data	Approved	Closed	Total
Projects	1	1	2
Installed Capacity (MW)	2.5	0.8	3.3
Lifetime Clean Energy Produced (MWh)	295,650	94,017	389,667
Annual Combined Energy Generated & Saved (MMBtu)	118,735	304,445	423,180
Subsidies ($'s)	$0	$0	$0
Credit Enhancement ($'s)	$0	$0	$0
Loans or Leases ($'s)	$1,000,000	$502,860	$1,502,860
Total Green Bank Investment ($'s)	$1,000,000	$502,860	$1,502,860
Private Capital ($'s)	$4,000,000	$2,898,532	$6,898,532
Direct Job Years	31	21	52
Indirect & Induced Job Years	50	34	83
Lifetime Tons of CO2 Emissions	-	~~55,000~~	~~55,000~~

Table 6. AD Pilot Program Overview for FY 2017

Program Data	Approved	Closed	Total
Projects	3	-	3
Installed Capacity (MW)	6.2	-	6.2
Lifetime Clean Energy Produced (MWh)	651,744	-	651,744
Annual Combined Energy Generated & Saved (MMBtu)	277,362	-	277,362
Subsidies ($'s)	$0	$0	$0
Credit Enhancement ($'s)	$0	$0	$0
Loans or Leases ($'s)	$11,860,109	$0	$11,860,109
Total Green Bank Investment ($'s)	$11,860,109	$0	$11,860,109
Private Capital ($'s)	$51,139,891	$0	$51,139,891
Direct Job Years	-	-	-
Indirect & Induced Job Years	-	-	-
Lifetime Tons of CO2 Emissions	-	-	-

For a breakdown of the use of Green Bank resources for Infrastructure Sector Programs (see Table 7).

Table 7. Distribution of Green Bank Funds Invested in Projects and Programs through Subsidies, Credit Enhancements, and Loans and Leases for FY 2017[12]

Program	Subsidies		Credit Enhancements		Loans and Leases		Total
RSIP	$12,867,584	100%	$0	0%	$0	0%	$12,867,584
CHP	$0	0%	$0	0%	$502,860	100%	$502,860
AD	$0	0%	$0	0%	$0	0%	$0
Total	$12,867,584	96%	$0	0%	$502,860	4%	$13,370,444

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 8):

Table 8. Program Progress Made in FY 2017[13]

Key Metrics	RSIP	CHP Program	AD Program	Total Program Progress
Date of Program Approval	Feb 2012	Feb 2012	Feb 2012	
Date of Program Launch	Mar 2012	Jun 2012	Dec 2012	
Ratepayer Capital at Risk	$12,867,584[14]	$502,860	$0	$13,370,444
Private Capital	$125,200,786	$2,898,532	$0	$128,099,318
Deployed (MW)	38.9	0.8	-	39.7
# of Loans/Installations	5,024	1	-	5,025
Lifetime Production (MWh)	1,108,319	94,017	0	1,202,335
Annual Combined Energy Generated & Saved (MMBtu)	~~161,159~~151,263	304,445	0	~~465,604~~455,708

"Top 5" Headlines

The following are the "Top 5" headlines for Infrastructure Sector Programs for FY 2017:

1. Quantum Biopower unveils the state's first food-to-energy facility

   The Southington Observer

   Southington is now home to Connecticut's first food waste-to-renewable-energy facility, bringing cutting edge technology and a new spin on recycling.

2. Connecticut Gets Federal Grant To Improve Solar Access For Low- And Moderate-Income Homeowners

   Hartford Courant

   Connecticut is getting a $160,000 federal grant for a three-year effort to increase the number of low- and moderate-income people able to take advantage of the state's solar-power programs.

3. The Connecticut Green Bank, EnergySage announce state-sponsored solar marketplace

[12] Includes only closed transactions

[13] Includes only closed transactions

[14] Includes incentives over the 6 year course of term of the agreement

Solar Power World

As the exclusive online partner to the Connecticut Green Bank, EnergySage and its full set of resources are now available to Connecticut residents in search of comprehensive solar information via GoSolarCT.com.

4. Green Bank Hopes State Lawmakers Won't Dip Into Its Funds

   Hartford Courant

   Four years ago, just 2,019 Connecticut homes relied on solar energy. Today, the number of homeowners across the state with panels on their rooftops totals nearly 22,000.

5. Property Rounds: Local solar market growth slows despite new offerings

   The Hour

   When solar first came on the scene as an affordable option, Brian Tilford saw as many homeowners installing photovoltaic systems "because it was cool," in his words, as those who saw the long-term savings they could generate.

Lessons Learned

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

- **The residential solar PV market is dynamic and sensitive to a lot of factors including national trends and market forces** - The Green Bank needs to continue to stay informed of these trends and monitor RSIP by examining data on a regular basis (currently done every week) and talking to the industry.

- **RSIP leveraging ongoing operational improvements and upgrading of technology platforms and resources** - RSIP recognizes the need for continued improvements to better manage the fleet of over 20,000 projects, both in terms of incentive application and project completion paperwork processing, as well as monitoring of solar PV electricity production in order to monetize RECs and SHRECs. RSIP will be launching a new PowerClerk platform in August 2017 that will provide better functionality, increase efficiency and assist with data validation. Secondly, RSIP is exploring use of outside resources to assist with monitoring of production data and trouble-shooting of system issues. Thirdly, the RSIP team continues to review and validate data in the PowerClerk and Locus platforms to ensure high data quality that meets program needs. Lastly, the team continues to make process improvements on an ongoing basis to increase work efficiencies and address emerging challenges.

- **Consumer protection efforts are growing in importance in the residential solar PV market** - The Green Bank, the State of CT Department of Consumer Protection (DCP) and the Office of Consumer Counsel (OCC) have seen an increase in consumer complaints due to rapid industry growth in recent years, a large percentage of third party owned projects installed by national companies, and the continuing need to better educate customers. The Green Bank works closely with other agencies, in particular DCP, to address and prevent complaints. RSIP staff have become educated on state of CT consumer protection laws and have shared information with RSIP contractors and third party system owners to help prevent future issues. RSIP staff worked with the residential financing and marketing teams to update the format and content of GoSolarCT.com to provide a trusted, online source of information for solar PV customers in the

state. This site includes a portal to the EnergySage Marketplace, a platform that allows customers to obtain and compare quotes.

- **In the context of broader market trends and the state of Connecticut's fiscal status and climate change mitigation efforts, the strategy for supporting RSIP going forward will not focus primarily on increasing project volume but rather on elements such as the following**:
    - Sustained orderly development of a stable, resilient, residential solar PV market not dependent on incentives – including net metering in time
    - Maintaining a stable installer base including strong local company presence
    - Continuing to support access to affordable financing through loans and third party providers
    - Continuing to increase adoption of solar among LMI households through additional research and analysis to understand opportunities in the Connecticut solar market
    - Training the market for the long term by supporting consumer education and protection, as well as installation technology diversity (e.g., energy efficiency)
    - Continuing to reduce barriers to PV adoption
    - Supporting a "Solar Plus" model of adoption of solar PV in combination with complementary technologies such as energy storage, electric vehicles, renewable thermal technologies, energy efficiency, demand response, and home energy management systems to increase the value of solar to the grid and to customers
- **Residential solar PV soft costs stabilized by DOE SunShot efforts** - In understanding the impact of Green Bank participation in DOE SunShot funded efforts to address soft costs for residential solar PV, data analysis revealed that soft costs had been steadily increasing over the past decade as a percentage of total costs until the timeframe of the SunShot Rooftop Solar Challenge and SunShot Prize projects. During the project period, soft costs were stabilized at about 50% of total project costs. RSIP will continue working with municipalities to improve permitting and zoning through participation in the SolSmart program.

- **Success of state's first food waste-to-renewable energy facility will demonstrate opportunity to economically generate clean electricity and recycle waste in Connecticut** – AD using food waste and other organics is relatively new to the New England region. The project economics can be favorable when there are multiple revenue streams including tipping fees paid by food waste generators. Per the source-separated organics recycling legislation, large commercial food waste generators are required to bring their source-separated organic materials (SSOM) to a recycling facility, unless there is not a suitable facility within a 20-mile radius of the generator. The Green Bank is also looking to support two farm AD projects which would combine manure and SSOM feedstocks. There are significant financial as well as performance benefits to co-digesting manure with food waste.

Infrastructure Sector Programs FY 2018 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 9):

Table 9. Number of Projects, Capital Deployed, and Clean Energy Deployed (MW)

Program	# of Projects	Capital Deployed	Clean Energy Deployed (MW)
RSIP	4,431	$136,300,000	37.0
AD	1	$20,000,000	1.6
Total	4,432	$156,300,000	38.6

For Infrastructure Sector Programs, there are 13.6 full time equivalent staff members supporting two (2) different products and 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, Bryan Garcia, Kerry O'Neill, and Eric Shrago

Cc Mackey Dykes, Brian Farnen, and Bert Hunter

Date: October 20, 2017

Re: Residential Sector Programs – Program Performance towards Targets for FY 2017 - Restated

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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 2017 and 2018.

Performance Targets and Progress

With respect to the Comprehensive Plan approved by the Board of Directors of the Green Bank on July 22, 2016 and revised on January 20, 2017,[1] the following are the performance targets for FY 2017 and progress made to targets for the Residential Sector Programs (see Table 1) as of June 30, 2017.

[1] For mid-year revisions to budget and targets, see "Q2 Progress to Targets" memo of January 11, 2017 on page 190 – click here

Table 1. Program Performance Targets and Progress Made to the Comprehensive Plan for FY 2017

Key Metrics	Program Performance Original Targets (as of 07/22/16)	Program Performance Revised Targets[2] (as of 01/20/17)	Program Progress[3][4]	% of Goal
Capital Deployed[5]	$36,599,000	$32,263,447	$44,896,880~~$41,588,084~~	139%~~129%~~
Investment at Risk[6]			$6,755,866~~$6,314,866~~	
Private Capital[7]			$40,090,009~~$37,049,660~~	
Deployed (MW)	5.4	5.4	6.1~~5.6~~	113%~~103%~~
# of Loans/Projects	1,093	775	1,162~~960~~	151%~~125%~~
Leverage Ratio			6.8~~6.7~~	

In summary, for Residential Sector Programs in FY 2017, there were ~~960~~ 1,162 projects (achieving ~~125~~151% of the goal) requiring $~~41.6~~44.9MM of investment (achieving ~~129~~139% of the goal) that led to the deployment of ~~5.6~~6.1 MW of clean energy deployed (achieving ~~103~~113% of the goal), that delivered a leverage ratio of nearly 7:1 for private to public funds invested.

Executive Summary for the Residential Sector Programs

The following is a bulleted executive summary of the Residential Sector Programs:

- Exceeded targets for all programs, though it should be noted that Multifamily Programs benefited from one $10.8 million “whale” deal this year

[2] Multifamily Predevelopment financing target were not set for fiscal year 2017.
[3] Includes only closed transactions.
[4] Includes $106,950 in Capital Deployed, $106,950 in CGB Investment, and $25,500 in Private Capital for 4 Multifamily Predevelopment financing.
[5] Capital Deployed is used to measure Investment actuals to targets and it includes fees related to financing costs and adjustments for Fair Market Value which are not included in the Gross System Cost. It represents: the Fair Market Value for Commercial/Residential Leases, the Amount Financed or Gross System Cost (whichever is greater) for CPACE, the Amount Financed for Residential financing products and the Gross System Cost for all other programs.
[6] Includes funds from the Clean Energy Fund, RGGI allowance revenue, repurposed ARRA-SEP funds, and other resources that are managed by Green Bank 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.
[7] Private Investment is based on the Gross System Cost and includes adjustments related to financing costs or Fair Market Value.

- Broke the $100 million threshold with $123 million of cumulative activity in the sector, including $95 million in residential 1-4 (3,500 projects) and $28 million in multifamily (70 projects)
- Unbelievably clean portfolio performance (3 defaults and fewer than 15 delinquencies) allowed us to recruit 6 Smart-E lenders to the credit-challenged version of the program, and extend maturities to 15-20 years for qualified borrowers, unsecured – a significant program enhancement that greatly expands access to affordable financing
- Invested in $5.3 million of project systems in the PosiGen Solar for All program
- Invested an additional $2.5 million in Capital for Change to further capitalize the Low Income Multifamily Energy (LIME) Loan
- Made $6 million of ARRA-SEP funds available to the Smart-E interest rate buydown program and launched 0.99% special offers
- Received $1.5 million of Regional Greenhouse Gas Initiative funds from CT Department of Energy and Environmental Protection to establish a revolving loan fund for energy related health and safety improvements.
- Experian dataset analyzed for credit trends to better communicate the financial capacity of CT low-to-moderate income (LMI) communities
- Performed Nielsen customer segmentation analysis of PosiGen and CT solar customers in LMI census tracts to support solar industry targeted marketing for LMI customers
- Partnered with Department of Public Health and the nonprofit Green and Health Homes Initiative to initiate research into sustainable funding streams from the CT health sector to support health and safety remediation at scale

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Residential Sector Programs – Single Family

The following are brief descriptions of the progress made under the Comprehensive Plan for FY 2017 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 0.99-2.99% rates for installing multiple eligible measures or converting to natural gas or installing renewable heating and cooling technologies (see Table 2).

Table 2. Energize CT Smart-E Loan Overview for FY 2017 (Lender data is as of ~~May 31~~June 30, 2017)

Program Data	Approved	Closed	Total
Projects	309 ~~312~~	517 ~~364~~	826 ~~676~~
Installed Capacity (MW)	0.3 ~~0.3~~	1.2 ~~1.0~~	1.5 ~~1.3~~
Lifetime Clean Energy Produced (MWh)	12,178 ~~14,672~~	58,973 ~~46,306~~	71,152 ~~60,978~~
Annual Combined Energy Generated & Saved (MMBtu)	2,496 ~~4,891~~	12,918 ~~14,638~~	15,414 ~~19,529~~
Subsidies ($'s)	$0 ~~$0~~	$0 ~~$0~~	$0 ~~$0~~

Program Data	Approved	Closed	Total
Credit Enhancement ($'s)[8]	$3,143~~$3,143~~	$763,399~~$763,399~~	$766,542~~$766,542~~
Loans or Leases ($'s)	$0~~$0~~	$0~~$0~~	$0~~$0~~
Total Green Bank Investment ($'s)	$3,143~~$3,143~~	$763,399~~$763,399~~	$766,542~~$766,542~~
Private Capital ($'s)	$4,956,961~~$5,056,410~~	$9,597,945~~$7,246,379~~	$14,554,906~~$12,302,789~~
Direct Job Years	10~~8~~	46~~22~~	56~~30~~
Indirect & Induced Job Years	14~~11~~	61~~29~~	75~~40~~
Lifetime Tons of CO2 Emissions	6,769~~8,136~~	32,859~~25,653~~	39,627~~33,788~~

For a breakdown of the Smart-E Loan Channel, see Table 3.

