



Board of Directors

Meeting Date

July 22, 2022



Board of Directors

Lonnie Reed Chair	Vickie Hackett Vice Chair Connecticut Department of Energy and Environmental Protection (DEEP)
Matthew Ranelli Secretary Partner Shipman & Goodwin	Sarah Sanders State Treasurers Office State of Connecticut
Thomas Flynn Managing Member Coral Drive Partners	Binu Chandy Deputy Director DECD
Adrienne Farrar Houel President and CEO Greater Bridgeport Community Enterprises, Inc.	Dominick Grant Director of Investments Dirt Capital Partners
John Harrity Chair CT Roundtable on Climate and Jobs	Brenda Watson Executive Director Operation Fuel
Matthew Dayton Office of Policy and Management (OPM)	Laura Hoydick Mayor of Stratford

July 15, 2022

Dear Connecticut Green Bank Board of Directors:

We have a meeting of the Board of Directors scheduled for **Friday, July 22, from 9:00-11:00 a.m.**

Please take note that this will be an online meeting.

For the agenda, we have the following:

- **Consent Agenda** – we have several items on the consent agenda, including a few items requiring resolutions, including:
 - Meeting Minutes for June 24, 2022
 - Incentive Programs – Progress to Targets FY 2022
 - Financing Programs – Progress to Targets FY 2022
 - Investments – Progress to Targets FY 2022
 - Board of Directors and Committees Report for FY 2022
 - Energy Storage Solutions – Reservation of Funds Letter

The key items here are the Progress to Targets FY 2022 memos which summarize the preliminary performance for last year and the Energy Storage Solutions memo and associated tear sheets.

And, I have also included several report outs including FY 2022 Progress to Targets overall, Professional Services Agreement (“PSA”) approvals for FY 2022 report, Under \$100,000 and No More in Aggregate than \$500,000 Transaction Restructuring report, and some recent written comments into the U.S. Department of Energy’s Loan Program Office’s Title XVII Loan Guarantee Program.

- **Committee Recommendations and Updates** – recommendation to approve Kevin Walsh as a Board Member Emeritus and the approval of an Ad Hoc Advisory Ethical Conduct Policy.
- **Incentive Programs Updates and Recommendations** – report out on FY 2022 progress to targets.
- **Financing Programs Updates and Recommendations** – report out in FY 2022 progress to targets, as well as recommendation to modify the C-PASCE Program Guidelines to include recharging infrastructure, strategic investment in Sustainable CT as noted in the FY 2023 budget approved by the BOD on June 24, 2022, and review and approval of the Municipal Assistance Program.

- **Investment Updates and Recommendations** – report out on FY 2022 progress to targets, extension request for Groton Fuel Cell, and investment modification request for Cargill Falls.
- **Environmental Infrastructure Programs Updates and Recommendations** – recommendation to approve the Comprehensive Plan, include position description for Director of Environmental Infrastructure.
- **Other Business** – we will provide an update on our tour of Quantum Biopower on Wednesday, July 27, 2022 from 10:00 a.m. to noon, Hydrogen Power Study Task Force, which was successfully launched this week, and other items of business.

Until next Friday, enjoy the weekend ahead.

Sincerely,

A handwritten signature in black ink, appearing to be 'Bryan Garcia', with a long horizontal stroke extending to the right.

Bryan Garcia
President and CEO



AGENDA

Board of Directors of the
Connecticut Green Bank
75 Charter Oak Avenue
Hartford, CT 06106

Friday, July 22, 2022
9:00 a.m.– 11:00 a.m.

Dial (571) 317-3112
Access Code: 769-990-573

Staff Invited: Sergio Carrillo, Mackey Dykes, Brian Farnen, Bryan Garcia, Bert Hunter, Jane Murphy, and Eric Shrago

1. Call to order
2. Public Comments – 5 minutes
3. Consent Agenda – 5 minutes
4. Committee Recommendations and Updates – 5 minutes
 - a. Audit, Compliance, and Governance Committee – 5 minutes
 - i. Ad Hoc Committee – Recommendation of Kevin Walsh (Emeritus)
5. Incentive Programs Updates and Recommendations – 15 minutes
 - a. FY 2022 Report Out – Incentive Programs
6. Financing Programs Updates and Recommendations – 45 minutes
 - a. FY 2022 Report Out – Financing Programs
 - b. C-PACE Program Guidelines – Recharging Infrastructure
 - c. Sustainable CT
 - d. Municipal Assistance Program(s)
7. Investment Updates and Recommendations – 15 minutes
 - a. FY 2022 Report Out – Investments
 - b. Extension Request – Groton Fuel Cell Project
 - c. Investment Modification Request – Cargill Falls

8. Environmental Infrastructure Programs Updates and Recommendations – 15 minutes
 - a. Comprehensive Plan
9. Other Business – 15 minutes
10. Adjourn

Join the meeting online at
<https://global.gotomeeting.com/install/769990573>

Or call in using your telephone:
Dial (571) 317-3112
Access Code: 769-990-573

***Next Regular Meeting: Friday, October 21, 2022 from 9:00-11:00 a.m.
Colonel Albert Pope Room at the
Connecticut Green Bank, 75 Charter Oak Avenue, Hartford***



RESOLUTIONS

Board of Directors of the
Connecticut Green Bank
75 Charter Oak Avenue
Hartford, CT 06106

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Access Code: 769-990-573

Staff Invited: Sergio Carrillo, Mackey Dykes, Brian Farnen, Bryan Garcia, Bert Hunter, Jane Murphy, and Eric Shrago

1. Call to order
2. Public Comments – 5 minutes
3. Consent Agenda – 5 minutes

Resolution #1

Motion to approve the meeting minutes of the Board of Directors for June 24, 2022.

Resolution #2

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

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

WHEREAS, the Board of Directors of the Connecticut Green Bank approved a Comprehensive Plan for FY 20212 including approving annual budgets and targets for FY 2022.

NOW, therefore be it:

RESOLVED, that Board has reviewed and approved the Program Performance towards Targets for FY 2022 memos dated July 22, 2022, which provide an overview of the performance of the Incentive Programs, Financing Programs, and Investments with respect to their FY 2022 targets.

Resolution #3

WHEREAS, in July of 2011, the Connecticut General Assembly passed Public Act 11-80 (the Act), “AN ACT CONCERNING THE ESTABLISHMENT OF THE DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION AND PLANNING FOR CONNECTICUT’S ENERGY FUTURE,” which created the Connecticut Green Bank (the “Green Bank”) and vests the power in a Board of Directors comprised of eleven voting and one non-voting member; and

WHEREAS, the structure of the Board of Directors is governed by the bylaws of the Connecticut Green Bank, including, but not limited to, its powers, meetings, committees, and other matters.

NOW, therefore be it:

RESOLVED, that Board has reviewed and approved the Overview of Compliance Reporting and the Board of Directors and Committees for FY 2022 memo dated July 15, 2022 prepared by staff, which provides a summary report of the FY 2022 governance of the Board of Directors and its Committees of the Connecticut Green Bank.

Resolution #4

WHEREAS, the Connecticut Green Bank (Green Bank) proposes to administer the upfront incentive payments through (i) the issuance of a Reservation of Funds (ROF) letter, and (ii) the issuance of a Confirmation of Funds (COF) letter upon the completed installment of all equipment, the procurement of required utility permits, and the verification of connectivity with dispatch platforms;

WHEREAS, residential projects with an estimated upfront incentive payment not equal to or greater than \$500,000 shall be approved by Green Bank staff and upon approval be issued a ROF letter; and, for projects with an estimated upfront incentive payment greater than or equal to \$500,000, the Green Bank shall prepare a proposal to the Board for approval, per the bylaws of the Green Bank;

WHEREAS proposals for projects with an estimated upfront incentive payment equal to or greater than \$500,000 shall include a Tear Sheet outlining customer, project, and site information; priority customer eligibility criteria, Battery Energy Storage System (BESS) characteristics, ratepayer and societal benefits generated by the program as represented by benefit-cost analysis ratios, and information related to the estimated upfront incentive payment;

WHEREAS, within the existing Board and Deployment Committee regular meeting schedule, the Green Bank staff shall seek Board approval of non-residential projects with estimated upfront incentive payments equal to or greater than \$500,000 via consent agenda, and, upon approval by the Board, Green Bank staff shall issue ROF letters to the project developer and customer;

WHEREAS, after projects are fully operational, Green Bank staff shall notify the Board of their intent to issue COF letters, and, and as necessary, provide an analysis and explanation for any

material difference between an approved estimated upfront incentive payment and the final incentive amount.

WHEREAS, in its June 22, 2002 meeting the Board approved that upfront incentive payments under \$500,000, as estimated by the Green Bank in fulfillment of its responsibilities set forth in the Program, be issued a ROF letter upon approval by internal Green Bank.

WHEREAS, in its June 22, 2002 meeting the Board approved the implementation of an Upfront Incentive Project Approval procedure (“Procedure”) involving of the issuance of a proposal for non-residential projects under consideration by the Green Bank in fulfillment of its responsibilities set forth in the Program with an estimated upfront incentive payment greater than \$500,000; and

WHEREAS, in its June 22, 2002 meeting the Board approved that, as part of the Procedure, the Green Bank staff shall obtain Board approval of such estimated upfront incentive payments via consent agenda utilizing the Tear Sheet process described in the memorandum to the Board dated June 24, 2022;

NOW, therefore be it:

RESOLVED, that the Board hereby approves the estimated upfront incentives sought by 13 non-residential projects totaling \$16,513,170 consistent with the memorandum provided to the Board dated July 15, 2022.

RESOLVED, that the proper Green Bank officers are authorized and empowered to do all other acts and execute and deliver all any documents and regulatory filings as they shall deem necessary and desirable to effect the above-mentioned incentives consistent with the Procedure and the memorandum provided to the Board dated July 15, 2022.

4. Committee Recommendations and Updates – 5 minutes

a. Audit, Compliance, and Governance Committee – 5 minutes

i. Ad Hoc Committee – Recommendation of Kevin Walsh (Emeritus)

Resolution #5

WHEREAS, the Board unanimously affirmed a motion to establish the Ad Hoc Advisory Committee comprised of members without voting authority for the sole purpose of soliciting expert advice to advance the mission of the organization at its meeting on October 22, 2021;

WHEREAS, the Green Bank is committed to ethical conduct and transparency and seeks to provide guidance to non-voting Directors on proper compliance with relevant statutes, rules, and regulations;

WHEREAS, the Audit, Compliance and Governance Committee recommended to the Board of Directors Kevin Walsh serve as Board Member Emeritus at its May 17, 2022, Committee Meeting;

NOW, therefore be it:

RESOLVED, that the Board of Directors approves the Ad Hoc Advisory Ethical Conduct Policy.

RESOLVED, that the Board of Directors approves the recommendation of Kevin Walsh to serve on the Ad Hoc Advisory Committee as a Board Member Emeritus.

5. Incentive Programs Updates and Recommendations – 15 minutes
 - a. FY 2022 Report Out – Incentive Programs
6. Financing Programs Updates and Recommendations – 45 minutes
 - a. FY 2022 Report Out – Financing Programs
 - b. C-PACE Program Guidelines – Recharging Infrastructure
 - c. Sustainable CT

Resolution #6

WHEREAS, the Comprehensive Plan and FY 2023 budget identify Sustainable CT as a partner of the Connecticut Green Bank (“Green Bank”), including an allocation of \$125,000 from the FY 2023 Marketing budget;

WHEREAS, Connecticut Green Bank (“Green Bank”) staff has submitted to the Green Bank Board of Directors (the “Board”) a proposal for Green Bank to enter into a grant agreement with Sustainable CT for \$125,000 for programmatic purposes in order to increase our impact by applying the green bank model through Sustainable CT’s programs as explained in a memorandum to the Board dated July 15, 2022;

WHEREAS, Sustainable CT satisfies all criteria of the Strategic Selection and Award process of Green Bank operating procedures, namely: (1) special capabilities, (2) uniqueness, (3) strategic selection, (4) multiphase, follow-on investment and (5) urgency and timeliness;

WHEREAS, Green Bank staff recommends that the Board approve a grant between the Green Bank and Sustainable CT, generally in accordance with memorandum summarizing the grant to the Board in a memorandum dated July 15, 2022; and,

WHEREAS, Green Bank would benefit from Sustainable CT’s public awareness and engagement program to increase participation in and development of Green Bank’s incentive and financing programs. Through the partnership, Green Bank and Sustainable CT are driving investment in projects in communities throughout the state.

NOW, therefore be it:

RESOLVED, that the Board approves Green Bank to enter into a Grant Agreement with Sustainable CT as a strategic selection;

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 Sustainable CT grant agreement 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.

- d. Municipal Assistance Program(s)

Resolution #7

WHEREAS, the state legislature provides statutory guidance to the Green Bank to support municipalities in clean energy deployment pursuant to CGS 16-245n;

WHEREAS, Green Bank’s Solar MAP was modelled after and developed based on Lead By Example, which supports solar on state facilities, and other programs to provide municipal assistance to address market barriers and to take advantage of the savings offered by solar;

WHEREAS, Green Bank received concerns from a subgroup of contractors regarding the absence of clarity on the program’s mission and target audience, the Green Bank’s role developing opportunities for municipalities, and request for more transparency in the status of the program;

WHEREAS, Green Bank was compelled to assess Solar MAP by seeking feedback from municipalities that have engaged in the program as well as contractors who we seek to continue to provide opportunities;

NOW, therefore be it:

RESOLVED, that the Board recognizes the importance of balancing the deployment of clean energy, supporting municipalities and not competing with the private sector; and

RESOLVED, that the Board recognizing that Solar MAP is creating more opportunities for the market and assistance to towns who seek assistance; and

RESOLVED, that the Board support for continuing Solar MAP and other municipal assistance programs to lower their energy costs and confront climate change; and

RESOLVED, that the Board approves of the program and the inclusion of Solar MAP in the Comprehensive Plan; and

RESOLVED, the Board directs staff to develop marketing materials that clearly communicate the intentions of the program.

- 7. Investment Updates and Recommendations – 15 minutes
 - a. FY 2022 Report Out – Investments
 - b. Extension Request – Groton Fuel Cell Project

Resolution #8

WHEREAS, in accordance with (1) the statutory mandate of the Connecticut Green Bank (“Green Bank”) to foster the growth, development, and deployment of clean energy sources that serve end-use customers in the State of Connecticut, (2) the State’s Comprehensive Energy Strategy (“CES”) and Integrated Resources Plan (“IRP”), and (3) Green Bank’s Comprehensive

Plan (the “Comprehensive Plan”) in reference to the CES and IRP, Green Bank continuously aims to develop financing tools to further drive private capital investment into clean energy projects;

WHEREAS, FuelCell Energy, Inc., of Danbury, Connecticut (“FCE”) has used previously committed funding (the “Bridgeport Loan”) from Green Bank to successfully develop a 15 megawatt fuel cell facility in Bridgeport, Connecticut (the “Bridgeport Project”), and FCE has operated and maintained the Bridgeport Project without material incident, is current on payments under the Bridgeport Loan;

WHEREAS, FCE has requested financing support from the Green Bank to develop a 7.4 megawatt fuel cell project in Groton, Connecticut located on the U.S. Navy submarine base and supported by a power purchase agreement (“PPA”) with the Connecticut Municipal Electric Energy Cooperative (“CMEEC”) (the “Navy Project”);

WHEREAS, staff has considered the merits of the Navy Project and the ability of FCE to construct, operate and maintain the facility, support the obligations under the Loan throughout its 20-year term, and as set forth in the due diligence memorandum (the “Board Memo”) dated December 18, 2020, recommended this support be in the form of a term loan not to exceed \$8,000,000, secured by the developer’s equity in the project company (which controls all project assets, contracts and revenues) as well as a pledge of revenues from an unencumbered project as explained in the Board Memo (the “Credit Facility”);

WHEREAS, on the basis of that recommendation, the Green Bank Board of Directors (“Board”) approved of the Credit Facility, in an amount not to exceed \$8,000,000 with the provision that the Credit Facility be executed no later than 315 days from the date of authorization by the Board (June 16, 2021), which was further extended by the Board on a number of occasions, including in June 2022 to July 31, 2022; and,

WHEREAS, Green Bank staff has further advised the Board that the closing for the Credit Facility is expected to close in early August 2022 and to accommodate the additional time that might be needed to execute the Credit Facility requests the permitted time to execute the credit facility be increased from not later than 590 days from the original date of authorization by the Board (i.e., not later than July 31, 2022) to not later than 682 days from the date of authorization by the Board (i.e., not later than October 31, 2022).

NOW, therefore be it:

RESOLVED, that the Green Bank Board hereby approves the extension of time for the execution of the Credit Facility to not later than 682 days from the original date of authorization by the Board (i.e., not later than October 31, 2022);

RESOLVED, that the President of the Green Bank and any other duly authorized officer is authorized to take appropriate actions to provide the Credit Facility to FCE (or a special purpose entity wholly-owned by FCE) in an amount not to exceed \$8,000,000 with terms and conditions consistent with the memorandum submitted to the Board dated December 18, 2020 (the

“Memorandum”), and as he or she shall deem to be in the interests of the Green Bank and the ratepayers; and,

RESOLVED, that the proper Green Bank officers are authorized and empowered to do all other acts and execute and deliver all other documents and instruments as they shall deem necessary and desirable to effect the Term Loan and participation as set forth in the Memorandum.

c. Investment Modification Request – Cargill Falls

Resolution #9

WHEREAS, pursuant to Conn. Gen. Stat. 16a-40g, the Connecticut Green Bank (“Green Bank”) has established a commercial sustainable energy program for Connecticut, known as Commercial Property Assessed Clean Energy (“C-PACE”);

WHEREAS, the Board of Directors (“Board”) of the Green Bank previously approved a construction and term loan, secured by a C-PACE benefit assessment, not-to-exceed amount of \$8,100,000 (the “Current Loan”) to Historic Cargill Falls Mill, LLC (“HCFM”), the property owner of 52 and 58 Pomfret Street, Putnam, Connecticut, to finance the construction of specified clean energy measures (the “Project”) in line with the State’s Comprehensive Energy Strategy and the Green Bank’s Strategic Plan;

WHEREAS, the Project includes numerous energy conservation measures that align with the goals and priorities of the Green Bank’s multifamily housing program; and,

WHEREAS, the Green Bank now seeks approval to amend the Current Loan to HCFM to provide up to \$275,000 in additional funding (the “Loan Amendment”) for the Project, inclusive of finalizing the existing Project work.

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 Amendment in a total amount not to exceed the sum of (i) the Current Loan being secured by a C-PACE benefit assessment, plus any and all interest accrued, plus (ii) \$260,000, with terms and conditions consistent with the memorandum submitted to the Board dated July 15, 2022, and as he or she shall deem to be in the interests of the Green Bank and the ratepayers no later than 180 days from July 22, 2022; and,

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

8. Environmental Infrastructure Programs Updates and Recommendations – 15 minutes

a. Comprehensive Plan

Resolution #10

WHEREAS, on June 23, 2021, the Connecticut General Assembly passed Public Act 21-115 (“the Act”), “AN ACT CONCERNING CLIMATE CHANGE ADAPTATION,” and on July 6, 2021, the Governor signed the Act into law expanding the scope of the Connecticut Green Bank (“Green Bank”) to include environmental infrastructure.

WHEREAS, on July 23, 2021, the President and CEO presented a process to develop a comprehensive plan which provides an overview of the process to be undertaken in FY22 to incorporate environmental infrastructure within its comprehensive plan which was approved by the Board.

WHEREAS, the President and CEO, with the assistance of a community engagement consultant, initiated a nine (9) month outreach effort with stakeholders from the public, private, nonprofit, and academic sectors, with guidance from the Department of Energy and Environmental Protection (“DEEP”), to introduce the Green Bank, discuss the Act, understand relevant public policies and targets, identifying funding opportunities, market potential, investment requirements, financing models, and metrics for environmental infrastructure that resulted in the production of several primers including environmental markets, parks and recreation, land conservation, and agriculture.

WHEREAS, on October 22, 2021, the General Counsel and Chief Legal Officer, with the guidance of the Audit, Compliance, and Governance Committee, sought and received approval from the Board of Directors (“the Board”) to modify various governance documents including the Resolution of Purpose, Bylaws, Operating Procedures, Ethics Statement, and Ethical Conduct Policies of the Board of Directors and Staff.

WHEREAS, on October 22, 2021, the Executive Vice President and Chief Investment Officer provided the Board with an overview of the Act’s improvements on the Green Bank’s new bonding capabilities including expansion to include environmental infrastructure, increase in the Special Capital Reserve Fund to \$250 million, and extending bond terms for up to fifty years for environmental infrastructure.

WHEREAS, on March 25, 2022, the Board approved amending the Smart-E Loan eligible improvements category to include environmental infrastructure improvements and authorizes the Deployment Committee to determine, in consultation with DEEP, the specific measures to be supported by the Smart-E Loan.

WHEREAS, from April 27-28, 2022, there was an offsite strategic retreat called “Confronting Climate Change in the Constitution State through Investment in Environmental Infrastructure” to engage members of the Board, staff, and key stakeholders to envision how the Green Bank would change, adapt, and grow to incorporate environmental infrastructure, including identifying specific skills required for a director to lead such programs.

WHEREAS, on May 10, 2022, the Governor signed Public Act 22-6, An Act Concerning the Commercial Property Assessed Clean Energy Program (“C-PACE”) into law expanding the ability of C-PACE to include resilience.

WHEREAS, on June 24, 2022, the Board of Directors (“Board”) of the Green Bank (“Green Bank”) approved of the annual budgets, targets, and investments for FY 2023.

WHEREAS, per Connecticut General Statutes 16-1245n, the Green Bank must (a) develop a comprehensive plan to foster the growth, development and commercialization of clean energy sources, related enterprises and stimulate demand clean energy and deployment of clean

energy sources that serve end use customers in this state, and (b) develop a comprehensive plan to foster the growth, development, commercialization and, where applicable, preservation of environmental infrastructure and related enterprises.

NOW, therefore be it:

RESOLVED, that Board has reviewed and approved the position description for the Director of Environmental Infrastructure.

RESOLVED, that Board has reviewed and approved the Comprehensive Plan presented to the Board on July 22, 2022.

9. Other Business – 15 minutes
10. Adjourn

Join the meeting online at
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Or call in using your telephone:
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Access Code: 769-990-573

***Next Regular Meeting: Friday, October 21, 2022 from 9:00-11:00 a.m.
Colonel Albert Pope Room at the
Connecticut Green Bank, 75 Charter Oak Avenue, Hartford***

ANNOUNCEMENTS

- **Mute Microphone** – in order to prevent background noise that disturbs the meeting, if you aren't talking, please mute your microphone or phone.
- **Chat Box** – if you aren't being heard, please use the chat box to raise your hand and ask a question.
- **Recording Meeting** – we continue to record and post the board meetings.
- **State Your Name** – for those talking, please state your name for the record.



CONNECTICUT
GREEN BANKSM

Board of Directors Meeting

July 22, 2022

Online Meeting

Amend Agenda

Motion



1. **Move** – move agenda item 8a on the Comprehensive Plan before agenda item 5 on Incentive Programs Updates and Recommendations
2. **Add** – add agenda item 5b on Asset Backed Securities (ABS) – Bond Matters after agenda item 5a FY 2022 Report Out – Incentive Programs

Board of Directors

Agenda Item #1

Call to Order

Board of Directors

Agenda Item #2

Public Comments

Board of Directors

Agenda Item #3

Consent Agenda

Consent Agenda

Resolutions #1 through #4



1. **Meeting Minutes** – approve meeting minutes of Jun 24, 2022
2. **FY22 Progress to Targets** – draft memos of year-end performance for merit review process (final in October with CAFR)
3. **Governance Compliance Reporting** – board and committee meeting and other ethics compliance reporting items for FY22
4. **Energy Storage Solutions** – upfront incentive for non-residential projects to issue Reservation of Funds letters to applicants
 - **PSA's Over \$75,000** – report out on Operating Procedures
 - **Under \$100,000 and No More in Aggregate than \$500,000 Transaction Restructurings**– report out on restructurings
 - **DOE Written Comments** – filed on LPO Title XVII loan guarantee

Board of Directors

Agenda Item #4a

Audit, Compliance and Governance Committee

Ad Hoc Committee – Recommendation

of Kevin Walsh

Kevin Walsh

Emeritus Board Member



Former CT Green Bank Board Member

Kevin is a Senior Operating Partner at Stonepeak Infrastructure since 2019 supporting its investing activities in the power and renewable energy space globally.

Prior to joining Stonepeak, Kevin was Managing Director and Head of U.S. Renewable Energy at GE Energy Financial Services from 2006-2019 where he led the team that invested \$1 -2 billion annually in renewable energy projects.

Resolution #5



NOW, therefore be it:

RESOLVED, that the Board of Directors approves the Ad Hoc Advisory Ethical Conduct Policy.

RESOLVED, that the Board of Directors approves the recommendation of Kevin Walsh to serve on the Ad Hoc Advisory Committee as a Board Member Emeritus.

Board of Directors

Agenda Item #8a

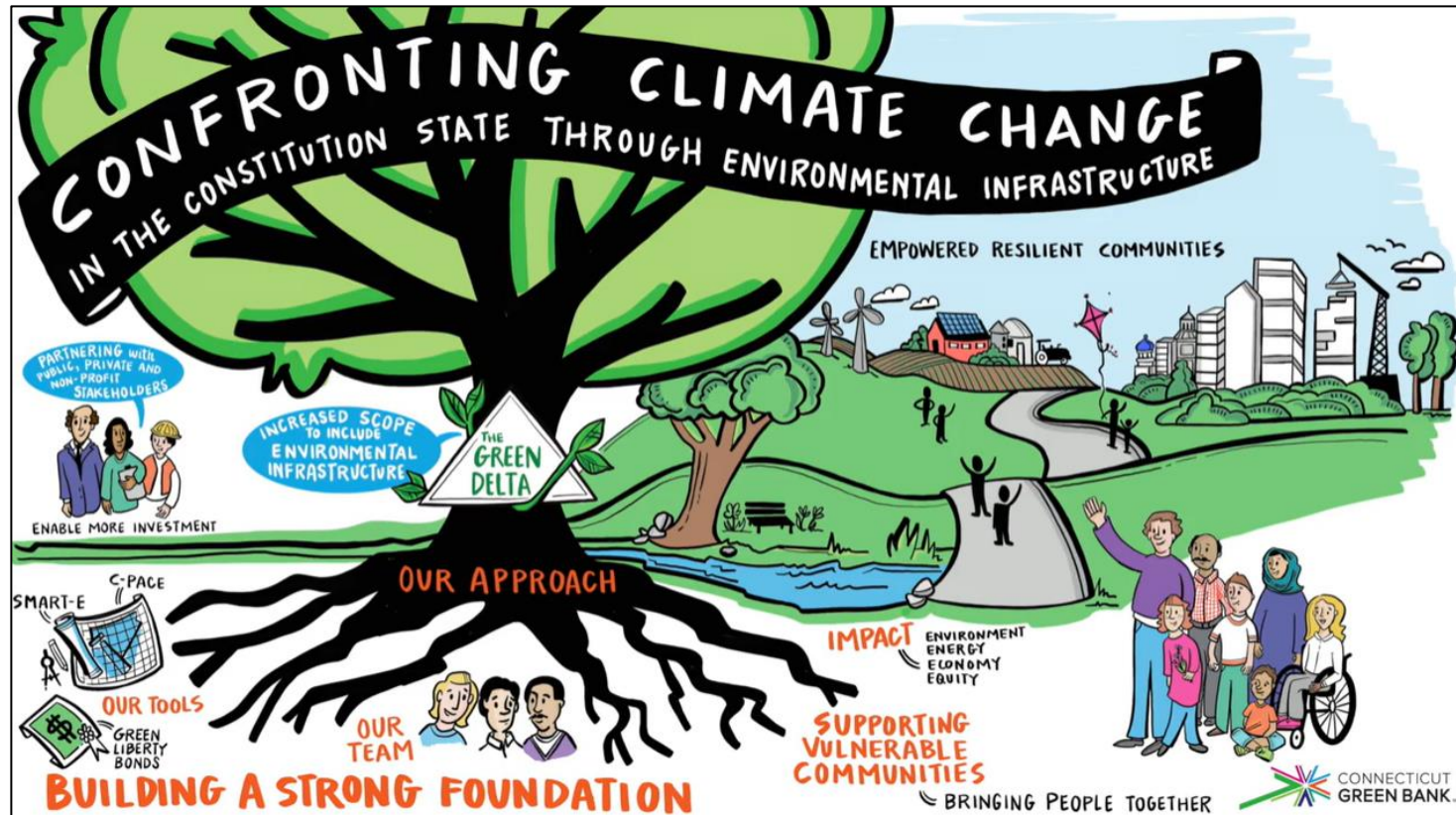
Environmental Infrastructure Programs Updates and

Recommendations

Comprehensive Plan

Strategic Retreat

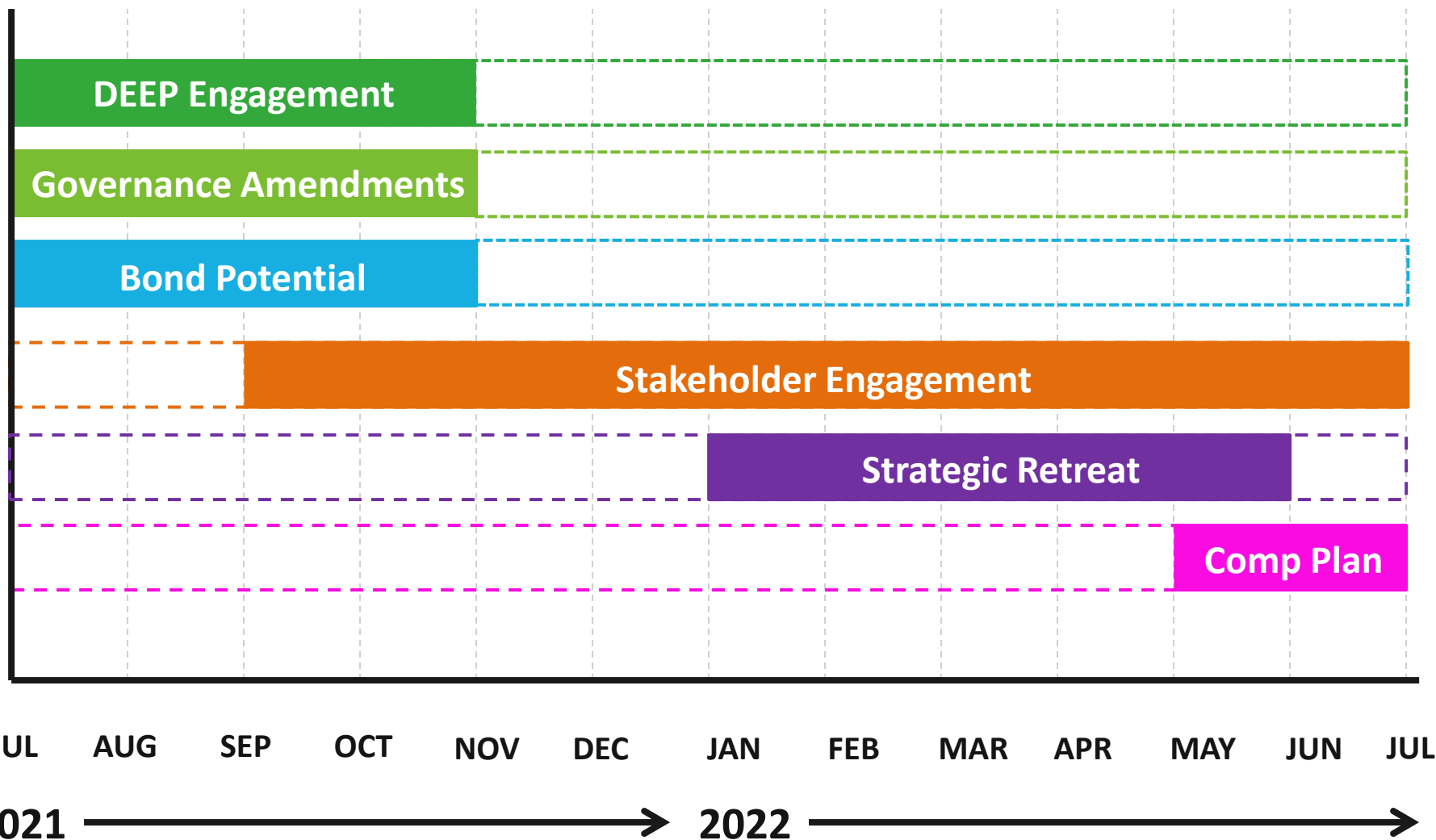
Connecticut Green Bank



Environmental Infrastructure

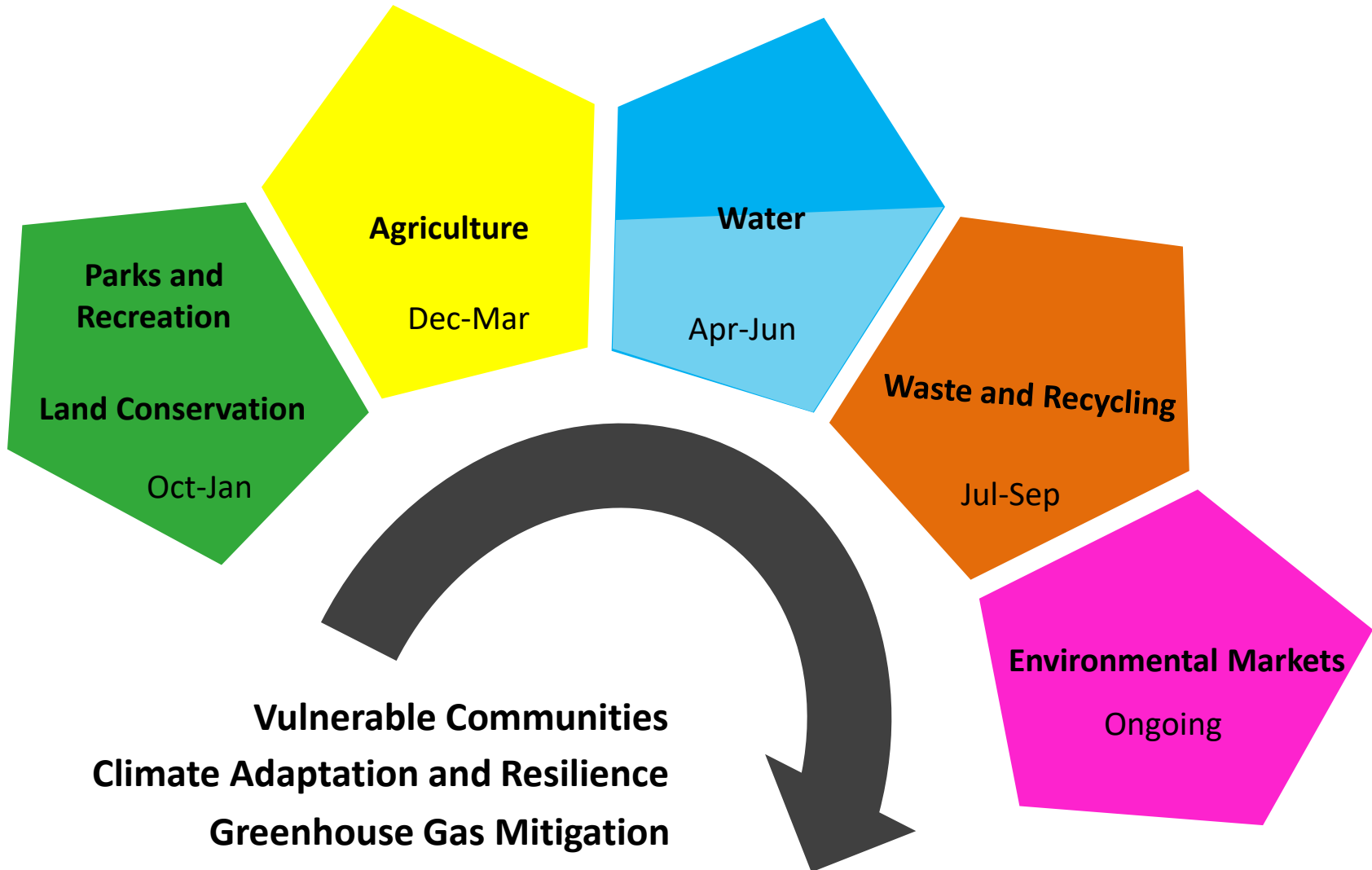


Comprehensive Plan Timeline and Deliverables



Environmental Infrastructure

Stakeholder Engagement



Comprehensive Plan (Draft)

Connecticut Green Bank



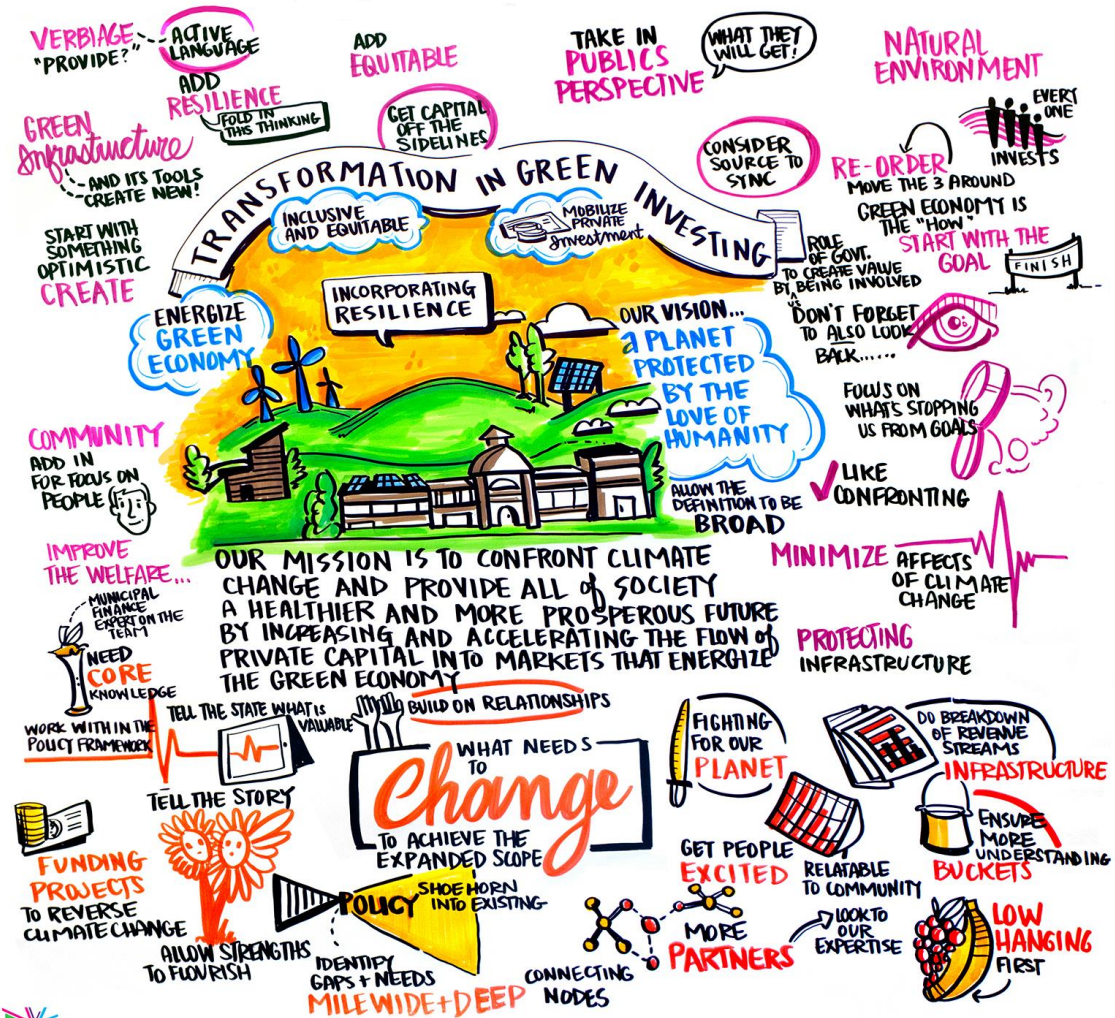
- **Table of Contents** – organization overview, programs, bonds, investment, impact, reporting, R&D, and budget
- **Areas of Focus** – now includes both “clean energy” and “environmental infrastructure,” including the primers
- **Audience** – defines direction for staff and board, communicates to stakeholders, and meets statutory requirements

Mission Statement

Proposed Revision

Old – Confront climate change and provide all of society a healthier and more prosperous future by increasing and accelerating the flow of private capital into markets that energize the green economy.

Proposed – Confront climate change by increasing and accelerating investment into Connecticut’s green economy to create more resilient, healthier, and equitable communities.



Environmental Infrastructure

Focus in FY 2023



- **Building the Team** – hiring several critical positions including Manager of Community Engagement and Director of Environmental Infrastructure
- **Continuing Engagement** – wrapping up outreach on areas (i.e., water, waste and recycling) and initiating engagement with municipal and regional governments with focus on vulnerable communities
- **Raising Resources** – identifying opportunities for federal and foundation funding, and developing Green Liberty Bonds to raise bond proceeds to provide capital for investment
- **Launching New Products** – developing existing products (i.e., Smart-E Loan and C-PACE) to support investment
- **Conducting Research** – identify research opportunities to develop markets for carbon offsets and ecosystem services

Resolution #10



NOW, therefore be it:

RESOLVED, that Board has reviewed and approved the position description for the Director of Environmental Infrastructure.

RESOLVED, that Board has reviewed and approved the Comprehensive Plan presented to the Board on July 22, 2022.

Board of Directors
Agenda Item #5a
Incentive Programs Updates and Recommendations
FY 2022 Report Out

Incentive Programs

FY22 Performance

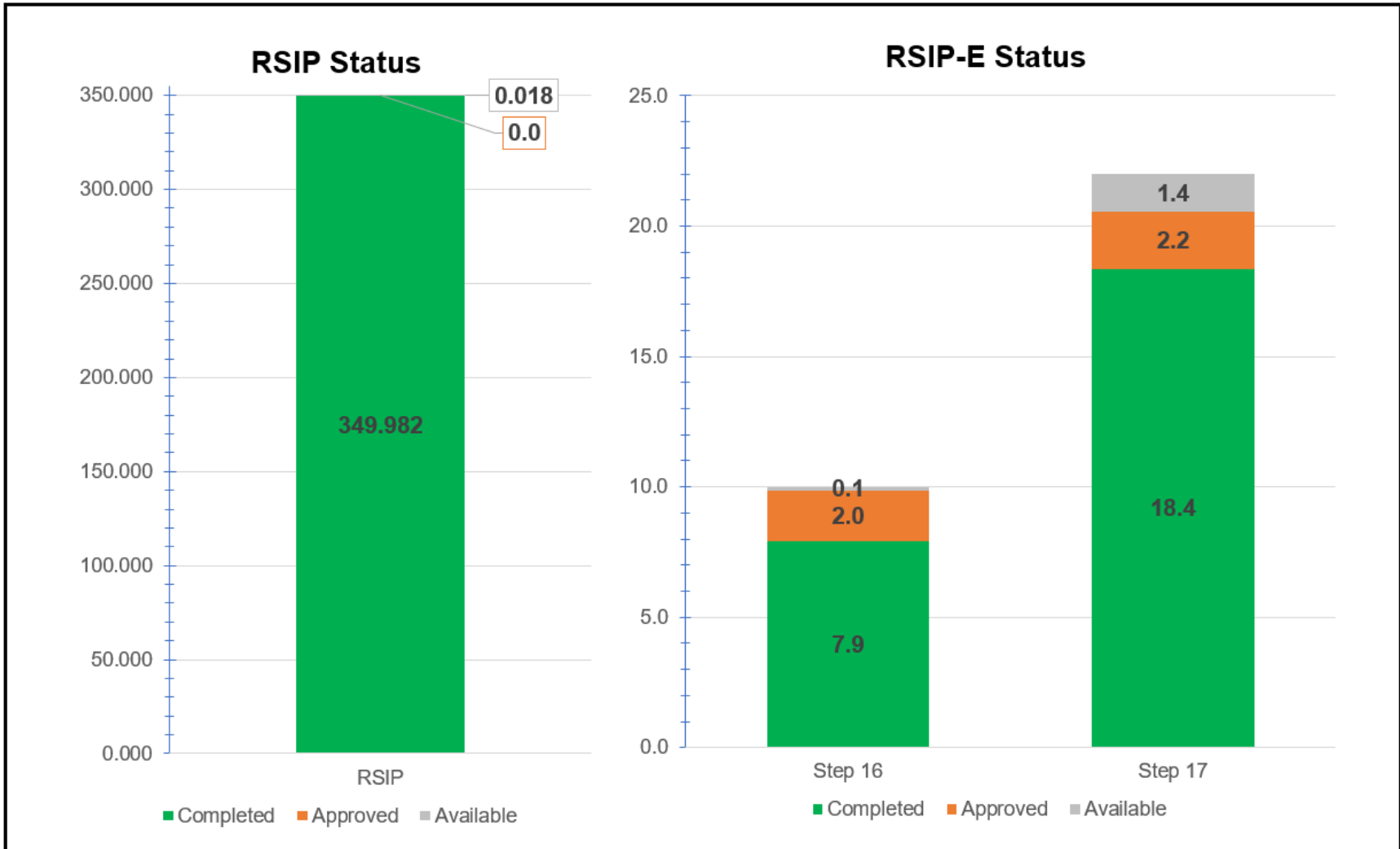


Product/ Program	Projects			Capital Deployed			Capacity (MW)		
	Closed	Target	% to Target	Closed (\$ MM)	Target (\$ MM)	% to Target	Closed	Target	% to Target
RSIP + RSIP-E	1,592	1,732	92%	\$57.9	\$62.9	92%	15.5	16.8	92%
Smart-E	909	800	114%	\$14.8	\$11.2	132%	0.2	0.8	31%
Solar for All	330	96	344%	\$9.3	\$2.5	378%	2.2	0.7	339%
Battery Storage	0	202	0%	\$0	\$5.8	0%	0.0	2.5	0%
Total	2,730	2,734	100%	\$78.7	\$79.9	98%	17.2	20.1	86%

FY22 marked the official end of RSIP + RSIP-E, and the transition to a tariff-based program managed entirely by the utilities.

Incentive Programs

RSIP Status



Incentive Programs

ESS Status

Residential



As of 7/1/22, there are 185 kW of approved projects and 1 MW of submitted projects. The current step has 10 MW of capacity.

Non-Residential



As of 7/1/22, there are 2.9 MW of approved projects and 67 MW of unapproved projects in the commercial and industrial queue. The current step has 50 MW of capacity.

Board of Directors
Agenda Item #5b
Incentive Programs & Investments
Asset Backed Securities (ABS) bond matters

SHREC ABS Bonds



RGM Upgrade Background (upgrade program approved July 2021)

- In 2020, national mobile cellular providers announced plans to retire their 3G networks (running CDMA technology) in favor of 4G LTE networks
 - T-Mobile/Sprint retirement was to occur in October 2021,
 - AT&T 3G network was to sunset in February 2022,
 - Verizon plans to retire its 3G network by December 2022.
- Most RSIP and RSIP-E system RGMs transmit solar production data to CGB's monitoring platform via these cellular networks
- Timely reporting and registering of renewable energy credits (RECs) production to NEPOOL GIS is essential for the Green Bank to monetize RECs including SHRECs which repay ABS and Green Liberty Bonds
- Meter replacement by CGB & 3rd Party Owners is underway and CGB was able to sponsor the development of an interim procedure to “estimate RECs”
- **In January 2021, NEPOOL-GIS Markets Committee approved Green Bank proposal to revise the GIS and GIS Operating Rule for “Metering for Certain Residential Solar Generating Systems Due to Changes in Telecommunications Technology” (e.g., estimating REC production)**

SHREC ABS Bonds



Impact & Need to Amend ABS Documents

- In 2021, due to 2 hurricanes (in August and September) production was impaired that caused the ABS bond facility to fail a debt service coverage ratio test
- Bond payments not in jeopardy – but payments to the holder of the “B Notes” were ceased with all payments going to the “A Notes”
- Kroll (bond rating agency) placed the ABS bonds on “Watch Developing” status in March (could lead to an adverse change in rating) – no impact on Green Liberty
- Due to implementation ramp time, only 1/3rd of “non-reporting” systems were able to be “estimated” and “reported” to NEPOOL-GIS under the revised rules
- **RESULT:** ABS Bonds are in jeopardy of a ratings downgrade
 - Reputational issue for Green Bank
 - Potential “capital reserve” issue for our bondholder (an insurance company)
- **PROPOSAL:** Work with bondholder to amend the bond documents to permit CGB the option to cure revenue shortfalls for matters related to interruptions of reporting or production that CGB considers temporary.
- **Resolutions required to permit management to enter into amendments to the bond documents**
- **No material adverse economic impact to CGB is foreseen**

Resolution #11



NOW, therefore be it:

RESOLVED, that the form, terms and provisions of an amendment to the terms of the Collateral Agreements permitting the Green Bank, in its discretion, to provide funds to the Issuer in amounts sufficient to allow the Issuer to restore compliance with, and to remain in compliance with, the terms of the Series 2019-1 Notes and the Collateral Agreements (the “Amendment”) be, and they hereby are, approved; and further

RESOLVED, that in connection with the Amendment, the President and any other officer of the Green Bank (each, a “Proper Officer”) be, and each of them acting individually hereby is, authorized and directed in the name and on behalf of the Green Bank, in its own capacity and as member and manager of SHREC ABS 1 LLC, to prepare and deliver, or cause to be prepared and delivered, each of the Amendment to the Series 2019-1 Notes and the Collateral Agreements, with such modifications, amendments or changes therein as the Proper Officer executing the same may approve, such approval and the approval thereof by such Proper Officer to be conclusively established by such execution and delivery; and to execute and deliver any and all instruments, certificates, receipts, undertakings, commitments, consents, representations, financing statements, ...

Resolution #11 (continued)



... control agreements and other ancillary documents contemplated by any of the foregoing agreements; and to take or cause to be taken all such action and to execute and deliver or cause to be executed and delivered, and, if appropriate, file or record, or cause to be filed and recorded, all such applications, agreements, contracts, undertakings, commitments, consents, certificates, reports, affidavits, statements, and other documents, instruments or papers as such officer deems necessary, and to make such payments desirable or appropriate to carry out and consummate the intent and purposes of the foregoing resolutions and/or all of the transactions contemplated therein or thereby, the authorization therefor to be conclusively evidenced by the taking of such action or the execution and delivery of such agreements, amendments to agreements, certificates, instruments, agreements or documents; and further

RESOLVED, that to the extent that any act, action, filing, undertaking, execution or delivery authorized or contemplated by these resolutions has been previously accomplished, all of the same is hereby ratified, confirmed, accepted, approved and adopted by the Board of Directors as if such actions had been presented to the Board of Directors for its approval before any such action's being taken, agreement being executed and delivered, or filing being effected.

Board of Directors
Agenda Item #6a
Financing Programs Updates and Recommendations
FY 2022 Report Out

Financing Programs

FY22 Performance



Product/Program	Projects			Capital Deployed			Capacity (MW)		
	Closed	Target	% to Target	Closed	Target	% to Target	Closed	Target	% to Target
Commercial Solar PPA	15	37	41%	\$5,182,599	\$17,652,000	29%	2.5	11.0	23%
CPACE	23	30	77%	\$24,162,207	\$22,838,680	106%	3.2	6.3	51%
SBEA	652	614	106%	\$11,892,905	\$9,260,800	128%	0.0	0.0	0%
Multi-Family H&S	0	1	0%	\$0	\$600,000	0%	0.0	0.0	0%
Multi-Family Pre-Dev	0	0	0%	\$0	\$0	0%	0.0	0.0	0%
Multi-Family Term	3	2	150%	\$2,060,000	\$300,000	687%	0.9	0.2	470%
Strategic Investments	0	0	0%	\$0	\$0	0%	0.0	0.0	0%
Total	690	679	102%	\$40,269,468	\$48,951,480	82%	5.3	16.5	32%

CPACE FY22 Performance



Source	Projects			Capital		
	Closed	Target	% to Target	Closed	Target	% to Target
CGB	11	17	65%	\$ 6,030,066	\$ 5,838,680	103%
Third Party Lenders	12	13	92%	\$18,132,141	\$17,000,000	107%
Total	23	30	77%	\$24,162,207	\$22,838,680	106%

- CGB average project size - \$548,187
Third Party Lender average project size - \$1,511,011
- Most lenders are focused on large new construction and repositioning projects.
- CGB playing valuable market role by focusing on smaller projects, particularly retrofits.

Commercial Solar PPA FY22 Performance



- Significant disruptions have hit the U.S solar market in 2022
- Supply chain issues, trade issues, and commodity price and wage inflation have driven up costs, reduced supply of equipment, and lengthened equipment delivery times
- According to the [Solar Energy Industry Association](#) and WoodMackenzie, the cost of solar installations has increased by between six and ten percent in 2021. In Q1 2022, the prices for commercial installations were up ten per cent compared to a year earlier.
- According to WoodMackenzie’s pipeline data 17.6 GW_{DC} of projects in development were delayed by over a year

	Closed	Target	State	Municipal	Total	% to Target
Projects	15	37	12	13	40	108%
MWs	2.5	11	9.976	2.24	14.716	134%
Capital Deployed	\$5,182,599	\$17,652,000	\$19,360,000	\$3,850,000	\$28,392,599	161%

Board of Directors

Agenda Item #6b

Financing Programs Updates and Recommendations

C-PACE Program Guidelines –

Recharging Infrastructure

C-PACE Program Guidelines

Recharging Infrastructure



Last session, the Connecticut Legislature revised the C-PACE enabling statute, adding Zero-emission vehicle (ZEV) refueling infrastructure and resiliency to Eligible Energy Improvements. The proposed guideline amendments integrate the refueling change. Resiliency will be more fully addressed later in the year or early 2023.

Current Edits

- Added Zero-emission vehicle (ZEV) refueling infrastructure and resiliency to Eligible Energy Improvements.
- Exempted ZEV refueling structures from the Savings to Investment Ratio (SIR) requirement. Added details regarding ZEV refueling projects.
- Simplified third party capital provider application process and brought in line with current program practice
- Edited throughout for clarity.

Process and Timing

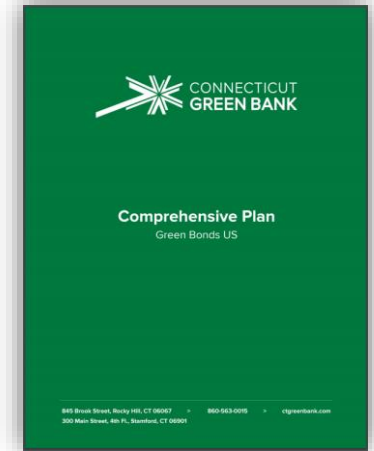
- Public comment in August.
- BOD approval on October 21, 2022.
- Guidelines effective immediately thereafter.

Board of Directors

Agenda Item #6c

Financing Programs Updates and Recommendations
Sustainable CT

Sustainable CT Grant Citizen Engagement



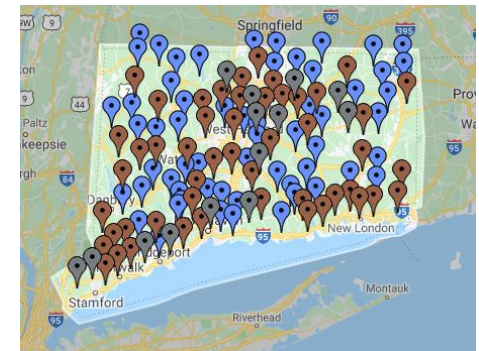
CGB Comprehensive Plan:

Sustainable CT and Green Bank partnership focuses on:

- **Driving investment** in projects in our communities;
- **Community-level engagement** that is inclusive, diverse and “knitted”;
- Creating a structure that harnesses all types of **capital for impact**;
- Developing a business model that **covers the cost of the program**; and
- Creating a **measurable impact**, both qualitative and quantitative.

Sustainable CT

- Launched in 2018 at annual CCM convention
- 129 of 169 CT towns registered and 66 towns certified
- 12 areas of voluntary action areas, includes CGB programs



Sustainable CT Grant Measurable Impact



Key outcomes:

- 51 towns received municipal solar site reviews, 23 closed projects, 5MW solar
- 3 town campaigns for Solar for All: 3 campaigns yielded 79 closed projects
- 4 town hosted business webinars for C-PACE program, 5 towns doing active outreach
- Ongoing support for Fellows – since 2018, 66 Fellows providing 25,000+ hours direct support to communities



NEW HAVEN, CT

A Link to Youth is a Link to the Future!

Help NCAT create a bike education program for middle school students, building a new generation of safe cyclists

\$1,365 of \$7,500 1 day left

★ Matching Grant: Sustainable CT

NEW HAVEN, CT

Climate Education and Action Project

NHLSCP is raising funds to support expanding youth-led climate and health education work in local high schools.

\$3,865 of \$3,337 Project Closed

★ Matching Grant: Sustainable CT

HARTFORD, CT

RBG Mural for CRT Women's Empowerment Center in Hartford

CRT will honor legacy of Justice Ruth Bader Ginsburg and other women leaders with powerful mural for

\$8,220 of \$7,500 Project Closed

★ Matching Grant: Sustainable CT

Sustainable CT Grant

Increasing CGB Impact



\$125,000 Grant

- \$25,000 matching grant for Sustainable CT Fellows Program
- \$20,000 matching grants for projects through crowdfunding platform
- \$80,000 organizational support

Leveraging existing partnership to further align programs

- **Awareness:** as more towns become registered in the SCT program, they learn how CGB programs enable them to take action on sustainability projects
- **Community- level Engagement**
 - Battery Storage: support community-based marketing to include SCT channel
 - Environmental Infrastructure: get town input to guide program development
 - Solar PPA: support outreach to target towns to achieve program goals
 - C-PACE: no less than 3 SCT communities, 10 leads
- **Lessons Learned:** sharing best practices to accelerate clean energy uptake
 - PV interest income from PPA projects can cover cost of the grant

Sustainable CT Grant

Strategic Selection



- **Special Capabilities:** Sustainable CT has exceptional experience and expertise in community engagement and ability to further the CGB model
- **Uniqueness:** unique opportunity to leverage momentum and heightened awareness of Green Bank resources to further drive program activity and new program development
- **Strategic Importance:** CGB renewed emphasis on community engagement and public awareness is put into action through SCT program's broad reach
- **Multiphase; Follow-on Investment:** grant bolsters SCT capabilities to support municipalities' participation in CGB incentive and investment programs
- **Urgency and Timeliness:** timely renewal of grant support allows community support and engagement in our programs to continue uninterrupted

Resolution #6



NOW, therefore be it:

RESOLVED, that the Board approves Green Bank to enter into a Grant Agreement with Sustainable CT as a strategic selection;

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 Sustainable CT grant agreement 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.

Board of Directors

Agenda Item #6d

Financing Programs Updates and Recommendations

Municipal Assistance Program

Solar MAP

Towns & Cities



Solar Municipal Assistance Program

- Makes it even easier for municipalities to access renewable energy and achieve energy savings using the Green Bank Solar PPA
- Provides technical assistance support that simplifies every step of the process
- Administers RFP to competitive select installation partner
- Bundles projects to achieve economics of scale and deliver savings

	Round 1	Round 2	Round 3
Municipalities	4	9	2
# of Projects	11	20	2
MW of solar	3	4	1.3
Avg Discount to Utility	35%	34%	TBD



Resolution #7



NOW, therefore be it:

RESOLVED, that the Board recognizes the importance of balancing the deployment of clean energy, supporting municipalities and not competing with the private sector; and

RESOLVED, that the Board recognizing that Solar MAP is creating more opportunities for the market and assistance to towns who seek assistance; and

RESOLVED, that the Board support for continuing Solar MAP and other municipal assistance programs to lower their energy costs and confront climate change; and

RESOLVED, that the Board approves of the program and the inclusion of Solar MAP in the Comprehensive Plan; and

RESOLVED, the Board directs staff to develop marketing materials that clearly communicate the intentions of the program.

Board of Directors
Agenda Item #7a
Investment Updates and Recommendations
FY 2022 Report Out

FY 22 Investments

Preliminary Progress to Targets



Program	Description	Activity Type	Budget			Actual				
			Rate	Term	Principal	Rate	Term	Principal	Total Investment Income	PV of Interest Income
Multifamily Pgms	C4C Lime facility draws	Forecast draws on existing loan facility	4.0%	15	\$ 200,000	4.0%	15	\$ 200,000	\$ 67,900.00	\$ 57,789.00
CPACE	CGB Portfolio	New CPACE Loans	5.60%	17.5	\$ 5,000,000	5.38%	18.2	\$ 3,238,094	\$ 1,880,521.00	\$ 1,544,216.00
Solar PPA Development	PPA State	New Debt to fund supporting State Solar PPA projects	3.0%	20	\$ 9,000,000	3%	20	\$ 1,573,954	\$ 524,846.00	\$ 427,914.00
Solar PPA Development	PPA Municipality	New Debt to fund supporting Municipal Solar PPA projects	3.75%	20	\$ 2,347,200	4%	20	\$ 741,496	\$ 339,240.00	\$ 275,789.00
Solar PPA Development	PPA Developers		4.50%	20	\$ 1,257,000	5%	20	\$ 659,295	\$ 387,482.00	\$ 314,132.00
Solar PPA Development	PPA Debt to 3rd parties		4.50%	15	\$ 4,100,000	5%	15	\$ 1,794,111	\$ 766,796.00	\$ 654,787.00
SBEA/BEA	Regular Loan Purchases	3 additional tranches purchased	3.50%	4	\$ 1,447,000	2.25%	5	\$ 819,022	\$ 49,137.00	\$ 46,609.00
Multifamily Programs	PPA Multifamily	expected closing of projects in pipeline	4.25%	20	\$ 270,000	0%	0	\$ -		
CE Finance Prg	Strategic Investments	Debt to support the FuelCell Groton	8.0%	10	\$ 3,200,000	0%	0	\$ -		
Hydro Projects	Strategic Investments	Canton Hydro: Loan \$1.2M loan + \$.5M Guaranty	8%	15	\$ 1,700,000	8%	15	\$ 1,170,157	\$ 859,952.00	\$ 727,275.00
CE Finance Prg	Strategic Investments	Unspecified	4.0%	10	\$ 5,000,000	0%	0	\$ -		
LMI Programs	Posigen - Junior facility	Restructured Facility for Resi Solar	0%	0	\$ -	7.5%	6	\$ 6,999,432	\$ 1,756,925.00	\$ 1,644,372.00
Solar PPA Development	Commercial Projects		0%	0	\$ -	3.75%	20	\$ 96,621	\$ 41,152.00	\$ 33,479.00
CE Finance Prg	Strategic Investments	Loan Facility for Budderfly	0%	0	\$ -	9%	6	\$ 5,000,000	\$ 1,489,193.00	\$ 1,397,882.00
Total					\$ 33,521,200			\$ 22,292,181	\$ 8,163,144	\$ 7,124,244

FY22 Investments have already generated \$200K in warrant income and will generate an additional \$8.2MM of interest income over their life.

Board of Directors

Agenda Item #7b

Investment Updates and Recommendations

Extension Request – Groton Fuel Cell

Resolution #8



NOW, therefore be it:

RESOLVED, that the Green Bank Board hereby approves the extension of time for the execution of the Credit Facility to not later than 682 days from the original date of authorization by the Board (i.e., not later than October 31, 2022);

RESOLVED, that the President of the Green Bank and any other duly authorized officer is authorized to take appropriate actions to provide the Credit Facility to FCE (or a special purpose entity wholly-owned by FCE) in an amount not to exceed \$8,000,000 with terms and conditions consistent with the memorandum submitted to the Board dated December 18, 2020 (the “Memorandum”), and as he or she shall deem to be in the interests of the Green Bank and the ratepayers; and,

RESOLVED, that the proper Green Bank officers are authorized and empowered to do all other acts and execute and deliver all other documents and instruments as they shall deem necessary and desirable to effect the Term Loan and participation as set forth in the Memorandum.

Board of Directors

Agenda Item #7c

Investment Updates and Recommendations

Investment Modification Request – Cargill Falls

Historic Cargill Falls Mill Project Update



- **Project Background:** Putnam CT mill redevelopment to mixed-use residential (82 units – incl 34 DOH low income / restricted) and commercial space, 2 hydro electric turbines (~900 kW total capacity fed by the Quinebaug River) and energy conservation measures
- **Real Estate Update:**
 - **Residential** occupancy at 100%; Renewal Rate 75-80% (above 65-75% typical renewal rate); 140 wait list (most units renewing July & August)
 - Annual income from **Commercial** Leases: ~\$80 + ~\$30k additional starting December 2022.
- **Hydro Update:**
 - Pending DOT permit. Plan submitted by project was rejected. New plan requires flagger during road closure. Added cost can be absorbed by budget
 - Work to be completed by mid August, notice has been provided to FERC
- Items impairing property's **cash flow:**
 - Delays in hydro: ~\$100k: \$70k in electricity savings + \$30k sale of excess generation.
 - Other: \$45k paid to CT for tax bills from prior year (unrelated to the hydro)

Historic Cargill Falls Mill Project Update



Historic Cargill Falls Mill Payment Modification



- Current CPACE Structure:
 - **First Benefit Assessment Lien:** \$8,811,116.72 (\$7.1M loan + \$1.7M capitalized interest).
 - 35 year term, 5% interest rate
 - Repayment start date of July 1, 2022
 - Supplemental Interest: 0.95% interest paid annually after financials are submitted
 - **Second Benefit Assessment Lien:** \$1,000,000
 - 10 year term; 5% interest
 - Repayment start date of January 1, 2022
 - A 3-1/2 year interest only period ending 1/1/2025
- First Benefit Assessment Payment due July 2022 - \$255,163.97 principal + \$8,560.61 interest
- **Modification:** interest portion due (the \$8k) to be paid in July, principal portion (the ~\$255k) to be added to the Second Benefit Assessment Lien.

