



Deployment Committee

Meeting Date

July 12, 2019





Deployment Committee

Betsy Crum

Former Executive Director, Women's Housing Institute

Shawn Wooden – Designee, Bettina Bronisz

Treasurer, State of Connecticut

Matthew Ranelli

Partner, Shipman & Goodwin LLP

Mary Sotos

Deputy Commissioner, Energy, DEEP

Binu Chandy

Deputy Director,

DECD

845 Brook Street, Rocky Hill, CT 06067
T 860.563.0015
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July 5, 2019

Dear Connecticut Green Bank Deployment Committee:

I hope you all are enjoying the incredible 4th of July weekend weather in celebration of our nation's independence!

We have a regular meeting of the Deployment Committee scheduled on Friday, July 12, 2019 from 9:00 to 10:00 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 May 29, 2019 and report out for loan losses below \$100,000 and no more in aggregate than \$500,000 for Q4.
- **Incentive Programs** – we are proposing Step 15 of the Residential Solar Investment Program (RSIP). It is our hope that this final step of the RSIP will take us to the public policy goal of 350 MW, while also ensuring the sustained orderly development of the local industry as the market transitions from net metering to a tariff-based compensation structure beginning in 2022.
- **Financing Programs** – we are bringing back the proposal from the last Deployment Committee meeting on the Smart-E Loan and Health & Safety Measures. With additional feedback from market participants – including the utilities and contractors – we are proposing a change that would include a 100-home pilot program. We might also have a few other items for consideration that may arrive next week – stay tuned.

Given the holiday, most of the meeting materials will be distributed by the close of business on Tuesday, July 9th.

If you have any questions, comments or concerns, please feel free to contact me at any time. Looking forward to seeing you all next week.

Until then, continue to enjoy your holiday weekend.

Sincerely,

A handwritten signature in blue ink, appearing to read "B. Garcia", with a long horizontal flourish extending to the right.

Bryan Garcia
President and CEO



AGENDA

Deployment Committee of the
Connecticut Green Bank
845 Brook Street
Rocky Hill, CT 06067

Friday, July 12, 2019
9:00-10:00 a.m.

Dial (646) 749-3112
Access Code: 213-118-693

Staff Invited: Craig Connolly, Mackey Dykes, Brian Farnen, Bryan Garcia, Bert Hunter, Jane Murphy, Selya Price, 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 May 29, 2019
 - b. Approval of Loan Losses Below \$100,000 and No More in Aggregate than \$500,000
4. Incentive Programs – 20 minutes
 - a. RSIP – Step 15
5. Financing Programs – 30 minutes
 - a. Smart-E Loan – Health and Safety (Revised)
 - b. Impact Investor and Small Business Energy Advantage
 - c. Other News
6. Adjourn

Join the meeting online at <https://global.gotomeeting.com/join/213118693>

Or call in using your telephone:
Dial (646) 749-3112
Access Code: 213-118-693

***Next Regular Meeting: Wednesday, September 25, 2019 from 2:00-3:00 p.m.
Colonel Albert Pope Board Room at the
Connecticut Green Bank, 845 Brook Street, Rocky Hill, CT***



RESOLUTIONS

Deployment Committee of the
Connecticut Green Bank
845 Brook Street
Rocky Hill, CT 06067

Friday, July 12, 2019
9:00-10:00 a.m.

Staff Invited: Craig Connolly, Mackey Dykes, Brian Farnen, Bryan Garcia, Bert Hunter, Jane Murphy, Selya Price, 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 May 29, 2019

Resolution #1

Motion to approve the meeting minutes of the Deployment Committee for May 29, 2019.

- b. Loan Losses Below \$100,000 and No More in Aggregate than \$500,000
4. Incentive Programs – 20 minutes
 - a. RSIP – Step 15

Resolution #2

WHEREAS, Public Act 19-35, “An Act Concerning a Green Economy and Environmental Protection” (the “Act”) updates Connecticut General Statutes 16-245ff and 16-245gg to require the Connecticut Green Bank (“Green Bank”) to design and implement a Residential Solar Photovoltaic (“PV”) Investment Program (“Program”) that results in no more than three hundred and fifty (350) megawatts of new residential PV installation in Connecticut on or before December 31, 2022 and extends through December 31, 2022 or after deployment of 350 MW the ability to create Solar Home Renewable Energy Credits (“SHRECs”) that the electric distribution companies are required to purchase through 15-year contracts;

WHEREAS, as of July 1, 2019, the Program has thus far resulted in nearly two-hundred and seventy-three (273) megawatts of new residential PV installation application approvals and nearly two-hundred and thirty-five (235) MW of completed projects in Connecticut;

WHEREAS, pursuant to Conn. Gen Stat. 16-245a, a renewable portfolio standard was established that requires that Connecticut Electric Suppliers and Electric Distribution Company Wholesale Suppliers obtain a minimum percentage of their retail load by using renewable energy;

WHEREAS, real-time revenue quality meters are included as part of solar PV systems being installed through the Program that determine the amount of clean energy production from such systems as well as the associated RECs which, in accordance with Connecticut General Statute 16-245gg will be sold to the Electric Distribution Companies through a master purchase agreement entered into between the Green Bank, Eversource Energy, and United Illuminating, and approved by the Public Utility Regulatory Authority;

WHEREAS, pursuant to the Act, the Green Bank has prepared a declining incentive block schedule (“Schedule”) that offers direct financial incentives, in the form of the expected performance based buy down (“EPBB”) and performance-based incentives (“PBI”), for the purchase or lease of qualifying residential solar photovoltaic systems, respectively, fosters the sustained orderly development of a state-based solar industry, and sets program requirements for participants, including standards for deployment of energy efficient equipment and building practices as a condition for receiving incentive funding;

WHEREAS, pursuant to the Act, to address willingness to pay discrepancies between communities, the Green Bank will continue to provide additional incentive dollars to improve the deployment of residential solar PV in low to moderate income communities (“LMI PBI”);

WHEREAS, pursuant to the Act, to address sustained orderly development of a state-based solar industry, as part of the balance of plant of a solar PV system, an upfront energy storage system incentive (“EPBB ESS”) will provide emergency back-up power for residential participants as well as reduce demand, specifically peak demand, through the load management of the solar PV and energy storage system thereby socializing the benefits to all ratepayers; and

WHEREAS, the total allocation for the upfront EPBB battery storage incentive within RSIP for FY19 would be \$4 million or less, anticipated to support deployment of 2.5 to 4 MW of battery storage, or roughly 570-1200 projects depending on project sizes and associated incentive levels; and

WHEREAS, pursuant to Section 16-245(d)(2) of the Connecticut General Statutes, a Joint Committee of the Energy Conservation Management Board and the Connecticut Green Bank (the “Joint Committee”) was established to “examine

opportunities to coordinate the programs and activities” contained in their respective plans (i.e., Conservation and Load Management Plan and Comprehensive Plan); and

WHEREAS, the Joint Committee has established a working group on battery storage deployment (“Working Group”) that includes DEEP, the Green Bank, Eversource, UI (Avangrid), and EEB consultants; the specific structure and incentive level of a possible EPBB ESS will be reviewed with this working group;

NOW, therefore be it:

RESOLVED, the Deployment Committee has reviewed and recommends that the Board approves of the Schedule of Incentives with the staff recommendation under Version 2 as set forth in the memo dated July 12, 2019, with the following adjustments:

- The LMI PBI incentive reduction for the ≤ 10 kW tier of the LMI PBI incentive will be reduced by 15% instead of 20% as originally proposed.
- The decrease in incentive reduction for the LMI PBI will be approximately offset (with respect to RSIP incentive expenditure) by an increase in incentive reduction to 35% for EPBB projects over 10 kW in size instead of 20% as originally proposed.
- The proposed EPBB-ESS structure and incentive level as outlined in the memo of July 12, 2019 is to be reviewed with the Working Group in conjunction with the development of other state-wide battery storage performance incentives, compensation and other policy frameworks. Informed by the Working Group, if the Green Bank and DEEP mutually agree on the need for Green Bank-delivered battery storage incentives paired with solar deployment, as well as the structure and incentive levels needed to promote uptake, a proposal will be drafted, reviewed and approved by the Green Bank Board of Directors.

5. Financing Programs – 30 minutes

a. Smart-E Loan – Health and Safety (Revised)

Resolution #3

WHEREAS, in July of 2011, the Connecticut General Assembly passed Public Act 11-80, “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 in residential projects per the definition of clean energy in CGS Section 16-245n(a);

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

WHEREAS, the Deployment Committee of the Green Bank approved of, in general, the concept laid out in a staff memorandum of May 22, 2019, with a focus on Connecticut homeowners using the HES-IE program or located in an LMI census tract; and

WHEREAS, Green Bank intends to develop and implement the Smart-E Loan program, as amended pursuant to staff recommendations as explained in the addendum to the memorandum to the Board dated July 5, 2019, to further leverage private capital and continue to offer Connecticut homeowners a financing solution;

NOW, therefore be it:

RESOLVED, that the Green Bank Deployment Committee (the "Deployment Committee") approves of the reclassification of health and safety measures - specifically, asbestos and mold remediation - as standalone measures that can be financed by the Smart-E Loan in full, up to \$25,000, via a 100-home pilot program, consistent with the memorandum submitted to the Deployment Committee dated July 5, 2019.

b. Impact Investor and Small Business Energy Advantage

Resolution #4

WHEREAS, Connecticut Green Bank ("Green Bank") staff has submitted to the Green Bank Deployment Committee ("Deployment Committee") a proposal for Green Bank or one of Green Bank's wholly-owned entities ("SPEs") to enter into an agreement with the New York Quarterly Meeting of the Society of Friends (QMSF), or an organization related to QMSF, for an impact investment of up to \$1,000,000 (the "QMSF Impact Investment") whereby the QMSF Impact Investment would be used in order to reinvest funds in other Green Bank investments, programs or its operations; and

WHEREAS, the QMSF satisfies three criteria of the Strategic Selection and Award process of Green Bank operating procedures, namely: (1) uniqueness, (2) strategic importance and (3) urgency and timeliness;

WHEREAS, along with a general repayment obligation by the Green Bank (or, if such obligation of general repayment is by a Green Bank SPE, a general repayment obligation by such SPE together with, if necessary, a guarantee of the Green Bank), QMSF would be secured by a general non-exclusive pledge of a portfolio of loans owned in part by Green Bank or its SPEs together with their related cash flows associated with the Small Business Energy Advantage financing facility; and

WHEREAS, Green Bank staff recommends that the Deployment Committee approve the proposed QMSF Impact Investment, generally in accordance with memorandum summarizing the QMSF Impact Investment and the terms of the summary term sheet, both presented to the Deployment Committee on July 12, 2019.

NOW, therefore be it:

RESOLVED, that the Deployment Committee approves Green Bank (or one of its wholly-owned SPEs on behalf of Green Bank and, if necessary, with a guarantee of the Green Bank) to enter into the QMSF Impact Investment as a strategic selection; and

RESOLVED, that the President, Chief Investment Officer and General Counsel of Green Bank, and any other duly authorized officer of Green Bank, is authorized to execute and deliver on behalf of Green Bank any of the definitive agreements related to the QMSF Impact Investment and any other agreement, contract, legal instrument or document as he or she shall deem necessary or appropriate and in the interests of Green Bank and the ratepayers in order to carry out the intent and accomplish the purpose of the foregoing resolutions.

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

c. Other News

Resolution #5

WHEREAS, the Connecticut Green Bank (“Green Bank”) has enjoyed a long and successful history of commercial-scale solar project development and financing;

WHEREAS, CEFA Holdings LLC (“Holdings”) is the Green Bank’s solar project development vehicle, and the Green Bank’s existing agreements for the sale and/or term financing of solar PPAs;

WHEREAS, the market for commercial solar PPA financing continues to evolve, as various financing providers are entering the small commercial solar financing space with the ability to provide long-term financing for projects originated by the Green Bank;

WHEREAS, the Green Bank’s Board of Directors approved funding, in a total not-to-exceed amount of \$15 million in new money, subject to budget constraints, for the continued development of commercial-scale solar PV PPA projects, to be utilized for the following purposes pursuant to market conditions and opportunities:

1. Development capital;
2. Construction financing; and
3. Financing one or more 3rd-party ownership platforms, in the form of sponsor equity and/or debt.

NOW, therefore be it:

RESOLVED, that the Board of Directors approves the sale of solar PPA projects developed by Holdings in an amount not to exceed \$2,500,000 to a project entity associated with CEI Capital Management;

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

6. Adjourn

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GREEN BANK SM

Deployment Committee Meeting

July 12, 2019

Deployment Committee

Agenda Item #1

Call to Order

Deployment Committee

Agenda Item #2

Public Comments

Deployment Committee

Agenda Item #3

Consent Agenda

Consent Agenda

Resolution 1



1. **Meeting Minutes** – approval of meeting minutes of May 29, 2019
 - **Loan Losses Below \$100,000 and No More in Aggregate than \$500,000** – report out that there were no instances in Q4 of FY 2019 and that year-end will be completed as part of the annual audit and reported to the BOD in October 2019