Table 3. Energize CT Smart-E Loans by Channel

Smart-E Loan Channel	Original Target	Revised Target	Closed	% of Goal
C4C/HES	250	20	171~~93~~	855%~~465%~~
EE/HVAC	145	126	181~~137~~	144%~~109%~~
Solar PV	143	108	126~~108~~	117%~~100%~~
Blank	-	0	39~~26~~	0%~~0%~~
Total	538	254	517~~364~~	204%~~143%~~

For a breakdown of the Smart-E Special Offers, see Table 4.

Table 4. Energize CT Smart-E Loan Special Offers

Smart-E Loan Special Offer	Closed	% of Special Offers	% of All Loans
Bundle	227~~178~~	59%~~67%~~	44%~~49%~~
Natural Gas Special Offer	80~~55~~	21%~~21%~~	15%~~15%~~
Heat Pump Special Offer	78~~31~~	20%~~12%~~	15%~~9%~~
Total	385~~264~~	100%~~100%~~	74%~~73%~~

For a breakdown of Smart-E loan volume by credit score band, see Table 5.

Table 5. Energize CT Smart-E Credit Scores

Credit Ranges						
Unknown	<639	640-679	680-699	700-719	720+	Grand Total
2~~2~~	14~~11~~	40~~30~~	52~~37~~	47~~30~~	362~~254~~	517~~364~~
0%~~1%~~	3%~~3%~~	8%~~8%~~	10%~~10%~~	9%~~8%~~	70%~~70%~~	

[8] 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 Includes $341,751 in loan loss reserves and $421,648 in interest rate buydowns.

For a breakdown of Smart-E loan volume and investment by census tracts categorized by Area Median Income (AMI) bands and Distressed Communities as designated by DECD, see Tables 6 and 7. It should be noted that Smart-E is not an income targeted program and only in the second half of FY17 began offering the expanded credit-challenged version of the program, opening new opportunities to partner with mission-oriented lenders focused on reaching consumers in underserved lower income markets.

Table 6. Smart-E Loan Activity in Metropolitan Statistical Area (MSA) Area Median Income (AMI) Bands

Fiscal Year Closed	MSA AMI Band	# of Project Units	% Project Distribution	Investment (Gross System Cost)	% Investment Distribution	Installed Capacity (MW)	% MW Distribution	Total Owner Occupied 1-4 Unit Households	% Total Household Distribution	Project Units / 1,000 Total Households	Investment / Total Household	Watts / Total Household
2017	<60%	32	6%	539,124	6%	0.1	5%	64,361	7%	0.5	$8.38	0.9
2017	60%-80%	55	11%	835,840	9%	0.1	10%	96,305	11%	0.6	$8.68	1.3
2017	80%-100%	80	15%	1,174,158	12%	0.1	11%	164,873	19%	0.5	$7.12	0.8
2017	100%-120%	128	25%	2,634,033	27%	0.4	29%	184,613	21%	0.7	$14.27	1.9
2017	>120%	222	43%	4,414,790	46%	0.6	46%	352,621	41%	0.6	$12.52	1.6
2017	**Total**	**517**	**100%**	**9,597,945**	**100%**	**1.2**	**100%**	**862,773**	**100%**	**0.6**	**$11.12**	**1.4**
Total	<60%	69	6%	982,613	4%	0.1	2%	64,361	7%	1.1	$15.27	1.3
Total	60%-80%	116	10%	1,661,958	6%	0.2	5%	96,305	11%	1.2	$17.26	1.9
Total	80%-100%	207	18%	4,516,962	18%	0.5	14%	164,873	19%	1.3	$27.40	3.2
Total	100%-120%	261	22%	6,100,592	24%	1.0	25%	184,613	21%	1.4	$33.05	5.2
Total	>120%	512	44%	12,484,156	48%	2.1	54%	352,621	41%	1.5	$35.40	5.9
Total	**Total**	**1,165**	**100%**	**25,746,281**	**100%**	**3.9**	**100%**	**862,773**	**100%**	**1.4**	**$29.84**	**4.5**

Table 7. Smart-E Loan Activity in Distressed Communities

Fiscal Year Closed	Distressed	# of Project Units	% Project Distribution	Investment (Gross System Cost)	% Investment Distribution	Installed Capacity (MW)	% MW Distribution	2010 Census Population	% Population Distribution	Investment / Capita	Watts / Capita	2010 Census Households	% Household Distribution	Investment / Household	Watts / Household
2017	Yes	119	23%	$1,791,845	19%	0.3	21%	1,167,312	33%	$1.54	0.2	445,638	33%	$4.02	$0.58
2017	No	398	77%	$7,806,101	81%	1.0	79%	2,406,785	67%	$3.24	0.4	925,449	67%	$8.43	$1.04
2017	**Total**	**517**	**100%**	**$9,597,945**	**100%**	**1.2**	**100%**	**3,574,097**	**100%**	**$2.69**	**0.3**	**1,371,087**	**100%**	**$7.00**	**$0.89**
Total	Yes	243	21%	$4,176,761	16%	0.6	14%	1,167,312	33%	$3.58	0.5	445,638	33%	$9.37	$1.24
Total	No	922	79%	$21,569,520	84%	3.3	86%	2,406,785	67%	$8.96	1.4	925,449	67%	$23.31	$3.57
Total	**Total**	**1,165**	**100%**	**$25,746,281**	**100%**	**3.9**	**100%**	**3,574,097**	**100%**	**$7.20**	**1.1**	**1,371,087**	**100%**	**$18.78**	**$2.81**

- **PosiGen Solar for All** – a solar PV lease and energy efficiency ESA financing program that focuses on the low to moderate income (LMI) market segment. Supported by $5 million subordinated debt investment, with an additional $5 million option from the Connecticut 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 8). All projects include light weatherization and efficiency provided by HES or HES-IE.

Table 8. PosiGen Solar for All Overview for FY 2017 (data is as of ~~May 31~~June 30, 2017)

Program Data	Approved	Closed	Total
Projects	48 ~~72~~	627 ~~578~~	675 ~~650~~
Installed Capacity (MW)	0.3 ~~0.5~~	3.8 ~~3.5~~	4.1 ~~4.0~~
Lifetime Clean Energy Produced (MWh)	8,683 ~~12,982~~	109,368 ~~101,040~~	118,051 ~~114,022~~
Annual Combined Energy Generated & Saved (MMBtu)[9]	1,825 ~~1,772~~	23,284 ~~13,790~~	25,109 ~~15,562~~
Subsidies ($'s)	$0 ~~$0~~	$0 ~~$0~~	$0 ~~$0~~
Credit Enhancement ($'s)	$0 ~~$0~~	$0 ~~$0~~	$0 ~~$0~~
Loans or Leases ($'s)	$432,000 ~~$648,000~~	$5,643,000 ~~$5,202,000~~	$6,075,000 ~~$5,850,000~~
Total Green Bank Investment ($'s)	$432,000 ~~$648,000~~	$5,643,000 ~~$5,202,000~~	$6,075,000 ~~$5,850,000~~
Private Capital ($'s)	$742,250 ~~$1,149,078~~	$11,693,078 ~~$11,010,521~~	$12,435,328 ~~$12,159,599~~
Direct Job Years	3 ~~7~~	42 ~~39~~	45 ~~46~~
Indirect & Induced Job Years	4 ~~11~~	54 ~~51~~	59 ~~62~~
Lifetime Tons of CO2 Emissions	4,881 ~~7,298~~	61,479 ~~56,798~~	66,360 ~~64,096~~

[9] Includes an additional 13.3 MMBtu for each project for the HES audit.

For a breakdown of PosiGen Solar for All volume and investment by census tracts categorized by Area Median Income bands and Distressed Communities as designated by DECD, see Tables 9 and 10. As an income-targeted program, this table illustrates the degree to which the goal of serving consumers in lower income communities is being met.

Table 9. PosiGen Activity in Metropolitan Statistical Area (MSA) Area Median Income (AMI) Bands

Fiscal Year Closed	MSA AMI Band	# of Project Units	% Project Distribution	Investment (Gross System Cost)	% Investment Distribution	Installed Capacity (MW)	% MW Distribution	Total Owner Occupied 1-4 Unit Households	% Total Household Distribution	Project Units / 1,000 Total Households	Investment / Total Household	Watts / Total Household
2017	<60%	240	38%	6,361,446	37%	1.4	36%	64,361	7%	3.7	$98.84	21.8
2017	60%-80%	129	21%	3,454,829	20%	0.8	20%	96,305	11%	1.3	$35.87	8.0
2017	80%-100%	116	19%	3,381,866	20%	0.7	19%	164,873	19%	0.7	$20.51	4.5
2017	100%-120%	52	8%	1,505,487	9%	0.3	9%	184,613	21%	0.3	$8.15	1.8
2017	>120%	90	14%	2,632,450	15%	0.6	15%	352,621	41%	0.3	$7.47	1.7
2017	**Total**	**627**	**100%**	**17,336,078**	**100%**	**3.8**	**100%**	**862,773**	**100%**	**0.7**	**$20.09**	**4.5**
Total	<60%	376	39%	10,182,168	38%	2.2	38%	64,361	7%	5.8	$158.20	34.9
Total	60%-80%	191	20%	5,245,922	20%	1.2	20%	96,305	11%	2.0	$54.47	12.1
Total	80%-100%	173	18%	5,066,577	19%	1.1	19%	164,873	19%	1.0	$30.73	6.8
Total	100%-120%	89	9%	2,524,813	9%	0.6	9%	184,613	21%	0.5	$13.68	3.1
Total	>120%	132	14%	3,876,331	14%	0.9	15%	352,621	41%	0.4	$10.99	2.5
Total	**Total**	**961**	**100%**	**26,895,812**	**100%**	**6.0**	**100%**	**862,773**	**100%**	**1.1**	**$31.17**	**6.9**

Table 10. PosiGen Activity in Distressed Communities

Fiscal Year Closed	Distressed	# of Project Units	% Project Distribution	Investment (Gross System Cost)	% Investment Distribution	Installed Capacity (MW)	% MW Distribution	2010 Census Population	% Population Distribution	Investment / Capita	Watts / Capita	2010 Census Households	% Household Distribution	Investment / Household	Watts / Household
2017	Yes	375	60%	$10,186,435	59%	2.2	59%	1,167,312	33%	$8.73	1.9	445,638	33%	$22.86	$5.04
2017	No	252	40%	$7,149,643	41%	1.6	41%	2,406,785	67%	$2.97	0.7	925,449	67%	$7.73	$1.72
2017	**Total**	**627**	**100%**	**$17,336,078**	**100%**	**3.8**	**100%**	**3,574,097**	**100%**	**$4.85**	**1.1**	**1,371,087**	**100%**	**$12.64**	**$2.80**
Total	Yes	570	59%	$15,737,094	59%	3.5	58%	1,167,312	33%	$13.48	3.0	445,638	33%	$35.31	$7.81
Total	No	391	41%	$11,158,718	41%	2.5	42%	2,406,785	67%	$4.64	1.0	925,449	67%	$12.06	$2.69
Total	**Total**	**961**	**100%**	**$26,895,812**	**100%**	**6.0**	**100%**	**3,574,097**	**100%**	**$7.53**	**1.7**	**1,371,087**	**100%**	**$19.62**	**$4.36**

Residential Sector Programs – Multifamily

The following are brief descriptions of the progress made under the Comprehensive Plan for FY 2017 in the Residential Sector Programs for Multifamily properties:

- **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 Capital for Change and supported by $3,500,000 of seed capital and $625,000 of ARRA-SEP and Green Bank funds for a loss reserve, a Catalyst Loan Fund for gap financing and health and safety remediation supported by Green Bank capital and Regional Greenhouse Gas Initiative funds provided by DEEP, and C-PACE and solar PPA options, leveraging the C&I sector programs (see Table 11). 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 (see Table 12). Units served this fiscal year are noted in Table 13.

Table 11. Multifamily Term Financing Overview for FY 2017

Program Data	Approved	Closed	Total
Projects	4	14	18
Installed Capacity (MW)	0.1	1.0	1.1
Lifetime Clean Energy Produced (MWh)	3,473 ~~–~~	28,772 ~~4,837~~	32,245 ~~4,837~~
Annual Combined Energy Generated & Saved (MMBtu)	474 ~~–~~	3,927 ~~660~~	4,401 ~~660~~
Subsidies ($'s)	$0	$0	$0
Credit Enhancement ($'s)[10]	$0	$130,897	$130,897
Loans or Leases ($'s)	$0	$137,120	$137,120
Total Green Bank Investment ($'s)	$0	$268,017	$268,017
Private Capital ($'s)	$3,021,825	$18,773,486	$21,795,311
Direct Job Years	-	2	2
Indirect & Induced Job Years	-	3	3
Lifetime Tons of CO2 Emissions	1,952 ~~–~~	16,174 ~~2,719~~	18,126 ~~2,719~~

[10] This is the actual loan loss reserve position of the LIME loan as of 6/30/2017

Table 12. Multifamily Pre-Development Financing Overview for FY 2017

Program Data	Approved	Closed	Total
Projects	22	4	26
Installed Capacity (MW)	-	-	-
Lifetime Clean Energy Produced (MWh)	-	-	-
Annual Combined Energy Generated & Saved (MMBtu)	-	-	-
Subsidies ($'s)	$0	$0	$0
Credit Enhancement ($'s)	$0	$0	$0
Loans or Leases ($'s)	$64,276	$81,450	$145,726
Total Green Bank Investment ($'s)	$64,276	$81,450	$145,726
Private Capital ($'s)	$2,778,041	$25,500	$2,803,541
Direct Job Years	18	-	18
Indirect & Induced Job Years	28	-	28
Lifetime Tons of CO2 Emissions	-	-	-

Table 13. Multifamily Number of Units

	Approved	Closed	Total
Affordable	1,405	1,244	2,649
Market Rate	413	100	513
Total # of Multifamily Units	1,818~~774~~	1,344 ~~1,268~~	3,162 ~~2,042~~

For a breakdown of Multifamily volume and investment by census tracts categorized by Area Median Income bands and Distressed Communities as designated by DECD, see Tables 14 and 15. As a program predominantly focused on properties that serve low-to-moderate income residents, this table doesn't reflect the degree to which the goal of serving lower income residents is being met. The program is equally focused on affordable housing properties located in more affluent communities and census tracts that are housing families of lower incomes as it is on affordable housing properties in lower income census tracts.