Resolution #9



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 Amendment in a total amount not to exceed the sum of (i) the Current Loan being secured by a C-PACE benefit assessment, plus any and all interest accrued, plus (ii) \$260,000, with terms and conditions consistent with the memorandum submitted to the Board dated July 15, 2022, and as he or she shall deem to be in the interests of the Green Bank and the ratepayers no later than 180 days from July 22, 2022; and,

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

Board of Directors
Agenda Item #9
Other Business

Hydrogen Study Task Force

Update

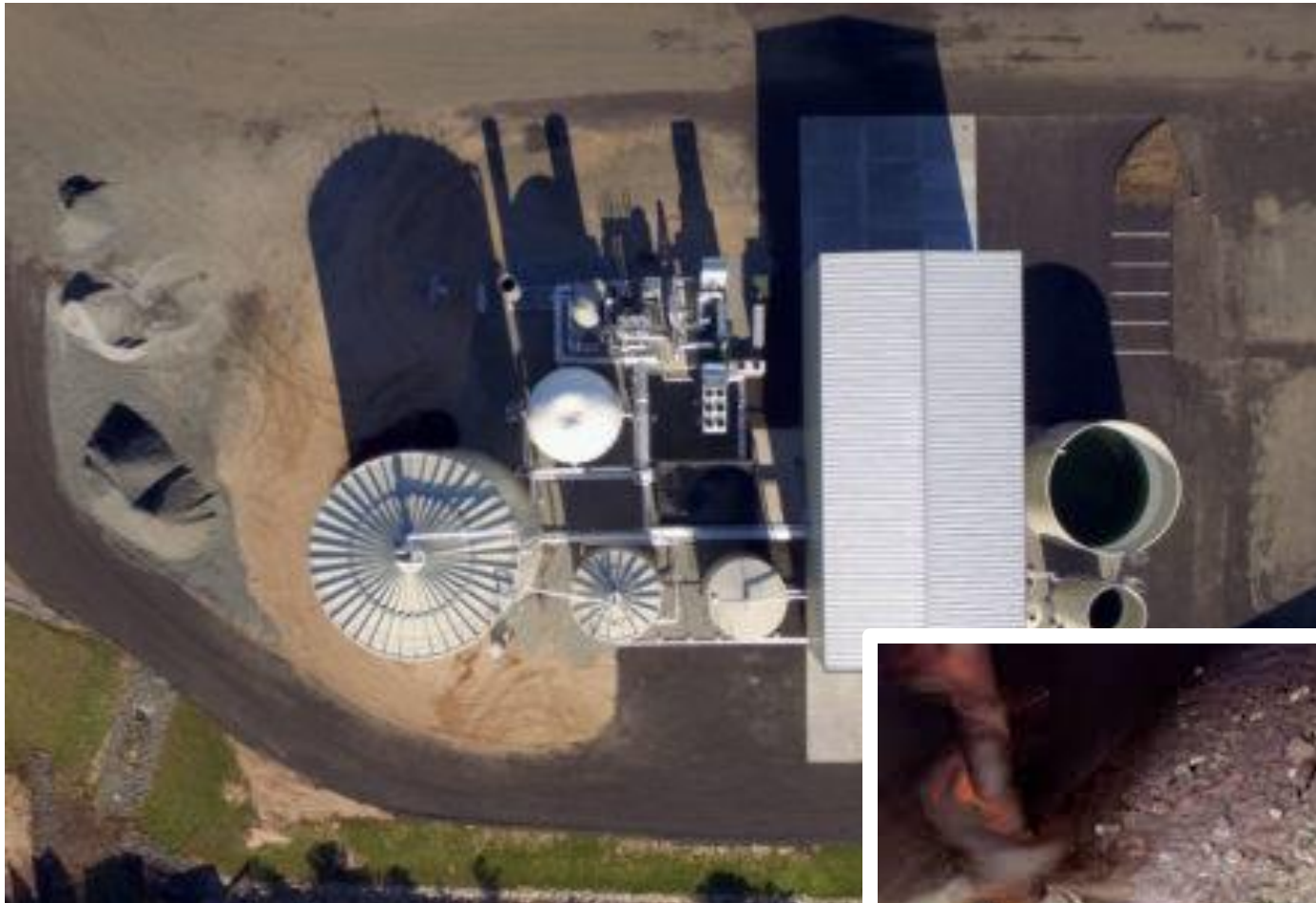


- **Launch** – Tuesday, July 12, 2022 with Rep. Arconti and Sen. Formica...next meeting at UCONN on August 9 from 10:00-noon
- **Members and Consultant** – still onboarding appointed members alongside ex officio members, and hired Strategen to assist

Appointer	Organization	Name	Title
Majority Leader Senate	AFL-CIO	Keith Brothers	Business Manager
Minority Leader Senate	United Illuminating	Frank Reynolds	President and CEO
Speaker of House	Eversource Nel Hydrogen	Digaunto Chatterjee Katherine Ayers	VP of System Planning VP of R&D
Minority Leader House	Dominion Energy Infinity Fuel	Mary Nuara William Smith	State Policy Directors President and CEO
Ex Officio	DEEP	Katie Dykes	Commissioner
Ex Officio	PURA	Marissa Gillett	Chair
Ex Officio	UCONN	Radenka Maric	Interim President
Ex Officio	CCAT	Joel Rinebold	Director of Energy Initiatives
Ex Officio (Chair)	CT Green Bank	Bryan Garcia	President and CEO

Quantum Biopower

Site Tour on July 27 from 10:00-1:00



GFOA

Certificate of Achievement – FY21 ACFR



Government Finance Officers Association
203 North LaSalle Street, Suite 2700
Chicago, Illinois 60601-1210
312.977.9700 fax: 312.977.4806

7/15/2022

Lonnie Reed
Chairperson
Connecticut Green Bank

Dear Ms. Reed:

We are pleased to notify you that your annual comprehensive financial report for the fiscal year ended June 30, 2021 qualifies for GFOA's Certificate of Achievement for Excellence in Financial Reporting. The Certificate of Achievement is the highest form of recognition in governmental accounting and financial reporting, and its attainment represents a significant accomplishment by a government and its management.

When a Certificate of Achievement is awarded to a government, an Award of Financial Reporting Achievement (AFRA) is also presented to the individual(s) or department designated by the government as primarily responsible for its having earned the Certificate. This award has been sent to the submitter as designated on the application.

We hope that you will arrange for a formal presentation of the Certificate and Award of Financial Reporting Achievement, and give appropriate publicity to this notable achievement. A sample news release is included to assist with this effort.

We hope that your example will encourage other government officials in their efforts to achieve and maintain an appropriate standard of excellence in financial reporting.

Sincerely,

A handwritten signature in black ink that reads "Michele Mark Levine".

Michele Mark Levine
Director, Technical Services

CONNECTICUT GREEN BANK
(A COMPONENT UNIT OF THE STATE OF CONNECTICUT)
ANNUAL COMPREHENSIVE FINANCIAL REPORT
FISCAL YEAR ENDED JUNE 30, 2021
(With Summarized Totals as of and for Fiscal Year Ended June 30, 2020)

Department of Finance and Administration
75 Charter Oak Avenue, Suite 1-103
Hartford, Connecticut

Board of Directors

Agenda Item #10
Adjourn



**BOARD OF DIRECTORS OF THE
CONNECTICUT GREEN BANK**
Regular Meeting Minutes

Friday, June 24, 2022
9:00 a.m. – 11:00 a.m.

A regular meeting of the Board of Directors of the **Connecticut Green Bank (the “Green Bank”)** was held on June 24, 2022.

Due to COVID-19, all participants joined via the conference call.

Board Members Present: Bettina Bronisz, designee for OTT, Dominick Grant, Victoria Hackett, John Harrity, Adrienne Farrar Houël, Laura Hoydick, Matthew Ranelli, Lonnie Reed.

Board Members Absent: Binu Chandy, Matthew Dayton, Thomas Flynn, Brenda Watson

Staff Attending: Sergio Carrillo, Brian Farnen, Bryan Garcia, Bert Hunter, Alex Kovtunenکو, Cheryl Lumpkin, Jane Murphy, Ariel Schneider, Eric Shrago, Dan Smith

Others present: Claire Sickinger, Giulia Bambara

1. Call to Order

- Lonnie Reed called the meeting to order at 9:04 am.

2. Public Comments

- No public comments.

3. Consent Agenda

Bryan Garcia briefly reviewed the items on the Consent Agenda. Each item was voted on independently due to Bettina Bronisz needing to abstain from Resolution 1.

a. Meeting Minutes of April 22, 2022

Resolution #1

Motion to approve the meeting minutes of the Board of Directors for April 22, 2022.

Upon a motion made by John Harrity and seconded by Victoria Hackett, the Board of Directors voted to approve the Resolution 1. None opposed or and Bettina Bronisz

Subject to Changes and Deletions

abstained. Motion approved.

b. Staff Approval of 2 C-PACE transactions

Resolution #2

WHEREAS, on January 18, 2013, the Connecticut Green Bank (the “Green Bank”) Board of Directors (the “Board”) authorized the Green Bank staff to evaluate and approve funding requests less than \$300,000 which are pursuant to an established formal approval process requiring the signature of a Green Bank officer, consistent with the Green Bank Comprehensive Plan, approved within Green Bank’s fiscal budget and in an aggregate amount not to exceed \$500,000 from the date of the last Deployment Committee meeting, on July 18, 2014 the Board increased the aggregate not to exceed limit to \$1,000,000 (“Staff Approval Policy for Projects Under \$300,000”), on October 20, 2017 the Board increased the finding requests to less than \$500,000 (“Staff Approval Policy for Projects Under \$500,000”); and

WHEREAS, Green Bank staff seeks Board review and approval of the funding requests listed in the Memo to the Board dated June 24, 2022 which were approved by Green Bank staff since the last Deployment Committee meeting and which are consistent with the Staff Approval Policy for Projects Under \$500,000;

NOW, therefore be it:

RESOLVED, that the Board approves the funding requests listed in the Memo to the Board dated June 24, 2022 which were approved by Green Bank staff since the last Deployment Committee meeting. The Board authorizes Green Bank staff to approve funding requests in accordance with the Staff Approval Policy for Projects Under \$500,000 in an aggregate amount to exceed \$1,000,000 from the date of this Board meeting until the next Deployment Committee meeting.

Upon a motion made by Laura Hoydick and seconded by Bettina Bronisz, the Board of Directors voted to approve the Resolution 2. None opposed or abstained. Motion approved unanimously.

c. Groton Subbase FuelCell Energy Project

- John Harranty’s poor internet connection and question had the Board discuss Resolution 3 further after the vote was made, and it was updated after the discussion to include John Harranty’s opposition. John Harranty commented that a recent attempt to organize a Union at FuelCell Energy resulted in employment issues for the workers and asked if the Green Bank could investigate their history and policies further in terms of corporate responsibility.
 - Lonnie Reed commented that this is something that could be considered going forward as it has a greater impact beyond just FuelCell Energy. Laura Hoydick responded that there are other departments that should be investigating this further and this is not the role of the Green Bank, and the Department of Labor and others may be more appropriate. Matthew Ranelli suggested that employment violations may be an area to research more for future partnerships with potential companies going forward. Adrienne Houël commented that it is a broad policy concept that needs more development before the practices of how to investigate are determined.

Subject to Changes and Deletions

Brian Farnen commented that the Green Bank also tries to be politically agnostic and does not always mirror what the State does. Laura Hoydick noted that she agrees that the Green Bank should be politically neutral.

Resolution #3

WHEREAS, in accordance with (1) the statutory mandate of the Connecticut Green Bank (“Green Bank”) to foster the growth, development, and deployment of clean energy sources that serve end-use customers in the State of Connecticut, (2) the State’s Comprehensive Energy Strategy (“CES”) and Integrated Resources Plan (“IRP”), and (3) Green Bank’s Comprehensive Plan (the “Comprehensive Plan”) in reference to the CES and IRP, Green Bank continuously aims to develop financing tools to further drive private capital investment into clean energy projects;

WHEREAS, FuelCell Energy, Inc., of Danbury, Connecticut (“FCE”) has used previously committed funding (the “Bridgeport Loan”) from Green Bank to successfully develop a 15 megawatt fuel cell facility in Bridgeport, Connecticut (the “Bridgeport Project”), and FCE has operated and maintained the Bridgeport Project without material incident, is current on payments under the Bridgeport Loan;

WHEREAS, FCE has requested financing support from the Green Bank to develop a 7.4 megawatt fuel cell project in Groton, Connecticut located on the U.S. Navy submarine base and supported by a power purchase agreement (“PPA”) with the Connecticut Municipal Electric Energy Cooperative (“CMEEC”) (the “Navy Project”);

WHEREAS, staff has considered the merits of the Navy Project and the ability of FCE to construct, operate and maintain the facility, support the obligations under the Loan throughout its 20-year term, and as set forth in the due diligence memorandum (the “Board Memo”) dated December 18, 2020, recommended this support be in the form of a term loan not to exceed \$8,000,000, secured by all project assets, contracts and revenues as well as a pledge of revenues from an unencumbered project as explained in the Board Memo (the “Credit Facility”);

WHEREAS, on the basis of that recommendation, the Green Bank Board of Directors (“Board”) approved of the Credit Facility, in an amount not to exceed \$8,000,000 with the provision that the Credit Facility be executed no later than 315 days from the date of authorization by the Board (June 16, 2021), which was further extended by the Board on a number of occasions, including in April 2022 to June 30, 2022;

WHEREAS, Green Bank staff has further advised the Board that the closing for the Credit Facility is expected to close in early July 2022 and to accommodate the additional time that might be needed to execute the Credit Facility requests the permitted time to execute the credit facility be increased from not later than 559 days from the original date of authorization by the Board (June 30, 2022) to not later than 590 days from the date of authorization by the Board (i.e., to July 31, 2022);

NOW, therefore be it:

RESOLVED, that the Green Bank Board hereby approves the extension of time for the execution of the Credit Facility to not later than 590 days from the original date of authorization by the Board (i.e., not later than July 31, 2022); and

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RESOLVED, that the President of the Green Bank and any other duly authorized officer is authorized to take appropriate actions to provide the Credit Facility to FCE (or a special purpose entity wholly-owned by FCE) in an amount not to exceed \$8,000,000 with terms and conditions consistent with the memorandum submitted to the Board dated December 18, 2020 (the "Memorandum"), and as he or she shall deem to be in the interests of the Green Bank and the ratepayers; and

RESOLVED, that the proper Green Bank officers are authorized and empowered to do all other acts and execute and deliver all other documents and instruments as they shall deem necessary and desirable to affect the Term Loan and participation as set forth in the Memorandum.

Upon a motion made by Laura Hoydick and seconded by Bettina Bronisz, the Board of Directors voted to approve the Resolution 3. John Harrity opposed and none abstained. Motion approved.

4. 2022 Legislative Session in Review

a. Legislative Session

- Brian Farnen summarized the updates and revisions decided during the recent legislative session. Bryan Garcia reviewed the legislation related to PA 22-25 CT Clean Air Act and HB-5506 State Budget Implementer, especially regarding electric school buses in environmental justice communities and RGGI funds from the Green Bank.
 - Laura Hoydick asked for clarification about the nuclear exemption from the moratorium and Brian Farnen answered that though it enables small, modular nuclear energy at the Dominion site, he does not expect to see more around the state.
 - Lonnie Reed asked about the Hydrogen Study Task Force, if there had been any progress on the previously proposed green hydrogen storage facility in Orange, CT. Bryan Garcia responded that there hasn't been a discussion about that specifically with Avangrid, but they are likely to have one or more seats on the task force. Legislative leaders have to identify representatives first.

b. Hydrogen Study Task Force

- Bryan Garcia summarized the history of hydrogen fuel cells within Connecticut, the background of Act 22-8 which establishes the task force, and the task force's membership composition. He reviewed the areas to that the task force will address and what other areas may be examined that are not required by statute but could be data points with crossover.

5. Committee Recommendations and Updates

a. Budget, Operations, and Compensation Committee

i. Proposed FY 2023 Targets, Budget, and Investments

- Eric Shrago summarized the targets for the Incentive Programs which is for \$34.9 MM in investment for 1,460 projects that will deploy 7.8 MW of clean energy, annually avoiding 6,554 TCO₂ and create 181 direct, indirect, and induced job years. Bryan Garcia added that the RSIP program is not present as the acquisition aspects of the Program has ended, congratulated the team for their hard work, and noted there is a shift to focus on managing those assets in terms

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of SHRECs created that generate revenues to payback bonds, incentives, and administrative costs.

- Matthew Ranelli congratulated the team and asked if the incentive level was lower than other states and Bryan Garcia responded yes, then elaborated further on the difference between those states' programs and Connecticut's.
- Eric Shrago summarized the targets for the Financing Programs which will support \$64.2 MM in investment for 882 projects that will deploy 7.6 MW of clean energy, annually avoiding 48,073 TCO₂ and will create 566.4 direct, indirect, and induced job years. He noted that the capacity is lower than recent years due to not setting a capacity target around C-PACE, which had inadvertently created a strange incentive to pursue solar energy projects instead of energy efficiency projects. From an EM&V perspective, this seems to be a better way to forecast. He elaborated further on some of the different Financing Programs.
 - Bryan Garcia noted that for the Behind the Meter energy solutions program, the early developmental point of the program may also affect the C-PACE project targets and total PPA project targets. He also thanked those who had worked hard last year to include Multifamily and Affordable housing in the Behind the Meter programs for residential properties.
 - Eric Shrago summarized the FY 2023 Budget, highlighting the net YOY increases to revenues, operating expenses, program incentives and grants, and non-operating expenses. He reviewed some of the things that have affected the different areas of the budget. Bryan Garcia clarified the state is headed into a formula grant period through the Federal Infrastructure and Jobs Act and that the federal government is also starting to solicit competitive projects as well which may include grant matches. He stated want some resources to put into RFPs in order to make Connecticut more competitive in bringing federal dollars back to the state.
 - Victoria Hackett commented that as the states work through the formula funding and competitive funding, the Board should discuss the requirements for the different funding sources and other information to make sure there is a coordinated approach when applying to programs. Bryan Garcia agreed and Victoria Hackett added that she just wanted to be sure there wasn't too much internal competition for the same funds.
 - Eric Shrago reviewed the targets to Investments which includes a \$37.4 MM investment using CEF and RGGI proceeds, which will deliver \$12.9 MM in interest income over time or a weighted average return of 4.42% over 8 years, thereby exceeding the portfolio target of 4% interest over an average 10-year term.
 - Eric Shrago noted there was not a formal recommendation for Resolution 4 because of a lack of quorum at the last BO&C Meeting though it was positively supported by those who had been present at the meeting.
 - John Harrity commented that he thinks there was support for the budget and thanked Eric Shrago and the team for their hard work and presentation. Adrienne Houël expressed her support for the budget.
 - Matthew Ranelli asked if the numbered PSAs in the Resolution have been looked at to be sure they comply with procurement guidelines. Brian Farnen responded that the requirement, which is not waivable, is that if they are over \$150,000, they have to go out to a competitive bid process. For certain longer-term contracts, the bid process happens every 3 years. Eric Shrago noted the only exception is Inclusive Prosperity Capital because of the unique relationship with the Green Bank which was brought before the State Ethics Board previously for approval for a 6-year cycle.
 - Bettina Bronisz asked what Stark Raving does, and Eric Shrago responded they are a marketing and media agency.

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Resolution #4

WHEREAS, pursuant to Section 5.2.2 of the Connecticut Green Bank (Green Bank) Bylaws, the Budget, Operations and Compensation Committee (BOC) is charged with the review and approval of, and in its discretion recommendations to the Board of Directors (Board) regarding the annual budget and staffing plan for the organization;

WHEREAS, Connecticut Green Bank (Green Bank) staff have reviewed with the Budget, Operations, & Compensation (BOC) Committee the Fiscal Year 2023 Targets and Budget; and

WHEREAS, the Budget, Operations, and Compensation Committee discussed staff entering into new or extending existing professional services agreements (PSAs) with the following, contingent upon a competitive bid process having occurred in the last three years:

- I. Adnet Technologies, LLC
- II. Clean Power Research, LLC
- III. Alter Domus (formerly Cortland)
- IV. CSW LLC
- V. Inclusive Prosperity Capital
- VI. AlsoEnergy LLC
- VII. DNV (includes what was formerly ERS)
- VIII. Guidehouse (formerly Navigant)
- IX. Novasource (f.k.a. SunSystem Technology - SST)
- X. PKF O'Connor Davies
- XI. C-TEC Solar, LLC
- XII. Stark Raving
- XIII. Kevala Analytics

For fiscal year 2023 with the amounts of each PSA not to exceed the applicable approved budget line item.

NOW, therefore be it:

RESOLVED, that Green Bank Board of Directors hereby approves: (1) the FY 2023 Targets and Budget, and (2) the PSAs with the 13 strategic partners listed above.

Upon a motion made by Matthew Ranelli and seconded by Victoria Hackett, the Board of Directors voted to approve Resolutions 4. None opposed or abstained. Motion approved unanimously.

b. Audit, Compliance, and Governance Committee

i. Draft Quarterly Reports

- Bryan Garcia reviewed the reporting history and structure, noted that in Q1 of FY 2023 the Green Bank will be providing the Board with comprehensive financial statements on a quarterly basis, and they will also include an abridged version to help the Board understand and communicate important points within the reports to their appointing authority. He summarized the four key messages of the abridged statements which is to make an impact, mobilize private investment, achieve sustainability, and monitor state benefit allocation. He showed an example of what the report will look like.

- Laura Hoydick asked for the Making an Impact reports, if she could receive information

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beyond the district of the appointee. Bryan Garcia responded that it should be easy enough to include several levels of parameters. Eric Shrago said there is the ability to create custom views for different geographic areas and to let him know, as it could be generated as requested.

- Laura Hoydick stated the COGS have been very active and keeping them up to date with this information would be beneficial.

6. Incentive Programs Updates and Recommendations

a. Energy Storage Solutions – Upfront Incentives Greater than \$500,000

- Sergio Carrillo summarized the current progress within the Energy Storage Solutions program. For Residential, there are 99 applications of unapproved projects in the queue and for Non-Residential there are 4.6 MW of approved projects and 59.7 MW of unapproved projects in the queue. He reviewed the deployment targets, application and approval process, tear sheet details for project applications, and intention for approval for Reservation of Funds letters via the Consent Agenda. He noted there is a sample of the process and paperwork in the Board packets.

- Lonnie Reed asked if there was a hard deadline to determine the time between Reservation of Funds to Confirmation of Funds letters. Sergio Carrillo answered there is an 18-month timeframe once the Reservation of Funds letter is issued. Some larger projects may have problems meeting that deadline due to needing certain studies performed before the utilities allow them to interconnect with the distribution networks.
- Victoria Hackett asked for clarification about downsizing a system if the cost-benefit analysis is run again to determine if the new system is still beneficial. Sergio Carrillo answered that yes, the BCA would be run again to be sure the project is still of value.
- Victoria Hackett asked if the responsibility of the upgrades to the distribution system to interconnect is on the developer or the Green Bank. Sergio Carrillo responded yes, it is the responsibility of the developer. Victoria Hackett stated part of the problem is that the cost of the interconnection is difficult to determine up-front and asked about the efficiency of the process and if there was a better method, raising it as a general concern. Sergio Carrillo noted he is seeing similar issues on some solar projects as well, though PURA has been leading the discussion about how to make it more manageable for project owners. Victoria Hackett asked for follow-up regarding how the cost benefit is analyzed once the interconnection fees are known and if the project is resized.

Matthew Ranelli left the meeting at 10:30 am.

Resolution #5

WHEREAS, the Connecticut Green Bank (“Green Bank”) was appointed Co-Administrator to the Energy Storage Solutions (ESS) Program (“Program”) by PURA pursuant its Final Decision, within docket Docket No. 17-12-03RE0 (PURA Investigation into Distribution System Planning of the Electric Distribution Companies – Electric Storage) on July 28, 2021;

WHEREAS, the Program responsibilities of the Green Bank established by the July 28, 2021 Final Decision, include customer enrollment, upfront incentive administration, communication and promotion of the Program, and data aggregation and publication;

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WHEREAS, the Green Bank proposes to administer the upfront incentive payments as through (i) the issuance of a Reservation of Funds (ROF) letter, provided to the project developer and customer upon verification that the Battery Energy Storage System (BESS) meets the minimum technical requirements necessary to participate in the Program, including equipment roundtrip efficiency and warranty, ability to comply with passive and active dispatch modes, and demonstrated ability to communicate with the dispatch platforms; (ii) the issuance of a Confirmation of Funds (COF) letter upon the completed installment of all equipment, the procurement of required utility permits, and the verification of connectivity with dispatch platforms;

WHEREAS, residential projects with an estimated upfront incentive payment not equal to or greater than \$500,000 shall be approved by Green Bank staff and upon approval be issued a ROF letter; and, for a non-residential project with an estimated upfront incentive payment greater than or equal to \$500,000, the Green Bank shall prepare a curated proposal to the Board for approval, per the bylaws of the Green Bank;

WHEREAS proposals for projects with an estimated upfront incentive payment equal to or greater than \$500,000 shall include a Tear Sheet outlining customer, project, and site information; priority customer eligibility criteria, BESS characteristics, ratepayer and societal benefits generated by the program as represented by benefit-cost analysis ratios, and information related to the estimated upfront incentive payment;

WHEREAS, within the existing Board and Deployment Committee regular meeting schedule, the Green Bank staff shall seek Board approval of non-residential projects with estimated upfront incentive payments equal to or greater than \$500,000 via consent agenda, and, upon approval by the Board, Green Bank staff shall issue ROF letters to the project developer and customer;

WHEREAS, after projects are fully operational, Green Bank staff shall notify the Board of their intent to issue COF letters, and, and as necessary, provide an analysis and explanation for any differential between a approved estimated upfront incentive payment and the final incentive amount.

NOW, therefore be it:

RESOLVED, that the Board hereby approves the Green Bank's administration of upfront incentive payments as set forth in the memorandum to the Board dated June 24, 2022;

RESOLVED, that the Board hereby approves that upfront incentive payments under \$500,000, as estimated by the Green Bank in fulfillment of its responsibilities set forth in the Program, be issued a ROF letter upon approval by internal Green Bank staff;

RESOLVED, that the Board hereby approves the implementation of an Upfront Incentive Project Approval procedure ("Procedure") involving of the issuance of a proposal for non-residential projects under consideration by the Green Bank in fulfillment of its responsibilities set forth in the Program with an estimated upfront incentive payment greater than \$500,000;

RESOLVED, that as part of the Procedure, the Board hereby approves that Green Bank staff shall obtain Board approval of such estimated upfront incentive payments via consent agenda utilizing the Tear Sheet process described in the memorandum to the Board dated June 24, 2022; and,

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RESOLVED, that as part of the Procedure, Green Bank staff shall notify the Board of intent to issue a COF letter for an approved Program-implemented, non-residential project with an upfront incentive payment equal to or greater than \$500,000, upon such project's compliance with the minimum technical requirements as set forth in the memorandum to the Board dated June 24, 2022.

Upon a motion made by Laura Hoydick and seconded by Adrien Houël, the Board of Directors voted to approve Resolutions 5. None opposed and Victoria Hackett abstained. Motion approved.

7. Investment Updates and Recommendations a. SHREC Line of Credit Renewal

- Bert Hunter summarized the history of and proposal to approve the renewal of the revolving credit facility established with Liberty Bank and Webster Bank as well as some of the strategic benefits of renewing it. The proposal includes a reduction in size from \$10 million to \$5 million, only upsizing later if needed. He reviewed the SHREC Warehouse structure.

Resolution #6

WHEREAS, the Company intends to enter into a Third Amendment to Credit Agreement (the "**Third Amendment**"), which amends the Credit Agreement dated as of July 31, 2019, as amended by that certain First Amendment to Credit Agreement and Other Loan Documents dated July 28, 2020 and by that certain Second Amendment to the Credit Agreement and Other Loan Documents dated July 30, 2021 (collectively, the "**Credit Agreement**") with Webster Bank, National Association ("**Webster**"), as Administrative Agent (in such capacity, as "**Agent**") and as a lender and Liberty Bank, as Lead Arranger and as a lender (Webster and Liberty Bank, in their capacities as lenders, are referenced to herein collectively as, "**Webster-Liberty**"), whereby Webster-Liberty have made available to the Company a Five Million and 00/100 Dollar (\$5,000,000) secured revolving line of credit, with a Five Million and 00/100 Dollar (\$5,000,000) uncommitted accordion feature ("**Loan**") for the purpose of financing the Tranche 5-2021 and Tranche 6-2022 (as defined in the Credit Agreement) Solar Home Renewable Energy Credit program ("**Tranche 5-2021 SHRECs**" and "**Tranche 6-2022 SHRECs**" respectively); and

WHEREAS, the Company and Green Bank have requested that Webster-Liberty and Agent modify the Loan and the terms of the Credit Agreement pursuant to the Third Amendment, in order to, among other things, secure the Loan with the Tranche 6-2022 SHRECs as collateral and extend the term of the Loan; and

WHEREAS, in connection with the modification of the Loan, the Company and Green Bank, as applicable, shall also enter into those documents listed on Exhibit A attached hereto (collectively, the "**Modification Documents**"); and

WHEREAS, to induce Webster-Liberty to continue to extend the Loan to the Company, Green Bank shall continue to guarantee the Loan pursuant to the Guaranty Agreement dated as of July 31, 2019 made by Green Bank in favor of Agent (the "**Guaranty**"); and

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WHEREAS, along with a general repayment obligation by the Company, Agent and/or Webster-Liberty are secured by, and the Company and the Green Bank are authorized to secure the Loan and the Guaranty by, among other things, granting to Agent and/or Webster-Liberty (i) a first priority security interest in all assets of the Company, (ii) a collateral assignment of and security interest in all of the Company's and the Green Bank's right, title and interest in the Tranche 5-2021 SHRECs and Tranche 6-2022 SHRECs and all rights and obligations relating thereunder under those certain Master Purchase Agreements for the Purchase and Sale of Solar Home Renewable Energy Credits by and between the Green Bank and each of The Connecticut Light & Power Company d/b/a Eversource Energy and The United Illuminating Company each dated February 7, 2017, each as amended by those certain First Amendments, dated July 30, 2018, as further amended by those certain Second Amendments, dated April 1, 2020, (as further amended from time to time, the "**MPAs**"), which collateral assignment and security interest shall include any and all rights to payment of money under the MPAs with respect to Tranche 5-2021 and Tranche 6-2022 SHRECs and those other attributes and rights associated with the Tranche 5-2021 and Tranche 6-2022 SHRECs, (iii) a collateral assignment of all of the right, title and interest in that certain Sale and Contribution Agreement by and between Green Bank and the Company, dated as of the date of the closing of the Loan, including without limitation, any security interest created under the Sale and Contribution Agreement, and (iv) a security interest in the MPA Collection Account, the Webster Interest Reserve Account and the Liberty Interest Reserve Account (the security interests listed in (i)-(iv) hereof, together, the "**SHREC Collateral**"); and,

WHEREAS, Webster-Liberty has requested and the staff of Green Bank has recommended that the Board provide these resolutions approving the renewal and extension of the Loan and the Green Bank's guarantee thereof in accordance with the terms of the Third Amendment.

NOW, therefore be it:

RESOLVED, that the Board of the Green Bank hereby authorizes, ratifies and approves the Loan, as modified, from Webster-Liberty to the Company pursuant to the terms of the Third Amendment and the Modification Documents and authorizes, ratifies, directs and approves the Company's and the Green Bank's entering into the Third Amendment and the Modification Documents to which it is a party and of each other contract or instrument to be executed and delivered by the Company and the Green Bank in connection with the transactions contemplated by the Third Amendment; and be it further

RESOLVED, that the Board of the Green Bank hereby reauthorizes, ratifies and reaffirms the Green Bank's obligations under the Guaranty; and be it further

RESOLVED, that each of the Company and the Green Bank be and it hereby is, authorized to continue to secure the Loan and the Guaranty by, among other things, granting to Agent and/or Webster-Liberty a first priority security interest in and to the Company's property, including, without limitation the SHREC Collateral; and be it further

RESOLVED, that the Board hereby authorizes, directs, ratifies, and approves Green Bank's and the Company's execution, delivery and performance of the Third Amendment and the other Modification Documents and all of the Green Bank's and the Company's obligations under the Third Amendment and the other Modification Documents; and be it further

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RESOLVED, that the actions of Bryan Garcia in his capacity as the President and Chief Executive Officer of Green Bank (“**Garcia**”), Roberto Hunter in his capacity as the Chief Investment Officer of Green Bank (“**Hunter**”) and Brian Farnen in his capacity as General Counsel and Chief Legal Officer of Green Bank (“**Farnen**”; and together with Garcia and Hunter, each an “**Authorized Signatory**”), are hereby ratified and approved with regard to the negotiation, finalization, execution and delivery, on behalf of Green Bank and the Company, of the Third Amendment and the other Modification Documents and any other agreements that they deemed necessary and appropriate to carry out the foregoing objectives of Green Bank and/or the Company, and any other agreements, contracts, legal instruments or documents as they deemed necessary or appropriate and in the interests of Green Bank and/or the Company in order to carry out the intent and accomplish the purpose of the foregoing resolutions are hereby ratified and approved; and be it further

RESOLVED, that the Authorized Signatories be, hereby are, acting singly, authorized, empowered, and directed, for and on behalf of the Green Bank and the Company (in the Green Bank’s capacity as the sole member of the Company), to execute and deliver the Third Amendment and the other Modification Documents; and be it further

RESOLVED, that any other actions taken by any Authorized Signatory are hereby approved and ratified to the extent that such Authorized Signatory or Authorized Signatories have deemed such actions necessary, appropriate, and desirable to affect the above-mentioned legal instrument or instruments.

Upon a motion made by John Harrity and seconded by Dominick Grant, the Board of Directors voted to approve Resolutions 6. None opposed or abstained. Motion approved unanimously.

Laura Hoydick left the meeting by 10:55 am due to a scheduling conflict.

8. Environmental Infrastructure Updates and Recommendations

a. Stakeholder Engagement

- Bryan Garcia reviewed the timeline for developing the Environmental Infrastructure program, including the next steps of the engagement cycle which are Water and Waste & Recycling. He summarized the progress and deliverables to come from the stakeholder feedback and findings which includes primers, opportunities, and engagement.

b. Strategic Retreat

- Bryan Garcia summarized parts of the results of the strategic retreat including the theme of confronting climate change in the Constitution State through investment in environmental infrastructure. He reviewed the participants who attended, several activities that took place, and conclusions made from the activities and discussions. He noted the need to build on the Green Bank’s strengths as well as addressing its weaknesses, including a better methodology to build community engagement and empowerment.
 - John Harrity commented that the Strategic Retreat was very well organized and that he got a better understanding of how the expansion of the mission should not overwhelm current efforts, and to not worry as much about how the expansion could negatively affect the Green Bank’s impact.

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- Adrienne Houël commented that the idea of having many different points of view really paid off. She was very impressed with the diversity of experience present which led to in-depth conversations about how to address the upcoming challenges. She hopes the Green Bank can follow up with some of the speakers present in the future.
- Lonnie Reed commented that it showed the Green Bank's strength to be a facilitator to bring disparate groups together. Dominick Grant agreed and that a big take-away is that the Green Bank is considered a trusted broker between the various groups. As well, the rollout will lean heavily on that strength to effectively coordinate and collaborate, which is a huge value to be able to provide.

c. Comprehensive Plan

- Bryan Garcia quickly summarized the progress to the upcoming Comprehensive Plan and reviewed some key notes from the previous one, named Green Bonds US. He went over the next steps for the various sections of the Green Bank.

9. Other Business

- Bryan Garcia briefly reviewed the Bipartisan Infrastructure Law Team Connecticut's efforts and meeting with DRS Commissioner Mark Boughton.
- Adrienne Houël celebrated Bridgeport's Phoenix Rising proposal being accepted into the Communities LEAP program and reviewed some of the efforts put forth to earn the acceptance. She thanked Bryan Garcia and Brenda Watson for their assistance to investigate further as to why they hadn't been initially accepted. She noted the Bridgeport Regional Energy Partners is a new organization that is being pulled together in order to maximize impact.

Victoria Hackett left the meeting at 11:00 am. Dominick Grant left the meeting at 11:04 am.

10. Adjourn

Upon a motion made by John Harrity and seconded by Adrienne Houël, the Board of Directors Meeting adjourned at 11:07 am.

Respectfully submitted,

Lonnie Reed, Chairperson



Memo

To: Board of Directors of the Connecticut Green Bank
From: Lucy Charpentier, Bryan Garcia, Sergio Carrillo, and Eric Shrago
Cc: Mackey Dykes, Brian Farnen, and Bert Hunter
Date: July 15, 2022
Re: Incentive Programs – Program Performance towards Targets for FY 2022 – Preliminary

Overview

FY 2022 Incentive Program targets and performance are focused on the Residential Solar Investment Program (RSIP), Smart-E and Solar for All. These programs are grant or subsidy program(s) (including credit enhancements – interest rate buydowns and loan loss reserves) that deploy clean energy, while at the same time cost recovering the expenses associated with these programs within the business unit – including, but not limited to, incentives, administrative expenses, and financing expenses, as well as loan loss reserves on the balance sheet. In addition, this memo will report on RSIP-E, the extension to RSIP approved by the Connecticut Green Bank Board of Directors, and progress in the development of Energy Storage Solutions (ESS) Programs, the battery storage incentive program launched in January 2022.

Performance Targets and Progress

With respect to the Comprehensive Plan approved by the Board of Directors of the Green Bank on June 25, 2021 and revised on January 21, 2022 the following are the performance targets for FY 2022 and progress made to targets for the Incentive Programs (see Table 1) as of June 30, 2022.

Table 1. Program Performance Targets and Progress Made to the Comprehensive Plan for FY 2022¹

Key Metrics	Program Performance Revised Targets	Program Progress ²	% of Goal
Capital Deployed ³	\$79,969,713	\$78,690,243	98%

¹ Performance data includes RSIP-E projects which accounted for 13.7 kW or 1392 projects, accounting for \$3,431,826 in Connecticut Green Bank investment and \$52.873.408 of total investment.

² Includes only closed transactions

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

Investment at Risk ⁴		\$5,320,893 ⁵	
Private Capital ⁶		\$75,148,651	
Deployed (MW)	20.1	17.2	86%
# of Loans/Projects	2,734	2,730	100%
Leverage Ratio		15.1	

In summary, for Incentive Programs in FY 2022, there were 2,730 projects (achieving 100% of the goal) requiring \$78.6M of investment (achieving 98% of the goal) that led to the deployment of 17.2 MW of clean energy (achieving 86% of the goal), that delivered a leverage ratio of 15.1 for private to public funds invested.

Executive Summary for the Incentive Programs

Residential Solar Investment Program (RSIP) and RSIP Extension (RSIP-E)

- During the first half of FY22, the Green Bank team supported the transition from RSIP plus net metering to the new tariff structure, which concluded with the official end of RSIP on 12/31/2021, and the launching of the Residential Renewable Energy Solutions (RRES) Program by Eversource and United Illuminating. After this date RSIP did not accept additional incentive applications.
- Despite the effects of COVID still impacting the local solar market, in FY22 we completed a total of 34.3 MW of projects, with 15.5 MW of these projects being approved in that same period. The majority of these projects occurred in the first half of the fiscal year caused mainly by supply chain issues, a nationwide shortage of meter sockets, and a lack of public understating of the newly launched program, which almost brought the market to a halt.
- Overall RSIP (plus RSIP-E) milestones as of the end of FY22 are:
 - 380 MW or 46,657 projects have been approved through RSIP and RSIP-E since FY12, with over 376 MW or 46,148 projects completed. RSIP is fully subscribed at 350 MW with respect to project approvals.
 - Approved projects since FY12 to date are approximately 28% EPBB and 72% PBI.
 - Total investment in RSIP has reached \$1.4 billion, with Green Bank leveraging nearly \$1.3 billion in private capital by investing \$157.1 million, a leverage ratio of 9.1 for the program through FY22.
- Public Act 21-53, An Act Concerning Energy Storage, passed by the Connecticut General Assembly in the 2021 legislative session and signed into law by Governor Lamont on June 16, 2021, set energy storage deployment targets of 300 MW by 2024, 650 MW by 2027, and 1000 MW by 2030. Shortly after, PURA issued a Proposed Final Decision in Docket No. 17-12-03RE03 on July 1, 2021, establishing a battery storage program for the state aimed at deploying 580 MW of battery storage by 2030.
- Green Bank staff have been engaged with Eversource and United illuminating, as program administrators, conceptualizing and designing the program that launched

⁴ Includes funds from the Clean Energy Fund, RGGI allowance revenue, and other resources that are managed by the Connecticut Green Bank that are committed and invested in subsidies, credit enhancements, and loans and leases

⁵ Interest rate buydowns of \$1,173,242 and loan loss reserve of \$1,864,996 are not included.

⁶ Private Investment is based on the Gross System Cost and includes adjustments related to financing costs.

January 1, and is called Energy Storage Solutions (ESS) Program. Over the first six months of ESS, Green Bank staff efforts have been focused on building the infrastructure required to run the program, including a project incentive application portal that went live on 12/31/2021, developing resources for, vetting, and onboarding contractors; reviewing and approving new technologies, and providing educational resources for stakeholders to learn about the program, and how to participate.

- As of July 13, ESS has received 117 residential applications totaling 1.5 MW of storage capacity, and 40 non-residential applications totaling 70.2 MW of capacity.
 - The average size of a residential system is 10.2 KW of power rating and 23.7 kWh of energy capacity
 - The average size of a non-residential system is 1.76 MW of power rating and 4.957 kWh of energy capacity
- The federal Department of Energy (DOE) grant, “Bringing LMI Solar Financing Models to Scale”, led by CESA, began in FY20 and provides funding for three years to help accelerate widespread adoption of a residential rooftop solar PV deployment model among LMI single-family homes, based on the Green Bank’s Solar for All program with PosiGen, throughout the country. The Green Bank in partnership with Inclusive Prosperity Capital (IPC) provides advisory support on this project assisting states in evaluating and launching LMI solar programs.

Energize CT Smart-E Loan

- **Volume:** Knowing that the clean energy industry remained active despite COVID-19 impacts in FY 2021, Smart-E targets were increased for FY 2022 to 800 loans (up from 740). As a result of spill over from the ‘Spring Special Offer’ that concluded at the end of FY 2021 (an interest rate buy down to 0% and 1.99% for certain qualifying technologies) plus consistent volume throughout the year, Smart-E exceeded it’s targets with 907 loans (113%) for \$14,8 million (exceeding the \$11.2 million target by 132%). However, due to numerous competing solar financing options, the final total MW capacity reached 0.2 MW of the 0.8 MW target. The program team will be adjusting the MW target for upcoming FY 2023 as a result of the new market conditions.
- **Deployment of ARRA-SEP Funds:** The interest rate buydown special offers that took place during FY 2021 resulted in a total disbursement of \$1.5 million paid in FY 2022 for 705 closed loans across the nine participating Smart-E lenders.
- **Contractor Outreach:** The Smart-E program team prioritize contractor outreach in FY 2022 to ensure continued engagement with the program after the conclusion of the special offer. Conversations were held with several contractors familiar with the LMI customer segment to discuss their experience with the program and to solicit feedback how the program can better serve their customers. Broader outreach to the larger contractor base is scheduled for FY 2023.

PosiGen Solar for All

- The PosiGen Solar for All partnership closed out with the end of the RSIP program. The partnership hosted two Solar for All campaigns in Norwalk and Branford to help maintain sales volume through the changing business climate. The Norwalk Solar for All campaign reached 62 families and closed 38 solar leases. The Branford Solar for All campaign reached 74 families and closed 32 leases. The program’s message resonated with families feeling the pandemic’s pressures despite the increased challenges in

reaching people with fewer outreach tactics available. Overall, the campaigns were quite successful demonstrating the traction of solar and the program offering. As the RSIP deadline neared, the partnership worked to bring in as many new projects as possible to secure incentives before transitioning projects to the successor incentive program, RRES.

The following are brief descriptions of the progress made under the last comprehensive plan for the Incentive Programs:

Residential Solar Investment Program (RSIP) and RSIP Extension Program (RSIP-E)

\$3.7 million in subsidies⁷ from the Green Bank has attracted \$54.2 million of funds from other sources.

Table 2. RSIP and RSIP-E Overview for FY 2022⁸

Program Data	Submitted but not Closed ⁹	Closed ¹⁰	Total
Projects	0	1,592	1,592
Installed Capacity (MW)	0.0	15.5	15.5
Lifetime Clean Energy Produced (MWh)	0	440,123	440,123
Annual Combined Energy Generated & Saved (MMBtu)	0	60,068	60,068
Subsidies (\$'s)	\$0	\$3,764,231	\$3,764,231
Credit Enhancement (\$'s)	\$0	\$0	\$0
Loans or Leases (\$'s)	\$0	\$0	\$0
Total Green Bank Investment (\$'s)	\$0	\$3,764,231	\$3,764,231
Private Capital (\$'s)	\$0	\$54,220,850	\$54,220,850
Direct Job Years	0	0	0
Indirect & Induced Job Years	0	0	0
Lifetime Tons of CO2 Emissions	0	243,269	243,269

Figure 1 provides historical perspective on projects incentivized through RSIP and RSIP-E from FY 2012 through FY 2022. The average RSIP incentive was reduced steeply as shown by the lower/green portion of the bars in the chart, roughly 90% from \$1.75/W in FY 2012 to \$0.17/W in FY 2022, while the average net cost to the customer shown in the upper/black portion of the bars has stayed roughly stable, from \$3.37/W to \$3.46/W (with some fluctuations) over the same time period. Average installed costs have decreased 29% from \$5.13/W in FY 2012 to \$3.63 in FY 2022 while deployment has increased 2400% from nearly 2 MW in FY 2012 to 50 MW in FY 2022. Over the last few years, installed costs in Connecticut have not decreased as anticipated due to various factors including federal import tariffs, pandemic impacts, supply chain constraints and increasing equipment and raw material costs, rising customer acquisition costs, and increasing costs of doing business, despite ongoing solar PV soft cost reduction efforts at the federal and state levels.

⁷ Note the distribution of EPBB and PBI and the 6-year payout of the PBI.

⁸ Program data includes RSIP-E projects which accounted for 13.7 kW or 1392 projects, accounting for \$3,431,826 in Connecticut Green Bank investment and \$52,873,408 of total investment.

⁹ This represents projects that are currently approved but not closed. It does not include projects that were approved but have since closed.

¹⁰ Approximately 85% of projects approved result in project completions.

Figure 1. RSIP and RSIP-E Historical Installed Costs, Incentives, Net Customer Cost, Installed Capacity, FY 2012-2022

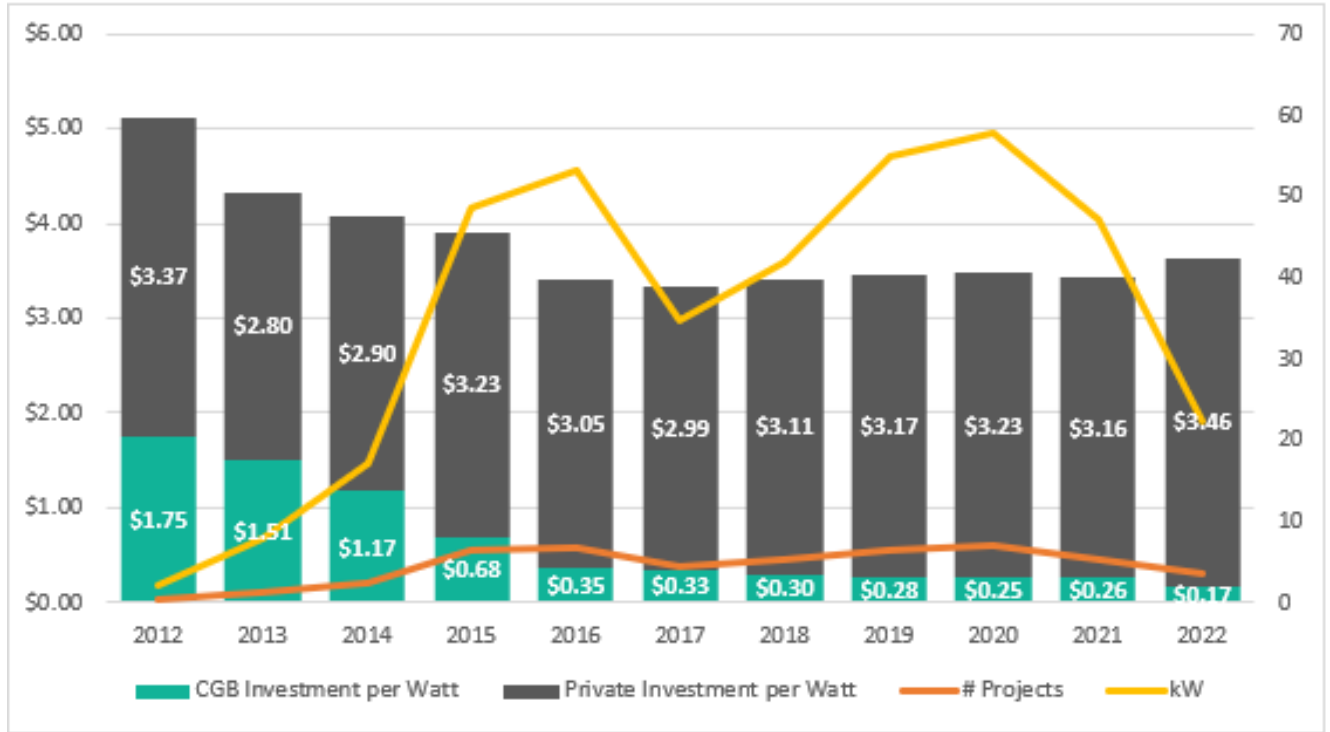


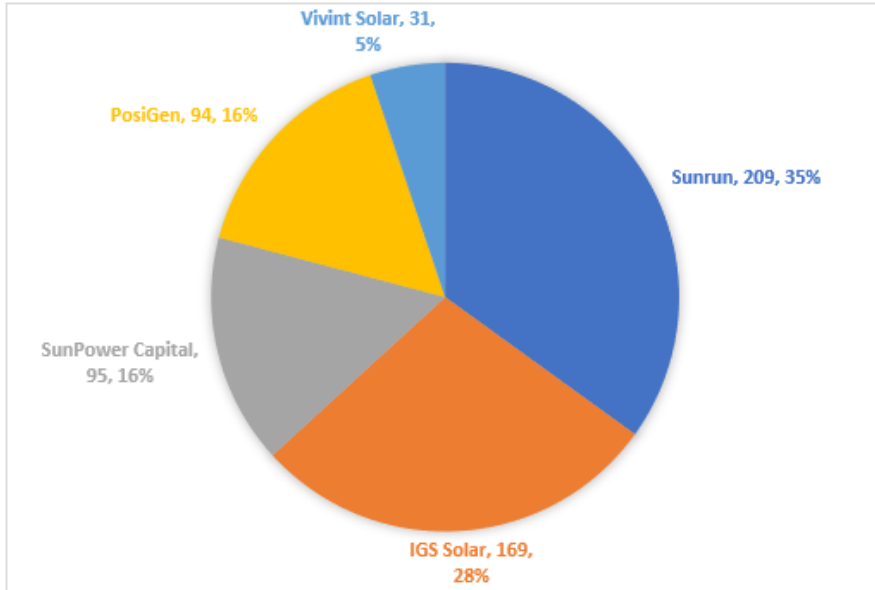
Table 3. RSIP and RSIP-E Historical Installed Costs, Incentives, Net Customer Cost, Installed Capacity, FY 2012-2022

Fiscal Year	# Projects	Installed Capacity (kW)	Average Installed Capacity (kW)	Average Incentive Amount	Total Average Investment	Average Incentive (\$/W)	Average Customer Installed Cost (\$/W)	Average Total Installed Cost (\$/W) ¹¹	Incentive % of Cost	Net Cost to Customer after RSIP Incentive
2012	288	1,940.2	6.7	\$11,811	\$34,380	\$1.75	\$3.40	\$5.13	34%	\$22,569
2013	1,109	7,890.4	7.1	\$10,744	\$31,944	\$1.51	\$2.87	\$4.31	34%	\$21,200
2014	2,384	17,144.1	7.2	\$8,418	\$31,012	\$1.17	\$2.92	\$4.07	27%	\$22,594
2015	6,381	48,629.0	7.6	\$5,189	\$33,546	\$0.68	\$3.21	\$3.91	15%	\$28,357
2016	6,785	53,196.0	7.8	\$2,767	\$32,061	\$0.35	\$3.04	\$3.41	9%	\$29,293
2017	4,445	34,628.6	7.8	\$2,599	\$27,046	\$0.33	\$3.03	\$3.33	10%	\$24,446
2018	5,150	41,785.9	8.1	\$2,438	\$28,565	\$0.30	\$3.13	\$3.41	9%	\$26,127
2019	6,468	54,983.2	8.5	\$2,343	\$30,267	\$0.28	\$3.19	\$3.45	8%	\$27,924
2020	6,849	57,696.4	8.4	\$2,147	\$29,957	\$0.25	\$3.24	\$3.48	7%	\$27,810
2021	5,206	47,087.5	9.0	\$2,339	\$31,957	\$0.26	\$3.17	\$3.42	7%	\$29,618
2022	1,592	15,459.2	9.7	\$2,364	\$36,423	\$0.24	\$3.39	\$3.63	6%	\$34,058
Total	46,657	380,440.7	8.2	\$3,369	\$30,938	\$0.41	\$3.15	\$3.53	11%	\$27,569

¹¹ Average Installed Cost per Watt figures include reported installed costs without including those projects where financing costs for some third-party ownership installers are included as part of the installed cost and projects that include battery storage costs. Total Average Investment, Incentive % of Cost and Net Cost to Customer are calculated based on Average Installed Cost.

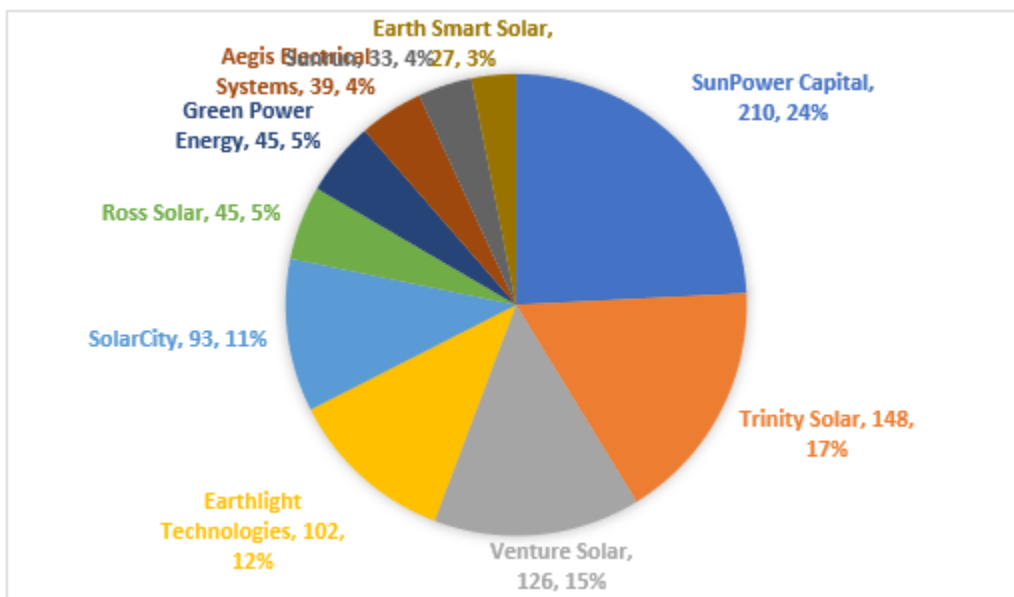
38% of FY 2022 RSIP and RSIP-E projects were third party owned (TPO). See Figure 2 for details.

Figure 2. RSIP and RSIP-E Market Share by Third Party System Owner and by Contractor by Project Volume for FY 2022



The highest volume Contractors of homeowner-owned projects collectively deployed 62% of RSIP and RSIP-E volume in FY 2022, with the top 10 deploying nearly 87% of homeowner-owned projects as illustrated in Figure 3.

Figure 3. RSIP and RSIP-E Top 10 Contractor Market Share by Homeowner Owned Project Volume for FY 2022



During the fall 2020 Special Session, the Connecticut General Assembly passed Public Act 20-5 to address emergency response by the state’s electric utilities during recent storms. Within the resiliency aspects of the bill, a definition for “vulnerable communities” was included:

"Vulnerable communities" means populations that may be disproportionately impacted by the effects of climate change, including, but not limited to, low and moderate income communities, environmental justice communities pursuant to section 22a-20a, communities eligible for community reinvestment pursuant to section 36a-30 and the Community Reinvestment Act of 1977, 12 USC 2901 et seq., as amended from time to time, populations with increased risk and limited means to adapt to the effects of climate change, or as further defined by the Department of Energy and Environmental Protection in consultation with community representatives”.

The Community Reinvestment Act was enacted by Congress in 1977 to encourage depository institutions to lend in low-to-moderate-income communities. These lending institutions are rated by regulators as to the volume of their lending to projects in these communities by regulators. Projects are potentially compliant with CRA requirements if they are below 80% of a Metropolitan Statistical Area’s (MSA) Adjusted Median Income (AMI) level.

Connecticut Environmental Justice (EJ) Communities as defined by section 22a-20a of the Connecticut General Statutes includes distressed municipalities as defined by the CT Department of Economic and Community Development (DECD) as well as census block groups that are not in distressed municipalities in which 30% or more of the population lives below 200% of the federal poverty level (FPL).

For a breakdown of RSIP and RSIP-E project volume and investment, see Table 4 for Vulnerable Communities, Table 5 for Above/Below 100% LMI, Table 6 for Above/Below 80% and Table 7 for Environmental Justice Communities as designated by DECD and DEEP. It should be noted that RSIP is not an income targeted program.

Table 4. RSIP and RSIP-E Closed Activity in Vulnerable Communities for FY 2022

Designation	# of Project Units	% Project Unit Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution
Vulnerable	736	46%	6.2	40%	\$23,733,512	41%
Not Vulnerable	856	54%	9.2	60%	\$34,251,569	59%
Total	1,592	100%	15.5	100%	\$57,985,080	100%

Table 5. RSIP and RSIP-E Closed Activity in Metropolitan Statistical Area (MSA) Area Median Income (AMI) Bands Above or Below 100% LMI for FY 2022

LMI Designation	# of Project Units	% Project Unit Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution
Below 100% AMI	639	40%	5.4	35%	\$20,685,649	36%
Above 100% AMI	953	60%	10.1	65%	\$37,299,432	64%
Total	1,592	100%	15.5	100%	\$57,985,080	100%

Table 6. RSIP and RSIP-E Closed Activity in Metropolitan Statistical Area (MSA) Area Median Income (AMI) Bands Above or Below 80% CRA for FY 2022

CRA Designation	# of Project Units	% Project Unit Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution
Below 80% AMI	361	23%	2.7	18%	\$10,459,462	18%
Above 80% AMI	1,231	77%	12.7	82%	\$47,525,619	82%
Total	1,592	100%	15.5	100%	\$57,985,080	100%

Table 7. RSIP and RSIP-E Closed Activity in Environmental Justice Communities for FY 2022

EJ Designation	# of Project Units	% Project Unit Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution
EJ Community	82	5%	0.7	5%	\$2,675,586	5%
Not EJ Community	1,510	95%	14.7	95%	\$55,309,495	95%
Total	1,592	100%	15.5	100%	\$57,985,080	100%

An emerging market is residential battery storage installed with solar PV. Nearly 450 RSIP (plus RSIP-E) projects have included battery storage (without an additional incentive for the battery storage) through FY22. Approximately 80% of projects use Tesla PowerWall battery storage equipment; other battery technology equipment submitted through RSIP includes Sonnen, Generac, Enphase, SunPower, and SolarEdge.

As a requirement to receive the RSIP incentive, all residential solar PV customers must have an energy audit performed on their home to encourage adoption of energy efficiency measures along with solar PV, preferably the utility-administered Home Energy Solutions (HES) audit, but with other options if needed.¹² RSIP-wide, an estimated 87% of audits performed were either HES audits or DOE Home Energy Scores (HES). In FY 2020, 95% of audits were either HES or DOE HES. In FY 2021 and FY 2022, the COVID pandemic resulted in a shutdown of HES services for several months; allowance was provided in RSIP for customers to sign a form that would allow them to have the energy audit performed within six months of HES resuming services. A lag in the timing of HES audits continued throughout FY 2022 due to high demand and scheduling backlogs. For energy audits that have completed in FY 2022 thus far, 84% were HES audits, 4% were DOE, 2% were RESNET HERS, and 5% were other Building Performance Institute (BPI) rated audits.

An area of ongoing importance is increasing the access and inclusivity of clean energy. The Green Bank continues to be active in initiatives that expand solar PV access in underserved communities through the DOE grant, “Bringing LMI Solar Financing Models to Scale.” Under the current grant, the Green Bank supports a public-sector learning network in replicating the Solar for All program in additional LMI markets. The model will accelerate the adoption of solar and energy efficiency solutions for single-family LMI homes by providing financing templates, market insights, and development guidance. As part of the grant, Lawrence Berkeley National

¹² Non-HES audits may be performed by Building Performance Institute (BPI) certified auditors, Home Energy Rating System (HERS) raters, other certified energy managers or were exempt due to being new construction or having a health and safety exemption.

Laboratory analyzed the financial performance of the program and determined that it has successfully reached underserved customers and has reasonable repayment rates given participants' credit characteristics.

In addition, the Green Bank continues to actively participate in PURA docket 19-07-01 ("Statewide Share Clean Energy Facility Program") to develop a strong, statewide shared solar program to expand access. Although the program is in its third year, PURA continues to open opportunities to shape each year's procurement, where the Green Bank can continue to support preference for projects that serve distressed communities and promote resiliency.

Energize CT Smart-E Loan

A credit enhancement program that uses a loan loss reserve to attract private capital from local credit unions and community banks. The product provides low interest (i.e. 4.49-6.99%) unsecured loans at flexible terms (i.e. between 5 to 20 years) for technologies that are consistent with the goals of the Comprehensive Energy Strategy. Occasionally, the Smart-E program offers special financing rates to promote certain technologies using ARRA funds for interest rate buydowns.

Table 8. Energize CT Smart-E Loan Overview for FY 2022¹³

Program Data	Approved¹⁴	Closed	Total
Projects	550	909	1,459
Installed Capacity (MW)	0.1	0.2	0.3
Lifetime Clean Energy Produced (MWh)	2,791	68,979	71,770
Annual Combined Energy Generated & Saved (MMBtu)	9,527	11,441	20,968
Subsidies (\$'s)	\$0	\$0	\$0
Credit Enhancement (\$'s)	\$0	\$0 ¹⁵	
Loans or Leases (\$'s)	\$0	\$0	\$0
Total Green Bank Investment (\$'s)	\$0	\$0	\$0
Private Capital (\$'s)	\$8,613,662	\$16,488,177	\$25,101,839
Direct Job Years	3	95	98
Indirect & Induced Job Years	4	124	128
Lifetime Tons of CO2 Emissions	458	23,013	23,471

Table 9. Energize CT Smart-E Loans by Channel for FY 2022

Smart-E Loan Channel	Closed	% of All Loans
EV	0	0%
Home Performance	85	9%
HVAC	791	87%
Solar	22	2%
Unknown ¹⁶	1	0%
Total	909	100%

¹³ All lender data is as of 6/30/2022.

¹⁴ This represents projects that are currently approved but not closed. It does not include projects that were approved but have since closed.

¹⁵ Interest rate buydowns of \$1,173,242 and loan loss reserve of \$1,864,996 are not included.

¹⁶ Channel not known due to trailing documentation/timing of data pull.

Table 10. Energize CT Smart-E Credit Scores for FY 2022

Credit Ranges									
-579	580-599	600-639	640-679	680-699	700-719	720-739	740-779	780+	Grand Total
1	3	27	102	96	129	103	235	213	909

For a breakdown of Smart-E loan volume and investment, see Table 11 for Vulnerable Communities, Table 12 for Above/Below 100% LMI, Table 13 for Above/Below 80% and Table 14 for Environmental Justice Communities as designated by DECD and DEEP. It should be noted that Smart-E is not an income targeted program and only in the second half of FY18 began offering the expanded credit-challenged version of the program, opening new opportunities to partner with mission-oriented lenders focused on reaching consumers in underserved lower income markets.

Table 11. Energize CT Smart-E Closed Activity in Vulnerable Communities for FY 2022

Designation	# of Project Units	% Project Unit Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution
Vulnerable	380	42%	0.0	10%	\$6,300,246	38%
Not Vulnerable	529	58%	0.2	90%	\$10,187,931	62%
Total	909	100%	0.2	100%	\$16,488,177	100%

Table 12. Energize CT Smart-E Closed Activity in Metropolitan Statistical Area (MSA) Area Median Income (AMI) Bands Above or Below 100% LMI for FY 2022

LMI Designation	# of Project Units	% Project Unit Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution
Below 100% AMI	335	37%	0.0	10%	\$5,614,180	34%
Above 100% AMI	568	63%	0.2	90%	\$10,776,420	66%
Total	903	100%	0.2	100%	\$16,390,600	100%

Table 13. Energize CT Smart-E Closed Activity in Metropolitan Statistical Area (MSA) Area Median Income (AMI) Bands Above or Below 80% CRA for FY 2022

CRA Designation	# of Project Units	% Project Unit Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution
Below 80% AMI	157	17%	0.0	0%	\$2,731,632	17%
Above 80% AMI	746	83%	0.2	100%	\$13,658,968	83%
Total	903	100%	0.2	100%	\$16,390,600	100%

Table 14. Energize CT Smart-E Closed Activity in Environmental Justice Communities for FY 2022

EJ Designation	# of Project Units	% Project Unit Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution
EJ Community	208	23%	0.0	0%	\$3,272,632	20%
Not EJ Community	701	77%	0.2	100%	\$13,215,546	80%
Total	909	100%	0.2	100%	\$16,488,177	100%

PosiGen Solar for All

A solar PV lease and energy efficiency financing program that focuses on the low to moderate income (LMI) market segment. Supported by \$15 million subordinated debt investment from the Green Bank, into a total fund of \$90 million to support 4,312 homes, 330 homes in FY22 , with a focus on the low-to-moderate income market segment utilizing alternative underwriting approaches that examine factors such as bill payment history and bad debt and bank databases (see Table 15). In May 2019, the program updated their offering to combine the solar lease and optional energy efficiency agreement into a single agreement that provides solar installations and energy efficiency services to all customers. With the energy efficiency services no longer optional, more customers are receiving deeper efficiency work, ensuring overall savings. The Solar for All program has been successful at reaching the LMI market segment with 54% of homes verified as low incomes.