Deployment Committee

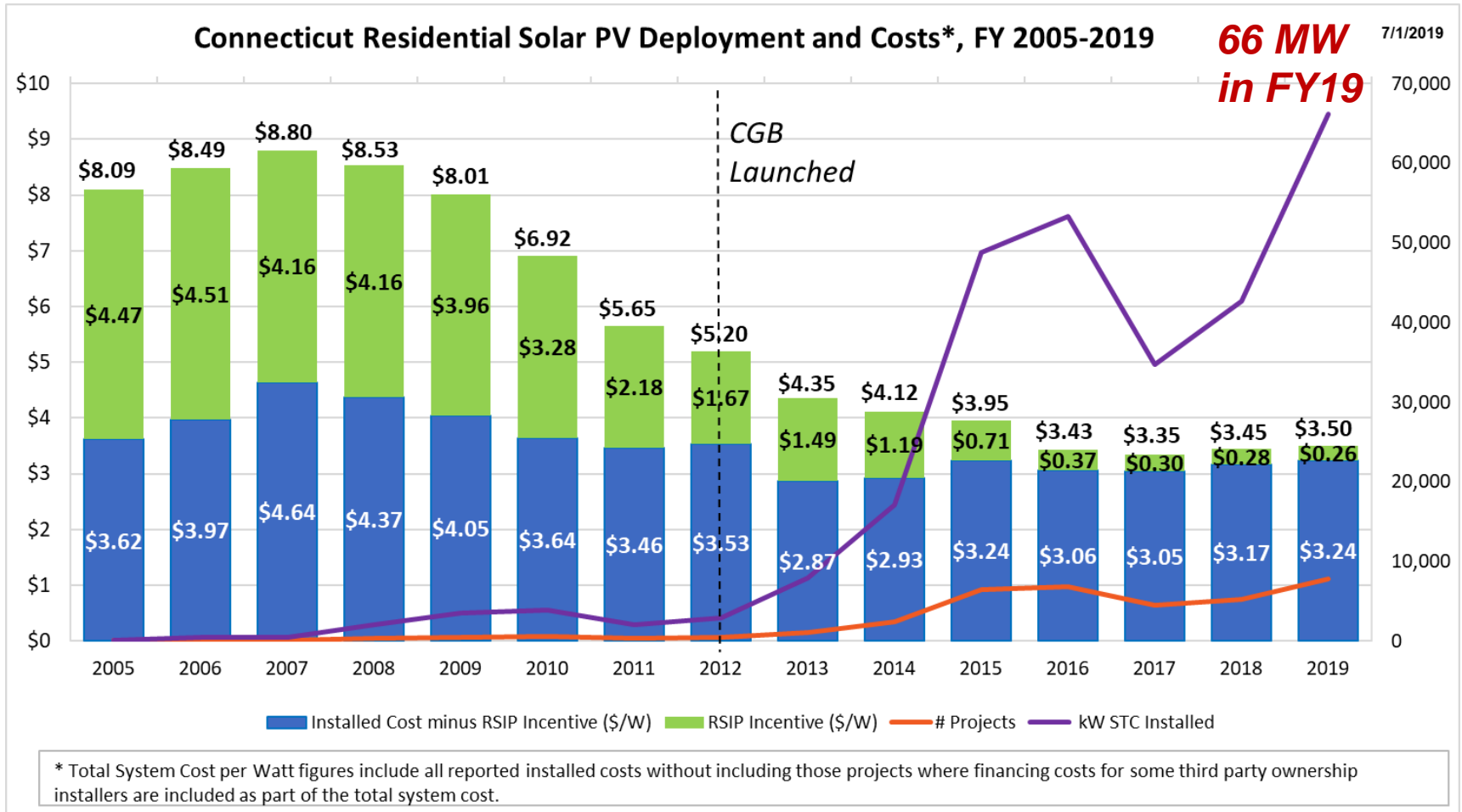
Agenda Item #4a

Incentive Programs

RSIP – Step 15

RSIP Progress by Fiscal Year

273 MW out of 350 MW



RSIP Proposal for Step 15



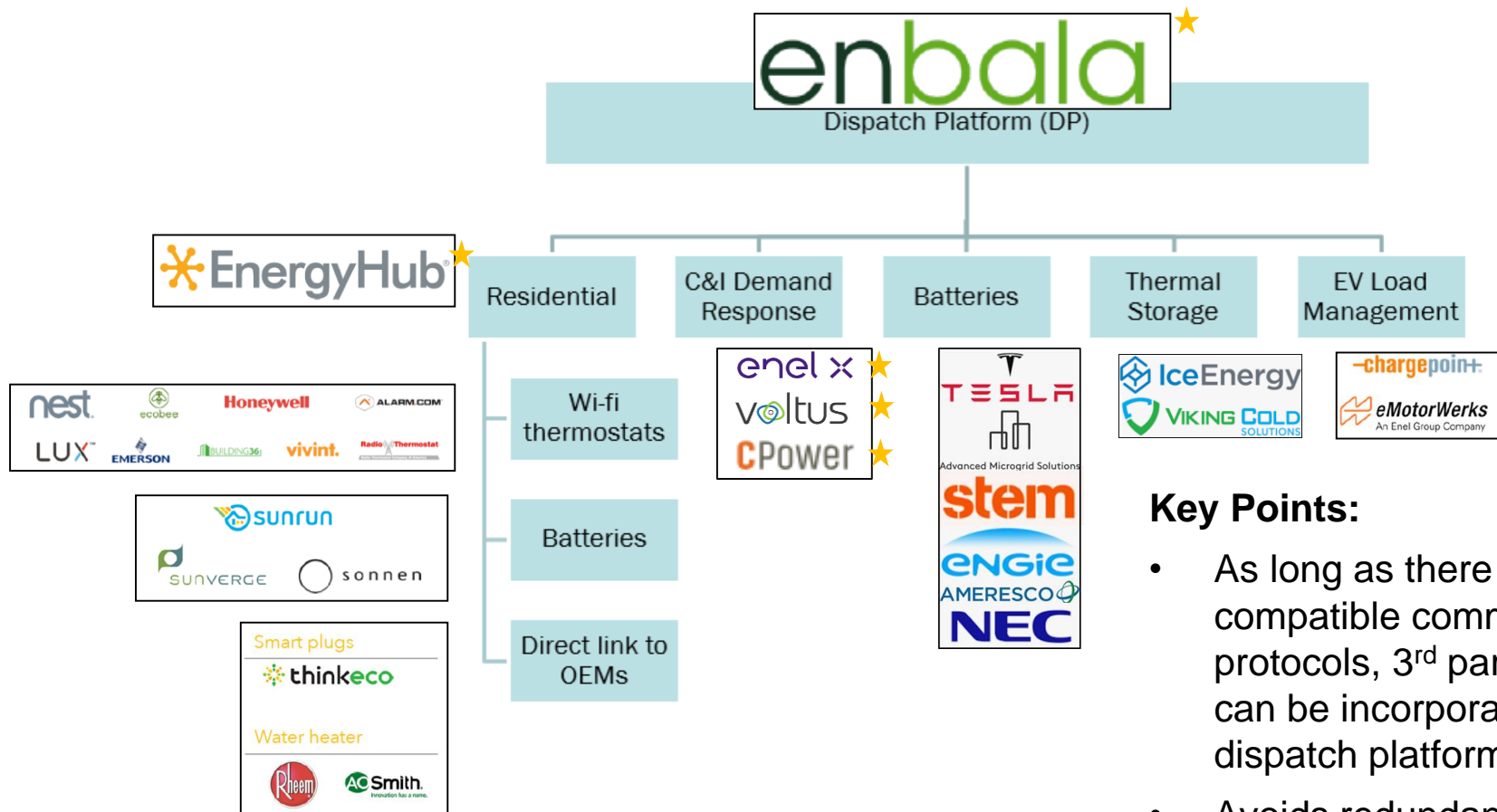
Objectives

- Ensure the sustained orderly development of the local solar PV industry by:
 - A. Achieving the 350 MW public policy target
 - B. Reducing market reliance on RSIP by continuing to decrease incentives, support “soft costs” reduction strategies, supporting consumer protection strategies, and
 - C. Supporting grid integration of battery storage into the balance of plant for a solar PV projects to realize additional benefits to customers (e.g., back-up power) as well as to all ratepayers (e.g., by dispatching battery storage to meet customer load and therefore reduce peak demand), while capitalizing on the ITC before it phases out.
 - D. Fostering the sustained, orderly development of a state-based solar industry by encouraging the deployment of battery storage, which is typically seen as the most important macro-development in the solar industry.
- Enable continued affordability and accessibility of solar PV by LMI households
- Support public policy transition from RSIP + Net Metering (i.e., through Q2 or Q3 of 2020) to Net Metering Only (Q3 or Q4 of 2020 through 2021) to Tariff (Q1 of 2022 and beyond)

Utility System Architecture

Dispatch Platform

Experience with 3rd parties informed the decision to create a framework and platform that could accommodate non-utility owned assets



Key Points:

- As long as there are compatible communication protocols, 3rd party assets can be incorporated into dispatch platform
- Avoids redundant need to procure dispatch platforms

RSIP Step 15

Proposed Schedule of Incentives

- **Version 1** – Step 15 reduced 10% for EPBB, 15% for PBI, 10% for LMI PBI from Step 14
- **Version 2** – Step 15 incentive reduced 20% for EPBB, 25% for PBI, 20% for LMI PBI, with additional up-front incentive offered for battery storage installed with solar PV [**Staff Recommendation**]

	Start Date	EPBB (\$/W)		PBI (\$/kWh)	LMI-PBI (\$/kWh)		EPBB ESS?
		≤10 kW	>10 kW, ≤20 kW	≤20 kW	≤10 kW	>10 kW, ≤20 kW	
Step 14 (Current incentive)	9/28/18	\$0.463	\$0.400	\$0.035	\$0.090	\$0.045	No
Step 15 Version 1	9/1/19	\$0.417	\$0.360	\$0.030	\$0.081	\$0.041	No
Step 15 Version 2 [Staff Recommendation]	9/1/19	\$0.370	\$0.320	\$0.026	\$0.072	\$0.036	Yes

In addition, given that the proposed LMI-PBI incentive levels are still approximately 2.7 times higher than the non-LMI PBI, the LMI market needs to be prepared for the end of RSIP. Green Bank staff will develop a strategy to reduce LMI market reliance on RSIP by reducing the LMI PBI over the next year so that the LMI market can achieve a sustained orderly transition to a post-RSIP market.

Deployment Committee

Agenda Item #5a

Financing Programs

Smart-E Loan – Health & Safety (Revised)

Smart-E Health & Safety

Revised Proposal



- Requesting reconsideration of the Deployment Committee’s decision from the May 29, 2019 meeting that required the Smart-E H&S borrower to be a HES-IE customer or live in an LMI census tract
 - Feedback from program contractors and utility program administrators was that the approved conditions would be difficult to operationalize and likely result in very limited participation

- **Revised Proposal:**
 - Launch a pilot to reclassify asbestos and mold remediation from the “other/related” energy measure category, which currently limits them to 25% of an approved loan amount, to being standalone measures that can be financed in full
 - Cap loan amount at \$25,000 to be applicable for all nine participating lenders
 - Allowed only in certain scenarios which prove a nexus to energy
 - Number of homes in pilot to be determined by Deployment Committee

Smart-E Health & Safety

Operationalizing



Achieve a nexus to energy under the following three (3) scenarios:

- **Option 1 – HES/HES-IE Channel**

- If asbestos or mold were detected via an incomplete HES assessment, the homeowner would be required to sign a commitment form (used during the Smart-E Loan's 0.99% special offer period) to complete HES/HES-IE within 90 days of loan closing.

- **Option 2 – Health & Safety Channel**

- If the homeowner sought to address asbestos or mold without needing any other immediate energy upgrades, they would be required to sign a commitment form (used during the Smart-E Loan's 0.99% special offer period) to complete HES/HES-IE within 90 days of loan closing.

- **Option 3 – Non-HES / EE Channel**

- Homeowners could bundle a second energy measure (e.g., HVAC or insulation) with their asbestos or mold remediation **or** provide proof of having completed that improvement through a cash purchase or alternate financing (e.g., CT Heat Loan)

Smart-E Health & Safety

Impact on Loan Loss Reserve



CGB reserves 2.5% of the total LLR obligation on its balance sheet, which currently averages about 8.3% of the outstanding principal balance.

100 Homes

Average Loan	\$20,000
Total Financed	\$2,000,000
Added LLR Obligation	\$166,000
Cash Reserve Impact	\$50,000

250 Homes

Average Loan	\$20,000
Total Financed	\$5,000,000
Added LLR Obligation	\$415,000
Cash Reserve Impact	\$125,000

500 Homes

Average Loan	\$20,000
Total Financed	\$10,000,000
Added LLR Obligation	\$830,000
Cash Reserve Impact	\$250,000

1,000 Homes

Average Loan	\$20,000
Total Financed	\$20,000,000
Added LLR Obligation	\$1,660,000
Cash Reserve Impact	\$500,000

Deployment Committee

Agenda Item #5b
Financing Programs
Impact Investor and
Small Business Energy Advantage (SBEA)

Impact Investor / SBEA



New York Quarterly Meeting of the Society of Friends (QMSF)

- Introduction from Inclusive Prosperity Capital
 - \$250,000 3 year PRI for IPC in documentation
- The Religious Society of Friends has had a historic commitment to social justice and charity
- Friends commitment to simplicity—to resisting materialism and consumerism—finds expression today in work on behalf of sustainability.
- This commitment to sustainability attracted QMSF to IPC and Green Bank in search of suitable impact investments.
- Green Bank has a strategic initiative to attract more impact investors to Green Bank’s activities

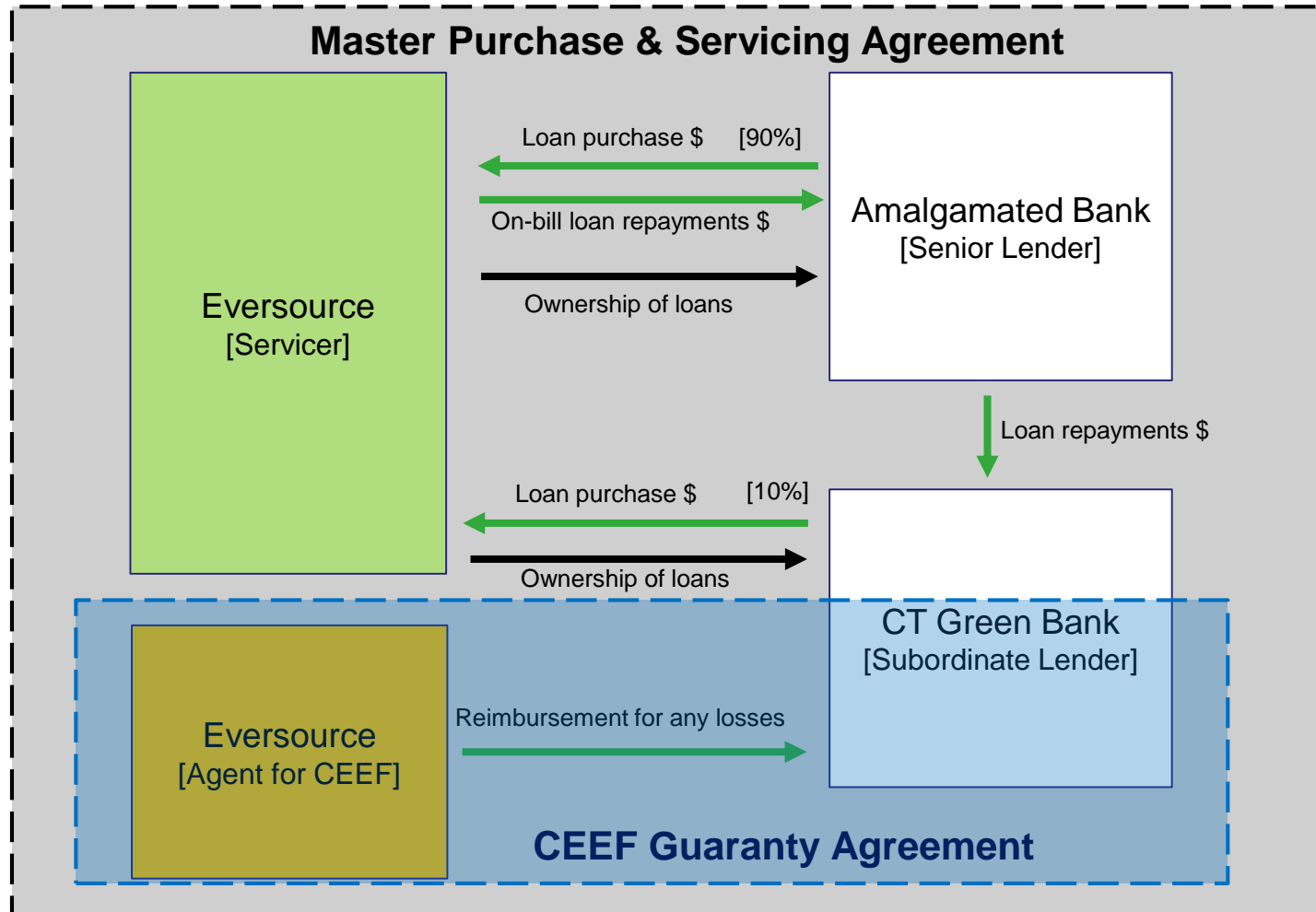
Impact Investor / SBEA (2)



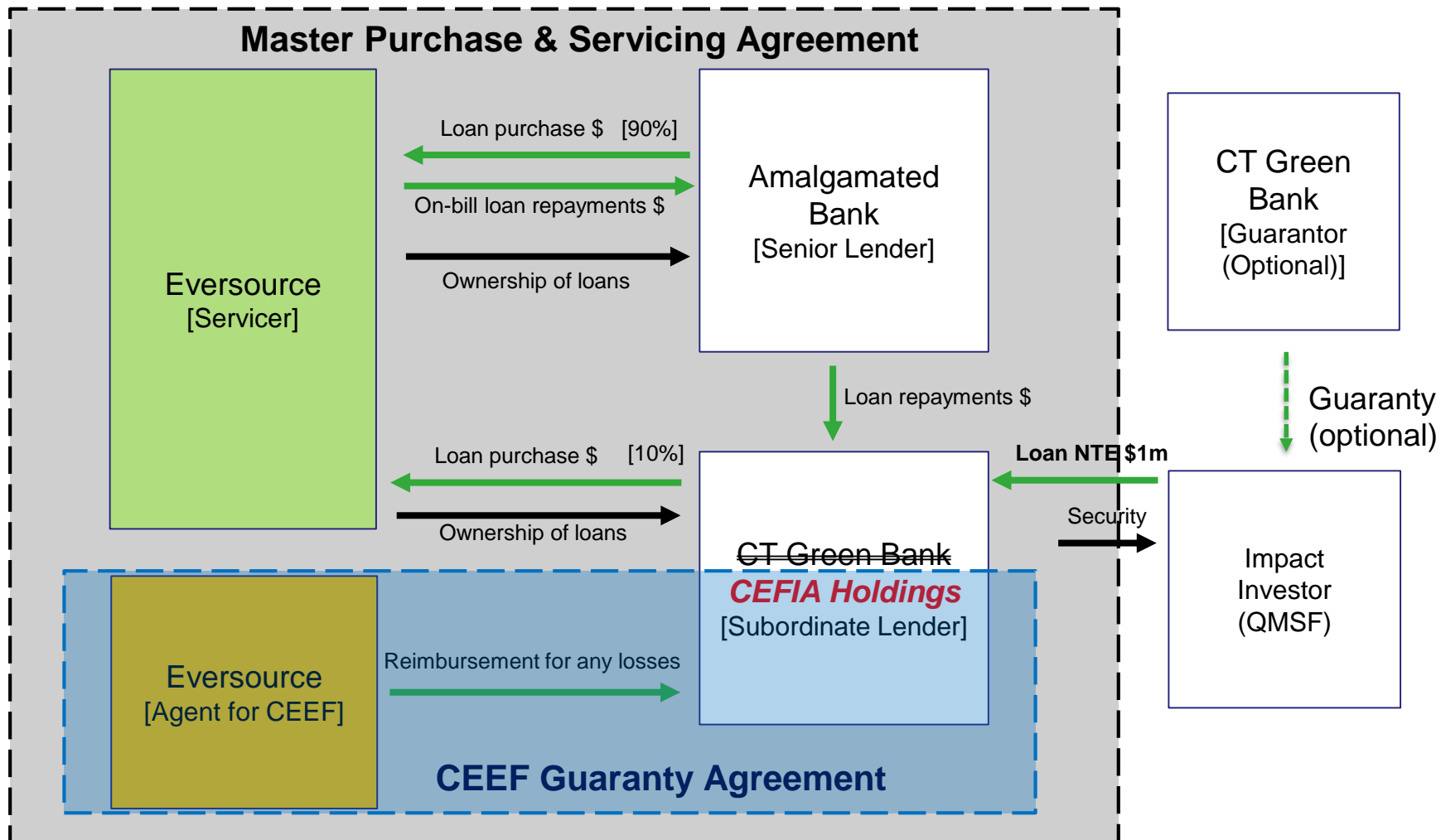
New York Quarterly Meeting of the Society of Friends (QMSF)