Table 14. Multifamily Activity in Metropolitan Statistical Area (MSA) Area Median Income (AMI) Bands

2017	<60%	537	43%	11,989,255	68%	0.3	30%	84,158	37%	6.4	$142.46	3.6
2017	60%-80%	315	25%	3,723,571	21%	0.2	24%	44,668	19%	7.1	$83.36	5.4
2017	80%-100%	100	8%	6,450	0%	0.0	0%	53,494	23%	1.9	$0.12	0.0
2017	100%-120%	255	21%	1,432,225	8%	0.3	29%	24,388	11%	10.5	$58.73	11.9
2017	>120%	32	3%	595,320	3%	0.2	17%	23,491	10%	1.4	$25.34	7.4
2017	**Total**	**1,239**	**100%**	**17,746,821**	**100%**	**1.0**	**100%**	**230,199**	**100%**	**5.4**	**$77.09**	**4.4**
Total	<60%	842	26%	13,789,788	36%	0.4	12%	84,158	37%	10.0	$163.86	4.6
Total	60%-80%	510	16%	4,900,965	13%	0.4	12%	44,668	19%	11.4	$109.72	8.4
Total	80%-100%	902	27%	7,685,131	20%	0.6	18%	53,494	23%	16.9	$143.66	10.5
Total	100%-120%	692	21%	6,085,783	16%	0.6	21%	24,388	11%	28.4	$249.54	26.5
Total	>120%	338	10%	5,538,116	15%	1.1	36%	23,491	10%	14.4	$235.75	47.7
Total	**Total**	**3,284**	**100%**	**37,999,783**	**100%**	**3.1**	**100%**	**230,199**	**100%**	**14.3**	**$165.07**	**13.4**

Table 15. Multifamily Activity in Distressed Communities

Fiscal Year Closed	Distressed	# of Project Units	% Project Distribution	Investment (Gross System Cost)	% Investment Distribution	Installed Capacity (MW)	% MW Distribution	2010 Census Population	% Population Distribution	Investment / Capita	Watts / Capita	2010 Census Households	% Household Distribution	Investment / Household	Watts / Household
2017	Yes	497	37%	$12,020,088	63%	0.3	25%	1,167,312	33%	$10.30	0.2	445,638	33%	$26.97	$0.57
2017	No	848	63%	$6,997,468	37%	0.8	75%	2,406,785	67%	$2.91	0.3	925,449	67%	$7.56	$0.82
2017	**Total**	**1,345**	**100%**	**$19,017,556**	**100%**	**1.0**	**100%**	**3,574,097**	**100%**	**$5.32**	**0.3**	**1,371,087**	**100%**	**$13.87**	**$0.74**
Total	Yes	1,029	29%	$19,223,943	48%	1.5	46%	1,167,312	33%	$16.47	1.3	445,638	33%	$43.14	$3.48
Total	No	2,573	71%	$20,915,005	52%	1.8	54%	2,406,785	67%	$8.69	0.7	925,449	67%	$22.60	$1.95
Total	**Total**	**3,602**	**100%**	**$40,138,948**	**100%**	**3.4**	**100%**	**3,574,097**	**100%**	**$11.23**	**0.9**	**1,371,087**	**100%**	**$29.28**	**$2.45**

For a breakdown of the use of Green Bank resources for Residential Programs – see Table 16.

Table 16. Distribution of Green Bank Funds Invested in Projects and Programs through Subsidies, Credit Enhancements, and Loans and Leases for FY 2017[11]

Program	Subsidies		Credit Enhancements		Loans and Leases		Total
Smart-E Loan	$0	0%	$763,399[12]	100%	$0	0%	$763,399
PosiGen	$0	0%	$0	0%	~~$5,202,000~~ $5,643,000	100%	~~$5,202,000~~$5,643,000
Multifamily Term	$0	0%	$130,897	49%	$137,120	51%	$268,017
Multifamily Pre-Development	$0	0%	$0	0%	$81,450	100%	$81,450
Total	$0	0%	$894,296	14%	$5,861,570 ~~$5,420,570~~	87%~~86%~~	$6,755,866~~$6,314,866~~

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 17):

Table 17. Program Progress Made for FY 2017[13]

Key Metrics	Smart-E	PosiGen	Multifamily Term[14]	Multifamily Pre-Dev	Total Program Progress
Date of Program Approval	Nov 2012	Jun 2015	Oct 2013 – Jan 2017	Oct 2013 – Oct 2015	
Date of Program Launch	Nov 2013	Jul 2015	Oct 2013 – Jan 2017	Oct 2013 – Oct 2015	
Ratepayer Capital at Risk	$763,399	$5,643,000	$268,017	$81,450	$6,755,866~~$6,314,866~~
Private Capital	$9,597,945~~$7,246,379~~	$11,693,078 ~~$5,202,000~~	$18,773,486	$25,500	40,090,009~~$37,049,660~~
Deployed (MW)	1.2~~1.0~~	3.8~~$11,010,521~~	1.0	-	6.1~~5.6~~
# of Loans/Installations	517~~364~~	627~~3.5~~	14	4	1,162~~960~~
Lifetime Production (MWh)	59,364~~46,306~~	109,368~~578~~	28,772~~4,837~~	0	197,504~~152,183~~
Annual Combined Energy Generated & Saved (MMBtu)	12,918~~14,638~~	23,284~~101,040~~	3,927~~660~~	0	40,129~~29,088~~

"Top 5" Headlines

The following are the "Top 5" headlines for Residential Sector Programs for FY 2017:

1. CT Green Bank Strengthens Commitment to Low-Income Residents

[11] Includes only closed transactions
[12] Includes $341,751 in loan loss reserves and $421,648 in interest rate buydowns.
[13] Includes only closed transactions
[14] Multifamily is a collection of individual programs, each with their own approval and launch dates.

Natural Resources Defense Council

Appointment Betsy Crum, a veteran professional in affordable housing development and finance, to Board of Directors strengthens Connecticut Green Bank's commitment to low-to-moderate income residents.

2. Connecticut Green Bank offering low interest loans for bundled energy efficiency projects, like solar

   Solar Power World

   The Connecticut Green Bank, in association with Energize CT, select local lenders, and contractors, is offering an extraordinarily low rate of 0.99% on home energy improvement loans.

3. Public-Private Partnership Launches 'Solar For All' Program In Hartford

   Solar Industry Magazine

   At an event on Tuesday, Hartford, Conn., Mayor Luke Bronin and other stakeholders announced a new public-private partnership to make clean energy more accessible and affordable to homeowners in the city.

4. GRID Alternatives, Connecticut Green Bank Kick Off Low-Income Solar Program

   Solar Industry Magazine

   Nonprofit solar installer GRID Alternatives expands into Connecticut through a collaboration with the Connecticut Green Bank to install no-cost solar on multifamily affordable housing units across the state.

5. Solar Panels Will Power Manchester Public Housing Complex

   Hartford Courant

   A solar panel array at the housing authority's Westhill Gardens complex is to provide all the energy required for the 199 apartments and office.

Lessons Learned

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

- **A stellar record of loan performance to date gave mission-oriented Smart-E lenders the confidence to adopt an expanded underwriting box for credit-challenged customers and to consider 15-20 year terms** – With no delinquencies and 2 defaults on a portfolio of nearly 1,000 unsecured consumer loans, 6 out of our 11 Smart-E lenders agreed to adopt the credit-challenged version of the program, which drops the minimum credit score from 640 down to 580 and raises the debt-to-income ratio from 45% to 50% (and waives it entirely for credit scores above 680). Furthermore, these lenders agreed to consider loan with maturities of up to 15 to 20 years, *unsecured*, for credit-qualified borrowers. This is a tremendous achievement for the program, and a testament to the clean performance of the portfolio, the quality of borrowers attracted to

the program, and the value these borrowers are seeing in the projects they are financing. We will be focusing on the credit-challenged market in the coming year with an updated analysis of statewide income and credit trends and targeted outreach with lenders focused on this underserved market.

- **Engaging contractors through training and marketing materials drives demand for residential single-family programs** – The single family residential team continued their efforts of training contractors in person to ensure their sales and back office staff were comfortable talking about the Smart-E Loan program with customers, yielding particular success among HVAC companies. In addition, having a centralized, online platform for marketing materials that are easy to access on demand makes contractors more comfortable bringing up financing options.

- **Targeted community based outreach is the best way to engage traditionally difficult to reach communities** – PosiGen surpassed the goals set for them by the Green Bank by working with groups like Operation Fuel, Hartford Habitat for Humanity, Neighborhood Housing Services, and faith community partners, in partnership with door to door outreach and direct mail to specific customer segments. However, we've learned that not all community groups are equipped to partner on outreach for energy financing. Lessons learned this year have been incorporated into screening for partner recruitment and selection for LMI and credit-challenged community outreach for our financing programs.

- **We continue to make inroads in solar penetration for the LMI market, but there is more to do** – We have seen a 3800% increase in solar penetration in LMI census tracts since 2012, and while PosiGen is part of that success, it is not solely responsible for the 4,100 systems now installed. Green Bank staff has been communicating to the solar market the opportunity to finance LMI customers in CT, since income and credit don't correlate in our state, and we have consistently communicated to the market our progress in increasing penetration in LMI census tracts. This focused message has paid off in growth in this underserved market segment, narrowing the gap in the rates of market penetration. We have furthered this work with additional LMI customer segmentation analysis which will enable both PosiGen and companies using a traditional credit underwrite to more effectively target LMI solar customers.

- **The Green Bank continues to be viewed as the authority on residential solar in the market, even for areas we don't have purview over, including real estate transactions involving solar and consumer protection issues** – To manage this, the Green Bank has established ongoing coordination meetings on consumer protection items with staff at the Department of Consumer Protection and the Office of Consumer Council. We have begun proactively engaging with the real estate sector, holding solar education meetings with realtor groups and engaging with regional and national efforts to incorporate solar information into multiple listing services and other real estate information databases.

- **The multifamily pipeline continues to be lumpy and long, but the focus on strategic financing interventions (pre-development resources, mid-cycle, solar, gap, health & safety term financing) appears to be the right approach** – This year saw deals closed that have been in our pipeline over 3 years, and it also saw deal sizes for term loans that ranged from ~$100,000 to over $10 million. The pipeline for pre-

development projects and for term loans is strong, but it will clearly take time to build this market, and even when built, we should expect timelines of up to 2-3 years in the affordable multifamily space. It is too early to tell what to expect for average deal sizes. It should be noted that our strategic approach to our suite of program interventions and our deep engagement with the housing agencies has garnered national attention as a smart model for clean energy financing for this sector.

- **Leveraging strategic partnerships is core to our multifamily approach and delivers huge dividends, but execution risks and partner capacity are a challenge** – Now that our multifamily programs are launched and running, we need to evaluate and improve our processes with strategic partners to ensure a customer experience that is truly friendly/easy to use, effective, and delivers on the Green Bank's brand promise. In conjunction, we are ready to push on getting the word out about our programs and successes through a robust marketing, communications and outreach strategy.

- **Continued structural alignment with the utility programs is needed to achieve scaled impact in the multifamily sector** – Utility company goals and programs in the multifamily sector are not yet structurally aligned with Green Bank goals and programs for mid-cycle properties. Despite significant alignment efforts and progress, these structural impediments prevent scaled impact and, in some cases, put the programs in competition. Previous alignment processes, focused on CHFA and DOH funded properties, have been incredibly successful, resulting in transformational impacts on the market. We need to achieve the same with the utility companies for mid-cycle properties.

- **Distressed properties, especially co-ops, are coming to the Green Bank as lender of last resort for technical assistance and financing** – The co-op channel has been severely underserved for decades, with properties in critical physical and financial distress because of failing building systems and crushing energy costs. These properties require significant technical assistance, but can be turned around and preserved as critical affordable housing resources.

- **Split incentive challenges continue to impact investment in the multifamily sector** – Tenant paid utilities continue to be an impediment to owners investing in clean energy improvements. As a first step in addressing this challenge, we will help develop low-cost, replicable tools that make solar sub-metering easy. Related to this issue, policies related to utility allowances need to be evaluated in conjunction with DOH and CHFA and redesigned to incent best practices by owners/developers and to reduce tenant energy burdens.

Residential Sector Programs FY 2018 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 18):

Table 18. Number of Projects, Capital Deployed, and Clean Energy Deployed (MW)

Program	# of Projects	Capital Deployed	Clean Energy Deployed (MW)
Smart-E Loan	440	$8,153,050	1.3
PosiGen Solar for All	720	$20,087,746	4.5
Multifamily Term Loans	16	$7,550,000	0.6
Multifamily Predevelopment Loans	9	$188,400	-
Total	1,185	$35,979,196	6.4

For Residential Sector Programs, there are 13.2 full time equivalent staff members supporting four (4) different products and programs. In addition, staff also support ongoing asset management operations of closed programs CT Solar Lease and CT Solar Loan.

845 Brook Street, Rocky Hill, CT 06067
T 860.563.0015
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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: October 20, 2017

Re: Commercial, Industrial and Institutional Sector Programs – Program Performance towards Targets for FY 2017 - Restated

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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 2017.

For a program description and information on the Total Addressable Market and Serviceable Addressable Market (SAM), please see the FY 2017 and FY 2018 Comprehensive Plan.

Performance Targets and Progress

With respect to the Comprehensive Plan approved by the Board of Directors of the Green Bank on July 22, 2016 and revised on January 20, 2017,[1] the following are the performance targets for FY 2017 and progress made to targets for the Commercial, Industrial and Institutional Sector Programs (see Table 1) as of June 30, 2017.

[1] For mid-year revisions to budget and targets, see "Q2 Progress to Targets" memo of January 11, 2017 on page 190 – click here

Table 1. Program Performance Targets and Progress Made to the Comprehensive Plan for FY 2017

Key Metrics	Program Performance Original Targets (as of 07/22/16)	Program Performance Revised Targets (of 01/20/17)	Program Progress[2]	% of Goal
Capital Deployed[3]	$56,800,000	$48,930,000	~~$44,634,686~~$44,753,461	91%
Investment at Risk[4]			$6,208,094	
Private Capital[5]			$38,545,367	
Deployed (MW)	14.8	14.3	~~12.5~~12.7	~~87~~88%
# of Loans/Projects	94	84	60	71%
Leverage Ratio			~~6.2~~7.2	

In summary, for Commercial, Industrial and Institutional Sector Programs in FY 2017, there were 60 projects (achieving 71% of the goal) requiring $~~44.6~~44.8M of investment (achieving 91% of the goal) that led to the deployment of ~~12.5~~12.7 MW of clean energy deployed (achieving ~~87~~88% of the goal), that delivered a leverage ratio of ~~6~~7:1 for private to public funds invested.

Executive Summary for the CI&I Sector Programs

The following is a bulleted executive summary of the Infrastructure Sector Programs:

- Broke $100MM threshold for C-PACE-backed financing
- Doubled 3rd party capital providers that are active in Connecticut
- Exceeded the goal for Commercial and Institutional Lease
- Unlocked the state college system for solar and made progress on state facilities
- CGB has been working with Eversource, Avangrid and the Energy Efficiency Board to attract private capital to the Small Business Energy Advantage financing program. CGB ran an RFP to the capital markets that attracted private capital responses totaling $300MM. In FY18, CGB hopes to close on a facility with one of these capital providers to provide a larger pool of cheaper capital for the award-winning utility program

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Commercial, Industrial and Institutional Sector Programs

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

[2] Includes only closed transactions

[3] Capital Deployed is used to measure Investment actuals to targets and it includes fees related to financing costs and adjustments for Fair Market Value which are not included in the Gross System Cost. It represents: the Fair Market Value for Commercial/Residential Leases, the Amount Financed or Gross System Cost (whichever is greater) for CPACE, the Amount Financed for Residential financing products and the Gross System Cost for all other programs.

[4] 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.

[5] Private Investment is based on the Gross System Cost and includes adjustments related to financing costs or Fair Market Value.