Table 15. PosiGen Solar for All Overview for FY 2022

Program Data	Approved¹⁷	Closed	Total
Projects	10	330	340
Installed Capacity (MW)	0.1	2.2	2.3
Lifetime Clean Energy Produced (MWh)	2,993	100,007	103,000
Annual Combined Energy Generated & Saved (MMBtu) ¹⁸	6,800	13,926	20,726
Subsidies (\$'s)	\$0	\$0	\$0
Credit Enhancement (\$'s)	\$0	\$0	\$0
Loans or Leases (\$'s)	\$50,000	\$1,650,000	\$1,700,000
Total Green Bank Investment (\$'s)	\$50,000	\$1,650,000	\$1,700,000
Private Capital (\$'s)	\$223,796	\$7,729,672	\$7,953,468
Direct Job Years	1	36	38
Indirect & Induced Job Years	2	48	50
Lifetime Tons of CO2 Emissions	1,654	55,271	56,925

For a breakdown of PosiGen Solar for All loan volume and investment, see Table 16 for Vulnerable Communities, Table 17 for Above/Below 100% LMI, Table 18 for Above/Below 80% and Table 19 for Environmental Justice Communities as designated by DECD and DEEP. As an income-targeted program, this table illustrates the degree to which the goal of serving consumers in lower income communities is being met.

¹⁷ This represents projects that are currently approved but not closed. It does not include projects that were approved but have since closed.

¹⁸ Includes an additional 15.0 MMBtu for each project for the HES audit.

Table 16. PosiGen Solar for All Activity in Vulnerable Communities for FY 2022

Designation	# of Project Units	% Project Unit Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution
Vulnerable	330	100%	2.2	100%	\$9,379,672	100%
Not Vulnerable	0	0%	0.0	0%	\$0	0%
Total	330	100%	2.2	100%	\$9,379,672	100%

Table 17. PosiGen Solar for All Closed Activity in Metropolitan Statistical Area (MSA) Area Median Income (AMI) Bands Above or Below 100% LMI for FY 2022

LMI Designation	# of Project Units	% Project Unit Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution
Below 100% AMI	192	58%	1.2	54%	\$5,083,239	54%
Above 100% AMI	138	42%	1.0	46%	\$4,296,433	46%
Total	330	100%	2.2	100%	\$9,379,672	100%

Table 18. PosiGen Solar for All Closed Activity in Metropolitan Statistical Area (MSA) Area Median Income (AMI) Bands Above or Below 80% CRA for FY 2022

CRA Designation	# of Project Units	% Project Unit Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution
Below 80% AMI	330	100%	2.2	100%	\$9,379,672	100%
Above 80% AMI	0	0%	0.0	0%	\$0	0%
Total	330	100%	2.2	100%	\$9,379,672	100%

Table 19. PosiGen Solar for All Closed Activity in Environmental Justice Communities for FY 2022

EJ Designation	# of Project Units	% Project Unit Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution
EJ Community	161	49%	1.0	46%	\$4,336,799	46%
Not EJ Community	169	51%	1.2	54%	\$5,042,873	54%
Total	330	100%	2.2	100%	\$9,379,672	100%

For a breakdown of the use of the Green Bank resources for Incentive Programs, see table 20 below.

Table 20. Distribution of Green Bank Funds Invested in Projects and Programs through Subsidies, Credit Enhancements, and Loans and Leases for FY 2022

Program	Subsidies		Credit Enhancements		Loans and Leases		Total ¹⁹
RSIP and RSIP-E	\$3,764,231	100%	\$0	0%	\$0	0%	\$3,764,231
Smart-E Loan		0%	\$0 ²⁰	0%		0%	\$0
PosiGen	\$0	0%	\$0	0%	\$0	0%	\$0
Total	\$0	0%	\$0	0%	\$1,650,000	100%	\$1,650,000

Of these programs, the following is a breakdown of their contributions made thus far towards the performance target and the human resources required to implement them (see Table 21):

Table 21. Program Progress Made in FY 2022²¹

Key Metrics	RSIP and RSIP-E	Smart-E	PosiGen	Total Program Progress ²²
Date of Program Approval	Feb-2012	Nov 2012	Jun 2015	
Date of Program Launch	Mar-2012	Nov 2013	Jul 2015	
Ratepayer Capital at Risk	\$3,764,231	\$0 ²³	\$1,650,000	\$5,320,893
Private Capital	\$54,220,850	\$16,488,177	\$7,729,672	\$75,148,651
Deployed (MW)	15.5	0.2	2.2	17.2
# of Loans/Installations	1,592	909	330	2,730
Lifetime Production (MWh)	440,123	68,979	100,007	587,581
Annual Combined Energy Generated & Saved (MMBtu)	60,068	11,441	13,926	82,497

“Top 5” Headlines

The following are the “Top 5” headlines for the Incentive Programs:

Residential Solar Investment Program (RSIP), Smart-E, PosiGen Solar for All, and Battery Storage

1. [PURA establishes new energy storage program](#)

Hartford Business Journal, July 28, 2021

The ruling establishes upfront and annual performance-based incentive structures to reduce the cost of buying and installing a storage system for customers of Eversource and UI.

¹⁹ Totals are adjusted to remove projects that overlap programs.

²⁰ Interest rate buydowns of \$1,173,242 and loan loss reserve of \$1,864,996 are not included.

²¹ Includes only closed transactions

²² Totals are adjusted to remove projects that overlap programs.

²³ Interest rate buydowns of \$1,173,242 and loan loss reserve of \$1,864,996 are not included.

2. [Connecticut details incentives, equity goals for energy storage program](#)
Utility Dive, July 29, 2021
PURA outlined proposals by the Connecticut Green Bank to offer incentives for up to a total 50 MW of residential storage, with incentives depending on system size and whether customers have a low-to-moderate income status, with a maximum project incentive of \$7,500.
3. [Go Solar: Branford's 'Solar For All' Program Deadline Extended](#)
Patch Community Corner November 18, 2021
The town announced its "Solar for All" program is being extended for residents. There has been high interest with over 30 Branford homeowners reached and over a dozen in process of going solar!
4. [4 things to know about Connecticut's new energy storage incentive program](#)
Energy News Network, Feb. 4, 2022
Connecticut regulators are offering upfront money to help pay for the installation of an in-home or business battery system, and customers can earn more money by allowing utilities to tap into them during peak demand.
5. [Connecticut Green Bank Presents 2021 Awards](#)
North American Clean Energy, March 28, 2022
The 2021 awards recognize 27 contractors who are offering Green Bank's Home Solutions (Smart-E) or Building Solutions programs and are performing at a high level and developing outstanding projects, as well as recognizing other Green Bank partners.

Customer Reviews

The following is a sampling of customer reviews provided by homeowners who participated in the EnergizeCT Smart-E Loan program in FY22:

- *"The process is extremely easy and provides much better rates than any other lending options we researched."* - Stephen, Clinton
 - Project: Ductless Mini split heat pumps
- *"Such a great program. Great support from back office to service providers."* – Joe, Trumbull
 - Project: Solar and Windows
- *"The process for the Smart-E loan was very smooth. I am pleased with my experience."* -Dawn, Bloomfield
 - Project: Air source heat pumps and furnace
- *Smart-E process is easy as can be. Work with a local bank in conjunction with Smart-E's team. Was a breeze."* – Patrick - Middletown
 - Project: Attic Insulation and windows
- *"It was extremely easy and all digital."* – Katie, Manchester
 - Project: Windows

Lessons Learned

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

Residential Solar Investment Program (RSIP), RSIP-E, and Battery Storage

- **Working closely with regulators, electric distribution companies, contractors, manufacturers, trade associations and technology providers is invaluable in the development of new programs in the state.** The recently launched Energy Storage Solutions (ESS) Program is an example of the synergies that we can achieve when all stakeholders work together to develop a new program in the state.
- **Supply chain disruptions can abruptly impact a well-established program like RSIP.** During the fiscal year, supply chain issues, adverse market conditions and the implementation of new programs threatened to bring the entire solar market to a halt. This included a nationwide shortage of meter sockets, an investigation by the Department of Commerce to determine if imports of solar cells and modules from Asian countries helped China circumvent tariffs on solar imports, and a lack of public understating of the newly launched RRES program caused a significant slowdown in the number of PV systems that were installed in the second half of FY22.
- **Collaboration among different Green Bank teams will be determinant for the success of the organization.** This is particularly evident in the creation and monetization of RECs and SHRECs and the Energy Storage Solutions Program where synergies between incentives, marketing, finance, legal, accounting, and others allow the Green Bank to achieve the Program objectives.
- **Staff development and cross-training will be a determinant factor in the Green Bank continuing its successful track record.** As the organization proceeds to wind down the RSIP Program and the Incentive Team ramps up its asset management duties while at the same time managing the nascent ESS Program, training and the development of new skills sets will require the support from senior leadership.

Energize CT Smart-E Loan

- **Heat pump market is growing.**
 - Heat pump awareness is growing amongst consumers, resulting in steady heat pump volume (especially air source) during FY 2022 even without a Smart-E special offer being available. Due to increase cost of fossil fuel-based heating, customers sought renewable heating and cooling alternatives. However, financing and contractor education remains crucial for continued deployment of heat pumps.
- **Contractor engagement remains critical for continue growth and sustainability of Smart-E.**
 - During the FY 2022, it became evident that contractors need consistent engagement as it relates to Smart-E program processes, due to staff turnover, other financing options available, etc. The program team held a series of successful one on one contractor conversations to discuss what contractors felt were opportunities and challenges with Smart-E. As a result, FY 2023 will focus on additional sourcing of contractor feedback and implementation of those conversations.
- **The end of RSIP provided unique challenges.**
 - Following the conclusion of RSIP, several new solar contractors that were unfamiliar to the CT Green Bank expressed interest in offering Smart-E financing.

As a result, new Smart-E processes and contractor vetting procedures were developed to ensure future solar systems are installed with the same level of professionalism as the RSIP program provided in the past.

PosiGen Solar for All

- **While PosiGen’s message kept hitting home, prolonged industry delays piled up.** Increased interest in solar over the last two years has led to record sales numbers for PosiGen. During this time, the industry continued to experience a number of operational challenges, from equipment delivery delays and shortages to permitting stopgaps with office closures. These prolonged challenges stress the standard operating procedures, making it tough to meet customer demand and expectations.

Incentive Programs FY 2023 Targets

Of programs being implemented in the Incentive Programs, the following is a breakdown of the key targets:

Table 22. Number of Projects, Capital Deployed, and Clean Energy Deployed (MW)

Program	# of Projects	Capital Deployed	Clean Energy Deployed (MW)	Ann. GHG Emissions Avoided (TCO2)
Energy Storage Solutions (C&I)	-	-	-	-
Energy Storage Solutions (Residential)	500	\$20,000,000	7.6	-
EnergizeCT Smart-E Loan	960	\$14,994,623	0.2	17,203
Total	1,460	\$34,994,623	7.8	17,203

For the Incentive Programs, there are ~~18.34~~20.12 full time equivalent staff members supporting five (5) different products and programs.

Memo

To: Board of Directors of the Connecticut Green Bank
From: Lucy Charpentier, Mackey Dykes, Bryan Garcia, and Eric Shrago
Cc: Brian Farnen and Bert Hunter
Date: July 15, 2022
Re: Financing Programs – Program Performance towards Targets for FY 2022 – Preliminary

Overview

The Green Bank's core business is financing clean energy projects. The Green Bank's focus is to leverage limited public funds to attract and mobilize multiples of private capital investment to finance these projects. In other words, the use of resources by the Green Bank (e.g., public revenues including the Clean Energy Fund ("CEF") and RGGI allowance proceeds) are to be invested with the expectation of principal and interest being paid back over time (i.e., earned revenues). For example, the Green Bank administers the Commercial Property Assessed Clean Energy ("C-PACE") program. Through C-PACE, the Green Bank provides capital to building owners to make clean energy improvements on their properties that is paid back over time from a benefit assessment on the building. The interest earned from these types of investments, over time, is expected to cover the operational expenses and a return for the Financing Programs business unit.

The Green Bank has a number of clean energy financing products, including:

- **C-PACE**¹ – enables building owners to pay for clean energy improvements over time through a voluntary benefit assessment on their property tax bills. This process makes it easier for building owners to secure low-interest capital for up to 25 years to fund energy improvements and is structured so that energy savings more than offset the benefit assessment.
- **Green Bank Solar PPA** – third-party ownership structure to deploy solar PV systems for commercial scale end-use customers (e.g., businesses, nonprofits, municipal and state governments, affordable multifamily properties, etc.) that uses a multi-year PPA to finance projects while reducing energy costs for the host customer.
- **Small Business Energy Advantage ("SBEA")** – Eversource Energy administered on-bill commercial energy efficiency loan program for small businesses, in partnership with low-cost capital provided by Amalgamated Bank with a credit enhancement from the Green Bank (i.e., subordinated debt) and the Connecticut Energy Efficiency Fund (i.e., loan loss guaranty and interest rate buydown).

¹ CGS 16a-40g

- **Multifamily Products** – defined as buildings with 5 or more units, the Green Bank provides a suite of financing options through IPC and Capital for Change (a Community Development Financial Institution or “CDFI”) that support property owners to assess, design, fund, and monitor high impact clean energy and health & safety improvements for their properties.
- **Special Projects** – as opportunities present themselves, the Green Bank from time-to-time invests as part of a capital structure in various projects (e.g., fuel cell, hydropower, food waste to energy, state “Lead by Example” energy service agreements, etc.). These projects are selected based on the opportunity to expand the organization’s experience with specific technologies, advance economic development in a specific locale, or to drive adoption of clean energy that would otherwise not occur, while also earning a rate of return.

Performance Targets and Progress

With respect to the Comprehensive Plan approved by the Board of Directors of the Green Bank on June 25, 2021 and revised on January 21, 2022, the following are the performance targets for FY 2022 and progress made to targets for the Financing Programs (see Table 1) as of June 30, 2022.

Table 1. Program Performance Targets and Progress Made to the Comprehensive Plan for FY 2022

Key Metrics	Program Performance Revised Targets	Program Progress ²	% of Goal
Capital Deployed ³	\$48,951,480	\$39,643,388	81%
Investment at Risk ⁴		\$7,960,090	
Private Capital ⁵		\$31,683,298	
Deployed (MW)	16.5	5.0	30%
# of Loans/Projects	679	688	101%
Leverage Ratio		5.0	

In summary, for Financing Programs in FY 2022, there were 688 projects (achieving 101% of the goal) requiring \$39.6M of investment (achieving 81% of the goal) that led to the deployment of 5.0 MW of clean energy (achieving 30% of the goal), that delivered a leverage ratio of 5.1 for private to public funds invested.

Executive Summary for the Financing Programs

² Includes only closed transactions

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

⁴ Includes funds from the Clean Energy Fund, RGGI allowance revenue, repurposed ARRA-SEP funds, and other resources that are managed by the Connecticut Green Bank that are committed and invested in subsidies, credit enhancements, and loans and leases.

⁵ Private Investment is based on the Gross System Cost and includes adjustments related to financing costs.

C-PACE and C-PACE-backed Commercial Solar PPA

- The national C-PACE market continues to grow as C-PACE becomes more of an established asset, with over \$2 billion in investment around the country. Our program reflects this interest, and we continue to attract more third-party capital providers to the CT market.
- The C-PACE New Construction pilot –was updated and transitioned into a permanent program, with excellent feedback on the new program structure from Third Party Capital Providers and other external stakeholders.
- The CT legislature expanded the C-PACE enabling statute to include resilience and electric vehicle (EV) refueling infrastructure, exempting both from the savings-to-investment ratio (SIR) requirement.
- CGB C-PACE and C-PACE backed PPA closed projects totaled \$6MM, 3% over capital deployed target. Numbers of projects reached 65% of target, suggesting a reversal in the trend towards smaller average project size. The lower project count is likely a direct outcome of the new Non-Residential Solar Renewable Energy Solutions (NRES) program delays in awarding tariffs. Without the NRES awards, project economics could not be finalized. As contracts were awarded in mid-June, C-PACE financing applications for solar projects have increased.

Commercial Solar PPA

- In total, closed 15 commercial solar PPA deals that are 2.3 MW in size with a value of \$2.3M.
- Expanded the commercial solar lending facility with Skyview Ventures in CT by deploying a further \$1M against 6 PPA projects
- Closed on a financing with Inclusive Prosperity Capital to set up an on-going, sustainable platform to develop commercial solar PPA projects in Connecticut that will see IPC as the long term asset owner and CGB as lender. This transaction allows for the deployment of \$5M in construction financing and \$5M in term financing.
- The IPC Connecticut solar PPA pipeline, which CGB will finance, consists of 18 projects that are 3.9 MW in size , and \$7.5M in construction costs.
CGB has continued to make progress in FY22 on the Lead by Example program to develop on-site solar for state entities:
 - The first 12 projects (round 1 of state solar projects) have continued to advance through the design and permitting phase. They have faced delays due to wetlands identified during the survey process, which required re-designs and two projects had to be terminated as they were impacted by the wetlands.
 - Green Bank’s finalists that were selected as potential owners of the round 1 projects are aware of the delays associated with permitting. All have continued to show interest in becoming long term owners of the portfolio and value Green Bank’s continued involvement through the permitting and development phase.
 - Building on the precedential processes established in round 1, a further 8.2MW (AC) worth of Renewable Energy Credit contracts were secured for Round 2 projects. A competitive process was launched in FY 2022 to select both an installation partner and a potential long-term owner. Green Bank continues to work with the state agencies and contractor to finalize costs and PPA pricing given the uncertainty associated with EPC costs (as further explained in Lessons Learned section)
- With the success of the initial year of the Solar Municipal Assistance Program (SolarMAP), CGB continued with a second round to support more CT municipalities.
- In FY22, PPAs were signed with 2 towns as part of SolarMAP, to build 3 projects, comprising 724 kW capacity, with a construction cost of \$1.28M.

- Under Round 2 of SolarMAP, CGB is in PPA negotiations with another 5 towns for FY23, for a further 2.24 MW worth of solar across a total of 13 PPAs with an indicative construction cost of \$3.85 M.

Small Business Energy Advantage (SBEA)

- ~~Underperformed utility expectations of program financing volume, primary due to COVID-19 requiring a lengthy shutdown of the program~~ Exceeded program goals for the fiscal year
- Extended the partnership with Eversource and Amalgamated Bank for another years while also increasing customer access to capital by increasing loan limits
- Doubled CGB's participation in loan purchases from 10% to 20%

Multifamily Affordable Housing

- Three (3) term loans were funded including 1 CPACE loan, 1 LIME Loan, and 1 Solar PPA
- Two (2) additional ECT H&S loans were approved in FY'22, in the amount of approximately \$1.3MM. These loans are anticipated to close in FY'23. Once funded, it is expected that the ECT Health & Safety Loan funds will have been fully deployed. As dollars revolve back in, these will be used to fund future health and safety projects.
- The small number(1) of solar PPAs closed in FY'22 was due, in part, to a transition in state policy to a specific affordable multifamily housing incentive, the guidance for which has yet to be finalized by PURA.
- Zero (0) pre-development loans were funded in FY'22.

The following are brief descriptions of the progress made under the last comprehensive plan for the Financing Programs:

C-PACE and C-PACE-backed Commercial Solar PPA

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

Table 2. C-PACE and C-PACE-backed Commercial Solar PPA Overview for FY 2022

Program Data	Approved⁶	Closed	Total
Projects	5	23	28
Installed Capacity (MW)	1.5	3.2	4.7
Lifetime Clean Energy Produced (MWh)	41,739	163,109	204,848
Annual Combined Energy Generated & Saved (MMBtu)	52,050	7,438	59,488
Subsidies (\$'s)	\$0	\$0	\$0
Credit Enhancement (\$'s)	\$0	\$0	\$0
Loans or Leases (\$'s)	\$581,625	\$5,004,220	\$5,585,845
Total Green Bank Investment (\$'s)	\$581,625	\$5,004,220	\$5,585,845
Private Capital (\$'s)	\$6,323,520	\$19,157,987	\$25,481,507
Direct Job Years	29	124	153
Indirect & Induced Job Years	37	165	202
Lifetime Tons of CO2 Emissions	23,071	86,993	110,064

⁶ This represents projects that are currently approved but not closed. It does not include projects that were approved but have since closed.

During the fall 2020 Special Session, the Connecticut General Assembly passed Public Act 20-5 to address emergency response by the state’s electric utilities during recent storms. Within the resiliency aspects of the bill, a definition for “vulnerable communities” was included:

“Vulnerable communities” means populations that may be disproportionately impacted by the effects of climate change, including, but not limited to, low and moderate income communities, environmental justice communities pursuant to section 22a-20a, communities eligible for community reinvestment pursuant to section 36a-30 and the Community Reinvestment Act of 1977, 12 USC 2901 et seq., as amended from time to time, populations with increased risk and limited means to adapt to the effects of climate change, or as further defined by the Department of Energy and Environmental Protection in consultation with community representatives”.

The Community Reinvestment Act was enacted by Congress in 1977 to encourage depository institutions to lend in low-to-moderate-income communities. These lending institutions are rated by regulators as to the volume of their lending to projects in these communities by regulators. Projects are potentially compliant with CRA requirements if they are below 80% of a Metropolitan Statistical Area’s (MSA) Adjusted Median Income (AMI) level.

Connecticut Environmental Justice (EJ) Communities as defined by section 22a-20a of the Connecticut General Statutes includes distressed municipalities as defined by the CT Department of Economic and Community Development (DECD) as well as census block groups that are not in distressed municipalities in which 30% or more of the population lives below 200% of the federal poverty level (FPL).

C-PACE has been used to fund projects in economically diverse locations across the state as reflected by Table 3 for Vulnerable Communities, Table 4 for Above/Below 100% LMI, Table 5 for Above/Below 80% and Table 6 for Environmental Justice Communities as designated by DECD and DEEP. It should be noted that C-PACE is not an income targeted program.

Table 3. C-PACE and C-PACE-backed Commercial Solar PPA Closed Activity in Vulnerable Communities for FY 2022

Designation	# of Project Units	% Project Unit Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution
Vulnerable	13	57%	1.7	52%	\$19,940,650	83%
Not Vulnerable	10	43%	1.5	48%	\$4,221,557	17%
Total	23	100%	3.2	100%	\$24,162,207	100%

Table 4. C-PACE and C-PACE-backed Commercial Solar PPA Closed Activity in Metropolitan Statistical Area (MSA) Area Median Income (AMI) Bands Above or Below 100% LMI for FY 2022

LMI Designation	# of Project Units	% Project Unit Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution
Below 100% AMI	11	58%	0.8	26%	\$15,943,650	68%
Above 100% AMI	8	42%	2.3	74%	\$7,389,273	32%
Total	19	100%	3.1	100%	\$23,332,923	100%

Table 5. C-PACE and C-PACE-backed Commercial Solar PPA Closed Activity in Metropolitan Statistical Area (MSA) Area Median Income (AMI) Bands Above or Below 80% CRA for FY 2022

CRA Designation	# of Project Units	% Project Unit Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution
Below 80% AMI	5	26%	0.3	9%	\$6,437,452	28%
Above 80% AMI	14	74%	2.8	91%	\$16,895,471	72%
Total	19	100%	3.1	100%	\$23,332,923	100%

Table 6. C-PACE and C-PACE-backed Commercial Solar PPA Closed Activity in Environmental Justice Communities for FY 2022

EJ Designation	# of Project Units	% Project Unit Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution
EJ Community	8	35%	1.1	33%	\$9,655,334	40%
Not EJ Community	15	65%	2.2	67%	\$14,506,873	60%
Total	23	100%	3.2	100%	\$24,162,207	100%

Commercial Solar PPA

A third-party ownership offering that combines public and private funding through the Connecticut ~~Solar Lease~~[Green Bank Solar PPA Program](#) to provide Power Purchase Agreements (PPAs) for solar PV to creditworthy commercial and industrial, as well as nonprofit, municipal, and multifamily housing, end-users of electricity. This program supports solar PV projects between 50 kW – 2 MW in size – with an average size of 200 kW. Following a strategic decision not to enter into a new tax equity funding structure after the CT Solar Lease 3 fund closed in September 2018, Green Bank has continued to serve the market with our PPA product through Inclusive Prosperity Capital. As further described in the Lessons Learned section, deployment for this program has been affected by the new tariff program and supply chain challenges affecting the solar industry.

[The Green Bank also provides debt financing to other third party owners and these projects are included here.](#)

Table 7. Commercial Solar PPA Overview for FY 2022

Program Data	Approved ⁷	Closed	Total
Projects	0	15	15
Installed Capacity (MW)	0.0	2.5	2.5
Lifetime Clean Energy Produced (MWh)	0	71,266	71,266
Annual Combined Energy Generated & Saved (MMBtu)	0	7,436	7,436
Subsidies (\$'s)	\$0	\$0	\$0
Credit Enhancement (\$'s)	\$0	\$0	\$0
PPAs (\$'s)	\$0	\$2,259,023	\$2,259,023
Total Green Bank Investment (\$'s)	\$0	\$2,259,023	\$2,259,023
Private Capital (\$'s)	\$0	\$2,923,576	\$2,923,576

⁷ This represents projects that are currently approved but not closed. It does not include projects that were approved but have since closed.

Direct Job Years	0	12	12
Indirect & Induced Job Years	0	16	16
Lifetime Tons of CO2 Emissions	0	39,438	39,438

The Commercial Solar PPA program has been used to fund projects in economically diverse locations across the state as reflected by Table 8 for Vulnerable Communities, Table 9 for Above/Below 100% LMI, Table 10 for Above/Below 80% and Table 11 for Environmental Justice Communities as designated by DECD and DEEP. It should be noted that Commercial Solar PPA is not an income targeted program.

Table 8. Commercial Solar PPA Closed Activity in Vulnerable Communities for FY 2022

Designation	# of Project Units	% Project Unit Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution
Vulnerable	6	40%	0.7	29%	\$1,553,125	30%
Not Vulnerable	9	60%	1.8	71%	\$3,629,474	70%
Total	15	100%	2.5	100%	\$5,182,599	100%

Table 9. Commercial Solar PPA Closed Activity in Metropolitan Statistical Area (MSA) Area Median Income (AMI) Bands Above or Below 100% LMI for FY 2022

LMI Designation	# of Project Units	% Project Unit Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution
Below 100% AMI	6	43%	0.7	30%	\$1,553,125	30%
Above 100% AMI	8	57%	1.7	70%	\$3,563,684	70%
Total	14	100%	2.5	100%	\$5,116,809	100%

Table 10. Commercial Solar PPA Closed Activity in Metropolitan Statistical Area (MSA) Area Median Income (AMI) Bands Above or Below 80% CRA for FY 2022

CRA Designation	# of Project Units	% Project Unit Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution
Below 80% AMI	2	14%	0.2	7%	\$462,428	9%
Above 80% AMI	12	86%	2.3	93%	\$4,654,381	91%
Total	14	100%	2.5	100%	\$5,116,809	100%

Table 11. Commercial Solar PPA Closed Activity in Environmental Justice Communities for FY 2022

EJ Designation	# of Project Units	% Project Unit Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution
EJ Community	2	13%	0.2	7%	\$462,428	9%
Not EJ Community	13	87%	2.3	93%	\$4,720,171	91%

Total	15	100%	2.5	100%	\$5,182,599	100%
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Small Business Energy Advantage (SBEA)

The Green Bank has partnered with Eversource to provide capital for their lending through their SBEA program. SBEA provides audits, incentives and financing for energy efficiency projects at small businesses and municipal and state buildings. The customers get up to 4 year (7 in the case of the state) loans at 0% and they are repaid on their electricity bill.

Table 8. SBEA Overview for FY 2022

Program Data	Approved	Closed	Total
Projects	0	652	652
Installed Capacity (MW)	0.0	0.0	0.0
Lifetime Clean Energy Produced (MWh)	0	219,523	219,523
Annual Combined Energy Generated & Saved (MMBtu)	0	0	0
Subsidies (\$'s)	\$0	\$0	\$0
Credit Enhancement (\$'s)	\$0	\$0	\$0
Loans or Leases (\$'s)	\$0	\$1,461,453	\$1,461,453
Total Green Bank Investment (\$'s)	\$0	\$1,461,453	\$1,461,453
Private Capital (\$'s) ⁸	\$0	\$10,431,452	\$10,431,452
Direct Job Years	0	63	63
Indirect & Induced Job Years	0	81	81
Lifetime Tons of CO2 Emissions	0	119,015	119,015

Multifamily

Offerings for both the affordable and market rate multifamily segments include pre-development and term loan programs that enable property owners to assess, design, fund and implement energy measures and remediate related health and safety measures. Pre-development loan programs were funded by the \$5 million program-related investment from the MacArthur Foundation through the Housing Development Fund (HDF), backed by a Green Bank repayment guaranty. Term loan programs include the Loans Improving Multifamily Energy (LIME) loan, Solar PPA program, and the ECT Health & Safety Revolving Loan program (ECT H&S RLF). LIME is offered by Capital for Change and supported by a FY'20 capital commitment of \$3,000,000 from CGB as well as previous \$3,500,000 of seed capital and \$625,000 of ARRA-SEP and Green Bank funds for a loss reserve. Solar PPA options leverage the C&I sector programs. The ECT H&S RLF is supported by a \$1.5MM grant from DEEP. During FY19 the DEEP H&S funds were transferred from Green Bank to IPC where this program is now administered. Limited Catalyst Loan Funds for flexible gap financing to support term loans using MacArthur Foundation funds, administered by Housing Development Fund are also available.

Table 9. Multifamily Term Financing Overview for FY 2022

Program Data	Approved ⁹	Closed	Total
Projects	7	3	10
Installed Capacity (MW)	0.1	0.9	1.1
Lifetime Clean Energy Produced (MWh)	3,473	97,706	101,180

⁸ This number includes energy and health and safety capital deployed.

⁹ This represents projects that are currently approved but not closed. It does not include projects that were approved but have since closed.

Annual Combined Energy Generated & Saved (MMBtu)	9,125	4,609	13,734
Subsidies (\$'s)	\$0	\$0	\$0
Credit Enhancement (\$'s)	\$0	\$0	\$0
Loans or Leases (\$'s)	\$0	\$1,959,400	\$1,959,400
Total Green Bank Investment (\$'s)	\$0	\$1,959,400	\$1,959,400
Private Capital (\$'s) ¹⁰	\$1,678,256	\$100,600	\$1,778,856
Direct Job Years	9	18	27
Indirect & Induced Job Years	11	29	40
Lifetime Tons of CO2 Emissions	1,920	50,796	52,716

Table 10. Multifamily Pre-Development Financing Overview for FY 2022

Program Data	Approved	Closed	Total
Projects	0	0	0
Installed Capacity (MW)	0.0	0.0	0.0
Lifetime Clean Energy Produced (MWh)	0	0	0
Annual Combined Energy Generated & Saved (MMBtu)	0	0	0
Subsidies (\$'s)	\$0	\$0	\$0
Credit Enhancement (\$'s)	\$0	\$0	\$0
Loans or Leases (\$'s)	\$0	\$0	\$0
Total Green Bank Investment (\$'s)	\$0	\$0	\$0
Private Capital (\$'s)	\$0	\$0	\$0
Direct Job Years	0	0	0
Indirect & Induced Job Years	0	0	0
Lifetime Tons of CO2 Emissions	0	0	0

Table 11. Multifamily Number of Units

	Approved ¹¹	Closed	Total
Affordable	273	102	375
Market Rate	0	82	82
Total # of Units	273	184	457

The CT Green Bank's Multifamily Program is predominantly focused on properties that serve low-to-moderate income (LMI) residents. The program is equally focused on multifamily properties serving low-and moderate-income residents in the more affluent communities of opportunity as it is on multifamily properties in lower income census tracts. This is aligned with the State of Connecticut's goals to encourage and support housing opportunities for low- and moderate-income residents in communities of opportunity. (Connecticut is the most geographically segregated state in the nation, with most LMI and people of color concentrated in low-income urban communities.)

Strategic Investments

¹⁰ This number includes energy and health and safety capital deployed.

¹¹ This represents projects that are currently approved but not closed. It does not include projects that were approved but have since closed.

Table 12. Strategic Investment Financing Overview for FY 2022

Program Data	Approved ¹²	Closed	Total
Projects	1	0	1
Installed Capacity (MW)	3.7	0.0	3.7
Lifetime Clean Energy Produced (MWh)	291,708	0	291,708
Annual Combined Energy Generated & Saved (MMBtu)	99,531	0	99,531
Subsidies (\$'s)	\$0	\$0	\$0
Credit Enhancement (\$'s)	\$0	\$0	\$0
Loans or Leases (\$'s)	\$3,200,000	\$0	\$3,200,000
Total Green Bank Investment (\$'s)	\$3,200,000	\$0	\$3,200,000
Private Capital (\$'s) ¹³	\$0	\$0	\$0
Direct Job Years	28	0	28
Indirect & Induced Job Years	36	0	36
Lifetime Tons of CO2 Emissions	19,690	0	19,690

For a breakdown of the use of the Green Bank resources for Commercial, Industrial and Institutional Programs, see table 13 below.

Table 13. Distribution of Green Bank Funds Invested in Projects and Programs through Subsidies, Credit Enhancements, and Loans and Leases for FY 2022

Program	Subsidies		Credit Enhancements		Loans and Leases		Total ¹⁴
	\$	%	\$	%	\$	%	
Commercial Lease	\$0	0%	\$0	0%	\$2,259,023	100%	\$2,259,023
CPACE	\$0	0%	\$0	0%	\$5,004,220	100%	\$5,004,220
SBEA	\$0	0%	\$0	0%	\$1,461,453	100%	\$1,461,453
Multi-Family Health & Safety		0%		0%		0%	\$0
Multi-Family Pre-Dev	\$0	0%	\$0	0%	\$0	0%	\$0
Multi-Family Term	\$0	0%	\$0	0%	\$1,959,400	100%	\$1,959,400
Strategic Investments	\$0	0%	\$0	0%	\$0	0%	\$0
Total	\$0	0%	\$0	0%	\$7,960,090	100%	\$7,960,090

Of these programs, the following is a breakdown of their contributions made thus far towards the performance target and the human resources required to implement them (see Table 14):

Table 14. Program Progress Made in FY 2022¹⁵

Key Metrics	C-PACE	Commercial Lease	SBEA	Multifamily Pre-Dev ¹⁶	Multifamily Term	Strategic	Total Program Progress ¹⁷

¹² This represents projects that are currently approved but not closed. It does not include projects that were approved but have since closed.

¹³ This number includes energy and health and safety capital deployed.

¹⁴ Totals are adjusted to remove projects that overlap programs.

¹⁵ Includes only closed transactions

¹⁶ Multifamily is a collection of individual programs, each with their own approval and launch dates.

¹⁷ Totals are adjusted to remove projects that overlap programs.

Date of Program Approval	Sep-2012	Jun-2013	-	Oct 2013 – Jan 2017	Oct 2013 – Oct 2015		
Date of Program Launch	Jan-2013	Sep-2013	-	Oct 2013 – Jan 2017	Oct 2013 – Oct 2015		
Ratepayer Capital at Risk	\$5,004,220	\$2,259,023	\$1,461,453	\$0	\$1,959,400	\$0	\$7,960,090
Private Capital	\$19,157,987	\$2,923,576	\$10,431,452	\$0	\$100,600	\$0	\$31,683,298
Deployed (MW)	3.2	2.5	0.0	0.0	0.9	0.0	5.0
# of Loans/Installations	23	15	652	0	3	0	688
Lifetime Production (MWh)	163,109	71,266	219,523	0	97,706	0	431,798
Annual Combined Energy Generated & Saved (MMBtu)	7,438	7,436	0	0	4,609	0	14,191

“Top 5” Headlines

The following are the “Top 5” headlines for the Financing Programs:

1. [Green Bank makes changes to C-PACE financing program aimed at developers](#)

Hartford Business Journal, April 19, 2022

New changes to the state’s Commercial Property Assessed Clean Energy program will make it easier for developers and borrowers to access financing for their projects, officials from the Connecticut Green Bank said. The Connecticut Green Bank Board of Directors last month approved a slew of changes to the C-PACE program, which offers financing to companies, developers and others pursuing clean energy projects. Among the changes, developers and borrowers can now access up to 35% of the total eligible construction costs in C-PACE financing based on their building’s designed energy performance.

2. [Connecticut Green Bank Awards 2021 celebrate resilience and innovation](#)

Clean Technica, March 29, 2022

Award recipients for 2021 included outstanding projects for C-PACE (One Park Road, West Hartford, for \$13.7 million C-PACE financing from CastleGreen Finance) and outstanding PPA for the Ridgefield High School project.

3. [New solar systems installed at East Windsor apartments](#)

Hartford Business Journal, Oct. 14, 2021

A new solar power systems installed at the Park Hill housing complex in East Windsor is expected to save the town’s housing authority over \$100,000 over the life of the project.

4. [Connecticut’s Westville Seafood adds solar PV system to roof via C-PACE program](#)

Solar Builder Mag, Sept. 28, 2021

“With our peak busy season being in the summer, we use a significant amount of energy to power the restaurant, which results in higher energy costs,” said David Austin, owner of Westville Seafood. “Going solar helped offset the cost of electricity, it’s more environmentally friendly, and our customers love it. We’re thankful for the help we received from the Connecticut Green Bank, who made the process easy.”

5. Connecticut Governor's Report: Leading From The Front

Business Facilities, Aug. 16, 2021

"Our state is currently ranked the lowest state contributor to climate change and a top-10 most energy efficient state," Lamont continued. "We are home to the nation's first Green Bank and are a national leader in offshore wind energy and hydrogen fuel-cell technologies. Many state-led initiatives like the Zero Emission Vehicle program, commercial Property Assessed Clean Energy (PACE) financing and the Regional Greenhouse Gas Initiative (RGGI) also are helping us further our goal of a zero carbon Connecticut."

Lessons Learned

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

C-PACE and C-PACE-backed Commercial Solar PPA

- With nearly 75% of the FY22 projects including solar PV, solar continues to be the driver of the program's success. FY22 has been challenging for solar in Connecticut due to the transition from the LREC/ZREC program to the Non-Residential Renewable Energy Solutions Program ("NRES"). The NRES program began in 2022 with only one auction scheduled for 2022. Developers and financiers like Green Bank have seen a slowdown in C-PACE and commercial PPA project applications and pricing requests as the new program has taken off. In addition, in part because of COVID, solar has faced issues associated with product shortages, delays in equipment delivery and increased equipment costs. Further, an anti-circumvention investigation into solar module imports has further affected the supply and cost of solar modules.
- C-PACE New Construction is driving exponential growth in the national C-PACE market. Connecticut launched a pilot program in 2018 to explore how offering a financing solution to the Connecticut market for new construction, repositioning, and gut rehabilitation could promote more energy efficient building design. After successfully closing 6 projects, the pilot was transitioned into a permanent program, offering multiple improvements and additions based on market feedback and lessons learned. One of the main objectives was to simplify the implementation of the program. Initial feedback from developers, capital providers and borrowers has been very positive. As this market continues to evolve and mature, CGB will need to make sure its program stays attractive to lenders and developers while still preserving the program's public policy as intended by the C-PACE enabling legislation.
- Connecticut's open market platform continued to attract capital providers to Connecticut and enable private capital investment. With 79% of the investment private versus 6% "public" through CGB-funded projects, CGB is balancing separate goals of leveraging private capital (and not crowding it out) and investing its dollars to build its balance sheet. CGB should continue to grow the C-PACE market and create new opportunities that the private lenders are not focused on.

Commercial Solar PPA

- Operations and maintenance (O&M) continues to be a key tenet of the asset management program for CGB's 19.5MW of owned commercial solar projects. Staff has been pleased with CTEC's quality of work, which became the commercial solar O&M provider in May 2021. While under contract with CTEC, the Green Bank's commercial solar portfolio's performance has improved: Q1 2022 commercial solar sites performed at 96% of expectation, vs. 92% in Q1 2021 (prior to CTEC).

- Using the findings of the O&M program, CGB continues to hone the risk protection aspects of the engineering, procurement and construction ‘form contract’.
- CGB has continued to secure competitive construction costs for state and municipal solar PPA projects, despite the challenges with solar costs that have been previously mentioned. The development and construction of these projects has emphasized the importance for Green Bank and its independent engineer partner to remain involved to ensure the projects are flowing smoothly and challenges along the way are resolved.

Small Business Energy Advantage (SBEA)

- ~~Despite program underperformance primarily due to COVID-19, the program remains popular with contractors and customers. The agreement between Eversource, CGB and Amalgamated Bank is set to expire at the end of calendar year 2021. The organizations are already in discussions to renew the agreement and further expand the availability of capital. The partnership with Green Bank and Amalgamated to provide capital for SBEA loans continues to be a success in delivering savings for the SBEA program and expanding access to capital. With the new 3 year Conservation and Load Management Plan’s focus on deeper savings, the Green Bank will work with Eversource to identify changes to the program to support this.~~
- Green Bank is working with Eversource to expand the SBEA financing model to battery storage and EV chargers

Multifamily Affordable Housing

- **Multifamily Programs Focused on Solar-PPA Program Development in FY’22**
CTGB Multifamily Programs are now primarily focused on solar PPA’s, as this product is anticipated to deliver the required financial returns to CT Green Bank. Green BankCTGB staff have been actively working with DEEP, DOH, CHFA and other stakeholders to review and provide public comments to PURA on the new multifamily solar incentive. This program will actively reopen once guidance for the new multifamily solar incentive is finalized by PURA. Capital for Change has continued to take full ownership of the Loans Improving Multifamily Energy (LIME) loan program, including marketing and outreach, which has been limited. LIME is primarily focused on funding energy efficiency improvements for mid-cycle multifamily properties.
- **Deployment of EnergizeCT Health & Safety Loan Funds was a priority in FY’220.**
(IPC is responsible for deploying these funds, with \$1.5MM originating as a grant from DEEP to CT Green Bank, and then subsequently transferred from CTGB to IPC in 2019.) In FY’22 IPC approved H&S funds in the amount of approximately \$1.3MM for two distressed coops in New Haven, Seabury Coop and Antillean Manor, which are anticipated to close in FY’23. These projects now fully commit the remaining Health & Safety funds. In order to ensure funds remain available for these projects, IPC requested, and DEEP approved, a one-year term extension of this funding to June 30, 2023.

Financing Programs FY 2023 Targets

Of programs being implemented in the Financing Programs, the following is a breakdown of the key targets:

Table 15. Number of Projects, Capital Deployed, and Clean Energy Deployed (MW)

Program	# of Projects	Capital Deployed	Clean Energy Deployed (MW)	Ann. GHG Emissions Avoided (TCO2)
Commercial PACE	23	\$31,000,000	-	
Green Bank Solar PPA	19	\$13,710,000	7.5	12,336
Small Business Energy Advantage	839	\$18,600,000	-	114,477
Multifamily Term Loan	6	\$1,380,000	-	1,057
Multifamily Health & Safety	1	\$892,500	-	-
Transportation	-	-	-	16,500
Strategic Investments	-	-	-	-
Total	902	\$62.0	19,000	143,312

For the Financing Programs, there are [49.718.4](#) full time equivalent staff members supporting [five-ten \(510\)](#) different programs.



Memo

To: Connecticut Green Bank Board of Directors

From: Eric Shrago, VP of Operations

CC: Bryan Garcia (President and CEO), Bert Hunter (EVP and CIO), Jane Murphy (EVP of Finance and Accounting), Sergio Carrillo (Director of Incentive Programs), and Mackey Dykes (VP of Financing Programs and Officer)

Date: July 22, 2022

Re: Investments – Performance towards Targets for FY 2022 – Preliminary

The following memo outlines Connecticut Green Bank (CGB) progress to deploying our own capital in line with the organization’s budget and sustainability plan.

Table 1. Budget to Actual Investment Activity¹

Program	Description	Activity Type	Budget			Actual				
			Rate	Term	Principal	Rate	Term	Principal	Total Investment Income	PV of Interest Income
Multifamily Pgms	C4C Lime facility draws	Forecast draws on existing loan facility	4.0%	15	\$ 200,000	4.0%	15	\$ 200,000	\$ 67,900.00	\$ 57,789.00
CPACE	CGB Portfolio	New CPACE Loans	5.60%	17.5	\$ 5,000,000	5.38%	18.2	\$ 3,238,094	\$ 1,880,521.00	\$ 1,544,216.00
Solar PPA Development	PPA State	New Debt to fund supporting State Solar PPA projects	3.0%	20	\$ 9,000,000	3%	20	\$ 1,573,954	\$ 524,846.00	\$ 427,914.00
Solar PPA Development	PPA Municipality	New Debt to fund supporting Municipal Solar PPA projects	3.75%	20	\$ 2,347,200	4%	20	\$ 741,496	\$ 339,240.00	\$ 275,789.00
Solar PPA Development	PPA Developers		4.50%	20	\$ 1,257,000	5%	20	\$ 659,295	\$ 387,482.00	\$ 314,132.00
Solar PPA Development	PPA Debt to 3rd parties		4.50%	15	\$ 4,100,000	5%	15	\$ 1,794,111	\$ 766,796.00	\$ 654,787.00
SBEA/BEA	Regular Loan Purchases	3 additional tranches purchased	3.50%	4	\$ 1,447,000	2.25%	5	\$ 819,022	\$ 49,137.00	\$ 46,609.00
Multifamily Programs	PPA Multifamily	expected closing of projects in pipeline	4.25%	20	\$ 270,000	0%	0	\$ -		
CE Finance Prg	Strategic Investments	Debt to support the FuelCell Groton	8.0%	10	\$ 3,200,000	0%	0	\$ -		
Hydro Projects	Strategic Investments	Canton Hydro: Loan \$1.2M loan + \$.5M Guaranty	8%	15	\$ 1,700,000	8%	15	\$ 1,170,157	\$ 859,952.00	\$ 727,275.00
CE Finance Prg	Strategic Investments	Unspecified	4.0%	10	\$ 5,000,000	0%	0	\$ -		
LMI Programs	Posigen - Junior facility	Restructured Facility for Resi Solar	0%	0	\$ -	7.5%	6	\$ 6,999,432	\$ 1,756,925.00	\$ 1,644,372.00
Solar PPA Development	Commercial Projects		0%	0	\$ -	3.75%	20	\$ 96,621	\$ 41,152.00	\$ 33,479.00
CE Finance Prg	Strategic Investments	Loan Facility for Budderfly	0%	0	\$ -	9%	6	\$ 5,000,000	\$ 1,489,193.00	\$ 1,397,882.00
Total					\$ 33,521,200			\$ 22,292,181	\$ 8,163,144	\$ 7,124,244

For FY2022, the board approved a budget where the staff sought to disburse or commit \$33.5 MM. The team was able to lend, commit, or disburse \$22.3 MM. These investments will generate a forecast of interest of more than \$ 8.2 MM over the course of their lives. In addition, the warrants

¹ Intacct, Board Materials, & Power BI data source: <https://app.powerbi.com/groups/289235dd-d77d-4043-8dae-d232a51a116a/reports/b24ec66b-a2c1-49f0-9a62-3f7443077b3f/ReportSection13c15e79a907a30b650e>

resulting from the Budderfly investment have already generated an additional \$200K of income for the organization, bringing the total investment income generated from FY22 investments to \$8.4 MM (which has a present value of \$ 7.1 MM)². The average interest rate was 6.54% for a term of 10.9 years.

While this surpasses the Green Banks established internal benchmark of 4% and 10 years, it falls short of the \$9.5 million that would have been generated had the organization achieved its lending target of \$33.5 million at the established internal benchmark rate and term. The Organization was on the cusp of other projects coming to fruition this year, especially for the PPA for the state and the Groton Fuel Cell, where delays were outside of our control and the projects are expected to close in FY23.

These numbers will change and will be updated once the books are closed for the fiscal year. We will capture these updates when we update the memo for the October 21, 2022 BOD meeting.

² Included in the actual principal figure are the principal amounts of loans, draws from borrowers on existing commitments, and new commitments. Interest income is forecast from the amount outstanding on the loans or lines of credit as of 6/30/2021 and assumes that the amounts drawn are repaid over the lives of the agreements.



Memo

To: Board of Directors of the Connecticut Green Bank

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

Date: July 15, 2022

Re: Overview of Compliance Reporting and the Board of Directors and Committees for FY 2022

Overview

This memo provides a summary report of the FY 2022 governance as it pertains to the Board of Directors and its Committees.

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

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

Table 1. Composition of the Board of Directors of the Green Bank in FY 2022

Position	Name	Status (as of 06-30-22)	Voting
Commissioner of DECD (or designee)	Binu Chandy	Ex Officio	Yes
Commissioner of DEEP (or designee)	Vicki Hackett	Ex Officio	Yes
State Treasurer (or designee)	Sarah Sanders	Ex Officio	Yes
Commissioner of OPM (or designee)	Matthew Dayton	Ex Officio	Yes
Finance of Renewable Energy	Adrienne Farrar Houël	Appointed	Yes
Finance of Renewable Energy	Dominick Grant	Appointed	Yes
Labor Organization	John Harry	Appointed	Yes
R&D or Manufacturing	Lonnie Reed	Appointed	Yes
Investment Fund Management	Laura Hoydick	Appointed	Yes
Environmental Organization	Matthew Ranelli	Appointed	Yes
Finance or Deployment	Tom Flynn	Appointed	Yes
Residential or Low Income	Brenda Watson	Appointed	Yes
President of the Green Bank	Bryan Garcia	Ex Officio	No

Board of Directors

The Board of Directors of the Green Bank is comprised of twelve (12) ex officio and appointed voting members, and one (1) ex officio non-voting member. A quorum for a meeting of the Board of Directors is seven (7) voting members at each meeting.

The leadership of the Board of Directors, includes:

- **Chair** – Lonnie Reed
- **Vice Chair**– Vicki Hackett, Deputy Commissioner of Energy, DEEP (voted in by her peers of the Green Bank Board of Directors)
- **Secretary** – Matthew Ranelli, Partner at Shipman and Goodwin (voted in by his peers of the Green Bank Board of Directors)
- **Staff Lead** – Bryan Garcia, President and CEO

For FY 2022, the Board of Directors of the Green Bank met seven (7) times, all regularly scheduled meetings (see Table 2). All meetings were held online via GoToMeeting due to Covid-19.

Table 2. Summary of Board of Directors Meetings for FY 2022

Date	Regular or Special Meeting	Attendees / % Attendance	# of Resolutions Approved¹
July 23, 2021	Regular	9 / 75%	14
October 22, 2021	Regular	12 / 100%	9
December 17, 2021	Regular	10 / 83%	6
January 21, 2022	Regular	10 / 83%	5
March 25, 2022	Regular	10 / 83%	7
April 22, 2021	Regular	11 / 92%	6
June 24, 2022	Regular	8 / 67%	5
Total	7 Regular Meetings 7 Total Meetings	83% 83%	52 52

Overall, the attendance for each meeting established a quorum – 7 of the 12 voting members present – in order to enable business decisions, and on average there were 10 members present at each meeting.

For a link to the materials from the Board of Directors meetings that is publicly accessible – [click here](#).

Statement of Financial Interest

It is required by state ethics laws that senior-level staff (i.e., Director level and above) and members of the Board of Directors annually file a Statement of Financial Interest (SFI). With respect to the 2020 SFI filing – required by May 1, 2022, the OSE received the following from the Connecticut Green Bank (see Table 3):

¹ Excludes approval of meeting minutes and adjournment.

Table 3. Summary of State of Financial Interest Filings with the Office of State Ethics for CY 2021

	Number of SFIs Submitted	% Submitted on Time
Senior Staff	7	100%
Board of Directors	12	100%

Of the 19 SFI filings by Senior Staff and the Board of Directors, all were filed online.

Audit, Compliance and Governance Committee

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

- **Chair** – Tom Flynn, Managing Partner, Coral Drive Partners, LLC
- **Members** – Lonnie Reed, Matthew Ranelli, Matthew Dayton
- **Staff Lead** – Brian Farnen, CLO and General Counsel

For FY 2022, the ACG Committee of the Connecticut Green Bank met three (3) times, all regularly scheduled meetings. (see Table 4). All meetings were held online via GoToMeeting due to Covid-19.

Table 4. Summary of Audit, Compliance and Governance Committee Meetings for FY 2022

Date	Regular or Special Meeting	Attendees / % Attendance	# of Resolutions Approved
October 12, 2021	Regular	3 / 100%	4
January 18, 2022	Regular	4 / 100% ²	1
May 17, 2022	Regular	4 / 100%	1
Total	3 total meetings	Avg. 100%	6

The attendance established a quorum with at least 3 voting members present – in order to enable business decisions.

For a link to the materials from the ACG Committee meetings that is publicly accessible – [click here](#).

Review of Governance Documents and Statutory Reporting

With respect to annual review of governance documents and statutory reporting, the following applies:

- Annual review by the ACG Committee of the Governance Documents (i.e., Bylaws, Operating Procedures, and Statement of Purpose) completed on October 15, 2020.
- Brian Farnen overviewed the Governance Documents, noting that the Bylaws were revised and changed in FY20 in a response to State Auditor best practice recommendations.
- Statutory Responsibilities and Reporting Checklist attached hereto as Exhibit A for continuous reporting tracking.

² Member total adjusted to four from three with addition of Matthew Dayton

Budget Operations and Compensation Committee

The Budget Operations and Compensation Committee (BOC Committee) is comprised of five (5) ex officio and appointed voting members. A quorum for a meeting of the BOC Committee is three (3) voting members at each meeting. Note, that if there aren't enough voting members of the BOC Committee present at a meeting, then the Chair and/or Vice Chair of the Green Bank can participate in the meeting to establish a quorum. The leadership of the BOC Committee, includes:

- **Chair** –John Harranty, Labor Union Representative (designated as the Chair by the former Chair of the Board Catherine Smith)
- **Members** – Lonnie Reed, Binu Chandy, Brenda Watson, Adrienne Farrar Houël
- **Staff Lead** – Eric Shrago, Managing Director of Operations

For FY 2022, the BOC Committee of the Green Bank met four (3) times, and all were regularly scheduled (see Table 5).

Table 5. Summary of Budget Operations and Compensation Committee Meetings for FY 2022

Date	Regular or Special Meeting	Attendees / % Attendance	# of Resolutions Approved
January 12, 2022	Regular	5 / 100%	1
May 24, 2022	Regular	3 / 60%	0
June 8, 2022	Regular	3 / 75%	0
Total	3 Total Meetings	Avg. 78%	1

The attendance for three (3) of the four (4) originally scheduled meetings established a quorum –3 voting members present – in order to enable business decisions and there were 2-3 members present at each meeting.

For a link to the materials from the BOC Committee meetings that is publicly accessible – [click here](#).

Deployment Committee

The Deployment Committee of the Green Bank is comprised of six (6) ex officio and appointed voting members. A quorum for a meeting of the Deployment Committee is four (4) voting members at each meeting. Note, that if there aren't enough voting members of the Deployment Committee present at a meeting, then the Chair and/or Vice Chair of the Green Bank can participate in the meeting to establish a quorum. The leadership of the Deployment Committee, includes:

- **Chair** –Vicki Hackett, DEEP Designee
- **Members** – Lonnie Reed, Matthew Ranelli, Binu Chandy, Dominick Grant, Sarah Sanders
- **Staff Lead** – Bryan Garcia, President and CEO, and Bert Hunter, EVP and CIO

For FY 2022, the Deployment Committee of the Green Bank met four (4) times, all of which were regularly scheduled meetings (see Table 6).

Table 6. Summary of Deployment Committee Meetings for FY 2022

Date	Regular or Special Meeting	Attendees / % Attendance	# of Resolutions Approved
September 8, 2021	Regular	3 / 60%	1
September 22, 2021	Regular	4 / 100% ³	1
November 17, 2021	Regular	6 / 100% ⁴	1
February 23, 2022	Regular	4 67%	2
Total	Total Meetings	Avg. 82%	5

Overall, the attendance for each meeting established a quorum – 4 of the 6 voting members present – in order to enable business decisions, and on average there were 4 members present at each meeting.

For a link to the materials from the Deployment Committee meetings that is publicly accessible – [click here](#).

Joint Committee of the EEB and the CGB

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

- **Chair** – Brenda Watson, Executive Director, Operation Fuel (Green Bank designee)
- **Vice Chair** – Vicki Hackett
- **Secretary** – Bryan Garcia, Connecticut Green Bank, and Craig Diamond, Connecticut Energy Efficiency Fund (voted in by their peers of the EEB and the Connecticut Green Bank)
- **Members** – Bryan Garcia (non-voting), Bert Hunter (non-voting), John Harrity (designated as member of the Committee by BOD Chair)
- **Staff Lead** – Bryan Garcia, President and CEO of the Connecticut Green Bank

For FY 2022, the Joint Committee of the EEB and the Green Bank met three (3) times, including three (3) regularly scheduled meetings (see Table 7).

³ Member total adjusted to four from five with departure of Steven Meier.

⁴ Member total adjusted to six from four with additions of Dominick Grant and Sarah Sanders.

Table 7. Summary of Joint Committee Meetings for FY 2022

Date	Regular or Special Meeting	Attendees / % Attendance	
		Voting	Non-voting (CGB)⁵
December 15, 2021	Regular	4 / 100%	2 / 100%
March 23, 2022	Regular	4 / 100%	2/100%
June 29, 2022	Regular	2 / 50%	1 /50%
Total	4 Regular Meetings 4 Total Meetings	Avg. 83%	Avg. 83%

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

For a link to the materials from the Joint Committee meetings that is publicly accessible – [click here](#).

⁵ Lonnie Reed attended all FY22 meetings.

Exhibit A

Quarterly Cash Flow		Quarterly Human Resources		Sec. 1-123		REEEFA Bonding		SCRIF Notice		RSIP		Annual Report		Board Meetings			OpenCT Checkbook Data to Comptroller		Board Diversity		
<i>Quarter End</i>	<i>Submitted</i>	<i>Quarter End</i>	<i>Submitted</i>	<i>Due</i>	<i>Submitted</i>	<i>Due</i>	<i>Submitted</i>	<i>Reason Required</i>	<i>Submitted</i>	<i>Due</i>	<i>Submitted</i>	<i>Due</i>	<i>Submitted</i>	<i>Held</i>	<i>Type</i>	<i>Held</i>	<i>Type</i>	<i>Requested by</i>	<i>Delivered</i>	<i>Due</i>	<i>Submitted</i>
9/30/13	3/14/14	10/1/13	6/17/14	1/1/2015	12/30/2014	1/1/13	2/8/13	CSCU deal	12/1/17	1/1/2014	-	1/1/15	12/30/14	12/16/15	regular	1/26/18	regular	1/15/19	1/10/19	10/1/2019	9/25/2019
12/31/13	3/14/14	1/1/14	6/17/14	1/1/2016	12/31/2015	1/1/14	1/15/14	CSCU, Meriden	11/30/18	1/1/2017	1/30/2017	1/1/16	12/31/15	1/15/16	regular	2/15/18	special	2/1/20	1/31/20	10/1/2021	9/14/2021
3/31/14	4/21/15	4/1/14	6/17/14	1/1/2017	12/29/2016	1/1/15	3/15/15	CSCU, Meriden	12/30/19	1/1/2019	1/11/2019	1/1/17	10/17/16	2/26/16	special	4/3/18	regular	3/15/21	3/15/21		
6/30/14	4/21/15	7/1/14	8/5/14	1/1/2018	12/27/2017	1/1/16	12/23/15	CSCU, Meriden, SHREC	12/7/20	1/1/2021	12/31/2020	1/1/18	12/1/17	3/3/16	special	4/27/18	regular	3/31/22	3/31/2022		
9/30/14	6/16/16	10/1/14	10/2/14	1/1/2019	12/31/2018	1/1/17	12/15/16	4 certificates	11/24/21	1/1/2023	Jan-'23	1/1/19	1/11/19	4/22/16	regular	5/25/18	special				
12/31/14	6/16/16	1/1/15	1/12/15	1/1/2020	12/31/2019	1/1/18	12/1/17					1/1/20	12/27/19	6/17/16	regular	6/13/18	regular				
3/31/15	6/16/16	4/1/15	4/12/15	1/1/2021	12/30/2020	1/1/19	12/31/18					1/1/21	12/31/20	7/6/16	special	6/28/18	regular				
6/30/15	6/16/16	7/1/15	7/9/15	1/1/2022	12/29/2021	1/2/19	12/30/19					1/1/22	12/29/21	7/22/16	regular	7/27/18	regular				
9/30/15	5/31/16	10/1/15	10/9/15			1/3/21	12/30/20							10/21/16	regular	8/21/18	special				
12/31/15	5/31/16	1/1/16	1/8/16			1/4/22	12/29/21							12/16/16	regular	9/18/18	special				
3/31/16	5/31/16	4/1/16	3/31/16											1/5/17	special	10/26/18	regular				
6/30/16	8/10/16	7/1/16	7/5/16											1/20/17	regular	12/14/18	regular				
9/30/16	11/8/16	10/1/16	10/5/16											3/10/17	special	2/22/19	regular				
12/31/16	2/23/17	1/1/17	2/21/17											4/28/17	regular	3/29/19	regular				
3/31/17	5/10/17	4/1/17	4/10/17											6/9/17	special	4/26/19	regular				
6/30/17	8/9/17	7/1/17	7/17/17											6/23/17	regular	6/28/19	regular				
9/30/17	12/21/17	10/1/17	10/6/17											7/21/17	regular	7/18/19	regular				
12/31/17	2/28/18	1/1/18	1/9/18											9/28/17	regular	9/12/19	regular				
3/31/18	5/17/18	4/1/18	4/2/18											10/3/17	special	10/25/19	regular				
6/30/18	9/5/18	7/1/18	7/5/18											10/20/17	regular	11/20/19	special				
9/30/18	11/28/18	10/1/18	10/3/18											11/6/17	special	12/20/19	regular				
12/31/18	7/11/19	1/1/19	1/3/19											11/13/17	special	1/24/20	regular				
3/31/19	9/23/19	4/1/19	4/1/19											12/1/17	special	3/25/20	regular				
6/30/19	9/23/19	7/1/19	7/1/19											12/15/17	regular	4/24/20	regular				
9/30/19	12/27/19	10/1/19	10/1/19													6/26/20	regular				
12/31/19	3/26/20	1/1/20	1/3/20													7/24/20	regular				
3/31/20	6/22/20	4/1/20	4/3/20													9/23/20	special				
6/30/20	9/28/20	7/1/20	7/7/20													10/23/20	regular				
9/30/20	12/18/20	10/1/20	10/9/20													12/18/20	regular				
12/31/20	3/11/21	1/1/21	1/11/21													1/22/21	regular				
3/31/21	6/22/21	4/1/21	4/1/21													3/26/21	regular				
6/30/21	9/23/21	7/1/21	6/30/21													4/6/21	special				
9/30/21	12/28/21	10/1/21	9/30/21													4/23/21	regular				
12/31/21	3/11/22	1/1/22	1/11/22													6/25/21	regular				
3/31/22	6/23/22	4/1/22	4/1/22													7/23/21	regular				
																10/22/21	regular				
																12/17/21	regular				
																1/21/22	regular				
																3/25/22	regular				
																4/22/22	regular				
																6/24/22	regular				

Memo

To: Board of Directors of the Connecticut Green Bank
From: Sergio Carrillo, Bryan Garcia
Cc: Mackey Dykes, Brian Farnen, Bert Hunter, Jane Murphy, and Eric Shrago
Date: July 15, 2022
Re: Approval of Battery Storage Upfront Incentive for Non-Residential Projects

Background

The Energy Storage Solutions (ESS) Program was established by the Public Utility Regulatory Authority (PURA) in Docket No. 17-12-03RE03, PURA Investigation into Distribution System Planning of the Electric Distribution Companies – Electric Storage. In its Final Decision¹ (Decision) in this docket, issued July 28, 2021, PURA appointed The Connecticut Light and Power Company d/b/a Eversource Energy (Eversource), The United Illuminating Company (UI), and the Connecticut Green Bank (Green Bank) as co-administrators of the ESS Program.

The Green Bank's responsibilities include customer enrollment, administration of the upfront incentive, communication and promotion of the Program, and data aggregation and publication, among others.

Benefits-Cost Analysis (BCA)

Among PURA's objectives in its Decision was to implement a battery storage program in a cost-effective way, that provides positive net present value to all ratepayers. To accomplish this, PURA directed the Green Bank to propose upfront incentives that deliver a Ratepayer Impact Measure (RIM) test of 1.40 over the first three-year Program cycle, inclusive of all residential and non-residential projects, to ensure the ESS Program delivers on the stated Objective.

The Green Bank designed an upfront and performance-based incentive structure that delivered a program-wide RIM of 1.39, meeting PURA's request. Such incentive structure also delivered a Participant Cost Test (PCT) of 1.0.

Upon receiving the first few non-residential projects, which shortly after the launching of the program depleted the 50 MW of capacity available for non-residential customers for the 2022-

¹ <https://tinyurl.com/2p8v4cwa>

2024 cycle, PURA directed the Green Bank perform BCA analysis for these “oversized systems”², including their ability to perform demand charge management.

The Green Bank’s analysis indicated that the proposed systems would lower the program-wide RIM from 1.39 to 1.32, and demand charge management would further reduce the program-wide RIM from 1.32 to 1.25.

On July 14, 2022, PURA issued a motion directing the Green Bank to model the next 100 MW of residential and 100 MW of non-residential capacity, originally scheduled for 2025-2027, as becoming available in January 2023 to potentially better meet ESS Program Objective 3, to “foster the sustained, orderly development of a state-based electric energy storage industry”. In the motion, PURA added that the BCA be modeled to provide improved understanding of how to achieve a RIM of 1.40 across the entire ESS Program.

Board Approval of Upfront Incentive Review and Approval Process

During the June 24 Board of Directors meeting, the Green Bank presented to the Board a two-step approach for the review and approval of upfront incentives in the ESS program. The approach calls for upfront incentives under \$500,000 to be approved by Green Bank staff, and those incentives greater than \$500,000 to be approved by the Board through the consent agenda.

Upon approval of the upfront incentives by the Board, Green Bank staff will issue Reservation of Funds Letter (ROF). Upon completion of the projects, Green Bank staff will issue Confirmation of Funds (COF) letters and inform the Board of any material difference in incentive amounts between ROF and COF letters.