- Impact Investment up to \$1m (\$500,000 likely)
- “Non-exclusive” pledge of the economic interests held by Green Bank (CEFIA Holdings) in the portfolio of SBEA loans proceeds
- Optional Guaranty by CGB
- Benefit to CGB
 - Impact Effectively a loan to CGB [REDACTED]
 - Allows CGB to “test” via a short term investment how Impact Investors may respond to this and other portfolio offerings
- Maturity: Maximum 3 years (1 year with 2 automatic annual renewals (w/ annual call @ QMSF’s option upon 90-days notice)
- Strategic Selection and Award:
 - (1) uniqueness, (2) strategic importance and (3) urgency / timeliness

SBEA Loan Purchase Facility Structure Diagram



SBEA Facility w/Impact Investment Structure Diagram



Deployment Committee

Agenda Item #5c

Financing Programs

Other News

Solar PPA Sale to CEI

Solar PPA Sale to CEI

Commercial Solar PPA Program



- **CEI Capital Management** – proposed partner for asset sale; selected after discussions with three potential bidders due to favorable terms:
 - [REDACTED] development fee
 - Deployment of CGB debt [REDACTED]
 - Asset management consultancy fees for two years post-sale
- **Assets** – C-PACE secured (where available) commercial solar PPA project developed by CEFIA Holdings
- **\$2.5m sale** – request Deployment Committee to approve sale of Commercial PPA projects (value not to exceed \$2.5M)

Solar PPA Sale to CEI (2)

Commercial Solar PPA Program

About CEI

- Expert in rural business, development and financing.
- A private, nonprofit Community Development Corporation (CDC) and Community Development Financial Institution (CDFI) based in Wiscasset, Maine
- Founded in 1977 to support job-creating natural resource and small business ventures in rural regions of Maine, its primary market, and areas of northern New England and upstate New York.
- With its New Markets Tax Credit Program, venture capital funds, and 7(a) lending license, CEI is able to invest in projects throughout rural America.

We are building an economy that works for everyone.



Good Jobs

Shared Prosperity

Environmentally Sustainable Enterprises

CEI integrates financing, business and industry expertise, and policy solutions to help grow good jobs, environmentally sustainable enterprises, and shared prosperity in Maine and other rural regions. CEI envisions a world in which communities are economically and environmentally healthy, enabling all people, especially those with low incomes, to reach their full potential.

[VIEW OUR STRATEGIC PLAN](#)

Deployment Committee

Agenda Item #6
Adjourn



**DEPLOYMENT COMMITTEE
OF THE CONNECTICUT GREEN BANK**

845 Brook Street
Rocky Hill, CT 06067

Wednesday, May 29, 2019
2:00 – 3:00 p.m.

The quarterly meeting of the Deployment Committee of the Connecticut Green Bank (the “Green Bank”) was held on May 29, 2019, at the office of the Connecticut Green Bank, 845 Brook Street, Rocky Hill, CT, in the Colonel Albert Pope Board Room.

1. Call to Order

Commissioner Mary Sotos, as Chair of the Deployment Committee, called the meeting to order at 2:01pm

Committee members participating: Bettina Bronisz (by phone), Matt Ranelli (by phone), Mary Sotos (by phone)

Members absent:

Others attending: Joe Buonannata and Kerry O’Neil from IPC

Staff participating: Mackey Dykes, Brian Farnen (by phone), Bryan Garcia, Alex Kovtunenکو, Mike Yu, Nick Zuma

2. Public Comments

There were no public comments.

3. Consent Agenda

- a. Approve Meeting Minutes for special meeting on March 27, 2019

Resolution #1

Motion to approve the meeting minutes of the Deployment Committee for March 27, 2019.

Upon a motion made by Bettina Bronisz and seconded by Matt Ranelli, the Committee

Subject to changes

unanimously voted to approve the Consent Agenda; Meeting Minutes from the March 27, 2019 meeting.

- b. Approval of Loan Losses Below \$100,000 and No More in Aggregate than \$500,000 – Memo (March 27, 2019)

Bryan Garcia reported through Q3 the Loan Loss performance.

4. Investment Business

- a. Smart-E Loan – Health & Safety

Mr. Garcia began this presentation with a proposal for this program; reclassifying asbestos and mold remediation from the “other/related” energy measure category, which currently limits them [banks and credit unions] to 25% of an approved loan amount, to be stand-alone measures that can be financed in full. This would provide low interest loans to organizations/homeowners for, not only the asbestos and mold remediation, but also; insulation, windows, solar PV, heating & cooling improvements.

The reasoning for this effort is because program contractors are often unable to complete energy assessments and make recommendations for more comprehensive energy improvements due to the presence of health and safety barriers, particularly in Low-to-Moderate Income (“LMI”) households. This request has the support of the utility program administrators of the Energy Efficiency Fund’s Home Energy Solutions program, the Joint Committee of the Connecticut Green Bank (“Green Bank”) and the Energy Efficiency Fund Board.

Contractors in the field may not be allowed to continue a field home energy assessment or audit once they encounter health or safety issues and LMI households likely have higher instances of those issues. All want to see these health & safety issues broken down in order to proceed with energy improvements—especially with asbestos or mold for which home energy solutions cannot proceed.

As Mr. Garcia pointed out, the health & safety barriers are holding up other upgrades like insulation and new window installations. Therefore, the goal is for homeowners to get a loan from Smart-E to fix the problems and commit to an energy efficiency audit right after the loan is approved if not already part of the plan. Then homeowners combine the fixes together and obtain other finances to cover the home efficiency expenses.

Ms. O’Neill of Inclusive Prosperity Capital, Inc. (“IPC”) stated there is a \$25,000 loan proposal which may fit the need for most of these fixes. IPC will continue to monitor these loans and report statistics quarterly to the Green Bank. Ms. O’Neill also stated that utilities have been “talking” about the need for this type of loan program for years and see high deferral rates for Home Energy Solutions (“HES”)/HES-IE (which would be lower with this program) due to the presence of health and safety issues. There is a regulatory limitation on energy efficiency funds that prevents these funds from being used for health & safety measures within the HES/HES-IE program. Staff are confident that we can improve this situation with deferrals by offering the proposed expanded Smart-E Loan for health and safety measures. Ms. O’Neill

shared that the platform IPC is creating with Hewlett funding here in CT is on track, they are also working on developing a similar loan program with counterparts in Colorado.

Ms. Sotos asked about barrier categories and related costs. Ms. O'Neill stated the utilities have the best information/records. Ms. O'Neill went on to state that there is a wide swing on costs and that there is an effort to get a handle on the variable expenses to determine how much funding is needed for each health & safety issue statewide. For instance, mold eradication can be costly depending on how prevalent in a household or building. Discussion continued with Committee members considering whether there is a removal or fix to these health & safety issues, do we know the median costs (only from a utility survey) and Mr. Ranelli asked if these Smart-E loans should be limited to LMI? Ms. O'Neill stated more data is needed to address Ms. Sotos' question.

Ms. O'Neill went on to share that these health & safety issue projects are only coming to the IPC/Green Bank attention through contractor channels working in the HES/HES-IE programs but there is not a single contractor marketing Smart-E loans – there are hundreds. She went on to state that the utilities advise this program should align with the contractors' business models working in the HES/HES-IE programs; they further advise that without a program such as is proposed, health & safety issues may not be removed if not obtaining financing such as is proposed under this expanded Smart-E model.

Mr. Ranelli stated he is sold on the overall process but asked if it is “our” role to give loans for these types of issues? Ms. O'Neill addressed these questions by stating that IPC tries to be efficient with Smart-E loan approvals, requiring minimal process changes for contractors and lenders. There is a lot of energy savings with these types of deferred efficiency projects which may drive interest. With lending partners, there have been calculated decisions to widen the underwriting box (580 on credit score), issue 15-to-20-year loans with partner banks and credit unions and continue to do loans with IPC support. This is how Green Bank “spent” the good will/good loan performance that has been seen in the program to date.

Mr. Ranelli asked “what about limiting to LMI” rather than to homeowners that can fund on their own? Ms. O'Neill stated they tried not to do anything with the Smart-E program model that requires special treatment/processes for certain populations. Joe Buonannata added that they could compile a quarterly report from their contractors and lending partners and report back to the committee their findings, based on running the proposed program. Mr. Garcia suggested that this be established as a ‘pilot’ program and then complete a survey of the different health & safety issues with the median repair funding for the Committee to review. Mr. Ranelli reiterated his opinion that the Smart-E loans be limited to LMI households. Ms. O'Neill stated that would be difficult as there is no income screen for approval but to adopt Joe Buonannata's suggestion that team track statistics after the fact—possibly through the HES/HES-IE channel—for future review. Mr. Ranelli feels strongly about LMI as other (non-LMI) borrowers would have more opportunity for funding. Ms. O'Neill also confirmed that the LMI census tract is one potential avenue to investigate and may also be used as a resource.

A scenario – HES or HES-IE assessment completed but held up due to a health and/or safety issue. Homeowner then goes to the lender. Per Ms. O'Neill, the lender process does not

Subject to changes

include income questions ('pilot' process through LMI census tract). Joe Buonannata asked if this is okay as a 'pilot' program? Mr. Garcia asked Mr. Ranelli if he approves of this census tract approach? Mr. Ranelli okay with that as they may get data sooner to review. Ms. Bronisz and Ms. Sotos also approve the census tract as the 'pilot' program. Ms. Sotos shared that mapping out these types of LMI loans would be helped by this kind of program to assist with health & safety issues that are not hit by government or other grants, etc. and understanding the market need at this time.

Ms. Sotos stated DSS has given part of budget to DEEP to assist in these endeavors as well, for the federal weatherization program. Mr. Ranelli asked the 'Amendment' or Resolution be updated to include the approval of the 'pilot' program. Mr. Ranelli recommended changes to the Amendment and does not want to put the brakes on at all.

Ms. O'Nei;l stated she does not want to cause friction between contractors and homeowners at all, to separate information from lenders and no income from lenders under Smart-E as this information may be obtained on the front end (HES EE).

Resolution #2

WHEREAS, in July of 2011, the Connecticut General Assembly passed Public Act 11-80, "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 in residential projects per the definition of clean energy in CGS Section 16-245n(a);

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

WHEREAS, Green Bank intends to develop and implement the Smart-E Loan program, as amended pursuant to staff recommendations as explained in the memorandum to the Board dated May 22, 2019, to further leverage private capital and continue to offer Connecticut homeowners a financing solution;

NOW, therefore be it:

RESOLVED, that the Green Bank Deployment Committee (the "Deployment Committee") approves of a pilot program that includes the reclassification of health and safety measures - specifically, asbestos and mold remediation - as standalone measures that can be financed by the Smart-E Loan in full, up to \$25,000 for Option 1 – HES Channel for income eligible only and Option 2 and Option 3 provided such improvement is in an Low to Moderate Income Census Tract, and otherwise consistent with the memorandum submitted to the Deployment Committee dated May 22, 2019.

Upon a motion made by Matt Ranelli and seconded by Bettina Bronisz, (with two modifications), the Committee voted to unanimously approve Resolution #2.

b. C-PACE Transaction – Newington

Subject to changes

Mr. Dykes presented a new project for review at 385 Stamm Road, Newington, CT. The terms of the deal are good with a beneficial ZREC and the building owner has a large portfolio with additional properties and opportunities for more projects. Mr. Dykes reviewed more details of the deal and asked if there were any questions. With no questions from attendees, Ms. Sotos presented Resolution #3 for a vote.

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 \$581,625 construction and (potentially) term loan under the C-PACE program to RPG Stamm, LLC., the building owner of 385 Stamm Road, Newington, 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 Committee dated May 23, 2019, 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 Deployment Committee;

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.

Upon a motion made by Bettina Bronisz and seconded by Matt Ranelli, the Committee voted to unanimously approve Resolution #3.

5. Other Business

a. Bond Strategy and Bond Authorization Resolution

Mr. Garcia began by acknowledging all involved on the bond team and their contributions to this endeavor including; financial advisor Bob Lamb at Lamont Financial (helping to determine the right bond structure for the Green Bank), legal advisor Bruce Chudwick at Shipman & Goodwin, Board Member advisor Bettina Bronisz from the Office of the Treasurer (who brings her strong background and experience of bond issuance) and the Green Bank team of Mackey Dykes, Brian Farnen, Bryan Garcia as Facilitator, Bert Hunter as Lead and Eric Shrago. In development for the Bond Team will be Underwriter(s), a Trustee, Rating Agencies and Green Bond Certifiers. Bond Team has been meeting once a month to work on and expand the team to develop bond products and strategy.

Master Bond Indenture goals include: i) scaling-up the investment; expand deployment of clean energy project finance and infrastructure development to achieve greater societal benefits, deploy funding beyond SBC and existing revenue sources, and citizen engagement as retail purchasers and; ii) lower the cost of capital; raise lower cost capital from institutional investors and “friends and family” through “green bonds” for clean energy and infrastructure investments.

Mr. Garcia reviewed the 2019 timeline of the Bond issuance with the plan being the Board adopting an appropriation and bond authorization resolution in September, presentation of the Master Bond Indenture to the Board in October, presentation of all the documents and instruments necessary based on the Master Bond Indenture for the Board’s review in November and then a public hearing (in accordance with IRS) and approval from Board and subsequent bond issuance in December.

Funds are necessary to cover the administrative costs (financial advisor and legal) of this bond work but opens a new revenue stream. Regarding an Inducement Resolution? May not be needed if project comes after funds have been raised through bond issuance. This information is a heads up and more information will follow. A draft Resolution has been provided for Committee members review.

Mr. Garcia pointed out that certain C-PACE projects could be compiled together as a single bond issuance to raise funds.

Ms. Bronisz has done ‘bonding’ her whole career and is excited for this opportunity and potential success. She stated, “This will be a home-run!” Mr. Ranelli shares Ms. Bronisz’ excitement for this direction and Ms. Sotos voiced her eagerness and is “excited” to see these opportunities to funding which are new to her.

Ms. Sotos asked if Bond Team is looking for specific feedback regarding the sample Resolution? Mr. Garcia stated this is just a sample Resolution, but any feedback would be welcome.

Subject to changes

6. Adjourn

Upon a motion made by Bettina Bronisz and seconded by Matt Ranelli the Committee unanimously agreed to adjourn meeting at 3:02 p.m.

Respectfully submitted,

Deputy Commissioner Mary Sotos, Chair

DRAFT



Memo

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

From: Bryan Garcia (President and CEO), Jane Murphy (VP of Finance), Eric Shrago (Managing Director of Operations)

Date: July 5, 2019

Re: Staff Loan Loss Approval Policy for Transactions Under \$100,000 – Q4 FY 2019 Report

At the June 13, 2018 Board of Directors (BOD) meeting of the Connecticut Green Bank (“Green Bank”) it was resolved that the BOD approves the authorization of Green Bank staff to evaluate and approve loan loss restructurings or write-offs for transactions less than \$100,000 which are pursuant to an established formal approval process in an aggregate amount not to exceed \$500,000 from the date of the last Deployment Committee meeting. This memo provides an update on loan losses below \$100,000 that were evaluated and approved in Q4 of FY 2019.

Within the FY 2019 budget, a “Provision for Loan Loss” of \$2,923,674 was included as a “Non-Operating Expense” item. This memo will track loan losses against this FY 2019 budget expense.