- **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 2017

Program Data	Approved	Closed	Total
Projects	9	38	47
Installed Capacity (MW)	1.0 ~~0.7~~	3.9 ~~3.7~~	4.9 ~~4.4~~
Lifetime Clean Energy Produced (MWh)	29,472 ~~20,086~~	133,414 ~~128,483~~	162,886 ~~148,569~~
Annual Combined Energy Generated & Saved (MMBtu)	4,700 ~~3,244~~	23,113 ~~14,227~~	27,813 ~~17,470~~
Subsidies ($'s)	$0	$0	$0
Credit Enhancement ($'s)	$0	$0	$0
Loans or Leases ($'s)	$1,669,047	$3,140,789	$4,809,836
Total Green Bank Investment ($'s)	$1,669,047	$3,140,789	$4,809,836
Private Capital ($'s)	$~~2,305,121~~2,415,251	$~~12,082,357~~12,137,406	$~~14,387,478~~14,552,656
Direct Job Years	17	56	74
Indirect & Induced Job Years	26	76	102
Lifetime Tons of CO2 Emissions	16,564 ~~11,288~~	74,582 ~~71,810~~	91,146 ~~83,098~~

C-PACE has been used to fund projects in economically diverse locations across the state as reflected by Table 3 for Metropolitan Statistical Area (MSA) Area Median Income (AMI) and Table 4 for Distressed Communities as designated by DECD. It should be noted that C-PACE is not an income targeted program.

Table 3. C-PACE Activity in Metropolitan Statistical Area (MSA) Area Median Income (AMI) Bands

Fiscal Year Closed	MSA AMI Band	# of Project Units	% Project Distribution	Investment (Gross System Cost)	% Investment Distribution	Installed Capacity (MW)	% MW Distribution	Total Population	% Total Population Distribution	Project Units / 1,000 People	Investment / Total Population	Watts / Total Population
2017	<60%	7	18%	4,529,669	30%	1.7	43%	662,619	18%	0.0	$6.84	2.6
2017	60%-80%	4	11%	1,312,429	9%	0.4	11%	489,826	14%	0.0	$2.68	0.8
2017	80%-100%	7	18%	2,092,122	14%	0.4	9%	650,163	18%	0.0	$3.22	0.5
2017	100%-120%	8	21%	2,305,092	15%	0.6	16%	631,741	18%	0.0	$3.65	1.0
2017	>120%	12	32%	5,038,882	33%	0.8	21%	1,150,974	32%	0.0	$4.38	0.7
2017	**Total**	**38**	**100%**	**15,278,194**	**100%**	**3.9**	**100%**	**3,585,323**	**100%**	**0.0**	**$4.26**	**1.1**
Total	<60%	41	25%	24,523,827	23%	5.5	26%	662,619	18%	0.1	$37.01	8.2
Total	60%-80%	18	11%	8,586,685	8%	2.3	11%	489,826	14%	0.0	$17.53	4.7
Total	80%-100%	26	16%	24,906,858	23%	2.9	14%	650,163	18%	0.0	$38.31	4.4
Total	100%-120%	31	19%	14,144,013	13%	3.9	19%	631,741	18%	0.0	$22.39	6.2
Total	>120%	46	28%	35,143,951	33%	6.4	31%	1,150,974	32%	0.0	$30.53	5.5
Total	**Total**	**162**	**100%**	**107,305,333**	**100%**	**20.9**	**100%**	**3,585,323**	**100%**	**0.0**	**$29.93**	**5.8**

Table 4. C-PACE Activity in Distressed Communities

Fiscal Year Closed	Distressed	# of Project Units	% Project Distribution	Investment (Gross System Cost)	% Investment Distribution	Installed Capacity (MW)	% MW Distribution	2010 Census Population	% Population Distribution	Investment / Capita	Watts / Capita	2010 Census Households	% Household Distribution	Investment / Household	Watts / Household
2017	Yes	10	26%	$6,422,413	42%	2.0	52%	1,167,312	33%	$5.50	1.7	445,638	33%	$14.41	$4.57
2017	No	28	74%	$8,855,781	58%	1.9	48%	2,406,785	67%	$3.68	0.8	925,449	67%	$9.57	$2.03
2017	**Total**	**38**	**100%**	**$15,278,194**	**100%**	**3.9**	**100%**	**3,574,097**	**100%**	**$4.27**	**1.1**	**1,371,087**	**100%**	**$11.14**	**$2.86**
Total	Yes	58	35%	$48,500,141	45%	8.9	42%	1,167,312	33%	$41.55	7.7	445,638	33%	$108.83	$20.06
Total	No	107	65%	$60,018,246	55%	12.3	58%	2,406,785	67%	$24.94	5.1	925,449	67%	$64.85	$13.24
Total	**Total**	**165**	**100%**	**$108,518,387**	**100%**	**21.2**	**100%**	**3,574,097**	**100%**	**$30.36**	**5.9**	**1,371,087**	**100%**	**$79.15**	**$15.46**

- **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 5). This program will support solar PV projects between 50-200 kW in size – with an average size of 75 kW. In 2017, CGB successfully closed out its SL2 commercial PPA fund and closed on a new facility with Onyx that will enable this successful product to continue. CGB is negotiating another fund (SL3), expected to close in FY18, to fill market gaps with customers and markets that don't meet the criteria for Onyx.

  At the end of FY17, CGB closed on the first two PPAs with schools within the Connecticut State Colleges and Universities. This significant accomplishment will "unlock" the CSCU market for further development in FY18 and plays a key role in helping the State of Connecticut "Lead by Example".

Table 5. CT Solar Lease Overview for FY 2017

Program Data	Approved	Closed	Total
Projects	-	30	30
Installed Capacity (MW)	-	10.6	10.6
Lifetime Clean Energy Produced (MWh)	-	301,012	301,012
Annual Combined Energy Generated & Saved (MMBtu)	-	~~33,944~~41,082	~~33,944~~41,082
Subsidies ($'s)	$0	$0	$0
Credit Enhancement ($'s)	$0	$0	$0
Loans or Leases ($'s)[6]	$0	$2,931,619	$2,931,619
Total Green Bank Investment ($'s)	$0	$2,931,619	$2,931,619
Private Capital ($'s)	$0	$29,560,243~~$23,997,214~~	$29,560,243~~$23,997,214~~
Direct Job Years	-	88	88
Indirect & Induced Job Years	-	116	116
Lifetime Tons of CO2 Emissions	-	169,209	169,209

[6] Based on the Objective Functions for the CT Solar Lease, the loan financing represents about 26% of the value of the lease.

The CT Solar Lease program has been used to fund projects in economically diverse locations across the state as reflected by Table 6 for Metropolitan Statistical Area (MSA) Area Median Income (AMI) and Table 7 for Distressed Communities as designated by DECD. It should be noted that C-PACE is not an income targeted program.

Table 6. CT Solar Lease Activity in Metropolitan Statistical Area (MSA) Area Median Income (AMI) Bands

Fiscal Year Closed	MSA AMI Band	# of Project Units	% Project Distribution	Investment (Gross System Cost)	% Investment Distribution	Installed Capacity (MW)	% MW Distribution	Total Population	% Total Population Distribution	Project Units / 1,000 People	Investment / Total Population	Watts / Total Population
2017	<60%	4	13%	3,456,922	11%	1.5	14%	662,619	18%	0.0	$5.22	2.2
2017	60%-80%	3	10%	426,802	1%	0.1	1%	489,826	14%	0.0	$0.87	0.3
2017	80%-100%	5	17%	8,452,522	26%	2.8	26%	650,163	18%	0.0	$13.00	4.3
2017	100%-120%	8	27%	8,663,950	27%	2.7	25%	631,741	18%	0.0	$13.71	4.2
2017	>120%	10	33%	11,491,666	35%	3.5	33%	1,150,974	32%	0.0	$9.98	3.1
2017	**Total**	**30**	**100%**	**32,491,862**	**100%**	**10.6**	**100%**	**3,585,323**	**100%**	**0.0**	**$9.06**	**2.9**
Total	<60%	6	8%	3,872,922	6%	1.6	8%	662,619	18%	0.0	$5.84	2.4
Total	60%-80%	5	7%	1,213,666	2%	0.3	2%	489,826	14%	0.0	$2.48	0.7
Total	80%-100%	12	16%	12,608,020	21%	4.1	21%	650,163	18%	0.0	$19.39	6.4
Total	100%-120%	18	25%	14,727,598	24%	4.6	24%	631,741	18%	0.0	$23.31	7.3
Total	>120%	32	44%	28,328,610	47%	8.9	45%	1,150,974	32%	0.0	$24.61	7.7
Total	**Total**	**73**	**100%**	**60,750,816**	**100%**	**19.6**	**100%**	**3,585,323**	**100%**	**0.0**	**$16.94**	**5.5**

Table 7. CT Solar Lease Activity in Distressed Communities

Fiscal Year Closed	Distressed	# of Project Units	% Project Distribution	Investment (Gross System Cost)	% Investment Distribution	Installed Capacity (MW)	% MW Distribution	2010 Census Population	% Population Distribution	Investment / Capita	Watts / Capita	2010 Census Households	% Household Distribution	Investment / Household	Watts / Household
2017	Yes	2	7%	$2,889,250	9%	1.3	12%	1,167,312	33%	$2.48	1.1	445,638	33%	$6.48	$2.89
2017	No	28	93%	$29,602,612	91%	9.3	88%	2,406,785	67%	$12.30	3.9	925,449	67%	$31.99	$10.03
2017	**Total**	**30**	**100%**	**$32,491,862**	**100%**	**10.6**	**100%**	**3,574,097**	**100%**	**$9.09**	**3.0**	**1,371,087**	**100%**	**$23.70**	**$7.71**
Total	Yes	5	7%	$3,792,114	6%	1.6	8%	1,167,312	33%	$3.25	1.3	445,638	33%	$8.51	$3.51
Total	No	68	93%	$56,958,702	94%	18.0	92%	2,406,785	67%	$23.67	7.5	925,449	67%	$61.55	$19.46
Total	**Total**	**73**	**100%**	**$60,750,816**	**100%**	**19.6**	**100%**	**3,574,097**	**100%**	**$17.00**	**5.5**	**1,371,087**	**100%**	**$44.31**	**$14.28**

For a breakdown of the use of the Green Bank resources for Commercial, Industrial and Institutional Programs, see table 8 below.

Table 8. Distribution of Green Bank Funds Invested in Projects and Programs through Subsidies, Credit Enhancements, and Loans and Leases for FY 2017

Program	Subsidies		Credit Enhancements		Loans and Leases		Total*
C-PACE	$0	0%	$0	0%	$3,140,789	100%	$3,140,789
CT Solar Lease	$0	0%	$0	0%	$2,931,619	100%	$2,931,619
CEBS	$1,000,000	100%	$0	0%	$0	0%	$1,000,000
Total*	$1,000,000	16%	$0	0%	$5,208,094	84%	$6,208,094

**Totals are adjusted to remove projects that overlap programs*

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 9):

Table 9. Program Progress Made in FY 2017[7]

Key Metrics	C-PACE	Commercial Lease	CEBS	Total Program Progress[8]
Date of Program Approval	Sep 2012	Jun 2013	-	
Date of Program Launch	Jan 2013	Sep 2013	-	
Ratepayer Capital at Risk	$3,140,789	$2,931,619	$1,000,000	$6,208,094
Private Capital	$12,137,406~~$12,082,357~~	$29,560,243~~$23,997,214~~	$648,000	$38,545,367~~$32,577,707~~
Deployed (MW)	3.9 ~~3.7~~	10.6	-	~~12.5~~12.7
# of Loans/Installations	38 ~~38~~	30	1	60
Lifetime Production (MWh)	133,414~~128,483~~	301,012	23,311	405,432~~400,501~~
Annual Combined Energy Generated & Saved (MMBtu)	23,113~~14,227~~	41,082~~33,944~~	6,630	63,687~~54,800~~

"Top 5" Headlines
The following are the "Top 5" headlines for Commercial, Industrial and Institutional Sector Programs for FY 2017:

1. Connecticut Green Bank Recognizes Energy Contractors, Projects and Advocates with PACEsetter Awards 3/9/17
   CONNTACT
   The **Connecticut Green Bank** announced the winners of its 2016 PACEsetter Awards during a ceremony in early March at the **Energize Connecticut Cente**r in North Haven.

[7] Includes only closed transactions
[8] Totals are adjusted to remove projects that overlap programs.

2. Bloomfield Manufacturing Company Goes Solar 7/10/16
   HARTFORD COURANT
   The solar project is the largest financed by the **Connecticut Green Bank**'s solar program.

3. Danbury company secures first Energy on the Line grant 8/10/16
   CT POST
   "Connecticut manufacturers feel the burden of energy costs more than anyone, and we're excited to see **C-PACE** put manufacturers back in control of their businesses through the Energy on the Line program," Bryan Garcia, president and CEO of the **Connecticut Green Bank**.

4. More city schools going solar 4/25/17
   MILFORD MIRROR
   The board unanimously approved the motion, which recommends authorizing the **Connecticut Green Bank**, its affiliates, designees, and/or assignees …

5. Curtis Packaging completing $2.5 million project to improve energy efficiency 10/4/16
   NEWS TIMES
   The venture is being financed over a period of 16 years and is expected to produce energy cost savings of $4.5 million over the life of the project.

Lessons Learned

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

- **Two Types of C-PACE Contractors** – 29% of contractors who have done a C-PACE project have used C-PACE financing multiple times. These are the most valuable allies of the program and CGB staff and other C-PACE capital providers continue to work closely with these contractors to keep C-PACE a part of their business. 71% of contractors who have done a C-PACE project have not used program again. Figuring out the barriers that prevent them from coming back, along with continued recruitment of new contractors, will be key to program growth.

- **Campaigns and Partnerships** – the focused marketing and grant offering to the manufacturing sector through the Energy on the Line campaign was a success. CGB is trying a similar approach through partnerships with energy auditors, contractors, relationship managers and other stakeholders to test various approaches and duplicate its success without having to offer the grant.

- **Open Market** – Connecticut's open market platform continues to attract capital providers, with two more becoming qualified in FY17. The general focus on larger deals and long development time for projects means the program should start to see more activity from third party capital providers in FY18.

- **PPA** – While the Green Bank's PPA product continues to see strong demand, with PPA prices declining as installation costs continue to fall, existing utility tariff structures for small commercial customers remain a barrier. To the extent that ZREC prices have trended up in the last 12-24 months, that is in large part due to developers seeking to

compete with avoided utility costs that account for only generation and minor ancillary charges, as opposed to the fully loaded cost of delivering energy from the grid. More and more, this is resulting in PPA contracts that are positioned to customers as "long-term hedges" against uncertain electric costs, rather than as deals promising immediate savings.

- **Energy Services Agreements** – Signals from leading ESA providers we have engaged suggest demand for "smaller" ESAs (up to $2.5M) in CT remains limited and that private banks are sometimes stepping up to provide longer-term debt capital for ESAs on terms similar to what the Green Bank piloted in our project for the Bridgeport International Academy. In 2017, we learned of at least one provider with a strong pipeline in CT for their Managed Energy Services Agreement (MESA), which is a variant of an ESA that includes the MESA provider maintaining a more active ongoing energy management role for the end customer. We are now engaged with that provider to better understand customer appetite for a more "hands-on" solution and how we can partner on financing. To build ESA pipeline we continue to monitor the C-PACE "parking lot" and are also engaged with other energy management solutions providers to assess potential for an ESA structure to accelerate deployment of their offering.