The Board approved that Green Bank staff shall obtain Board approval of estimated upfront incentive payments via consent agenda utilizing the Tear Sheet process described in the memorandum to the Board dated June 24, 2022.

Request for Approval of Estimated Upfront Incentives

Table 1 below shows the 13 projects seeking estimated upfront incentives for a total amount of \$16,513,170. The smallest of the projects will receive \$537,250 and the largest will receive \$3,675,000.

These projects are small, medium, and large³ commercial and industrial projects, and are expected to come online in 2023 and 2024, due to their complexity and distribution and transmission interconnection studies triggered by the size of the batteries being proposed, which can be lengthy and costly. Batteries with power rating above 2 MW (2,000 kW) will require distribution studies, while batteries above 5 MW (5,000 kW) will also require transmission studies.

All 13 projects propose to use one or multiple Tesla Megapack(s) which is a very popular battery model in commercial applications.

² Battery systems where the maximum power output rating is significantly higher than the customer’s annual average demand are considered oversized

³ Small: < 200 kW average annual demand; Medium: 200-500 kW average annual demand; Large: 500 kW+ average annual demand. Note that the Program Administrators are requesting to PURA to modify these parameters starting in 2023.

These 13 projects totaling 33.8 MW of capacity account for 67.6% of the original 50 MW of non-residential available capacity for the 2022-2024 cycle.

Project Name	Contractor Account	Application Submitted Date	FCM	Upfront Incentive	Battery Manufacturer	Battery Model	Total System Energy Capacity	Total System Power (kW)
ESS-00014	CPower	1/14/2022	No	\$ 1,800,000	Tesla	Megapack	18,000	6,000
ESS-00017	CPower	1/14/2022	Yes	\$ 3,675,000	Tesla	Megapack	21,000	7,000
ESS-00019	CPower	1/14/2022	No	\$ 3,300,000	Tesla	Megapack	16,500	5,500
ESS-00021	CPower	1/14/2022	Yes	\$ 1,620,000	Tesla	Megapack	16,200	5,400
ESS-00031	ConEdison Solutions	1/19/2022	No	\$ 537,320	Tesla	Megapack	3,070	768
ESS-00034	ConEdison Solutions	1/19/2022	Yes	\$ 614,080	Tesla	Megapack	3,070	768
ESS-00035	ConEdison Solutions	1/19/2022	No	\$ 1,074,640	Tesla	Megapack	6,141	1,535
ESS-00036	ConEdison Solutions	1/19/2022	Yes	\$ 614,080	Tesla	Megapack	3,070	768
ESS-00037	ConEdison Solutions	1/28/2022	No	\$ 613,600	Tesla	Megapack	3,068	767
ESS-00038	ConEdison Solutions	1/25/2022	No	\$ 537,250	Tesla	Megapack	3,070	767
ESS-00040	ConEdison Solutions	1/28/2022	No	\$ 613,600	Tesla	Megapack	3,068	767
ESS-00048	ConEdison Solutions	1/28/2022	No	\$ 613,600	Tesla	Megapack	3,068	767
ESS-00172	CPower	3/10/2022	No	\$ 900,000	Tesla	Megapack	9,000	3,000
				\$ 16,513,170			108,326	33,807

Table 1. Summary of Estimated Upfront Incentives

Project Name	FCM	RIM with FCM Participation	RIM w/o FCM Participation
ESS-00014	No	0.99	2.31
ESS-00017	Yes	0.93	2.16
ESS-00019	No	0.87	2.03
ESS-00021	Yes	0.78	1.83
ESS-00031	No	0.75	1.46
ESS-00034	Yes	0.74	1.43
ESS-00035	No	0.83	1.62
ESS-00036	Yes	0.78	1.51
ESS-00037	No	0.77	1.50
ESS-00038	No	0.57	1.10
ESS-00040	No	0.78	1.51
ESS-00048	No	0.78	1.52
ESS-00172	No	1.11	2.59

Table 2. RIM scores with and without participation in FCM

Table 2 above, shows the RIM scores for all 13 projects with and without participation in the ISO-NE FCM. The numbers in bold represent the expected RIM scores of the projects based on their intent to participate in the FCM indicated at the time of the application.

It is worth noting that there's a direct correlation between participation in Forward Capacity Markets (FCM) and the RIM. A general rule is that projects that expect to participate in FCM will consistently produce RIMs under 1.00, while non-participation in FCM consistently yields RIMs above 1.40, and sometimes even above 2.00.

Moving forward, the Green Bank will recommend implementing a permanent change in the Program Rules forbidding participation in FCM as the most effective way to protect RIM and all ratepayers.

The attached Tear Sheets provide these and other details pertaining to the 13 projects seeking estimated upfront incentives in the ESS Program.

Resolution

WHEREAS, the Connecticut Green Bank (Green Bank) proposes to administer the upfront incentive payments through (i) the issuance of a Reservation of Funds (ROF) letter, and (ii) the issuance of a Confirmation of Funds (COF) letter upon the completed installment of all equipment, the procurement of required utility permits, and the verification of connectivity with dispatch platforms;

WHEREAS, residential projects with an estimated upfront incentive payment not equal to or greater than \$500,000 shall be approved by Green Bank staff and upon approval be issued a ROF letter; and, for projects with an estimated upfront incentive payment greater than or equal to \$500,000, the Green Bank shall prepare a proposal to the Board for approval, per the bylaws of the Green Bank;

WHEREAS proposals for projects with an estimated upfront incentive payment equal to or greater than \$500,000 shall include a Tear Sheet outlining customer, project, and site information; priority customer eligibility criteria, Battery Energy Storage System (BESS) characteristics, ratepayer and societal benefits generated by the program as represented by benefit-cost analysis ratios, and information related to the estimated upfront incentive payment;

WHEREAS, within the existing Board and Deployment Committee regular meeting schedule, the Green Bank staff shall seek Board approval of non-residential projects with estimated upfront incentive payments equal to or greater than \$500,000 via consent agenda, and, upon approval by the Board, Green Bank staff shall issue ROF letters to the project developer and customer;

WHEREAS, after projects are fully operational, Green Bank staff shall notify the Board of their intent to issue COF letters, and, and as necessary, provide an analysis and explanation for any material difference between an approved estimated upfront incentive payment and the final incentive amount.

WHEREAS, in its June 22, 2002 meeting the Board approved that upfront incentive payments under \$500,000, as estimated by the Green Bank in fulfillment of its responsibilities set forth in the Program, be issued a ROF letter upon approval by internal Green Bank.

WHEREAS, in its June 22, 2002 meeting the Board approved the implementation of an Upfront Incentive Project Approval procedure ("Procedure") involving of the issuance of a proposal for non-residential projects under consideration by the Green Bank in fulfillment of its responsibilities set forth in the Program with an estimated upfront incentive payment greater than \$500,000; and

WHEREAS, in its June 22, 2002 meeting the Board approved that, as part of the Procedure, the Green Bank staff shall obtain Board approval of such estimated upfront incentive payments via consent agenda utilizing the Tear Sheet process described in the memorandum to the Board dated June 24, 2022;

NOW, therefore be it:

RESOLVED, that the Board hereby approves the estimated upfront incentives sought by 13 non-residential projects totaling \$16,513,170 consistent with the memorandum provided to the Board dated July 15, 2022.

RESOLVED, that the proper Green Bank officers are authorized and empowered to do all other acts and execute and deliver all any documents and regulatory filings as they shall deem necessary and desirable to effect the above-mentioned incentives consistent with the Procedure and the memorandum provided to the Board dated July 15, 2022.

Energy Storage Solution Program Upfront Incentive Application

Project Description	Installation of a Tesla Mega Pack battery storage system of 6 MW power ratio and 18 MWh of power capacity to reduce electric bills and provide backup power to the facility during power outages.
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Customer / Site information

Customer Name	[REDACTED]
Address	[REDACTED]
Business Purpose	Conductor/Wires Manufacturer
Incentive Application No.	ESS-00014
Incentive Application Date	01/14/2022
Customer Average Annual Demand (kW)	1,559 kW
Customer Class (S / M / L)	Large
Project Developer / Installer	CPower

Program Eligibility

Critical Facility	No
Small Business	No
Onsite Fossil Fuel Generator	No
Grid Edge Customer	No
Participation in FCM Allowed	No
Participation in FCM Declared	No
Resiliency Plan on File (N/A if Grid Edge Customer)	No

Battery Energy Storage System (BESS) Characteristics

System Configuration	Standalone battery
Expected Program Participation	Passive and Active Dispatch
BESS Make / Model	Tesla Megapack
BESS Power Rating (kW)	6,000 kW
BESS Energy Capacity (kWh)	18,000 kWh
BESS Technology Approval Status	Pre-Approved
Power Rating to Annual Average Demand Ratio	3.85
Interconnection Application Filed	Yes
Interconnection Study Required	Distribution and Transmission
Estimated Project Cost	[REDACTED]

Benefit / Cost Ratios

RIM – Ratepayer Impact Measure	2.31
PCT – Participant Cost Test	1.33
PACT – Program Administrator Cost Test	3.26
SCT – Societal Cost Test	3.27
TRC – Total Resource Cost Test	3.28

Upfront Incentive Information

Incentive Application Status	<ul style="list-style-type: none">▪ Pending Board Approval▪ Approved Reservation of Funds Letter (ROF)▪ Approved Confirmation of Funds Letter (COF)
Incentive Calculation Method	Non-Tiered (Initial oversized system)
Estimated Upfront Incentive	\$1,800,000

Energy Storage Solution Program Upfront Incentive Application

Project Description	Installation of a Tesla Mega Pack battery storage system of 7 MW power ratio and 21 MWh of power capacity to reduce electric bills and provide backup power to the facility during power outages.
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Customer / Site information

Customer Name	[REDACTED]
Address	[REDACTED]
Business Purpose	Iron and Steel Castings
Incentive Application No.	ESS-00017
Incentive Application Date	01/14/2022
Customer Average Annual Demand (kW)	391 kW
Customer Class (S / M / L)	Medium
Project Developer / Installer	CPower

Program Eligibility

Critical Facility	No
Small Business	No
Onsite Fossil Fuel Generator	No
Grid Edge Customer	Yes
Participation in FCM Allowed	Yes
Participation in FCM Declared	Yes
Resiliency Plan on File (N/A if Grid Edge Customer)	Yes

Battery Energy Storage System (BESS) Characteristics

System Configuration	Standalone battery
Expected Program Participation	Passive and Active Dispatch
BESS Make / Model	Tesla Megapack
BESS Power Rating (kW)	7,000 kW
BESS Energy Capacity (kWh)	21,000 kWh
BESS Technology Approval Status	Pre-Approved
Power Rating to Annual Average Demand Ratio	17.90
Interconnection Application Filed	Yes
Interconnection Study Required	Distribution and Transmission
Estimated Project Cost	[REDACTED]

Benefit / Cost Ratios

RIM – Ratepayer Impact Measure	0.93
PCT – Participant Cost Test	1.42
PACT – Program Administrator Cost Test	1.03
SCT – Societal Cost Test	1.16
TRC – Total Resource Cost Test	1.17

Upfront Incentive Information

Incentive Application Status	<ul style="list-style-type: none">▪ Pending Board Approval▪ Approved Reservation of Funds Letter (ROF)▪ Approved Confirmation of Funds Letter (COF)
Incentive Calculation Method	Non-Tiered (Initial oversized system)
Estimated Upfront Incentive	\$3,675,000

Energy Storage Solution Program Upfront Incentive Application

Project Description	Installation of a Tesla Mega Pack battery storage system of 5.5 MW power ratio and 16.5 MWh of power capacity to reduce electric bills and provide backup power to the facility during power outages.
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Customer / Site information

Customer Name	[REDACTED]
Address	[REDACTED]
Business Purpose	Conductor/Wires Manufacturer
Incentive Application No.	ESS-00019
Incentive Application Date	01/14/2022
Customer Average Annual Demand (kW)	270 kW
Customer Class (S / M / L)	Medium
Project Developer / Installer	CPower

Program Eligibility

Critical Facility	No
Small Business	No
Onsite Fossil Fuel Generator	No
Grid Edge Customer	No
Participation in FCM Allowed	No
Participation in FCM Declared	No
Resiliency Plan on File (N/A if Grid Edge Customer)	No

Battery Energy Storage System (BESS) Characteristics

System Configuration	Standalone battery
Expected Program Participation	Passive and Active Dispatch
BESS Make / Model	Tesla Megapack
BESS Power Rating (kW)	5,500 kW
BESS Energy Capacity (kWh)	16,500 kWh
BESS Technology Approval Status	Pre-Approved
Power Rating to Annual Average Demand Ratio	20.37
Interconnection Application Filed	Yes
Interconnection Study Required	Distribution and Transmission
Estimated Project Cost	[REDACTED]

Benefit / Cost Ratios

RIM – Ratepayer Impact Measure	2.03
PCT – Participant Cost Test	1.51
PACT – Program Administrator Cost Test	2.78
SCT – Societal Cost Test	3.27
TRC – Total Resource Cost Test	3.28

Upfront Incentive Information

Incentive Application Status	<ul style="list-style-type: none">▪ Pending Board Approval▪ Approved Reservation of Funds Letter (ROF)▪ Approved Confirmation of Funds Letter (COF)
Incentive Calculation Method	Non-Tiered (Initial oversized system)
Estimated Upfront Incentive	\$3,300,000

Energy Storage Solution Program Upfront Incentive Application

Project Description	Installation of a Tesla Mega Pack battery storage system of 5.4 MW power ratio and 16.2 MWh of power capacity to reduce electric bills and provide backup power to the facility during power outages.
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Customer / Site information

Customer Name	[REDACTED]
Address	[REDACTED]
Business Purpose	Fuel Oil, Propane and HVAC
Incentive Application No.	ESS-00021
Incentive Application Date	01/14/2022
Customer Average Annual Demand (kW)	561 kW
Customer Class (S / M / L)	Large
Project Developer / Installer	CPower

Program Eligibility

Critical Facility	Yes
Small Business	No
Onsite Fossil Fuel Generator	No
Grid Edge Customer	Yes
Participation in FCM Allowed	Yes
Participation in FCM Declared	Yes
Resiliency Plan on File (N/A if Grid Edge Customer)	Yes

Battery Energy Storage System (BESS) Characteristics

System Configuration	Standalone battery
Expected Program Participation	Passive and Active Dispatch
BESS Make / Model	Tesla Megapack
BESS Power Rating (kW)	5,400 kW
BESS Energy Capacity (kWh)	16,200 kWh
BESS Technology Approval Status	Pre-Approved
Power Rating to Annual Average Demand Ratio	9.62
Interconnection Application Filed	Yes
Interconnection Study Required	Distribution and Transmission
Estimated Project Cost	[REDACTED]

Benefit / Cost Ratios

RIM – Ratepayer Impact Measure	0.78
PCT – Participant Cost Test	1.22
PACT – Program Administrator Cost Test	0.80
SCT – Societal Cost Test	0.80
TRC – Total Resource Cost Test	0.81

Upfront Incentive Information

Incentive Application Status	<ul style="list-style-type: none">▪ Pending Board Approval▪ Approved Reservation of Funds Letter (ROF)▪ Approved Confirmation of Funds Letter (COF)
Incentive Calculation Method	Non-Tiered (Initial oversized system)
Estimated Upfront Incentive	\$1,620,000

Energy Storage Solution Program Upfront Incentive Application

Project Description	Installation of a Tesla Mega Pack battery storage system to reduce electric bills and provide backup power to the facility during power outages.
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Customer / Site information

Customer Name	[REDACTED]
Address	[REDACTED]
Business Purpose	Middle school
Incentive Application No.	ESS-00031
Incentive Application Date	1/18/2022
Average Annual Demand (kW)	312 kW
Customer Class (S / M / L)	Medium C&I
Project Developer / Installer	ConEdison Solutions

Program Eligibility

Critical Facility	No
Small Business	No
Onsite Fossil Fuel Generator	No
Grid Edge Customer	No
Participation in FCM Allowed	No
Participation in FCM Declared	No
Resiliency Plan on File (N/A if Grid Edge Customer)	No

Battery Energy Storage System (BESS) Characteristics

System Configuration	Standalone battery
Expected Program Participation	Passive and Active Dispatch
BESS Make / Model	Tesla Megapack
BESS Power Rating (kW)	767 kW
BESS Energy Capacity (kWh)	3,070.4 kWh
BESS Technology Approval Status	Pre-Approved
Power Rating to Average Annual Demand Ratio	2.5
Interconnection Application Filed	Yes
Interconnection Process	Fast Track
Estimated Project Cost	[REDACTED]

Benefit / Cost Ratios

RIM – Ratepayer Impact Measure	1.46
PCT – Participant Cost Test	1.20
PACT – Program Administrator Cost Test	2.13
SCT – Societal Cost Test	2.04
TRC – Total Resource Cost Test	2.05

Upfront Incentive Information

Incentive Application Status	<ul style="list-style-type: none">▪ Pending Board Approval▪ Approved Reservation of Funds Letter (ROF)▪ Approved Confirmation of Funds Letter (COF)
Incentive Calculation Method	Non-Tiered (Initial oversized system)
Estimated Upfront Incentive	\$537,320

Energy Storage Solution Program Upfront Incentive Application

Project Description	Installation of a Tesla Mega Pack battery storage system to reduce electric bills and provide backup power to the facility during power outages.
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Customer / Site information

Customer Name	[REDACTED]
Address	[REDACTED]
Business Purpose	Recreational facility
Incentive Application No.	ESS-00034
Incentive Application Date	1/18/2022
Average Annual Demand (kW)	175 kW
Customer Class (S / M / L)	Small C&I
Project Developer / Installer	ConEdison Solutions

Program Eligibility

Critical Facility	No
Small Business	Yes
Onsite Fossil Fuel Generator	No
Grid Edge Customer	No
Participation in FCM Allowed	Yes
Participation in FCM Declared	Yes
Resiliency Plan on File (N/A if Grid Edge Customer)	Yes

Battery Energy Storage System (BESS) Characteristics

System Configuration	Paired with existing solar PV
Expected Program Participation	Passive and Active Dispatch
BESS Make / Model	Tesla Megapack
BESS Power Rating (kW)	768 kW
BESS Energy Capacity (kWh)	3,070.4 kWh
BESS Technology Approval Status	Pre-Approved
Power Rating to Average Annual Demand Ratio	4.4
Interconnection Application Filed	Yes
Interconnection Process	Fast Track
Estimated Project Cost	[REDACTED]

Benefit / Cost Ratios

RIM – Ratepayer Impact Measure	0.74
PCT – Participant Cost Test	1.23
PACT – Program Administrator Cost Test	0.89
SCT – Societal Cost Test	0.88
TRC – Total Resource Cost Test	0.88

Upfront Incentive Information

Incentive Application Status	<ul style="list-style-type: none">▪ Pending Board Approval▪ Approved Reservation of Funds Letter (ROF)▪ Approved Confirmation of Funds Letter (COF)
Incentive Calculation Method	Non-Tiered (Initial oversized system)
Estimated Upfront Incentive	\$614,080

Energy Storage Solution Program Upfront Incentive Application

Project Description	Installation of a Tesla Mega Pack battery storage system to reduce electric bills and provide backup power to the facility during power outages.
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Customer / Site information

Customer Name	[REDACTED]
Address	[REDACTED]
Business Purpose	Multi-use commercial
Incentive Application No.	ESS-00035
Incentive Application Date	1/18/2022
Average Annual Demand (kW)	520 kW
Customer Class (S / M / L)	Large C&I
Project Developer / Installer	ConEdison Solutions

Program Eligibility

Critical Facility	No
Small Business	No
Onsite Fossil Fuel Generator	No
Grid Edge Customer	No
Participation in FCM Allowed	No
Participation in FCM Declared	No
Resiliency Plan on File (N/A if Grid Edge Customer)	No

Battery Energy Storage System (BESS) Characteristics

System Configuration	Paired with existing solar PV
Expected Program Participation	Passive and Active Dispatch
BESS Make / Model	Tesla Megapack
BESS Power Rating (kW)	1,535.2 kW
BESS Energy Capacity (kWh)	6,140.8 kWh
BESS Technology Approval Status	Pre-Approved
Power Rating to Average Annual Demand Ratio	3.0
Interconnection Application Filed	Yes
Interconnection Process	Fast Track
Estimated Project Cost	[REDACTED]

Benefit / Cost Ratios

RIM – Ratepayer Impact Measure	1.62
PCT – Participant Cost Test	1.16
PACT – Program Administrator Cost Test	2.13
SCT – Societal Cost Test	2.14
TRC – Total Resource Cost Test	2.15

Upfront Incentive Information

Incentive Application Status	<ul style="list-style-type: none">▪ Pending Board Approval▪ Approved Reservation of Funds Letter (ROF)▪ Approved Confirmation of Funds Letter (COF)
Incentive Calculation Method	Non-Tiered (Initial oversized system)
Estimated Upfront Incentive	\$614,080

Energy Storage Solution Program Upfront Incentive Application

Project Description	Installation of a Tesla Mega Pack battery storage system to reduce electric bills and provide backup power to the facility during power outages.
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Customer / Site information

Customer Name	[REDACTED]
Address	[REDACTED]
Business Purpose	Manufacturing
Incentive Application No.	ESS-00036
Incentive Application Date	1/18/2022
Average Annual Demand (kW)	164 kW
Customer Class (S / M / L)	Small C&I
Project Developer / Installer	ConEdison Solutions

Program Eligibility

Critical Facility	No
Small Business	Yes
Onsite Fossil Fuel Generator	No
Grid Edge Customer	Yes
Participation in FCM Allowed	Yes
Participation in FCM Declared	Yes
Resiliency Plan on File (N/A if Grid Edge Customer)	N/A

Battery Energy Storage System (BESS) Characteristics

System Configuration	Standalone battery
Expected Program Participation	Passive and Active Dispatch
BESS Make / Model	Tesla Megapack
BESS Power Rating (kW)	768 kW
BESS Energy Capacity (kWh)	3,070 kWh
BESS Technology Approval Status	Pre-Approved
Power Rating to Average Annual Demand Ratio	4.7
Interconnection Application Filed	Yes
Interconnection Process	Fast Track
Estimated Project Cost	[REDACTED]

Benefit / Cost Ratios

RIM – Ratepayer Impact Measure	0.78
PCT – Participant Cost Test	1.17
PACT – Program Administrator Cost Test	0.89
SCT – Societal Cost Test	0.88
TRC – Total Resource Cost Test	0.88

Upfront Incentive Information

Incentive Application Status	<ul style="list-style-type: none">▪ Pending Board Approval▪ Approved Reservation of Funds Letter (ROF)▪ Approved Confirmation of Funds Letter (COF)
Incentive Calculation Method	Non-Tiered (Initial oversized system)
Estimated Upfront Incentive	\$614,080

Energy Storage Solution Program Upfront Incentive Application

Project Description	Installation of a Tesla Mega Pack battery storage system to reduce electric bills and provide backup power to the facility during power outages.
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Customer / Site information

Customer Name	[REDACTED]
Address	[REDACTED]
Business Purpose	Physical Fitness Facilities
Incentive Application No.	ESS-00037
Incentive Application Date	01/28/2022
Customer Average Annual Demand (kW)	112
Customer Class (S / M / L)	Small
Project Developer / Installer	ConEdison Solutions

Program Eligibility

Critical Facility	No
Small Business	Yes
Onsite Fossil Fuel Generator	No
Grid Edge Customer	No
Participation in FCM Allowed	Yes
Participation in FCM Declared	No
Resiliency Plan on File (N/A if Grid Edge Customer)	No

Battery Energy Storage System (BESS) Characteristics

System Configuration	Standalone battery
Expected Program Participation	Passive and Active Dispatch
BESS Make / Model	Tesla Megapack
BESS Power Rating (kW)	767 kW
BESS Energy Capacity (kWh)	3,068 kWh
BESS Technology Approval Status	Pre-Approved
Power Rating to Average Annual Demand Ratio	6.8
Interconnection Application Filed	Yes
Interconnection Study Required	Fast Track
Estimated Project Cost	[REDACTED]

Benefit / Cost Ratios

RIM – Ratepayer Impact Measure	1.50
PCT – Participant Cost Test	1.17
PACT – Program Administrator Cost Test	2.05
SCT – Societal Cost Test	2.04
TRC – Total Resource Cost Test	2.05

Upfront Incentive Information

Incentive Application Status	<ul style="list-style-type: none">▪ Pending Board Approval▪ Approved Reservation of Funds Letter (ROF)▪ Approved Confirmation of Funds Letter (COF)
Incentive Calculation Method	Non-Tiered (Initial oversized system)
Estimated Upfront Incentive	\$613,600

Energy Storage Solution Program Upfront Incentive Application

Project Description	Installation of a Tesla Mega Pack battery storage system to reduce electric bills and provide backup power to the facility during power outages.
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Customer / Site information

Customer Name	[REDACTED]
Address	[REDACTED]
Business Purpose	Wiper Manufacturer
Incentive Application No.	ESS-00038
Incentive Application Date	01/25/2022
Customer Peak Demand (kW)	271
Customer Class (S / M / L)	Medium
Project Developer / Installer	ConEdison Solutions

Program Eligibility

Critical Facility	No
Small Business	No
Onsite Fossil Fuel Generator	No
Grid Edge Customer	No
Participation in FCM Allowed	No
Participation in FCM Declared	No
Resiliency Plan on File (N/A if Grid Edge Customer)	No

Battery Energy Storage System (BESS) Characteristics

System Configuration	Paired with existing on-site solar PV
Expected Program Participation	Passive and Active Dispatch
BESS Make / Model	Tesla Megapack
BESS Power Rating (kW)	767 kW
BESS Energy Capacity (kWh)	3,068 kWh
BESS Technology Approval Status	Pre-Approved
Power Rating to Annual Average Demand Ratio	2.8
Interconnection Application Filed	Yes
Interconnection Study Required	Fast Track
Estimated Project Cost	[REDACTED]

Benefit / Cost Ratios

RIM – Ratepayer Impact Measure	1.10
PCT – Participant Cost Test	1.27
PACT – Program Administrator Cost Test	1.62
SCT – Societal Cost Test	1.56
TRC – Total Resource Cost Test	1.57

Upfront Incentive Information

Incentive Application Status	<ul style="list-style-type: none">▪ Pending Board Approval▪ Approved Reservation of Funds Letter (ROF)▪ Approved Confirmation of Funds Letter (COF)
Incentive Calculation Method	Non-Tiered (Initial oversized system)
Estimated Upfront Incentive	\$537,250.00

Energy Storage Solution Program Upfront Incentive Application

Project Description	Installation of a Tesla Mega Pack battery storage system to reduce electric bills and provide backup power to the facility during power outages.
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Customer / Site information

Customer Name	[REDACTED]
Address	[REDACTED]
Business Purpose	Physical Fitness Facilities
Incentive Application No.	ESS-00040
Incentive Application Date	01/28/2022
Customer Average Annual Demand (kW)	97
Customer Class (S / M / L)	Small
Project Developer / Installer	ConEdison Solutions

Program Eligibility

Critical Facility	No
Small Business	Yes
Onsite Fossil Fuel Generator	No
Grid Edge Customer	No
Participation in FCM Allowed	Yes
Participation in FCM Declared	No
Resiliency Plan on File (N/A if Grid Edge Customer)	No

Battery Energy Storage System (BESS) Characteristics

System Configuration	Standalone battery
Expected Program Participation	Passive and Active Dispatch
BESS Make / Model	Tesla Megapack
BESS Power Rating (kW)	767 kW
BESS Energy Capacity (kWh)	3,068 kWh
BESS Technology Approval Status	Pre-Approved
Power Rating to Annual Average Demand Ratio	7.9
Interconnection Application Filed	Yes
Interconnection Study Required	Fast Track
Estimated Project Cost	[REDACTED]

Benefit / Cost Ratios

RIM – Ratepayer Impact Measure	1.51
PCT – Participant Cost Test	1.17
PACT – Program Administrator Cost Test	2.05
SCT – Societal Cost Test	2.04
TRC – Total Resource Cost Test	2.05

Upfront Incentive Information

Incentive Application Status	<ul style="list-style-type: none">▪ Pending Board Approval▪ Approved Reservation of Funds Letter (ROF)▪ Approved Confirmation of Funds Letter (COF)
Incentive Calculation Method	Non-Tiered (Initial oversized system)
Estimated Upfront Incentive	\$613,600

Energy Storage Solution Program Upfront Incentive Application

Project Description	Installation of a Tesla Mega Pack battery storage system to reduce electric bills and provide backup power to the facility during power outages.
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Customer / Site information

Customer Name	[REDACTED]
Address	[REDACTED]
Business Purpose	Physical Fitness Facilities
Incentive Application No.	ESS-00048
Incentive Application Date	01/28/2022
Customer Peak Demand (kW)	62
Customer Class (S / M / L)	Small
Project Developer / Installer	ConEdison Solutions

Program Eligibility

Critical Facility	No
Small Business	Yes
Onsite Fossil Fuel Generator	No
Grid Edge Customer	No
Participation in FCM Allowed	Yes
Participation in FCM Declared	No
Resiliency Plan on File (N/A if Grid Edge Customer)	No

Battery Energy Storage System (BESS) Characteristics

System Configuration	Standalone battery
Expected Program Participation	Passive and Active Dispatch
BESS Make / Model	Tesla Megapack
BESS Power Rating (kW)	767 kW
BESS Energy Capacity (kWh)	3,068 kWh
BESS Technology Approval Status	Pre-Approved
Power Rating to Annual Average Demand Ratio	12.4
Interconnection Application Filed	Yes
Interconnection Study Required	Fast Track
Estimated Project Cost	[REDACTED]

Benefit / Cost Ratios

RIM – Ratepayer Impact Measure	1.52
PCT – Participant Cost Test	1.16
PACT – Program Administrator Cost Test	2.05
SCT – Societal Cost Test	2.04
TRC – Total Resource Cost Test	2.05

Upfront Incentive Information

Incentive Application Status	<ul style="list-style-type: none">▪ Pending Board Approval▪ Approved Reservation of Funds Letter (ROF)▪ Approved Confirmation of Funds Letter (COF)
Incentive Calculation Method	Non-Tiered (Initial oversized system)
Estimated Upfront Incentive	\$613,600

Energy Storage Solution Program Upfront Incentive Application

Project Description	Installation of a Tesla Mega Pack battery storage system to reduce electric bills and provide backup power to the facility during power outages.
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Customer / Site information

Customer Name	[REDACTED]
Address	[REDACTED]
Business Purpose	Aviation Manufacturer
Incentive Application No.	ESS-00172
Incentive Application Date	03/10/2022
Customer Average Annual Demand (kW)	6200
Customer Class (S / M / L)	Large
Project Developer / Installer	CPower

Program Eligibility

Critical Facility	No
Small Business	No
Onsite Fossil Fuel Generator	No
Grid Edge Customer	No
Participation in FCM Allowed	No
Participation in FCM Declared	No
Resiliency Plan on File (N/A if Grid Edge Customer)	No

Battery Energy Storage System (BESS) Characteristics

System Configuration	Standalone battery
Expected Program Participation	Passive and Active Dispatch
BESS Make / Model	Tesla Megapack
BESS Power Rating (kW)	3000 kW
BESS Energy Capacity (kWh)	9000 kWh
BESS Technology Approval Status	Pre-Approved
Power Rating to Annual Average Demand Ratio	0.5
Interconnection Application Filed	Yes
Interconnection Study Required	Study Process
Estimated Project Cost	[REDACTED]

Benefit / Cost Ratios

RIM – Ratepayer Impact Measure	2.59
PCT – Participant Cost Test	1.21
PACT – Program Administrator Cost Test	3.26
SCT – Societal Cost Test	3.27
TRC – Total Resource Cost Test	3.28

Upfront Incentive Information

Incentive Application Status	<ul style="list-style-type: none">▪ Pending Board Approval▪ Approved Reservation of Funds Letter (ROF)▪ Approved Confirmation of Funds Letter (COF)
Incentive Calculation Method	Tiered
Estimated Upfront Incentive	\$900,000



Memo

To: Connecticut Green Bank Board of Directors
From: Eric Shrago, Managing Director of Operations
CC: Bryan Garcia (President and CEO), Sergio Carrillo (Director of Incentive Programs), and Mackey Dykes (VP of Financing Programs and Officer)
Date: July 15, 2022
Re: Fiscal Year 2022 Progress to Targets through Q4 - Preliminary

The following memo outlines Connecticut Green Bank (CGB) progress to targets for Fiscal Year (FY) 2022 as of June 30, 2022¹.

Table 1. Incentive Programs FY 2022 Progress to Targets

Product/Program	Projects			Capital Deployed			Capacity (MW)		
	Closed	Target	% to Target	Closed	Target	% to Target	Closed	Target	% to Target
RSIP	1,592	1,732	92%	\$57,985,080	\$62,969,713	92%	15.5	16.8	92%
Battery Storage	0	202	0%	\$0	\$5,800,000	0%	0.0	2.5	0%
Smart-E	909	800	114%	\$14,797,947	\$11,200,000	132%	0.2	0.8	31%
Solar for All	330	96	344%	\$9,379,672	\$2,478,528	378%	2.2	0.7	339%
Total	2,730	2,734	100%	\$78,690,243	\$79,969,713	98%	17.2	20.1	86%

Table 2. Smart-E Channels

Smart-E Loan Channels	Closed	% of Loans
EV	0	0%
Home Performance	85	9%
HVAC	791	87%
Solar	22	2%
(blank)	1	0%
Total	909	100%

¹ Power BI data source: <https://app.powerbi.com/groups/289235dd-d77d-4043-8dae-d232a51a116a/reports/b24ec66b-a2c1-49f0-9a62-3f7443077b3f/ReportSection13c15e79a907a30b650e>

Table 3. Financing Programs FY 2022 Progress to Targets

Product/Program	Projects			Capital Deployed			Capacity (MW)		
	Closed	Target	% to Target	Closed	Target	% to Target	Closed	Target	% to Target
Commercial Solar PPA	14	37	38%	\$4,153,356	\$17,652,000	24%	2.0	11.0	18%
CPACE	20	30	67%	\$22,506,884	\$22,838,680	99%	2.5	6.3	39%
CPACE backed Commercial Solar PPA	3	0	0%	\$1,655,323	\$0	0%	0.8	0.0	0%
SBEA	652	614	106%	\$11,892,905	\$9,260,800	128%	0.0	0.0	0%
Multi-Family H&S	0	1	0%	\$0	\$600,000	0%	0.0	0.0	0%
Multi-Family Pre-Dev	0	0	0%	\$0	\$0	0%	0.0	0.0	0%
Multi-Family Term	3	2	150%	\$2,060,000	\$300,000	687%	0.9	0.2	470%
Strategic Investments	0	0	0%	\$0	\$0	0%	0.0	0.0	0%
Total	690	679	102%	\$40,269,468	\$48,951,480	82%	5.3	16.5	32%

Table 4. Multi-Family Units

MFH # of Units	Closed
Affordable	102
Market Rate	82
Total	184

Table 5. CGB Totals FY 2022 Progress to Targets

Segment	Projects			Capital Deployed			Capacity (MW)		
	Closed	Target	% to Target	Closed	Target	% to Target	Closed	Target	% to Target
Incentive Programs	2,730	2,734	100%	\$78,690,243	\$79,969,713	98%	17.2	20.1	86%
Financing Programs	690	679	102%	\$40,269,468	\$48,951,480	82%	5.3	16.5	32%
Total	3,418	3,413	100%	\$118,333,631	\$128,921,193	92%	22.2	36.6	61%

MEMO

To: Board of Directors of the Connecticut Green Bank

From: Brian Farnen, Blaire Backman, and Bryan Garcia

Date: July 15, 2022

Re: Overview of Requests for Approvals for Professional Services Agreements over \$75,000 for FY 2022 per Operating Procedures

Overview

This memo provides a summary report of the requested approvals for those Professional Services Agreement (“PSA”) with a not-to-exceed amount of over \$75,000 in the 2022 fiscal year (“FY2022”). This approval process is outlined in Section IX (ii) of the Connecticut Green Bank Operating Procedures, as follows:

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

Green Bank staff requested a total of thirty-four (34) PSAs, or amendments to existing PSAs, with not-to-exceed amounts over the \$75,000 threshold for FY2022, for a total amount of \$8,848,661. Approval for fifteen (15) of the thirty-four (34) were requested, and subsequently granted, by Lonnie Reed, Board Chair. The others all gained approval of the full Board of Directors, as either a one-time approval or as strategic selections for FY 2022 at the 6/25/2021 BOD meeting or at subsequent meetings of the Board (see Table 2). This number is up from that of FY 2021 by \$3,125,691 when approval was sought for thirty-one (31) PSAs and/or amendments over \$75,000, for a total amount of \$5,722,970, with seven (7) being approved by direct request of BOD Chair Lonnie Reed and approval for the remaining twenty-four (24) being granted by the full Board. A breakdown of the agreements for FY2022 follows.

Table 1. FY 2022 PSAs over \$75,000 approved by BOD Chair Lonnie Reed

Date	Agreement	Division / Program	Original PSA Amount	Amount Amended By	
7/1/2021	Monte Verde Consulting PSA 5731	CI&I - SL2 & CEFIA Holdings	\$110,500		
7/1/2021	Lamont Financial PSA 5734	General Ops	\$135,000		
8/10/2021	Adams & Knight PSA 5585 1 st Amendment	Marketing	\$125,000 ¹	\$3,000	
10/15/2021	Craftsman Technology Group, LLC PSA 5682 1 st Amendment	Marketing	\$49,000	\$31,000	
11/19/2021	Louise Della Pesca PSA 5732	CI&I - SL2 & CEFIA Holdings	\$110,500		
12/7/2021	Encon PSA 5406 4 th Amendment	CI&I - SL2 & CEFIA Holdings	\$672,000	\$29,000	
12/7/2021	C-Tec Solar PSA 5723 1 st Amendment ²	S&I - RSIP	N/A	N/A	
2/7/2022	Selya Price PSA 5700 1 st Amendment	S&I-RSIP	\$60,000	\$30,000	
4/27/2022	Clifton Larson Allen LLP PSA 5752	Accounting	\$120,100 total for CLA ³ (5743- \$39,525+5744- \$31,575 + 5752- \$49,000)		
5/1/2022	C-Tec Solar PSA 5666 1 st Amendment	S&I-RSIP	\$120,000	\$36,000	
5/1/2022	C-Tec Solar PSA 5667 1 st Amendment	S&I-RSIP	\$740,000	\$154,000	
5/1/2022	C-Tec Solar PSA 5735 1 st Amendment	S&I-RSIP	\$100,000	\$15,000	
5/3/2022	ADNET Technologies, LLC PSA 5673 1 st Amendment	General Op	\$350,000	\$110,000	
5/11/2022	CSW LLC PSA 5664 1 st Amendment	CI&I-CPACE (StateSolar)	\$450,000	\$200,000	
6/10/2022	Lamont Financial PSA 5763 1 st Amendment	General Ops	\$135,000	\$40,000	
		Total:	\$476,100	\$648,000	\$1,124,100

Table 2. FY 2022 PSAs over \$75,000 approved by Green Bank BOD

Date	Agreement	Division / Program	Original PSA Amount	Amount Amended By
7/1/2021	Adnet Technologies PSA 5673	General Ops	\$350,000	
7/1/2021	Clean Power Research PSA 5704	S&I - RSIP	\$470,000	

¹ Highlighted amounts are for illustrative purposes *only* and are not included in calculations, as they pertain to original PSA amounts for PSAs amended in FY22.

² Amendment to change *only* the unit costs and invoicing and *not* the not-to-exceed amount of \$505,000.

³ Multiple PSAs for FY21 brings aggregate amount over \$75K.

7/1/2021	AlsoEnergy (Locus) Resi PSA 5705	S&I -RSIP	\$1,000,000	
7/1/2021	AlsoEnergy (Locus) Comm PSA 5706	S&I -Commercial	\$33,000	
7/1/2021	Strategic Environ Associates PSA 5709	Marketing	\$160,000	
7/1/2021	Guidehouse Inc PSA 5710	S&I - RSIP	\$300,000	
7/1/2021	Stark Raving LLC PSA 5711	Marketing	\$300,000	
7/1/2021	Cortland Captial Market Services PSA 5712	CI&I - CPACE	\$150,740	
7/1/2021	IPC - CESA Grant PSA 5574 1 st Amendment	S&I - (SunShot)	\$46,600	\$5,100
7/2/2021	IPC - Smart-E (A&R) PSA 5410	Resi - Smart-E	\$243,385 ⁴	
7/2/2021	IPC - MF (A&R) PSA 5411	Resi - MF	\$103,416	
7/2/2021	IPC - Commercial Solar (A&R) PSA 5412	Resi - SL	\$789,982	
7/2/2021	IPC - Investment Mgmt. (A&R) PSA 5413	Resi - LMI	\$229,438	
9/1/2021	SunSystem Technology PSA 5722	S&I - RSIP	\$1,065,000	
9/1/2021	C-Tec Solar PSA 5723	S&I - RSIP	\$505,000	
9/1/2021	EnCon PSA 5724	S&I - RSIP	\$860,000	
1/4/2022	Craftsman Technology Group LLC PSA 5682 2 nd Amendment	Marketing	\$80,000	\$25,000
2/7/2022	Stark Raving LLC PSA 5747	Marketing	\$80,000	
3/1/2022	Stark Raving LLC PSA 5711 1 st Amendment	Marketing	\$300,000	\$54,500
4/26/2022	Guidehouse Inc PSA 5759	S&I - RSIP	\$1,000,000	
		Total:	\$7,639,961	\$84,600
				\$7,724,561

⁴ IPC NTE for FY 2022 *only*. Multi-year totals (FYs 2019-2022) are as follows: 5410-\$1,236,648; 5411-\$1,474,848; 5412-\$1,473,656; and, 5413-\$1,110,925



Memo

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

From: Bryan Garcia (President and CEO)

CC:

Date: 7/22/2022

Re: Approval of Restructure/Write-Offs Requests below \$100,000 and No More in Aggregate than \$500,000 – Update

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. At the April 24, 2020 BOD meeting of the Green Bank, it was resolved that the BOD approves the authorization of Green Bank staff to evaluate and approve a semi-annual (or two quarterly periods) repayment modification of various transaction types in light of the COVID-19 pandemic.¹ And at the June 26, 2020 BOD meeting of the Green Bank, it was resolved that the BOD approves of the framework applying to subsidiaries of the Green Bank.

During this period, 0 projects were evaluated and approved for payment restructure in an aggregate amount of approximately \$0. If members of the board or committee would be interested in the internal documentation of the review and approval process Green Bank staff and officers go through, then please request it.

¹ The Board also approved accommodation for one year for C-PACE transactions in certain towns where C-PACE assessments are collected annually.



July 1, 2022

U.S. Department of Energy
Loan Programs Office
Title XVII Innovative Technologies Loan Guarantee Program
Federal Register / Vol. 87, No. 105 / Wednesday, June 1, 2022 / Notices (33141-33144)

SUBJECT: Comments from the Connecticut Green Bank – Loan Program Office’s Innovative Technologies Loan Guarantee Program Request for Information

To Whom it May Concern:

The Connecticut Green Bank (“Green Bank”) appreciates the U.S. Department of Energy’s (“DOE”) efforts through the Loan Programs Office (“LPO”) issuing this Request for Information (“RFI”). The RFI is seeking information to understand how it could improve its Title XVII Loan Guarantee Program (“Title XVII”), including amending the Title XVII Rule (“the Rule”), by implementing provisions from the Energy Act of 2020 (“the Act”) and the Infrastructure Investments and Jobs Act of 2021 (“IIJA”), that expand or modify the authorities applicable to Title XVII.

At the outset, the Green Bank would make the following points:

- **Include Prior Submission** – the DOE should include the Green Bank’s prior comments under DE-FOA-0002716 filed on May 6, 2022, for “Designing Equitable, Sustainable, and Effective Revolving Loan Fund Programs” as part of this submission – see Attachment D.
- **Community Reinvestment Act** (“CRA”) – with respect to this RFI, the Green Bank principally responds from the perspective of the Community Reinvestment Act of 1977,¹ which forms the basis for an existing public policy mechanism to increase private investment from the banking industry in clean energy, climate change, and Justice 40 (or vulnerable community)² objectives. Although CRA does not explicitly mention race, it was passed alongside complementary federal civil rights laws including the Equal Credit Opportunity Act.

¹ The Community Reinvestment Act (CRA), enacted in 1977, requires the Federal Reserve and other [federal banking regulators](#) to encourage financial institutions to help meet the credit needs of the communities in which they do business, including [low- and moderate-income \(LMI\) neighborhoods](#).

² Per Connecticut’s [Public Act 20-05](#), vulnerable communities means populations that may be disproportionately impacted by the effects of climate change, including, but not limited to, low and moderate income communities, environmental justice communities pursuant to section 22a-20a, communities eligible for community reinvestment pursuant to section 36a-30 and the Community Reinvestment Act of 1977, 12 USC 2901 et seq., as amended from time to time, populations with increased risk and limited means to adapt to the effects of climate change, or as further defined by the Department of Energy and Environmental Protection in consultation with community representatives.

- **Local and State Government** – with respect to this RFI, the Green Bank secondarily responds to Section 40401(c)(2) of the IJJA.³
- **Defense Production Act** (“DPA”) – with the recent statement of the Biden Administration on the DPA to spur domestic clean energy manufacturing,⁴ there is the potential for federal government procurement, zero interest loans, provision of capital (i.e., to state and local governments), and other mechanisms (e.g., an LPO nationwide guarantee to participating state energy financing institutions) to support the investment in and deployment of critical clean energy technologies (i.e., solar, insulation, heat pumps, fuel cells, and grid infrastructure) to reduce energy costs for all Americans, especially those in vulnerable communities, whose energy burden is increasingly being exacerbated as a result of the War in the Ukraine.
- **American Recovery and Reinvestment Act** (“ARRA”) – it should be noted that through ARRA of 2009, the Green Bank invested \$8.3 MM of federal funds, alongside \$16.5 MM of Green Bank capital, to mobilize \$158.1 MM of private investment for a total of \$174.6 MM of investment to finance energy efficiency (e.g., heat pumps) and renewable energy (e.g., solar) projects for over 9,000 families. The investment of federal funds, as credit enhancements (i.e., loan loss reserves (“LLR”), interest rate buydowns (“IRB”)), enabled 20 times more state and local private investment in clean energy deployment – reducing the burden of energy costs on families (especially those in vulnerable communities), increasing jobs in our communities, and reducing greenhouse gas emissions.

ARRA provides a useful example for how local, state, and federal partnerships can unlock and mobilize private investment to increase the impact of taxpayer resources while maximizing the benefits to participants (e.g., reduce energy burden and increase energy security), ratepayers (e.g., reduce peak demand and increase grid reliability and resiliency), and society (e.g., create good-paying jobs, reduce GHG emissions). As the DOE looks ahead at implementing the Act and IJJA, including amendments to Title XVII, the Rule, and other provisions, it should build on the lessons learned from ARRA, while advancing the Biden Administration’s objectives (e.g., DPA, 100% clean electricity by 2035, Justice 40).

The Green Bank offers the following comments with respect to the RFI:

A. *Energy Act of 2020*

With respect to Section 9010(a)(3)(A) of the Act, on applicant payment of fees and third-party costs incurred by the DOE to review applications,⁵ the Green Bank would, in general, state that the payment of fees and cost recovery by the DOE from third-party advisors should be reasonable. It is difficult for RFI respondents and potential applicants to ascertain reasonableness without data from the DOE LPO on prior fees paid and third-party advisor costs incurred by former applicants. The Green Bank believes that the DOE LPO publicly provides such information (or will make it available upon request to potential applicants), however, if not, then the LPO should consider such public disclosures in order for potential

³ LPO authority to work with local and state government was expanded under Sec. 40401(c)(2) of the IJJA amending the terms and conditions of Title XVII loans to include projects receiving financial support or credit enhancements from state energy financing institutions as eligible projects, and that such projects are not required to meet Section 1703(a)(2)’s requirement for new or significantly improved technologies, but instead meet emissions requirements.

⁴ <https://www.whitehouse.gov/briefing-room/statements-releases/2022/06/06/fact-sheet-president-biden-takes-bold-executive-action-to-spur-domestic-clean-energy-manufacturing/>

⁵ (A-1)(i-iv)

applicants to ascertain reasonableness and establish expectations for the fees and costs incurred by the DOE during the various stages of the application process to cover its administrative costs.

RECOMMENDATIONS

The following should be considered with respect to fees and costs:

- **Prioritization to Justice 40** – allowances should be given to the Secretary of Energy for applicants whose projects or technologies benefit vulnerable communities, to forgive (or reduce) fees and costs to applicants given the public policy objectives of the Biden Administration; and
- **Financing Costs** – allowance for the fees and costs (i.e., LPO administrative expenses) to be financeable within the terms of the financing agreement to be paid overtime as principal and interest for successful applicants.

With respect to Section 9010(b) of the Act, in general, the DOE should recognize that a technology may be commercial in one region versus another as a matter of (1) environmental conditions (e.g., open space in the Southwest versus tree cover and alternative land uses such as agriculture and forestry in the Northeast), (2) statutory and regulatory policies of local and state government (e.g., renewable portfolio standards, greenhouse gas reduction targets, net metering, procurement), or (3) other relevant factors. The commercialization success of the LPO Title XVII solar projects in the Southwest (i.e., various 100 MW sized projects) are different than what is required for such commercial success of solar projects in the Northeast, Southeast, Midwest, etc. Commercialization should not be viewed in a technology silo, but instead recognize other factors that enable such commercialization as noted above (e.g., environmental conditions, statutory and regulatory policies of local and state governments), including others such as income (i.e., area medium income census tracts), race and ethnicity, and other socio-economic factors.

And lastly, in terms of Section 1703 of the Energy Policy Act of 2005, not only should “...innovative software, innovative technology applications, or control system technology under Title XVII...” be revisited, but the definition of “commercial technology” per the Rule should be revisited as well.

- **Definition of “Commercial Technology”** – Title XVII provides loan guarantees for projects that “avoid, reduce, utilize, or sequester air pollutants or anthropogenic emissions of greenhouse gases” and [emphasis added] “employ new or significantly improved technologies as compared to commercial technologies in service in the United States.” The Title XVII Rule states that “commercial technology means a technology in general use in the commercial marketplace [emphasis added] in the United States at the time the term sheet is offered by DOE...”
 - The current definition for “commercial technology” under the Title XVII Rule has flaws because it is not inclusive of vulnerable communities. In other words, just as environmental conditions and statutory and regulatory policies of local and state government have an impact on “commercial technology,” so too does the income of people within an economy. If the DOE asked the question with an equity lens “...in general use in the commercial marketplace for who...” it would see that its current definition of “commercial technology” is too exclusive, and not inclusive of the socio-economic marketplace for commercial clean energy technologies in the United States. As such, such clean energy technologies aren’t commercial and therefore should be supported by Title XVII to provide easy and affordable access to applicants seeking to serve those vulnerable communities with appropriate clean energy technologies.

As a result, states are left to “fill the void” to enable “commercial technologies” to be accessible and affordable to vulnerable communities. Allowing private entities, the opportunity to use Title XVII for commercial technologies (e.g., distributed energy resources as noted within the DPA) that benefit vulnerable communities should be pursued (e.g., loan guarantee for a third-party financier of a portfolio of residential solar PV and battery storage projects within less than 80 percent of area median income census tracts).⁶

RECOMMENDATIONS

Within §609.2 Definitions and Interpretation of the Rules, the LPO should consider adding the following in order to increase access to commercial technologies for vulnerable communities:

- **Redefining Commercial Technology** – *Commercial Technology* means a technology in general use in the commercial marketplace in the [United States](#), including communities eligible for the Community Reinvestment Act of 1977, at the time the [Term Sheet](#) is offered by [DOE](#). A technology is in general use if it is being used in three or more facilities that are in commercial operation in the [United States](#) for the same general purpose as the proposed project, and has been used in each such facility for a period of at least five years. The five-year period for each facility shall start on the in-service date of the facility employing that particular technology or, in the case of a retrofit of a facility to employ a particular technology, the date the facility resumes commercial operation following completion and testing of the retrofit. For purposes of this section, facilities that are in commercial operation include projects that have been the recipients of a loan [guarantee](#) from [DOE](#) under this part.
- **Include Community Reinvestment Act as a Definition** – just as the Rules include the Davis Bacon Act of 1931 to acknowledge the importance of paying the local prevailing wage on public works projects, the Rules should also include the Community Reinvestment Act of 1977 to acknowledge the importance of enabling private investment projects in vulnerable communities (e.g., environmental justice communities).
- **Include CRA within Eligible Project Definition** – to acknowledge the importance of enabling private investment in projects in vulnerable communities, the following should be added within the Eligible Project definition “(iv) is located in communities eligible for community reinvestment pursuant to section 36a-30 and the Community Reinvestment Act of 1977, 12 USC 2901 et seq., as amended from time to time.”

These inclusions within Title XVII, will enable private developers an opportunity to develop projects that would benefit vulnerable communities across the United States. Vulnerable communities are not only being adversely impacted by climate change, but they are also being impacted by rising inflation resulting from energy costs from the War in the Ukraine. Enabling Title XVII to support eligible projects in vulnerable communities, is a means to support the DPA as well as confront climate change.

In terms of “...innovative software, information technology applications, or control system technology...”⁷ the Green Bank would say that such technology should be eligible under Title XVII, however, only after definitions within the Rules are modified to be more inclusive of vulnerable

⁶ It should be noted that the Community Reinvestment Act of 1977, 12 USC 2901 et seq. acknowledges the need for FDIC-insured commercial banks to provide access to capital to families and businesses in less than 80 percent AMI census tracts.

⁷ (A-3)

communities as noted above within the context of CRA, and not exclusive to those with economic means.

B. Infrastructure Investments and Jobs Act

This is the principal section the Green Bank would like to respond to.

In terms of what types of entities should be considered “state energy financing institutions” for implementing Title XVII,⁸ the Green Bank would recommend:

- **Government** – public and quasi-public entities of local (e.g., DC Green Bank) and state (e.g., Connecticut Green Bank, New York Green Bank) government (i.e., green banks).
- **Non-Profit Organizations** – registered as a 501(c)3 of the Internal Revenue Code or community development financing agencies (e.g., community development financial institutions, credit unions), working with public and quasi-public entities, established for the purposes consistent with Title XVII.

A private entity could be formed for the purposes consistent with Title XVII and be considered a “state energy financing institution” as long as it is not primarily a profit seeking entity, but instead an entity focused primarily on social and environmental profit, and subject to public disclosures of financial information. For example, a Certified B Corporation could be considered. The general point is that to be considered as such an institution, that business must serve more than shareholders and be primarily focused on society (i.e., the state).

In terms of the types of financial support or credit enhancements from “state energy financing institutions” the DOE should consider in evaluating projects under this authority,⁹ the Green Bank would recommend the financing tools established through ARRA:

- Revolving loan funds
- Loan loss reserves
- Interest rate buydowns
- Third party insurance

These financing tools are tried and tested,¹⁰ and demonstrate how to mobilize private capital investment, alongside public resources, to provide easier and more affordable access to clean energy technologies for vulnerable communities, including small businesses within those communities. As interest rates rise, it will be increasingly important to keep the cost of capital down in order to ensure the realization of benefits that clean energy provides to vulnerable communities.

Other financing should also be included:

- Transaction warehousing through standardized documentation

⁸ (B-1)(i-iii)

⁹ (B-2)

¹⁰ State and Local Energy Efficiency Action Network (SEE Action). (2021). *Long-Term Performance of Energy Efficiency Loan Portfolios*. Prepared by Jeff Deason, Greg Leventis, and Sean Murphy of Lawrence Berkeley National Laboratory.

- Securitization credit enhancements to reduce the costs of capital (e.g., Special Capital Reserve Fund or “SCRF”)¹¹

Resources provided through Title XVII to “state energy financing institutions” could make capital easier to access and more affordable in order to maximize the benefits clean energy technologies provide (e.g., reduce energy burden, increase energy security), especially for vulnerable communities.

In terms of how the DOE can facilitate a nationwide program for partnering with “state energy financing institutions,”¹² as noted in the Green Bank’s comments under DE-FOA-0002716, through an “across government” strategy, the LPO working with the U.S. Department of Treasury’s CRA division, could mobilize billions of dollars of public and private investment in vulnerable communities across the country.

RECOMMENDATION

The LPO should work with leading green banks at the local and state level (e.g., DC Green Bank, Montgomery County Green Bank, Connecticut Green Bank, Hawaii Green Infrastructure Authority, Illinois Finance Authority) focused on credit enhancement strategies (e.g., loan guarantees), including non-profit organizations (e.g., Inclusive Prosperity Capital, Inclusiv, Michigan Saves, Solar and Energy Loan Fund), to develop a standardized single “opt-in” loan guarantee program with uniform terms and requirements to enable easy and affordable access to capital to finance clean energy improvements for families and businesses with a priority towards communities eligible for CRA.

With inflation on the rise, and energy a key component as a result of the War in the Ukraine, the DOE’s use of the DPA, to enable more investment in clean energy in CRA eligible communities through the LPO, will help confront climate change, while reducing the increasing burden of energy costs borne by vulnerable communities.

C. Title XVII Financing Structures¹³

Any amendments to the Rule, should enable Title XVII to offer program(s) (e.g., national loan loss guarantee) to “state energy financing institutions” to support clean energy deployment in vulnerable communities. As noted above, ensuring that CRA-eligible projects are deemed eligible projects per Title XVII Rules would be a critical factor. Rather than a competitive RFP, the LPO should be able to design programmatic offering(s) (e.g., through RFIs) that make accessing Title XVII easier for “state energy financing institutions” (e.g., opt-in) to mobilize private investment in clean energy deployment in their vulnerable communities.

RECOMMENDATION

The LPO should issue an RFI to establish a national loan guarantee for CRA-eligible projects. There could be no better place-based initiative that the LPO could provide for Justice 40 than a national loan guarantee that supports the development of projects in CRA-eligible communities in collaboration with “state energy financing institutions”.

¹¹ In Connecticut, the Green Bank has access to \$250 MM of SCRF, which is the ability to issue bonds supported by the State of Connecticut – thereby improving the bond rating and therefore reducing borrowing costs and costs of capital for financing clean energy projects.

¹² (B-3)

¹³ (C-1) through (C-2) only

For example, “Under the amendments to Title XVII through the Energy Act of 2020,¹⁴ the LPO is seeking requests for information on how a standardized \$500 MM loan guarantee facility to state energy financing institutions would unlock private investment in clean energy technologies in CRA-eligible communities.” By soliciting feedback for a standardized programmatic approach that allows “state energy financing institutions” to “opt-in” and access Title XVII resources through the LPO, additional public and private investment that is more accessible (i.e., CRA-eligible communities) and affordable (e.g., lower interest rates, longer terms) can be mobilized to provide vulnerable communities with the capital they need to realize the benefits that clean energy technologies provide.

The LPO has an opportunity now as a result of the Act, IIJA, and this RFI to mobilize public and private investment in place-based Justice 40 initiatives, if it works in collaboration with “state energy financing institutions”.

D. Title XVII Loan Guarantee Program Improvements

It is great to see the LPO receiving a significantly higher volume of applications to its Title XVII program in the past twelve months than in recent years. The challenge for the LPO will be its ability to manage within its resources (i.e., human and financial), while at the same time encouraging maximum participation within its programs – from applications submitted to innovative transactions approved, especially transactions focused on vulnerable communities (e.g., including Tribal Nations).

In terms of how the LPO navigates through this challenge,¹⁵ the Green Bank provides the following observations. The Operating Procedures of the Green Bank allow us to invest in projects through competitive solicitations, designed programs, or strategic opportunities.¹⁶ If posed with budget and time constraints, it is likely that the Green Bank would focus its resources on areas that delivered the most impact (i.e., “bang for the buck”) with respect to our primary inputs, outputs, and outcomes (i.e., maximize societal benefit per public dollar invested) – which includes investment (i.e., both public and private), clean energy produced (e.g., kWh, MMBtu), emissions avoided (e.g., CO₂, particulate matter), jobs created, and ensuring that no less than forty percent of investment and benefits is directed to vulnerable communities. For the LPO, this might translate into explicit requests for proposals with detailed funding currently available over a specified period of time. For example, the LPO has [\$X] billion of existing loan guarantee authority for innovative [Type of Technology] projects that it seeks to invest in the next [X] years by mobilizing [X] times more private investment. For the Green Bank, mobilizing investment, specifically multiples of private investment using limited public resources, is the key metric for achieving the ambitious social and environmental public policy goals of the State of Connecticut.

The Rule should further clarify what the DOE considers a “project” because the track record of the LPO doesn’t represent distributed energy resources (“DER”). The Rules should allow for DER projects to be supported by Title XVII as is being suggested above by the Green Bank within the lens of CRA, vulnerable communities, and a standardized national loan guarantee program for “state energy financing institutions”.

Within the “project costs” definition of the Rules, includes:

- “...and shakedown of an Eligible Project, as specified in § 609.10(a).”

¹⁴ Sec. 40401(c)(2) of the IIJA

¹⁵ (D-1) through (D-4)

¹⁶ https://www.ctgreenbank.com/wp-content/uploads/2022/05/5ai_Green-Bank-Operating-Procedures.pdf

- “Project costs do not include costs for the items set forth in § 609.10(b).”

For DER projects to be considered as “eligible projects” (i.e., they should be included within the “eligible projects” definition), the Green Bank would suggest including the following from § 609.10(a):

- (12) Other necessary and reasonable costs, including, without limitation, previously acquired real estate, equipment, or other materials, marketing costs for customer acquisition, and any engineering, construction, make-ready, design, permitting, or other work completed on an existing facility or project.

And removing the following from § 609.10(b):

- (9) Operating costs

In terms of applicants being prejudiced or disadvantaged if the application process were to not include the negotiation of a preliminary term sheet with the DOE, the Green Bank feels that it is standard practice for transactions to include the negotiation of a preliminary term sheet.

And lastly, although the Green Bank doesn’t have direct experience applying within Title XVII, the DOE can modify its application process or requirements in a manner that improves its implementation of Title XVII by integrating the purposes of the Act, by creating an opportunity for “state energy financing institutions” to “opt-into” a standardized loan guarantee program offered by the LPO through a simple application to provide local and state governments and nonprofit organizations with easy and affordable access to capital to support clean energy deployment in vulnerable communities.

The Green Bank appreciates the DOE's efforts to solicit public comment on the LPO’s Title XVII program amendments given the Act and IJJA. If appropriate, we look forward to speaking with members of the LPO team, including alongside our local and state, and nonprofit partners, to enable Title XVII to mobilize private investment in clean energy for vulnerable communities through CRA to confront climate change and support the DPA.

Sincerely,

Bryan Garcia

Bryan Garcia
President and CEO

Bert Hunter

Bert Hunter
EVP and CIO

About the Connecticut Green Bank

As the nation's first state-level green bank, the Connecticut Green Bank leverages the limited public resources it receives to attract multiples of private investment to scale up clean energy deployment. Since its inception, the Green Bank has mobilized \$2.14 billion of investment into Connecticut's clean energy economy at a 7.4 to 1 leverage ratio of private to public funds, supported the creation of 25,612 direct, indirect and induced jobs, reduced the energy burden on over 63,000 families and businesses, deployed over 494 MW of clean renewable energy, helped avoid 9.9 million tons of CO₂ emissions over the life of the projects, and generated \$107.4 million in individual income, corporate, and sales tax revenues to the State of Connecticut.

Attachments

- A. Connecticut Green Bank Decennial Societal Impact Report – Fact Sheet
- B. The Impact of Federal Funds in Connecticut – Fact Sheet
- C. Green Bank's comments filed under DE-FOA-0002716

Decennial Societal Impact Report

FY12
FY21

Since the Connecticut Green Bank's inception through the bipartisan legislation in July 2011, we have mobilized more than **\$2.14 billion of investment** into the State's green economy. To do this, we used **\$288.4 million** in Green Bank dollars to attract \$1.85 billion in private investment, a leverage ratio of **\$7.40 for every \$1**. The impact of our deployment of renewable energy and energy efficiency to families, businesses, and our communities is shown in terms of economic development, environmental protection, equity, and energy (data from FY 2012 through FY 2021).

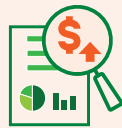
ECONOMIC DEVELOPMENT

JOBS The Green Bank has supported the creation of more than **25,612** direct, indirect, and induced job-years.



TAX REVENUES

The Green Bank's activities have helped generate an estimated **\$107.4** million in state tax revenues.

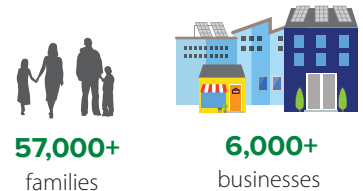


- \$52.8 million** individual income tax
- \$27.5 million** corporate taxes
- \$27.1 million** sales taxes

ENERGY

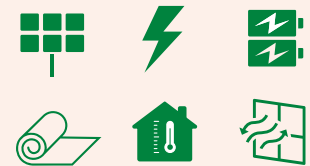
ENERGY BURDEN

The Green Bank has reduced the energy costs on families, businesses, and our communities.



DEPLOYMENT

The Green Bank has accelerated the growth of renewable energy to more than **494 MW** and lifetime savings of over **64.1 million MMBTUs** through energy efficiency projects.

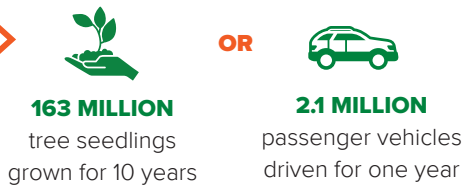


ENVIRONMENTAL PROTECTION

POLLUTION The Green Bank has helped reduce air emissions that cause climate change and worsen public health, including **9.3** million pounds of SOx and **10.7** million pounds of NOx.



9.9 MILLION tons of CO₂ : **EQUALS**



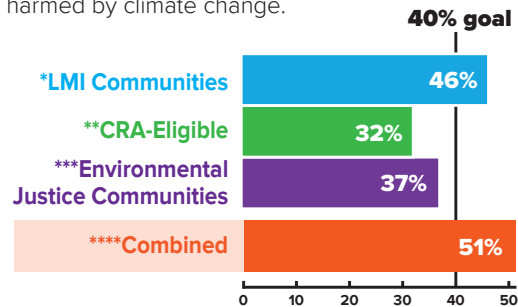
PUBLIC HEALTH The Green Bank has improved the lives of families, helping them avoid sick days, hospital visits, and even death.