During this period, 0 projects were evaluated and approved for loan loss restructurings and write-offs in an aggregate amount of approximately \$0. There was one project in FY 2019 Q2 where the Deployment Committee forgave \$19,066 in accrued construction interest – reported out to the Deployment Committee on March 27, 2019.

An analysis of the loan loss reserve is done every year end as part of the annual audit. The performance of each asset is analyzed and the loan loss reserve is adjusted as necessary. For FY 2019 this analysis will occur in early August and the results will be reported to the BOD in October.

If members of the Board would be interested in the internal documentation of the review and approval process Green Bank staff and officers go through, please let us know and we would be happy to provide.

Memo

To: Deployment Committee and Board of Directors of the Connecticut Green Bank

From: Bryan Garcia and Selya Price

Date: July 12, 2019

Re: Residential Solar Investment Program – Step 15 Recommendation

Background

The Connecticut Green Bank (Green Bank) Residential Solar Investment Program (RSIP) was legislatively enabled through Section 106 of Public Act (PA) 11-80¹ and most recently updated by PA 15-194², PA 16-212³ and PA 19-35⁴, amending Connecticut General Statute (CGS) at Section 16-245ff⁵. PA 19-35 updated CGS Section 16-245ff to require that not more than 350 MW (updated from 300 MW) of new residential solar PV be deployed in Connecticut on or before December 31, 2022:

- The Connecticut Green Bank, established pursuant to section 16-245n, shall structure and implement **a residential solar investment program established pursuant to this section that shall support the deployment of not more than [three hundred] three hundred fifty megawatts of new residential solar photovoltaic installations located in this state on or before (1) December 31, 2022, or (2) the deployment of [three hundred] three hundred fifty megawatts of residential solar photovoltaic installation, in the aggregate, whichever occurs sooner...** The procurement and cost of such program shall be determined by the bank in accordance with this section.

As of July 1, 2019, approximately 273 MW or 34,500 projects have been approved through RSIP, with nearly 235 MW or approximately 30,000 projects having been completed.

¹ PA 11-80: <https://www.cga.ct.gov/2011/ACT/Pa/pdf/2011PA-00080-R00SB-01243-PA.pdf>, “An Act Concerning the Establishment of the Department of Energy and Environmental Protection and Planning for Connecticut’s Energy Future.”

² PA 15-194: <https://www.cga.ct.gov/2015/act/pa/pdf/2015PA-00194-R00HB-06838-PA.pdf>, “An Act Concerning the Encouragement of Local Economic Development and Access to Residential Renewable Energy.”

³ PA 16-212: <https://www.cga.ct.gov/2016/act/pa/pdf/2016PA-00212-R00SB-00366-PA.pdf>, “An Act Concerning Administration of the Connecticut Green Bank, the Priority of the Benefit Assessments Lien under the Green Bank’s Commercial Sustainable Energy Program and the Green Bank’s Solar Home Renewable Energy Credit Program.”

⁴ PA 19-35: <https://www.cga.ct.gov/2019/ACT/pa/pdf/2019PA-00035-R00HB-05002-PA.pdf>, “An Act Concerning a Green Economy and Environmental Protection.”

⁵ https://www.cga.ct.gov/current/pub/chap_283.htm#sec_16-245ff (Residential solar investment program)

Other key provisions of PA 19-35 that impact the Connecticut residential solar PV market, and RSIP specifically, include:

- Amendments to CGS Section 16-245gg⁶ that extend to December 31, 2022 or deployment of 350 MW the ability of the Green Bank to create and sell to the electric distribution companies (EDCs) solar home renewable energy credits (SHRECs) generated by RSIP projects approved on or after January 1, 2015
- Net metering extended through December 31, 2021, and in effect through December 31, 2041 for grandfathered systems through the RSIP
- Monthly netting option added to residential tariff provided in PA 18-50, Section 7
- Value of Distributed Generation Study to be conducted by DEEP and PURA by July 2020

Key RSIP implementation requirements as stipulated in CGS Section 16-245ff include:

- Offer direct financial incentives, in the form of a performance-based incentive (PBI) or expected performance-based buydown (EPBB)⁷, for the purchase or lease of qualifying residential solar photovoltaic systems or power purchase agreement from such systems
- The bank shall consider willingness to pay studies and verified solar photovoltaic system characteristics, such as operational efficiency, size, location, shading and orientation, when determining the type and amount of incentive
- Any such direct financial incentives shall only apply to the first twenty kilowatts of direct current of the qualifying residential solar photovoltaic system
- Provide for a series of solar capacity blocks the combined total of which shall be a maximum of three hundred fifty megawatts and projected incentive levels for each such block
- Provide incentives that are sufficient to meet reasonable payback expectations of the residential consumer and provide such consumer with a competitive electricity price, taking into consideration the estimated cost of residential solar installations, the value of the energy offset by the system, the cost of financing the system, and the availability and estimated value of other incentives, including, but not limited to, federal and state tax incentives and revenues from the sale of solar home renewable energy credits
- Provide incentives that decline over time and will foster the sustained, orderly development of a state-based solar industry
- Provide comparable economic incentives for the purchase or lease of qualifying residential solar photovoltaic systems or power purchase agreements from such systems
- Nothing in this subsection shall restrict the Green Bank from modifying the approved incentive schedule to account for changes in federal or state law or regulation or developments in the solar market when such changes would affect the expected return on investment for a typical residential solar photovoltaic system by ten per cent or more. Any such modification shall be subject to review and approval by the Department (i.e., DEEP)
- The Green Bank shall establish and periodically update program guidelines, including, but not limited to, requirements for systems and program participants related to: (1) Eligibility criteria; (2) standards for deployment of energy efficient equipment or building practices as

⁶ https://www.cga.ct.gov/current/pub/chap_283.htm#sec_16-245gg (Master purchase agreement for solar home renewable energy credits)

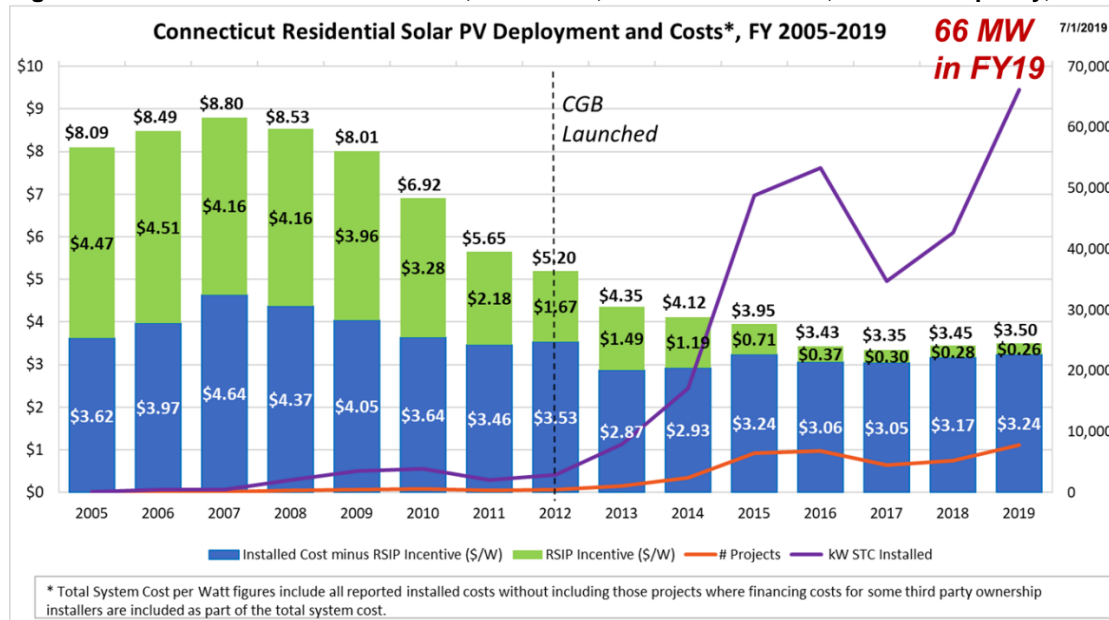
⁷ Expected Performance Based Buydowns (EPBBs) are one-time, upfront rebates provided for homeowner-owned projects and Performance Based Incentives (PBIs) are incentives provided on a per kWh basis, quarterly over six years for electricity produced through leases and power purchase agreements (i.e., third party owned projects). While the EPBB and PBI are paid over different time periods, they are, as required by statute, designed to be economically comparable on a net present value basis.

a condition for receiving incentive funding; (3) procedures to provide reasonable assurance that such reservations are made and incentives are paid out only to qualifying residential solar photovoltaic systems demonstrating a high likelihood of being installed and operated as indicated in application materials; and (4) reasonable protocols for the measurement and verification of energy production.

To date, through the RSIP, nearly 273 MW have been approved and 235 MW completed, or approximately 78% approved and 67% completed toward the updated 350 MW public policy target. Approved projects since 2012 to date are 27% EPBB and 73% PBI. Approved projects in FY19 are 23% EPBB and 77% PBI.

Figure 1 provides historical perspective on Connecticut’s residential solar PV market from fiscal year (FY) 2005 through FY 2019, based on projects incentivized through RSIP from FY 2012 through FY 2019 and before that through the Connecticut Clean Energy Fund (CCEF), the Green Bank’s predecessor organization. The average RSIP incentive⁸ was reduced steeply as shown by the upper/green portion of the bars in the chart, while the average installed cost minus the RSIP incentive shown in the lower/blue portion of the bars has stayed roughly stable, between \$3.00-3.25/W. Comparing FY 2005 to FY 2019, the average installed cost decreased 57% from \$8.09/W to \$3.50/W and the average RSIP incentive decreased 94% from \$4.47/W to \$0.26/W, while deployment increased over 50,000% from 122 kW in FY 2005 to 66 MW in FY 2019. Incentives were reduced most steeply with the inception of the Green Bank in FY 2012, 84% from \$1.67/W in FY 2012 to \$0.26/W in FY 2019 (as compared to 51% from FY 2005 to FY 2011). Additionally, since FY 2012, installed costs decreased 33% from \$5.20/W to \$3.50/W and deployment grew over 2200% from 2.8 MW in FY 2012 to 66 MW in FY 2019.

Figure 1. RSIP Historical Installed Costs, Incentives, Net Customer Cost, Installed Capacity, FY 2005-2019



RSIP Step 15 is intended to be the final incentive step for RSIP, up to the 350 MW target, barring unforeseen events that could arise and necessitate returning to the Board.

⁸ The incentive levels shown in Figure 1 are averages based on incentives calculated for RSIP projects in PowerClerk that reflect system and design characteristics (e.g., equipment specifics, tilt, azimuth, shading).

In developing a recommendation for RSIP Step 15 incentive, the Green Bank observed that while installed costs increased slightly since FY17, incentives decreased slightly, net customer costs increased slightly from \$3.05/W to \$3.24/W (represented by the lower/blue bars in Figure 1), and deployment levels remained strong and increased since FY17, reaching the highest annual deployment level to date of 66 MW in FY19. A lower incentive level for Step 15 as compared to Step 14 that still maintains a net customer cost in the range of \$3.00-\$3.25/W is anticipated to continue supporting 50-60 MW of RSIP deployment in FY20.

Objectives

The broad objectives of RSIP Step 15 are:

1. Ensure the sustained orderly development of the local solar PV industry by:
 - Achieving the 350 MW public policy target
 - Reducing market reliance on RSIP by continuing to decrease incentives, support “soft costs” reduction strategies, supporting consumer protection strategies, and
 - Supporting grid integration of battery storage into the balance of plant for a solar PV projects to realize additional benefits to customers (e.g., back-up power) as well as to all ratepayers (e.g., by dispatching battery storage to meet customer load and therefore reduce peak demand), while capitalizing on the ITC before it phases out.
 - Fostering the sustained, orderly development of a state-based solar industry by encouraging the deployment of battery storage, which is typically seen as the most important macro-development in the solar industry.
2. Enable continued affordability and accessibility of solar PV by LMI households
3. Support the public policy transition from RSIP plus net metering (through Q2 or Q3 of CY 2020) to net metering only (Q3 or Q4 of CY 2020 through CY 2021) to a tariff-based compensation structure (Q1 of 2022 and beyond).

Historical RSIP Steps 1-14 Incentives and Overview of Proposed Step 15 Incentive

Table 1 below documents historical RSIP incentive levels from Step 1 in 2012 through Step 14 in 2019, as well as two proposed incentive options for Step 15, at levels reduced from the Step 14 incentive:

- **Version 1** – Step 15 incentive reduced 10% for EPBB, 15% for PBI, 10% for LMI PBI
- **Version 2** – Step 15 incentive reduced 20% for EPBB, 25% for PBI, 20% for LMI PBI, with an additional up-front incentive offered for battery storage installed with solar PV
[Staff Recommendation]

In addition, given that the proposed LMI-PBI incentive levels are still approximately 2.7 times higher than the non-LMI PBI, the LMI market needs to be prepared for the end of RSIP. Green Bank staff will develop a strategy to reduce LMI market reliance on RSIP by reducing the LMI PBI over the next year so that the LMI market can achieve a sustained orderly transition to a post-RSIP market.

Table 1. RSIP Historical Incentive and Deployment Levels by Step and Incentive Type (EPBB, PBI, LMI PBI, and EPBB ESS), as of July 1, 2019

RSIP Incentive Step	Start Date	EPBB (\$/W)			PBI (\$/kWh)		LMI PBI (\$/kWh)		PV Installed and Approved		EPBB ESS?	
	Start Date	≤5 kW	5 to 10 kW	>10kW	Start Date	≤10 kW	>10 kW	≤10 kW	>10 kW	Capacity (kW)		# Projects
1	3/2/2012	\$2.450	\$1.250	\$0.000	3/2/2012	\$0.300	\$0.000	-	-	1,381	206	
2	5/18/2012	\$2.275	\$1.075	\$0.000	5/18/2012	\$0.300	\$0.000	-	-	5,992	842	
3	1/4/2013	\$1.750	\$0.550	\$0.000	4/1/2013	\$0.225	\$0.000	-	-	13,100	1,838	
4	1/6/2014	\$1.250	\$0.750	\$0.000	1/6/2014	\$0.180	\$0.000	-	-	19,282	2,591	
5	9/1/2014	\$0.800	\$0.400	\$0.000	9/1/2014	\$0.125	\$0.060	-	-	13,382	1,745	
6	1/1/2015	\$0.675	\$0.400	\$0.000	1/1/2015	\$0.080	\$0.060	-	-	12,228	1,574	
7	3/11/2015	\$0.540	\$0.400	\$0.000	3/11/2015	\$0.064	\$0.060	-	-	19,077	2,559	
8	8/8/2015	\$0.540	\$0.400	\$0.000	8/8/2015	\$0.054	\$0.060	\$0.110	\$0.055	27,138	3,426	
9	2/1/2016	\$0.513	\$0.400	\$0.000	2/1/2016	\$0.046	\$0.060	\$0.110	\$0.055	26,139	3,279	
10	9/1/2016	\$0.487	\$0.400	\$0.000	9/1/2016	\$0.039	\$0.060	\$0.110	\$0.055	30,040	3,899	
11	8/15/2017	\$0.487	\$0.400	\$0.000	8/15/2017	\$0.039	\$0.060	\$0.110	\$0.055	18,187	2,212	
12	1/15/2018	\$0.463	\$0.400	\$0.000	1/15/2018	\$0.035	\$0.060	\$0.100	\$0.050	16,371	2,024	
13	6/1/2018	\$0.463	\$0.400	\$0.000	6/1/2018	\$0.035	\$0.060	\$0.090	\$0.045	19,349	2,318	
14	9/24/2018	\$0.463	\$0.400	\$0.000	9/24/2018	\$0.035	\$0.060	\$0.090	\$0.045	52,830	6,205	
15 v.1	9/1/2019	\$0.417	\$0.360	\$0.000	9/1/2019	\$0.030	\$0.060	\$0.081	\$0.041	n/a	n/a	No
15 v.2	9/1/2019	\$0.370	\$0.320	\$0.000	9/1/2019	\$0.026	\$0.060	\$0.072	\$0.036	n/a	n/a	Yes
Total										272,789	34,502	

The battery storage incentive included in Version 2 is indicated in Table 1 as “EPBB Energy Storage System (ESS)” and is designed as an additional upfront incentive for projects incorporating battery storage as part of the balance of plant of the solar PV system to increase the value of the system to the end user (i.e., back-up emergency power), as well as Connecticut ratepayers (i.e., reducing demand, specifically peak demand, by using stored solar power through the battery onsite). Funds for the EPBB ESS would derive from approximately \$4 million in incentive savings resulting from reducing Step 14 to the Step 15 Version 2 incentive levels and would support up to 4 MW of battery storage.