- **Small Business Energy Advantage (SBEA)** – We continue to work closely with Eversource and UI/AVANGRID, the EEB, and JP Morgan to develop a facility to fund customer loans made through the SBEA program in Connecticut. Primary goals remain increasing the pool of capital available, lowering the cost of funds, and maintaining the streamlined and successful operational aspects of the SBEA program. Ongoing negotiations with the utilities and JP Morgan have provided a valuable opportunity for the Green Bank to gain insight into the opportunities and challenges within the utilities' signature CI&I offering and learn how best to attract additional private capital into clean energy investments in CT. Pending successful resolution of the state budget proposal to diminish CEEF funding, we hope to reach agreement on a facility with the utilities and JP Morgan with support from the EEB during Q32017.

Commercial, Industrial, and Institutional Sector Programs FY 2018 Targets

Of programs being implemented in the Commercial, Industrial, and Institutional Sector Programs, the following is a breakdown of the key targets (see Table 10):

Table 10. Number of Projects, Capital Deployed, and Clean Energy Deployed (MW)

Program	# of Projects	Capital Deployed	Clean Energy Deployed (MW)
C-PACE	51	$24,400,000	6.4
CT Solar Lease	25	$15,000,000	6.3
Total without SBEA[9]	67	$34,000,000	10.4
SBEA[10]	1,600	$28,000,000	-
Total with SBEA	1,667	$62,000,000	10.4

[9] Total has been adjusted to back-out CPACE backed Commercial Leases to prevent double counting.

[10] Pending approval from the Utilities.

For Commercial, Industrial, and Institutional Sector Programs, there are 13 full time equivalent staff members supporting three (3) different products and programs.

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, Bryan Garcia, and Eric Shrago

Date: October 20, 2017

Re: Connecticut Green Bank – Investment and Public Benefit Performance from Clean Energy Projects from FY 2012 through FY 2017 - Restated

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Per Section 99 of Public Act 11-80, the Connecticut Green Bank began operations on July 1, 2011 – the start of FY 2012. This memo outlines the progress that has been made with respect to investments in closed projects by sector and an estimate of the public benefits (i.e., economic development and environmental protection).

Investments in Projects

From the period of FY 2012 through FY 2017 (as of June 30, 2017), there has been a significant shift in the use of the organizations resources for programs and projects (see Table 1).

Table 1. Total Investments FY 2012 through FY 2017 by Sector and Type

	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Commercial, Industrial & Institutional	$0	$1,762,144	$23,071,586	$40,973,889	$45,847,967	$44,753,461
Residential	$0	$338,161	$11,358,776	$42,225,335	$49,724,044	$44,896,880
Infrastructure	$14,989,569	$38,773,155	$80,352,944	$217,159,522	$243,401,017	$141,469,762
Strategic	$0	$70,800,000	$0	$56,500,000	$0	$4,538,212
Total Public and Private Investment[1]	**$14,989,569**	**$111,489,169**	**$107,480,373**	**$324,946,609**	**$315,102,342**	**$212,749,474**
Total CGB Investment	$4,804,743	$18,705,488	$32,559,362	$57,048,511	$36,954,135	$24,496,404
Grants from CGB[2]	$4,804,743	$12,508,064	$21,236,693	$33,525,414	$19,856,255	$13,867,584
Loans from CGB	$0	$6,010,302	$10,692,059	$21,247,225	$15,186,433	$9,734,524
% of Funding Approved as Grants	100%	67%	65%	59%	54%	57%
Installed Capacity (MW)[3]	2.9	23.5	23.4	62.7	68.7	53.2

[1] Total has been adjusted to eliminate the projects that overlap sectors.
[2] Through Solar Home Renewable Energy Credits, the Green Bank will recover the costs of the RSIP incentive incurred after January 1, 2015
[3] kW_{STC} was used for solar PV, CHP, AD and wind projects while kW_{AC} was used for fuel cell projects.

A brief review of the data indicates the following:

- **Generate Leverage** – the organizations programs and products continue to attract outside investment allowing the ratepayer's dollars to go further. Private to Public leverage has increased from 3.1:1 in FY2012 to 8.7:1 in FY 2017

- **Stewardship of Funds** – a change in the way the organization's resources are being managed from 100% grants in FY 2012 to 60% grants in FY 2017 (and it should be noted that all RSIP subsidies are to be returned over time through the sale of SHRECs from long-term contracts with the utilities);

- **Financing Markets** – The Green Bank's financing products and programs represent large markets (e.g. nearly 100 million a year);

- **Inclusive Prosperity –** The distribution of Green Bank projects more and more reflects the population of the state with more projects bringing relief from the energy burden to residents in low-to-moderate income census tracts or in communities designated by the Department of Economic and Community Development as distressed.

Public Benefits from Projects – Economic Development and Environmental Protection
As more and more investment in clean energy deployment in Connecticut is achieved, the economic development and environmental protection benefits increase (see Tables 2 - Table5).

Table 2. Estimates of Economic Development Benefits – Project Unit Activity in Distressed Communities between FY 2012 through FY 2017

Sectors	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Commercial, Industrial & Institutional	0	3	9	24	16	11
Residential	0	4	62	362	676	991
Infrastructure	46	115	381	1,382	2,150	1,858
Strategic	0	1	0	1	0	1
Total Public Benefits[4]	46	121	388	1,514	2,495	2,495

Table 3. Estimates of Economic Development Benefits – Project Unit Activity in Income Bands Under 100% MSA AMI between FY 2012 through FY 2017

Sectors	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Commercial, Industrial & Institutional	0	2	16	29	29	27
Residential	0	2	228	424	1,513	1,604
Infrastructure	68	205	621	1,977	2,964	2,479
Strategic	0	1	0	1	0	1
Total Public Benefits[5]	68	208	785	2,167	3,754	3,583

[4] Total has been adjusted to eliminate the projects that overlap sectors.
[5] Total has been adjusted to eliminate the projects that overlap sectors.

Table 3. Estimates of Economic Development Benefits – Direct Job Years between FY 2012 through FY 2017[6]

Sectors	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Commercial, Industrial & Institutional	0	11	116	165	208	137
Residential	0	1	64	233	193	89
Infrastructure	142	230	476	1,282	1,374	560
Strategic	0	340	0	139	0	28
Total Public Benefits[7]	**142**	**580**	**594**	**1604**	**1,654**	**750**

Table 4. Estimates of Economic Development Benefits – Indirect and Induced Job-Years between FY 2012 through FY 2017[8]

Sectors	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Commercial, Industrial & Institutional	0	18	186	263	332	184
Residential	0	1	103	375	311	118
Infrastructure	142	370	766	2,064	2,213	738
Strategic	0	779	0	180	0	36
Total Public Benefits[9]	142	1,165	954	2,537	2,660	993

[6] Job year estimates are based on multipliers determined as a result of work performed by Navigant Consulting for the *Connecticut Renewable Energy and Energy Efficiency Economy Baseline Study* completed in March 2009 and subsequently updated in 2016. This Navigant Study was an independent, third party analysis of Connecticut's clean energy economy. Job years are calculated using the factors from the 2010 Navigant Study for projects approved prior to 7/1/2016 and the 2016 study for projects approved after 7/1/2016.

http://ctgreenbank.com/wp-content/uploads/2017/02/CTGReenBank-Memo-CT-Dept-Economic-Community-Development-October142016.pdf

DECD has approved of the methodology for estimating the economic development benefits (i.e., job-years created) from the investment in clean energy projects.

[7] Total has been adjusted to eliminate the projects that overlap sectors.

[8] Job year estimates are based on multipliers determined as a result of work performed by Navigant Consulting for the *Connecticut Renewable Energy and Energy Efficiency Economy Baseline Study* completed in March 2009 and subsequently updated in 2016. This Navigant Study was an independent, third party analysis of Connecticut's clean energy economy. Job years are calculated using the factors from the 2010 Navigant Study for projects approved prior to 7/1/2016 (i.e. FY2012-2016) and the 2016 study for projects approved after 7/1/2016 (i.e. FY2017).

DECD has approved of the methodology for estimating the economic development benefits (i.e., job-years created) from the investment in clean energy projects.

http://ctgreenbank.com/wp-content/uploads/2017/02/CTGReenBank-Memo-CT-Dept-Economic-Community-Development-October142016.pdf

[9] Total has been adjusted to eliminate the projects that overlap sectors.

Table 5. Estimates of Environmental Protection Benefits – Lifetime CO2 Emission Reductions (Tons) between FY 2012 through FY 2017[10]

Sectors	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Commercial, Industrial & Institutional	0	4,224	87,435	208,225	202,134	227,050
Residential	0	410	39,058	174,004	139,828	110,511
Infrastructure	45,820	128,257	273,427	797,386	906,312	623,022
Strategic	0	78,761	0	63,528	0	10,715
Total Public Benefits[11]	**45,820**	**210,616**	**357,139**	**1,055,021**	**1,145,841**	**883,582**

[10] Emission Savings are calculated by using average emission rates from the DOE AVERT model for solar PV, wind and energy efficiency. The factors used are based on the year of completion. Projects approved prior to 2012 and projects pending completion or completed in prior to July 1, 2017 use the 2012 factors. Projects completed after July1, 2017 use the 2016 factors. All other technologies use ISO-New England information which is based on the results of the 2007 New England Marginal Emission Rate Analysis. Projects that are both RE & EE use the factors for the RE technology.

DEEP has approved of the methodology for estimating the environmental benefits (i.e., tons of CO2 emission avoided from the investment in clean energy projects.
http://www.ctgreenbank.com/wp-content/uploads/2017/05/DEEP-memo-to-CGB-031517.pdf

[11] Total has been adjusted to eliminate the projects that overlap sectors.

AUDIT, COMPLIANCE AND GOVERNANCE COMMITTEE
REGULAR MEETING SCHEDULE FOR 2018

The following is a list of dates and times for regular meetings of the Connecticut Green Bank Audit, Compliance and Governance Committee through **2018**.

- Wednesday, May 23, 2018 – Regular Meeting from 8:30am - 9:30am
- Wednesday, October 10, 2018 – Regular Meeting from 8:30am - 9:30am

All regular meetings will take place at:

Connecticut Green Bank
845 Brook Street, Building #2
Albert Pope Board Room
Rocky Hill, CT 06067

CONNECTICUT GREEN BANK BUDGET AND OPERATIONS COMMITTEE
2018 REGULAR MEETING SCHEDULE

The following is a list of dates and times for regular meetings of the Connecticut Green Bank Budget and Operations Committee through **2018**.

- Wednesday, January 10, 2018 – Regular Meeting from 3:00 to 4:00 p.m.
- Wednesday, May 16, 2018 – Regular Meeting from 3:00 to 4:30 p.m.
- Wednesday, June 6, 2018 – Regular Meeting from 3:00 to 4:30 p.m.

All regular meetings will take place at:

Connecticut Green Bank
845 Brook Street, Building 2
Rocky Hill, CT 06067

CONNECTICUT GREEN BANK SM

REGULAR DEPLOYMENT COMMITTEE 2018 MEETING SCHEDULE

The following is a list of dates and times for regular meetings of the Connecticut Green Bank Deployment Committee through **2018**.

- Tuesday, February 27, 2018 – Regular Meeting from 2:00pm – 3:00pm
- Tuesday, March 27, 2018 – Regular Meeting from 2:00pm – 3:00pm
- Tuesday, May 29, 2018 – Regular Meeting from 2:00pm – 3:00pm
- Tuesday, September 11, 2018 – Regular Meeting from 2:00pm – 3:00pm
- Tuesday, November 13, 2018 – Regular Meeting from 2:00pm – 3:00pm

All regular meetings will take place at:

Connecticut Green Bank
845 Brook Street, Building #2
Albert Pope Board Room
Rocky Hill, CT 06067

Joint Committee of the CT Energy Efficiency Board and the Connecticut Green Bank Board of Directors

REGULAR QUARTERLY MEETING SCHEDULE FOR 2018

The following is a list of dates and times for **regular meetings** of the Connecticut Green Bank and the Connecticut Energy Efficiency Board through 2018

- **January 17, 2018** – Wednesday from 1:30-3:30 p.m.
- **April 18, 2018** – Wednesday from 1:30-3:30 p.m.
- **July 18, 2018** – Wednesday from 1:30-3:30 p.m.
- **October 17, 2018** – Wednesday from 1:30-3:30 p.m.

Should a **special meeting** be needed to address other issues that arise, a meeting will be scheduled accordingly.

All regular and special meetings will take place at the:

Department of Energy and Environmental Protection Commissioners Conference room
10 Franklin Square New Britain, CT 06051

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

CONNECTICUT GREEN BANK

Memo

To: Keri Enright-Kato, Director, Office of Climate Change, Technology, & Research, Connecticut Department of Energy Environmental Protection, Ric Piroli, Bureau of Air Management, Connecticut Department of Energy Environmental Protection, Bryan Toal, Environmental Health, Connecticut Department of Public Health, and Denise Mulholland, Senior Analyst - State Climate and Energy Program, US Environmental Protection Agency;

CC: Robyn DeYoung, Environmental Specialist, US Environmental Protection Agency

From: Lucy Charpentier, Manager of Evaluation, Measurement and Verification; Eric Shrago, Director of Operations

Date: August 25, 2017

Re: Connecticut Green Bank use of EPA CoBRA for Public Health Impact Measurement for Projects

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BACKGROUND

Earlier this year, the Connecticut Green Bank (Green Bank) operationalized the Environmental Protection Agency (EPA)'s Avoided Emissions and Generation Tool (AvERT) model as the basis for measuring the environmental impacts of its investments. AvERT models the pollutants emitted by energy producers based on what would have been used to generate electricity had these projects not existed. AvERT measures these results in terms of CO_2, NO_X, SO_2, and $PM_{2.5}$.

The Green Bank, recognizing these pollutants effect a person's wellbeing, would like to gage the impact of improved air quality supported by its investments with regards to public health in the state.

The U.S. EPA created the Co-Benefit Risk Assessment (CoBRA) model as a tool for policy makers to assess public health impacts that are supported by changes in emissions.). The model allows users to estimate and map the air quality, human health, and related financial benefits of clean energy policies or programs.[1]

COBRA is built upon emission 2017 estimates of PM2.5, S02, NOX, NH3, and VOCs and a reduced form air quality model (Source-Receptor (S–R) Matrix). Users create their own

[1] https://19january2017snapshot.epa.gov/statelocalclimate/co-benefits-risk-assessment-cobra-screening-model_.html

scenario by inputting increases or decreases to emissions. The model then converts the air quality changes into human health effects (e.g. number of cases of asthma, fatal heart attacks, hospitalizations, etc.) using standard EPA methods and applies monetary factors so that the user can see the health improvements in financial terms as well.

Once the methodology for the use of CoBRA is implemented, the Green Bank will:

- Calculate and disclose the public health benefits anticipated from the issuance of "green" bonds that finance clean energy projects; and
- Publicly report the public health benefits resulting from its investment activity in clean energy through its Comprehensive Annual Financial Report.