\$298.1 – \$674.1 million of lifetime public health value created



EQUITY

INVESTING in vulnerable communities, The Green Bank has set **goals** to reach **40% investment** in communities that may be disproportionately harmed by climate change.



*LMI Communities – census tracts where households are at or below 100% Area Median Income.
 **Community Reinvestment Act (CRA) Eligible – households at or below 80% of Area Median Income and all projects in programs designed to assist LMI customers.
 ***Environmental Justice Community means a municipality that has been designated as distressed by Connecticut Department of Economic and Community Development (DECD) or a census block group for which 30% or more of the population have an income below 200% of the federal poverty level.
 ****Combined Vulnerable Communities include LMI, CRA and EJC.



Learn more by visiting ctgreenbank.com/strategy-impact/impact

Winner of the 2017 Harvard Kennedy School Ash Center Award for Innovation in American Government, the Connecticut Green Bank is the nation's first green bank.

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 Sources: Connecticut Green Bank Comprehensive Annual Financial Reports

The Impact of Federal Funds in Connecticut

Through our partnership with the Department of Energy & Environmental Protection, Connecticut Green Bank deployed \$8.25 million of American Recovery and Reinvestment Act of 2009 (ARRA) funds to create more than \$176.4 million of investments into residential clean energy projects. (All data as of 12-31-2021)



Economic Development

The Green Bank turned \$8.25 million of federal funds

\$8.25 million → \$174.6 million

into **\$174.6 million in investments**

\$16.5M Green Bank investment
 \$158.1M private investment
 \$8.25M ARRA Funds

The Green Bank supported the creation of **2,176 job-years of employment** through the use of ARRA funds.

Environment

ARRA funds helped to avoid **596,382 tons of CO₂**, which is equal to:

8.9 million tree seedlings grown for 10 years

removing **117,663 passenger cars from the road** for one year

Equity

38% of investments **53%** of projects were made in **vulnerable communities**

\$38.8–87.8M of lifetime public health value created

9,434 families supported

The Green Bank targets 40% of investment and benefits into vulnerable communities

Energy

The use of ARRA funds supported

- Deployment of over **24 megawatts of clean energy**
- **Lifetime savings of over 3.4 million MMBTUs** through energy efficiency projects, including:

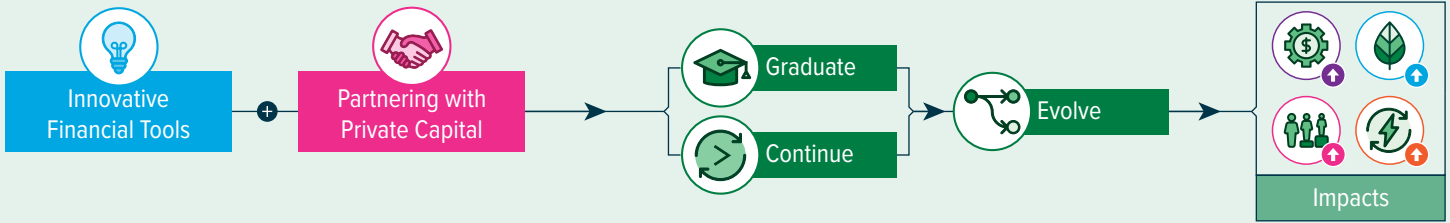
- Solar panel installation
- Insulation upgrades
- Heating and cooling system upgrades

\$138M in lifetime energy savings generated

Financing Programs with Federal Funds



The Green Bank's ARRA funded programs combined innovative financial tools and partnering with private capital to create programs that **promote clean energy, economic growth, a healthier environment, and greater equity** in Connecticut.



Program models, proved successful through the deployment of ARRA funds, evolved to focus on additional markets and larger investment beyond the Green Bank.

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">CT SOLAR LEASE</p>	<p>Allowed homeowners to access the benefits of solar through a lease option.</p> <ul style="list-style-type: none"> Leveraged \$3.5M in ARRA funds as a lease loss reserve and \$7.1M in Green Bank Subordinated Debt and Sponsor Equity. Raised \$15.0M of tax equity investment and \$16.9 million of senior debt through a syndicate of local lenders. 	<ul style="list-style-type: none"> The success of this model led to the creation of "Solar For All": a program based on the model that focused on providing residential solar to low-to-moderate income (LMI) families and communities of color — helping Connecticut achieve 41% deployment in LMI communities
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">CT SOLAR LOAN</p>	<p>Enabled homeowners of varying financial means to own their systems at affordable rates without a lien.</p> <ul style="list-style-type: none"> Used \$517,000 in ARRA funds for a loan loss reserve (LLR) to allow for the creation of the first-ever crowd-sourced portfolio of solar loans. Partnered with Sungage Financial and The Reinvestment Fund to generate \$8.3M in lifetime savings. 	<p>A loan loss reserve is a pool of money set aside to cover a prespecified amount of loan losses, providing partial risk coverage to lenders.</p> <ul style="list-style-type: none"> After this model proved successful, the program expanded to include new partners and a \$100 million pool of capital, without any resources from the Green Bank.
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">SMART-E LOAN</p>	<p>Offers flexible financing for upgrades to home energy performance.</p> <ul style="list-style-type: none"> ARRA funds used as LLR and interest rate buydowns (IRB) to offer homeowners low-interest financing to improve their home's energy performance. Provided in partnership with 13 local community banks and credit unions, 500+ contractors, and 5,923 families for \$108.7 million in total investment. 	<p>Originally focused on clean energy, this program is expanding to support environmental infrastructure.</p> <p>The program is transitioning from ARRA supported LLR to LLR on the Green Bank's balance sheet using IRBs from ARRA funds.</p> <p>An interest rate buydown is when capital is deployed to pay a portion of the interest on borrowers' loans to decrease their costs.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">LOW INCOME MULTI-FAMILY ENERGY (LIME) LOAN</p>	<p>Unsecured low interest loans serving properties where at least 60% of units serve renters at 80% or lower of Area Median Income.</p> <ul style="list-style-type: none"> ARRA funds used as LLR and projected energy savings are used to cover the debt service of the loan. Offered through a partnership with Capital For Change (C4C), a community development financial institution (CDFI) that provides financial products and services that support an inclusive and sustainable economy. 	<ul style="list-style-type: none"> Using \$300,000 in ARRA funds as LLR, LIME projects have a combined lifetime energy cost savings of over \$117.6M.

ATTACHMENT C



May 6, 2022

U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy
Revolving Loan Fund Programs
EERevolvingLoanFund@ee.doe.gov

SUBJECT: Comments from the Connecticut Green Bank – Designing Equitable, Sustainable, and Effective Revolving Loan Fund Programs – DE-FOA-0002716

To Whom it May Concern:

The Connecticut Green Bank (“Green Bank”) appreciates the U.S. Department of Energy’s (“DOE”) efforts through the Office of Energy Efficiency and Renewable Energy (“EERE”) issuing this request for Information (“RFI”) – Designing Equitable, Sustainable, and Effective Revolving Loan Fund Programs. The RFI is intended to inform the DOE on promising, innovative, and best practices for designing revolving loan funds (“RLF”) – specifically for 42 U.S.C. 18792 – that effectively serve a wide array of borrowers with beneficial energy efficiency products and services and enable private sector capital to scale access to energy efficiency financing.

Through the American Recovery and Reinvestment Act (“ARRA”) of 2009, the Green Bank invested \$8.3 MM of federal funds, alongside \$16.5 MM of Green Bank capital, to mobilize \$158.1 MM of private investment for a total of \$174.6 MM of investment to finance energy efficiency and renewable energy (“clean energy”) projects for over 9,000 families – see attached fact sheet. The investment of federal funds, albethey credit enhancements (i.e., loan loss reserves (“LLR”), interest rate buydowns (“IRB”)) and not RLF’s, enabled 20 times more state and local private investment in clean energy deployment – reducing the burden of energy costs on families (especially those in vulnerable communities),¹ increasing jobs in our communities, and reducing greenhouse gas emissions.

ARRA provides a useful example for how local, state, and federal partnerships can unlock and mobilize multiples of private investment to increase the impact of taxpayer resources while maximizing the benefits to participants (e.g., reduce energy burden), ratepayers (e.g., reduce peak demand, increase energy security), and society (e.g., create jobs, reduce GHG emissions). As the DOE looks ahead at

¹ Per Public Act 20-05, vulnerable communities means populations that may be disproportionately impacted by the effects of climate change, including, but not limited to, low and moderate income communities, environmental justice communities pursuant to section 22a-20a, communities eligible for community reinvestment pursuant to section 36a-30 and the Community Reinvestment Act of 1977, 12 USC 2901 et seq., as amended from time to time, populations with increased risk and limited means to adapt to the effects of climate change, or as further defined by the Department of Energy and Environmental Protection in consultation with community representatives.

implementing the Bipartisan Infrastructure Law (“BIL”), including the RLF and other provisions, it should build on the lessons learned from ARRA, while advancing the Biden Administration’s objectives (e.g., 100% clean electricity by 2035, Justice 40).

The Green Bank offers the following comments.

Category 1— Equitable Access to Financing

- **Question 1** —the Lawrence Berkeley National Laboratory (“LBNL”) report² highlights two (2) program models for RLFs for residential energy efficiency financing – New York’s “Green Jobs – Green New York” and Pennsylvania’s “Keystone HELPS” – capitalized from bond proceeds from municipal bonds³ and asset backed securities, respectively. The research report emphasizes that these carefully designed and administered energy efficiency loan programs – including Connecticut’s “Smart-E Loan” and Michigan’s “Michigan Saves” supported by federal funds as credit enhancements (i.e., not RLF’s) – exhibit stronger performance than other similar loans and therefore capital providers and lenders should offer better terms (i.e., lower interest rates, longer tenors, or both), and that such lending can help support policy goals related to equitable access to capital such as Justice 40 and the Community Reinvestment Act⁴ compliance requirements. The DOE should look to this report, and the four residential energy efficiency financing programs highlighted, for design elements that result in equitable access and greater energy and environmental justice for residential end-use customers.

Although not an RLF, the Green Bank’s Smart-E Loan⁵ was developed in collaboration with local contractors and capital providers (i.e., community banks, credit unions (“CU”), community development financial institutions (“CDFI”)) through the use of ARRA funds. With the Green Bank goal by 2025 of no less than 40 percent of investment and benefits from financing and incentive programs being directed to vulnerable communities, the Smart-E Loan is making steady progress – see Table 1.

Table 1. Smart-E Loan Data for Investment and Projects for Vulnerable Communities

Investment (\$MM’s)			# of Projects		
Not Vulnerable Communities	Vulnerable Communities	% Vulnerable Communities	Not Vulnerable Communities	Vulnerable Communities	% Vulnerable Communities
\$65.6	\$34.4	34%	3,204	2,216	41%

- **Question 2** — with respect to residential clean energy financing, there are several other programs the Green Bank administers(ed) that use public capital as debt in a capital structure (e.g., subordinated debt) that act(ed) like RLF’s – see Table 2.

² State and Local Energy Efficiency Action Network (SEE Action). (2021). *Long-Term Performance of Energy Efficiency Loan portfolios*. Prepared by: Jeff Deason, Greg Leventis, and Sean Murphy of Lawrence Berkeley National Laboratory.

³ Secured by the Clean Water State Revolving Fund

⁴ The Community Reinvestment Act (CRA), enacted in 1977, requires the Federal Reserve and other [federal banking regulators](#) to encourage financial institutions to help meet the credit needs of the communities in which they do business, including [low- and moderate-income \(LMI\) neighborhoods](#) (i.e., less than 80% area median income).

⁵ <https://www.ctgreenbank.com/wp-content/uploads/2021/11/FY21-CGB-ACFR-Final-11.08.21.pdf> (p. 243)

Table 2. Green Bank Residential Clean Energy Financing Programs by Investment and Projects for Vulnerable Communities

Program	Investment (\$MM's)			# of Projects		
	Not Vulnerable Communities	Vulnerable Communities	% Vulnerable Communities	Not Vulnerable Communities	Vulnerable Communities	% Vulnerable Communities
CT Solar Loan ⁶	\$6.7	\$2.4	26%	197	82	29%
CT Solar Lease ⁷	\$30.2	\$16.1	35%	746	443	37%
Solar for All ⁸	\$27.9	\$90.5	76%	929	3,363	78%

It should be noted, that not all clean energy financing programs are (were) focused on driving equitable access to energy efficiency financing. However, Solar for All, a partnership between the Connecticut Green Bank and PosiGen, is a lease product for solar PV and energy efficiency targeted at vulnerable communities.

The DOE should look to reports from LBNL for other financing tools that are driving equitable access to clean energy financing that can be extrapolated to answer this important question, including solar PV financing and the role of incentives.^{9,10} As the DOE looks to enable RLF to mobilize greater private investment in energy efficiency, it should also look to non-financing tools such as the Weatherization Assistance Program (“WAP”)¹¹ for funding that provides incentives (i.e., grants) that can also play a role in increasing equitable access to energy efficiency. Given the market for weatherization is approximately 39.5 million households requiring between \$300-\$400 billion of investment, the DOE needs to see RLFs in a manner that mobilizes private investment and not simply grant out such resources if we are to achieve such high targets.

- **Question 3** — RLF program administrators should include partnerships with local, state, and nonprofit green banks, climate banks, or other public or nonprofit CDFI’s to ensure that prospective borrowers leverage all appropriate incentives before taking on debt. As noted above, carefully designed and administered energy efficiency loan programs exhibit strong performance (e.g., loan repayment). Potential borrowers should always take advantage of local, state, and federal incentives, including tax credits, before taking on debt in order to reduce debt service payments and reduce energy burden.

It should be noted that eligible recipients under 42 U.S.C. 18792 are small to medium sized manufacturers. To maximize support for such manufacturers, innovative public-private partnership approaches that mobilize private investment should be allowed, including partnerships with local, state, and nonprofit green banks, climate banks, or other CDFI’s as intermediaries to directly or indirectly channel DOE RLF program to support financing.

⁶ Ibid (p. 316)

⁷ Ibid (p. 332)

⁸ Ibid (p.266)

⁹ (May 2021). *Performance of Solar Leasing for Low- and Middle-Income Customers in Connecticut*. Prepared by Jeff Deason, Greg Leventis, and Sean Murphy of Lawrence Berkeley National Laboratory.

¹⁰ (April 2022). *Rooftop Solar Incentives Remain Effective for Low- and Moderate-Income Adoption*. Prepared by Eric O’Shaughnessy of Lawrence Berkeley National Laboratory.

¹¹ “Biden Administration Announces New Funding to Make Homes Energy-Efficient” by Anna Phillips of The Washington Post (March 30, 2022)

In Connecticut, there are two (2) energy efficiency financing programs for small and medium sized manufacturers, including:

- a. **Small Business Energy Advantage** (“SBEA”)¹² – through a partnership with Eversource Energy¹³ and Amalgamated Bank,¹⁴ the Green Bank supports the SBEA program – an on-bill, zero-percent interest rate, an “RLF-like” program for small businesses (i.e., commercial and industrial, non-profits, municipalities and state agency customers that use less than 1,000,000 kWh a year across all their properties). SBEA provides financing for up to 7 years for up to \$1.0 MM per business customer. The Connecticut Energy Efficiency Fund (a statutorily established fund replenished by a small recurring charge on electric and gas utility ratepayer bills) provides funds for an interest rate buydown (to 0%) and to absorb any loan losses (historically ~1% of outstanding loan balances per annum). Over the past three years, SBEA, through utility managed installation contractors, has provided nearly 5,400 on-bill financings totaling \$67.4 MM (of which 90% is financed by Amalgamated Bank) with an estimated 1.8 GWh of energy savings over the life of the measures. Due to its success, this partnership was recently renewed for an additional 3 years to 12/31/2024.

- b. **Commercial Property Assessed Clean Energy** (“C-PACE”)¹⁵ – through a partnership with over twenty (20) qualified capital providers and 137 (of 169) of Connecticut’s municipalities, the Green Bank administers the C-PACE program – a benefit assessment lien to finance clean energy improvements on commercial, industrial, and multifamily properties. C-PACE, an RLF-like program, provides financing up to 25 years. Since its inception in 2013, C-PACE has provided nearly 350 financings totaling \$220.1 MM (of which 75% is from private capital) and an estimated 4.1 million MMBtu of clean energy production or energy savings over the life of the measures delivering a savings to investment ratio greater than 1. Green Bank capital for the program is provided primarily from funds provided by the Regional Greenhouse Gas Initiative (RGGI) as well as through securitization of the loan receivables with private capital sources.

RLF offered through the program should support utility on-bill financing programs, C-PACE, and bridge, construction, term, off-taker, and secondary capital loans – and consideration should be given to allowing such RLF to be used as credit enhancements (i.e., interest rate buydowns, loan loss reserves) to lower the cost of and increase access to private capital.

- **Question 4** — To be successful, any RLF program should enable borrowers to access funding in a straightforward manner. Contractor-installers should be trained periodically on how to educate their customers about available financing options and be able to assist their customers in the loan application process. This application process should be “cloud-based” to not only simplify the submission of borrower information, but also to enable proper tracking of the underwriting process. While interest rates needn’t be “0%” – programs that have a uniform and simplified underwriting process with credit loss reserves will ensure the program has access to the lowest cost capital for maturities that best match the expected useful lives of the projects being financed. Applications for smaller commercial loan sizes (such as up to \$100,000 as with the SBEA program mentioned

¹² <https://www.ctgreenbank.com/wp-content/uploads/2021/11/FY21-CGB-ACFR-Final-11.08.21.pdf> (p. 303)

¹³ www.eversource.com

¹⁴ www.amalgamatedbank.com

¹⁵ <https://www.ctgreenbank.com/wp-content/uploads/2021/11/FY21-CGB-ACFR-Final-11.08.21.pdf> (p. 180)

above) will benefit greatly from a simplified underwriting process (for example, needing to be current on one's utility bill with no more than 2 late payments within the past 18 months). Consumer (homeowner) loan processes (typically not exceeding \$50,000) are well-established with standard FICO (and potentially income verified) underwriting criteria. Larger commercial transactions (such as with C-PACE) require underwriting that is commonplace for small business administration ("SBA") loans, which would include disclosure of the most recent 2 years of audited financial information (or the submission of federal tax returns along with financial statements that have not been audited), an appraisal and a high-level environmental assessment for the property being improved (assuming the property is being used to provide security for the loan). Whatever the process, processing the application expeditiously will promote better program deployment success.

- **Question 5** — Private capital is available to residential, commercial, and industrial borrowers anywhere in the United States from a variety of capital providers, including community and national banks, credit unions, "fin-tech" lending companies, leasing companies, and state or utility-sponsored loan programs, to name a few. However, the terms and conditions of lenders, given the actual (or perceived) risks of potential borrowers, the type of improvements (e.g., energy efficiency and heat pumps vs solar PV for instance) can be relatively loose and inexpensive for highly creditworthy borrowers for short-term loans, or more stringent (and at a considerably higher interest rate) for less creditworthy borrowers for longer-term loans. Structures that are not construed as debt (such as solar PV power purchase agreements or "pay as you save" (PAYS) programs) are likely to result in better deployment in vulnerable communities where residents may already be at their credit limit. Easy and affordable access to borrowing will determine the likelihood of underserved markets in realizing the benefits from clean energy deployment.

There is an important role that public or community-based financial institutions such as green banks, credit unions, and CDFI's can play – to leverage federal RLF into financing programs that provide access to private capital for eligible recipients.

- **Question 6** — carefully designed and administered energy efficiency loan programs by electric and natural gas distribution companies,¹⁶ local, state, and nonprofit green banks,^{17,18} climate banks, or other public or nonprofit CDFI's, establish contractor pre-qualification conditions or labor standards, as well as technical review, to ensure that high-quality workmanship delivers the intended energy savings to consumers. Typically guided by state policy or energy regulation to deliver all cost-effective energy efficiency, program administrators ensure high-quality workmanship and delivery of energy savings to participating consumers.

IMPORTANT NOTE

The Green Bank is willing and able to speak with the DOE staff in detail about any of these residential and commercial clean energy financing programs as appropriate and would invite the

¹⁶ Small Business Energy Advantage – <https://energizect.com/find-a-contractor>

¹⁷ Smart-E Loan – <https://www.ctgreenbank.com/programs/find-a-contractor/>

¹⁸ Commercial Property Assessed Clean Energy – <https://www.cpace.com/capital-provider/resource-center/approved-technical-reviewers/>

DOE staff to review the “Use Cases” describing these financing programs in detail within its Annual Comprehensive Financial Report for FY21.¹⁹

Category 2 – Program Success & Sustainability

- **Question 7** – the following is a breakdown of Green Bank program models and design factors in response to the RFI questions:
 - a. **Small Business Energy Advantage** – beginning with a no-cost energy assessment²⁰ to receiving combination of upfront incentives and access to on-bill financing for the remainder of the installed costs.²¹
 - b. **Commercial Property Assessed Clean Energy** – easy and affordable access to private capital (and public capital from Green Bank), including, in collaboration with the Connecticut Department of Economic and Community Development, additional incentives provided to manufacturers through Energy On the Line.²²
 - c. **Decarbonization** – the Green Bank has established impact methodologies to measure decarbonization²³ and the public health benefits²⁴ resulting from reduced air pollution as a result of clean energy deployment through its financing programs – see Table 3.

Table 3. Decarbonization and Public Health Benefits from Reduced Air Pollution

Program	Sector	Decarbonization (LT Avoided MMTCO ₂ e)	Air Pollution (LT Avoided Pounds) ²⁵	Public Health Savings (\$MM)
Smart-E Loan	Residential	281,623	521,373	\$8.7-\$19.6
CT Solar Loan	Residential	35,018	103,089	\$1.2-\$2.7
CT Solar Lease	Residential	154,900	381,464	\$5.3-\$11.9
Solar for All	Residential	700,785	1,287,120	\$20.5-\$46.5
SBEA	C&I	-	-	-
C-PACE	C&I	851,192	1,704,781	\$24.9-\$56.4

The DOE, working with the Environmental Protection Agency (“EPA”), can develop similar impact methodologies to measure decarbonization and public health as a result of federal funds increasing private investment in clean energy deployment. It will be imperative for the DOE to collect data (e.g., estimate annual and lifetime energy savings, including kW, kWh, and MMBtu) from RLF partners to measure progress towards decarbonization, air quality, and public health goals.

¹⁹ <https://www.ctgreenbank.com/wp-content/uploads/2021/11/FY21-CGB-ACFR-Final-11.08.21.pdf>

²⁰ <https://www.eversource-ct.com/small-business/>

²¹ <https://energizect.com/your-business/solutions-list/Small-Business-Energy-Advantage>

²² <https://www.energyontheonline.com/>

²³ <https://www.ctgreenbank.com/wp-content/uploads/2018/01/CGB-Eval-IMPACT-091917-Bv2.pdf>

²⁴ <https://www.ctgreenbank.com/wp-content/uploads/2018/03/CGB-Eval-PUBLICHEALTH-1-25-18-new.pdf>

²⁵ Includes NO_x, SO_x, and PM_{2.5}

- d. **Job Creation** – the Green Bank has established impact methodologies to measure job creation,^{26,27} including tax revenue generation,²⁸ as a result of increased investment in clean energy deployment – see Table 4.

Table 4. Job Creation Benefits

Program	Sector	Direct (Job-Years)	Indirect and Induced (Job-Years)	Total (Job-Years)	Tax Revenue Generation (\$MM)
Smart-E Loan	Residential	522	716	1,239	\$6.0
CT Solar Loan	Residential	51	82	132	\$0.5
CT Solar Lease	Residential	221	356	577	\$2.4
Solar for All	Residential	482	644	1,126	\$2.9
SBEA	C&I	73	115	188	\$7.2
C-PACE	C&I	936	1,354	2,290	\$16.2

Again, it will be important for the DOE to collect data (e.g., public and private investment by measure) from and for RLF partners to report data in order to measure progress towards job creation goals.

With the assistance of [bw] Research Partnership, the Green Bank, and our electric and gas distribution partners (i.e., Eversource Energy and United Illuminating), tracks the clean energy workforce in Connecticut by diversity and union.²⁹ In 2021, Public Act 21-43 “An Act Concerning a Just Transition to Climate-Protective Energy Production and Community Investment” was passed in Connecticut requiring clean energy developers of certain projects (i.e., Class I renewable energy resources that exceed 2 MW in capacity), to establish a workforce development program, enter into community benefit agreements, and ensure that contractors and subcontractors on projects meet certain criteria. It is important to note that this is for large-scale clean energy projects and not energy efficiency.

- e. **Upskilling Opportunities** – no comment
- f. **Self-Sustaining** – as noted above, the Green Bank invested ARRA funds as credit enhancements (i.e., LLR, IRB) and not RLF’s. And although those ARRA resources weren’t used as RLF’s, their impact in mobilizing private investment was extraordinary. For a detailed description of the self-sustaining impact beyond capitalization/federal funding, see the attached fact sheet entitled “The Impact of Federal Funds in Connecticut,” and note on the second side entitled “Financing Programs with Federal Funds” how the use of ARRA funds as credit enhancements, led to self-sustainable private investment through the Green Bank.
- **Question 8** — as a Co-Chair of the Financing Solutions Working Group of the State Energy Efficiency Action Network (“SEE Action Network”),³⁰ there are a number of resources that

²⁶ https://www.ctgreenbank.com/wp-content/uploads/2018/03/CGB_DECD_Jobs-Study_Fact-Sheet.pdf

²⁷ <https://www.ctgreenbank.com/wp-content/uploads/2017/02/CTGreenBank-Clean-Energy-Jobs-CT-August102016.pdf>

²⁸ <https://www.ctgreenbank.com/wp-content/uploads/2018/09/CGB-Eval-Tax-Methodology-7-24-18.pdf>

²⁹ <https://www.ctgreenbank.com/wp-content/uploads/2020/11/2020-Connecticut-Clean-Energy-Industry-Report.pdf> (p. 33)

³⁰ Bryan Garcia, President and CEO of the Connecticut Green Bank

can be reviewed to identify the lessons learned from successful and unsuccessful RLF programs, including, but not limited to:

- Energy Efficiency Financing for Low- and Moderate-Income (LMI) Households: Current State of the Market, Issues, and Opportunities (August 2017)³¹
- Making it Count: Understanding the Value of Energy Efficiency Financing Programs Funded by Utility Customers (December 2015)³²
- Accessing Secondary Markets as a Capital Source for Energy Efficiency Finance Programs: Program Design Considerations for Policymakers and Administrators (February 2015)³³
- Energy Efficiency Finance Programs: Use Case Analysis to Define Data Needs and Guidelines (July 2014)³⁴
- Financing Energy Improvements on Utility Bills: Market Updates and Key program Design Considerations for Policymakers and Administrators (May 2014)³⁵
- Energy Efficiency Financing Program Implementation Primer (January 2014)³⁶
- Credit Enhance Overview Guide (January 2014)³⁷

The DOE should review these reports to identify relevant lessons learned that can inform RLF program design.

- **Question 9** —reducing asymmetric information by requiring that all data from federally-funded RLF programs be collected, made available, and publicly disclosed will reduce the perception of risk by private lenders and encourage more competition in the marketplace. Increased competition is good for borrowers as this should result in increased access to capital, lower interest rates, more term options, better underwriting criteria, greater marketing by financial institutions, and other benefits, including an increase in demand for clean energy projects and measures by consumers – see Figure 1.³⁸

³¹ <https://www.energy.gov/sites/default/files/2021-07/ee-financing-lmi.pdf>

³² <https://www.energy.gov/sites/default/files/2021-07/making-it-count-final-v2.pdf>

³³ <https://www.energy.gov/sites/default/files/2021-07/accessing-secondary-markets-ee-finance.pdf>

³⁴ <https://www.energy.gov/sites/default/files/2021-07/energy-efficiency-finance-programs.pdf>

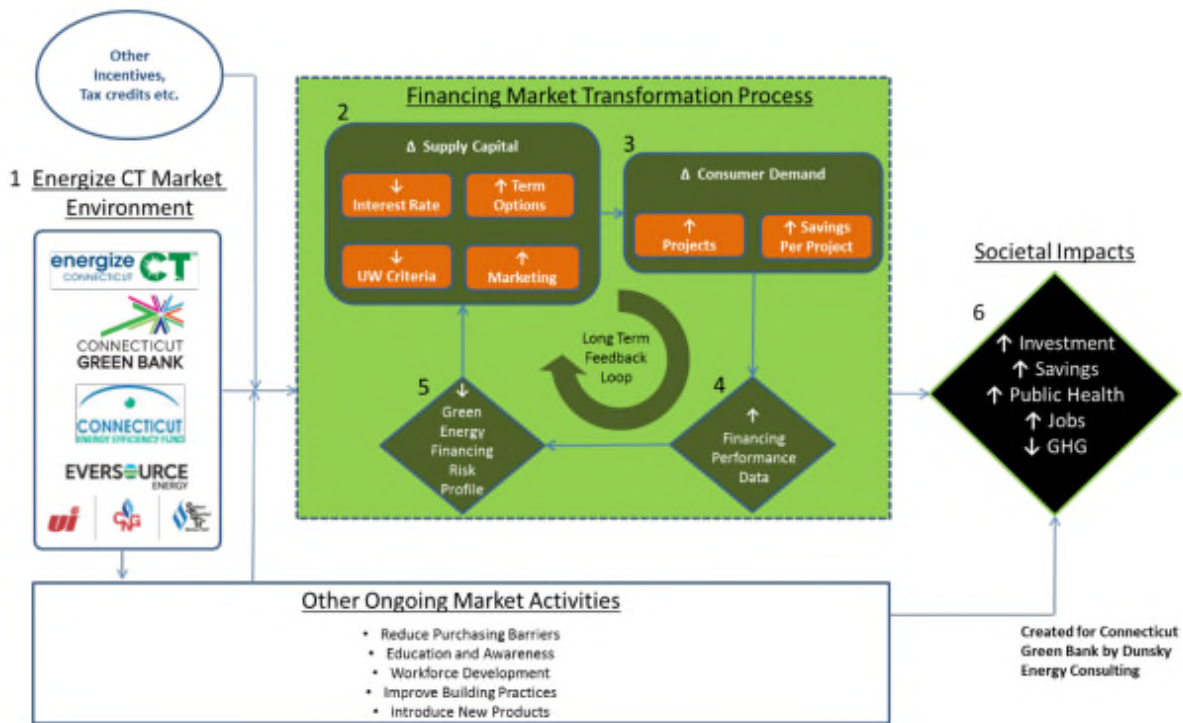
³⁵ <https://www.energy.gov/sites/default/files/2021-07/financing-energy-improvements-utility-bills-market.pdf>

³⁶ <https://www.energy.gov/sites/default/files/2021-07/ee-financing-program-implementation-primer.pdf>

³⁷ https://www.energy.gov/sites/default/files/2021-07/credit_enhancement_guide.pdf

³⁸ <https://www.ctgreenbank.com/wp-content/uploads/2017/02/CTGreenBank-Evaluation-Framework-July-2016.pdf>

Figure 1. Program Logic Model of the Connecticut Green Bank – Financing Market Transformation Process



Instilling greater confidence to private lenders that investment in the program provides acceptable levels of risk and benefits requires engagement from local and state entities and the utilities. For example, the Smart-E Loan in Connecticut, is supported by the Green Bank providing technical assistance in terms of eligible clean energy and energy efficiency measures consistent with the public policy of the state, and qualifying eligible contractors who are trained and don't have poor records with respect to consumer protection violations.

- **Question 10** – see response to Question 6.

IMPORTANT NOTE

Over the years, the Green Bank has been asked by local and state governments about how they could develop and/or use the social and environmental impact methodologies developed by the Green Bank to communicate the benefits of clean energy deployment. The Green Bank staff is willing and able to meet with the DOE staff as appropriate, with respect to its impact methodologies, including its program logic model for financing market transformation that guides data collection and reporting.

Category 3 – Supporting Tools & Resources

- **Question 11** — long-term success of RLFs in reaching more low- and moderate-income, underserved, or disadvantaged communities, occurs when the investment of such funds develop local funding ecosystems, including, but not limited to incentives (i.e., electric and gas distribution companies), tax credits (e.g., sales, property, investment), and credit enhancements for financing (e.g., loan loss reserves, interest rate buydowns). Easy and affordable access to capital, in its various forms from funding (i.e., grants) to financing (i.e., loans), provides end-use

customers and their contractors with the financial resources they need to develop, construct, commission, and operate such systems.

- **Question 12** —see response to Question 21.
- **Question 13** – this is not an area of expertise of the Green Bank, however, we would offer the following observations:
 - **Financial Institutions** – encouraging partnerships between local and state governments with financial institutions that share these objectives given their corporate structure (e.g., Amalgamated Bank³⁹) and/or their commitment to CRA (e.g., Liberty Bank, Webster Bank, KeyBank) may improve pay, unionization, and increased access to disadvantaged workers.
 - **US Energy and Employment Jobs Report** (“USEER”) – the DOE, working in collaboration with the National Association of State Energy Offices (“NASEO”), Energy Futures Initiative, and [bw] Research Partnership produce information on state-level and national jobs in the clean energy industry. The DOE should increase its support of this research to track key information over time (e.g., unionized workers, compensation) to monitor progress. The Green Bank would like to thank the DOE for its continued support of such research efforts as it helps states track jobs in the clean energy industry.⁴⁰
- **Questions 14** – this is not an area of expertise of the Green Bank, however, we would offer the following observation:

There are several federal auditing tools that are useful for residential (i.e., Home Energy Score) and non-residential (i.e., Energy Star Benchmarking) end-use customers. The DOE should not limit data collection, auditing, modelling and sales tools to government platforms, but should encourage innovation in such tools.

What is important to note is that any data collected as a result of RLF support for residential, commercial, and industrial projects should be made publicly available to the DOE. For example, the data collected by the Green Bank from the Smart-E Loan, supported by credit enhancements from ARRA, were made available to LBNL for scientific research purposes. Reducing asymmetric information should be an important outcome for the DOE in terms of loan and energy savings performance through the RLF because it increases competition in the market for easy and affordable access to capital to consumers and contractors.

- **Question 15** – see various responses above.

As local and state, nonprofit and utility administrators of clean energy programs know, the qualification and eligibility of contractors to access and operate within incentive programs is important and essential.

³⁹ Founded in 1923 by the Amalgamated Clothing Workers of America, Amalgamated Bank is the largest union-owned bank and one of the only unionized banks in the United States. It is currently majority owned by Workers United and SEIU Affiliate.

⁴⁰ <https://www.ctgreenbank.com/wp-content/uploads/2022/01/2021-CT-Clean-Energy-Industry-Report.pdf>

Beyond demonstrating local certifications (e.g., journeyman licenses, including E-2, PV-2, and STC-2 Licenses in Connecticut) and standards, frequent and random project inspections are important to ensure proper installation and operation of projects. By inspecting new contractors and randomly inspecting old contractors in the program, program administrators are able to improve consumer protections and increase energy savings from such projects.

- **Questions 16** – as the DOE knows, there are various ways to track program success and impacts while relieving burden on contractors and programs. The following are the key pieces of data that are essential to collect to estimate E⁴ impact – see Table 5.

Table 5. Data Collection to Compute Success and Impact

	Economy	Energy	Environment	Equity
Installed Cost	x			
Project Type	x			
Installed Capacity		x	x	x
Location	x			x

- **Economy** – per every \$1.0 MM invested in funding (i.e., grants) and financing (i.e., loans) from public and private sources of capital in various clean energy projects (e.g., renewable energy, energy efficiency) direct, indirect and induced jobs years and sales, property, corporate, and individual tax revenues can be estimated.
- **Energy** – based on the installed capacity of a project, including its estimated production (i.e., kWh) and/or savings (i.e., MMBtu), and the energy consumption of participating residential, commercial, and industrial end-use electric and gas customers, the energy burden and security can be calculated depending upon the rate structure.
- **Environment** – based on the estimated production and/or savings of such systems, using tools developed by the EPA, an estimate of GHG and criteria pollutant emissions avoided and the associated public health benefits from cleaner air (e.g., reduced sick days, hospitalizations, deaths) can be estimated.
- **Equity** – if data on income and race is not being collected, then the location of a project with respect to census tract can enable an estimate of what families and businesses are benefitting from such investment in and deployment of clean energy.

For further details, see “Decennial Societal Impact Report” fact sheet.

IMPORTANT NOTE

DOE should consider providing technical assistance to local and state governments and/or developing standardized methodologies for impact tracking and reporting based on the data it collects from investment through the BIL and other programs. Given its experience, the Green Bank is willing to assist the DOE as appropriate.

Category 4 – Job Quality, Buy America, and Climate Impact

- **Question 17** — the RLF, might impact a region’s workforce by:
 - a. **Job Growth and Quality** – if the RLF is able to unlock and leverage multiples of private investment, then it is able to increase the capacity to lend to projects and increase job growth and quality. For example, if \$10.0 MM were available for an RLF that has no ability to mobilize additional private investment and revolves every 4 years, then in Connecticut, such a facility could support 62 direct jobs from commercial energy efficiency projects every 4 years.⁴¹ However, if the \$10.0 MM RLF were able to be invested through a green bank as subordinated debt within a capital structure (e.g., 10-20 percent) in partnership with a private lender (e.g., 80-90 percent) as senior debt, then 4-9 times more capital would be available for projects thereby supporting a \$50.0-\$100.0 MM RLF facility that could support 248-558 additional direct jobs. This is the capital structure of the SBEA program noted above (i.e. response to 3a). More capital available and deployed in projects leads to job growth – and an increase in the supply of projects in a market, results in an increase in job quality (e.g., compensation) as the competition for labor increases.
 - b. **Construction Jobs** – as noted above, a \$10.0 MM RLF without mobilizing private investment versus a \$50.0-\$100.0 MM RLF whose \$10.0 MM of investment is subordinated to \$40.0-\$90.0 MM of private investment as senior debt, would produce an additional 248-558 more direct (i.e., construction) and 320-720 indirect and induced jobs. Greater and easier access to affordable capital fosters the sustained orderly development of a local construction industry.
 - c. **Prevailing Wage Requirement** – a considerable amount of deployment for projects for SMEs and residential homeowners are accomplished by less substantial local contractors that generally lack the wherewithal to comply with Davis Bacon prevailing wage requirements. We would recommend that, like ARRA, that there be categorical exclusions for such requirements related to the size of such projects. Where Davis Bacon prevailing wage requirements will apply, compliance protocols for such requirements should be made as straightforward as possible with readily-available technical assistance for contractors (particularly those contractors with annual revenues below a certain threshold (for instance).

The Green Bank, working with [bw] Research Partnership, EDCs, DEEP, and Connecticut Department of Labor, broadly collect wage and benefit (i.e., health care and retirement) data to discern how the clean energy economy is supporting families.⁴²

- **Question 18** —in general, residential and commercial energy efficiency projects tend to use Energy Star products. Beyond the procurement of these Energy Star products from domestic or foreign sources (e.g., LG appliance manufacturing plant in the U.S.), project developers typically don’t track the domestic or foreign procurement of iron, steel, cement or other construction materials for a project outside of the model and serial information collected on an invoice.

⁴¹ <https://www.ctgreenbank.com/wp-content/uploads/2017/02/CTGreenBank-Clean-Energy-Jobs-CT-August102016.pdf>

⁴² <https://www1.ctdol.state.ct.us/lmi/green/CTGreenBank.asp>

- **Question 19** – this is beyond the expertise of the Green Bank, however there are a number of ways an RLF could encourage procurement of domestic products and materials, including, but not limited to:
 - **Additional Pool of Resources** – the DOE could allow RLF program administrators to access a pool of additional resources to lower interest rates (e.g., first-come, first-serve);
 - **Federal Procurement** – given the procurement power of the federal government, long-term contracts could create competitive domestic markets that can help local and state governments, utilities, developers, and others procure lower cost products and materials that are domestically manufactured (e.g., buyers pool); and/or
 - **Innovative Customer Acquisition Strategies** – as demonstrated through the SunShot Program, and its support of community-based Solarize campaigns, customers could be given a pricing choice by contractors to offer two bid prices – including a conventional lowest bid price versus a bid price that includes American made products and materials allowing the customer to decide.

It should be noted that although well intended, adding additional domestic manufactured requirements may have unintended consequences (e.g., reduce customer participation) that would reduce economic activity across the market (e.g., installation of projects).

- **Questions 20** – the RLF could encourage the use of funds for beneficial electrification by lowering interest rates. For example, the Smart-E Loan used ARRA funds as interest rate buydowns to catalyze the market for weatherization in combination with air source heat pumps and Energy Star windows. If RLF are to be used to finance projects that are reliant on fossil fuels, then equipment installed should be more efficient than what it is displacing.

It should be noted that the transition to beneficial electrification will not only put additional stress on the electric grid (i.e., increase demand, specifically peak demand), but it will also adversely impact small businesses, typically family-owned businesses, that are being displaced as a result of this shift in technology. The DOE should provide additional technical assistance (e.g., workforce development) to enable a just transition for those small businesses currently focused on installing fossil-fuel powered equipment.

Category 5 – Open Response on Revolving Loan Fund Program Design

- **Question 21** – with the objective to maximize the impact that BIL provides to help as many families and businesses as possible, within future formula grant or competitive RFPs in support of Sections 40209, 40502, and similar programs, we would recommend language along the following be included within the program documentation:

In its effort to maximize support to the most families and SME's as possible, the DOE seeks innovative public-private partnership approaches that mobilize private investment, including, but not limited to the following:

- *technical assistance (i.e., focus on Justice 40 and Just Transition)*
- *predevelopment capital*

- *credit enhancements (i.e., interest rate buydowns, loan loss reserve funds)*
- *revolving loan funds*
- *participation agreements to lower cost of and increase access to private capital*
- *utility on-bill financing programs*
- *commercial property assessed clean energy*
- *bridge, construction, term, off-taker, and secondary capital loans*
- *partnerships with local, state, and nonprofit green banks, climate banks, or other public or nonprofit community development financial institutions, as intermediaries to directly or indirectly channel financing to SME's, including meaningful involvement of veteran, minority, women, and disabled-owned businesses*

Also, separate from this RFI, the Green Bank would recommend DOE consider the following aspects of supporting local and state efforts to unlock private investment to support the deployment of clean energy for families and businesses:

- **National Loan Loss Reserve Fund** – through an “across government” strategy, the DOE’s Loan Program Office (“LPO”)⁴³ working with the U.S. Department of Treasury’s Community Reinvestment Act (“CRA”) division, has the potential to mobilize billions of dollars of public and private investment that will be needed in order to achieve the Biden Administration’s ambitious objectives. Work with leading green banks at the local and state-level focused on credit enhancement strategies (e.g., CT, HI, IL, Montgomery County) and non-profit organizations (e.g., Inclusive Prosperity Capital, Inclusiv, Michigan Saves, SELF) to develop a standardized “opt-in” program to enable easy and affordable access to capital to finance clean energy improvements for families and businesses with a priority focus on Justice 40 (e.g., vulnerable communities).
- **Credit Enhancements** – the importance of loan loss reserves (“LLR”) in attracting private capital investment and interest rate buydowns (“IRB”) in catalyzing contractor deployment of clean energy, are two key lessons from ARRA that should be advanced through RLF mechanisms. Although not an RLF per se, credit enhancements have the potential to engage local lenders to invest their private capital in clean energy markets. As those investments yield returns, local lenders will continue to invest private capital in clean energy market development revolving their own capital sources by continuously investing in the clean energy economy above and beyond local, state, and national government resources.
- **Cost-Effectiveness Testing** – conventional utility or third-party administered energy conservation and load management incentive programs are designed using cost-effectiveness testing (e.g., National Standard Practice Manual).⁴⁴ This approach allows for various benefit-cost analyses (“BCA”) including, but not limited to Participant Cost Test (“PCT”), Program Administrator Cost Test (“PACT”), Total Resource Cost Test (“TRC”), Societal Cost Test (“SCT”), and Ratepayer Impact Measure (“RIM”). Prioritizing

⁴³ LPO authority to work with local and state government was expanded under Sec. 40401(c)(2) of the BIL amending the terms and conditions of Title 17 loans to include projects receiving financial support or credit enhancements from state energy financing institutions as eligible projects, and that such projects are not required to meet Section 1703(a)(2)’s requirement for new or significantly improved technologies, but instead meet emissions requirements.

⁴⁴ <https://www.nationalenergyscreeningproject.org/national-standard-practice-manual/>

vulnerable communities to achieve Justice 40 objectives, could be justified by providing additional incentives to such communities using the cost-effectiveness framework. For example, Energy Storage Solutions in Connecticut, prioritizes low-income households, households located in distressed communities, and affordable housing by receiving additional incentives justified by the BCA framework which should result in an increase in deployment in vulnerable communities.⁴⁵ DOE could provide technical assistance to states to support the analytical framework for higher incentives for vulnerable communities for such distributed energy resources such as solar PV + battery storage that both reduce energy burden and increase energy security for vulnerable communities.

IMPORTANT NOTE

The Green Bank would request to meet with the DOE staff for 30-minutes to discuss how a National Loan Loss Reserve and/or Credit Enhancements (e.g., LLR, IRB) strategy could unlock private capital investment at the scale necessary to achieve the ambitious Biden Administration policies.

The Green Bank appreciates the DOE's efforts to solicit public comment on the pending RLF request for proposals. We look forward to working with our public and private capital partners to submit an application, where appropriate, for consideration into the Revolving Loan Fund Program formula or competitive grant solicitation(s).

Sincerely,

Bryan Garcia

Bryan Garcia
President and CEO

Bert Hunter

Bert Hunter
EVP and CIO

About the Connecticut Green Bank

As the nation's first state-level green bank, the Connecticut Green Bank leverages the limited public resources it receives to attract multiples of private investment to scale up clean energy deployment. Since its inception, the Green Bank has mobilized \$2.14 billion of investment into Connecticut's clean energy economy at a 7.4 to 1 leverage ratio of private to public funds, supported the creation of 25,612 direct, indirect and induced jobs, reduced the energy burden on over 63,000 families and businesses, deployed over 494 MW of clean renewable energy, helped avoid 9.9 million tons of CO₂ emissions over the life of the projects, and generated \$107.4 million in individual income, corporate, and sales tax revenues to the State of Connecticut.

Attachments

- A. Green Bank – Fact Sheet
- B. Decennial Societal Impact Report – Fact Sheet
- C. The Impact of Federal Funds in Connecticut – Fact Sheet

⁴⁵ <https://www.cleangroup.org/webinar/connecticuts-new-energy-storage-solutions-program/>

Memo

To: Board of Directors of the Connecticut Green Bank

From: Bryan Garcia (President and CEO) and Brian Farnen (General Counsel and Chief Legal Officer)

Date: July 22, 2022

Re: Ethical Conduct Policy and Board Director Emeritus Recommendation– Connecticut Green Bank

Background

To engage prior Board members (e.g., Emeritus), and industry and public policy experts, the Connecticut Green Bank (“Green Bank”) Board of Directors approved the establishment of the Ad Hoc Advisory Committee for the purpose of soliciting expert advice to advance the mission of the Green Bank at its October 22, 2021, meeting. The designation of members to the Ad Hoc Advisory Committee shall be determined by the Board of Directors of the Green Bank in consultation with its President and CEO.

Based on feedback received from the Audit, Compliance and Governance (ACG) Committee and in a continued effort to strengthen our governance procedures and advisory oversight, the Green Bank staff drafted an Ad Hoc Advisory Committee Ethical Conduct Policy (“Policy”) for your review and consideration. The ACG committee also seeks the approval for Kevin Walsh to serve as our first Board Member Emeritus on the Ad Hoc Advisory Committee.

Policy and Board Member Emeritus Recommendation

Over the last decade, the Green Bank has attracted industry and policy leaders who have provided formal or informal advice to support its mission. The Ad Hoc Committee was created as a formal mechanism to engage prior members of the Board of Directors, industry or public policy leaders, and/or experts in the field of clean energy and environmental finance and seek their consultation. Although these individuals will have no formal approval authority, their advice, guidance, and counsel will be sought on occasion by staff of the Green Bank to support its mission.

The enclosed Policy seeks to provide formal guidance to non-voting Directors or advisors serving on the Ad Hoc Committee to ensure compliance with state statutes, guide decision making and advisory processes, protect the reputation of the Green Bank and its people, and distinguish between the ethics requirements of non-voting Directors or advisors and voting Directors – see Attachment A.

Furthermore, to provide strategic counsel to the staff and Board of the Green Bank on occasion in order to advance the mission of the organization, the Green Bank recommends Kevin Walsh serve as Board Member Emeritus as an advisor on the Ad Hoc Committee at the direction of the Audit, Compliance, and Governance Committee.

RESOLUTION

WHEREAS, the Board unanimously affirmed a motion to establish the Ad Hoc Advisory Committee comprised of members without voting authority for the sole purpose of soliciting expert advice to advance the mission of the organization at its meeting on October 22, 2021;

WHEREAS, the Green Bank is committed to ethical conduct and transparency and seeks to provide guidance to non-voting Directors on proper compliance with relevant statutes, rules, and regulations;

WHEREAS, the Audit, Compliance and Governance Committee recommended to the Board of Directors Kevin Walsh serve as Board Member Emeritus at its May 17, 2022, Committee Meeting;

NOW, therefore be it:

RESOLVED, that the Board of Directors approves the Ad Hoc Advisory Ethical Conduct Policy.

RESOLVED, that the Board of Directors approves the recommendation of Kevin Walsh to serve on the Ad Hoc Advisory Committee as a Board Member Emeritus.

Attachment A
Ad Hoc Advisory Committee Ethical Conduct Policy

Section 1. Purpose

Ethical conduct and transparency in the conduct of its business are core values of the Connecticut Green Bank (“Green Bank”). Ad Hoc Advisory Committee (“Committee”) members of the Green Bank are expected to maintain the highest standards in the conduct of their duties to maintain public trust and confidence in the Green Bank. It is the purpose of this Ethics Policy to establish the highest standards of honesty, integrity and quality of performance for all Green Bank Committee members to avoid even the appearance of impropriety in the performance of Green Bank’s statutory mandate.

This Ethics Policy is intended to be a general guide for Green Bank nonvoting Committee members in determining what conduct is prohibited so that it may be avoided.

Section 2. Values

In performance of their nonvoting consulting and advisory duties, Green Bank Committee members will:

- Maintain ethical standards beyond strict compliance with relevant statutes and regulations;
- Fulfill the statutory mandate of the Green Bank in fostering the growth, development and commercialization of clean energy sources, environmental infrastructure and related enterprises and in stimulating demand for clean energy and environmental infrastructure projects and in the deployment of clean energy resources which serve end use customers in the State of Connecticut;
- Make all decisions strictly on a public purpose and financial basis, without regard to political affiliation or personal interest;
- Maintain transparency and honesty in all operations of the Green Bank;
- Act as a responsible stewardship of all the Green Bank assets;
- Maintain the public trust by strict adherence to the public purpose for which the Green Bank was created.

Section 3. Applicability

This Ethics Policy is applicable to all members of the Committee of the Green Bank.

Section 4. Enforcement

Any questions or concerns regarding violations or suspected violations of this Ethics Policy shall be brought to the attention of the Green Bank's Ethics Compliance Officer.

Section 5. Outside Business Interests

It is expected that some Committee members will have outside business or professional interests related to energy resources or policy. Such outside interests are not considered to create a conflict of interest, provided that a member of the Committee shall not participate in any deliberation, and shall not take any other affirmative action in their capacity with the Green Bank, with respect to a matter in which the member has an interest which is in substantial conflict with the proper discharge of their duties and responsibilities as a Committee member. Determination of whether a "substantial conflict" exists is made in the manner provided in Section 1-85 of the Connecticut General Statutes. (See Selected Statutory References, Section 1-85 and Green Bank Bylaws, Article VII)

Section 6. Additional Green Bank Policies

Given that the Green Bank is partially funded through public revenues (e.g., a surcharge on consumers of electric services) in the State of Connecticut and the Green Bank's statutory mandate is to foster the growth, development, and commercialization of clean energy resources and environmental infrastructure projects, and to stimulate demand for clean energy and environmental infrastructure projects, among other things, the Green Bank expects that its Committee members will:

- Protect the confidential information to which Green Bank Committee members have access
- Avoid actual or potential conflicts of interest
- Neither interfere with nor solicit contracts on behalf of any person

Section 7. Green Bank Staff

Committee members understand that Green Bank employees are subject to the Green Bank Ethical Conduct Policy. Known or suspected breaches of the Green Bank Ethical Conduct Policy by such employees may require reporting to the Green Bank's General Counsel acting as the Green Bank's Ethics Compliance Officer and may require disciplinary action as provided by the Green Bank's employment policies, in addition to sanctions provided by state law.

Member Acknowledgment Form

I have received a copy of the Connecticut Green Bank Ad Hoc Advisory Committee Ethical Conduct Policy and understand that it is my responsibility to read and comply with this policy and any revisions made to it. Should the contents of this policy be changed, I understand that I may be required to provide a written acknowledgment that I have received and understand the change(s).

Member's Signature

Date

Print Member Name



Memo

To: Connecticut Green Bank Board of Directors

From: Mackey Dykes, VP of Financing Programs; Catherine Duncan, Financing Programs; Alex Kovtunenکو, Associate General Counsel, Financing Programs

Date: July 19, 2022

Re: C-PACE Program Guidelines Update – EV Chargers

Conn. Gen. Stat. Section 16a-40g (the “Statute”) authorizes what has come to be known as the Commercial Property Assessed Clean Energy Program (“C-PACE”) and designates the Connecticut Green Bank (“Green Bank”) as the state-wide administrator of the program. The Green Bank established program guidelines (“Program Guidelines”) for the C-PACE program. The Statute was updated in the most recent legislative session (Public Act No. 22-6, effective October 1, 2022) to include zero-emission vehicle refueling infrastructure and resilience improvements on qualifying commercial real property as eligible energy measures under the program. Both newly eligible measures are exempted from the Savings-to-Investment Ratio (“SIR”) calculation. “Zero-emission vehicle” is defined in statute as a battery electric vehicle, hybrid electric vehicle, range-extended electric vehicle and any vehicle that is certified by the executive officer of the California Air Resources Board to produce zero emissions of any criteria pollutant under all operational modes and conditions (Conn. Gen. Stat. Section 4a-67d). “Resilience” is defined in statute as the ability to prepare for and adapt to changing conditions and withstand and recover rapidly from deliberate attacks, accidents or naturally occurring threats or incidents, including, but not limited to, threats or incidents associated with the impacts of climate change (Conn. Gen. Stat. Section 16-244aa).

Attached to this memo are Green Bank staff proposed edits to the Program Guidelines which address the inclusion of zero-emission vehicle refueling infrastructure. Staff is still working on drafting edits to address the inclusion of resiliency, which will take more time and staff expects to come back to the Board with further updates early next year.

After receiving Board input on the attached proposed Program Guidelines edits, staff will publish the proposed Program Guidelines for public comment. After receipt of public comments, and any additional edits resulting from such comments, staff will return to the Board for a formal approval of the updated Program Guidelines prior to implementation.



SPARKED BY
CONNECTICUT GREEN BANK

C-PACE PROGRAM GUIDELINES

Version Date: ~~March 30~~July 19, 2022

Connecticut Green Bank

75 Charter Oak Ave, Suite 1 – 103

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Article I. INTRODUCTION

Capitalized terms used below which are not otherwise defined shall have the meaning ascribed to them in Article [VI hereof](#).

~~VI hereof.~~

~~In 2012, the Connecticut legislature passed the~~

~~The~~ C-PACE Legislation (defined below), ~~which~~ authorized the commercial sustainable energy program more commonly known as the Commercial & Industrial Property Assessed Clean Energy Program (“C-PACE”). C-PACE is a financing program that allows Connecticut building owners to access cleaner, cheaper, and more reliable energy, ~~as well as financing for resiliency and zero-emission vehicle refueling infrastructure~~ The C-PACE Legislation authorized Connecticut Green Bank, a Connecticut quasi-public agency (“Green Bank”), to administer C-PACE and establish program guidelines for the implementation of the program. **NOTE: Guidelines specific to resiliency will be developed later this fiscal year.**

C-PACE allows qualifying commercial real property owners to access financing to undertake ~~qualifying energy efficiency and clean~~eligible energy improvements on their buildings ~~or build greener and more efficient new buildings~~ and repay the investment through an additional charge/assessment, similar to ~~their~~ real property tax, sewer, or water bill. Similar to a sewer assessment, projects financed through C-PACE are secured by a benefit assessment lien on the improved real property, which lien is ~~repaid over time. Like other benefit assessments, C-PACE is~~ a non-accelerating, senior lien ~~secured by the property, and repaid over time.~~ The repayment obligation transfers automatically to the next owner if the property is sold and in the event of default, only the payments in arrears come due. This arrangement spreads the cost of ~~clean~~eligible energy improvements – such as energy efficient boilers, upgraded insulation, new windows, ~~or~~ solar PV installations, or EV chargers – over the expected life of the measure. Because the payment is secured by a senior lien, C-PACE projects are seen as less risky than typical loans, and low interest capital can be raised from the private sector with little or no government financing required.

Benefit assessments are a familiar tool ~~which~~that municipalities levy on real estate parcels to finance projects including street paving, water and sewer systems, and street lighting. C-PACE builds on a long history of using such benefit assessments and serves a public purpose through reducing energy costs, stimulating the economy, improving property valuation, reducing greenhouse gas emissions, and creating jobs. C-PACE is a proven and effective tool to attract private capital into the clean energy and energy efficiency market. The Connecticut Green Bank, as program administrator, bills and collects the scheduled payments for all benefit assessment liens in the manner of property taxes in the Participating Municipality.

This document sets forth the program guidelines established by Green Bank for the implementation of C-PACE ~~(as may be updated, supplement, amended or otherwise modified by Green Bank, the “Program Guidelines”), which~~ Program Guidelines govern all C-PACE participants.

All Appendixes attached hereto are supplemental program documents used by Green Bank in implementation of the Program Guidelines and may be modified or amended by Green Bank, in its sole discretion, from time to time. Current versions of all Appendixes may be found at www.cpace.com/guidelines.

Article II. OUTLINE OF C-PACE BENEFITS

PACE offers multiple benefits to a broad range of stakeholders, including but not limited to: building owners, municipalities, mortgage holders, lenders, and energy efficiency/renewable energy contractors.

Section 1. ———For Building Owners:

C-PACE helps minimize the up-front investment, installation, and performance risk of energy upgrades, while helping owners lower their operating costs, improve the value and market competitiveness of their asset, and comply with energy mandates. C-PACE does this in several ways:

- ~~Many owners lack capital to implement energy improvements.~~ C-PACE provides up to 100% ~~up-front,~~ long-term financing to property owners for qualified energy upgrades. Audits, construction costs, commissioning and post-construction performance measurement and verification (M&V) can be [wrapped into C-PACE financing.](#)
- ~~Owners often want to sell the building before an energy upgrade loan is repaid.~~ The C-PACE assessment obligation is attached to the property and can transfer to the new owner. Payments do not accelerate in case of default.
- ~~Many owners feel energy improvements do not yield an adequate return on investment.~~ The C-PACE program requires that the estimated energy savings from [an efficiency retrofit or renewable energy](#) project exceed the up-front investment and financing costs, leading the expected cash flow to be positive over the useful life of the equipment. Moreover, C-PACE requires an independent third-party technical review of the project energy savings estimates, thereby ensuring confidence in the projected energy savings. Deeper energy upgrades and savings are possible because assessments match the useful life of equipment, which for certain improvements can extend up to 25 years.
- ~~Other owners are uncertain that energy savings will perform as advertised.~~ C-PACE helps building owners understand their future energy savings by requiring that an energy audit and/or feasibility study be conducted to estimate energy savings and commissioning to ensure that equipment is installed correctly. [Buildings owners are encouraged to develop an equateAn audit for a refueling installation assesses the impact of a charging station on a building's energy profile. Buildings owners should consider developing a](#) measurement & verification plan to track energy consumption or production over time.
- ~~Owners need tenants to share in the costs of energy upgrades.~~ As a benefit assessment, C-PACE payments – as well as energy savings – may, if permitted by the lease agreement, be passed along to tenants.

Section 2. For Energy Auditors and Contractors:

The biggest barrier to converting leads to deals for energy upgrades is the lack of access to acceptable finance terms from traditional lenders. C-PACE solves this. By allowing a property owner to access up ~~to 100% up-front~~ to 100% financing for up to 25 years, deeper energy efficiency and clean energy improvements are now affordable. The Green Bank also provides energy auditors and contractors access to training, support services, market research, and marketing materials.

Section 3. For Municipalities:

C-PACE is an economic development tool for municipalities. Energy upgrades create a more competitive environment for retaining and attracting new businesses by lowering energy costs. Energy upgrades also create jobs and reduce greenhouse gases and other pollutants. The Green Bank facilitates municipal outreach and coordination with municipalities, ~~and their legislative bodies,~~ interested in entering into the Participation Agreement (as defined below) and facilitates municipal outreach to commercial property owners.

Section 4. For ~~Third-Party~~ Capital Providers:

C-PACE ~~has created~~ is a very secure, clean energy financing product for ~~Third-Party~~ Capital Providers (~~TPCP~~). The security comes from its position similar to a tax lien on a property. The lien, like other public benefit assessments, sits in a senior position to other encumbrances on the property, including mortgage debt and liens other than municipal real property tax liens. ~~Repayment is managed by the~~The Green Bank bills, collects, and remits funds in its role as program administrator.

~~Finally, the~~

~~The~~ C-PACE Legislation requires C-PACE approved projects, other than zero-emission vehicle refueling infrastructure upgrades, to have a “Savings to Investment Ratio” (SIR) greater than one, meaning that projected lifetime savings from the measures must exceed the total investment, inclusive of financing costs, over the lifetime of the measures. Connecticut streamlined the C-PACE program by establishing a single statewide C-PACE program administered by the Green Bank. Connecticut’s C- PACE program maintains an open market approach, encouraging private capital to be the primary financier of these assessments and supporting building owners who wish to source their own C-PACE lender (see Article V below). Additionally, the Green Bank currently has dedicated capital to invest in C-PACE projects. ~~At certain intervals through the year, the Green Bank may periodically “sell-down” its portfolio of C-PACE transactions to TPCP(s) (as defined herein) who desire to be the secondary financiers of these assessments. The sell-down process replenishes the Green Bank’s capital, enabling a sustainable source of funding for C-PACE projects.~~

Section 5. For Mortgage Holders:

The ~~structure of~~ C-PACE ~~allows participating building owners to pay~~ for improvements to their property out of the savings the project creates. Connecticut statutes require C-PACE approved projects to have an SIR greater than 1, meaning that projected lifetime savings from the energy measures must exceed the total investment, inclusive of financing costs, over the lifetime of the measures. The Green Bank has instituted technical underwriting standards for C-PACE that provides a robust framework for measuring the estimated SIR (Appendix D), which all efficiency and renewable energy C-PACE Projects must meet. Under the C-PACE financing structure, the building should experience increased net operating income, often an immediate return on investment, and therefore becomes more attractive to current and potential tenants and future buyers. Additionally, C-PACE Assessments do not accelerate. In the event of a foreclosure of the property for any reason, only the amount of the C-PACE assessment currently due and/or in arrears, a relatively small proportion of the entire C-PACE assessment, would come due. In the event of a property sale, C-PACE assessments ~~can~~ automatically transfer to the new property owner unless the buyer or seller decides to prepay the assessment. Finally, the C-PACE Legislation requires that property owners receive the written consent of their existing mortgage holder before being eligible for C-PACE financing (Appendix C). Mortgage lenders will be at the table helping to determine whether a property can undertake this voluntary assessment.

Article III. C-PACE STATUTORY AND PROGRAMMATIC REQUIREMENTS

This section outlines certain requirements set forth in the C-PACE Legislation as well as additional programmatic requirements established by the Green Bank.

Section 1. Mortgage Lender Consent

~~A.~~

A. Pursuant to the C-PACE Legislation, Benefited Property Owners must:

~~i.~~ Provide written notice to any existing mortgage holder of the Qualifying Property (as defined

a. below), at least thirty days before the recording of a benefit assessment lien on such property, of the property owner's intent to finance a project through C-PACE, and

~~ii.~~ Obtain the written consent to the C-PACE financing from any existing mortgage holder of the

b. Qualifying Property.

~~B.~~ Green Bank's model mortgage holder notice and consent is attached as Appendix C. C-PACE participants may

B. elect to use a different agreement to evidencing mortgage holder notice and consent, however any other such agreement will be subject to review and approval by Green Bank in its sole discretion.

~~C.~~ In accordance with the U.S. Department of Housing and Urban Development ("HUD") Notice H2017-01

C. dated January 11, 2017, as may be modified, amended or superseded, in the event that the mortgage holder is HUD, the mortgage holder notice and consent as well as the Financing Agreement associated with such consent shall provide, in the event of a default on the associated Benefit Assessment Lien payment, for notice and a reasonable opportunity for the mortgage holder to cure any such non-payment.

Section 2. Real Property Eligibility

To be considered a "Qualifying Property" eligible for C-PACE Financing, a Qualifying Commercial Real Property (as defined below) must meet the following requirements:

~~A.~~

A. Must be located within a Participating Municipality (as defined below), or multiple abutting Participating ~~Municipalities.~~
~~Municipalities.~~

~~B.~~ Must be owned by a Benefited Property Owner (as defined below), who is not a state, municipality, or

B. any political subdivision thereof.

~~C.~~ Must not be a Residential Dwelling (as defined bellow) of four units or less. Multifamily properties of

C. five units or more are eligible. Mixed-use, not-for-profit, and agricultural properties may also be eligible. If the eligibility of a certain property is not clear, Green Bank may determine property eligibility in its reasonable discretion based on site specific considerations including, but not limited to, zoning designation and current/past/future land use. Multiple abutting parcels may be included in the legal description of one Benefit Assessment Lien (as defined below) if (1) each parcel, by itself, is a Qualifying Property (2) each parcel is owned by the same Benefited Property Owner, and (3) each parcel benefits from the same Qualifying Project.

~~D.~~ Must not be subject to any mortgage, deed of trust or other equivalent consensual security interest
securing a loan primarily for personal, family or household use in a Residential Dwelling of four units or

~~-4-~~

- D. ~~Less~~ or on land on which a person intends to construct a Residential Dwelling of four units or less.