Proposed Step 15 Versions 1 and 2 would result in a net customer cost of approximately \$3.30/W, just slightly higher than the net customer cost ranging from \$3.00-3.25/W in recent fiscal years. Given increasing deployment levels since FY17 and in particular FY19, the reduced incentive level is still anticipated to support deployment levels in the residential solar PV market in the range of 50-60 MW, with the public policy objective of “sustained orderly development” to maintain at least this deployment level after RSIP is phased out.

RSIP is estimated to reach 350 MW in the summer or fall of 2020, after which time only net metering (and the federal ITC) would be available to support the solar PV market through December 31, 2021. Beginning January 1, 2022 (or potentially earlier if there is an overlap period with net metering through an interim tariff), production based (per kWh) tariff compensation is to be offered to solar PV customers, based on the requirements stipulated by Section 7 in PA 18-50, amended by PA 19-35, and as developed and determined by PURA and stakeholders through continued docket processes⁹. The proposed Step 15 incentive levels are anticipated to allow for a sustained transition from RSIP to a net metering

⁹ Green Bank participated in multiple dockets in FY19 to provide input into the development of the Section 7 tariff compensation structure put forth in PA 18-50.

plus ITC supported market to a market compensated via a tariff (that could also factor in ITC reductions).¹⁰

RSIP Incentive as Compared to Class I REC Prices and ZREC Incentives

Step 14 and proposed Step 15 incentive levels, when converted to estimated 15-year equivalents, compare favorably to Class I REC market spot prices and recent ZREC prices.

Table 2. RSIP Incentive at Equivalent 15-Year Price (\$/REC)

RSIP Step	ZREC equivalent prices
Step 14	\$22.2
Step 15 – V.1	\$17.8
Step 15 – V.2	\$15.8

RSIP incentives at equivalent 15-year prices for Steps 14 and 15 are between \$15-22/MWh as shown in Table 2, in comparison to the spot market REC price for CT Class I resources ranging from \$20-22/REC in July 2019 and to ZREC prices for commercial projects ranging from \$100/REC for small (i.e., less than 100 kW), \$64-116/REC for medium (i.e., 100-250 kW), and \$39-75/REC for large ZRECs (i.e., 250-1,000 kW)¹¹, demonstrating that the Green Bank is successfully transitioning the residential solar PV market reliance away from the RSIP incentive.

Deployment Progress by Area Median Income

The RSIP continues to be successful in reaching low-and-moderate income (LMI) households. Adoption has largely been driven by the Green Bank’s Solar for All partnership with PosiGen and complemented by efforts supported by a Department of Energy grant, “State Strategies for Solar Adoption in Low-and-Moderate Income Communities.” Of the 34,500 projects approved under RSIP, the Green Bank has in recent years made progress with respect to increased distribution of RSIP projects in LMI census tracts. Figure 2 shows approved RSIP projects by FY and Metropolitan Statistical Area (MSA) Area Median Income (AMI) Band. Nearly 50% of RSIP projects in FY17-19 were deployed in low-to-moderate income (LMI) census tracts (AMI<100%), having increased from just over 20% in FY12.

¹⁰ The federal ITC is scheduled to step down from 30% through calendar year 2019 to 26% in 2020, 22% in 2021, and starting in 2022, 10% for third party owned projects and 0% for homeowner-owned projects. Tariff based compensation (in lieu of net metering) could factor in the ITC reduction by calculating a tariff rate that factors in higher net customer costs as the ITC steps down.

¹¹ <https://www.eversource.com/content/ct-c/residential/save-money-energy/explore-alternatives/renewable-energy-credits/small-zrecs>, <https://www.eversource.com/content/ct-c/residential/save-money-energy/explore-alternatives/renewable-energy-credits/lrecs-large-medium-zrecs>, and [http://www.dpuc.state.ct.us/dockcurr.nsf/8e6fc37a54110e3e852576190052b64d/25a545bd88d8a29a852583a9006e442f/\\$FILE/Exhibit%20B.PDF](http://www.dpuc.state.ct.us/dockcurr.nsf/8e6fc37a54110e3e852576190052b64d/25a545bd88d8a29a852583a9006e442f/$FILE/Exhibit%20B.PDF)

Figure 2. Distribution of Approved RSIP Projects by FY and by Metropolitan Statistical Area (MSA) Area Median Income (AMI) Bands

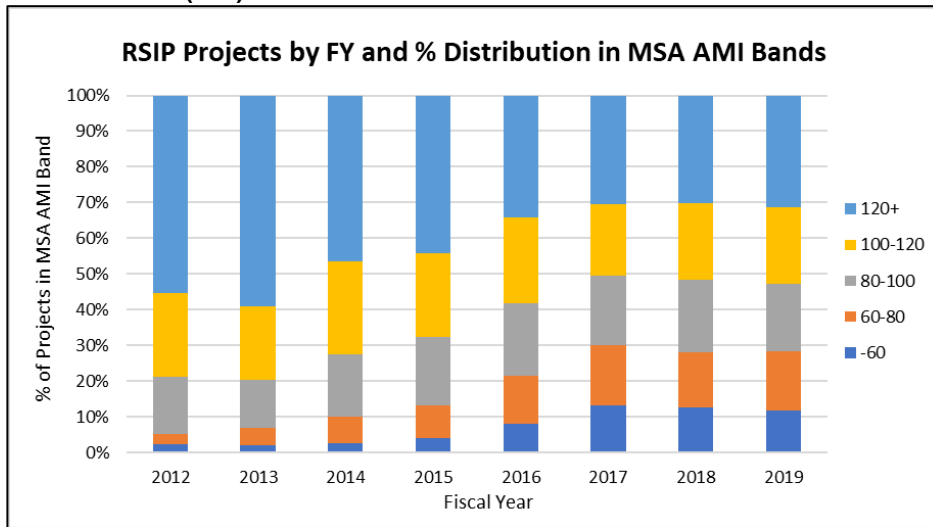


Table 3 illustrates that RSIP has reached and slightly exceeded parity with respect to deployment among LMI census tracts. For example, while the <60% AMI Band represents only 7% of 1-4 unit owner-occupied households (OOH), the <60% AMI Band represents 9% of approved RSIP projects. Similarly, 13% of RSIP projects are deployed in the 60-80% AMI Band while only 12% of OOH are in the 60-80% band. The 80-90% AMI Band has about 18% of projects, slightly less than the % of OOH, while the highest income bands, 100-120% and 120%+ have proportionately lower RSIP deployment levels relative to their representation among OOH.

Table 3. Distribution of Approved RSIP Projects among MSA AMI Bands and 1-4 Unit OOH

MSA AMI Band	Owner Occupied 1-4 Unit Households	% of Total HHs	# Project Units for FY 2019	% Project Units for FY 2019	# of Cumulative Project Units	% of Cumulative Projects	Cumulative Project Units / 1,000 HHs
<60%	60,769	7%	967	12%	3,154	9%	51.9
60%-80%	99,220	12%	1,300	17%	4,565	13%	46.0
80%-100%	165,331	19%	1,462	19%	6,360	18%	38.5
100%-120%	187,463	22%	1,661	21%	7,913	23%	42.2
>120%	345,311	40%	2,415	31%	12,506	36%	36.2
Total	858,094	100%	7,805	100%	34,498	100%	40.2

While the RSIP has been effective in reaching LMI households, in FY19 Green Bank also investigated whether the RSIP has been successful in reaching communities of color (i.e., Black and Hispanic households). When examining solar deployment by the racial and ethnic makeup of the census tract, the analysis demonstrated that RSIP has been very successful in reaching communities of color. To date, on a per OOH basis, there are 86% more RSIP installations in majority Black neighborhoods, 18% more in majority Hispanic neighborhoods, and 20% more in No Majority race neighborhoods as compared to majority White neighborhoods – see Table 4 to compare % OOH vs % of RSIP for AMI Bands of <100%. A report on this analysis titled “Sharing Solar Benefits” was published in May 2019.¹²

¹² ctgreenbank.com/wp-content/uploads/2019/05/Sharing-Solar-Benefits-May2019.pdf

Table 4. Owner-Occupied Housing and RSIP Distribution by Race/Ethnicity and Income

Census Tract Income Level (AMI Band)	Majority Hispanic		Majority Black		Majority White		No Majority Race	
	% of OO Homes	% of RSIP	% of OO Homes	% of RSIP	% of OO Homes	% of RSIP	% of OO Homes	% of RSIP
<60%	30.3%	24.91%	12.8%	22.41%	18.8%	14.58%	38.0%	38.09%
60%-80%	10.8%	13.04%	5.7%	7.68%	62.7%	56.04%	20.7%	23.24%
80%-100%	1.2%	1.57%	2.9%	4.48%	89.7%	87.94%	6.3%	6.01%
100%-120%	--	--	--	--	95.0%	95.04%	5.0%	4.96%
>120%	--	--	--	--	96.1%	95.14%	3.9%	4.86%
Grand Total	3.6%	4.11%	2.1%	3.77%	85.3%	81.81%	9.0%	10.31%

Proposed RSIP Step 15 Incentive – Details and Rationale

Step 15 is scheduled to begin on September 1, 2019, with notice given to RSIP eligible contractors and system owners by August 1, 2019 or sooner (30 day notice).

Green Bank staff propose two incentive options for Step 15, at levels reduced from the Step 14 incentive as follows:

- **Version 1** – Step 15 incentive reduced 10% for EPBB, 15% for PBI, 10% for LMI PBI
- **Version 2** – Step 15 incentive reduced 20% for EPBB, 25% for PBI, 20% for LMI PBI, with an additional up-front incentive offered for battery storage installed with solar PV
[Staff Recommendation]

Table 5 shows RSIP incentive levels from Step 8-14 and the proposed Step 15 incentive levels including EPBB, PBI and LMI PBI. The Step 15 proposal reduces the EPBB incentive less than the PBI, percentage-wise, following the legislative guidance of providing comparable economic incentives as well as research and best practices documented by LBNL that reflect the richer federal tax incentives available to third party owned projects.¹³

¹³ “A Survey of State and Local PV Program Response to Financial Innovation and Disparate Federal Tax Treatment in the Residential PV Sector” by Mark Bolinger and Edward Holt in LBNL-181290 (June 2015). <https://emp.lbl.gov/publications/survey-state-and-local-pv-program>

Table 5. RSIP Incentive Levels by Step, Incentive Type for Steps 8-14 and proposed Step 15, July 1, 2019

RSIP Incentive Step	Start Date	EPBB (\$/W)			PBI (\$/kWh)		LMI PBI (\$/kWh)		PV Installed and Approved		EPBB ESS?	
	Start Date	≤5 kW	5 to 10 kW	>10kW	Start Date	≤10 kW	>10 kW	≤10 kW	>10 kW	Capacity (kW)		# Projects
8	8/8/2015	\$0.540		\$0.400	8/8/2015		\$0.054	\$0.110	\$0.055	27,138	3,426	
9	2/1/2016	\$0.513		\$0.400	2/1/2016		\$0.046	\$0.110	\$0.055	26,139	3,279	
10	9/1/2016	\$0.487		\$0.400	9/1/2016		\$0.039	\$0.110	\$0.055	30,040	3,899	
11	8/15/2017	\$0.487		\$0.400	8/15/2017		\$0.039	\$0.110	\$0.055	18,187	2,212	
12	1/15/2018	\$0.463		\$0.400	1/15/2018		\$0.035	\$0.100	\$0.050	16,371	2,024	
13	6/1/2018	\$0.463		\$0.400	6/1/2018		\$0.035	\$0.090	\$0.045	19,349	2,318	
14	9/24/2018	\$0.463		\$0.400	9/24/2018		\$0.035	\$0.090	\$0.045	52,830	6,205	
15 v.1	9/1/2019	\$0.417		\$0.360	9/1/2019		\$0.030	\$0.081	\$0.041	n/a	n/a	No
15 v.2	9/1/2019	\$0.370		\$0.320	9/1/2019		\$0.026	\$0.072	\$0.036	n/a	n/a	Yes
Total										272,789	34,502	

RSIP LMI Incentives

Given the continuing priority of expanding solar PV in Connecticut into LMI market segments, and to attempt to ensure that the 350 MW policy target provides an opportunity to reach all household income levels in the state, we propose continuing the LMI PBI incentive in Step 15, reduced by 10% in Step 15 Version 1 and by 20% in Version 2 (relative to Step 14 LMI PBI incentive levels). As shown in Table 6, the LMI PBI has previously been reduced twice, both times in 2018 by 10%. The Green Bank did not reduce incentives since Step 14 was launched in September 2018 to give the market continuity while winding RSIP down to the 300 MW RSIP target, before the expansion to 350 MW in FY19 by PA 19-35. Based on FY19 deployment levels being the highest achieved since inception of RSIP in 2012, Green Bank staff recommend lowering Step 15 incentive levels to support sustained orderly transition to a post-RSIP, net metering market through 2021, and a tariff-based compensation policy from 2022 onward. Given that the proposed LMI-PBI incentive levels are still approximately 2.7 times higher than the non-LMI PBI, the LMI market needs to be prepared for the end of RSIP. Green Bank staff will develop a strategy to reduce LMI market reliance on RSIP by reducing the LMI PBI over the next year so that the LMI market can achieve a sustained orderly transition to a post-RSIP market.

Table 6. Schedule of Incentives for Steps 8-14 and Proposed Step 15 for LMI Households

RSIP Incentive Step	LMI PBI (\$/kWh)				EPBB ESS?
	Start Date	≤10 kW	>10 kW	% decrease	
8	8/8/2015	\$0.110	\$0.055	0%	
9	2/1/2016	\$0.110	\$0.055	0%	
10	9/1/2016	\$0.110	\$0.055	0%	
11	8/15/2017	\$0.110	\$0.055	0%	
12	1/15/2018	\$0.100	\$0.050	10%	
13	6/1/2018	\$0.090	\$0.045	10%	
14	9/24/2018	\$0.090	\$0.045	0%	
15 v.1	9/1/2019	\$0.081	\$0.041	10%	No
15 v.2	9/1/2019	\$0.072	\$0.036	20%	Yes
Total					

RSIP Battery Storage Incentive - EPBB ESS

At the Deployment Committee meeting on September 18, 2018, an upfront RSIP battery storage incentive was approved for storage to be deployed with solar PV within a United Illuminating pilot project, Localized Targeting of DERs demonstration project¹⁴ (“ConnectSun”), supported by the Green Bank as a collaborator. The approved incentive design was based on a battery storage incentive originally proposed and approved for Steps 11 through 13 that had not yet been implemented. Updates were made to the original incentive design, to be implemented within Steps 13 and 14, to increase the incentive level based on the following reasoning:

- Battery storage deployment is in its early stages, similar to where residential solar PV deployment was in the first steps of RSIP and perhaps even pre-RSIP (i.e., during the CCEF years before the Green Bank was formed). In supporting adoption of solar PV technology among the earliest adopters in Connecticut, it was helpful to offer relatively large incentives such as those covering 30% or more of installed cost. Over time, costs decreased and allowed incentives to be reduced over time.
- Early adopters of battery storage technology are primarily interested in storage for backup power during outages. However, storage can also be used to reduce/shift peak load on the grid and thereby provide benefits to the grid and ultimately all ratepayers. Higher incentive levels can be justified to encourage customer adoption and allow realization of these additional benefits. Cost effectiveness analysis shown below demonstrates the benefit/cost ratios associated with solar PV plus battery storage projects as would be incentivized through RSIP.

The design of the RSIP Step 15 EPBB ESS is based on the incentive structure and incentive levels proposed by the Green Bank in its Technology Application to PURA’s Electric Efficiency Partners (EEP) Program, which proposed battery storage incentive levels that would result in a utility cost test of 2.0 or better for the proposed, overall program of 30 MW. The benefits of battery storage, as presented in the proposal, are to contribute to reduction of peak demand, in particular during ISO-New England summer peak hours which are June through August, non-holiday weekdays from 1-5pm.

Figures 3 and 4 help to illustrate the following points:

- Figure 3 shows solar generation and electricity consumption for a typical residential household, during an average summer weekday. In the course of a year, roughly 50% of residential solar PV output is simultaneously produced and consumed, meaning that 50% is exported to the grid at times when there is more PV production than can be used on-site (for example, in the middle of the day when solar production is high but energy use is low for residents that do not work at home).
- Figure 4 shows that charging a battery using solar PV and then discharging the battery later in the day to meet on-site load when demand is higher (such as in the evening when residents come home from work), can help reduce peak load during high demand time periods. More PV could be exported to the grid in the evening, since the battery helps meet load, helping to alleviate the need for other energy sources to meet that demand.