OVERVIEW OF OPERATIONALIZATION

The Green Bank will use outputs from AvERT as the inputs for CoBRA. The organization envisions running the model on a portfolio of projects at a time rather than calculating impacts on a per project level due to the complexity of the model and the small effects of a single project. The Green Bank will use the built in monetary factors in CoBRA unless otherwise approved by Connecticut Department of Public Health (DPH).

RECOMMENDATION

The Green Bank proposes to use CoBRA as its official tool for measuring health impacts and will automate its use where and when possible in our Data Warehouse.

Connecticut Department of
ENERGY & ENVIRONMENTAL PROTECTION

79 Elm Street • Hartford, CT 06106 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

Memo

To: Bryan Garcia, President and CEO, Connecticut Green Bank

CC: Lucy Charpentier, Manager of Evaluation, Measurement and Verification, Connecticut Green Bank; Eric Shrago, Director of Operations, Connecticut Green Bank

From: Keri Enright-Kato /S/, Director of the Office of Climate Change, Technology, & Research

Date: Oct. 12, 2017

Re: Request by the Connecticut Green Bank on August 25, 2017 for Review and Approval of the use of CoBRA to Calculate Health Impacts of Air Quality Changes Measurement and Societal Perspective/ Evaluation Framework Draft Fact Sheet

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Background

At the Environmental Protection Agency (EPA)'s suggestion, the Connecticut Green Bank ("Green Bank") reviewed available tools for estimating public health benefits associated with the organization's contribution to support emissions reductions and is now seeking to adopt the Environmental Protection Agency's model Co-Benefits Risk Assessment (CoBRA) as their official tool for measuring these impacts. The Green Bank assembled the following materials for DEEP's review and approval:

- Memo (August 25, 2017);
- Quick Start Tutorial: How to Use CoBRA (June 2015);
- CoBRA User Manual (June 2015);
- Evaluation Framework: Societal Perspective (Public Health) – Draft Fact Sheet by the Green Bank.

Review

The Connecticut Green Bank wants to estimate the extent to which investments in clean energy create value from a societal perspective as it relates to the public health benefits associated with the mitigation of greenhouse gas emissions and other air pollutants. For Green Bank programs the resulting renewable energy produced and energy saved from its projects, will be examined using the previously approved EPA AvERT based methodology to quantify the amounts of Carbon Dioxide (CO_2), Nitrous Oxide (NOx), Sulfur Dioxide (SO_2) and particulate matter ($PM_{2.5}$) that will not be emitted due to generation from existing sources being offset due to, for example, Green Bank supported projects. The outputs are in tons of CO_2 and pounds of NOx, SO_2, and $PM_{2.5}$. These offset emissions will be used as inputs into the CoBRA model resulting in numbers of health-related incidents avoided and their associated cost savings.

Findings

DEEP reviewed The Green Bank's Memos, CoBRA Manual, Quick Start Tutorial: How to Use CoBRA, and Draft Fact Sheet. Our view is that the CoBRA is a well-developed tool that accurately describes the impacts of Green Bank projects to support the reduction of regional emissions. DEEP approves the use of CoBRA for emissions benefit calculations and the summary fact sheet.

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

Raul Pino, M.D., M.P.H.
Commissioner

Dannel P. Malloy
Governor
Nancy Wyman
Lt. Governor

MEMO

To: Bryan Garcia, President and CEO, Connecticut Green Bank

cc: Lucy Charpentier, Manager of Evaluation, Measurement and Verification, Connecticut Green Bank
Eric Shrago, Director of Operations, Connecticut Green Bank

Subject: CoBRA Review

I have reviewed some of the background materials available from the U.S. Environmental Protection Agency (EPA) on their "Co-Benefits Risk Assessment" (CoBRA) screening model for estimating health and economic benefits of policies that affect air pollution. I also listened to a webinar presentation by Denise Mulholland of EPA about the uses and limitations of the Co-BRA Screening Model.

The CoBRA model turns estimated air pollution reductions into estimated health impacts in nine areas: mortality, non-fatal heart attacks, hospitalizations, bronchitis, respiration symptoms, asthma emergency room visits, asthma exacerbations, days of limited physical activity and work days lost. The estimated health impacts are then converted into estimated cost savings. In EPA's "User Manual for the Co-Benefits Risk Assessment Screening Model" there is a lengthy description of how they used numerous epidemiology studies to estimate health improvements from decreased air pollution and specifically from decreased levels of small particulate matter (PM 2.5). This section of the manual has an extensive review of the epidemiology literature used in the model.

The Connecticut Department of Public Health (DPH) does not have the expertise to evaluate the air pollution modeling or health impacts modeling that went into CoBRA. However the health effects section is well researched and referenced. The model was also submitted for technical peer review by external experts.

The CoBRA model appears to be a well reviewed screening tool to estimate the air pollution related health impacts at the policy level. DPH supports the effects by the Green Bank to find ways to evaluate the effectiveness of its programs.

Sincerely,

Brian Toal

Brian Toal, Epidemiologist 4
Environmental and Occupational Health Program

Keeping Connecticut Healthy
DPH
Connecticut Department of Public Health

Phone: (860) 509-7740• Fax: (860) 509-7785
410 Capitol Avenue, P.O. Box 340308
Hartford, Connecticut 06134-0308
www.ct.gov/dph

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: Eric Shrago, Director of Operations

Date: October 13, 2017

Re: Public Health Impact Measurement

Describing the public health impact of the portfolio of projects supported by the Connecticut Green Bank helps illustrate the contributions of the organization and is a key part of the Societal Impact section of the Evaluation Framework. At present, the organization does not have a methodology to assess such impact.

In consultation with the US Environmental Protection Agency (EPA) the CT Department of Energy and Environmental Protection (DEEP), and the CT Department of Public Health, the organization's staff identified the EPA's CoBenefits Risk Assessment (CoBRA) as a respected tool for assessing the public health impacts of air quality changes resulting from emissions reductions of supported by Green Bank projects. The CoBRA tool is built to work in conjunction with the AVoided Emissions and geneRation Tool (AVERT) adopted by the organization this year as its methodology for assessing air quality improvements associated with our projects. Green Bank staff will use the outputs from AVERT (SOx, NOx, CO2, and PM2.5) as inputs into CoBRA for the model to generate estimates of the number of cases avoided of specific health outcomes and the economic costs of these.

Staff from DEEP, DPH, and EPA are supportive of the Green Bank communicating the impact of projects supported by the Green Bank in terms of public health.

After reviewing the methodology and model, the Audit, Compliance and Governance Committee recommended pursuant to the consent agenda the adoption of CoBRA by the Green Bank Board of Directors as the organization's public health impact measurement methodology on October 10, 2017.

Resolution #4

WHEREAS, the Connecticut Green Bank, Connecticut Department of Energy and Environmental Protection (DEEP), and Connecticut Department of Public Health working with the U.S. Environmental Protection Agency (EPA) to assess the Co-Benefit Risk Assessment (COBRA) model to quantify public health benefits resulting from improved air quality with the deployment of clean energy;

WHEREAS, DEEP, DPH, and the EPA have demonstrated support for the

environmental emissions methodology; and

WHEREAS, the Audit, Compliance, and Governance Committee at a meeting on October 11, 2017, reviewed and now recommends that the Board of Directors (the "Board") approve through the Consent Agenda the proposed Connecticut Green Bank, DPH, and DEEP Evaluation Framework – Societal Perspective – Public Health Benefit Methodology documentation;

NOW, therefore be it:

RESOLVED, that the Board approves the proposed Connecticut Green Bank DPH, and DEEP Evaluation Framework – Societal Perspective – Public Health Benefit Methodology documentation to be used for reporting, communication, and other purposes as deemed necessary.

Public Health Impact Overview

An important measurement of success for the Connecticut Green Bank (Green Bank) and its programs is how our investment activity improves the air quality of the state. This are measured by the decrease in the amount of nitrogen oxides (NO_x), sulfur dioxide (SO_2), and particulate matter ($PM_{2.5}$) emitted by the region's fossil fuel electric generation due to Green Bank projects

The changes in quantities of these emissions impacts the quality of health of those that breathe this air. Air pollution influences the prevalence and severity of asthma, bronchitis, coronary disease, and even death.

The Green Bank uses the US Environmental Protection Agency's (EPA) Co-Benefit Risk Assessment (CoBRA) model to calculate and report on the public health benefits of the Green Bank's clean energy investment activity in Connecticut.

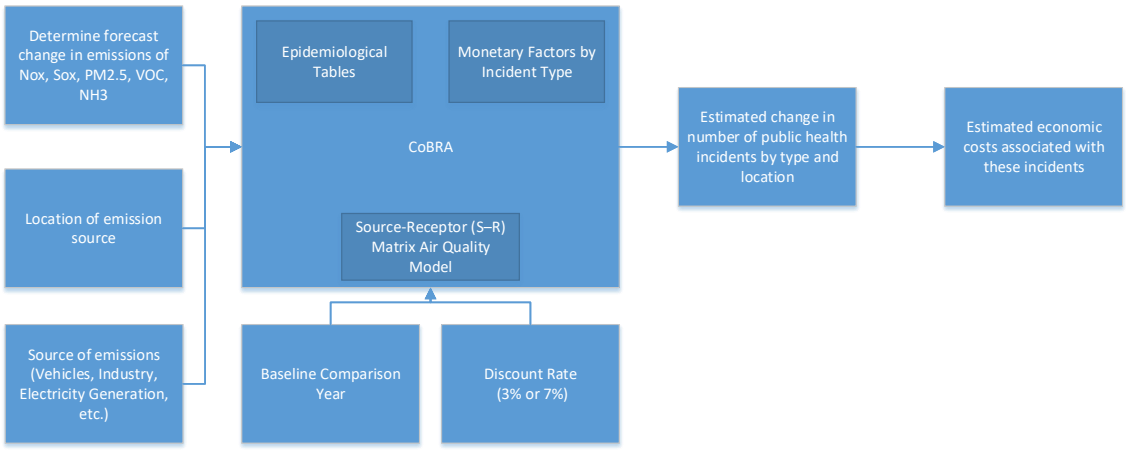
The Green Bank will include public health impacts of its programs as part of the Societal Benefits in its Comprehensive Annual Financial Report, green bonds issuances, and other communications.

Methodology

The Green Bank has long recognized the environmental benefits of its investments. After working with the Connecticut Department of Energy and Environmental Protection (DEEP), Connecticut Department of Public Health (DPH) and the US Environmental Protection Agency, the Green Bank adopted the EPA's CoBRA to model the public health impacts of the air quality benefits associated with Green Bank projects.

CoBRA is a complex model uses a baseline of emissions and models the increase or decrease in public health incidents and their costs based on the change in emissions of nitrogen oxides (NO_x), sulfur dioxide (SO_2), particulate matter ($PM_{2.5}$), volatile organic compounds (VOC) and ammonia (NH_3). The tool takes into account the method through which these are emitted (vehicles, energy production, type of industry, etc) and their location. It then uses an air dispersion model (Source-Receptor (S–R) Matrix) and standard EPA epidemiological estimation methods to gage the change in number of incidents. It then applies monetary factors to give an economic impact of these emission changes. The graphic below presents a simplified representation of the model.

Figure 1: CoBRA Flow



Users input the emissions changes, the source of those changes, and their location.

The COBRA model determines the public health impacts and the associated economic costs based on a user selected discount rate.

The Green Bank will directly run a project or projects' environmental impacts through the CoBRA model to obtain the associated public health benefits that its projects support. CoBRA will report back the low and high estimates of avoided incidents, locations, and associated costs of the following health outcomes:

- Acute Bronchitis
- Asthma Exacerbation
- Emergency Room Visits, Asthma
- Hospital Admits, All Respiratory
- Hospital Admits, Cardiovascular (except heart attacks)
- Infant Mortality
- Lower Respiratory Symptoms
- Minor Restricted Activity Days
- Mortality
- Nonfatal Heart Attacks
- Upper Respiratory Symptoms
- Work Loss Days

Example of Health Impacts

The following shows an example of public health impacts associated with the decrease of 155 tons of $PM_{2.5}$, 1,169 ton decrease in SO_2, and a 2,331 ton decrease in NO_X (the equivalent of what the Green Bank's projects avoid emitting in one year).

CT Emissions Decrease (in tons)			Location of impact	Value of Total Health Benefits	
PM 2.5	SO2	NOx		low estimate	high estimate
7	98	116	**Connecticut**	$ 1,223,570.82	$ 2,765,762.89

			Rest of US	$ 2,746,739.14	$ 6,208,562.73
			Nationwide	$ 3,970,309.96	$ 8,974,325.62

Further information about the CoBRA is available at: https://www.epa.gov/sites/production/files/2017-10/documents/cobra_user_manual_september2017_508_v2.pdf

About the Connecticut Green Bank

The Connecticut Green Bank was established by the Connecticut General Assembly on July 1, 2011 as a part of Public Act 11-80. As the nation's first full-scale green bank, it is leading the clean energy finance movement by leveraging public and private funds to scale-up renewable energy deployment and energy efficiency projects across Connecticut. The Green Bank's success in accelerating private investment in clean energy is helping Connecticut create jobs, increase economic prosperity, promote energy security and address climate change. For more information about the Connecticut Green Bank, please visit www.ctgreenbank.com

About the Department of Energy and Environmental Protection

The Connecticut Department of Energy and Environmental Protection (DEEP) was established on July 1, 2011 with the consolidation of the Department of Environmental Protection, the Department of Public Utility Control, and energy policy staff from other areas of state government. It is charged with conserving, improving and protecting the natural resources and the environment of the state of Connecticut as well as making cheaper, cleaner and more reliable energy available for the people and businesses of the state. The agency is also committed to playing a positive role in rebuilding Connecticut's economy and creating jobs – and to fostering a sustainable and prosperous economic future for the state. For more information about the Connecticut Department of Energy and Environmental Protection, please visit www.ct.gov/deep

About the Department of Public Health

Established in 1878, the Department of Public Health (DPH) is the lead agency in protection of the public's health, and in providing health information, policy and advocacy. DPH is a central part of a comprehensive network of public health services, and is a partner to local health departments for which it provides advocacy, training and certifi cation, technical assistance and consultation, and specialty services that are not available at the local level. The agency is responsible for providing accurate health information to the Governor, the Legislature, the federal government and local communities. This information is used to monitor the health status of Connecticut's residents, set health priorities and evaluate the effectiveness of health initiatives. The agency is also a regulator focused on health outcomes, maintaining a balance between assuring quality and administrative burden on the personnel, facilities and programs regulated. DPH is currently staffed by approximately 800 employees organized into fourteen branches, sections, and offices; each tasked with ensuring and/or providing services to help the agency achieve its mission. For more information about the Connecticut Department of Public Health, please visit http://www.ct.gov/dPh/site/default.asp

About the United States Environmental Protection Agency

The mission of the EPA is to protect human health and the environment. For more information about the United States Environmental Protection Agency, please visit www.epa.gov

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: Eric Shrago, Director of Operations

CC: Bryan Garcia, President and CEO

Date: October 20, 2017

Re: FY 2018 Q1 Progress to Targets

The following memo outlines Connecticut Green Bank (CGB) progress to Q1 goals for fiscal year 2018 as of September 30, 2018, the end of the first quarter.