Section 3. Project Eligibility

To be considered a “Qualifying Project” eligible for C-PACE Financing, an ~~energy improvement~~ Energy Improvement project must meet

~~the~~ the following requirements:

~~A.~~

- A. Contain at least one Energy Improvement (as defined below).

~~B.~~ All costs associated with the Energy Improvement and the financing thereof (e.g., closing/lender fees,

- B. ~~consultant/development~~ consultant/development fees, soft costs, or other associated project costs, each being an “Associated Cost”) may, subject to Green Bank approval, be included in the Financed Amount.

- C. ~~C.~~ Obtain an energy audit or feasibility study for the proposed Energy Improvement(s).

~~D.~~ The term of the Benefit Assessment associated with the Qualifying Project may not exceed the weighted

- D. ~~average~~ average effective useful life (“EUL”) of the Energy Improvement(s), except in the context of Restructuring, in which case the term of the Benefit Assessment may be extended beyond the weighted average EUL of the Energy Improvement(s). EUL is determined through the energy audit, based on industry best practice, and is subject to approval by (1) either the Technical Administrator or a Technical Reviewer, and (2) the Green Bank. Regardless of a Project’s EUL, the term of the Benefit Assessment may not exceed 25 years unless approved by Green Bank, in its sole discretion.

~~E.~~ For all Energy Improvements other than Zero-emission Vehicle Refueling Infrastructure, Projected Total Cost Savings must exceed the Projected Financing Cost. In other words, the savings-to-

- E. ~~investment~~ investment ratio (“SIR”) of the project must be greater than one. To demonstrate that the SIR requirement has been satisfied the project must be either (1) reviewed and approved by the Technical Administrator, (2) reviewed and approved by a Technical Reviewer, (3) be certified as ~~Investor Confidence Project~~ “an Investor Ready Energy Efficiency”² project by the Investor Confidence Project (as defined by the Investor Confidence Project, see <http://www.eepformance.org>) or (4), for certain projects which include third party-owned renewable energy system(s), reviewed and approved by Green Bank, or certified by a ~~Qualified~~ Approved Capital Provider, as applicable and more particularly described in Appendix L. For the avoidance of doubt, the SIR calculation for the project must meet the requirements set forth in Article IV below and shall not be applicable for Zero-emission Vehicle Refueling Infrastructure.

- F. ~~F.~~ All Projects require the written approval of the Green Bank, as the statewide administrator of the C-PACE Program.

~~PACE Program.~~

- G. ~~G.~~ All Benefited Property Owner(s) associated with the project must sign a Disclosure of Risk Form.

~~H.~~ If the Energy Improvement(s) are wholly owned by any party or parties which is/are not the Benefited

- H. ~~Property~~ Property Owner(s), then such project must meet the requirements set forth in Appendix L.

Section 4. Restrictions on completed Qualifying Projects and consolidated Qualifying Projects

Qualifying Project improvements which have already been made to a Qualifying Property may be eligible for financing if such Qualifying Project was -completed less than a calendar year prior to the complete submission of documents necessary for Green Bank approval (See Appendix F) of such Qualifying Project. Additionally, subsequent Energy Improvement(s) made to a Qualifying Property which has previously received C-PACE financing for a previous Qualifying Project, made within one calendar year from the close of C-PACE financing for the initial Qualifying Project, may be considered as one Qualifying Project for the purposes herein.

Section 5. Restrictions on Refinancing within the C-PACE Program

Qualifying Projects which closed on C-PACE financing ~~may~~are not ~~be~~eligible for Refinancing through the

~~C-PACE Program.~~ For the avoidance of doubt, nothing in the Program Guidelines is intended to prohibit Restructuring, at any time during the term of the applicable Benefit Assessment, through the [C-PACE Program](#).

Section 6. Billing and Collection

Benefit Assessment Liens are billed in the same manner as real property taxes. As such, any payment schedule associated with any Benefit Assessment Liens will follow the billing cycle and due dates for real property taxes in the applicable Participating Municipality. Billing and collection of recorded Benefit Assessment Liens are conducted in accordance with the applicable Participation Agreement, as may be amended. ~~In the event that~~If such Participation Agreement provides for Green Bank to conduct the billing and collection of Benefit Assessment Liens in such Participating Municipality then Green Bank will conduct such billing and collection in accordance with Appendix M.

Article IV. TECHNICAL STANDARDS OVERVIEW

~~The Green Bank requires a third-party review of the proposed project to demonstrate that the SIR requirement has been met.~~

The following provides a summary of the technical review process. Please refer to the Technical Standards (Appendix D) for a full description of audit requirements, technical review methodology and standards, and eligible and ineligible measures. Technical review may be completed by the Green Bank's selected Technical Administrator or [an Approved](#) Technical Reviewer, in accordance with the Technical Standards. As an alternative to this process, the Green Bank will also accept Investor Confidence Project-certified Investor Ready Energy Efficiency Projects ([as defined by the Investor Confidence Project, see <http://www.eepformance.org>](#)) that demonstrate the SIR is greater than one. Additionally, Green Bank may, in its sole discretion, perform technical review for projects which include third party-owned renewable energy system(s), as more particularly described in Appendix L.

Section 1. Defining a Scope of Work

Benefited Property Owners should work with a qualified energy auditor and/or contractor with demonstrated experience to define a scope of work for their proposed project. This scope can range from installation of a single Energy Improvement, such as a new high efficiency boiler or a renewable energy system, to a whole building energy upgrade involving multiple, interactive Energy Improvements. A general list of eligible Energy Improvements and their typical energy saving characteristics can be found in the Technical Standards. The scope of work for the proposed project ~~must be~~ prepared and submitted by a Qualified Contractor or Registered Contractor. Projects require the applicant to conduct an energy audit or renewable energy feasibility study. For all projects involving the installation of Energy Improvements, depending on project type, size and complexity, the energy audit may range from a simple walkthrough of the building to an investment grade audit.²¹ The Qualified Contractor or Registered Contractor will determine the minimum required energy audit level consistent with the Technical Standards (Appendix D). The audit should identify the building's representative baseline energy use, [\(except for in the case of zero-emission vehicle refueling\)](#), identify and recommend Energy Improvements, estimate the useful life of each Energy Improvement, determine total project capital cost and the projected energy savings that can be confidently achieved, [and](#) evaluate key financial metrics, ~~and provide an energy savings equipment commissioning plan.~~ All projects involving a renewable energy system are required to complete a feasibility study.²² Green Bank recommends that any feasible study follow the guidelines set forth in Technical Standards (Appendix D).

Section 2. Standard SIR Technical Review

~~The~~

~~. For projects with an SIR requirement, the~~ Technical Administrator ~~and/or~~ Technical Reviewer will conduct a technical review, the purpose of which is to validate the reasonableness of project costs and energy savings projections. The Technical Administrator ~~and/or~~ Technical Reviewer will also confirm the projected SIR of the project is greater than one.

¹ [Connecticut utilities may provide what can be considered an ASHRAE Level I audit at no cost to applicants. The Green Bank can provide applicants referrals to qualified energy auditors to do higher level audits, the costs of which may be included in C-PACE financing.](#)

~~²Connecticut utilities may provide what can be considered an ASHRAE Level I audit at no cost to applicants. The Green Bank can provide applicants referrals to qualified energy auditors to do higher level audits, the costs of which may be included in C-PACE financing.~~

In addition, the methodology for tracking energy savings over an agreed upon term will be reviewed, thereby verifying for project stakeholders the extent to which projected energy savings are being achieved in an ongoing fashion.

Technical Review consists of three tasks:

- ~~A.~~ A.—Verify that the building’s baseline energy consumption is representative and reasonable, e.g., weather normalized ~~B.~~ B.
- ~~A.~~ B. Validate the reasonableness of projected energy savings; and
- ~~C.~~ C.—Confirm that an adequate commissioning plan exists.

The first two tasks are necessary to determine the SIR on the project and verify that it is greater than one. The third task ensures a property owner and the contractor have planned to confirm the correct installation and operational performance of the installed measures.

The Green Bank has developed a methodology for this technical review process, which relies upon two established industry protocols:

- A. **Baseline Energy Use:** ASTM E2797-15, Building Energy Performance Assessment (BEPA) Standard directed at data collection and baseline calculations for the energy audit; B.
- B. **Energy Improvement & Energy Savings:** ASHRAE Level I, Level II and Level III Energy Audit Guidelines; C.

The Technical Administrator or a Technical Reviewer will qualify the proposed Energy Improvement(s) and validate the projected energy savings are consistent with these protocols and, in conjunction with the applicant, will confirm a baseline financing scenario that meets the SIR criteria.

Section 3. Commissioning; Measurement and Verification

~~In order to~~

To verify that the project was installed according to the evaluated scope, ~~all project applications~~ projects are required to include a commissioning plan ~~and subsequent report.~~ A report commissioning plan by a Qualified Contractor, Registered Contractor, Technical Reviewer, or the Technical Administrator ~~that confirms~~ can confirm the measures were properly installed and that the project is operating as intended ~~must be submitted to the Green Bank once project construction is complete.~~

Additionally, ~~in order~~ to (i) evaluate the energy savings effectiveness of the measures after they have been installed, and (ii) to collect energy consumption and/or clean energy production data, property owners are encouraged to ~~work~~ with their contractor(s) to implement an adequate measurement and verification plan. The International Performance Measurement and Verification Protocol (IPMVP) provides guidance for measurement and verification of the energy savings, for additional information see the Technical Standards.

The Green Bank may elect to facilitate M&V for projects submitted to the Green Bank for financing, and may elect to offer the same services to TPCP third-party financed projects, at Green Bank’s discretion ~~and subject to additional costs/fees.~~ M&V activities may be financed as an Associated Cost of any Qualifying Project.

Section 4. Alternative to Standard SIR Technical Review Process

As an alternative to the Standard SIR Technical Review process (described in Section 2 and the Technical Standards), Green Bank will also consider projects ~~which~~that meet one of the following requirements as having met the technical review requirement of this Article:

- A. ~~A.~~—Projects ~~which~~that demonstrate a receipt of an Investor Ready Energy Efficiency certification from the Investor Confidence Project (“ICP”) and provide a letter from the ICP Quality Assurance Provider stating that the ~~SIR for the project is greater than one; or~~
~~SIR for the project is greater than one; or~~
- ~~B.~~—Certain projects which include third party-owned renewable energy system(s), reviewed, and approved by
- B. Green Bank, as more particularly described in Appendix L.

Section 5. —New Construction, Repositioning, and Gut Rehabilitation

Given the lack of a pre-improvement energy baseline against which to measure energy savings and the difficulty of isolating and assigning portions of new construction, repositioning, and gut rehabilitation project costs to ~~particulars~~specific Energy Improvements, the Standard SIR Technical Review process (described in Section 2 and the Technical Standards) is not applicable. ~~For new construction, repositioning or gut rehabilitation Qualifying Projects, an~~ alternate methodology will apply ~~for determining~~. ~~For these Qualifying Projects, the amount of~~ allowable C-PACE financing ~~is~~ based ~~upon~~on the ~~design~~ level of energy performance, ~~above exceeding~~ the applicable building energy code, ~~the Qualifying Property is designed to reach, as set forth in~~. See Appendix N ~~attached hereto~~.

The Green Bank’s Technical Administrator will evaluate the base line and design levels of energy modeling submitted by Qualified Projects and determine the percentage by which the design exceeds the base line. The Green Bank will determine the Total Eligible Construction Costs (TECC) and identify the total C-PACE funding available. See Appendix F for costs and details.

Section 6. Technical Review Auditing

Green Bank may select and retain a Technical Review Auditor or Technical Review Auditors to conduct periodic reviews of the technical review work performed by any Technical Reviewer, the Technical Administrator, or the Green Bank to evaluate compliance with the Program Guidelines and Technical Standards.

Article V. C-PACE OPEN MARKET AND ELIGIBILITY CRITERIA FOR C-PACE CAPITAL

PROVIDERS

Section 1. Concept of 'Open Market'

Connecticut maintains an "open market" approach to its C-PACE program, encouraging capital providers to be the primary ~~financier~~financiers of Qualifying Projects and supporting Benefited Property Owners who wish to source their own capital provider. For capital providers wishing to directly offer C-PACE financing, thereby becoming an "Approved ~~Third-Party~~ Capital Provider" or "~~ATPCP~~ACP", the Green Bank has created terms and conditions, attached hereto as Appendix F (the "Third-Party Capital Provider Terms and Conditions"), which outline the requirements and process for ~~Third-Party~~Approved Capital Provider to directly offer C-PACE financing to Benefited Property Owners and interact with Green Bank, as the program administrator.

Additionally, the Green Bank currently maintains dedicated capital to finance C-PACE projects. Benefited Property Owners looking to finance any Qualifying Project with Green Bank sourced capital may apply directly to Green Bank and follow the process outlined in Appendix F. ~~From time to time and through the RFP process, the Green Bank may "sell-down" portfolios of its C-PACE transactions to Qualifying Capital Providers (s) or partner with Qualifying Capital Providers for the purpose of originating transactions, which Qualifying Capital Providers desire to be the secondary or co-financiers of these assessments. The "sell-down" process replenishes or leverages the Green Bank's capital, enabling a sustainable source of funding for C-PACE projects.~~

The 'open market' program offers multiple financing options to Benefited Property Owners, enabling the Green Bank to achieve its mission of making financing accessible and affordable.

Section 2. Qualified Capital Provider

~~Any capital provider or other entity interested in purchasing C-PACE transactions from the Green Bank or offering C-PACE financing directly to borrowers must become a qualified Capital Provider through the C-PACE Program. The process for becoming a "Qualified Capital Provider" is as follows:~~

- ~~1. The interested capital provider must respond to the open CGB Request for Qualifications from Interested Capital Providers.~~
- ~~2. Green Bank shall review the submission and may approve the capital provider. Upon approval, the capital provider will be considered a "Qualified Capital Provider". Qualified Capital Providers are listed on Green Bank's C-PACE website and receive information from the Green Bank regarding financing opportunities as well as pertinent information about C-PACE. Qualified Capital Providers wishing to directly offer C-PACE financing must acknowledge and agree to the Third-Party Capital Provider Terms and Conditions.~~

~~Section 3.~~ C-PACE Approved Third-Party Capital Providers ONLY Qualified

~~A Capital Provider which anticipate directly offering Provider must be approved by the C-PACE Program to offer financing to Benefited Property Owners directly to building owners in Connecticut need to acknowledge and agree to the Third Party Capital Provider Terms and Conditions. A Request for Qualifications (RFQ) can be found at <https://www.cpace.com/Capital-Provider/Get-Started>. The Third Party Capital Provider Terms and Conditions outline the requirements and process for Third Party Capital~~

~~Provider to directly offer C-PACE financing to Benefited Property Owners and interact with the Green Bank, as the program administrator. In summary, the process for project origination, funding, and administration is as follows. Please review Appendix F, Third-Party Capital Provider Term Sheet for further details.~~

~~A.~~

The ~~ATPCPACP~~ or Benefited Property Owners may submit a completed C-PACE application and all associated documents necessary to demonstrate any project's compliance with the Program Guidelines and any other applicable requirements set forth in the Third-Party Capital Provider Terms and Conditions.

~~B.~~ Green Bank shall review such documents for compliance with the Program Guidelines and Third-Party Capital Provider Terms and Conditions, and, in its sole discretion, provide its approval of the Qualifying Project (thereby becoming an "Approved Project").

~~C.~~ The ~~ATPCPACP~~ may then enter into a Financing Agreement with Benefited Property Owner for such Approved Project (thereby becoming a "Closed Project").

~~D.~~ Concurrently or shortly thereafter, the ~~ATPCPACP~~ shall enter into an Administration Agreement with the Green Bank for such Closed Project.

~~E.~~ Green Bank will facilitate the filing and assignment to the ~~ATPCPACP~~ of a Benefit Assessment Lien, pursuant

~~E.~~ to the Administration Agreement.

~~F.~~ Green Bank will work with the ~~ATPCPACP~~ to collect any payments received pursuant the Benefit Assessment Lien and remit such payments to the ~~ATPCPACP~~, pursuant to the

~~F.~~ Administration Agreement.

The ~~ATPCPACP~~ shall maintain its own financial underwriting criteria and financing terms and conditions for a C-PACE transaction, subject to the requirements set forth in the Program Guidelines.

Article VI. DEFINED TERMS

"Approved ~~Third Party Capital Provider~~" or "ATPCPACP" shall mean a Third-party Capital Provider, ~~which that~~ (1) has been approved by Green Bank as a **Qualifying Capital Provider**, ~~(2) has acknowledged (and agreed to Third-Party Capital Provider Terms and Conditions, and (3)(2)~~ is in good standing with the Green Bank.

"Associated Cost" shall have the meaning ascribed to it in Article III Section 3(B).

"Benefit Assessment" shall mean an assessment authorized by the C-PACE Legislation. In an event of a conflict between this definition and that which is ascribed in the C-PACE Legislation, the C-PACE Legislation shall govern.

"Benefit Assessment Lien" shall mean a lien which evidences a Benefit Assessment and is recorded by a Participating Municipality on the land records against a Qualifying Property at Green Bank's direction pursuant to the Participation Agreement. The form of such Benefit Assessment Lien is attached hereto as Appendix K, as may be modified or amended from time to time by Green Bank, in its sole discretion.

"Benefited Property Owner" shall mean an owner of Qualifying Commercial Real Property who desires to install Energy Improvements and provides free and willing consent to the Benefit Assessment against the Qualifying Commercial Real Property. In an event of a conflict between this definition and that which is ascribed in the C-PACE Legislation, the C-PACE Legislation shall govern.

"C-PACE" shall have the meaning ascribed to it in Article I.

"C-PACE Legislation" shall mean Section 16a-40g of the Connecticut General Statutes, as may be amended, attached hereto as Appendix A.

"Commercial or Industrial Property" shall mean any real property other than a Residential Dwelling containing less than five dwelling units. In an event of a conflict between this definition and that which is set forth in the C-PACE Legislation, the C-PACE Legislation shall govern.

"Disclosure of Risk Form" shall mean the disclosure of risk form associated with C-PACE, attached hereto as Appendix H, as may be modified or amended from time to time by Green Bank, in its sole discretion.

"District Heating and Cooling System" shall mean a local system consisting of a pipeline or network providing hot water, chilled water or steam from one or more sources to multiple buildings. In an event of a conflict between this definition and that which is ascribed in the C-PACE Legislation, the C-PACE Legislation shall govern.

"Energy Engineer" shall mean a professional or entity who/which meets one of the following: (1) holds a Certified Energy Manager or Certified Energy Auditor accreditation, (2) is a Professional Engineer with demonstrated relevant energy experience, or (3) a contractor with relevant demonstrated experience as determined by the Technical Administrator.

"Energy Improvement" shall mean (A) participation in a District Heating and Cooling System by Qualifying Commercial Real Property, (B) participation in a microgrid, as defined in Section 16-243y of the Connecticut

General Statutes, including any related infrastructure for such microgrid, by Qualifying Commercial Real Property, provided such microgrid and any related infrastructure incorporate clean energy, as defined in Section

~~-12-~~

16-245n of the Connecticut General Statutes, (C) any improvement, renovation or retrofitting of Qualifying Commercial Real Property to reduce energy consumption or improve energy efficiency, (D) installation of a renewable energy system to service qualifying commercial real property, or (E) installation of a solar thermal or geothermal system to service qualifying commercial real property, or (F) installation of refueling infrastructure for zero-emission vehicles to a Qualifying Commercial Real Property, or (G) installation of resilience improvements to a Qualifying Commercial Real Property, provided such renovation, retrofit or installation described in subparagraph (C), ~~(D) or (E)~~ to (G), inclusive, is permanently fixed to such Qualifying Commercial Real Property. In an event of a conflict between this definition and that which is ascribed in the C-PACE Legislation, the C-PACE Legislation shall govern.

“EUL” shall have the meaning ascribed to it in Article III Section 3(E).

“Financed Amount” means the combined costs of the Energy Improvement(s) and Associated Cost(s) which has been or will be financed through C-PACE for any Qualifying Project.

“Financing Agreement” shall mean a written agreement between a Benefited Property Owner and either ~~a Third-Party~~ an Approved Capital Provider or the Green Bank, or any of its subsidiaries, for the financing, leasing, or purchasing power from ~~of Energy Improvement(s), a Qualifying Project.~~ Such financing agreement shall contain, among other things, a provision which allows the Benefited Property Owner to rescind the agreement not later than three business days from the date of such agreement.

“Green Bank” shall have the meaning ascribed to it in Article I.

“Participating Municipality” shall mean a municipality, as defined in Section 7-369 of the Connecticut General Statutes, that has entered into a Participation Agreement. In an event of a conflict between this definition and that which is ascribed in the C-PACE Legislation, the C-PACE Legislation shall govern.

“Participation Agreement” shall mean a written agreement between Green Bank and a Participating Municipality, as approved by its legislative body, pursuant to which the municipality has agreed to assess and assign, Benefit Assessments to Green Bank in return for Energy Improvements for Benefited Property Owners within such municipality and costs reasonably incurred in performing such duties. The template participation agreement is attached hereto as Appendix B, as may be modified or amended from time to time by Green Bank, in its sole discretion.

“Professional Engineer” shall mean an individual, or company which employs such individual, who is licensed as a professional engineer and in good standing with the relevant licensing authorities in the State of Connecticut.

“Program Guidelines” shall have the meaning ascribed to it in Article I.

“Projected Associated Savings” shall mean non-energy savings ~~which~~ that have a close nexus to the Energy Improvement(s) ~~which~~ that are part of a Project. Examples include, but are not limited to, federal tax credits, depreciation, and revenues from the sale of environmental attributes. Green Bank, in its sole discretion, may determine which types of savings may be considered to fall under this definition.

“Projected Energy Savings” shall mean the estimated energy savings, calculated in accordance with the Technical Standards, from any Energy Improvement(s) over the EUL of such improvements.

“Projected Financing Cost” shall mean the total projected debt service associated with the Financed Amount for a Qualifying Project including, but not limited to, all principal, interest, and any fees over the term of the financing. This does not include any potential [capitalized interest during constructions](#), late fees or penalties.

“Projected Total Cost Savings” shall mean the combined value of the Projected Energy Savings and the Projected Associated Savings for any Qualifying Project.

“Qualified Contractor” shall mean an individual or entity who/~~which~~[that](#) meets one of the following: (1) holds a Certified Energy Manager or Certified Energy Auditor accreditation, (2) is a Professional Engineer with demonstrated relevant energy experience, or (3) a contractor with relevant demonstrated experience.

~~“Qualifying Capital Provider” or “QCP” shall have the meaning ascribed to it in Article V Section 2.~~

“Qualifying Commercial Real Property” shall mean any Commercial or Industrial Property, regardless of ownership, that meets the qualifications established for the C-PACE program. In an event of a conflict between this definition and that which is provided in the C-PACE Legislation shall govern.

“Qualifying Project” shall mean an energy improvement project which meets all the requirements set forth in Article III Section 3.

“Qualifying Property” shall mean a Qualifying Commercial Real Property which meets all the requirements set forth in Article III Section 2.

“Refinancing” means, in the context of any existing Financing Agreement, ~~a~~ Benefited Property Owner entering into a new Financing Agreement with any C-PACE ~~capital provider~~[ACP](#) other than the capital provider (or its successors or assigns) who is a party to the applicable existing Financing Agreement for the purpose of repaying or refinancing the existing Financing Agreement and Benefit Assessment, including but not limited to, filing of a new Benefit Assessment associated with the same Qualifying Project.

“Registered Contractor” shall mean a contractor who has registered with Green Bank, via the contractor registration process (<https://www.cpace.com/Contractor/Get-Started/Contractor-Sign-Up>), and remains in good standing with Green Bank.

“Residential Dwelling” shall mean a structure used or occupied, or intended to be used or occupied, in whole or in part, as the home or residence of one or more persons. Residential dwelling shall not include any structure which is:

- A. ~~1-~~A home or residence which is part of public or private institution, if such residence is incidental to provision of medical, geriatric, educational, counseling, religious, or similar services;~~2~~
- B. ~~2-~~A campground, hotel, motel, extended stay facility, vacation residential facility, boardinghouse, fraternal or social organization, or similar lodgings;~~2~~ and
- C. 3. Primarily used for business, commercial, charitable, not-for-profit, or agricultural purposes.

“Restructuring” means, in the context of any existing Financing Agreement, a Benefited Property Owner

entering into a new Financing Agreement or any modification of the existing Financing Agreement with the C-PACE ~~capital provider~~ ACP (or its successors or assigns) who is a party to the applicable existing Financing Agreement for the purpose of restructuring, amending, restating, or otherwise modifying the existing Financing Agreement and Benefit Assessment, including but not limited to, releasing the existing Benefit Assessment and entering into a new Financing Agreement and filing of a new Benefit Assessment associated with the same Qualifying Project, subject to all other applicable program requirements.

“SIR” shall have the meaning ascribed to it in Article III Section 3(G).

“**Technical Administrator**” shall mean the entity, selected by Green Bank pursuant to an RFP process, which may conduct technical review as well as provide Green Bank with guidance and consultation in the development and implementation of the Technical Standards and Program Guidelines. The Technical Administrator may also work with contractors to help them develop a building’s baseline energy consumption and energy savings estimates for projects.

“**Technical Reviewer**” shall mean an entity which has been approved by and in good standing with Green Bank in accordance with the standard set forth in Appendix J. Technical reviewers may be proposed to Green Bank for approval by ~~Third Party Capital Providers~~ ACP. For a list of Technical Reviewers ~~which that~~ are currently approved and in good standing with Green Bank, please visit www.cpace.com/technicalreviewers ~~www.cpace.com/technicalreviewers~~.

“**Technical Review Auditor**” shall mean an entity or entities, selected by Green Bank pursuant to an RFP process, which may conduct periodic reviews of the technical review work performed by any Technical Reviewer, the Technical Administrator or the Green Bank to evaluate compliance with the Program Guidelines and Technical Standards.

“**Technical Standards**” shall mean the complete description of energy audit requirements, technical review methodology and standards, and eligible and ineligible measures for C-PACE, attached hereto as Appendix D, as may be amended or modified from time to time by Green Bank in its sole discretion.

~~Third Party~~

“**Approved Capital Provider**” means an entity, other than the Green Bank or any of its subsidiaries, that enters into one or more Financing Agreement(s). In an event of a conflict between this definition and that which is ascribed in the C-PACE Legislation, the C-PACE Legislation shall govern.

~~15~~–“**Zero-emission Vehicle Refueling Infrastructure**” means infrastructure used to refuel Zero-emission Vehicles.

“**Zero-emission Vehicle**” shall mean a battery electric vehicle, hybrid electric vehicle, range-extended electric vehicle and any vehicle that is certified by the executive officer of the California Air Resources Board to produce zero emissions of any criteria pollutant under all operational modes and conditions. In an event of a conflict between this definition and that which is ascribed in the C-PACE Legislation, the C-PACE Legislation shall govern.

Memo

To: Connecticut Green Bank Board of Directors
From: Emily Basham, Senior Manager; Bryan Garcia, President and CEO
CC: Bert Hunter, EVP and CIO; Eric Shrago, Managing Director of Operations
Date: July 15, 2022
Re: Grant Agreement with Sustainable CT Program – Community Engagement

Background & Purpose

Per the Comprehensive Plan of the Connecticut Green Bank (“Green Bank”), this memo seeks approval from the Green Bank Board of Directors (the “Board”) for it to enter into a grant agreement with Sustainable CT.¹ This grant enables the continued support of Sustainable CT to engage communities throughout the state to improve their sustainability, explore environmental infrastructure needs, and to drive participation in incentive and financing programs administered by the Green Bank and promoted through Sustainable CT.

As highlighted in the Green Bank’s Comprehensive Plan for Fiscal Year 2020 & Beyond (and the draft Comprehensive Plan for Fiscal Year 2023) and supported by an initial grant in fiscal year 2019, and continued through 2022, Sustainable CT and the Green Bank are working together to provide individuals, families, and businesses with investment opportunities to make an impact on sustainability in their communities. The partnership between Sustainable CT and the Green Bank is focused on the following key priorities:

- Driving investment in projects in our communities, with a goal to accelerate over time;
- Community-level engagement, from project origination through financing, that is inclusive, diverse, and “knitted”;
- Creating a structure that harnesses all types of capital for impact – from donations (e.g., through grant-providing platforms such as Patronicity,² administered by Sustainable CT) to investment (e.g., through approaches such as green bonds, issued by the Green Bank);
- Developing a business model that covers the cost of the program; and

¹ It should be noted that the staff of the Connecticut Green Bank were actively involved in assisting and setting up Sustainable CT since 2016 and its subsequent formation as a 501(c)3 nonprofit organization in 2019. Bryan Garcia serves on its Board of Directors as its Co-Chair and many members of the Green Bank staff provide support to the organization’s efforts.

² Patronicity is a civic crowdfunding platform to support people doing great things in their community, from large initiatives like creating a green alley to small ones, like funding a neighborhood block party

- Creating a measurable impact, both qualitative and quantitative.

Since 2019, the partnership has been successful in meeting its objectives to support Sustainable CT's capabilities to engage communities throughout the state and work with the Green Bank to provide citizens, families, and businesses with investment opportunities. This engagement has laid a rich foundation of collaboration between the organizations to build awareness of and engagement in Green Bank programs. As the Green Bank expands our scope beyond clean energy to include environmental infrastructure, municipalities are a key stakeholder in identifying priority areas for Green Bank's program development. With the continuation of grant support, Sustainable CT can leverage their strong relationship with towns to get input on Green Bank strategic planning and program build-out for environmental infrastructure.

The Green Bank's new goal of no less than 40% of investment and benefits be directed to vulnerable communities by 2025 captures and furthers our longstanding efforts to bring clean energy and environmental infrastructure to more communities in coordination with partners like Sustainable CT. Sustainable CT provides significant support and has built higher engagement in distressed communities than communities statewide, providing an excellent opportunity to funnel new climate actions and support tools into these communities. With new Green Bank programs and goals, future grant work can focus on targeted community engagement and action alignment needed to support new and existing Green Bank programs, particularly battery storage and environmental infrastructure.

The Green Bank's FY2023 Budget, Marketing Expenditures, allocates \$125,000 in funding for the purposes of supporting Sustainable CT with its community engagement efforts, while enabling the Green Bank to access potential end-use customers to achieve its incentive and financing program targets for FY 2023. Presented for consideration by the Board is a grant to allocate the \$125,000 to Sustainable CT to further increase the green bank's impact, more specifically, through:

- **Awareness-** as more communities come into the Sustainable CT program, continuing to build awareness of the Green Bank from stakeholders across the state through increased community engagement on our existing incentive and financing (e.g., Solar MAP, C-PACE, Energy Storage Solutions) programs and services;
- **Engagement-** engaging Sustainable CT's network of partners, local municipalities, businesses, and their citizens with incentive and financing programs that will help them achieve their sustainability goals including Sustainable CT's online crowdfunding campaign and its Sustainable CT Fellows program; and
- **Action-** moving the local municipalities, businesses, and citizens beyond awareness and engagement to action, leading to the purchase and installation of more clean energy and environmental infrastructure in their communities through incentive and financing program support from the Green Bank.

This grant agreement will leverage the existing partnership with Sustainable CT to guide inclusive program development and participation. The partnership connects the Green Bank with local advocates to help increase the pipeline of project leads for our incentive and financing programs (e.g., Green Bank Solar PPA, C-PACE, etc.) – creating more opportunities for local projects with municipalities, nonprofits, businesses, and families through Sustainable CT and its various citizen engagement approaches.

Increasing Green Bank's Impact in Connecticut through Sustainable CT

Since 2018 Sustainable CT has been the primary platform supporting Connecticut's 169 cities and towns become more sustainable through a voluntary certification program. Currently, 129 cities and towns are registered and 66 of them certified. This program includes numerous actions where the Green Bank can increase its impact through its incentive and financing programs and services, including participating and promoting the C-PACE program, installing solar on municipal buildings through the Green Bank Solar PPA, streamlining solar permitting, supporting zero emission vehicle deployment, increasing renewable energy use in municipal buildings, and implementing community energy campaigns. Municipalities that take advantage of all the Green Bank's incentive and financing program can earn up to 120 sustainability points, more than halfway to the 200 points needed for Bronze certification.

Previous grant activity focused on increasing the Green Bank's impact in communities by "offering up" its line of incentive and financing programs to help municipalities implement Sustainable CT's sustainability actions. Funding was purposed for various programmatic purposes, including matching grant dollars for Sustainable CT's Community Match Fund, an online crowdfunding platform where citizen leaders access financial resources they need for local sustainability projects, and matching grant dollars for municipal outreach through the Sustainable CT Fellows program. The Community Match Fund enabled the Green Bank's support to match various projects outside of our programs but aligned with our mission of democratizing investment in sustainability projects, including, but not limited to:

- [Climate Education and Action Project](#): New Haven Leon Sister City Project is raising funds to support expanding youth-led climate and health education work in local high schools.
- [A Link to Youth is a Link to the Future](#): New Haven Coalition for Active Transportation create a bike education program for middle school students, building a new generation of safe cyclists
- [RGB Mural for CRT Women's Empowerment Center in Hartford](#): The Community Renewal Team the legacy of Justice Ruth Bader Ginsburg and other women leaders with powerful mural for Women's Empowerment Center in downtown Hartford.

Through the Sustainable Fellows program of Sustainable CT, students from colleges and universities in Connecticut work directly with community leaders and volunteers to create much-needed capacity at the local level. Since 2018, the Fellows Program has funded 66 students, each receiving \$5,400 to provide 25,000+ hours of direct support full-time to local communities. Green Bank staff participated in the onboarding process to train three cohorts of Fellows on Green Bank resources to better support municipalities pursuing our programs. Continued sponsorship of the Fellows Program will further:

- Enhance commitment to sustainability by supporting communities where employees and customers live, work, and play
- Increase local capacity to make progress: The 2018 and 2019 Fellows produced open space maps and inventories, developed housing needs assessments, and designed and created buy-local campaigns, among many other projects
- Support the development of Connecticut's future workforce and accelerate Connecticut's low-carbon economy
- Create connections with community leaders across Connecticut
- Build partnership with Sustainable CT

To date, Sustainable CT has expanded their certification actions to further align with Green Bank programs, developed online resources to increase awareness of the partnership, and facilitated municipal outreach to participating municipalities and stakeholders. Sustainable CT has become a significant outreach channel for the Green Bank's community engagement efforts and underpins the outreach strategy for the Solar Marketplace Assistance Program (Solar MAP) for Towns & Cities providing project development support for the Green Bank PPA, as well as the C-PACE and Solar for All programs. Through these efforts the partnership met the goals outlined in the previous grant agreement, including:

- **Solar PPA** – The team exceeded by far the goal to engage 20 Sustainable CT communities for the Green Bank's Solar PPA product that will create no less than 50 leads resulting in at least 30% of leads becoming closed PPA projects. The Solar MAP program closed 11 PPA projects in 6 Sustainable CT communities.
- **C-PACE** – The team met the goal to partner with no less than 3 Sustainable CT communities that create at least 10 leads. We have worked with 12 towns to generate 20 leads in the C-PACE program in Sustainable CT communities.
- **Smart-E and Battery Storage** – this work is still being developed by the Green Bank and will carry forward through this fiscal year.

Overall, grant support has been successful at increasing the impact of the green bank model by supporting our marketing efforts and increasing awareness of and enrollment in Green Bank programs through the support and promotion of Sustainable CT. Continued support would allow the partnership to capitalize on the opportunities currently being harnessed and accelerate activity in our programs.

Grant Allocation

In order to further engage communities to improve sustainability and focus investment opportunities on participation in Green Bank incentive and financing programs, the grant funds will be used per the following:

1. \$25,000 matching grant for Sustainable CT Fellows Program
2. \$20,000 matching grants for projects submitted through the Patronicity online crowdfunding platform
3. \$80,000 organizational support to Sustainable CT

Desired Outcomes

- **Awareness**- more citizen engagement and cities and towns becoming registered and certified by Sustainable CT as sustainable communities given their progress on implementing clean energy projects and recognizing the benefits to them for doing so; and
- **Community-level Engagement and Impact**- significant community-level engagement leads to activity in the Green Bank's incentive and financing programs and critical to garnering feedback needed to shape future programs and products. To deliver this impact, in partnership with Sustainable CT, the Green Bank will:
 - **Solar PPA** – engage all target towns for the program to achieve the program goals;
 - **C-PACE** – engage no less than 3 Sustainable CT communities that generate no less than 10 leads for the C-PACE program in Sustainable CT communities;

- **Environmental Infrastructure**- develop a community-based engagement strategy that includes Sustainable CT as a mechanism to solicit municipal feedback in Green Bank’s planning strategy and program development; and
- **Battery Storage** – develop a community-based marketing strategy that includes Sustainable CT as a mechanism to increase the deployment of battery storage for residential and non-residential end-use customers, especially deployment in vulnerable communities to make them more resilient to the impacts of climate change.
- **Lessons Learned**- continuously sharing best practices and lessons learned with other municipalities and states in order for the Green Bank to transfer knowledge that increases and accelerates the uptake of clean energy through the adaptation and adoption of the green bank model and its line of incentive and financing programs.

Strategic Selection

Green Bank is pursuing this arrangement and approval from the Board on the basis of a Strategic Selection. The proposed impact investment satisfies all criteria of the Strategic Selection and Award process of Green Bank operating procedures, namely: (1) special capabilities, (2) uniqueness, (3) strategic importance, (4) multiphase project; follow-on investment, and (5) urgency and timeliness:

(1) Special Capabilities

Evolving in large part from the Connecticut Clean Energy Communities Program,³⁴ Sustainable CT is a 501(c)3 nonprofit organization focused on providing local cities and towns with the resources they need to achieve sustainability. It has demonstrated, exceptional experience and expertise in community engagement, and a strong platform to help the Green Bank achieve its objectives.

(2) Uniqueness

The highly successful engagement presents a unique opportunity to leverage the momentum and heightened awareness of Green Bank resources to further drive program activity through a highly visible community-based initiative across Connecticut.

(3) Strategic Importance

At the strategic retreat of the Green Bank in 2019⁵, it was determined that by creating a public awareness and engagement program in partnership with Sustainable CT, the Green Bank could enlist local citizens to take action on clean energy – deploy it, invest in it, and defend it (e.g., build citizen support for the Green Bank). The Green Bank was very active in the formation of Sustainable CT and currently serves as its co-chair. Sustainable CT will match \$45,000 of the Green Bank’s contribution (e.g., through foundation grants, citizen contributions, etc.) and its programs will have broad reach and deliver exceptional education value of strategic importance to the Green Bank.

(4) Multiphase; Follow-on Investment

³ Created in 2005 by the predecessor of the Connecticut Green Bank – the Connecticut Clean Energy Fund

⁴ “Climate Policy and Voluntary Market Initiatives: An Evaluation of the Connecticut Clean Energy Communities Program” by Matthew Kotchen as Working Paper 16117 of the National Bureau of Economic Research.

⁵ Connecticut Green Bank 2.0 – From 1 to 2 Orders of Magnitude ([click here](#))

Green Bank recognized the ability of Sustainable CT to drive sustainable action and investment in communities at its inception. Through early participation in Sustainable CT's working groups, Green Bank has integrated its programs and products into Sustainable CT's menu of coordinated, voluntary sustainability actions for municipalities. Green Bank looks to continue to integrate new programs and initiatives into the menu of actions. Under previously awarded grants, Sustainable CT has demonstrated its leadership in driving sustainable actions in communities while deepening the Green Bank's engagement with municipalities. The proposed grant builds on these connections and bolsters the human resources available to municipalities through the Sustainable CT Fellows program and operational support to provide the capacity needed to participate in Green Bank incentive and financing programs and achieve certification. As highlighted in the Green Bank's Comprehensive Plan for Fiscal Year 2020 & Beyond, Sustainable CT and the Green Bank are working together to provide individuals, families, and businesses with investment opportunities to make an impact on sustainability in their communities from grants through the Community Match Fund to bonds through the Green Liberty Bonds.

(5) Urgency and Timeliness

The previously awarded grant to Sustainable CT expired at the end of the Fiscal Year, while our engagement with Sustainable CT communities is still underway. It is important to renew our grant support in a timely fashion so that our partnership and the community engagement that our programs are relying on is uninterrupted.

Conclusion & Recommendation

Sustainable CT offers strategic importance for the Green Bank to increase its impact by applying the green bank model through its incentive and financing programs to help municipalities improve their sustainability and take action on clean energy. The proposed grant agreement is necessary to expand upon the existing partnership between Sustainable CT and the Green Bank. With Board approval, the partnership will engage communities to provide input on program development, drive investment in projects in our communities, support communities from project origination through financing, and create a measurable impact.

Staff recommend this grant agreement to the Board for approval.

Strategic Plan

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

Yes – the proposed grant agreement underpins the partnership between the Green Bank and Sustainable CT that is highlighted and specified in Green Bank's Comprehensive Plan for Fiscal Year 2020 & Beyond as well as the proposed Comprehensive Plan before the Board, and FY23 budget allocation of \$125,000.

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?

An additional 5 Green Bank Solar PPA projects (i.e., 863 kW and \$2.2 MM in investment) produce an average 69,000 MWh over the lifetime⁶ of the projects. A \$125,000 grant to Sustainable CT will generate nearly \$1.3MM of Green Bank investment through the Green Bank Solar PPA product.

Terms and Conditions

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

As a result of the expected increase in interest revenues from 5 additional Green Bank Solar PV projects, derived from approximately \$1.3 MM investment of Green Bank funds through the Green Bank Solar PPA (i.e., each project on average is a \$432,500 investment of which 60% of the capital is from the Green Bank)⁷ generating approximately \$85,000 in present value interest income per project (i.e., from \$110,000 in interest income over the life of the PPA), for a total of \$425,000 present value interest income for 5 projects, the costs of the grant as well as personnel and non-personnel related expenses will be covered 3 times over.

Capital Expended

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

The full \$125,000 grant amount is coming from earned revenues from the Green Bank's financing programs.

Risk

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

The maximum risk exposure is \$125,000 of Green Bank funds.

Financial Statements

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

When funds are paid:

\$125,000 Credit: Cash [Sustainable CT Grant – Marketing Expense]

Target Market

Who are the end-users of the engagement?

There are multiple end-users who will benefit from this engagement, including:

- Participating Sustainable CT Communities – those cities and towns that utilize the Green Bank's incentive and financing programs to reduce the burden of energy costs through the deployment of clean energy;
- Sustainable CT Fellows – Connecticut college and university students supporting Sustainable CT cities and towns across the state; and

⁶ Green Bank average PPA system size is 172.65 kW

⁷ Of the total investment of \$13.4 MM of investment on the Green Bank Solar PPA in FY 2019, \$8.1 MM was from the Green Bank.

- Citizens – local citizens who use the Patronicity platform to match contributions through an online citizen engagement platform in support of local sustainability projects in their communities.

Green Bank Role, Financial Assistance & Selection/Award Process

The Green Bank will award the grant.

Program Partners

Sustainable CT – see Exhibit C

Risks and Mitigation Strategies

The following is the key risk and mitigation strategy:

Loss of the Grant – the \$125,000 grant to Sustainable CT is intended to create new opportunities (i.e., new marketing channel) for the Green Bank to offer its incentive and financing programs. If there is not enough origination of transactions from the Green Bank’s programs (e.g., closed Solar PPA’s), then the likelihood of interest income paying for the grant over time is lessened. It should be noted that on average \$85,000 of present value of interest income (i.e., earned revenues) is generated from a solar PPA project through the Sustainable CT channel. In order to cover the \$125,000 grant, only 2 of the target 5 projects would be required to cover the cost of the grant. The mitigation strategy is to develop and track measurable performance targets to ensure that grant proceeds towards community-based marketing strategies are resulting in increased deal flow to the Green Bank to achieve the 5 project target.

Resolutions

WHEREAS, the Comprehensive Plan and FY 2023 budget identify Sustainable CT as a partner of the Connecticut Green Bank (“Green Bank”), including an allocation of \$125,000 from the FY 2023 Marketing budget;

WHEREAS, Connecticut Green Bank (“Green Bank”) staff has submitted to the Green Bank Board of Directors (the “Board”) a proposal for Green Bank to enter into a grant agreement with Sustainable CT for \$125,000 for programmatic purposes in order to increase our impact by applying the green bank model through Sustainable CT’s programs as explained in a memorandum to the Board dated July 15, 2022;

WHEREAS, Sustainable CT satisfies all criteria of the Strategic Selection and Award process of Green Bank operating procedures, namely: (1) special capabilities, (2) uniqueness, (3) strategic selection, (4) multiphase, follow-on investment and (5) urgency and timeliness;

WHEREAS, Green Bank staff recommends that the Board approve a grant between the Green Bank and Sustainable CT, generally in accordance with memorandum summarizing the grant to the Board in a memorandum dated July 15, 2022; and

WHEREAS, Green Bank would benefit from Sustainable CT’s public awareness and engagement program to increase participation in and development of Green Bank’s incentive and financing programs. Through the partnership, Green Bank and Sustainable CT are driving investment in projects in communities throughout the state.

NOW, therefore be it:

RESOLVED, that the Board approves Green Bank to enter into a Grant Agreement with Sustainable CT as a strategic selection;

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 Sustainable CT grant agreement 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: Emily Basham, Senior Manager, and Bryan Garcia, President & CEO



Memo

To: Connecticut Green Bank Board of Directors

From: Bryan Garcia, President and CEO; Mackey Dykes, VP of Financing Programs; Emily Basham, Senior Manager

Date: July 15, 2022

Re: Green Bank Solar Marketplace Assistance Program (Solar MAP)

Program History and Overview

Pursuant to public policy¹, the Connecticut Green Bank (Green Bank) has supported municipalities in their sustainability initiatives through various programs and partnerships since its inception. Through programs like “Lead by Example”, Solarize, and Solar for All, Green Bank has created longstanding relationships with municipalities and taken a leading role in sparking clean energy deployment initiatives in the state. The Green Bank Power Purchase Agreement (PPA) has financed over 60 solar projects on municipal sites that has helped Green Bank develop a deep understanding of the barriers to deploying clean energy for our towns. Because financing comes toward the end of the program development process, we have seen first-hand the challenges some towns face to get through the many project steps required to put together a financeable project. Many Connecticut municipalities, primarily smaller towns, have not shown an ability to get through this process, for varying reasons, and take advantage of the savings and clean energy opportunities offered by solar.

The Solar Marketplace Assistance Program (Program) was created to strengthen Connecticut’s communities, better direct Green Bank resources, and support underserved municipal and state agency partners access clean energy and energy savings. The Program provides municipal assistance (Solar MAP) and state agency assistance (Solar SAP).

Solar MAP provides turnkey support from start to finish to make it easier for towns to identify projects that will provide savings, to access necessary incentives and financing, and to add much-needed capacity to manage project implementation and construction. With no-cost technical assistance, towns receive a comprehensive analysis of their solar feasibility and consultation in determining their best path forward obligation-free. The program administers a competitive solicitation to bid the projects out to the market and select a construction partner. Towns that are ready to move forward are bundled into a single portfolio and included in that year’s solicitation. Aggregating all projects into a portfolio achieves economies of scale to drive down project costs and deliver better savings a town wouldn’t experience if they acted alone.

¹ CGS 16-245n “...stimulate demand for clean energy and deployment of clean energy sources that serve end use customers in the state...” (i.e., 16-245n(c)); and “...shall (i) develop separate programs to finance and otherwise support clean energy investment in residential, municipal, small business and larger commercial projects...” CGS 16-245n(d)(1)(B).

The program’s goal is to provide streamlined, comprehensive services to help reduce barriers for towns and aims to bring more projects to the market to grow our state’s clean energy economy. The new projects brought to the market are primarily in the undersubscribed small category of the Zero-Emission Renewable Energy Credit (ZREC) utility incentive program, which has been under-subscribed for all the years of Solar MAP’s existence. Many municipalities haven’t shown an ability to participate in the first 8 years of the ZREC program. In 2019, Green Bank created Solar MAP to support municipalities to take advantage of the ZREC program’s resources and opportunities offered by solar – see Table 1. The program comprises a minimal share of these incentives while opening up opportunities to market for installation work.

Table 1. Solar MAP Municipal Participation - Rounds 1 and 2

Municipality	# Projects	Population ²	Current Status	Small ZREC	Medium ZREC	Large ZREC
Branford	2	28,220	Construction	2		
Manchester	7	59,693	Construction	4	2	1
Mansfield	1	25,883	Construction	1		
Portland	1	9,371	Construction	1		
Round 1	11					
Avon	2	18,918	Contract Executed		2	
Darien	4	21,527	Contract pending	4		
Farmington	1	26,673	Contract pending	1		
Groton	2	38,445	Contract pending	1	1	
Kent	1	3,014	Contract Executed		1	
Redding	3	8,742	Contract pending	2	1	
Sharon	1	2,675	Contract pending		1	
Washington	1	3,644	Contract pending	1		
Windsor Locks	5	12,592	Contract pending	2	2	1
Round 2	20			19	10	2
Thompson	1	9,185	Site Feasibility			
Bristol	1	60,786	Site Feasibility			
Round 3	2					

Within Solar MAP, over 60% of projects are within the small ZREC program.

Stakeholder Feedback - Municipalities

Interviews with participating municipalities provided insightful feedback on the barriers that exist for municipalities and the efficacy of Solar MAP. Interviews were conducted with representatives from 6 municipalities with varying degrees of participation in the program ranging from towns who only completed the first phase of initial site feasibility to towns with projects constructed. Interviewees also represent towns from all three rounds of the program – see Table 2.

² <https://portal.ct.gov/DPH/Health-Information-Systems--Reporting/Population/Annual-Town-and-County-Population-for-Connecticut>

Table 2. Breakdown of Municipal Feedback on Solar MAP

Municipality	Solar MAP Round	Interviewee Type	Political Party of Mayor / Selectman	Program Status
Manchester	1	Town Managers Office, Facilities Dept	Mayor (D)	Project Construction
Branford	1	Selectman, Finance, Taskforce member	First Selectman (R)	Project Construction
Woodbridge	1	Administrative Officer	First Selectman (D)	Projects Terminated
Avon	2	Town Manager's Office, BOE Business Office	Town Manager (U)	Executed Contract
Southbury	2	Sustainability volunteer	First Selectman (R)	Feasibility
Bristol	3	Public Works	Mayor (D)	Feasibility

Town Barriers to Solar Projects:

- Town has very small staff with no capacity to take on project feasibility or procurement work.
- Town installed solar on two schools 4 years ago with an installation company that is no longer in business, leaving the town with limited recourse and support to address issues that arise. The process required a lot of time and involvement from town staff that is not sustainable.
- Town is familiar with developing RFPs to bid out project opportunities. The town finds it challenging to understand and evaluate RFP proposals and also finds it challenging to understand best overall value when using RFP services. The Solar MAP program helped in managing the RFP process and leveraging Green Bank's expertise to deliver project savings.
- Getting buy-in from various town Boards can be very challenging even when projects are proposed internally. Having a partner like the Green Bank helps the projects avoid unnecessary scrutiny and be reviewed for their technical and economic benefits.
- Working with private companies requires a trust-building phase that can take a lot of time or not get built at all.

Addressing Barriers with Solar MAP:

- It was very helpful to have a turnkey program to help get started, provide ongoing support, identify the best opportunities, reduce/avoid need for expertise and time required from staff, and manage participation from external entities/stakeholders.
- The all-in-one feature of the program and Green Bank's role as a third-party guide and system owner make it much easier to do a solar project. Using other pathways required too many people internally and externally to implement.
- The comprehensive support offered in the program allowed the town to confidently identify and use existing facilities for green energy and savings. These efforts would command a huge amount of internal resources from staff that are not knowledgeable of solar PV.
- Solar MAP provides a longer timeline for local government to participate and an understanding of town operations and relationships between town authorizing entities.
- The comprehensive feasibility work on all town properties provided valuable information about the solar status for each building without the obligation or cost to move forward.

Role of the Green Bank:

- Green Bank's background and leadership in green energy gave the town confidence to sign a 20-year solar agreement with an entity that will have support and exist in the future.

- Green Bank is highly respected and has similar structure and authority as towns and an obligation to be accountable to the public.
- The town values the unbiased look at properties for solar opportunities.
- As an agency of government, Green Bank understands the priorities of town governments. It's important that Green Bank isn't going anywhere and their financial commitments to the project are backed by the state.

Enabling projects that wouldn't happen otherwise:

- The town does not think the projects would have moved forward without Solar MAP. The Board would not have been open to proposals from another entity.
- We would not have explored solar on our town buildings or gotten as far as we did without Solar MAP primarily because of staff constraints.
- We feel more prepared from participating in MAP, but we need an independent party with no vested interest to partner with to get necessary stakeholders to be receptive to considering a project.

Stakeholder Feedback - Contractors

The Green Bank is partnering with three solar contractors to install the municipal portfolio and three contractors to install the state agency portfolio. These contractors were selected through competitive RFP's. Solar MAP is working to bring more projects to the market and giving Connecticut installers project opportunities they wouldn't have otherwise. While many of the Green Bank's contractor partners see the value of the program's mission, we have received feedback from a subset of contractors that are concerned with the scope of the program and role of the Green Bank – so much so, that they raised the issue with the leadership of the Energy & Technology Committee of the Connecticut General Assembly.

The Green Bank has met with individuals representing these companies and understand their perspective to be centered around the following items:

- Absence of clarity on the program's mission and target audience
- Green Bank's role developing opportunities for municipalities can be competing with private companies
- Lack of transparency with the Program's participation in utility incentives and RFP results
- Disagreement over participating towns that have a history working with private companies
- Concern with the potential for the Program to expand its scope or into other sectors

Green Bank values its relationship with the state's solar contractor industry and their participation in all of the organization's programs. Green Bank agrees it is important to define the goals of the Program and limit the target audience to where there are gaps. Program feedback is being seriously considered and prompted the program team to solicit feedback from all stakeholders to understand the gaps that exist in the market and re-evaluate the role of the Program, as well as to make improvements. The Green Bank continues to meet with contractors to address concerns and find resolution.

Program Changes in Response to Feedback

Weighing the feedback from contractors and municipalities, the Green Bank is working to integrate the following changes to the Program to better serve the market and meet the organization's mission:

- **Transparency:** While the Green Bank has provided program information upon request, the Program will prepare and make available online information about participating towns, financing costs, construction costs, and bidder activity. This information will be posted at <https://www.ctgreenbank.com/solarmap-townsandcities/>. It should be noted that some information will not be provided until such time as contracts have been executed between the appropriate parties.
- **Develop a clearer mission and target audience:** To continue to address barriers outlined by municipal partners and maintain an appropriate role in the market, the Program will have a clear mission and target audience. The Program aims to support municipalities that are underserved by the market, typically towns that are smaller in population and/or town staff. The target audience for the program are underserved towns and those without recent history of doing solar projects. Any program outreach conducted will be limited to the target audience. If a town approaches us with a reasonable request for assistance, we will consider working with them.

The Green Bank focuses program development and support in areas that accelerate the deployment of clean energy and foster the growth of the state's green economy. We look forward to continuing to serve municipal partners and refining the Solar MAP mission to find and support gaps in the market.

Resolutions

WHEREAS, the state legislature provides statutory guidance to the Green Bank to support municipalities in clean energy deployment pursuant to CGS 16-245n;

WHEREAS, Green Bank's Solar MAP was modelled after and developed based on Lead By Example, which supports solar on state facilities, and other programs to provide municipal assistance to address market barriers and to take advantage of the savings offered by solar;

WHEREAS, Green Bank received concerns from a subgroup of contractors regarding the absence of clarity on the program's mission and target audience, the Green Bank's role developing opportunities for municipalities, and request for more transparency in the status of the program;

WHEREAS, Green Bank was compelled to assess Solar MAP by seeking feedback from municipalities that have engaged in the program as well as contractors who we seek to continue to provide opportunities;

NOW, therefore be it:

RESOLVED, that the Board recognizes the importance of balancing the deployment of clean energy, supporting municipalities and not competing with the private sector; and

RESOLVED, that the Board recognizing that Solar MAP is creating more opportunities for the market and assistance to towns who seek assistance; and

RESOLVED, that the Board support for continuing Solar MAP and other municipal assistance programs to lower their energy costs and confront climate change; and

RESOLVED, that the Board approves of the program and the inclusion of Solar MAP in the Comprehensive Plan; and

RESOLVED, the Board directs staff to develop marketing materials that clearly communicate the intentions of the program.

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Connecticut Municipal Electric Energy Cooperative (CMEEC) & US Naval Submarine Base – Groton, CT Fuel Cell Project

A Fuel Cell Debt Financing Strategic Selection
Green Bank Term Loan Facility Extension Request
July 15, 2022



Document Purpose: This document contains background information and due diligence on a proposed credit facility for the FuelCell Energy, Inc. (“FCE” and NASDAQ: FCEL) fuel cell project under a power purchase agreement between FCE and the Connecticut Municipal Electric Energy Cooperative (“CMEEC”) and located at the US Naval Submarine Base – Groton, CT. The information herein is provided to the Connecticut Green Bank Board of Directors for the purposes of reviewing and approving recommendations made by the staff of the Connecticut Green Bank.

In some cases, this package may contain, among other things, trade secrets and commercial or financial information given to the Connecticut Green Bank in confidence and should be excluded under C.G.S. §1-210(b) and §16-245n(D) from any public disclosure under the Connecticut Freedom of Information Act. If such information is included in this package, it will be noted as confidential.

Strategic Selection Financing Extension Memo

To: Connecticut Green Bank Board of Directors
From: Bert Hunter, EVP & CIO
Cc: Bryan Garcia, President & CEO; Brian Farnen, General Counsel & CLO; Sergio Carrillo, Director, Incentive Programs; Jane Murphy, EVP of Finance and Administration
Date: July 15, 2022
Re: FuelCell Energy / US Navy / CMEEC / Groton Fuel Cell Project
Term Loan Facility Update & Extension Request

At the June 2022 meeting of the Connecticut Green Bank (“Green Bank”) Board of Directors (the “Board”), the Board approved an extension to complete the financing for a term loan facility to finance the 7.4 megawatt FuelCell Energy, Inc. (“FCE”) fuel cell at the US Naval Submarine Base, Groton, CT (the “Navy Project”) in partnership with and subordinated to loans (the “Senior Loans” and together with Green Bank’s loan, the “Term Loans”) from two bank lenders: Liberty Bank and Amalgamated Bank (the “Senior Lenders” and together with Green Bank, the “Lenders”).

The senior lenders and FCE have entered into a commitment for the financing, subject to finalization of diligence and credit approval, both of which are in progress. The project’s “commercial operation date” is now projected with reasonable confidence to occur by the end of July (everything is complete for the project but certain commissioning tests need to be finalized). This being the case, the project financing is now expected to close by early August and legal meetings between the lenders are well underway – and the banks are refreshing their credit approvals which have “timed out” (neither lender has expressed any concerns about renewing credit approvals for the project). Accordingly, staff requests the original approval “execute by date” be extended to 682 days from its original approval date (to bring the extension to October 31, 2022). Staff is setting this extension to the end of October to avoid any issues with an unanticipated delay between now and the next meeting of the Board in October. At the same time, the project is being funded with a combination of tax equity investment from East West Bank, FCE investment, and loans from the senior lenders and Green Bank. This being the case, we are adding to the resolutions a modification of the original approval to accommodate the financing by the lenders through a traditional backleverage structure whereby the lenders lend to an SPV controlled by FCE, and this SPV in turn manages the project and owns (with tax equity) the project assets.

Resolutions

WHEREAS, in accordance with (1) the statutory mandate of the Connecticut Green Bank (“Green Bank”) to foster the growth, development, and deployment of clean energy sources that serve end-use customers in the State of Connecticut, (2) the State’s Comprehensive Energy Strategy (“CES”) and Integrated Resources Plan (“IRP”), and (3) Green Bank’s Comprehensive Plan (the “Comprehensive Plan”) in reference to the CES and IRP, Green Bank continuously aims to develop financing tools to further drive private capital investment into clean energy projects;

WHEREAS, FuelCell Energy, Inc., of Danbury, Connecticut (“FCE”) has used previously committed funding (the “Bridgeport Loan”) from Green Bank to successfully develop a 15 megawatt fuel cell facility in Bridgeport, Connecticut (the “Bridgeport Project”), and FCE has operated and maintained the Bridgeport Project without material incident, is current on payments under the Bridgeport Loan;

WHEREAS, FCE has requested financing support from the Green Bank to develop a 7.4 megawatt fuel cell project in Groton, Connecticut located on the U.S. Navy submarine base and supported by a power purchase agreement (“PPA”) with the Connecticut Municipal Electric Energy Cooperative (“CMEEC”) (the “Navy Project”);

WHEREAS, staff has considered the merits of the Navy Project and the ability of FCE to construct, operate and maintain the facility, support the obligations under the Loan throughout its 20-year term, and as set forth in the due diligence memorandum (the “Board Memo”) dated December 18, 2020, recommended this support be in the form of a term loan not to exceed \$8,000,000, secured by the developer’s equity in the project company (which controls all project assets, contracts and revenues) as well as a pledge of revenues from an unencumbered project as explained in the Board Memo (the “Credit Facility”);

WHEREAS, on the basis of that recommendation, the Green Bank Board of Directors (“Board”) approved of the Credit Facility, in an amount not to exceed \$8,000,000 with the provision that the Credit Facility be executed no later than 315 days from the date of authorization by the Board (June 16, 2021), which was further extended by the Board on a number of occasions, including in June 2022 to July 31, 2022;

WHEREAS, Green Bank staff has further advised the Board that the closing for the Credit Facility is expected to close in early August 2022 and to accommodate the additional time that might be needed to execute the Credit Facility requests the permitted time to execute the credit facility be increased from not later than 590 days from the original date of authorization by the Board (i.e., not later than July 31, 2022) to not later than 682 days from the date of authorization by the Board (i.e., not later than October 31, 2022);

NOW, therefore be it:

RESOLVED, that the Green Bank Board hereby approves the extension of time for the execution of the Credit Facility to not later than 682 days from the original date of authorization by the Board (i.e., not later than October 31, 2022); and

RESOLVED, that the President of the Green Bank and any other duly authorized officer is authorized to take appropriate actions to provide the Credit Facility to FCE (or a special purpose entity wholly-owned by FCE) in an amount not to exceed \$8,000,000 with terms and conditions consistent with the memorandum submitted to the Board dated December 18, 2020 (the “Memorandum”), and as he or she shall deem to be in the interests of the Green Bank and the ratepayers; and

RESOLVED, that the proper Green Bank officers are authorized and empowered to do all other acts and execute and deliver all other documents and instruments as they shall deem necessary and desirable to effect the Term Loan and participation as set forth in the Memorandum.

Submitted by: Bryan Garcia, President and CEO; Bert Hunter, EVP and CIO;



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Historic Cargill Falls Mill

A C-PACE Project in Putnam, CT

Green Bank Term Loan Facility Modification Request

July 15, 2022



Document Purpose: This document contains background information and due diligence on a proposed modification of a credit facility for the hydroelectric repowering and gut rehabilitation financing for energy efficiency measures using C-PACE for this project located in Putnam, CT. The information herein is provided to the Connecticut Green Bank Board of Directors for the purposes of reviewing and approving recommendations made by the staff of the Connecticut Green Bank.

In some cases, this package may contain, among other things, trade secrets and commercial or financial information given to the Connecticut Green Bank in confidence and should be excluded under C.G.S. §1-210(b) and §16-245n(D) from any public disclosure under the Connecticut Freedom of Information Act. If such information is included in this package, it will be noted as confidential.

Memo

To: Connecticut Green Bank Board of Directors

From: Bert Hunter, EVP and CIO; Mariana Trief, Consultant, Clean Energy Finance; David Beech, Associate Manager, Clean Energy Finance

Cc: Bryan Garcia, President and CEO; Brian Farnen, General Counsel and CLO; Mackey Dykes, VP Financing Programs; Alex Kovtunencko, Associate General Counsel

Date: July 15, 2022

Re: Historic Cargill Falls Mill Redevelopment Project: Update & Proposed Investment Modification

General Update & Proposed Investment Summary

Staff of the Connecticut Green Bank (“Green Bank”) returns to the Green Bank’s Board of Directors (the “Board”) to report on progress for the C-PACE project at 58 Pomfret Street, Putnam, CT (the “Historic Cargill Falls Mill”, “HCFM” or “Project”) and to recommend a slight modification to the repayment terms of the outstanding CPACE loan, due to delays in finalizing the hydro installation as further explained in this memo.

As for the financial picture, the Project was able to close on December 2021 in a restructuring plan that was approved by Green Bank’s Board of Directors (“Green Bank Board”) on July 23, 2021. It included the following (all amounts have been rounded for ease) source of funding:

- \$1.85 million in additional funds from Department of Housing (“DOH”)
- \$1 million in additional Green Bank C-PACE funding to cover the funding gap
- \$900,000 in Green Bank C-PACE funding for additional hydro costs that had been previously approved
- \$95,000 from the property’s operating funds to cover closing costs and a portion of interest costs from the bridge lender (Octagon Finance (“Octagon”))
- \$3.2 million from the tax credit investor (Enhanced Capital Partners (“Enhanced”)) were released to complete their investment contribution to the project
- \$725,000 in a term note to the contractor (Haynes Construction, or “Haynes”)

The Project continues to be a residential success. As of June 2022, vacancy rates remain low at 0% and there is 130 wait list. While residential lease-up has been successful, leasing of the commercial space has, understandably, been slower to fill amidst COVID. To date four small office spaces and three large spaces have been leased up. The annual projected income from the leased up commercial spaces is \$79,404, which excludes about \$30,000 in annual rent payments from one of the larger office spaces that will commence on 12/1/22. The hydro project has been delayed (more info provided in the Hydro Update Section below), which has resulted in higher electricity costs. This is affecting Cargill’s ability to make the first payment due in July 2022. Therefore, Green Bank staff would like to propose an amendment to the Financing Agreement whereby the principal payment that would have otherwise been due in July 2022 is added to the \$1M second mortgage and modifying the associated lien to reflect this. This is further discussed below in the Proposed Investment section.