¹⁴ UI seeks to reduce the peak load on two distribution circuits served by the Ash Creek Substation in Fairfield, CT by 1 MWh, which may enable UI to defer or avoid a significant infrastructure capacity investment.

- Reducing peak demand can help keep overall electricity prices lower for all ratepayers, along with providing other benefits.

Figure 3. Eversource Average Summer Weekday Demand and Solar Generation (kW)

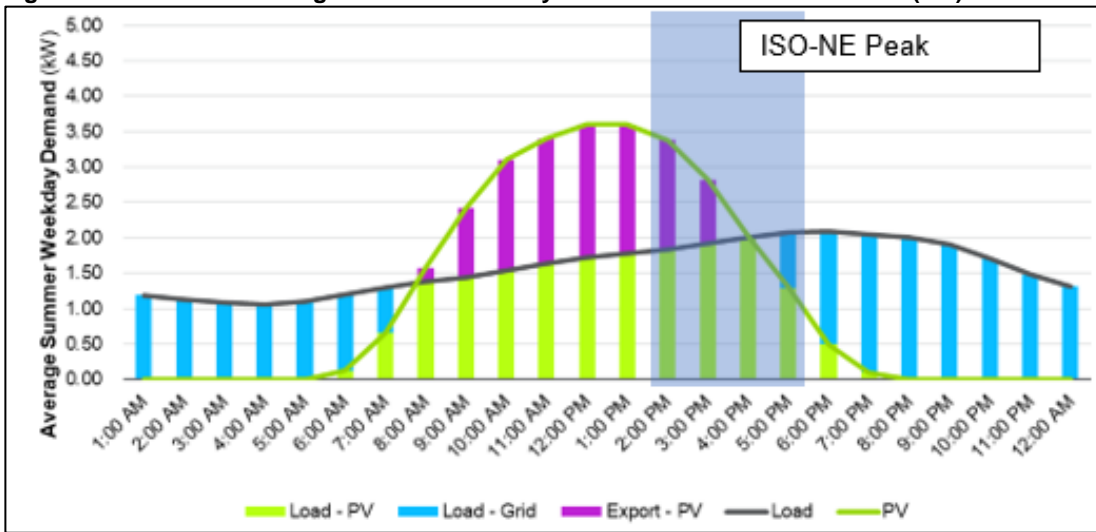
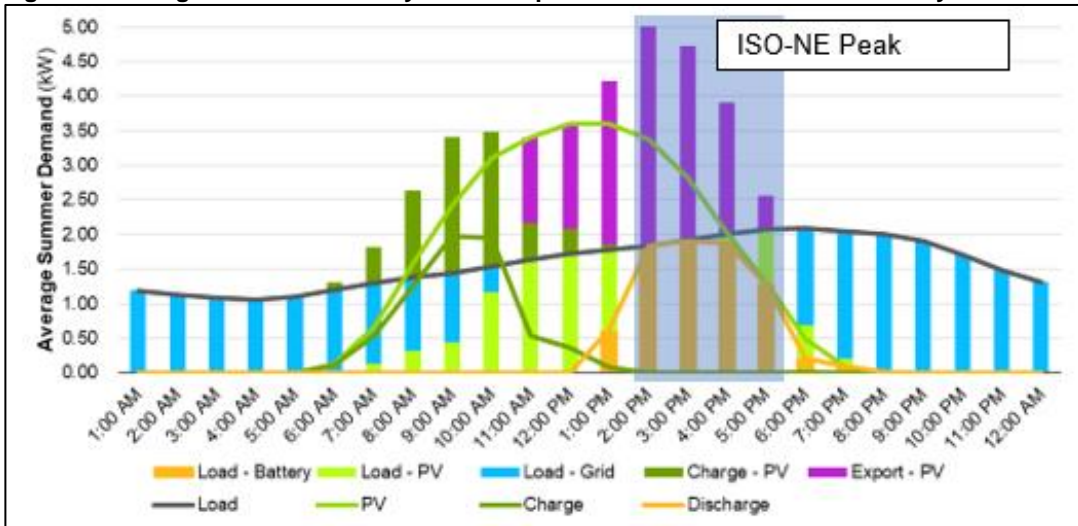


Figure 4. Average Summer Weekday for Participant in Eversource Service Territory



As solar PV penetration increases on the system, peaks shift to later in the day, potentially creating a “duck curve” scenario with sufficiently high solar PV deployment. The result is depressed demand in the middle of the day followed by a steep ramp up in demand in the afternoon and evening, which can be difficult for utilities to manage. Battery storage can help offset this effect by shifting when solar PV energy is utilized and/or exported to the grid, thereby supporting greater deployment of solar PV in the long term. Therefore, deployment of battery storage is a good strategy for supporting integration of solar PV and other renewable energy technologies on the grid in the long-term and to ensure the sustained orderly development of the local industry by socializing industry to the biggest trend in the industry and ensuring that Connecticut’s State solar policies are even more closely aligned with overall State energy policies.

Battery storage systems are still expensive but are beginning to reach prices more accessible to early adopters who want to purchase system primarily for backup power. Providing incentives in the early stages of market growth, such as at present, can greatly support continued price declines that come with increased manufacturing volume. Providing an incentive while also requiring dispatch of the batteries for peak load reduction is a win-win for the customer who can reduce their up-front cost, to the grid and to all ratepayers for the benefits it provides, and to the sustained growth of the solar PV and battery storage industries.

EPBB ESS Details

The main design difference with the RSIP EPBB ESS (as compared to the EEP application) is that the EPBB ESS can only be applied to battery storage installed along with a new solar PV system (i.e., Step 15 systems or excluding battery storage from being incentivized when added to an existing solar PV system). The reason for the exclusion of retrofit battery storage projects is because the storage component cannot be considered part of the balance of plant for a solar PV project as incentivized within RSIP. However, Green Bank staff would recommend allowing for consideration of an EPBB ESS when a specific amount of new solar PV will be installed as an addition to an existing solar PV project along with an ESS, as part of the balance of plant. Staff recommend that the requirement on the addition of solar PV sufficient to qualify for an ESS incentive be specified in updated RSIP program guidelines and determined in further technical consultation with solar PV contractors.

The Green Bank anticipates calculating the EPBB ESS for a specific project by taking the minimum of the following five values¹⁵:

- ESS usable energy capacity (kWh) * \$500/kWh
- ESS maximum power output rating (kW) * 2 hrs * \$500/kWh
- Solar PV system nameplate rating (kW) * 2 hrs * \$500/kWh
- 50% of ESS total installed cost
- maximum per project incentive of \$7000.

The total allocation for the battery storage incentive within RSIP for FY19 would be \$4 million or less, anticipated to support deployment of 2.5 to 4 MW of battery storage, or roughly 570-1200 projects depending on project sizes and associated incentive levels. Green Bank staff also recommend that the above incentive calculation be subject to possible, further adjustment as warranted by cost-benefit analysis and/or in response to input from DEEP and the utilities. The Green Bank would intend to support deployment of battery storage within RSIP, while also offering to collaborate with the utilities by facilitating onboarding of these same RSIP customers into utility demand response programs that may become available in the near future. Future, utility demand response programs for battery storage, offered through the C&LM Plan, would allow customers to access additional, performance-based incentives to help offset the costs of these battery deployments, while providing enhanced benefits to the grid through utility control and dispatch of the batteries (i.e., active dispatch of solar power from the system through the ESS by the utilities). Green Bank staff have had two meetings with DEEP, the utilities, and the EEB to better understand how to collectively support deployment of battery storage and the most effective way to allocate roles in this effort. The Green Bank learned through these meetings that the utilities are implementing a

¹⁵ An average incentive level based on a modeled 4 kW/10 kWh project would be approximately \$4000.

dispatch platform for assets such as Wi-Fi thermostats, water heaters, and batteries to provide for demand response capabilities.

Cost effectiveness Analysis of Solar PV, Battery Storage, and Solar PV plus Battery Storage

The Green Bank hired Navigant Consulting originally to assist with evaluation, measurement and verification related planning and tasks associated with the Green Bank’s EEP application and are currently working with Navigant to understand cost-effectiveness of solar PV, battery storage, and solar PV plus battery storage more broadly, in support of Green Bank program and incentive design.

Figures 5 and 6 below show cost-effectiveness results when deploying battery storage with solar using (1) a “Set it and Forget it” strategy to require battery charging from solar, followed by dispatch during ISO-New England summer peak hours – the Green Bank would require RSIP customers taking the EPBB ESS to have their batteries automatically set by their contractor to meet this requirement, (2) a “Utility Dispatch” strategy whereby the same customer could later be onboarded by the utility (as an option to the customer when the utility demand response program has been implemented) – the utility would more precisely control and dispatch their battery to assist with peak events, thereby increasing the benefits to the grid, and providing additional, performance-based incentive to the customer to further offset the customer’s initial investment in the battery.

Figure 5. Benefit/cost Ratios for “Set it and Forget it” Strategy

Solar PV Only				Battery Storage Only			
	UCT	PCT	RIM		UCT	PCT	RIM
C&LM Benefits	18.00	4.54	0.96	C&LM Benefits	1.84	0.61	2.01
C&LM Benefits less PTF, ROP DRIPE *	10.11	4.54	0.54	C&LM Benefits less PTF, ROP DRIPE *	0.61	0.61	0.66

Solar PV with Battery Storage			
	UCT	PCT	RIM
C&LM Benefits	7.51	1.96	1.00
C&LM Benefits less PTF, ROP DRIPE *	3.92	1.96	0.52

* This scenario excludes Pooled Transmission Facilities (PTF) and Rest of Pool (ROP) DRIPE benefits per discussion on Compliance Condition #5 (see Appendix for details)

Figure 6. Benefit/cost Ratios for “Utility Dispatch” Strategy

Battery Storage Only				Solar PV with Battery Storage			
	UCT	PCT	RIM		UCT	PCT	RIM
C&LM Benefits	4.55	0.79	2.36	C&LM Benefits	9.17	2.08	1.12
C&LM Benefits less PTF, ROP DRIPE *	1.52	0.79	0.79	C&LM Benefits less PTF, ROP DRIPE *	4.47	2.08	0.55

* This scenario excludes Pooled Transmission Facilities (PTF) and Rest of Pool (ROP) DRIPE benefits per discussion on Compliance Condition #5 (see Appendix for details)

** Cost-effectiveness calculations for utility dispatch scenarios only include the additional benefits resulting from dispatch and do not include utility administrative costs and utility incentives provided to participants (e.g., performance-based incentives)

The main points to take-away from the results in Figures 5 and 6 are:

- The UCT is better if you combine battery storage with solar – it makes sense to deploy them together. Even with a “set it and forget it” strategy, the UCT ratio for PV plus storage is 3.92.
- Adding utility dispatch increases these ratios, which supports the utilities potentially adding this on later, but this doesn’t necessarily have to happen to justify including battery storage within RSIP (from a cost-effectiveness perspective) since the UCT is already high even without utility control and dispatch capabilities added.
- Battery storage helps to socialize the benefit of PV among non-participants as evidenced by high or increased RIM scores with battery storage alone or when combining PV plus battery storage.
- Even with reduced benefit levels indicated in Figures 5 and 6 by the two C&LM scenarios, the benefit/cost ratios are still sufficient to demonstrate cost-effectiveness.

For additional background information, Figure 7 shows a full range of benefits and costs that may be included in the utility cost test (UCT), participant cost test (PCT), societal cost test (SCT), the total resource cost test (TRC) and the ratepayer impact measure (RIM). Not all these benefits and costs were used to derive the results shown in figures 5 and 6. Figure 8 shows the benefits and costs included in the UCT calculated by Navigant; The RIM differs from the UCT in including participant bill savings as a cost. DRIPE refers to “Demand Reduction Induced Price Effects”, i.e., the impact on market prices. Note that benefit/cost ratios are generally considered acceptable if greater than 1 but specific programs may have requirements for higher ratios, such as PURA’s EPP which requires a UCT of at least 2.0. Additionally, the RIM is not considered to be useful in most cases as it is usually below 1.0.

Figure 7. Cost-Effectiveness Tests

Benefit or Cost	UCT	PCT	SCT	TRC	RIM
Avoided Energy	Benefit		Benefit	Benefit	Benefit
Avoided Generation Capacity	Benefit		Benefit	Benefit	Benefit
Avoided Transmission Capacity	Benefit		Benefit	Benefit	Benefit
Avoided Distribution Capacity	Benefit		Benefit	Benefit	Benefit
DRIPE Impacts	Benefit		Benefit	Benefit	Benefit
Net Avoided Outage Benefits		Benefit	Benefit	Benefit	
Non-Embedded Emissions			Benefit	Benefit	
Market Revenue	Benefit		Benefit	Benefit	Benefit
Avoided Ancillary Services	Benefit		Benefit	Benefit	Benefit
Job Creation Benefits			Benefit		
Net Non-Energy Benefits	Benefit	Benefit	Benefit	Benefit	Benefit
Participant Bill Savings		Benefit			Cost
Program Incentives	Cost	Benefit			Cost
Non-Program Incentives (e.g., ITC)		Benefit		Benefit	
Program Administration Costs	Cost		Cost	Cost	Cost
Participant Incremental DER Costs		Cost	Cost	Cost	

Figure 8. Utility Cost Test

Utility Cost Test (UCT)	
Cost/Benefit Stream	
Benefits	Avoided Energy
	Avoided Generation Capacity
	Avoided T&D Capacity
	Reliability
	DRIPE Energy Impacts
	DRIPE Capacity Impacts
	Cross-DRIPE Impacts
Costs	Program Incentives
	Program Administration Costs

Resolution

WHEREAS, Public Act 19-35, “An Act Concerning a Green Economy and Environmental Protection” (the “Act”) updates Connecticut General Statutes 16-245ff and 16-245gg to require the Connecticut Green Bank (“Green Bank”) to design and implement a Residential Solar Photovoltaic (“PV”) Investment Program (“Program”) that results in no more than three hundred and fifty (350) megawatts of new residential PV installation in Connecticut on or before December 31, 2022 and extends through December 31, 2022 or after deployment of 350 MW the ability to create Solar Home Renewable Energy Credits (“SHRECs”) that the electric distribution companies are required to purchase through 15-year contracts;

WHEREAS, as of July 1, 2019, the Program has thus far resulted in nearly two-hundred and seventy three (273) megawatts of new residential PV installation application approvals and nearly two-hundred and thirty five (235) MW of completed projects in Connecticut;

WHEREAS, pursuant to Conn. Gen Stat. 16-245a, a renewable portfolio standard was established that requires that Connecticut Electric Suppliers and Electric Distribution Company Wholesale Suppliers obtain a minimum percentage of their retail load by using renewable energy;

WHEREAS, real-time revenue quality meters are included as part of solar PV systems being installed through the Program that determine the amount of clean energy production from such systems as well as the associated RECs which, in accordance with Connecticut General Statute 16-245gg will be sold to the Electric Distribution Companies through a master purchase agreement entered into between the Green Bank, Eversource Energy, and United Illuminating, and approved by the Public Utility Regulatory Authority;

WHEREAS, pursuant to the Act, the Green Bank has prepared a declining incentive block schedule (“Schedule”) that offers direct financial incentives, in the form of the expected performance based buy down (“EPBB”) and performance-based incentives (“PBI”), for the purchase or lease of qualifying residential solar photovoltaic systems, respectively, fosters the sustained orderly development of a state-based solar industry, and sets program requirements for participants, including standards for deployment of energy efficient equipment and building practices as a condition for receiving incentive funding;

WHEREAS, pursuant to the Act, to address willingness to pay discrepancies between communities, the Green Bank will continue to provide additional incentive dollars to improve the deployment of residential solar PV in low to moderate income communities (“LMI PBI”);

WHEREAS, pursuant to the Act, to address sustained orderly development of a state-based solar industry, as part of the balance of plant of a solar PV system, an upfront energy storage system incentive (“EPBB ESS”) will provide emergency back-up power for residential participants as well as reduce demand, specifically peak demand, through the load

management of the solar PV and energy storage system thereby socializing the benefits to all ratepayers; and

WHEREAS, the total allocation for the upfront EPBB battery storage incentive within RSIP for FY19 would be \$4 million or less, anticipated to support deployment of 2.5 to 4 MW of battery storage, or roughly 570-1200 projects depending on project sizes and associated incentive levels; and

WHEREAS, pursuant to Section 16-245(d)(2) of the Connecticut General Statutes, a Joint Committee of the Energy Conservation Management Board and the Connecticut Green Bank was established to “examine opportunities to coordinate the programs and activities” contained in their respective plans (i.e., Conservation and Load Management Plan and Comprehensive Plan).