Infrastructure Sector

Table 1. Statutory and Infrastructure Sector Q1 Progress to Targets

	Projects		Capital Deployed		Capacity	
Product/Program	**Closed**	**Target**	**Closed**	**Target**	**Closed**	**Target**
Anaerobic Digesters Pilot	0	1	$0	$20,000,000	0	1.6
RSIP	1,262	4,431	$34,756,908	$136,300,000	10.0	37.0
Infrastructure Total	**1,262**	**4,432**	**$34,756,908**	**$156,300,000**	**10.0**	**38.6**

RSIP has achieved 28% of the FY18 project target in Q1 and 26% of the target for capital deployed, and is thus on schedule, despite a transition in August to a new version of PowerClerk, the online document management platform for incentive applications. PowerClerk was not available for approximately one week and it took contractors another two weeks to acclimate to the new system, which continues to be refined. Program trends include:

- With the exception of relatively low July volume of 2.7 MW, monthly RSIP submission volume has been steady in the past six months, averaging 426 projects or 3.4 MW in Q1 FY18 and 3.5 MW in Q4 FY17. September volume was 494 projects or 4 MW, the highest monthly RSIP volume in over a year.
- Q1 2018 volume was almost 25% EPBB and 75% PBI, as compared to 22% EPBB and 78% PBI in Q4 2017.
- In Q1 FY18, overall market leaders included Sunnova, Vivint, Sunrun, Posigen and SunPower, accounting for 77% of total volume and all but three PBI projects. Vivint and Posigen installed their own projects, while Trinity installed 47% of all PBI projects. Leading installers of homeowner owned projects included Vivint, Trinity, Real Goods Solar, Con Ed Solutions (Ross Solar Group), and C-TEC, representing 59% of EPBB volume. Thirty companies submitted EPBB applications in Q1 FY18, reflecting a diverse, growing installer base. Solar City, who had

essentially left the program in FY17, in favor of monetizing RECs on their own, is returning to the program and will be focusing on homeowner owned projects.

- Installed costs across all RSIP projects remained almost flat in Q1 FY18 at $3.49/W, as compared to $3.52/W in Q4 FY17 (and $3.54/W on average in FY17). Incentives have decreased slightly to $0.28/W in Q1 FY18 as compared to $0.32/W in Q4 FY17 (and $0.33/W on average in FY17), approximately 8% and 9% of installed costs, respectively.

The Turning Earth AD project in Southington continues to make progress but not without some bumps in the road. Turning Earth has completed the project's final engineering design in an effort to finetune the project's capital cost estimates. Based on the final design and cost estimates, they are expecting the project cost to increase by about 15 – 20% from the original estimate, causing one of their several equity partners to back out due to project returns not meeting their investment thresholds. However, Turning Earth is currently having conversations with other potential equity providers as well as debt providers to shore up the capital stack. They expect to firm up their equity partners in the coming weeks and will push for a binding contract with their EPC contractor. Other project development accomplishments include reaffirming their 10-year LOI agreement with their organics feedstock provider for 100% of the system's annual needs and an LOI for a 10-year O&M agreement with Casella, who is very experienced with operating these facilities. Turning Earth has prepared a new construction schedule which has construction ground breaking occurring in early Spring 2018 and facility completion 12-months later.

Residential Sector

Table 2. Residential Sector Q1 Progress to Targets

	Projects		Capital Deployed		Capacity	
Product/Program	**Closed**	**Target**	**Closed**	**Target**	**Closed**	**Target**
Smart-E	285	440	$4,366,187	$8,153,050	0.4	1.3
Low Income Loans/Leases (PosiGen)	127	720	$3,250,274	$20,087,746	0.8	4.5
Multi-Family Term	3[1]	16	$399,800	$7,550,000	0.1	0.6
Multi-Family Pre-Development (Sherpa & Navigator)	3[2]	9	$296,092	$188,400	0	0
Resi Total	**417[3]**	**1,185**	**$8,312,353**	**$35,979,196**	**1.3**	**6.4**

Smart-E has exceeded its targets for the first quarter by more than double, despite only reporting for 2 months (Smart-E always has a 1 month lag due to lender reporting cycles) and the average loan size being lower than projected ($15,320 vs. a projected average loan of $18,350). Strong activity in the 0.99% special promotions is driving activity across the board, with particularly strong uptake of natural gas conversions (due to promotions of Smart-E by the gas utilities), heat pumps (due to a strong response to using heat pumps for cooling solutions), and the Home Energy Solutions and insulation bundles, which are now tied with solar bundles for activity (historically, solar bundles represented over 80% of overall bundle activity). The strong uptake in heating and cooling

[1] These 3 projects are comprised of 192 units (88 of these units are in one project which is included in both Pre-Development and Term totals).
[2] These 3 projects are comprised of 186 units (88 of these units are in one project which is included in both Pre-Development and Term totals).
[3] There is presently one loan that is currently being counted in totals for Multifamily Pre-Development and Term lending. This loan has been removed from the total to avoid double counting.

equipment, insulation and other efficiency measures is bringing down the average loan size, since these measures cost less than solar PV. The decline rate is currently at 16%, which is a record low for the program, and a sign that the credit-challenged lenders are able to qualify in more customers.

The Low-to-Moderate-Income lease program offered through PosiGen is below target due to a slow summer selling season, in part caused by a vacancy in the key role of community outreach manager, which is now filled. Of note, about two-thirds of customers are low-to-moderate income and 99.9% of customers receive direct install measures through the Home Energy Solutions program. Additionally, nearly two-thirds of customers have taken advantage of the Energy Savings Agreement (ESA) offering which provides even further energy savings (this is a high percentage of customers going "deeper" relative to the experience in the Home Energy Solutions program, which averages ~25-30%).

In the 1st quarter, the Multifamily programs closed 2 LIME term loans for $305,000 and 2 pre-development loans. The program additionally closed one hybrid Green Bank term health and safety/Navigator pre-development loan for $228,300. Previously indicated "lumpiness" of deal sizes and 2-3 year project cycles continue to be characteristics of this sector, but there is a robust pipeline of early stage projects on the Sherpa side, and consistent word-of-mouth applications being received on the Navigator side. Benchmarking feeds the top of the pipeline and we currently have 1,381 buildings representing 23,000 units or about ~10% of all multifamily units in CT benchmarked.

Commercial, Industrial, and Institutional Sector

Table 3. Commercial, Industrial and Industrial Q1 Progress to Targets

	Projects		Capital Deployed		Capacity	
Product/Program	**Closed**	**Target**	**Closed**	**Target**	**Closed**	**Target**
CPACE	19	51	$6,858,697	$24,400,000	1.8	6.4
Commercial Lease	7	25	$2,803,580	$15,000,000	0.9	6.3
CI&I Total[4]	**23**	**67**	**$8,595,920**	**$34,000,000**	**2.3**	**10.4**

C-PACE has achieved 37% of the FY18 project target, 28% of the capital deployed target, and 28% of the capacity target. Projects were evenly split between the two most active capital providers in the program, Greenworks Lending and CGB with Hannon Armstrong or the solar PPA funds. For CGB, Energy on the Line was the most fruitful channel, with the long development times for the initiative beginning to yield projects from the approximately year-long pipeline. Solar was the primary driver of projects, with 68% being solar only and 10% more including solar and other measures. On the contractor side, most of the projects were brought by contractors who had previously used C-PACE financing, with 3 contractors even having multiple projects this quarter. Process streamlining is beginning to yield results with one project this quarter closing within 3 months of the initial application.

[4] CPACE backed commercial leases have been removed from the total to avoid double counting.

The Commercial Lease is on target for its FY18 goal, achieving 28% of the project, 25% of the capital deployed, and 22% of the capacity target.

CGB Total

Table 4. CGB Q1 Progress to Targets

	Projects		Capital Deployed		Capacity	
Sector	**Closed**	**Target**	**Closed**	**Target**	**Closed**	**Target**
Infrastructure Sector	1,262	4,432	$34,756,908	$156,300,000	10.0	38.6
Residential Sector	417	1,185	$8,312,353	$35,979,196	1.3	6.4
Commercial, Industrial and Institutional Sector	23	67	$8,595,920	$34,000,000	2.3	10.4
Other Strategic Investments	0	1	$0	$15,000,000	0	3.7
Total[5]	**1,463**	**5,676**	**$45,311,225**	**$235,879,196**	**11.9**	**56.8**

[5] Residential solar projects that receive financing also receive an incentive under the Residential Solar Incentive Program and Multifamily and Commercial Lease projects may also use C-PACE so they are counted in each sector's results. These projects have been removed from the total to avoid double counting.

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

CONNECTICUT GREEN BANK

Memo

To: Connecticut Green Bank Board of Dierctors

From: Eric Shrago, Director of Operations

CC: Suzanne Kaswan, Vice President of Human Resources

Date: August 15, 2017

Re: Revised Salary Ranges

The Connecticut Green Bank's (CGB's) success can be attributed largely in part to its ability to attract and retain a high-caliber staff. This ability is due to several factors, including an exciting mission, a national identity as a leader in the clean energy sector, and the progressive energy policy of Connecticut. We have also relied on a flexible and competitive salary structure to help us recruit top quality talent. While CGB cannot expect to compete with private sector financial institutions, it's useful to understand the market and benchmark against both private and similar public sector institutions. CGB partnered with Connecticut Innovations in 2012 to conduct a comprehensive benchmark compensation study and the results of that study were implemented in 2014. At that time, we received guidance from the CGB Board of Directors to undertake a comprehensive benchmark assessment every 3 to 5 years. We also built this initiative into our Succession Planning document. This compensation study is the result of that directive. CGB undertook a study in 2016 and is proposing a more organized compensation structure with new salary ranges (highlighted in Attachment A) for Board approval. There is no cost impact as no actual salaries will immediately change as a result of this recommendation but this action will put in place a structure that will continue to enable us to attract and retain top talent by adjusting their compensation levels without having to adjust their titles.

Background

In February 2016, CGB began a Request for Proposal (RFP) selection process for a Compensation Study. The RFP sought proposals from qualified firms to conduct a benchmark compensation study and make recommendations to update CGB's compensation structure based on the study. The purpose of the study was to ensure that all positions within CGB are internally equitable and externally competitive. The Scope of Services specified recommendations be

included for the following: (1) a wage comparison with comparable public and private sector entities, (2) a compensation plan based on that wage comparison, and (3) suggestions for the development of an incentive compensation plan. We also requested that a review of our internal compensation data be conducted to ensure parity based on gender and race. The RFP was sent to several firms and we received 4 responses. We selected 2 finalists to interview in person. KardasLarson, LLC was the selected consultant after the final interview based on their proposed approach to the project, the background and experience of the consultants, and their competitive bid.

KardasLarson conducted a comprehensive benchmark salary survey for 37 CGB positions. KardasLarson and CGB worked to identify 30 comparable CT Quasi, Public non-CT Quasi and private organizations to invite them to participate in a compensation survey. 10 organizations agreed to participate yielding results for 10 of the 37 positions. The additional benchmarking for the remainder of the positions was competed using supplemental market-pricing survey data that is proprietary to KardasLarson. The study evaluated our market position including salary, and benefits. CGB's current salary structure has 3 different salary progressions based on each division, Corporate, Investment and Program. This structure is difficult to administer and cumbersome. KardasLarson LLC proposed a single structure with broad and consistent ranges and made recommendations on slotting all of our positions into the new structure as a result of the market benchmarking analysis.

Results and Recommendation

The results of the study are documented in **Attachment B**. Broadly, KardasLarson found that CGB base salaries are within an acceptable range of the market median. However, implementation of the new recommended ranges will be simpler to administer (one structure as opposed to 3 separate program division structures) and will give staff room to advance within their ranges. We are recommending a new salary structure (**Attachment A**) based on the study. The new structure will allow CGB to offer competitive salaries consistent with the market. In addition, it will provide parity across the organization as well as offer a smooth progression for career paths. Positions have been organized into eleven grades.

Resolution

WHEREAS, per the Operating Procedures and Section VII Personnel Policies of the Connecticut Green Bank, grade classifications for each job title are established by the President, subject to Board approval,

WHEREAS, pursuant to the Succession Plan developed by the President of the Connecticut Green Bank, there is a need to conduct a market compensation analysis every 3 to 5 years,

WHEREAS, through a competitive Request for Proposals (RFP), the Connecticut Green Bank engaged KardasLarson to conduct a compensation study that benchmarks the current salaries of staff at the Connecticut Green Bank with other comparable public and private organizations to determine market competitiveness of compensation,

WHEREAS, the Budget and Operations committee has reviewed the results of the study prepared by KardasLarson and recommends their adoption by the Green Bank Board of Directors,

NOW THEREFORE the following be resolved

RESOLVED, the Connecticut Green Bank's Board of Directors recommends the approval of the grade classifications and salary ranges for the positions outlined in Attachment A.

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: Brian Farnen (General Counsel and CLO), Bryan Garcia (President and CEO), Bert Hunter (Executive Vice President and CIO)

CC: Mackey Dykes, Dale Hedman, and Kerry O'Neill,

Date: October 13, 2017

Re: Request for Adjustment in Officer Approvals – Funding Requests below $500,000 and in Aggregate less than $1,000,000

BACKGROUND

On January 18, 2013, the Connecticut Green Bank ("Green Bank") Board of Directors approved of a recommendation brought forth by the Audit, Compliance and Governance (ACG) Committee and Deployment Committee to approve the authorization of Green Bank staff to evaluate and approve program 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. This policy is consistent with that of the Connecticut Clean Energy Fund (CCEF), the predecessor to Green Bank, who's Board passed a similar resolution permitting staff to approve funding requests below $300,000.

On July 18, 2014, the Connecticut Green Bank ("Green Bank") Board of Directors approved of a second recommendation brought forth by the ACG Committee and Deployment Committee to approve the authorization of Green Bank staff to evaluate and approve program 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 $1,000,000 from the date of the last Deployment Committee meeting.

Green Bank staff, with the support of the Deployment Committee and a recommendation from the ACG Committee on October 10, 2017, is now requesting an adjustment in the policy to increase the funding request amount limit from $300,000 to $500,000.

JUSTIFICATION FOR REQUEST FOR ADJUSTMENT

Green Bank staff is making this request due to the increased funding request amounts per project, especially within the C-PACE and Solar Lease programs. Additionally, Green Bank has operationalized increased standardization with the relevant financing documents, underwriting and technical review for such programmatic projects.

RESOLUTION

WHEREAS, pursuant to Section 5.3.1 of the Connecticut Green Bank (Green Bank) Bylaws, the Audit, Compliance & Governance (ACG) Committee is charged with the review and approval of, and in its discretion recommendations to the Board regarding, all governance and administrative matters affecting the Green Bank, including but not limited to matters of corporate governance and corporate governance policies;

WHEREAS, on January 18, 2013, the Board of Directors authorized 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 ("Staff Approval Policy for Projects Under $300,000");

WHEREAS, on July 18, 2014, the Green Bank Board of Directors approved of a recommendation brought forth by the ACG Committee and Deployment Committee to approve the authorization of Green Bank staff to evaluate and approve program 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 $1,000,000 from the date of the last Deployment Committee meeting; and

WHEREAS, that the Green Bank ACG Committee hereby recommended on October 10, 2017 that the Board of Directors adopt a resolution amending the Staff Approval Policy to increase the program funding request for Projects Under $300,000 to $500,000 with an aggregate amount limit of $1,000,000 from the date of the last Deployment Committee meeting.