Hydro Project Update

The Hydro Project consists of two turbines. The larger 600 kW turbine was placed in service in May 2017 but was then taken offline during the construction work associated with the redevelopment. The 600 kW turbine is not currently operational because the Federal Energy Regulatory Commission (“FERC”) has required additional consultant work to verify the downstream and upstream eel migration structures that were installed, along with a dissolved oxygen plan.¹ Work to enable the smaller 300 kW unit to come online was anticipated as part of the mill redevelopment, but the Project is still waiting for a permit from the DOT (“DOT Permit”) to complete the bifurcation work that will allow the 300 kW turbine to come online. The bifurcation work consists of water from the Quinebaug River being channeled through a large conduit that splits the flow with a portion piped to the larger turbine and the balance going to the second turbine. This bifurcation also permits optimally running either turbine, as required, during low flow seasons.

The DOT Permit was not granted in the fall as additional structural and engineering information was requested (and there were delays in processing this information due to COVID). A new plan was submitted to DOT for approval in spring 2022, but again this was denied because the detour plan required traffic to be rerouted from state roads to town roads which results in liability issues. DOT proposed an alternate that required a flagger during the 3 week construction proposed. The proposed solution has added costs that can be accommodated in the contingency budget and will allow the work to be completed by mid-August.

All other work is underway or complete to align with the bifurcation schedule so that the hydro project can begin to generate electricity by mid-August once the bifurcation work is completed. The Project team has already submitted an extension request to FERC explaining these delays so that it does not impact the July 31, 2022 deadline. The project team does not foresee this will be an issue with FERC given the delays have been a result of the DOT permit, outside of the Project’s control.

These delays have affected the property’s cash flow, as originally we had expected the Hydro to be online by April 2022. It has led to a ~\$100k reduction in net operating income; \$70k in electricity savings associated with onsite generation and \$30k associated with the sale of excess generation. There was an additional \$45k paid to CT for tax bills from prior year (unrelated to the hydro).² The ~\$150k in reduced operating income affect’s the Project’s ability to make the principal repayment associated with the “Second Lien Payment.” Therefore, staff is requesting an adjustment to the C-PACE Loan payment scheduled as proposed in this memo.

Adjustment to C-PACE Loan Payment Scheduled

The current Green Bank C-PACE loan, in accordance with the Board Approval, is structured as follows:

- i. First Benefit Assessment Lien (as defined in the Financing Agreement) of \$8,811,116.72 (composed of the approved \$7.1M C-PACE loan + \$1.7M in capitalized interest)
 - a. Repayable over 35 years at 5% interest rate
 - b. Repayment start date of July 1, 2022
 - c. Supplemental Interest: 0.95% interest paid annually after financials are submitted

¹ The dissolved oxygen plan is an environmental requirement associated with the FERC license. The write up needs to show whether the hydro unit changes the amount of dissolved oxygen in the water.

² We have asked that these be repaid by the owner ahead of any distributions as there was an oversight on the ownerships part (before the property management firm had been hired) to pay these taxes on a timely manner.

- ii. Second Benefit Assessment Lien: \$1,000,000
 - a. Repayable over 10 years at 5% interest
 - b. Repayment start date of January 1, 2022
 - c. A 3-1/2 year interest only period ending 1/1/2025³
- iii. Cash Flow Sweep: In addition to payments above, a 100% cash flow sweep based on annual available cash flow
 - a. Due until Second Benefit Assessment Lien is paid in full
 - b. Payments are applied to Second Benefit Assessment lien in inverse order of maturity

The Lien schedules are provided as Exhibit A. Per the schedule, the payment amount associated with the Second Benefit Assessment due on July 2022 is \$263,724.58; \$255,163.97 of principal payments and \$8,560.61 of interest payments. Green Bank staff is proposing that the interest portion due (the \$8k) get paid by the Project in July and that the principal portion (the ~\$255k) be added to the Second Benefit Assessment Lien. The new proposed Lien schedules are provided as Exhibit B. The Lien schedule for the First Benefit Assessment Lien would not change, as essentially the \$255k would be paid by increasing the Second Benefit Assessment Lien.

The proposed change will allow the building to recover from the higher electricity costs as a result of the delays associated with the hydro project, while ensuring the Green Bank's C-PACE loan is repaid over time. Subject to Green Bank's approval and prior to amending the Financing Agreement, staff will confirm the CPACE Savings to Investment Ratio ("SIR") requirement. ⁴ In addition, other Project lenders who holds mortgages will need to provide consent to the amendment.

³ The extension of the maturity is to allow for payment to Haynes of the ~\$725k short term note.

⁴ Green Bank's technical consultant, DNV, had confirmed in July 2021 the project had an SIR of 1.05 and an estimated useful life (for the SIR analysis) of 15 years for HVAC upgrades, 10 years for domestic hot water upgrades and 40 years for on-site hydro, combined: 35.6 years. The SIR would be updated to reflect the ~\$260k increase.

Resolutions

WHEREAS, pursuant to Conn. Gen. Stat. 16a-40g, the Connecticut Green Bank (“Green Bank”) has established a commercial sustainable energy program for Connecticut, known as Commercial Property Assessed Clean Energy (“C-PACE”);

WHEREAS, the Board of Directors (“Board”) of the Green Bank previously approved a construction and term loan, secured by a C-PACE benefit assessment, not-to-exceed amount of \$8,100,000 (the “Current Loan”) to Historic Cargill Falls Mill, LLC (“HCFM”), the property owner of 52 and 58 Pomfret Street, Putnam, Connecticut, to finance the construction of specified clean energy measures (the “Project”) in line with the State’s Comprehensive Energy Strategy and the Green Bank’s Strategic Plan;

WHEREAS, the Project includes numerous energy conservation measures that align with the goals and priorities of the Green Bank’s multifamily housing program;

WHEREAS, the Green Bank now seeks approval to amend the Current Loan to HCFM to provide up to \$275,000 in additional funding (the “Loan Amendment”) for the Project, inclusive of finalizing the existing Project work.

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 Amendment in a total amount not to exceed the sum of (i) the Current Loan being secured by a C-PACE benefit assessment, plus any and all interest accrued, plus (ii) \$260,000, with terms and conditions consistent with the memorandum submitted to the Board dated July 15, 2022, and as he or she shall deem to be in the interests of the Green Bank and the ratepayers no later than 180 days from July 22, 2022; and

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

Submitted by: Bryan Garcia, President and CEO; Bert Hunter, EVP and CIO; Mackey Dykes,
VP Financing Programs

**Exhibit A
Current Lien Schedules**

Cargill Falls - PT-100040

**Benefit Assessment Installment Payment Schedule
Benefit Assessment Advance (Project Amount + Closing Fees) + Capitalized Interest =
\$8,805,203.68**

Principal: \$7,100,000.00; Closing Fees: 00.00; Capitalized Interest: \$1,711,116.72

**Interest Rate: 5.00%; Semiannual Installments: 70
Final Disbursement Date: 6/24/2022**

<u>Payment Date</u>	<u>Lien 1 Special Int PMT</u>	<u>Payment</u>	<u>Principal Paid</u>	<u>Interest Paid</u>	<u>Remaining Balance</u>	<u>Total Payment</u>
-		-	\$8,805,203.68	-	-	
7/1/2022		\$263,724.58	\$255,163.97	\$8,560.61	\$8,550,039.71	\$263,724.58
1/1/2023	\$42,874.99	\$263,724.58	\$45,223.57	\$218,501.01	\$8,504,816.14	\$306,599.57
7/1/2023		\$263,724.58	\$49,922.95	\$213,801.63	\$8,454,893.19	\$263,724.58
1/1/2024	\$81,205.67	\$263,724.58	\$47,655.09	\$216,069.49	\$8,407,238.10	\$344,930.25
7/1/2024		\$263,724.58	\$51,208.28	\$212,516.30	\$8,356,029.82	\$263,724.58
1/1/2025	\$80,461.66	\$263,724.58	\$50,181.60	\$213,542.98	\$8,305,848.22	\$344,186.24
7/1/2025		\$263,724.58	\$54,924.78	\$208,799.80	\$8,250,923.44	\$263,724.58
1/1/2026	\$79,215.73	\$263,724.58	\$52,867.65	\$210,856.93	\$8,198,055.79	\$342,940.31
7/1/2026		\$263,724.58	\$57,634.57	\$206,090.01	\$8,140,421.22	\$263,724.58
1/1/2027	\$78,137.67	\$263,724.58	\$55,691.59	\$208,032.99	\$8,084,729.63	\$341,862.25
7/1/2027		\$263,724.58	\$60,483.46	\$203,241.12	\$8,024,246.18	\$263,724.58
1/1/2028	\$77,004.26	\$263,724.58	\$58,660.51	\$205,064.07	\$7,965,585.67	\$340,728.84
7/1/2028		\$263,724.58	\$62,372.28	\$201,352.30	\$7,903,213.39	\$263,724.58
1/1/2029	\$76,032.02	\$263,724.58	\$61,753.57	\$201,971.01	\$7,841,459.82	\$339,756.60
7/1/2029		\$263,724.58	\$66,598.99	\$197,125.59	\$7,774,860.83	\$263,724.58
1/1/2030	\$74,571.25	\$263,724.58	\$65,033.69	\$198,690.89	\$7,709,827.14	\$338,295.83
7/1/2030		\$263,724.58	\$69,908.09	\$193,816.49	\$7,639,919.05	\$263,724.58
1/1/2031	\$73,254.76	\$263,724.58	\$68,482.20	\$195,242.38	\$7,571,436.85	\$336,979.34
7/1/2031		\$263,724.58	\$73,387.07	\$190,337.51	\$7,498,049.78	\$263,724.58

1/1/2032	\$71,870.68	\$263,724.58	\$72,107.75	\$191,616.83	\$7,425,942.03	\$335,595.26
7/1/2032		\$263,724.58	\$76,013.27	\$187,711.31	\$7,349,928.76	\$263,724.58
1/1/2033	\$70,619.56	\$263,724.58	\$75,893.07	\$187,831.51	\$7,274,035.69	\$334,344.14
7/1/2033		\$263,724.58	\$80,863.41	\$182,861.17	\$7,193,172.28	\$263,724.58
1/1/2034	\$68,896.28	\$263,724.58	\$79,899.07	\$183,825.51	\$7,113,273.21	\$332,620.86
7/1/2034		\$263,724.58	\$84,904.80	\$178,819.78	\$7,028,368.41	\$263,724.58
1/1/2035	\$67,288.45	\$263,724.58	\$84,110.72	\$179,613.86	\$6,944,257.69	\$331,013.03
7/1/2035		\$263,724.58	\$89,153.66	\$174,570.92	\$6,855,104.03	\$263,724.58
1/1/2036	\$65,598.08	\$263,724.58	\$88,538.59	\$175,185.99	\$6,766,565.44	\$329,322.66
7/1/2036		\$263,724.58	\$92,680.84	\$171,043.74	\$6,673,884.60	\$263,724.58
1/1/2037	\$64,006.21	\$263,724.58	\$93,169.75	\$170,554.83	\$6,580,714.85	\$327,730.79
7/1/2037		\$263,724.58	\$98,292.72	\$165,431.86	\$6,482,422.13	\$263,724.58
1/1/2038	\$61,962.18	\$263,724.58	\$98,062.68	\$165,661.90	\$6,384,359.46	\$325,686.76
7/1/2038		\$263,724.58	\$103,228.88	\$160,495.70	\$6,281,130.58	\$263,724.58
1/1/2039	\$59,998.37	\$263,724.58	\$103,206.80	\$160,517.78	\$6,177,923.78	\$323,722.95
7/1/2039		\$263,724.58	\$108,418.44	\$155,306.14	\$6,069,505.34	\$263,724.58
1/1/2040	\$57,933.75	\$263,724.58	\$108,615.00	\$155,109.58	\$5,960,890.34	\$321,658.33
7/1/2040		\$263,724.58	\$113,046.52	\$150,678.06	\$5,847,843.82	\$263,724.58
1/1/2041	\$55,925.53	\$263,724.58	\$114,279.68	\$149,444.90	\$5,733,564.14	\$319,650.11
7/1/2041		\$263,724.58	\$119,589.15	\$144,135.43	\$5,613,974.99	\$263,724.58
1/1/2042	\$53,489.58	\$263,724.58	\$120,256.33	\$143,468.25	\$5,493,718.66	\$317,214.16
7/1/2042		\$263,724.58	\$125,618.60	\$138,105.98	\$5,368,100.06	\$263,724.58
1/1/2043	\$51,090.82	\$263,724.58	\$126,539.80	\$137,184.78	\$5,241,560.26	\$314,815.40
7/1/2043		\$263,724.58	\$131,957.58	\$131,767.00	\$5,109,602.68	\$263,724.58
1/1/2044	\$48,568.91	\$263,724.58	\$133,145.84	\$130,578.74	\$4,976,456.84	\$312,293.49
7/1/2044		\$263,724.58	\$137,930.81	\$125,793.77	\$4,838,526.03	\$263,724.58
1/1/2045	\$46,051.96	\$263,724.58	\$140,073.36	\$123,651.22	\$4,698,452.67	\$309,776.54
7/1/2045		\$263,724.58	\$145,610.70	\$118,113.88	\$4,552,841.97	\$263,724.58
1/1/2046	\$43,137.14	\$263,724.58	\$147,374.17	\$116,350.41	\$4,405,467.80	\$306,861.72
7/1/2046		\$263,724.58	\$152,976.01	\$110,748.57	\$4,252,491.79	\$263,724.58
1/1/2047	\$40,206.91	\$263,724.58	\$155,049.79	\$108,674.79	\$4,097,442.00	\$303,931.49

7/1/2047		\$263,724.58	\$160,719.44	\$103,005.14	\$3,936,722.56	\$263,724.58
1/1/2048	\$37,126.26	\$263,724.58	\$163,119.45	\$100,605.13	\$3,773,603.12	\$300,850.84
7/1/2048		\$263,724.58	\$168,336.28	\$95,388.30	\$3,605,266.84	\$263,724.58
1/1/2049	\$33,987.70	\$263,724.58	\$171,589.98	\$92,134.60	\$3,433,676.86	\$297,712.28
7/1/2049		\$263,724.58	\$177,405.76	\$86,318.82	\$3,256,271.10	\$263,724.58
1/1/2050	\$30,487.75	\$263,724.58	\$180,508.76	\$83,215.82	\$3,075,762.34	\$294,212.33
7/1/2050		\$263,724.58	\$186,403.33	\$77,321.25	\$2,889,359.01	\$263,724.58
1/1/2051	\$26,908.15	\$263,724.58	\$189,885.41	\$73,839.17	\$2,699,473.60	\$290,632.73
7/1/2051		\$263,724.58	\$195,862.81	\$67,861.77	\$2,503,610.79	\$263,724.58
1/1/2052	\$23,144.77	\$263,724.58	\$199,743.42	\$63,981.16	\$2,303,867.37	\$286,869.35
7/1/2052		\$263,724.58	\$205,487.93	\$58,236.65	\$2,098,379.44	\$263,724.58
1/1/2053	\$19,246.70	\$263,724.58	\$210,099.33	\$53,625.25	\$1,888,280.11	\$282,971.28
7/1/2053		\$263,724.58	\$216,255.32	\$47,469.26	\$1,672,024.79	\$263,724.58
1/1/2054	\$15,031.80	\$263,724.58	\$220,995.06	\$42,729.52	\$1,451,029.73	\$278,756.38
7/1/2054		\$263,724.58	\$227,247.30	\$36,477.28	\$1,223,782.43	\$263,724.58
1/1/2055	\$10,658.73	\$263,724.58	\$232,450.14	\$31,274.44	\$991,332.29	\$274,383.31
7/1/2055		\$263,724.58	\$238,803.59	\$24,920.99	\$752,528.70	\$263,724.58
1/1/2056	\$6,061.16	\$263,724.58	\$244,493.29	\$19,231.29	\$508,035.41	\$269,785.74
7/1/2056		\$263,724.58	\$250,882.57	\$12,842.01	\$257,152.84	\$263,724.58
1/1/2057	\$1,235.05	\$263,724.53	\$257,152.84	\$6,571.68	\$0.00	\$264,959.58
Total	\$1,793,290.49	\$18,460,720.52	\$8,805,203.68	\$9,655,516.83		\$20,254,011.01

Cargill Falls - PT-101841

Benefit Assessment Installment Payment Schedule

Benefit Assessment Advance (Project Amount + Closing Fees) + Capitalized Interest = \$1,000,000.00

Principal: \$1,000,000.00; Capitalized Interest: 00.00

Interest Rate: 5.00%; Semiannual Installments: 20

Project Completion Date: 12/14/2021

<u>Payment Date</u>	<u>Payment</u>	<u>Principal Paid</u>	<u>Interest Paid</u>	<u>Remaining Balance</u>
-	-	\$1,000,000.00	-	-
1/1/2022	\$2,361.11	\$0.00	\$2,500.00	\$1,000,000.00
7/1/2022	\$25,344.27	\$0.00	\$25,205.38	\$1,000,000.00
1/1/2023	\$25,555.56	\$0.00	\$25,555.56	\$1,000,000.00
7/1/2023	\$25,138.89	\$0.00	\$25,138.89	\$1,000,000.00
1/1/2024	\$25,555.56	\$0.00	\$25,555.56	\$1,000,000.00
7/1/2024	\$25,277.78	\$0.00	\$25,277.78	\$1,000,000.00
1/1/2025	\$25,555.56	\$0.00	\$25,555.56	\$1,000,000.00
7/1/2025	\$91,249.80	\$66,110.91	\$25,138.89	\$933,889.09
1/1/2026	\$91,249.80	\$67,383.75	\$23,866.05	\$866,505.34
7/1/2026	\$91,249.80	\$69,466.82	\$21,782.98	\$797,038.52
1/1/2027	\$91,249.80	\$70,881.04	\$20,368.76	\$726,157.48
7/1/2027	\$91,249.80	\$72,995.01	\$18,254.79	\$653,162.47
1/1/2028	\$91,249.80	\$74,557.87	\$16,691.93	\$578,604.60
7/1/2028	\$91,249.80	\$76,623.96	\$14,625.84	\$501,980.64
1/1/2029	\$91,249.80	\$78,421.41	\$12,828.39	\$423,559.23
7/1/2029	\$91,249.80	\$80,601.99	\$10,647.81	\$342,957.24
1/1/2030	\$91,249.80	\$82,485.34	\$8,764.46	\$260,471.90
7/1/2030	\$91,249.80	\$84,701.83	\$6,547.97	\$175,770.07
1/1/2031	\$91,249.80	\$86,757.90	\$4,491.90	\$89,012.17
7/1/2031	\$91,249.84	\$89,012.17	\$2,237.67	\$0.00
Total	\$1,341,036.17	\$1,000,000.00	\$341,036.17	

Exhibit B
Proposed Lien Schedules – with Modification

Cargill Falls - PT-100040

Benefit Assessment Installment Payment Schedule

Benefit Assessment Advance (Project Amount + Closing Fees) + Capitalized Interest = \$8,805,203.68

Principal: \$7,100,000.00; Closing Fees: 00.00; Capitalized Interest: \$1,711,116.72

Interest Rate: 5.00%; Semiannual Installments: 70

Final Disbursement Date: 6/24/2022

<u>Payment Date</u>	<u>Lien 1 Special Int PMT</u>	<u>Payment</u>	<u>Principal Paid</u>	<u>Interest Paid</u>	<u>Remaining Balance</u>	<u>Total Payment</u>
-		-	\$8,800,852.40	-	-	
7/1/2022		\$263,594.25	\$255,037.87	\$8,556.38	\$8,545,814.53	\$263,594.25
1/1/2023	\$42,853.80	\$263,594.25	\$45,201.21	\$218,393.04	\$8,500,613.32	\$306,448.05
7/1/2023		\$263,594.25	\$49,898.28	\$213,695.97	\$8,450,715.04	\$263,594.25
1/1/2024	\$81,165.54	\$263,594.25	\$47,631.53	\$215,962.72	\$8,403,083.51	\$344,759.79
7/1/2024		\$263,594.25	\$51,182.97	\$212,411.28	\$8,351,900.54	\$263,594.25
1/1/2025	\$80,421.90	\$263,594.25	\$50,156.79	\$213,437.46	\$8,301,743.75	\$344,016.15
7/1/2025		\$263,594.25	\$54,897.64	\$208,696.61	\$8,246,846.11	\$263,594.25
1/1/2026	\$79,176.59	\$263,594.25	\$52,841.52	\$210,752.73	\$8,194,004.59	\$342,770.84
7/1/2026		\$263,594.25	\$57,606.08	\$205,988.17	\$8,136,398.51	\$263,594.25
1/1/2027	\$78,099.06	\$263,594.25	\$55,664.07	\$207,930.18	\$8,080,734.44	\$341,693.31
7/1/2027		\$263,594.25	\$60,453.56	\$203,140.69	\$8,020,280.88	\$263,594.25
1/1/2028	\$76,966.21	\$263,594.25	\$58,631.52	\$204,962.73	\$7,961,649.36	\$340,560.46
7/1/2028		\$263,594.25	\$62,341.45	\$201,252.80	\$7,899,307.91	\$263,594.25
1/1/2029	\$75,994.45	\$263,594.25	\$61,723.05	\$201,871.20	\$7,837,584.86	\$339,588.70
7/1/2029		\$263,594.25	\$66,566.08	\$197,028.17	\$7,771,018.78	\$263,594.25
1/1/2030	\$74,534.40	\$263,594.25	\$65,001.55	\$198,592.70	\$7,706,017.23	\$338,128.65
7/1/2030		\$263,594.25	\$69,873.54	\$193,720.71	\$7,636,143.69	\$263,594.25
1/1/2031	\$73,218.56	\$263,594.25	\$68,448.36	\$195,145.89	\$7,567,695.33	\$336,812.81
7/1/2031		\$263,594.25	\$73,350.80	\$190,243.45	\$7,494,344.53	\$263,594.25
1/1/2032	\$71,835.16	\$263,594.25	\$72,072.11	\$191,522.14	\$7,422,272.42	\$335,429.41
7/1/2032		\$263,594.25	\$75,975.70	\$187,618.55	\$7,346,296.72	\$263,594.25
1/1/2033	\$70,584.66	\$263,594.25	\$75,855.56	\$187,738.69	\$7,270,441.16	\$334,178.91
7/1/2033		\$263,594.25	\$80,823.44	\$182,770.81	\$7,189,617.72	\$263,594.25
1/1/2034	\$68,862.24	\$263,594.25	\$79,859.57	\$183,734.68	\$7,109,758.15	\$332,456.49
7/1/2034		\$263,594.25	\$84,862.83	\$178,731.42	\$7,024,895.32	\$263,594.25
1/1/2035	\$67,255.20	\$263,594.25	\$84,069.15	\$179,525.10	\$6,940,826.17	\$330,849.45
7/1/2035		\$263,594.25	\$89,109.59	\$174,484.66	\$6,851,716.58	\$263,594.25
1/1/2036	\$65,565.66	\$263,594.25	\$88,494.83	\$175,099.42	\$6,763,221.75	\$329,159.91
7/1/2036		\$263,594.25	\$92,635.03	\$170,959.22	\$6,670,586.72	\$263,594.25
1/1/2037	\$63,974.58	\$263,594.25	\$93,123.70	\$170,470.55	\$6,577,463.02	\$327,568.83
7/1/2037		\$263,594.25	\$98,244.14	\$165,350.11	\$6,479,218.88	\$263,594.25
1/1/2038	\$61,931.56	\$263,594.25	\$98,014.21	\$165,580.04	\$6,381,204.67	\$325,525.81

7/1/2038		\$263,594.25	\$103,177.85	\$160,416.40	\$6,278,026.82	\$263,594.25
1/1/2039	\$59,968.73	\$263,594.25	\$103,155.79	\$160,438.46	\$6,174,871.03	\$323,562.98
7/1/2039		\$263,594.25	\$108,364.85	\$155,229.40	\$6,066,506.18	\$263,594.25
1/1/2040	\$57,905.13	\$263,594.25	\$108,561.31	\$155,032.94	\$5,957,944.87	\$321,499.38
7/1/2040		\$263,594.25	\$112,990.64	\$150,603.61	\$5,844,954.23	\$263,594.25
1/1/2041	\$55,897.90	\$263,594.25	\$114,223.20	\$149,371.05	\$5,730,731.03	\$319,492.15
7/1/2041		\$263,594.25	\$119,530.04	\$144,064.21	\$5,611,200.99	\$263,594.25
1/1/2042	\$53,463.15	\$263,594.25	\$120,196.89	\$143,397.36	\$5,491,004.10	\$317,057.40
7/1/2042		\$263,594.25	\$125,556.51	\$138,037.74	\$5,365,447.59	\$263,594.25
1/1/2043	\$51,065.58	\$263,594.25	\$126,477.26	\$137,116.99	\$5,238,970.33	\$314,659.83
7/1/2043		\$263,594.25	\$131,892.36	\$131,701.89	\$5,107,077.97	\$263,594.25
1/1/2044	\$48,544.91	\$263,594.25	\$133,080.04	\$130,514.21	\$4,973,997.93	\$312,139.16
7/1/2044		\$263,594.25	\$137,862.64	\$125,731.61	\$4,836,135.29	\$263,594.25
1/1/2045	\$46,029.21	\$263,594.25	\$140,004.13	\$123,590.12	\$4,696,131.16	\$309,623.46
7/1/2045		\$263,594.25	\$145,538.73	\$118,055.52	\$4,550,592.43	\$263,594.25
1/1/2046	\$43,115.82	\$263,594.25	\$147,301.33	\$116,292.92	\$4,403,291.10	\$306,710.07
7/1/2046		\$263,594.25	\$152,900.40	\$110,693.85	\$4,250,390.70	\$263,594.25
1/1/2047	\$40,187.05	\$263,594.25	\$154,973.15	\$108,621.10	\$4,095,417.55	\$303,781.30
7/1/2047		\$263,594.25	\$160,640.00	\$102,954.25	\$3,934,777.55	\$263,594.25
1/1/2048	\$37,107.91	\$263,594.25	\$163,038.82	\$100,555.43	\$3,771,738.73	\$300,702.16
7/1/2048		\$263,594.25	\$168,253.08	\$95,341.17	\$3,603,485.65	\$263,594.25
1/1/2049	\$33,970.91	\$263,594.25	\$171,505.17	\$92,089.08	\$3,431,980.48	\$297,565.16
7/1/2049		\$263,594.25	\$177,318.07	\$86,276.18	\$3,254,662.41	\$263,594.25
1/1/2050	\$30,472.69	\$263,594.25	\$180,419.54	\$83,174.71	\$3,074,242.87	\$294,066.94
7/1/2050		\$263,594.25	\$186,311.20	\$77,283.05	\$2,887,931.67	\$263,594.25
1/1/2051	\$26,894.85	\$263,594.25	\$189,791.55	\$73,802.70	\$2,698,140.12	\$290,489.10
7/1/2051		\$263,594.25	\$195,766.01	\$67,828.24	\$2,502,374.11	\$263,594.25
1/1/2052	\$23,133.34	\$263,594.25	\$199,644.69	\$63,949.56	\$2,302,729.42	\$286,727.59
7/1/2052		\$263,594.25	\$205,386.37	\$58,207.88	\$2,097,343.05	\$263,594.25
1/1/2053	\$19,237.19	\$263,594.25	\$209,995.48	\$53,598.77	\$1,887,347.57	\$282,831.44
7/1/2053		\$263,594.25	\$216,148.43	\$47,445.82	\$1,671,199.14	\$263,594.25
1/1/2054	\$15,024.37	\$263,594.25	\$220,885.83	\$42,708.42	\$1,450,313.31	\$278,618.62
7/1/2054		\$263,594.25	\$227,134.98	\$36,459.27	\$1,223,178.33	\$263,594.25
1/1/2055	\$10,653.47	\$263,594.25	\$232,335.25	\$31,259.00	\$990,843.08	\$274,247.72
7/1/2055		\$263,594.25	\$238,685.56	\$24,908.69	\$752,157.52	\$263,594.25
1/1/2056	\$6,058.18	\$263,594.25	\$244,372.45	\$19,221.80	\$507,785.07	\$269,652.43
7/1/2056		\$263,594.25	\$250,758.57	\$12,835.68	\$257,026.50	\$263,594.25
1/1/2057	\$1,234.44	\$263,594.97	\$257,026.50	\$6,568.46	\$0.00	\$264,829.41
Total	\$1,792,404.40	\$18,451,598.22	\$8,800,852.40	\$9,650,745.81		\$20,244,002.62

Cargill Falls - PT-101841

Benefit Assessment Installment Payment Schedule

Benefit Assessment Advance (Project Amount + Closing Fees) + Capitalized Interest = \$1,255,037.87

Principal: \$\$1,255,037.87; Capitalized Interest: 00.00

Interest Rate: 5.00%; Semiannual Installments: 20

Project Completion Date: 12/14/2021

<u>Payment Date</u>	<u>Payment</u>	<u>Principal Paid</u>	<u>Interest Paid</u>	<u>Remaining Balance</u>
-	-		-	-
1/1/2022	\$2,361.11	\$0.00	\$2,500.00	\$1,000,000.00
7/1/2022	\$25,277.78	-\$255,037.87	\$25,138.89	\$1,255,037.87
1/1/2023	\$32,073.19	\$0.00	\$32,073.19	\$1,255,037.87
7/1/2023	\$31,550.26	\$0.00	\$31,550.26	\$1,255,037.87
1/1/2024	\$32,073.19	\$0.00	\$32,073.19	\$1,255,037.87
7/1/2024	\$31,724.57	\$0.00	\$31,724.57	\$1,255,037.87
1/1/2025	\$32,073.19	\$0.00	\$32,073.19	\$1,255,037.87
7/1/2025	\$114,521.96	\$82,971.70	\$31,550.26	\$1,172,066.17
1/1/2026	\$114,521.96	\$84,569.16	\$29,952.80	\$1,087,497.01
7/1/2026	\$114,521.96	\$87,183.49	\$27,338.47	\$1,000,313.52
1/1/2027	\$114,521.96	\$88,958.39	\$25,563.57	\$911,355.13
7/1/2027	\$114,521.96	\$91,611.50	\$22,910.46	\$819,743.63
1/1/2028	\$114,521.96	\$93,572.96	\$20,949.00	\$726,170.67
7/1/2028	\$114,521.96	\$96,165.98	\$18,355.98	\$630,004.69
1/1/2029	\$114,521.96	\$98,421.84	\$16,100.12	\$531,582.85
7/1/2029	\$114,521.96	\$101,158.56	\$13,363.40	\$430,424.29
1/1/2030	\$114,521.96	\$103,522.23	\$10,999.73	\$326,902.06
7/1/2030	\$114,521.96	\$106,304.01	\$8,217.95	\$220,598.05
1/1/2031	\$114,521.96	\$108,884.45	\$5,637.51	\$111,713.60
7/1/2031	\$114,521.96	\$111,713.60	\$2,808.36	\$0.00
Total	\$1,675,918.77	\$1,255,037.87	\$420,880.90	



Memo

To: Board of Directors

From: Bryan Garcia (President and CEO)

Cc: Sergio Carrillo (Director of Incentive Programs), Mackey Dykes (VP of Financing Programs and Officer), Brian Farnen (General Counsel and CLO), Bert Hunter (EVP and CIO), Jane Murphy (EVP of Finance and Administration), and Eric Shrago (Managing Director of Operations)

Date: July 15, 2022

Re: FY 2023 Comprehensive Plan – Including Environmental Infrastructure

Per the passage of Public Act 21-115, An Act Concerning Climate Change Adaptation (“the Act”) in the 2021 legislative session, the scope of the Green Bank expanded beyond “clean energy” to include “environmental infrastructure”. At a Board of Directors (“Board”) meeting held on July 23, 2021, the President and CEO presented the Comprehensive Plan Process for FY22 focused on environmental infrastructure,¹ including:

- **DEEP Engagement** – the President and CEO sought DEEP’s guidance from the Commissioner, Deputy Commissioners, and Bureau Chiefs on numerous occasions to seek consultation² and review of draft documents;
- **Governance Amendments** – the General Counsel and Chief Legal Officer reviewed, revised, and sought approval from the Board of the Green Bank’s governance documents which took place on October 22, 2021;
- **Bond Potential** – the Executive Vice President and Chief Investment Officer presented the potential of new bonding capabilities from the Act describing how it can be used to raise capital to support environmental infrastructure projects which took place on October 22, 2021;
- **Stakeholder Engagement** – the President and CEO, with support from a community engagement consultant, consulted with more than fifty (50) stakeholder organizations with the public, private, nonprofit, and academic sectors on environmental infrastructure resulting in several primers describing feedback that is to be included alongside the Comprehensive Plan – see Attachments 2 through 5;

¹ Memo to the Board on July 23, 2021, entitled “Environmental Infrastructure – Comprehensive Plan Process”

² October 20, 2021, December 22, 2021, March 11, 2022, April 14, 2022, and May 16, 2022

- **Offsite Strategic Retreat** – despite several lost attempts to hold an offsite strategic retreat as a result of COVID, a two-day session was held at the Pocantico Conference Center of the Rockefeller Brothers Fund on April 27-28, 2022 including Board, staff, and key stakeholders to envision how the Green Bank would change, adapt, and grow to incorporate environmental infrastructure, including identifying specific skills required for a director to lead such programs – see Attachments 6 and 7; and
- **Comprehensive Plan** – attached to this memo is the draft Comprehensive Plan for the Green Bank for the review and approval by its Board for FY23 and beyond. The plan not only makes modifications to the Green Bank’s “clean energy” efforts (e.g., from RSIP to ESS), but it develops the “environmental infrastructure” learnings into near-term executable tasks.

Despite having provided several Board updates on the development of the Comprehensive Plan for environmental infrastructure during FY22, I look forward to delivering a final draft Comprehensive Plan for your review and approval for FY23 – see Attachment 1.

Attachments

1. Draft Comprehensive Plan Fiscal Year 2023
2. Environmental Markets – Primer
3. Land Conservation – Primer
4. Parks and Recreation – Primer
5. Agriculture – Primer
6. Strategic Retreat – Summary Report
7. Position Description – Director of Environmental Infrastructure

Resolution

WHEREAS, on June 23, 2021, the Connecticut General Assembly passed Public Act 21-115 (“the Act”), “AN ACT CONCERNING CLIMATE CHANGE ADAPTATION,” and on July 6, 2021, the Governor signed the Act into law expanding the scope of the Connecticut Green Bank (“Green Bank”) to include environmental infrastructure.

WHEREAS, on July 23, 2021, the President and CEO presented a process to develop a comprehensive plan which provides an overview of the process to be undertaken in FY22 to incorporate environmental infrastructure within its comprehensive plan which was approved by the Board.

WHEREAS, the President and CEO, with the assistance of a community engagement consultant, initiated a nine (9) month outreach effort with stakeholders from the public, private, nonprofit, and academic sectors, with guidance from the Department of Energy and Environmental Protection (“DEEP”), to introduce the Green Bank, discuss the Act, understand relevant public policies and targets, identifying funding opportunities, market potential, investment requirements, financing models, and metrics for environmental infrastructure that resulted in the production of several primers including environmental markets, parks and recreation, land conservation, and agriculture.

WHEREAS, on October 22, 2021, the General Counsel and Chief Legal Officer, with the guidance of the Audit, Compliance, and Governance Committee, sought and received approval from the Board of Directors (“the Board”) to modify various governance documents including the Resolution of Purpose, Bylaws, Operating Procedures, Ethics Statement, and Ethical Conduct Policies of the Board of Directors and Staff.

WHEREAS, on October 22, 2021, the Executive Vice President and Chief Investment Officer provided the Board with an overview of the Act’s improvements on the Green Bank’s new bonding capabilities including expansion to include environmental infrastructure, increase in the Special Capital Reserve Fund to \$250 million, and extending bond terms for up to fifty years for environmental infrastructure.

WHEREAS, on March 25, 2022, the Board approved amending the Smart-E Loan eligible improvements category to include environmental infrastructure improvements and authorizes the Deployment Committee to determine, in consultation with DEEP, the specific measures to be supported by the Smart-E Loan.

WHEREAS, from April 27-28, 2022, there was an offsite strategic retreat called “Confronting Climate Change in the Constitution State through Investment in Environmental Infrastructure” to engage members of the Board, staff, and key stakeholders to envision how the Green Bank would change, adapt, and grow to incorporate environmental infrastructure, including identifying specific skills required for a director to lead such programs.

WHEREAS, on May 10, 2022, the Governor signed Public Act 22-6, An Act Concerning the Commercial Property Assessed Clean Energy Program (“C-PACE”) into law expanding the ability of C-PACE to include resilience.

WHEREAS, on June 24, 2022, the Board of Directors (“Board”) of the Green Bank (“Green Bank”) approved of the annual budgets, targets, and investments for FY 2023.

WHEREAS, per Connecticut General Statutes 16-1245n, the Green Bank must (a) develop a comprehensive plan to foster the growth, development and commercialization of clean energy sources, related enterprises and stimulate demand clean energy and deployment of clean energy sources that serve end use customers in this state, and (b) develop a comprehensive plan to foster the growth, development, commercialization and, where applicable, preservation of environmental infrastructure and related enterprises.

NOW, therefore be it:

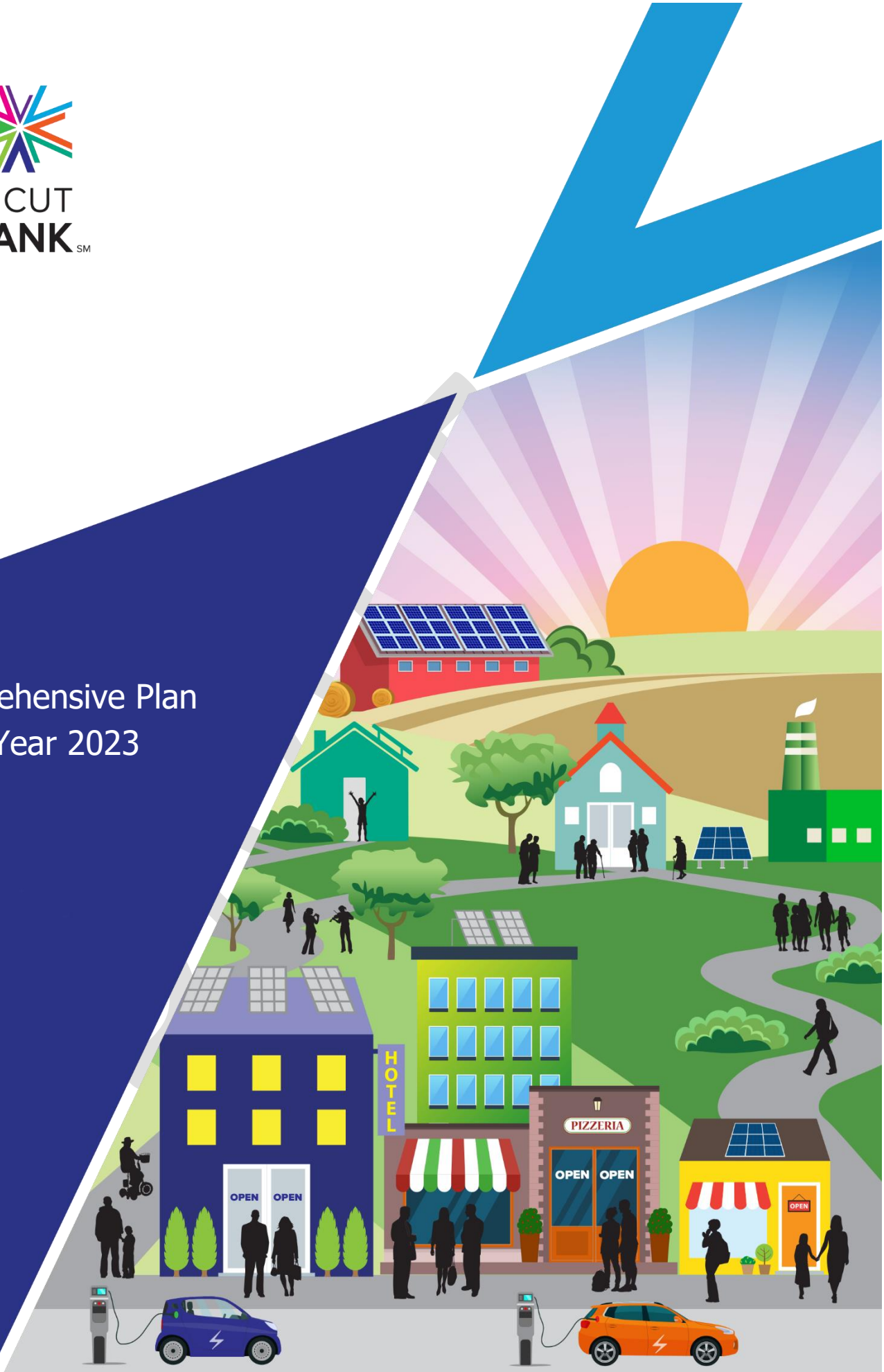
RESOLVED, that Board has reviewed and approved the position description for the Director of Environmental Infrastructure.

RESOLVED, that Board has reviewed and approved the Comprehensive Plan presented to the Board on July 22, 2022.



Comprehensive Plan Fiscal Year 2023

July 2022





CONNECTICUT
GREEN BANKSM

Comprehensive Plan

Fiscal Year 2023

July 2022

DRAFT

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1. Executive Summary

The past two years have been some of the most challenging in living memory.

The COVID-19 pandemic upended the world. In Connecticut alone, there have been over 833,000 confirmed COVID-19 cases and more than eleven thousand COVID-19 associated deaths.¹ We were forced to quickly adapt to new safety precautions, changing how we work with our partners and interact with our customers. Global supply chains have faced massive disruptions, including international shipping delays that delayed the arrival of clean energy technology required to support our programs. In the past six months, global armed conflict in Ukraine instigated by Russia has sent further shockwaves through the supply chain and energy markets. These and other emergencies have drawn political attention away from the climate crisis while increasingly violent storms, drought, wildfires, flooding and other climate-related catastrophes sweep the planet.

The most recent update from the United Nations on progress towards the Sustainable Development Goals² paints a bleak picture: to avoid the worst effects of climate change, global GHG emissions will “need to peak before 2025 and then decline by 43% by 2030, falling to net zero by 2050. Instead under current voluntary national commitments to climate action, greenhouse gas emissions will *rise* [emphasis added] by nearly 14 percent by 2030.”

Here in the United States, we have only seen marginal progress made at the federal level towards changing our emissions trajectory. In November 2021, the US Congress enacted the Infrastructure Investment and Jobs Act (“IIJA”), also called the Bipartisan Infrastructure Law (“BIL”). The \$1.2 trillion act established and refunded programs to support new infrastructure over a 10-year period. The Act contains research and development funds for low-carbon energy technology and support for deployment of clean energy technology such as electric vehicles. In fact, the largest portion of this investment will be overseen by the Department of Transportation.³

However, the fate of IIJA’s sister bill, the Build Back Better bill, remains uncertain. Without the additional funding of clean energy and transportation (including new tax credits) included in the Build Back Better bill, it is unlikely that the United States will be able to achieve President Biden’s goal of cutting national greenhouse gas emissions to 50 percent below 2005 levels by 2030.

Here in Connecticut, the Connecticut Green Bank (“Green Bank”) continues to seek solutions that can accelerate progress towards the state decarbonization goals established in the 2008 Global Warming Solutions Act (“GWSA”) and our investments are making a measurable difference, but greater public and private investment in and deployment of clean energy is needed. In the 10 years of its existence, the Green Bank has helped avoid nearly 10 million tons of carbon dioxide emissions (the equivalent of 2.1 million passenger vehicles driven for one year).⁴ Avoiding 1 million tons of carbon dioxide emissions a year, for a state that emits over

¹ [COVID-19 data resources | Connecticut Data](#)

² [The-Sustainable-Development-Goals-Report-2022.pdf \(un.org\)](#)

³ [The US Bipartisan Infrastructure Law: Breaking it down | McKinsey](#)

⁴ <https://www.ctgreenbank.com/wp-content/uploads/2021/12/FY12-FY21-CGB-ImpactReport-web.pdf>

40 million tons per year, is just over 2 percent of all emissions avoided, or over 10 percent of emissions avoided from electricity generation (and consumption).

Connecticut is not on track to achieve 2030 and 2050 targets established in the GWSA.⁵ The 2018 Connecticut Greenhouse Gas Emissions Inventory, released in 2021 by the Connecticut Department of Energy and Environmental Protection (“DEEP”),⁶ revealed that while emissions have fallen 7.3% from a 1990 baseline, there was in fact a slight increase in emissions in 2018 over 2017 emissions.

In response to this, and to growing threats from severe storms, rain bombs, heat domes, polar vortexes, and rising sea levels, on July 6, 2021, Governor Ned Lamont, with the support of the Governor’s Council on Climate Change, signed into law Public Act 21-115.⁷ This act expanded the Green Bank mandate to include environmental infrastructure – a recognition that the same financing tools we have successfully leveraged to increase investment in and deployment of clean energy in Connecticut can support other environmental sectors in need of rapid transformation as well.

Liu Zhenmin, the Under-Secretary-General for Economic and Social Affairs, concludes his comments on the annual SDG report with the following guidance: “Nothing short of a comprehensive transformation of the international finance and debt architecture will be required to accomplish these aims...”

Although the Green Bank is geographically limited in our ability to invest in resilience and mitigation to confront climate change, we can continue to be a leader in the space and demonstrate how new financing models through public-private partnerships can drive innovative investment in our global future. Since the Green Bank’s launch in 2011 as the first green bank in the nation, dozens of state and local green banks have popped up both nationally and abroad. Perhaps the old adage of “think globally – act locally” is appropriate – “let’s go!”

2. Organizational Overview

The Green Bank⁸ was established on a bipartisan basis by Governor Malloy and the Connecticut General Assembly (“CGA”) on July 1, 2011 through Public Act (“PA”) 11-80⁹ as a quasi-public agency that supersedes the former Connecticut Clean Energy Fund (“CCEF”). On July 1, 2021, the 10th anniversary of the Green Bank, again, on a bipartisan basis, Governor Lamont and the CGA enacted PA 21-115¹⁰ expanding the scope of the Green Bank beyond “clean energy” to include “environmental infrastructure”. As the nation’s first state green bank, the Green Bank leverages public funds to mobilize multiples of private investment to increase and accelerate

⁵ Reduce GHG emissions by 45% from 2001 levels by 2030 and 80% from 2001 levels by 2050

⁶ https://portal.ct.gov/-/media/DEEP/climatechange/GHG_Emissions_Inventory_2018.pdf

⁷ An Act Concerning Climate Change Adaptation – <https://www.cga.ct.gov/2021/ACT/PA/PDF/2021PA-00115-R00HB-06441-PA.PDF>

⁸ PA 11-80 repurposed the Connecticut Clean Energy Fund (CCEF) administered by Connecticut Innovations, into a separate quasi-public organization called the Clean Energy Finance and Investment Authority (CEFIA). Per Public Act 14-94, CEFIA was renamed to the Connecticut Green Bank.

⁹ An Act Concerning the Establishment of the Department of Energy and Environmental Protection and Planning for Connecticut’s Energy Future – <https://www.cga.ct.gov/2011/act/pa/pdf/2011PA-00080-R00SB-01243-PA.pdf>

¹⁰ An Act Concerning Climate Change Adaptation – <https://www.cga.ct.gov/2021/ACT/PA/PDF/2021PA-00115-R00HB-06441-PA.PDF>

investment in clean energy deployment and environmental infrastructure improvement in Connecticut.

The Green Bank's statutory purposes are:

- To develop programs to finance and otherwise support clean energy and environmental infrastructure investment in residential, municipal, small business and larger commercial projects and such other programs as the Green Bank may determine;
- To support financing or other expenditures that promote investment in clean energy sources and environmental infrastructure to foster the growth, development and commercialization of clean energy sources, environmental infrastructure, and related enterprises; and
- To stimulate demand for clean energy and the deployment of clean energy sources and investment in environmental infrastructure within the state that serves end-use customers in the state.

The Green Bank's purposes are codified in Section 16-245n(d)(1) of the Connecticut General Statutes ("CGS") and restated in the Green Bank's Board approved [Resolution of Purposes](#). The Green Bank is a public policy innovation that exemplifies Connecticut's more than two-decade history of bipartisan executive and legislative branch leadership on the issue of climate change. Leadership highlights include:

- **Governor Rowland** – co-chaired the New England Governors and Eastern Canadian Premiers Conference, which established a regional commitment to reduce greenhouse gas ("GHG") emissions (i.e., 1990 levels by 2010, 10% below 1990 levels by 2020, and 80% below 2001 levels by 2050);¹¹
- **Governor Rell** – supported PA 08-98¹² codifying the regional commitment into state law, appointing Gina McCarthy to be the Commissioner of the Department of Environmental Protection who would help lead the development of the Regional Greenhouse Gas Initiative ("RGGI"), later become the Administrator of the United States Environmental Protection Agency ("USEPA") under President Obama, and becoming the White House National Climate Advisor for President Biden;
- **Governor Malloy** – led the passage of PA 11-80 establishing the Department of Energy and Environmental Protection ("DEEP"), creating the Green Bank, and other policies catalyzing the market for clean energy, as well as PA 18-50¹³ and PA 18-82¹⁴ increasing the state's renewable portfolio standard ("RPS") to 40% by 2030 and

¹¹ NEG-ECP Resolution 26-4 adopting the "Climate Change Action Plan 2001" (August 2001 in Westbrook, CT) – Westbrook Resolution

¹² An Act Concerning Connecticut Global Warming Solutions – <https://www.cga.ct.gov/2008/ACT/Pa/pdf/2008PA-00098-R00HB-05600-PA.pdf>

¹³ An Act Concerning Connecticut's Energy Future – <https://www.cga.ct.gov/2018/act/pa/pdf/2018PA-00050-R00SB-00009-PA.pdf>

¹⁴ An Act Concerning Climate Change Planning and Resiliency – <https://www.cga.ct.gov/2018/act/pa/pdf/2018PA-00082-R00SB-00007-PA.pdf>

establishing a midterm GHG emissions reduction target of 45% below 2001 levels by 2030, respectively; and

- **Governor Lamont** – issued his first¹⁵ and third¹⁶ executive orders on state “Greener Gov” for sustainability, clean energy, and climate change leadership, passing PA 21-115 expanding the scope of the Green Bank to include “environmental infrastructure,” PA 22-5¹⁷ including a 100% zero emission electricity target by 2040, and PA 22-25¹⁸ confronting greenhouse gas emissions from the transportation sector, including 100% targets for school buses in environmental justice communities by 2030 and all communities by 2040.

The CGA has worked hand-in-hand with these Governors and the citizens of the state over the years to devise and support public policies that promote clean energy, environmental infrastructure, and lead the movement to confront climate change.¹⁹

2.1 Vision Statement

...a planet protected by the love of humanity.²⁰

2.2 Mission Statement

Confront climate change by increasing and accelerating investment into Connecticut’s green economy to create more resilient, healthier, and equitable communities.

2.3 Goals

To achieve its vision and mission, the Green Bank has established the following three goals:

1. To leverage limited public resources to scale-up and mobilize private capital investment in the green economy of Connecticut.
2. To strengthen Connecticut’s communities, especially vulnerable communities,²¹ by making the benefits of the green economy inclusive and accessible to all individuals, families, and businesses.

¹⁵ <https://portal.ct.gov/-/media/Office-of-the-Governor/Executive-Orders/Lamont-Executive-Orders/Executive-Order-No-1.pdf>

¹⁶ <https://portal.ct.gov/-/media/Office-of-the-Governor/Executive-Orders/Lamont-Executive-Orders/Executive-Order-No-3.pdf>

¹⁷ An Act Concerning Climate Change Mitigation – <https://www.cga.ct.gov/2022/act/Pa/pdf/2022PA-00005-R00SB-00010-PA.PDF>

¹⁸ An Act Concerning the Connecticut Clean Air Act – <https://www.cga.ct.gov/2022/ACT/PA/PDF/2022PA-00025-R00SB-00004-PA.PDF>

¹⁹ Reducing greenhouse gas emissions and confronting climate change is supported by a number of public policies, including, but not limited to PA 17-3, PA 18-82, PA 19-71, Governor Lamont’s Executive Orders 1 and 3, Comprehensive Energy Strategy, Governor’s Council on Climate Change, and many other past acts, plans, or policies.

²⁰ Vision Statement inspired by the Innovations in American Government Awards at the Ash Center of Harvard University’s Kennedy School of Government, Maya Angelou’s “On the Pulse of Morning,” the powerful words of Mary Evelyn Tucker on “inclusive capitalism,” and Mother Jennifer of the Daughters of Mary of the Immaculate Conception

²¹ Per PA 20-05, “An Act Concerning Emergency Response by Electric Distribution Companies, the Regulation of Other Public Utilities and Nexus Provisions for Certain Disaster-Related or Emergency-Related Work Performed in the State,” “vulnerable communities” means populations that may be disproportionately impacted by the effects of climate change, including, but not limited to, low and moderate income communities, environmental justice communities pursuant to section 22a-20a,

3. To pursue investment strategies that advance market transformation in green investing while supporting the organization’s pursuit of financial sustainability.

The vision statement, mission statement, and goals support the implementation of Connecticut’s climate change, clean energy, and environmental infrastructure policies be they statutorily required (e.g., PA 21-53),²² planning (e.g., Comprehensive Energy Strategy), or regulatory (e.g., Docket No. 17-12-03RE03)²³ in nature.

Framework for an Equitable Modern Grid²⁴

The Public Utilities Regulatory Authority’s (“PURA”) Framework for an Equitable Modern Grid, seeks to (1) support, or remove barriers to, the growth of Connecticut’s green economy; (2) enable a cost-effective, economy-wide transition to a decarbonized future; (3) enhance customer access to a more resilient, reliable and secure electricity commodity; and (4) advance the ongoing energy affordability dialogue in the state, particularly in underserved communities.

The Green Bank supports PURA in their efforts through participation in many of the re-openers in the equitable modern grid as a commentor, a participant and a program administrator.

2.4 Definitions – Clean Energy and Environmental Infrastructure

The Green Bank’s investment focus is on “clean energy” and “environmental infrastructure” as defined by CGS Section 16-245n:

- **Clean Energy** – clean energy means solar photovoltaic energy, solar thermal, geothermal energy, wind, ocean thermal energy, wave or tidal energy, fuel cells, landfill gas, hydropower that meets the low-impact standards of the Low-Impact Hydropower Institute, hydrogen production and hydrogen conversion technologies, low emission advanced biomass conversion technologies, alternative fuels, used for electricity generation including ethanol, biodiesel or other fuel produced in Connecticut and derived from agricultural produce, food waste or waste vegetable oil, provided the Commissioner of Energy and Environmental Protection determines that such fuels provide net reductions in GHG emissions and fossil fuel consumption, usable electricity from combined heat and power systems with waste heat recovery systems, thermal storage systems, other energy resources and emerging technologies which have significant potential for commercialization and which do not involve the combustion of coal, petroleum or petroleum products, municipal solid waste or nuclear fission, financing of energy efficiency projects, projects that seek to deploy electric, electric hybrid, natural gas or alternative fuel vehicles and associated infrastructure, any related

communities eligible for community reinvestment pursuant to section 36a-30 and the Community Reinvestment Act of 1977, 12 USC 2901 et seq., as amended from time to time, populations with increased risk and limited means to adapt to the effects of climate change, or as further defined by DEEP in consultation with community representatives.

²² An Act Concerning Energy Storage – <https://www.cga.ct.gov/2021/act/Pa/pdf/2021PA-00053-R00SB-00952-PA.PDF>

²³ Equitable Modern Grid Initiative – Electric Storage

²⁴ <https://portal.ct.gov/PURA/Electric/Grid-Modernization/Grid-Modernization>

storage, distribution, manufacturing technologies or facilities and any Class I renewable energy source, as defined in CGS 16-1(a)(2).

- **Environmental Infrastructure** – structures, facilities, systems, services and improvement projects related to (A) water, (B) waste and recycling, (C) climate adaptation and resiliency, (D) agriculture, (E) land conservation, (F) parks and recreation, and (G) environmental markets, including, but not limited to carbon offsets²⁵ and ecosystem services.²⁶

2.5 Governance

Pursuant to Section 16-245n of the CGS, the powers of the Green Bank are vested in and exercised by a BOD²⁷ that is comprised of twelve voting and one non-voting members each with knowledge and expertise in matters related to the purpose of the organization – see Table 1.²⁸

Table 1. Board of Directors of the Connecticut Green Bank

Position	Status	Appointer	Voting
State Treasurer (or designee)	Ex Officio	Ex Officio	Yes
Commissioner of DEEP (or designee)	Ex Officio	Ex Officio	Yes
Commissioner of DECD (or designee)	Ex Officio	Ex Officio	Yes
Secretary of OPM (or designee)	Ex Officio	Ex Officio	Yes
Residential or Low-Income Group	Appointed	Speaker of the House	Yes
Investment Fund Management	Appointed	Minority Leader of the House	Yes
Environmental Organization	Appointed	President Pro Tempore of the Senate	Yes
Finance or Deployment of Renewable Energy	Appointed	Minority Leader of the Senate	Yes
Finance of Renewable Energy	Appointed	Governor	Yes
Finance of Renewable Energy	Appointed	Governor	Yes
Labor	Appointed	Governor	Yes
R&D or Manufacturing	Appointed	Governor	Yes
President of the Green Bank	Ex Officio	Ex Officio	No

There are four (4) committees of the BOD of the Green Bank, including Audit, Compliance, and Governance Committee (“ACG Committee”), Budget, Operations, and Compensation Committee (“BOC Committee”), Deployment Committee, and the Joint Committee of the Energy Efficiency Board (“EEB”) and the Green Bank.²⁹

²⁵ Carbon offsets means an activity that compensates for the emission of carbon dioxide or other greenhouse gases by providing for an emission reduction elsewhere.

²⁶ Ecosystem services means benefits obtained from ecosystems, including, but not limited to, (A) provisioning services such as food and water, (B) regulating services such as floods, drought, land degradation and disease, and (C) supporting services such as soil formation and nutrient cycling.

²⁷ <https://www.ctgreenbank.com/about-us/governance/board-of-directors/>

²⁸ <https://www.ctgreenbank.com/about-us/governance/>

²⁹ Pursuant to CGS 16-245m(d)(2) – There shall be a joint committee of the Energy Conservation Management Board and the board of directors of the Connecticut Green Bank. The boards shall each appoint members to such joint committee. The joint committee shall examine opportunities to coordinate the programs and activities funded by the Clean Energy Fund pursuant to section 16-245n with the programs and activities contained in the plan developed under this subsection and to provide financing to increase the benefits of programs funded by the plan so as to reduce the long-term cost, environmental impacts and security risks of energy in the state. Such joint committee shall hold its first meeting on or before August 1, 2005.

Principal Statement of the Joint Committee

To support the Joint Committee of the EEB and the Green Bank, the following is a principal statement to guide its activities:

The EEB and the Green Bank have a shared goal to implement state energy policy throughout all sectors and populations of Connecticut with continuous innovation towards greater leveraging of ratepayer funds and a uniformly positive customer experience.

The BOD of the Green Bank is governed through enabling legislation, as well as by an [Ethics Statement](#) and [Ethical Conduct Policy](#), Resolutions of Purposes, [Bylaws](#), [Joint Committee Bylaws](#), and a Comprehensive Plan. All meetings, agendas, and materials of the Green Bank's BOD and its Committees are publicly available on the organization's website.^{30,31}

2.6 Organizational Structure

The Green Bank is administered by a professional staff overseeing three (3) business units, including:

- **Incentive Programs** – the Governor and the CGA from time-to-time may decide that there are certain incentive programs that they seek to have the Green Bank administer (e.g., PA 21-53). The Green Bank administers such programs with the goal of delivering on the public policy objectives, while at the same time ensuring that funds invested by the Green Bank are cost recoverable.³² For example, the Green Bank co-administers the Energy Storage Solutions ("ESS") program with the Electric Distribution Companies ("EDC") (i.e., Avangrid and Eversource Energy) to deploy 580 MW of behind the meter residential and non-residential battery storage systems through an upfront declining incentive block structure and ongoing performance-based incentive.
- **Financing Programs** – the Green Bank's core business is financing clean energy projects. The use of public revenues by the Green Bank (i.e., Clean Energy Fund ("CEF") and RGGI allowance proceeds) are to be invested with the expectation of principal and interest being paid back over time (i.e., earned revenues). For example, per CGS 16a-40g, the Green Bank administers the Commercial Property Assessed Clean Energy ("C-PACE") program. Through C-PACE, the Green Bank provides capital to building owners to make clean energy and resilience improvements on their properties that is paid back over time from a benefit assessment on the building owner's property tax bill. The interest earned from these types of investments, over time, is expected to cover the operational expenses and a return for the Green Bank.
- **Environmental Infrastructure Programs** – as a result of the passage of PA 21-115 expanding the scope of the Green Bank beyond "clean energy" to include "environmental infrastructure," the financing tools of the green bank model will be used

³⁰ <https://www.ctgreenbank.com/about-us/governance/connecticut-grboard-meetings/>

³¹ <https://www.ctgreenbank.com/about-us/governance/connecticut-grittee-meetings/>

³² In the past, per CGS 16-245ff, the Green Bank administered the Residential Solar Investment Program ("RSIP") which resulted in 350 MW of residential solar photovoltaic system deployment between 2012 through 2021.

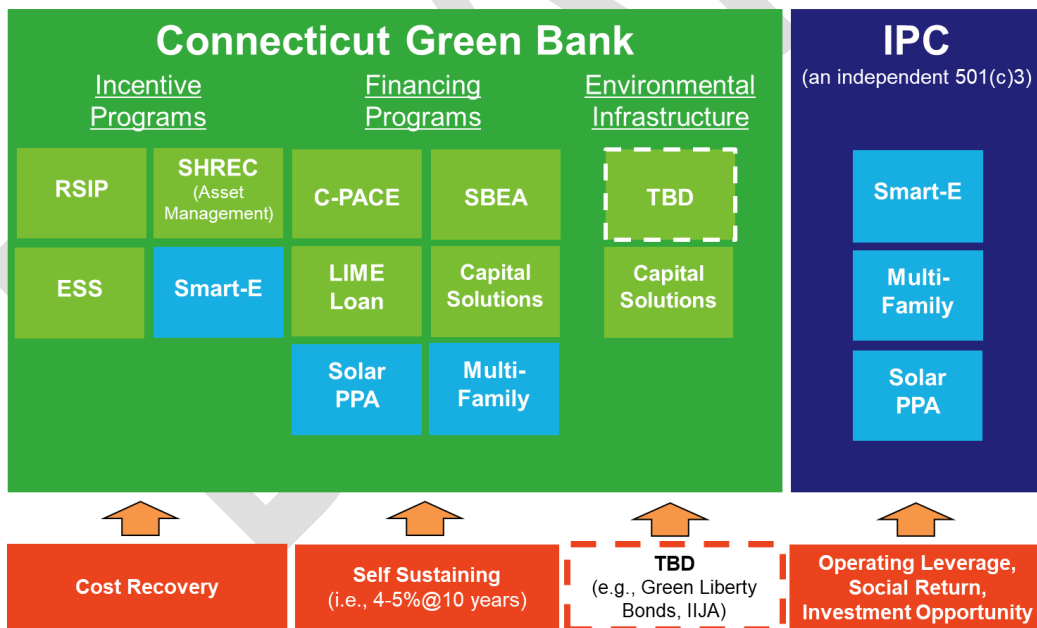
to mobilize private investment in Connecticut’s green economy. Raising capital for the Environmental Infrastructure Fund (“EIF”) through the issuance of Green Liberty Bonds, accessing federal resources (e.g., Infrastructure Investment and Jobs Act (“IIJA”) of 2021), and/or other means, will provide resources to invest in the modernization, decarbonization, and resilience of the state’s environmental infrastructure.

These three business units – Incentive Programs and Financing Programs (i.e., for “clean energy”) and Environmental Infrastructure Programs – serve the purposes of the Green Bank. To support the business units and their investments, the Green Bank has administrative support from finance, legal, marketing and operations.

In FY19, the Green Bank, in partnership with DEEP and the Kresge Foundation, formed a nonprofit organization called Inclusive Prosperity Capital (“IPC”). The mission of IPC is to attract mission-oriented investors in underserved clean energy market segments (e.g., low-to moderate-income (“LMI”) single and multifamily properties) of the green economy. Although not an affiliate, nor a component unit of the Green Bank, IPC serves an important role supporting Green Bank programs (e.g., Smart-E, Solar PPA, and Multifamily Affordable) through FY26.

For an overview of the organizational structure of the Green Bank, and its partnership with IPC – see Figure 1.

Figure 1. Organizational Structure of the Green Bank with Support from Inclusive Prosperity Capital



An Employee Handbook and [Operating Procedures](#) have been approved by the BOD Directors and serve to guide the staff to ensure that it is following proper contracting, financial assistance, and other requirements.

3. Incentive Programs

The Green Bank administers incentive programs, including credit enhancements (e.g., interest rate buydowns, loan loss reserves), used to deploy clean energy and environmental infrastructure, while at the same time cost recovering the expenses associated with several of these programs (i.e., CGS 16-245ff, PA 21-53) within the business unit – including, but not limited to, incentives, administrative expenses, and financing costs.

3.1 Residential Solar Investment Program and Residential Renewable Energy Solutions

Residential Solar Investment Program

Per CGS 16-245ff, the Green Bank administered the Residential Solar Investment Program (“RSIP”) to deploy no more than 350 megawatts of new residential solar PV systems on or before December 31, 2022, while promoting the sustained, orderly development of a local state-based solar PV industry and ensuring that solar PV systems are accessible and affordable to vulnerable communities.³³ As of December 31, 2021, the RSIP achieved 350 MW of deployment, providing over 43,000 households with access to solar PV systems, including 50% within vulnerable communities. With the end of the RSIP policy on December 31, 2022, the focus of the Green Bank will be to manage the Solar Home Renewable Energy Credits (“SHREC”) generated from the systems supported through the RSIP to recover incentives, administrative expenses, and financing costs, by selling SHRECs to the EDCs through a 15-year Master Purchase Agreement (“MPA”) to pay for bonds sold to support the program.

Residential Renewable Energy Solutions

Starting January 1, 2022, the residential solar PV market transitioned from the RSIP and net metering to a tariff-based compensation structure.³⁴ In order to ensure the continued sustained, orderly development of the local solar industry beyond the conclusion of the RSIP, and access to such clean energy technologies by vulnerable communities, the Green Bank actively engaged in the regulatory process (i.e., Docket No. 20-07-01) overseen by PURA to establish Residential Renewable Energy Solutions (“RRES”) – an EDC-administered residential renewable energy tariff program.