NOW, therefore be it:

RESOLVED, the Deployment Committee has reviewed and recommends that the Board approves of the Schedule of Incentives with the staff recommendation under Version 2 as set forth in the memo dated July 12, 2019.

Memo

To: Connecticut Green Bank Deployment Committee
From: Eric Shrago, Managing Director, Operations; Bert Hunter, Executive Vice President and Chief Investment Officer
CC: Bryan Garcia, President and CEO; Kerry O'Neill, CEO of Inclusive Prosperity Capital
Date: July 5, 2019
RE: Smart-E Loans for Health and Safety Measures – Addendum to May 22, 2019 Memo

Introduction

Program Staff are requesting reconsideration of the Deployment Committee's decision from May 29, 2019 that health and safety measures – specifically asbestos and mold remediation – only be financeable in full, up to \$25,000, for homeowners participating in the Energize Connecticut Home Energy Solutions-Income Eligible ("HES-IE") program or whose homes are in a low-to-moderate income ("LMI") census tract. Program Staff are requesting approval to launch a 100-home pilot program that allows these measures to be financed in certain approved scenarios which prove a nexus to energy.

Smart-E Program Description

The Smart-E Loan program is administered by the Green Bank in partnership with nine local lenders (community banks, credit unions and a community development financial institution) who provide long-term, low-cost financing, and a network of over 500 eligible contractors who install qualifying energy equipment. This program is a contractor-driven model where contractors source the majority of projects financed with minimal impact on their sales and business/operations processes. Similarly, lenders have to make minimal changes to their lending and operational processes to adopt the program model.

Smart-E Loan terms range from 5-20 years, with associated not-to-exceed rates fixed between 4.49% - 6.99%. Loan amounts range from \$500 - \$40,000, though several of the participating community banks do not lend over \$25,000. Up to 25% of the total loan amount can be used for "other/related" energy measures, including health and safety measures, ENERGY STAR appliances, roof repairs in advance of a solar installation, and electric service upgrades.

To date, the Smart-E Loan program has seen tremendous success in driving customer demand – over 3,600 projects totaling over \$55 million of financing – and matching it with a low-cost, flexible supply of private capital and portfolio performance has been outstanding.

Proposal Background – Feedback on Previously Approved Approach

Program Staff discussed the Deployment Committee's approved conditions with utility program administrators of the HES program and with select HES/Smart-E contractors (collectively known

as “the partners”). Feedback was that the HES-IE requirement was a step in the right direction to address this market need; however, they raised several concerns:

1. **On the HES-IE requirement:** many, if not most, HES-IE customers are renters, so they would not qualify for Smart-E since it requires owner-occupancy. The partners and Program Staff felt that this requirement would result in very minimal health and safety volume, perhaps as low as 5-10 loans total.
2. **On the LMI census tract limitation:** the partners and Program Staff believe that this requirement would be very difficult to operationalize based on discussions with contractors (including those who are most likely to promote this feature), as contractors do not have access to the necessary tools to determine which of their customers live in LMI census tracts. And while such a tool could be developed, the partners and Program Staff are not confident this would be effective, since it would require a significant change to contractor sales and business processes – which runs counter to the program model (and the success to date of the program). As an example, in discussions with one of the leading contractors focused on both low income homeowners and health and safety remediation and energy upgrades (they are a HES and HES-IE contractor), they indicated the proposed approach would not work for them, and would continue to offer a sub-optimal loan product available from GreenSky that includes an exploding teaser rate, risk-based pricing, and high fees for the contractor.

A key element of Smart-E’s success is its broad applicability to homeowners across the state. Through May 2019, Smart-E has reached near parity across all Area Median Income bands – per the table below:

AMI Bands	Number of closed loans	Percentage of loans	Number of owner-occupied 1-4 unit properties	Percentage of owner-occupied 1-4 unit properties
<60%	220	6%	60,769	7%
60%-80%	417	12%	99,220	12%
80%-100%	673	19%	165,331	19%
100% - 120%	790	22%	187,463	22%
>120%	1501	42%	345,311	40%
Total	3,604	100%	858,094	100%

Near parity status was achieved despite the Smart-E program’s introduction of and transition to an LMI/credit-challenged focus in January 2017 that coincided with Green Bank budget sweeps and their impact on Program Staff’s ability to market to and focus on those communities. During the sweeps, marketing/outreach budgets for the program were eliminated (year 1) or greatly reduced (year 2). The program results to date demonstrate that the Smart-E model is reaching lower income homeowners. And with the reinstatement of marketing/outreach budgets, Program Staff will now be able to focus efforts specifically in these communities, with a goal of “beyond parity” for lower income census tracts.

Proposal

Smart-E Loan Program Staff are requesting a 100-home pilot program focused on the reclassification of asbestos and mold remediation as standalone measures that can be financed in full so long as there is a proven nexus to energy, achieved by requiring completion of a HES or HES-IE assessment and/or bundling a second qualifying energy improvement – as outlined in the May 22, 2019 memo.

Program Staff feel that a pilot program, with quarterly updates provided to Green Bank, would afford an opportunity to better understand the market's need for health and safety-focused financing, while also helping the utilities and State of Connecticut achieve its energy policy goals and maintaining integrity of the Smart-E program model, with respect to a "light touch" on the sales and business/operations processes of contractors, and lending and operations processes of lenders.

So long as the borrowers meet the standard Smart-E Loan underwriting criteria, it is unlikely that Smart-E lenders would have any issues with lending their private capital for health and safety improvements. From the Green Bank perspective, a 100-home pilot would have a negligible impact on the Smart-E program's loan loss reserve.

As of As of March 31, 2019, the size of the loan loss reserve ("LLR") obligation for the program is \$3.1 MM, with \$1.3 MM set aside in reserve on the balance sheet (the Green Bank only reserves on its balance sheet 2.5% out of the total LLR obligation for its largest lenders, which currently averages ~8.3% of the outstanding principal balance). If 100 health and safety loans were closed at a conservatively-assumed average loan amount of \$20,000, that would increase the LLR obligation for the program by \$166,000, with a cash reserve impact of \$50,000. Note that to date, only \$22,000 has been paid out of the LLR on over \$55 million of program loans, since lenders are responsible for the first 1.5% of portfolio losses.

Program Staff believe a 100-home pilot is the most effective approach that balances the needs of our Energize CT utility partners, homeowners with health and safety issues standing in the way of energy upgrades, contractors seeking to fill those needs, and the integrity of the Smart-E program model (easy for contractors and lenders to use).

Resolution

WHEREAS, in July of 2011, the Connecticut General Assembly passed Public Act 11-80, "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 in residential projects per the definition of clean energy in CGS Section 16-245n(a);

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

WHEREAS, the Deployment Committee of the Green Bank approved of, in general, the concept laid out in a staff memorandum of May 22, 2019, with a focus on Connecticut homeowners using the HES-IE program or located in an LMI census tract; and

WHEREAS, Green Bank intends to develop and implement the Smart-E Loan program, as amended pursuant to staff recommendations as explained in the addendum to the memorandum to the Board dated July 5, 2019, to further leverage private capital and continue to offer Connecticut homeowners a financing solution;

NOW, therefore be it:

RESOLVED, that the Green Bank Deployment Committee (the "Deployment Committee") approves of the reclassification of health and safety measures - specifically, asbestos and mold remediation - as standalone measures that can be financed by the Smart-E Loan in full, up to \$25,000, via a 100-home pilot program, consistent with the memorandum submitted to the Deployment Committee dated July 5, 2019.

Memo

To: Connecticut Green Bank Deployment Committee
From: Eric Shrago, Managing Director, Operations; Bert Hunter, Executive Vice President and Chief Investment Officer
CC: Bryan Garcia, President and CEO; Kerry O'Neill, CEO of Inclusive Prosperity Capital
Date: May 22, 2019
RE: Smart-E Loans for Health and Safety Measures

Introduction

Smart-E Loan Program Staff are requesting approval from the Connecticut Green Bank (the "Green Bank") Deployment Committee to reclassify health and safety measures – specifically, asbestos and mold remediation – from the "other/related" energy measure category, which limits them to 25% of an approved loan amount, to being standalone measures that can be financed in full, up to a loan maximum of \$25,000. The measures would be approved only in certain scenarios which prove a nexus to energy.

The request is being made at the behest of program contractors who are often unable to complete home energy assessments and make recommendations for more comprehensive energy efficiency improvements due to the presence of health and safety barriers, particularly in low-to-moderate income ("LMI") households. The request also has the support of the utility program administrators of the Energy Efficiency Fund's Home Energy Solutions program and the Joint Committee of the Green Bank and Energy Efficiency Fund Board, which has a goal of identifying a financing solution for the numerous Connecticut residents who cannot make their homes more energy efficient because of these barriers.

Smart-E Program Description

Originally approved by the Connecticut Green Bank's ("Green Bank") Deployment Committee on November 30, 2012 as the CT Home Energy Loan Program, the Smart-E Loan Program was created as a financing tool to help Connecticut homeowners statewide afford their energy improvements, consistent with the Green Bank's Comprehensive Plan, the State of Connecticut's Comprehensive Energy Strategy, and the Connecticut Energy Efficiency Fund's Conservation and Load Management Plan.

The Smart-E Loan program is administered by the Green Bank in partnership with nine local lenders (community banks, credit unions and a community development financial institution) who provide long-term, low-cost financing, and a network of over 500 eligible contractors who install qualifying energy equipment.

Smart-E Loans can be used to finance over forty qualifying energy improvements, including insulation, windows, efficient heating and cooling, electric vehicle home charging stations, and

solar, at 1-4 unit, owner-occupied residential properties. Up to 25% of the total loan amount can be used for “other/related” energy measures, including health and safety measures, ENERGY STAR appliances, roof repairs in advance of a solar installation, and electric service upgrades.

Smart-E Loan terms range from 5-20 years, with associated not-to-exceed rates fixed between 4.49% - 6.99%. Loan amounts range from \$500 - \$40,000, though several of the participating community banks do not lend over \$25,000.

To date, the Smart-E Loan program has seen tremendous success in driving customer demand and matching it with a low-cost, flexible supply of private capital. Through April 30, 2019, participating Smart-E Lenders closed 3,574 loans for \$56.3 million in amount financed.

Portfolio performance is outstanding for an unsecured consumer loan product: 4 charge-offs (0.11% of principal originated), 13 defaults (0.41% of # loans outstanding), and 55 delinquencies (2% of # loans outstanding). Performance of the Loan Loss Reserve (LLR) has been outstanding – despite the defaults and charge-offs to date, there has only been one draw on the LLR to date for \$20,000, since lenders bear a first loss responsibility for the first 1.5% of portfolio losses.

Recognizing the success of Smart-E, the Hewlett Foundation awarded Inclusive Prosperity Capital (“IPC”) and Michigan Saves a grant of \$250,000 to develop a platform to enable national expansion. As the Deployment Committee will recall, pursuant to Green Bank’s Sustainability Strategy, IPC manages the Smart-E program for the Green Bank under a Professional Services Agreement. As the marketplace for residential clean energy retrofits continues to grow, Green Bank staff recognize the need to further develop the Smart-E Loan program to keep meeting the needs of homeowners and contractors while delivering on lower carbon and Green House Gas goals for the state.

Proposal Background

Smart-E Loan Program Staff are requesting the reclassification of asbestos and mold remediation as standalone measures that can be financed in full to address a market demand, namely from the state’s most vulnerable communities, which could open additional energy efficiency project scopes.

The presence of mold or asbestos-like material can prevent blower door guided air sealing done as part of a home energy assessment, particularly evident in the Energize CT Home Energy Solutions (“HES”) program, which is frequently a first step for Smart-E customers. The utility managers of the HES program have tracked deferrals to blower door guided air sealing under their program and shared that LMI customers are disproportionately impacted by health and safety barriers than higher income customers. An average of 31% of Eversource and UIL’s LMI customers in 2016 and 2017 could not complete HES assessments due to health and safety barriers, as compared to just 8% of higher income customers.¹

While Smart-E’s 25% allowance for measures related to the financed energy improvement (including health and safety measures) is helpful, it does not have broad applicability, which is a cornerstone of the Smart-E Loan program. Homeowners that can take advantage of the 25% allowance are those who have a clear understanding of additional required improvements, often determined following a HES assessment. Health and safety barriers prevent some homeowners from reaching that step – chiefly evident with HES-IE, the income restricted version of the

¹ Eversource. “ES H&S Remediation Costs 2017.” 20 March 2019.

assessment program which provides no or low-cost insulation and significant rebates to homeowners for new heating equipment, the balance of which they can finance with Smart-E.

Eversource and UIL conducted a small pilot program called the “Clean Energy Healthy Homes Initiative” from 2016-2018 through which the cost of remediation work was covered for LMI customers. Under the initiative, the utilities found that the average cost of asbestos remediation was \$13,620 and the average cost of mold remediation was \$23,945.² In comparison, if a homeowner knew they needed a new \$7,000 natural gas furnace, Smart-E’s 25% allows them to add just \$2,333 to address their health and safety measure, leaving them to cover \$10,000 or more in order to complete the work properly.

Due to the remediation costs being only partially covered by Smart-E’s 25% allowance, or not qualifying at all, homeowners often decide to forgo these much-needed projects, exacerbating the health and safety issue and leaving important energy improvements undone. Allowing a borrower to apply up to \$25,000 of their loan amount to health and safety measures would help alleviate, if not eliminate, this issue for many homeowners.

The anticipated impact of this proposal on the loan loss reserve provided by the Green Bank would be minimal. As of March 31, 2019, the size of the LLR obligation for the program is \$3.1 MM, with \$1.3 MM set aside in reserve on the balance sheet (the Green Bank only reserves on its balance sheet 2.5% of the obligation for its largest lenders, which currently averages ~8.3% of the outstanding principal balance). It is expected that fewer than 20 loans per year would be closed under this new option. If the average health and safety loan were conservatively assumed to be \$20,000 per loan, that would increase the annual LLR obligation by \$33,200, with a cash impact of \$10,000.

Operationalizing Program

Program Staff propose to reclassify asbestos and mold remediation as standalone Smart-E Loan eligible measures so long as there is a proven nexus to energy, which can be achieved under the following three (3) scenarios:

- **Option 1 – HES Channel**
 - If asbestos or mold were detected via an incomplete HES assessment, the homeowner would be required to sign a commitment form (used during the Smart-E Loan’s 0.99% special offer period) to complete HES within 90 days of loan closing.
- **Option 2 – Health & Safety Channel**
 - If the homeowner sought to address asbestos or mold without needing any other immediate energy upgrades, they would be required to sign a commitment form (used during the Smart-E Loan’s 0.99% special offer period) to complete HES within 90 days of loan closing.
- **Option 3 – Non-HES / EE Channel**
 - Homeowners could bundle a second energy measure (e.g., HVAC or insulation) with their asbestos or mold remediation **or** provide proof of having purchased that improvement through a cash purchase or alternate financing (e.g., CT Heat Loan)

² Eversource. “ES H&S Remediation Costs 2017.” 20 March 2019.

Smart-E Loan Program Staff believe the reclassification of health and safety measures - specifically, asbestos and mold remediation - as standalone measures that can be financed in full will provide positive exposure for this Green Bank program that faces continued competition from loan products utilizing ratepayer-subsidized capital. Already an innovative, highly successful program, Smart-E has the opportunity to reach an even larger number of Connecticut homeowners, with particular emphasis on supporting those that need it most.

Resolution

WHEREAS, in July of 2011, the Connecticut General Assembly passed Public Act 11-80, "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 in residential projects per the definition of clean energy in CGS Section 16-245n(a);

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

WHEREAS, Green Bank intends to develop and implement the Smart-E Loan program, as amended pursuant to staff recommendations as explained in the memorandum to the Board dated May 22, 2019, to further leverage private capital and continue to offer Connecticut homeowners a financing solution;

NOW, therefore be it:

RESOLVED, that the Green Bank Deployment Committee (the "Deployment Committee") approves of the reclassification of health and safety measures - specifically, asbestos and mold remediation - as standalone measures that can be financed by the Smart-E Loan in full, up to \$25,000, consistent with the memorandum submitted to the Deployment Committee dated May 22, 2019.