NOW, therefore be it:

RESOLVED, that the Green Bank Board of Directors approve amending the Staff Approval Policy to increase the program funding request for Projects Under $300,000 to $500,000 with an aggregate amount limit of $1,000,000 from the date of the last Deployment Committee meeting.

RESOLVED, that the Board of Directors approves the proposed draft revisions to the Green Bank Bylaws to effectuate the revised staff authorization amount of $500,000.

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: Bryan Garcia, President and CEO
Date: October 20, 2017
Re: Strategic Retreat – Progress to Date

BACKGROUND
On Thursday, January 5, 2017, the Board of Directors and Senior Staff of the Connecticut Green Bank held a facilitated strategic retreat at the Yale School of Forestry and Environmental Studies – see Appendix I for agenda. This retreat identified a number of areas of strategic importance for the organization.

This memo summarizes the progress to date from the strategic retreat.

BUILD RELATIONSHIPS WITH THE UTILITIES AND ENERGY EFFICIENCY BOARD (EEB)
Continuing to identify program opportunities for co-investment with our utility partners and collaborations with the EEB, including:

- **Residential Sector** (Single Family) – improvements to the Energize CT Smart-E Loan including inclusion of Capital for Change onto the platform, longer terms (i.e., 15 and 20-year options), greater maximum loan amounts (i.e., up to $45,000), access to lower FICO scores (i.e., down to 580), and special promotional offers for interest rate buydowns on loans for energy conservation measures of interest to the utilities (e.g. Home Energy Solutions and insulation bundles, heat pump and natural gas conversions offers) using $6 million of repurposed ARRA-SEP funds approved by the Board of Directors on March 10, 2017;

- **Residential Sector** (Multifamily) – launch of the joint EnergizeCT Multifamily initiative in March 2017; expansion of the Low Income Multifamily Energy (LIME) Loan using $2.5 million of Connecticut Green Bank capital to attract additional private capital approved by the Deployment Committee on February 27, 2017 and $1.5 million of DEEP RGGI funding for health and safety remediation in the Catalyst Loan program approved by the Deployment Committee on May 30, 2017;

- **Commercial Sector** (Small Business) – identification of a lower cost of private capital for the Small Business Energy Advantage (SBEA) on-bill repayment program which saves ratepayer costs from buying down higher interest rates by using $3 million of Connecticut Green Bank capital to attract $27 million of private capital approved by the Board of Directors on October 3, 2017; and

- **Joint Activities** – the utilities and the Connecticut Green Bank hold quarterly contractor events on various topics at the Energize CT Center in North Haven. The utilities and Green Bank also worked together to host an educational solar event in July focused on the healthcare and C&I sector. It has helped to start a conversation on how to work together on CI&I customers interested in solar.

This is an ongoing effort and constant challenge; however, we are making steady progress to this end through the Joint Committee.

EXPLORE HOW A PRIVATE ENTITY COULD ACHIEVE GREATER RESULTS

In order to achieve greater impact in Connecticut and improve organizational efficiencies, we were to investigate how the creation of a non-profit private entity (e.g., CDFI, 501(c)3, foundation, etc.) could serve the interests of the Connecticut Green Bank, with a particular emphasis on low-to-moderate income community activities. For example, given state contracting laws (e.g., gift affidavits), we had to transfer a $5 million PRI from the MacArthur Foundation to a local CDFI to manage on our behalf requiring us to provide a $5 million guarantee. The team, including Ben Healey, Bert Hunter, Kerry O'Neill, and myself are leading this project. Beyond our budget allocation to support an outside consultant to assist us with this project, we were able to raise an additional $50,000 from a private foundation to investigate how this organization would not only benefit Connecticut, but could also be expanded beyond the state into the region to increase its impact in underserved market segments. We are in the process of soliciting feedback from members of the board and will present our initial findings and recommendations at the December 15th Board of Directors meeting to seek your guidance. It should be noted that Governor Cuomo recently announced that the New York Green Bank will work with the private sector to raise new funds to assist other states in the establishment of new green banks.

ADDRESS OPERATIONAL ISSUES

There is a desire to improve organizational efficiencies. In the draft FY 2017 Comprehensive Annual Financial Report, we are reporting organizational efficiencies (see Tables 1 through 3).

Table 1. Human and Financial Resources of the Green Bank for FY 2012 vs. FY 2017

	Human Resources		Financial Resources				
Fiscal Year	**Full Time Equivalent Staff**	**Office Space** (ft^2)	**Total Expenses** ($ MM)	**General Admin & Program Admin** ($ MM)	**General Admin** ($ MM)	**SBC Revenues** ($ MM)	**RGGI Revenue** ($ MM)
2012	29.1	3,626	$32.5	$4.5	$1.4	$27.0	$2.1
2017	46.3	16,122	$39.6	$21.5	$5.7	$26.4	$2.4

Table 2. Green Bank Impact for FY 2012 vs. FY 2017

Fiscal Year	**Private Investment** ($ MM)	**Clean Energy Deployment** (MW)	**Expected Annual Generation** (GWh)	**Annual Saved / Produced** (MMBtu)	**Job Years Supported**	**Annual CO2 Savings** (Tons)
2012	$10.2	2.9	3,278	11,183	231	1,833

2017	$197.4	55.0	72,305	532,685	1,680	36,975
Multiple	19.4 x	19.0 x	22.1 x	47.6 x	7.3 x	20.2 x

Table 3. Green Bank Investment and Deployment Efficiency for FY 2012 vs. FY 2017

Fiscal Year	**Private Investment per FTE** ($/FTE)	**Clean Energy Deployment per FTE** (kW/FTE)	**Private Investment / Total Expenses**	**Private Investment / General Admin**	**Private Investment / Office Space** ($/ft^2)	**Clean Energy Deployment / Office Space** (kW/ft^2)
2012	$350,596	100	0.31	7.34	$2,809	0.8
2017	$4,267,446	1,189	4.98	34.52	$12,242	3.4
Multiple	12.2 x	11.9 x	15.9 x	4.7 x	4.4 x	4.3 x

These ratios show greater impact being achieved from the Connecticut Green Bank from the first year of operations to the present time. We will be tracking these ratios over time to ensure that we are delivering operational efficiencies. Despite reflecting increased impact per human and financial resources, we are cognizant of keeping our human resources lean and productive. We are always reviewing our processes and resources to find ways to streamline them.

With regards to staffing, as a result of the strategic retreat, our financial statements now include a breakdown of the cost for employee compensation (base salary plus benefits) demonstrating an all-in cost of about 1.77 times base salary per full-time employee:

- State Retirement Plan Contributions – 54.0%
- Medical Dental Rx Premiums – 14.7%
- Life & Disability and Workers Compensation Premiums – 0.6%
- Payroll and Unemployment Taxes – 7.5%

Recently, discussions at the board level have been around increasing our impact, including by expanding our staff (e.g., our LMI market segment). For each new staff member we add, the costs are 1.77 times the salary, when all employee benefits are included. Beyond restructuring staff for greater efficiencies and productivity, another possibility is using an entity created by and affiliated with the Connecticut Green Bank (as noted above) to improve our operational efficiencies while freeing up resources to deliver more impact.

CATALYZE NEW MARKETS TO SUPPORT GOVERNOR'S CLIMATE CHANGE COUNCIL

Given that the largest emitting GHG sectors in Connecticut are from transportation and the residential, commercial and industrial sectors (i.e., heating with fossil fuels), we have achieved a lot of progress, including:

- **Residential Solar Investment Program** – the Board approved on April 28, 2017 a "grid modernization and climate change pilot" to encourage more collaboration with the Connecticut Energy Efficiency Fund, while supporting households that want to combine solar PV with renewable heating and cooling equipment, electric vehicles, and battery storage;

- **Smart-E Loan** – as noted above, there are special interest rate offers encouraging households to install renewable heating and cooling equipment on its own as well as in

combination with solar PV. At a recent Board of Directors meeting, a pilot program in partnership with DEEP, CARA, and local installers and lenders, to incentivize EV purchases, and especially previously owned EV's was approved to keep these zero-emission vehicles in Connecticut while also providing assistance to the LMI market segment to buy EV's**;**

- **Community Based Marketing** – learning from our successful Solarize campaigns, we are adapting the model to increase purchasing of EV's (e.g., pilot with Nissan Leaf) as well as the deployment of air source heat pumps – a renewable heating and cooling technology. As part of the renewable heating and cooling campaigns we are organizing with the utilities and DEEP and through our partnership with Yale, we will be metering these technologies to track their performance over time.

We are making steady progress supporting the Governor's Council on Climate Change through clean energy measures in the residential market segment. [It should be noted that our battery storage pilot is still being designed and hasn't been launched.]

SUPPORT BALANCE SHEET BY EXPANDING EXISTING PROGRAMS

The Connecticut Green Bank made a number of investments that resulted in current assets (i.e., cash) being invested in non-current assets (i.e., loans) maintaining the strength of our balance sheet while providing a mechanism against transfers to the General Fund, including:

- **Fuel Cell Project** – $5.0 million investment in a fuel cell project whose power is being sold into the wholesale market through a technology manufactured in Connecticut;

- **LMI Solar PV Lease and Energy Efficiency ESA** – follow-on investment of $5.0 million in PosiGen to secure additional private investment in a facility that provides easy and affordable access to low-to-moderate income households in solar PV and energy efficiency;

- **Loan Loss Reserves** – reallocation of Green Bank $4.5 million balance sheet funds to support Smart-E and CT Solar Lease puts our capital to work while redeploying $4.5 million in American Recovery and Reinvestment Act funds.

- **LIME Loan** – follow-on investment of $2.5 million in Capital for Change to secure additional private investment that provides access to capital for clean energy improvements in multifamily and affordable housing projects; and

- **Small Business** – seeking to provide $3 million in subordinated debt (or equity) to support the attraction of private capital for the Small Business Energy Advantage program in partnership with the Connecticut Energy Efficiency Fund (through the Joint Committee) and the utilities.

It should be noted that we also used cash by reducing a liability that isn't represented on our financial statements – future payments for performance-based incentives through the RSIP – by issuing an RFP to third-party owned system installers to pay-off upfront their incentive. This transaction was finalized in July.

IMPROVING PRESENTATION OF FINANCIAL STATEMENTS
The internal presentation of financial statements was improved for management reporting purposes only to reflect the liability of the future payments for incentives from the RSIP – see August 2007 financial statements.

Although this presentation does not follow GAAP, it shows a better representation of the future liabilities faced by the Connecticut Green Bank reflecting a lower net asset position for the organization.

Also, every quarter, the Connecticut Green Bank reports to the Office of Fiscal Analysis our budget to actuals. Within this filing we now include all board-approved transactions as future uses of the assets of the organization to better reflect the true financial position of the organization.

DEVELOP PROACTIVE LEGISLATIVE STRATEGY
It is a very difficult state budget environment we find ourselves in – with a $40 billtion two-year budget that is $5 billion in deficit over the next two fiscal years. We have developed a number of legislative strategies to protect ourselves from a transfer of our assets to the General Fund. Notwithstanding these strategies, the recent budget passed by the legislature and subsequently vetoed by the Governor demonstrates that we must be ever vigilant in seeking to protect our revenues and balance sheet in order to accomplish the objectives set forth in our Comprehensive Plan and as envisioned by our enabling legislation.

We will continue to work with the Chair of the Connecticut Green Bank, Governor's Office, and legislative leaders from both parties to try and advance a position that minimizes the impact of the state budget on the Connecticut Green Bank.

LEAD THE GREEN BANK MOVEMENT
The Connecticut Green Bank continues to lead the green bank movement as evidenced by:

- **Harvard Ash Center Award** – winning the Harvard Kennedy School Ash Center's "Innovations in American Government Awards for 2017" by outcompeting over 500 other nominations. This is the 2nd time a Connecticut public sector innovation has won the award in the over 30-year history of it – including over 25,000 nominations.

- **Green Bank Academy** – with the $100,000 prize money from the Harvard award and a match from the Connecticut Green Bank, in partnership with the Coalition for Green Capital, we are launching a Green Bank Academy to "accelerate the successful creation and efficient operation of green banks through education". We recently had an offsite strategic retreat with other green banks, non-profits, and academic institutions to layout a plan for the first two years of the effort.

- **Green Bank Network** – we continue to co-lead the Green Bank Network with our partners from Australia, Japan, Malaysia, New York, and the UK. We recently held a Green Bank Congress in New York City during Climate Week, which featured as keynote speaker the Executive Director of the Green Climate Fund ("GCF") – a $10

billion effort of the UNFCC to provide climate finance to developing countries. His remarks highlighted the need to rollout more green banks internationally and the GCF's desire to dedicate funding toward this effort.

- **US Green Bank Act** – we continue to support our local Congressional Leaders – Representative Elizabeth Esty and Senator Chris Murphy advance the National Green Bank Act of 2017. If passed, the Act would provide capital to subnational green banks across the country to mobilize more private investment in their local economies. Additionally, we will work with the American Council On Renewable Energy, the Council of Development Finance Agencies and the Connecticut delegation to encourage public private partnerships for clean energy deployment and grid modernization within proposed infrastructure legislation.

APPENDIX I

Strategic Retreat Agenda
January 5, 2017

1. Arrival for Lunch – 11:30 a.m.

2. Kick-Off – Successes and Shortcomings (12:00 to 12:45 – 45 minutes)

    a. 2011 to 2016 – What were the Connecticut Green Bank's successes and shortcomings (or missed best practices) in its first 5 years?

3. Strategic Issues to Address (12:45 to 4:50 – 245 minutes)

    a. Issue #1 – The "Big Picture" – Towards 80% Reductions of GHG Emissions by 2050 (12:45 to 1:55 – 70 minutes)

    b. Issue #2 – Financial Position of the Connecticut Green Bank; Leveraging Resources for Public-Private Partnerships and Sustainability: Emerging Opportunities Like Bank of America (1:55 to 2:55– 60 minutes)

    (Afternoon Break – 2:55 to 3:10 – 15 minutes)

    c. Issue #3 – Financial Position of the Connecticut Green Bank – Protecting Resources from Transfer to the General Fund: Strategies and Communications* (3:10 to 4:00 – 50 minutes)

    d. Issue #4 – The Green Bank Movement in a Trump Administration – Opportunities and Vulnerabilities (4:00 to 4:50 – 50 minutes)

4. Next Steps (4:50 to 5:00 – 10 minutes)

5. Adjourn

6. Tour of the Yale Beinecke Library (30 minutes – 5:30-6:00)

7. Dinner at Mory's (6:00-8:00 p.m.) – Special Guest Frances Beinecke, Former President of the Natural Resources Defense Council and Author of *The World We Create: A Message of Hope for a Planet in Peril*