CONFIDENTIAL TO THE DEPLOYMENT COMMITTEE

(ACTIVE FINANCING FACILITY PROPOSAL UNDER NEGOTIATION)

Memo

To: Connecticut Green Bank Deployment Committee

From: Bert Hunter, EVP and CIO and Louise Venables, Senior Manager, Clean Energy Finance

CC: Bryan Garcia, President and CEO; Jane Murphy, Vice President of Finance and Administration; Brian Farnen, General Counsel and CLO; Eric Shrago, Director of Operations

Date: July 5, 2019

Re: Impact Investor – Small Business Energy Advantage Program

Purpose

This memo seeks approval from the Connecticut Green Bank (“Green Bank”) Deployment Committee (the “Deployment Committee”) for Connecticut Green Bank (“Green Bank”) or one of Green Bank’s wholly-owned special purpose entities (“SPE”) to enter into an agreement with the New York Quarterly Meeting of the Society of Friends (QMSF), or an organization related to QMSF, for an impact investment of up to \$1,000,000 (the “QMSF Impact Investment”) whereby the QMSF Impact Investment would be used in order to reinvest funds in other Green Bank investments, programs or its operations.

The QMSF initially approached Green Bank’s spin-off entity: Inclusive Prosperity Capital (“IPC”) with respect to a Program Related Investment. QMSF and IPC have both approved the PRI and are in the process of documenting the investment.

QMSF is the Quarterly Meeting for the Monthly Meetings in New York City of the Religious Society of Friends (QMSF), including Fifteenth St., Brooklyn, Flushing, Morningside, Manhattan and Staten Island. (The Religious Society of Friends is also referred to as “Quakers” or “Friends”.) The Quarterly Meeting office is in the building alongside the Fifteenth St. Meetinghouse at 15 Rutherford Place, New York, NY. The Religious Society of Friends has had a historic commitment to social justice and charity. Friends have been active in the abolition of slavery, the advancement of equal rights for women, fairness in immigration, and ending war. Friends commitment to simplicity—to resisting materialism and consumerism—finds expression today in work on behalf of sustainability. It is this commitment to sustainability that attracted QMSF to IPC and Green Bank in search of suitable impact investments.

At the same time, and following from Green Bank's strategic meetings in 2019, Green Bank seeks to attract more impact investors to Green Bank's activities. Similar to funding facilities Green Bank has arranged over the years, such as with Mosaic, The Reinvestment Fund, Webster Bank, Liberty Bank and Amalgamated Bank, the Finance Team has discussed with QMSF an impact investment supported by a general obligation of Green Bank (or a Green Bank SPE) together with cash flows from specific investments. In NYQM's case, the suitable investment was determined to be the Small Business Energy Advantage portfolio of loans acquired with Amalgamated Bank. The pledge would be of the economic interests held by Green Bank or the Green Bank SPE in the portfolio of loans, but not a pledge of the ownership of the loans themselves. This is necessary as this is a "non-exclusive" pledge so as to enable Green Bank to potentially invite other impact investors into the arrangement if desired in future.

Green Bank is pursuing this arrangement and approval from Deployment Committee on the basis of a Strategic Selection. The proposed impact investment satisfies three criteria of the Strategic Selection and Award process of Green Bank operating procedures, namely: (1) uniqueness, (2) strategic importance and (3) urgency and timeliness:

(1) Uniqueness

The Green Bank has yet to arrange an impact investment with a foundation whereby the investment can be directed by the goals of Green Bank rather than by the foundation. In this case, the Green Bank desired to test the waters with an investor open to a variety of collateral support, but with a preference by Green Bank to use shorter-term assets so as to progress up the maturity ladder to longer dated investments which would be more complex to structure.

(2) Strategic Importance

At the strategic meetings earlier this year, it was agreed that Green Bank needed to diversify funding sources to include foundations and other impact investors, including green bonds. QMSF offers the opportunity to test this strategy with a limited impact investment up to \$1 million.

(3) Urgency and Timeliness

The QMSF is very motivated to move quickly – following on with its PRI with IPC. Moving quickly we can secure this impact investment and use it to test the interest of other impact investors.

Background

On October 26, 2018, the Green Bank Board of Directors (the "Board") passed resolutions approving up to \$5 million for the Green Bank to finance a portfolio of Small Business Energy Advantage Loans with Amalgamated Bank (the "SBEA Facility"). In December 2018, the Board increased this limit by a further \$560,000. The SBEA Facility was executed in December 2018 and 2 purchases of loans have taken place (~\$48 million). Green Bank's share of this loan portfolio is approximately \$4.8 million with funding by the Green Bank of approximately \$4.4 million.

Business need for a Revolving Credit Facility

Shortly following the announcement of the budget sweeps, the VP Finance and Administration (the "VP F/A") and the Chief Investment Officer (the "CIO") together with their teams assessed future liquidity needs of the Green Bank given the material redirection of funding that needs to pass from the Green Bank to the General Fund prior to the end of FY2018 (\$14 million in June 2018) and during FY2019 (approximately \$1.167 million each month).

Related to the need for liquidity are covenants associated with guaranties by the Green Bank to various financial institutions, notably US Bank under the Solar Lease 2 and Solar Lease 3 facilities (required minimum cash balance of \$4 million).

The VP Finance and Administration and CIO jointly determined the benefits to the Green Bank of a short term revolving credit facility and to diversify funding sources. To this end, Green Bank secured a \$5 million line of credit from Amalgamated Bank. The up to \$1 million impact investment would augment the access to funds with access to liquidity for additional investment in accordance with the proposed FY2020 budget.

QMSF and Green Bank are negotiating the terms of the impact investment. It would be best structured through an SPE. If a guarantee of Green Bank is desired, additional conditions may apply to the impact investment yet to be negotiated but which would be explored with counsel.

The effective interest rate for the impact investment would be [REDACTED]

Conclusion & Recommendation

The QMSF Impact Investment offers a unique opportunity for Green Bank to test and shape an impact investment with a willing impact investor. The effective funding rate for the Green Bank is [REDACTED] which is less than the [REDACTED] recently agreed with Amalgamated Bank. Given the uniqueness of the opportunity and the competitive pricing available, staff recommends this impact investment to the Deployment Committee for approval.

Strategic Plan

Is the program proposed, consistent with the Board approved Comprehensive Plan and Budget for the fiscal year?

Yes – the proposed facility enables Green Bank to fund advances in respect of various programs active under Green Bank’s Comprehensive Plan (C-PACE, Commercial Solar PPA, SBEA, etc.).

Ratepayer Payback

How much clean energy is being produced (i.e. kWh over the projects lifetime) from the program versus the dollars of ratepayer funds at risk?

N/A (funds from the Impact Investment are being borrowed, not advanced)

Terms and Conditions

What are the terms and conditions of ratepayer payback, if any?

N/A (funds from the Impact Investment are being borrowed, not advanced); however, see **Appendix I – Term Sheet** for terms of the Impact Investment.

Capital Expended

How much of the ratepayer and other capital that Green Bank manages is being expended on the project?

N/A (funds from the Impact Investment are being borrowed, not advanced)

Risk

What is the maximum risk exposure of ratepayer funds for the program?

N/A (funds from the Impact Investment are being borrowed, not advanced)

Financial Statements

How is the program investment accounted for on the balance sheet and profit and loss statements?

When funds are borrowed:

\$x	Debit: Cash
\$x	Credit: Short Term Borrowings

When funds are repaid:

\$x	Debit: Short Term Borrowings
\$x	Credit: Cash

Target Market

Who are the end-users of the engagement?

The end users of the Impact Investment are Green Bank as well as the underlying programs and projects that receive short-term funding from the underlying line of credit.

Green Bank Role, Financial Assistance & Selection/Award Process

The Green Bank role is as the borrower, and QMSF was chosen as the lender via Strategic Selection and Award process.

Program Partners

New York Quarterly Meeting of the Society of Friends

Risks and Mitigation Strategies

The main risk associated with the Impact Investment is that, in the event of default by the Green Bank, the amount outstanding under the facility becomes due. Such repayment risk is mitigated by the following structural components of the Impact Investment:

- 1.) The Green Bank is able to repay the Impact Investment with available cash held in accounts on its balance sheet, and given the overall health of the Green Bank's long-term balance sheet position, there is ample coverage in the form of available net assets relative to the size of the line of credit to raise other credit facilities if needed.
- 2.) Because the Impact Investment is short-term in nature, to be used in between a financing opportunity and a capital sourcing/monetization event, there is less uncertainty with regards to the economic position of the Green Bank while amounts drawn are outstanding relative to other types

of longer-term credit facilities. The Green Bank will operationalize the utilization of the Impact Investment so that a definitive “source” of short term revenue is identified to repay the “use” of the Revolving Credit Facility within the requirements of the definitive transaction documentation.

Resolutions

WHEREAS, Connecticut Green Bank (“Green Bank”) staff has submitted to the Green Bank Deployment Committee (“Deployment Committee”) a proposal for Green Bank or one of Green Bank’s wholly-owned entities (“SPEs”) to enter into an agreement with the New York Quarterly Meeting of the Society of Friends (QMSF), or an organization related to QMSF, for an impact investment of up to \$1,000,000 (the “QMSF Impact Investment”) whereby the QMSF Impact Investment would be used in order to reinvest funds in other Green Bank investments, programs or its operations; and

WHEREAS, the QMSF satisfies three criteria of the Strategic Selection and Award process of Green Bank operating procedures, namely: (1) uniqueness, (2) strategic importance and (3) urgency and timeliness;

WHEREAS, along with a general repayment obligation by the Green Bank (or, if such obligation of general repayment is by a Green Bank SPE, a general repayment obligation by such SPE together with, if necessary, a guarantee of the Green Bank), QMSF would be secured by a general non-exclusive pledge of a portfolio of loans owned in part by Green Bank or its SPEs together with their related cash flows associated with the Small Business Energy Advantage financing facility; and

WHEREAS, Green Bank staff recommends that the Deployment Committee approve the proposed QMSF Impact Investment, generally in accordance with memorandum summarizing the QMSF Impact Investment and the terms of the summary term sheet, both presented to the Deployment Committee on July 12, 2019.

NOW, therefore be it:

RESOLVED, that the Deployment Committee approves Green Bank (or one of its wholly-owned SPEs on behalf of Green Bank and, if necessary, with a guarantee of the Green Bank) to enter into the QMSF Impact Investment as a strategic selection; and

RESOLVED, that the President, Chief Investment Officer and General Counsel of Green Bank, and any other duly authorized officer of Green Bank, is authorized to execute and deliver on behalf of Green Bank any of the definitive agreements related to the QMSF Impact Investment and any other agreement, contract, legal instrument or document as he or she shall deem necessary or appropriate and in the interests of Green Bank and the ratepayers in order to carry out the intent and accomplish the purpose of the foregoing resolutions.

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

Submitted by: Bert Hunter, EVP and CIO and Louise Venables, Senior Manager, Clean Energy Finance

Appendix I – Term Sheet

Summary Term Sheet

QMSF Impact Investment

1. **Borrower:** Connecticut Green Bank / Green Bank SPE (“SPE”)

2. **Guarantor:** Connecticut Green Bank (if applicable)

3. **Amount and Loan Type:** Up to \$1,000,000 Impact Investment

4. **Purpose:** Provide for working capital

Interest Rate:

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

6. **Maturity:** 1 year from initial investment the closing date

7. **Repayment:**

participation on the following basis:

- a. One year secured participation automatically renewable for two additional years but with a call at QMSF option annually upon 90-days notice (in other words, if QMSF does not call back their funds, the facility renews for a further year, with an additional call in the second year);

[REDACTED]

[REDACTED]

8. **Payments:** TBD (Interest-only in arrears)
9. **Collateral:**
- i. General repayment obligation of the Connecticut Green Bank or its SPE
 - ii. Pledge of the revenues associated with the Small Business Energy Advantage portfolio
 - iii. (Optional if Borrower is SPE) Guarantee of Green Bank

Memo

To: Connecticut Green Bank Deployment Committee
From: Mariana Cardenas, Consultant, Clean Energy Finance; Louise Venables, Assistant Director, Clean Energy Finance; Bert Hunter, Executive Vice President and Chief Investment Officer
CC: Bryan Garcia, President and CEO; Kerry O'Neill, CEO of Inclusive Prosperity Capital
Date: July 9, 2019
RE: Sale of Solar PPA Projects to CEI Capital Management

Purpose

The purpose of this memo is to request approval from the Connecticut Green Bank (“Green Bank”) Deployment Committee to confirm the authority of the Green Bank, consistent with the Board of Directors approvals from August 21, 2018 and October 19, 2018, to sell commercial scale solar PV projects it has developed to CEI Capital Management. These solar projects employ a Power Purchase Agreement (“PPA”) mechanism with host customers and a C-PACE credit enhancement mechanism where appropriate and available.

Proposal Background

The Green Bank continues to develop a strong pipeline of commercial solar PPA projects due to its institutional knowledge derived over time, as well as a network of relationships with developers, customers, and key local players who facilitate project origination. As approved in the August 21, 2018 Board Meeting, Green Bank has provided development capital and construction financing to projects using its existing development subsidiary, CEFIA Holdings LLC (“Holdings”), to continue moving projects through the development process with the intent of selling those to a 3rd-party owned financing structure.

The October 19, 2018 approvals allowed the Green Bank to determine, based on project fundamentals, partner strengths, and market conditions, how it ultimately participates in specific projects and fund structures (e.g. whether via (i.) providing development and construction capital, or (ii.) providing term financing in the form of either debt or equity to projects owned by a 3rd party platform. This allows the Green Bank to optimize the use of ratepayer funds for leveraging private capital and developing quality projects to benefit local communities.

In 2019 Green Bank approached several 3rd party platforms to sell its portfolio of 2019 solar PPA projects (“2019 Portfolio”). After evaluating the economics from several key players (CEI Capital Management, Sunwealth, etc.), Green Bank chose to move ahead with CEI Capital

Management (“CEI”), a CDFI based out of Maine, as they were able to offer the best terms for the 2019 Portfolio.

Proposal

Green Bank has continued to advance the documentation of the sale of the 2019 Portfolio to CEI and will also provide debt funding. The following are the main terms that have been negotiated and papered:

- Projects will be sold to two separate project SPVs/funds based on the geographical location of the projects (those in opportunity zones vs. those outside of opportunity zones). Specifically, we are requesting approval from the Deployment Committee to approve the cumulative sale of projects in the 2019 Portfolio, in an amount not to exceed \$2,500,000
- Green Bank will receive a development fee from CEI as these projects are transferred [REDACTED]
- Green Bank will also be providing debt [REDACTED] as authorized under the October 18, 2018 approvals. The amount of debt (based on the DSCR requirements) is ~[REDACTED]% of the Project Purchase price, which would be around \$[REDACTED] in debt (\$[REDACTED] for projects outside of opportunity zones and \$[REDACTED] for projects in opportunity funds).

Green Bank staff is specifically requesting the Deployment Committee’s approval to sell projects in an amount not to exceed \$2,500,000 developed by Holdings to CEI. While this had been envisioned and described in the memo and presentation to the Board on October 18, 2019, the resolutions did not explicitly include a provision for Green Bank to sell these projects. Staff will also be requesting approval from the Board of Directors in the July 18, 2019 meeting to approve the sale of any projects developed by Holdings to 3rd party owned financing structures.

Resolutions

WHEREAS, the Connecticut Green Bank (“Green Bank”) has enjoyed a long and successful history of commercial-scale solar project development and financing;

WHEREAS, CEFIA Holdings LLC (“Holdings”) is the Green Bank’s solar project development vehicle, and the Green Bank’s existing agreements for the sale and/or term financing of solar PPAs;

WHEREAS, the market for commercial solar PPA financing continues to evolve, as various financing providers are entering the small commercial solar financing space with the ability to provide long-term financing for projects originated by the Green Bank;

WHEREAS, the Green Bank’s Board of Directors approved funding, in a total not-to-exceed amount of \$15 million in new money, subject to budget constraints, for the continued development of commercial-scale solar PV PPA projects, to be utilized for the following purposes pursuant to market conditions and opportunities:

1. Development capital;
2. Construction financing; and
3. Financing one or more 3rd-party ownership platforms, in the form of sponsor equity and/or debt.

NOW, therefore be it:

RESOLVED, that the Board of Directors approves the sale of solar PPA projects developed by Holdings in an amount not to exceed \$2,500,000 to a project entity associated with CEI Capital Management;

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

Submitted by: Bryan Garcia, President and CEO; Bert Hunter, EVP and CIO; Louise Venables, Assistant Director, Clean Energy Finance



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