As a result of the Green Bank’s engagement in the PURA process for the RRES, the following key program design principles were included:

- **Rate of Return** – a just, reasonable, and adequate rate of return of between 9 to 11 percent was determined (i.e., equivalent to \$0.294/kWh in 2021) for the 20-year tariff through the Green Bank’s inclusion of an objective rate of return analysis of the RSIP;
- **HES or HES-IE Requirement** – to continue the linkage between energy efficiency and solar PV as demonstrated by the RSIP, an important objective of the Joint Committee, the Green Bank advocated for a Home Energy Solutions (“HES”) or Home Energy

³³ Each year, from 2019 through 2021, and cumulatively from 2014 through 2021, Connecticut had the largest per capita deployment of residential solar PV in the entire northeast (i.e., New England, New Jersey, and New York) as a result of administering the RSIP (SEIA – Solar Market Insights 2022).

³⁴ See CGS 16-244z and Docket No. 20-07-01

Solutions – Income Eligible (“HES-IE”) requirement as part of every project supported through RRES;

- **Additional Incentives for Vulnerable Communities** – given the success of the RSIP in reaching vulnerable communities, the Green Bank wanted to ensure that solar PV was affordable and accessible to LMI households, and thus adds for low income (i.e., \$0.0250/kWh) or households located in distressed municipalities³⁵ (i.e., \$0.0125/kWh) over the 20-year tariff were determined;
- **Direct Payment** – due to the perceived risks of underwriting financing (i.e., loans, leases, or power purchase agreements (“PPAs”)) for vulnerable communities, the Green Bank advocated for direct payments of the tariff rates from the EDCs to a third-party in-part or in-whole as a way to reduce borrower risk (including perceived risk) and therefore make renewable energy more affordable and accessible to vulnerable communities. This provides a financing mechanism that would allow the Green Bank to provide investment in developers serving vulnerable communities; and
- **Affordable Housing** – as part of the Green Bank-led amendments to PA 21-48,³⁶ which includes “affordable housing” as part of RRES (i.e., versus Non-Residential Renewable Energy Solutions or “NRES”), and a subsequent decision by PURA in Docket No. 21-08-02, it will be easier for property owners to participate in RRES, enabling energy savings to both the property owner and its low-income tenants.

These key program design principles within the EDC-administered tariff program will improve the program’s likelihood of success in deploying no less than fifty (50) megawatts of new residential solar PV a year, while ensuring that vulnerable communities have continued opportunities to reduce the burden of energy costs that they experienced through the RSIP. To support PURA in overseeing the EDC-administered RRES, the Green Bank is a consultant to the Office of Education, Outreach, and Enforcement.

3.2 Energy Storage Solutions

With the passage of PA 21-53 establishing a 1000 MW energy storage target by 2030, and the final decision in Docket No. 17-12-03RE03 on electric storage, the Green Bank was selected by PURA to co-administer a 580 MW behind the meter residential and non-residential battery storage incentive program with the EDCs called ESS. The Green Bank is responsible for administering the upfront incentive, marketing the program, and overseeing evaluation, measurement, and verification (“EM&V”). ESS seeks to deploy battery storage systems to help families and businesses become more resilient against power outages, while reducing peak demand during summer and winter periods reducing electric rates for all ratepayers.

3.3 EnergizeCT Smart-E Loan

The EnergizeCT Smart-E Loan (“Smart-E Loan”) is a partnership between the Green Bank and local community banks and credit unions that provide easy and affordable access to capital for homeowners to finance clean energy and environmental infrastructure improvements on their

³⁵ https://portal.ct.gov/DECD/Content/About_DECD/Research-and-Publications/02_Review_Publications/Distressed-Municipalities

³⁶ An Act Establishing and Energy Efficiency Retrofit Grant Program for Affordable Housing – <https://www.cga.ct.gov/2021/act/Pa/pdf/2021PA-00048-R00SB-00356-PA.PDF>

properties through local contractors. The Green Bank provides credit enhancements to the participating financing institutions in the form of interest rate buydowns (i.e., from the use of federal resources) and loan loss reserves (i.e., from the Green Bank balance sheet). This allows financial institutions to provide low-interest and longer-term loans to families.

In FY 2023, the Green Bank, working with DEEP and other stakeholders, will be expanding the Smart-E Loan offering beyond clean energy to include environmental infrastructure measures.

3.4 Incentive Program Targets

The Green Bank has set targets for its Incentive Programs business unit for FY 2023 in terms of the number of projects, total investment (i.e., public and private), and installed capacity – see Table 2.

Table 2. FY 2023 Targets for the Incentive Programs Business Unit

Program / Product	Projects	Total Investment (\$MM's)	Installed Capacity (kW)
Energy Storage Solutions – Residential	500	\$20.0	7,600
Energy Storage Solutions – Non-Residential ³⁷	0	0	0
EnergizeCT Smart-E Loan	960	\$15.0	200
Total	1,460	\$35.0	7.8

In terms of the Green Bank’s vulnerable community’s prioritization, the following is a goal for Incentive Programs:

- By 2025, no less than 40 percent of investment and benefits (e.g., jobs) from Incentive Programs is directed to vulnerable communities.

As a result of successfully achieving these targets, the Green Bank will reduce energy burden and increase energy security for Connecticut families and businesses, especially those in vulnerable communities, create jobs in our communities, raise tax revenues for the State of Connecticut, and reduce air pollution causing local public health problems and contributing to global climate change.

4. Financing Programs

The Green Bank manages financing programs. That is to say that it oversees financing programs that invest capital upfront (i.e., public revenues including CEF and RGGI) to deploy clean energy, while at the same time returning principal and interest (i.e., earned revenues) over time from the financing of projects, products, or programs to ensure the financial sustainability of the Green Bank.

³⁷ It should be noted that as of June 30, 2022, that 39 non-residential battery storage projects were submitted for approval totaling 64.3 MW and an estimated \$90.4 MM of investment. Of those projects, 4 have been approved totaling 3.8 MW and received a Reservation of Funds letter. All of these projects must work through the interconnection process of the EDCs, which could take months, if not years to review and approve.

4.1 Commercial Property Assessed Clean Energy

Per CGS 16a-40g, C-PACE enables building owners to pay for clean energy improvements over time through a voluntary benefit assessment placed by participating municipalities on their property tax bills. As of June 30, 2022, there have been 139 cities and towns that have opted into C-PACE. This process makes it easier for building owners to secure low-interest capital for up to 25 years to fund clean energy improvements and is structured so that energy savings more than offset the benefit assessment. With the passage of PA 22-6,³⁸ resilience and electric vehicle recharging stations were added to the list of eligible measures for C-PACE.

In FY 2023, the Green Bank, working with DEEP, Connecticut Institute for Resilience and Climate Adaptation (“CIRCA”), and other stakeholders, will be expanding C-PACE beyond clean energy to include resilience³⁹ measures.

4.2 Green Bank Solar Power Purchase Agreement

Green Bank Solar PPA is a third-party ownership structure to deploy solar PV systems for commercial scale end-use customers (e.g., businesses, nonprofits, municipal and state governments, affordable multifamily properties, etc.) that uses a multi-year PPAs to finance projects while reducing energy costs for the host customer.

4.3 Small Business Energy Advantage

Small Business Energy Advantage (“SBEA”) is an Eversource Energy administered on-bill commercial energy efficiency financing program for small businesses, in partnership with low-cost capital provided by Amalgamated Bank with a credit enhancement from the Green Bank (i.e., subordinated debt) and the Connecticut Energy Efficiency Fund (i.e., loan loss guaranty and interest rate buydown). SBEA enables small businesses with an average 12-month peak demand between 10 and 200 kW to access 0% on bill financing for up to \$100,000 for businesses and \$1,000,000 for municipalities and state facilities.

4.4 Multifamily Products

Defined as buildings with 5 or more units, the Green Bank provides a suite of financing options in collaboration with our partners IPC and Capital for Change (a Community Development Financial Institution or “CDFI”) that support property owners to assess, design, fund, and monitor high impact clean energy and health & safety improvements for their properties.

4.5 Green Bank Capital Solutions

As opportunities present themselves, the Green Bank from time-to-time invests as part of a capital structure in various projects (e.g., fuel cell, hydropower, food and farm waste to energy). These projects are selected based on the opportunity to expand the organization’s experience with specific technologies, advance economic development in a specific locale, or to drive adoption of clean energy that would otherwise not occur, while also earning a rate of return.

³⁸ An Act Concerning the Commercial Property Assessed Clean Energy Program – <https://www.cga.ct.gov/2022/act/Pa/pdf/2022PA-00006-R00SB-00093-PA.PDF>

³⁹ Per CGS 16-244aa, “resilience” means the ability to prepare for and adapt to changing conditions and withstand and recover rapidly from deliberate attacks, accidents or naturally occurring threats or incidents, including, but not limited to, threats or incidents associated with the impacts of climate change.

4.6 Financing Program Targets

The Green Bank has set targets for its Financing Programs business unit for FY 2023 in terms of the number of projects, total investment (i.e., public and private), and installed capacity – see Table 3.

Table 3. FY 2023 Targets for the Financing Programs Business Unit

Program / Product	Projects	Total Investment (\$MM's)	Installed Capacity (kW)
Commercial PACE	23	\$31.0	-
Green Bank Solar PPA	19	\$13.7	7,600
Small Business Energy Advantage	839	\$18.6	-
Multifamily Term Loan	6	\$1.4	600
Multifamily Health and Safety	1	\$0.9	-
Strategic Investments	2	\$7.5	-
Total	882	\$64.2	7,600

In terms of the Green Bank's vulnerable communities prioritization, the following is a goal for Financing Programs:

- By 2025, no less than 40 percent of investment and benefits (e.g., jobs) from Financing Programs is directed to vulnerable communities.

The capital provided by the Green Bank, which is a portion of the total investment, is expected to yield a return commensurate with the financial sustainability objectives of the organization and business unit.

As a result of successfully achieving these targets, the Green Bank will contribute to its financial sustainability, while also reducing the energy burden on and improve the resiliency from climate change for Connecticut families and businesses, especially those in vulnerable communities, create jobs in our communities, raise tax revenues for the State of Connecticut, and reduce air pollution that cause local public health problems and global climate change.

5. Environmental Infrastructure Programs

Following the passage of PA 21-115 in June of 2021, the Green Bank began the process of policy assessment and development for environmental infrastructure in FY 2022, including:

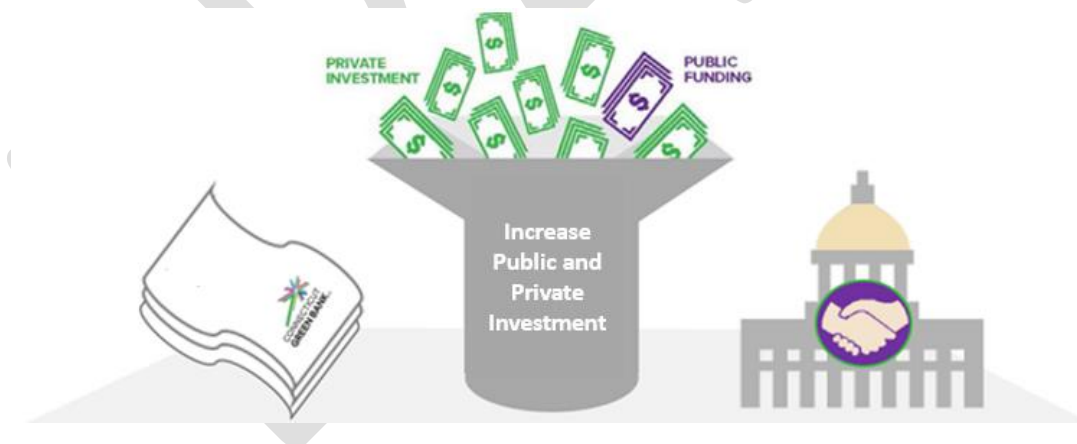
- Governance Amendments** – revising various governance documents including the Resolution of Purpose, Bylaws, and Operating Procedures;
- Assessing Bond Potential** – investigating the potential for Green Liberty Bonds to be issued to raise proceeds for environmental infrastructure investment, including fifty (50) year maturity terms;

- **Developing Products** – expanding the ability for the Smart-E Loan to support environmental infrastructure projects for single family property owners and C-PACE to support resilience projects for multifamily and commercial property owners;
- **Stakeholder Engagement** – initiating outreach to public, private, nonprofit, and academic stakeholder organizations to introduce the Green Bank, understand public policies and targets, identify funding opportunities, market potential, investment requirements, and financing models, and metrics for environmental infrastructure; and
- **Strategic Retreat** – engaging members of the BOD, staff, and key stakeholders in an offsite strategic retreat to expand the scope of the Green Bank to mobilize private investment in environmental infrastructure.

As a result of these efforts in FY 2022, the Green Bank makes the following observations with respect to environmental infrastructure:

1. **Market Intermediary Role** – as is the case with respect to “clean energy,” the Green Bank has a role to play as a market intermediary for “environmental infrastructure” – see Figure 2. Given the ambitious nature of public policies with respect to environmental infrastructure (e.g., 21% open space by 2023), and the need to mobilize and attract private investment to achieve the policy objectives (e.g., \$1.5 billion of additional public and/or private investment needed to achieve the open space target), there is a need for an intermediary role for the Green Bank between capital markets and public policy.

Figure 2. Market Intermediary Role - Capital Markets and Public Policy



2. **Better Market Signals** – again, as is the case with respect to “clean energy” (e.g., zero emission renewable energy credits), there is a need for public policy to send better market signals to unlock and mobilize private capital investment in “environmental infrastructure”. For example, beyond “sticks” (e.g., regulation and enforcement requiring producers of food waste to transport their waste to an anaerobic digester per Public Act 11-127), there need to also be associated “carrots” (e.g., virtual net metering, low emission renewable energy credits, renewable natural gas) in order to enable private investment in “environmental infrastructure”. A strong market signal public

policy for green and blue infrastructure is Maryland’s Conservation Finance Act of 2022 and the pay-for-success contracts for certain environmental outcomes.⁴⁰

3. **Appropriately Priced Capital** – if public policy in Connecticut is designed to reduce risks (including perceived risks), then attracting and mobilizing appropriately priced private capital (e.g., lower interest rates, longer terms) must ensue. The Green Bank can access affordable private capital through the issuance of Green Liberty Bonds, which can be paid back over 50 years (or the useful life of the asset) and whose proceeds can be invested in environmental infrastructure.
4. **Community Engagement** – there is a continuous need to not only engage public, private, nonprofit and academic stakeholders, but also municipal, councils of government, and other community-level officials. Empowering impacted communities, especially vulnerable communities, through near-term engagement (i.e., informing, consulting, and involving) to long-term engagement (i.e., collaborating and empowering) is vital to identifying needs to support the development of programs and the success of investments in projects to achieve their intended impacts.
5. **Vulnerable Communities** – with a key goal to “strengthen Connecticut’s communities, especially vulnerable communities, by making the benefits of the green economy inclusive and accessible to all individuals, families, and businesses,” as is the goal for “clean energy,” the Green Bank will ensure that by the end of 2025 no less than 40 percent of investment and benefits (e.g., jobs) in “environmental infrastructure” are directed to vulnerable communities.

In FY 2023, the Green Bank will continue its progress on developing its environmental infrastructure business unit and programs including, but not limited to:

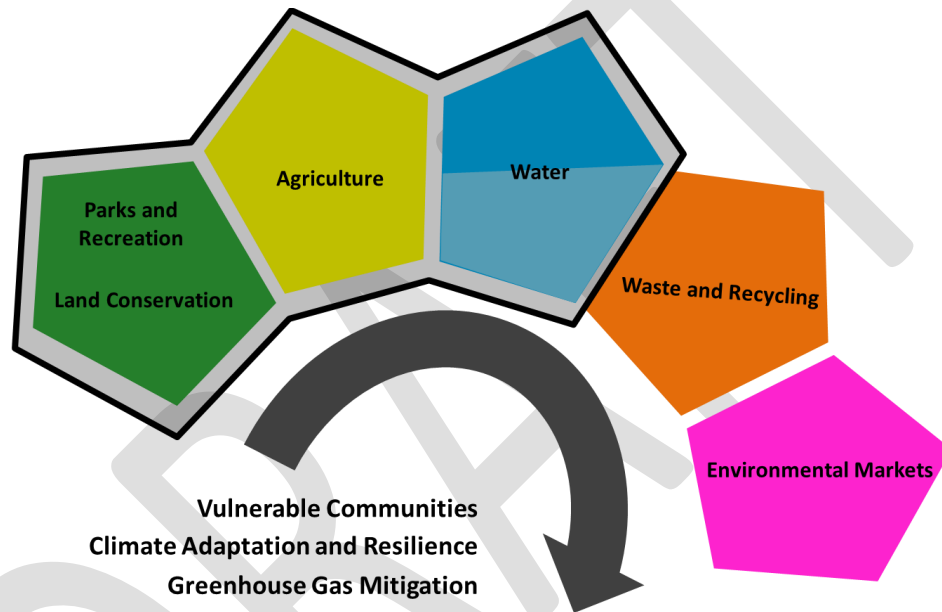
- **Building the Team** – hiring several critical positions including the Manager of Community Engagement and Director of Environmental Infrastructure, as well as qualifying a suite of contractors to support the work of the business unit;
- **Continuing Engagement** – wrapping up stakeholder outreach for the water, waste and recycling sectors, and initiating engagement of municipal and regional governments, especially those in vulnerable communities;
- **Raising Resources** – identifying opportunities for federal and foundation funding, and developing the Green Liberty Bonds to raise proceeds from the issuance of bonds to provide capital for investment;
- **Launching New Products** – developing existing financing products for clean energy (i.e., Smart-E Loan, C-PACE) to support environmental infrastructure measures; and
- **Conducting Research** – continuing to identify research opportunities to develop markets for carbon offsets and ecosystem services for the purposes of generating revenues from projects as a result of Green Bank investments.

⁴⁰ <https://mgaleg.maryland.gov/mgawebsite/Legislation/Details/SB0348>

5.1 Confronting Climate Change and Vulnerable Communities

Given the mission of the Green Bank, investments in environmental infrastructure must seek to confront climate change (i.e., mitigate GHG emissions and increase resilience against its impacts) and increase investment in vulnerable communities – see Figure 3. The combination of land conservation, parks and recreation, agriculture, and water – together “green infrastructure” or “nature-based solutions” – provide an opportunity for the Green Bank, in partnership with public, private, nonprofit, municipal and other stakeholders, to mobilize investment.

Figure 3. Confronting Climate Change and Enabling Investment in Vulnerable Communities through Environmental Infrastructure



Through stakeholder engagement, the Green Bank recognizes the opportunity for investment in nature-based solutions that protect land and water from loss, improve management of natural resources for productive use in the economy, and restore native cover – all of which help Connecticut confront climate change – see Figure 4.

Figure 4. Nature-Based Solutions and Green Infrastructure



In terms of the Green Bank’s vulnerable communities prioritization, the following is a goal for Environmental Infrastructure Programs:

- By 2025, no less than 40 percent of investment and benefits (e.g., jobs) from Environmental Infrastructure Programs is directed to vulnerable communities.

The following is a succinct breakdown of each area of environmental infrastructure, including links to more detailed primers based on stakeholder outreach.

5.2 Environmental Markets – Carbon Offsets and Ecosystem Services

Carbon offsets are measurable outcomes from carbon sequestration activities, traded in voluntary (e.g., requiring verification and certification) and compliance (e.g., RGGI) markets, whereby regulations, sustainability priorities, and public relations are motivators for buyers and sellers. Ecosystem services are the benefits people obtain from ecosystems.⁴¹ Fundamentally, ecosystem services markets are designed to embed the positive benefits (e.g., public health, resilience) and negative impacts (e.g., GHG emissions) of individuals on natural resources into market-based systems which financially incentivize environmental stewardship, conservation, and rehabilitation of natural ecosystems.

Environmental infrastructure projects that involve carbon offsets and ecosystem services can be quantified and sold in markets to generate additional revenues from the projects.

For further details on the market opportunity, see Primer – Environmental Markets.

5.3 Land Conservation

Nature-based solutions such as protecting intact lands from loss (e.g., forestlands, wetlands), improving the management of working lands (e.g., sustainably certified timberlands), and restoring native land cover, including coastlines, can both mitigate GHG emissions that cause climate change (e.g., forest carbon sequestration) and increase resilience against the impacts of climate change (e.g., flood protection).

The following is the market potential for land conservation from the perspective of forestland – see Table 4.

Table 4. Market Potential for Land Conservation in Connecticut based on Forest Land

3,205,762 Acres Land in Connecticut				
1,869,761 Acres Forest Land			1,336,001 Acres Non-Forest Land	
298,994 Acres Protected Core Forests	568,857 Acres Unprotected Core Forest	1,001,910 Acres Non-Core Forest	1,130,000 Acres Urban Area	206,001 Acres Other Non- Urban and Non- Forest

⁴¹ Provisioning services (e.g., food, water, fuel, wood), supporting services (e.g., nutrient cycling, soil formation, habitat provision, primary production), regulating services (e.g., climate regulation, flood regulation, water purification), and cultural (e.g., spiritual, aesthetic, educational, and recreational).

To retain the multiple benefits that forests provide, there is a “no net loss of forest” policy goal.

The following is a breakdown of the land conservation target outlined in the CGS 23-8⁴² – see Table 5.

Table 5. Progress Towards the Open Space Land Target in Connecticut (as of December 31, 2019)

3,205,762 Acres Land in Connecticut								2,532,552 Acres No Land Conservation (@79%)
320,576 Acres State Goal (@10%)				352,634 Acres Partner Goal (@≥11%)				
175,000 Acres State Forests⁴³	36,000 Acres State Parks⁴⁴	46,000 Acres Wildlife Area and Other⁴⁵	63,500 Acres left to achieve target	84,000 Acres Cities and Towns	99,000 Acres Water Companies	66,000 Acres Non- Profit Land Trusts	104,000 Acres left to achieve target	

Of the open space goal of 21% by 2023 (i.e., 673,210 acres), approximately 510,249 acres are conserved (as of December 31, 2019), or 76% of the open space goal comprising 261,806 acres of state (i.e., 82% of the 10% state target) and 248,953 acres of partner (i.e., 71% of the partner target) – leaving an estimated 162,451 acres of open space left to achieve. If the average land acquisition cost is \$9,000 per acre, then approximately \$1.5 billion of public and private investment in land conservation would be needed to acquire and protect over 160,000 acres of open space in order to achieve the 21% target.

As the Green Bank looks to increase and accelerate private investment in land conservation, it will be exploring the following financing tools, including, but not limited to:

- Carbon offset markets
- Ecosystem services markets
- Pay-for-Performance
- Eco-Labeling (e.g., FSC Certified)
- Green Liberty Bonds
- Buy-Protect-Sell Revolving Loan Fund
 - Predevelopment Financing
 - Bridge Financing
 - Traditional Debt Financing
- Forest Investment Fund

For further details on the market opportunity, see Primer – Land Conservation.

5.4 Parks and Recreation

Infrastructure investments in parks and recreation can both mitigate the GHG emissions that cause climate change (e.g., carbon sinks from urban tree canopy cover) and increase resilience against the impacts of climate change (e.g., stormwater management through urban parks, improve public health).

⁴² State goal for open space acquisition – <https://law.justia.com/codes/connecticut/2012/title-23/chapter-447/section-23-8/>

⁴³ 33 locations

⁴⁴ 107 locations

⁴⁵ Including wildlife management areas, fish hatcheries, flood control, natural area preserve, water access, wildlife sanctuaries, and other

The following is a breakdown of the market potential for parks and recreation from the perspective of active⁴⁶ and passive⁴⁷ outdoor recreation facilities, and on “land” or “water” based activities from the Statewide Comprehensive Outdoor Recreation Plan (“SCORP”) – see Table 6.

Table 6. Outdoor Recreation Facilities in Connecticut (2005)

Outdoor Recreation Type	# of Facilities	DIRPS ⁴⁸ per 10,000 Residents	Ownership		
			Statewide Average	Municipal Average	Other Average
Active – Land	4,788	1.4	4%	77%	20%
Active – Water	137	0.4	2%	69%	30%
Passive – Land	1,957	1.0	27%	46%	27%
Passive – Water	1,130	1.1	22%	45%	33%
Total	8,012	1.2	14%	62%	24%

The Trust for Public Land’s (“TPL”) ParkScore Index is a comprehensive rating system to measure how cities are meeting the needs for parks.⁴⁹ In an effort to assess ParkScore, the following data are for Connecticut’s “Top 10” most populated municipalities with respect to park access – see Table 7.

Table 7. “Top 10” Most Populated Municipalities in Connecticut and ParkScore

City	Population	Acres	% Land as Parks	Acres of Land as Parks	Acres of Parks per 10,000 Residents	# of Parks	Parks per 10,000 Residents	10-Minute Walk
Hartford	121,203	11,136	9%	1,002	83	218	18.0	99%
New Haven	130,764	11,968	12%	1,436	110	128	9.8	96%
West Hartford	63,063	13,952	20%	2,790	442	48	7.6	82%
Stamford	129,302	24,064	5%	1,203	93	54	4.2	74%
New Britain	72,303	8,576	7%	600	83	23	3.2	73%
Bridgeport	143,653	10,304	7%	721	50	35	2.4	73%
Waterbury	106,458	18,240	6%	1,094	103	30	2.8	60%
Norwalk	88,326	14,656	3%	440	50	45	5.1	55%
Bristol	59,639	16,896	4%	676	113	20	3.4	51%
Danbury	84,732	26,880	5%	1,344	159	17	2.0	37%

⁴⁶ Active outdoor recreation facilities based on 2005 data (X – #) and 2017 use frequency index data, if available (# – Y), include fields, courts, and courses for baseball and softball (984 – 16.0), basketball (645 – 23.0), football (154 – 10.0), golf (125 – 13.6), multi-use (624), soccer (495 – 14.6), tennis (384 – 11.2), and volleyball (74 – 23.0), as well as playgrounds (1,065), swimming pools (137 – 60.9), and winter sports (238 – 9.3)

⁴⁷ Passive outdoor recreation facilities based on 2005 data (X – #) and 2017 use frequency index data, if available (# – Y) include access to sites for beaches (176 – 60.1), boating (285 – 10.9), camping (88 – 13.5), fishing (669 – 19.0), gardens (109), historic landmarks (99 – 35.9), hunting (88 – 3.5), picnics (677), and trails (896 – 102.8)

⁴⁸ Discrete Identifiable Recreation Places

⁴⁹ The “% of Land as Parks,” “# of Parks,” and “10-Minute Walk” data were used from TPL’s ParkScore data set.

The quality of parks is difficult to discern. To better understand the quality of parks, TPL partnered with the Urban Resources Institute (“URI”) to compare New Haven against the nation’s most populous cities on five (5) categories reflective of an excellent city park system: Acreage,⁵⁰ Access,⁵¹ Investment,⁵² Amenities,⁵³ and Equity⁵⁴ – see Table 8.⁵⁵

Table 8. TPL and URI Analysis of New Haven Compared to Other Cities

City	Overall	Acreage	Access	Investment	Amenities	Equity
New Haven, CT	60	36	95	35	71	65
Boston, MA	-	47	100	79	65	79
Baltimore, MD	-	25	81	68	40	83
Buffalo, NY	-	25	85	47	61	64

The TPL-URI research also delves deeper into the twenty (20) neighborhoods of New Haven to collect data with respect to population, acres of parks, and acres per 1,000 population, as well as demographic data including income and people of color. Based on data from TPL from 14,000 cities, parks that serve low-income households are four (4) times as crowded as parks that serve high-income households, and parks that serve people of color are five (5) times as crowded as parks that serve majority-white populations.⁵⁶ Such analyses in municipalities across Connecticut could elucidate opportunities for areas of improvement, including improving the public health of residents (e.g., reducing urban heat island effects) with access to parks and the economic development impact of property values within proximity to parks.

As the Green Bank looks to increase and accelerate private investment in parks and recreation, it will be exploring the following financing tools, including, but not limited to:

- Carbon offset markets
- Ecosystem services markets (e.g., Park Rx)
- Pay-for-Performance
- Green Liberty Bonds
- Tax Increment Financing
- Buy-Protect-Sell Revolving Loan Fund
 - Predevelopment Financing
 - Bridge Financing
 - Traditional Debt Financing

For further details on the market opportunity, see Primer – Parks and Recreation.

⁵⁰ Acreage score indicates the relative abundance of large ‘destination’ parks, which include large natural areas that provide critical mental health as well as climate and conservation benefits.

⁵¹ Access score indicates the percentage of the city’s residents that live within a walkable half-mile of a park – the average distance that most people are willing to walk to reach a destination.

⁵² Investment score indicates the relative financial health of a city’s park system, which is essential to ensuring parks are maintained at a high level for all to enjoy.

⁵³ Amenities score indicates the relative abundance of six park activities popular among a multi-generational cross-section of user groups (i.e., playgrounds, basketball courts, dog parks, senior and recreation center, splashpads, and permanent restrooms).

⁵⁴ Equity score indicates how fairly parks and park space are distributed within a city, including percentage of people of color and low-income households within a 10-minute walk of a park, and comparison of the amount of park space between neighborhoods by race and income.

⁵⁵ For example, a score of 90 means that the municipality is within the top 90 percent across the country.

⁵⁶ “The Heat is On” by The Trust for Public Lands

5.5 Agriculture

Nature-based solutions such as protecting farmlands from loss and improving farming practices, can both mitigate GHG emissions that cause climate change (e.g., climate smart agriculture) and increase resilience against the impacts of climate change (e.g., flood protection).

The following is a breakdown of the market potential for “agriculture” (i.e., farmland), including other natural forms of land cover (i.e., forestland and wetlands) – see Table 9.

Table 9. Land Cover in Connecticut (2015)⁵⁷

3,179,253 Acres Land and Water in Connecticut				
921,827 Acres Developed Land ⁵⁸ 29%	233,847 Acres Farmland 7%	1,873,471 Acres Forestland ⁵⁹ 59%	129,153 Acres Wetlands ⁶⁰ 4%	20,955 Acres Other Lands ⁶¹ 1%

More than 70% of Connecticut’s land is farmland, forestland, or wetland. From 2001 through 2016, approximately 6% of the state’s farmland was converted to urban or low-density residential development – placing the state in the top three nationally in percent of farmland lost to development.⁶²

The long-term goal of the Farmland Preservation Program, which was set back in the 1980’s, is to preserve 130,000 acres of farmland – see Table 10.

Table 10. Progress Towards the Farmland Preservation Program Target in Connecticut

3,205,762 Acres Land in Connecticut				
381,539 Acres⁶³ Farmland				2,824,223 Acres Non-Farmland
148,609 Acres Farmland	113,355 Acres Woodland	31,923 Acres Pastureland	87,652 Acres Other ⁶⁴	
130,000 Acres Preserved Farmland Goal				
48,744 Acres Preserved		81,256 Acres Not Preserved		

⁵⁷ UCONN CLEAR Project – 2015 Land Cover

⁵⁸ Includes “Developed,” “Turf & Grass,” and “Other Grasses” classifications

⁵⁹ Includes “Deciduous Forest,” “Coniferous Forest,” “Forested Wetland,” and “Utility-Rights-of-Way (Forest)” classifications

⁶⁰ Includes “Water,” “Non-Forested Wetlands,” and “Tidal Wetlands” classifications

⁶¹ Includes “Barren” classification

⁶² “Planning for Agriculture – A Guide for Connecticut Municipalities: Emerging Agricultural Trends” by the American Farmland Trust and Connecticut Department of Agriculture (2020 Edition) (Page 19)

⁶³ USDA Economic Research Service – 2017 data

⁶⁴ Land in house lots, ponds, roads, wasteland, etc.

As of October 2020, the Farmland Preservation Program has protected nearly 49,000 acres on 418 farms with agricultural conservation easements – leaving 81,000 acres of farmland left to preserve.⁶⁵ If the average real estate value of an acre of farmland in Connecticut in 2019 was \$12,200, and Purchasing Development Rights (“PDR”) is 30-50% of value, then between \$300 to \$500 MM of public investment (e.g., through DoAg and/or USDA-NRCS) would be needed to protect 81,000 acres of farmland to achieve the 130,000 acres of farmland preserved target.

As the Green Bank looks to increase and accelerate private investment in agriculture, it will be exploring the following financing tools, including, but not limited to:

- Carbon offset markets
- Ecosystem services markets
- Pay-for-Performance
- Eco-Labeling (e.g., Connecticut Grown)
- Green Liberty Bonds
- Linked Deposits
- Buy-Protect-Sell Revolving Loan Fund
 - Predevelopment Financing
 - Bridge Financing
 - Traditional Debt Financing
- Farmland Investment Fund
- Loan Guarantees (e.g., Smart-E Loan)

For further details on the market opportunity, see Primer – Agriculture.

5.6 Water

In FY 2023, the Green Bank will continue to explore opportunities to enable private investment in Connecticut’s water infrastructure.

Per PA 21-115, there are several boundaries with respect to what the Green Bank can do with respect to water, including:

- **Environmental Infrastructure Fund** – may not receive funds from the Clean Water Fund pursuant to sections 22a-475 to 22a-438f, or funds collected from a water company as defined in section 25-32a; and
- **Apply for Federal Assistance** – may not apply directly or through a subsidiary to be eligible for federal grant assistance under the Clean Water Act, 33 USC 1251 et seq., nor the Safe Drinking Water Act, 42 USC 300f et seq., without the approval of the State Treasurer, Commissioner of Energy and Environmental Protection, and Commissioner of Public Health.

As a result of these restrictions, and since Connecticut’s State Revolving Fund (“SRF”) hasn’t invested in green infrastructure,⁶⁶ the Green Bank will focus its efforts on nature-based solutions (e.g., land conservation) and stormwater (e.g., green roofs), as well as its financing programs (e.g., Smart-E Loan, C-PACE) to help end-use customers improve water on their property. It should be noted that within PA 21-115, that municipalities can create stormwater authorities.

⁶⁵ Connecticut Department of Agriculture, Farmland Preservation Programs Report (January 2022)

⁶⁶ Hansen, K., Thomas, T., Vo, S., Berven, K., Moudgalya, P., Vedachalam, S. (2022). Financing Green Stormwater and Natural Infrastructure with Clean Water State Revolving Funds. by the Environmental Policy Innovation Center – EPIC. (pp 11)

5.7 Waste and Recycling

In FY 2023, the Green Bank will explore opportunities to enable private investment in Connecticut's waste and recycling infrastructure.

It should be noted that the Green Bank is a leading financier of food waste⁶⁷ and farm waste⁶⁸ to energy projects that utilize anaerobic digesters and combined heat and power to reduce methane and produce renewable natural gas for onsite clean energy.

6. Citizen and Community Engagement – Green Bonds US

The Green Bank, and its predecessor the CCEF, have a long-standing history of community engagement in Connecticut. In 2002, the CCEF partnered with six private foundations⁶⁹ to co-found SmartPower – which launched the 20 percent by 2010 campaign and led the administration of the CCEF's EPA award-winning Connecticut Clean Energy Communities Program to engage citizens in signing-up to purchase clean energy.⁷⁰ Then in 2013, the Green Bank launched a series of Solarize campaigns in communities across the state in partnership with SmartPower and the Yale Center for Business and the Environment to help citizens install solar PV on their homes,⁷¹ while also advancing the SunShot Initiative of the U.S. Department of Energy ("DOE") in partnership with the Clean Energy States Alliance through projects that reduce soft-costs for solar PV (i.e., customer acquisition, permitting, and financing) and provide better access to solar PV for LMI households.

Citizen and community engagement have been in the DNA of the Green Bank since its inception. The Green Bank is reaching citizens and communities through various ways including green bonds, community match funds, community-based campaigns, and municipal assistance programs.

6.1 Green Bonds US

Whether through markets or within communities, the Green Bank is bringing people together and strengthening the bonds we share with one another. As the name of the Comprehensive Plan suggests – "Green Bonds US" seeks to promote a simple but critically important message; green brings us together, green bonds us, the environment unites us. The simple slogan combines the financial tool of green bonds that are being sold to retail investors across the United States with a unifying message that humanity and the environment are inextricably linked.

CGS Section 16-245n(d)(1)(C) is the enabling statute that allows the Green Bank to issue revenue bonds for up to 25 years for clean energy and 50 years for environmental infrastructure projects to support its purposes. Green Bonds are bonds whose proceeds are

⁶⁷ Quantum Biopower – <http://www.quantumbiopower.com/>

⁶⁸ Fort Hill Farm – <https://aggridenergy.com/fort-hill-ag-grid-digester/>

⁶⁹ Emily Hall Tremaine Foundation, The John Merck Fund, Pew Charitable Trust, The Oak Foundation, Rockefeller Brothers Fund, and Surdna Foundation

⁷⁰ "Climate Policy and Voluntary Initiatives: An Evaluation of the Connecticut Clean Energy Communities Program," by Matthew Kotchen for the National Bureau of Economic Research (Working Paper 16117).

⁷¹ "Solarize Your Community: An Evidence-Based Guide for Accelerating the Adoption of Residential Solar" by the Yale Center for Business and the Environment.

used for projects or activities with environmental or climate benefits, most usually climate change mitigation and adaptation. Research shows that citizens across the US, including Connecticut, are interested in seeing their investments go towards green projects – see Table 11.⁷²

Table 11. Green Project Types of Interest by Private Investors by Location

Green Project Types	Composite	National	Connecticut	Connecticut with Solar
Clean Water	65.4%	63.5%	68.6%	65.8%
Waste Reduction and Recycling	48.8%	40.7%	51.4%	62.2%
Rooftop Solar	48.5%	34.9%	38.4%	85.6%
Home Energy Efficiency	41.6%	30.7%	37.2%	67.6%
Electric Vehicles	38.0%	30.9%	30.0%	60.2%
Land Conservation	37.3%	29.5%	40.4%	49.4%
Agriculture	33.2%	26.1%	36.6%	43.8%
Parks and Recreation	30.1%	24.8%	34.6%	36.0%
Climate Adaptation and Resiliency	28.8%	21.8%	30.4%	41.0%

To enable everyday citizens with an opportunity to invest in the green economy, the Green Bank created two fixed income securities – Green Liberty Bonds and Green Liberty Notes, which have three features:

1. **Use of Proceeds** – funds raised from the bonds must go towards projects that support the Paris Agreement (i.e., mitigation of GHG emissions or adaptation to the impacts of climate change);
2. **Retail Accessible** – like the Series-E War Bonds of the 1940’s, bonds must be small denomination (i.e., less than \$1,000) and available to everyday retail investors; and
3. **Independently Certified and Verified** – due to the expectation by retail investors that the use of proceeds will go towards projects that support the Paris Agreement, the bonds must be independently certified and verified as green.

6.2 Green Liberty Bonds

In April of 2019, the Green Bank issued \$38.6 million in green asset backed securities – its first rated debt issuance and the first ever solar asset-backed security (“ABS”) transaction by a green bank. The issuance was certified by Kestrel Verifiers and independently assessed by Climate Action Reserve. In July 2020, the Green Bank issued \$16.8 million in a Special Capital Reserve Fund (“SCRF”) backed Green Liberty Bond that was Climate Bond Certified. And in April 2021, the Green Bank sold out \$25 million in Green Liberty Bonds drawing four times as much demand as could be fulfilled from retail investors in Connecticut and across the U.S., as well as institutional investors interested in sustainability investments.

⁷² 2021 Brand Awareness Digital Survey by Great Blue for the Connecticut Green Bank (August 2021)

In March and December of 2020, and June of 2022, the Green Bank's Green Liberty Bonds were awarded for innovation and green bond structure by Environmental Finance, The Bond Buyer, and Clean Energy States Alliance respectively.

For more information on Green Liberty Bonds, visit www.greenlibertybonds.com

6.3 Green Liberty Notes

In January of 2022, the Green Bank, in collaboration with Raise Green, began a two-year campaign to raise \$2 million by providing an opportunity for citizens to invest as little as \$100 to confront climate change. Issuances are anticipated quarterly. Investment by everyday citizens in Green Liberty Notes supports Eversource's SBEA program, administered through the Conservation and Load Management Plan, which helps small businesses reduce their energy consumption through deploying energy efficient equipment. As a result of the climate benefits associated with this program, the offering was reviewed and verified for its environmental attributes by Kestrel Verifiers.

To attract more investors, the program offers one-year maturity notes, with \$100 minimums, that are easy to purchase through an online platform without a broker. The Green Liberty Notes were created as an investment companion to Green Liberty Bonds, which have been offered in \$1,000 minimums to retail and institutional investors through brokerage firms.

For more information on Green Liberty Notes, visit <https://invest.raisegreen.com/offerings>

6.4 Sustainable CT and Community Match Fund

The strategic partnership between Sustainable CT and the Green Bank is focused on the following key priorities:

- Driving investment in projects in our communities, with a goal to accelerate over time;
- Community-level engagement, from project origination through financing, that is inclusive, diverse, and "knitted";
- Creating a structure that harnesses all types of capital for impact – from donations to investment;
- Developing a business model that covers the cost of the program; and
- Creating a measurable impact, both qualitative and quantitative.

Sustainable CT, in collaboration with Patronicity, has developed a community matching grant platform to raise capital in support of local projects that provide individuals, families, and businesses with funding opportunities to make an impact on sustainability in their communities. This online crowdfunding platform enables citizen leaders to have access to financial resources (i.e., matching grants) that they need to support local sustainability projects.

For more information on Sustainable CT's Community Match Fund, visit <https://www.patronicity.com/sustainablect>

6.5 Community-Based Campaigns

The Green Bank has once again partnered with the Yale School of the Environment,⁷³ to support DOE-funded Solar Energy Evolution and Diffusion Study 3 (“SEEDS 3”). SEEDS 3 research builds on nearly a decade of work investigating the peer-to-peer effects of solar PV adoption – how do prospective solar PV customers make the decision to adopt and how do people talk to each other about going solar. Professor Gillingham developed a community-based solar adoption strategy that accelerated the adoption of solar in Connecticut through various Solarize campaigns.⁷⁴

SEEDS 3 expands on this work to investigate the co-adoption of solar, storage, and electric vehicles. The Green Bank will support Professor Gillingham as he initiates and runs community-based solar plus storage campaigns over the next two years. We will leverage the learnings that these campaigns create to refine our storage marketing messages to assist ESS in achieving its goals.

6.6 Municipal Assistance Programs

Supported by public policy,⁷⁵ the Green Bank continues to support municipalities in their sustainability initiatives through the Solar Marketplace Assistance Program for Towns and Cities (Solar MAP). Many Connecticut towns, primarily smaller towns, are challenged to get through the many project steps preventing them from taking advantage of clean energy. Solar MAP provides turnkey support from start to finish to make it easier for towns to identify projects that will provide savings, to access necessary incentives and Green Bank financing, and to add much-needed capacity to manage project implementation and construction. The program administers a competitive solicitation to select a construction partner and bring more projects to the market to grow our state’s clean energy economy. Projects are bundled into portfolios to achieve economies of scale driving down project costs and delivering better savings a town wouldn’t experience if they acted alone. With feedback from contractors and municipalities, the Green Bank integrated additional transparency into the Programs’ status and activities and developed a clearer mission and target audience. Solar MAP aims to support municipalities that are underserved by the market, typically towns that are smaller in population and/or town staff without recent history of doing solar projects. The comprehensive program support and refined mission help better serve municipalities and the clean energy market.

7. Investment

The Green Bank pursues investments that advance market transformation in green investing while supporting the organization’s pursuit of financial sustainability. With the mission to confront climate change, the Green Bank leverages limited public resources to scale-up and mobilize private capital investment in the green economy of Connecticut.

⁷³ Professor Ken Gillingham

⁷⁴ <https://cbey.yale.edu/our-stories/lessons-learned-from-solarize-campaigns-in-connecticut>

⁷⁵ CGS 16-245n “...stimulate demand for clean energy and deployment of clean energy sources that serve end use customers in the state...” (i.e., 16-245n(c)); and “...shall (i) develop separate programs to finance and otherwise support clean energy investment in residential, municipal, small business and larger commercial projects...” CGS 16-245n(d)(1)(B).

7.1 State Funds

The Green Bank receives public revenues from a number of sources that are leveraged to mobilize multiples of private capital investment in the green economy of Connecticut.

System Benefit Charge

As its primary source of public revenues, the Green Bank through CGS 16-245n(b) receives a 1 mill per kilowatt-hour surcharge called the CEF from ratepayers of Eversource Energy and Avangrid. The CEF has been in existence since Connecticut deregulated its electric industry in the late 1990s.⁷⁶⁷⁷ On average, households contribute between \$7-\$10 a year for the CEF, which the Green Bank leverages to attract multiples of private capital investment in clean energy through its Financing Programs.

Regional Greenhouse Gas Emission Allowance Proceeds

As a secondary source of public revenues, the Green Bank receives a portion (i.e., 23%) of Connecticut's RGGI allowance proceeds through CGS 22a-174(f)(6)(B). The Green Bank invests RGGI proceeds to finance clean energy projects through its Financing Programs. It should be noted that with the passage of PA 22-25, that allowance proceeds received in excess of \$5.2 MM from the Green Bank's portion of RGGI, are to be directed to DEEP for the purposes of supporting electric school buses in environmental justice communities.

7.2 Federal Funds

The Green Bank receives public revenues through a number of past, current, and future sources⁷⁸ of federal funds as well that it leverages to scale-up and mobilize private capital investment in the green economy of Connecticut.

American Recovery and Reinvestment Act

Through the American Recovery and Reinvestment Act ("ARRA") the CCEF received \$20 million for its programs and initiatives. After nearly \$12 million of those funds were invested as grants, the Green Bank invested the remaining \$8.2 million in financing programs. With \$600,000 of ARRA funds left,⁷⁹ the Green Bank invested over \$7.6 million of ARRA funds to attract and mobilize \$167 million of public and private investment in residential clean energy financing programs.⁸⁰

United States Department of Agriculture

The Green Bank has applied to the United States Department of Agriculture ("USDA") to seek access to low-cost and long-term federal loan funds for the deployment of clean energy in rural

⁷⁶ PA 98-28 An Act Concerning Electric Restructuring – <https://www.cga.ct.gov/ps98/act/pa/1998pa-00028-r00hb-05005-pa.htm>

⁷⁷ The Clean Energy Fund should not be mistaken with the Conservation Adjustment Mechanism (or the Conservation and Loan Management Fund), which is administered by the EDCs

⁷⁸ There have been ongoing public policy proposals at the national level that the Connecticut Green Bank has been a part of to create a US Green Bank. If such a public policy were passed, then the Connecticut Green Bank would have access to significant federal funds to leverage to scale-up and mobilize private capital investment in the green economy of Connecticut.

⁷⁹ As of June 30, 2022

⁸⁰ https://www.ctgreenbank.com/wp-content/uploads/2022/04/CGB_ARRA_Infographic_2022-4-4.pdf

communities.⁸¹ The USDA has vast lending authority under the Rural Electrification Act of 1936, which enables direct loans, project financing and loan guarantees to a variety of borrowers.

Infrastructure Investment and Jobs Act

As a result of the IIJA, also known as the Bipartisan Infrastructure Law (“BIL”), significant federal resources are being made available to local and state governments through formula grants, and through competitive requests for proposals from budget allocations across many of the federal agencies (e.g., DOE, USDA, EPA, FEMA, etc.). The Green Bank will pursue federal funding to support its programs.

7.3 Additional Funding Sources

Per CGS 16-245n, additional funding sources include, but are not limited to:

- Charitable gifts, grants, contributions as well as loans from individuals, corporations, university endowments and philanthropic foundations;
- Earnings and interest derived from financing support activities for clean energy projects backed by the Connecticut Green Bank;
- If it qualifies as a CDFI” under Section 4702 of the United States Code, funding from the CDFI Fund administered by the United States Department of Treasury, as well as loans from and investments by depository institutions seeking to comply with their obligations under the United States Community Reinvestment Act of 1977; and
- Contracts with private sources to raise capital.

8. Impact

The Green Bank’s evaluation efforts seek to understand how the increase in investment and deployment of clean energy and environmental infrastructure supported through the Green Bank, result in benefits to society. To that end, the Green Bank has devised an Evaluation Framework and impact methodologies for various societal benefits.

8.1 Evaluation Framework

The Green Bank has established an Evaluation Framework to guide the assessment, monitoring and reporting of the program impacts and processes, including, but not limited to energy savings and clean energy production and the resulting societal impacts or benefits arising from clean energy investment.⁸² This framework focuses primarily on assessing the market transformation the Green Bank is enabling, including:

- **Supply of Capital** – including affordable interest rates, longer term maturity options, improved underwriting standards, etc.

⁸¹ “Rural” communities are defined by a population bound and the various limits depend on the program; at the broadest, “rural” may be considered a town that has a population not greater than 50,000 people. Despite its positioning in a mostly-developed corridor, we estimate Connecticut would have 69% of towns eligible at the 20,000-person limit and 89% of towns at the 50,000-person limit.

⁸² <https://ctgreenbank.com/wp-content/uploads/2017/02/CTGreenBank-Evaluation-Framework-July-2016.pdf>

- **Consumer Demand** – increasing the number of projects, increasing the comprehensiveness of projects, etc.
- **Financing Performance Data and Risk Profile** – making data publicly available to reduce perceived technology risks by current or potential private investors.
- **Societal Impact** – the benefits society receives from more investment and deployment of clean energy.

With the goal of pursuing investment strategies that advance market transformation in green investing, the Green Bank’s evaluation framework provides the foundation for determining the impact it is supporting in Connecticut and beyond across the four (4) “E’s” (i.e., E⁴) – including Economy, Environment, Energy, and Equity.⁸³

The Evaluation Framework will have to be revised, over time, to include environmental infrastructure, as well as the important role Green Liberty Bonds play in raising capital for investments.

8.2 Impact Methodologies

To support the implementation of the Evaluation Framework, the Green Bank, working with various public sector organizations, has developed methodologies that estimate the impact from the investment, installation and operation of clean energy projects, including:

- **Jobs** – working in consultation with the Connecticut Department of Economic and Community Development (“DECD”), through the work of Guidehouse (formerly Navigant), the Green Bank devised a methodology that takes investment in clean energy to reasonably estimate the direct, indirect, and induced job-years resulting from clean energy deployment.⁸⁴
- **Tax Revenues** – working in consultation with the Connecticut Department of Revenue Services (“DRS”), through the work of Guidehouse, the Green Bank devised a methodology that takes investment in clean energy to reasonably estimate the individual income, corporate, and sales tax revenues from clean energy deployment.⁸⁵
- **Environmental Protection** – working in consultation with the United States Environmental Protection Agency (“USEPA”) and DEEP, the Green Bank devised a methodology that takes the reduction in consumption of energy and increase in the production of clean energy to reasonably estimate the air emission reductions (i.e., CO₂, NO_x, SO₂, and PM_{2.5}) resulting from clean energy deployment.⁸⁶
- **Public Health Improvement** – working in consultation with the EPA, DEEP, and the Connecticut Department of Public Health (“DPH”), the Green Bank devised a methodology that takes air emission reductions to reasonably estimate the public health

⁸³ <https://www.ctgreenbank.com/wp-content/uploads/2021/12/FY12-FY21-CGB-ImpactReport-web.pdf>

⁸⁴ https://www.ctgreenbank.com/wp-content/uploads/2018/03/CGB_DECD_Jobs-Study_Fact-Sheet.pdf

⁸⁵ <https://www.ctgreenbank.com/wp-content/uploads/2018/09/CGB-Eval-Tax-Methodology-7-24-18.pdf>

⁸⁶ <https://www.ctgreenbank.com/wp-content/uploads/2018/01/CGB-Eval-IMPACT-091917-Bv2.pdf>

benefits (e.g., reduced hospitalizations, reduced sick days, etc.) and associated savings to society resulting from clean energy deployment.⁸⁷

- **Equity** – with the passage of PA 20-05, the Green Bank devised a methodology that takes the definition of “vulnerable communities” to track progress towards the goal of ensuring that no less than 40 percent of investment from its programs are directed to vulnerable communities by 2025.⁸⁸
- **Energy Burden** – working in consultation with DEEP and PURA, the Green Bank devised a methodology that takes actual solar PV production data from meters compared against contractual lease and PPA prices, to estimate the energy burden reduction from financing solar PV.⁸⁹

Each year, the Green Bank develops additional methodologies that value the impact the Green Bank is helping create in Connecticut and all of society. For more information on the Green Bank’s impact methodologies, visit the Impact page of the website.⁹⁰

In time, additional impact methodologies will be developed for environmental infrastructure.

8.3 Green Bond Framework

The Green Bank’s Green Bond Framework⁹¹ provides a structure in which the Green Bank can more efficiently and effectively support its efforts to raise capital and deploy more clean energy and environmental infrastructure through the issuance of green bonds.

Connecticut has been at the forefront of state-level efforts to combat the threat of global climate change. In order to increase investment, the Green Bank will use its statutory authority (i.e., CGS 16-245kk) to issue bonds, including green bonds. These are key to sourcing capital for clean energy and environmental infrastructure projects and providing a way for all residents, businesses, and institutions of Connecticut to invest in growing our green economy.

The framework sets out how the Green Bank proposes to use its Master Trust Indenture (“MTI”) in a manner consistent with its purpose and provide the transparency and disclosures investors require to make investment decisions through green bonds. This framework is specifically intended for the MTI approved and adopted April 22, 2020, which establishes the purposes for which the Green Bank may issue green bonds or other public debt. The Framework is established in accordance with the Climate Bonds Initiative (“CBI”) Standard and adheres to the Green Bond Principles issued by the International Capital Market Association.

The Green Bond Framework will have to be revised, over time, to include environmental infrastructure.

⁸⁷ <https://www.ctgreenbank.com/wp-content/uploads/2018/03/CGB-Eval-PUBLICHEALTH-1-25-18-new.pdf>

⁸⁸ https://www.ctgreenbank.com/wp-content/uploads/2021/10/Equity_Investment_in_Vulnerable_Communities.pdf

⁸⁹ <https://www.ctgreenbank.com/wp-content/uploads/2021/09/CGB-Eval-Solar-Methodology-combined-6-8-2021-final.pdf>

⁹⁰ <https://www.ctgreenbank.com/strategy-impact/impact/societal-impacts/>

⁹¹ https://ctgreenbank.com/wp-content/uploads/2020/04/CGB_Green-Bond-Framework_final-4-22-2020.pdf

9. Reporting and Transparency

The Green Bank has extensive reporting on its financial management and societal impact through various mechanisms. As a recipient of public revenues (i.e., CEF and RGGI allowance proceeds), the Green Bank believes that complete transparency is important to ensure the public's continued trust in serving its purpose. The Green Bank reports to the Governor's Office (i.e., Office of Policy and Management ("OPM")), various committees of cognizance within the CGA (i.e., energy & technology, commerce, environment, and banking), and other departments (e.g., DEEP, Office of Fiscal Analysis).

9.1 Annual Comprehensive Financial Report

An Annual Comprehensive Financial Report ("ACFR") is a set of government financing statements that includes the financial report of a state, municipal or other government entity that complies with the accounting requirements promulgated by the Governmental Accounting Standards Board ("GASB"). GASB provides standards for the content of an ACFR in its annually updated publication *Codification of Governmental Accounting and Financial Reporting Standards*. An ACFR is compiled by a public agency's accounting staff and audited by an external American Institute of Certified Public Accountants ("AICPA") certified accounting firm utilizing GASB requirements. It is composed of three sections – Introductory, Financial, and Statistical. The independent audit of the ACFR is not intended to include an assessment of the financial health of participating governments, but rather to ensure that users of their financial statements have the information they need to make those assessments themselves.⁹²

To date, the Green Bank has issued eight ACFR's, including:

- [Fiscal Year Ended June 30, 2014 \(Certificate of Achievement\)](#)
- [Fiscal Year Ended June 30, 2015 \(Certificate of Achievement\)](#)
- [Fiscal Year Ended June 30, 2016 \(Certificate of Achievement\)](#)
- [Fiscal Year Ended June 30, 2017 \(Certificate of Achievement\)](#)
- [Fiscal Year Ended June 30, 2018 \(Certificate of Achievement\)](#)
- [Fiscal Year Ended June 30, 2019 \(Certificate of Achievement\)](#)
- [Fiscal Year Ended June 30, 2020 \(Certificate of Achievement\)](#)
- [Fiscal Year Ended June 30, 2021](#)

As the "gold standard" in government reporting, the ACFR is the mechanism the Green Bank uses to report its fiscal year financial, investment, and impact performance to its stakeholders. For each of its seven years filing the ACFR with the Government Finance Officers Association the Green Bank has received a Certificate of Achievement for Excellence in Financial Reporting.⁹³

⁹² The Government Finance Officers Association (GFOA), founded in 1906, represents public finance officials throughout the United States and Canada. GFOA's mission is to enhance and promote the professional management of governmental financial resources by identifying, developing, and advancing fiscal strategies, policies, and practices for the public benefit. GFOA established the Certificate of Achievement for Excellent in Financial Reporting Program in 1945 to encourage and assist state and local governments to go beyond the minimum requirements of generally accepted accounting principles to prepare CAFRs that evidence the spirit of transparency and full disclosure and then to recognize individual governments that succeed in achieving that goal.

⁹³ GAO has yet to designate the FY 2021 ACFR with a Certificate of Achievement

9.2 Annual Report

Beyond the ACFR, the annual reports of the Green Bank are compiled by the marketing staff and include consolidated financial statement information and narratives of various program achievements in a condensed format that can be widely distributed.

To date, the Green Bank has issued ten annual reports, including:

- [Fiscal Year 2012 Annual Report](#)
- [Fiscal Year 2013 Annual Report](#)
- [Fiscal Year 2014 Annual Report](#)
- [Fiscal Year 2015 Annual Report](#)
- [Fiscal Year 2016 Annual Report](#)
- [Fiscal Year 2017 Annual Report](#)
- [Fiscal Year 2018 Annual Report](#)
- [Fiscal Year 2019 Annual Report](#)
- [Fiscal Year 2020 Annual Report](#)
- [Fiscal Year 2021 Annual Report](#)

9.3 Auditors of Public Accounts

The office of the Auditors of Public Accounts (“APA”) is a legislative agency of the State of Connecticut whose primary mission is to conduct audits of all state agencies, including quasi-public agencies. Included in such audits is an annual Statewide Single Audit of the State of Connecticut to meet federal requirements. The office is under the direction of two state auditors appointed by the state legislature. The APA audited certain operations of the Green Bank in fulfillment of its duties under Sections 1-122 and Section 2-90 of the CGS

To date, the APA has conducted four audits, including:

- [Fiscal Years 2012 and 2013](#)
- [Fiscal Years 2014 and 2015](#)
- [Fiscal Years 2016 and 2017](#)
- [Fiscal Years 2018 and 2019](#)

9.4 Open Connecticut and Open Quasi

Open Connecticut centralizes state financial information to make it easier to follow state dollars. In Connecticut quasi-public agencies are required to submit annual reports to the legislature, including a summary of their activities and financial information. In addition to that, the Comptroller’s Office requested that quasi-public agencies voluntarily provide payroll and checkbook-level vendor payment data for display on Open Connecticut. The Green Bank, which was among the first quasi-public organizations to participate, has voluntarily submitted this information since the inception of Open Connecticut.⁹⁴ In June of 2020, the Comptroller launched Open Quasi, which provides payroll and checkbook level data for all quasi-public organizations in Connecticut.

For more information, go to <https://openquasi.ct.gov/>

⁹⁴ <https://openquasi.ct.gov/>

10. Research and Product Development

As the Green Bank implements its Comprehensive Plan, there will be ongoing efforts to develop market opportunities for future green investments. With the lessons being learned and best practices being discovered in the green economy, the Green Bank's ability to deliver more societal benefits requires understanding potential opportunities and the development of pilot programs and initiatives to increase and measure impact, including, for example:

- **Ecosystems Services** – increasing understanding of ecosystem services values from environmental infrastructure, will help to identify opportunities to mobilize private investment to maximize GHG emissions reductions and resiliency against climate change. Ongoing support of research studies to understand the value of ecosystem services from environmental infrastructure is important.
- **Carbon Offsets** – continuing to increase understanding of carbon offsets,⁹⁵ recognizing their importance within environmental infrastructure (e.g., forest carbon, climate-smart agriculture) and the potential to generate revenues in support of projects, there is need for ongoing support of research studies to understand carbon offset markets.
- **Resiliency** – in its efforts to advance resilience, the Green Bank working with DEEP, Insurance Department, and CIRCA, will seek to better understand labelling (e.g., FORTIFIED by the Insurance Institute for Business and Home Safety), direct install measures, and other programs (e.g., adapting Solarize campaigns to Ruggedize campaigns). To continue to develop ESS, research and pilots for vehicle to grid ("V2G") will also be pursued.
- **Electric School Buses** – per Public Act 22-25, the Green Bank supported contract extensions for electric school buses ("ESB") and financial support through RGGI for vouchers in support of ESB deployment in environmental justice communities through the Connecticut Hydrogen and Electric Automobile Purchase Rebate ("CHEAPR") program. Support for the deployment of ESBs and electric vehicle supply equipment ("EVSE") will enable increased private investment to support the 100% zero emission ESB goals for 2030 (i.e., environmental justice communities) and 2040 (i.e., all communities).
- **Hydrogen** – per Special Act 22-8,⁹⁶ and consistent with the definition of "clean energy" under CGS 16-245n, the Green Bank is chair of the task force to study hydrogen power. Recognizing the importance of "green hydrogen" to Connecticut's fuel cell industry, there may be the need for research on the sources, infrastructure, and uses related to hydrogen.
- **Impact Methodologies** – building on the Green Bank's leading impact methodologies for "clean energy," efforts will be undertaken to develop impact methodologies for "environmental infrastructure".

⁹⁵ Verified Carbon Standard – VM0038 Methodology for Electric Vehicle Charging Systems (V1.0) – <https://verra.org/methodology/vm0038-methodology-for-electric-vehicle-charging-systems-v1-0/>

⁹⁶ An Act Establishing a Task Force to Study Hydrogen Power – <https://www.cga.ct.gov/2022/ACT/SA/PDF/2022SA-00008-R00HB-05200-SA.PDF>

The Green Bank’s research product development efforts are intended to open-up new market channels for private investment in Connecticut’s green economy through studies, pilot projects, and other initiatives that have the potential for expanding the impact of the Green Bank.

11. Budget

11.1 FY 2023 Budget

For the details on the FY 2023 budget– [click here](#).

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12. Glossary of Acronyms

ABS	Asset-Backed Security
ACFR	Annual Comprehensive Financial Report
ACG Committee	Audit, Compliance, and Governance Committee
AICPA	American Institute of Certified Public Accountants
APA	Auditors of Public Accounts
ARRA	American Recovery and Reinvestment Act
BIL	Bipartisan Infrastructure Law
BOC Committee	Budget, Operations, and Compensation Committee
BOD	Board of Directors
CBI	Climate Bonds Initiative
CCEF	Connecticut Clean Energy Fund
CDFI	Community Development Financial Institution
CEF	Clean Energy Fund
CGA	Connecticut General Assembly
CGS	Connecticut General Statutes
CHEAPR	Connecticut Hydrogen and Electric Automobile Purchase Rebate
CIRCA	Connecticut Institute for Resilience and Climate Adaptation
C-PACE	Commercial Property Assessed Clean Energy
DECD	Department of Economic and Community Development
DEEP	Department of Energy and Environmental Protection
DoAg	Department of Agriculture
DPH	Department of Public Health
DRS	Department of Revenue Services
EDC	Electric Distribution Company
ESB	Electric School Bus
EEB	Energy Efficiency Board
EIF	Environmental Infrastructure Fund
ESS	Energy Storage Solutions
EM&V	Evaluation, Measurement, and Verification
EVSE	Electric Vehicle Supply Equipment
GASB	Governmental Accounting Standards Board
GHG	Greenhouse Gas Emissions
HES	Home Energy Solutions
HES-IE	Home Energy Solutions – Income Eligible
IPC	Inclusive Prosperity Capital
IIJA	Infrastructure Investments and Jobs Act
LMI	Low-to-Moderate Income
MPA	Master Purchase Agreement
MTI	Master Trust Indenture
NRCS	Natural Resources Conservation Service
NRES	Non-Residential Renewable Energy Solutions
OPM	Office of Policy and Management
PA	Public Act
PDR	Purchasing Development Rights

PPA	Power Purchase Agreement
PURA	Public Utilities Regulatory Authority
REC	Renewable Energy Credit
RGGI	Regional Greenhouse Gas Initiative
RPS	Renewable Portfolio Standard
RRES	Residential Renewable Energy Solutions
RSIP	Residential Solar Investment Program
SBEA	Small Business Energy Advantage
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SCRf	Special Capital Reserve Fund
SHREC	Solar Home Renewable Energy Credit
SRF	State Revolving Fund
TPL	Trust for Public Land
URI	Urban Resources Institute
USDA	U.S. Department of Agriculture
USDOE	U.S. Department of Energy
USEPA	United States Environmental Protection Agency
V2G	Vehicle to Grid
ZEV	Zero Emission Vehicle

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Connecticut Green Bank

Environmental Markets – A Primer
July 2022



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2. Environmental Infrastructure and the Green Bank

On July 6, 2021, Governor Ned Lamont signed Public Act 21-115 “An Act Concerning Climate Change Adaptation” (“the Act”) into law.¹ The bipartisan-supported public policy was among the sixty-one (61) recommendations made by the Governor’s Council on Climate Change (“GC3”),² including a recommendation to expand the scope of the Connecticut Green Bank (“Green Bank”) beyond “clean energy” to include “environmental infrastructure” (i.e., Recommendation #57).

The Act, expands the scope of the Green Bank beyond “clean energy” to include “environmental infrastructure,” and includes the following key provisions:

- **Definition** – “environmental infrastructure” means structures, facilities, systems, services and improvement projects related to (A) water, (B) waste and recycling, (C) climate adaptation and resiliency, (D) agriculture, (E) land conservation, (F) parks and recreation, and (G) environmental markets, including, but not limited to, carbon offsets and ecosystem services;
- **Comprehensive Plan** – requirement for the Green Bank to develop a Comprehensive Plan³ prior to implementing any programs or initiatives related to “environmental infrastructure”;
- **Reporting** – inclusion of the Banks Committee and the Environment Committee, alongside the Energy and Technology Committee and Commerce Committee in terms of reporting; and
- **Bonding** – the ability to issue 25-year bonds for “clean energy” and 50-year bonds for “environmental infrastructure” (i.e., no more than the useful life of the projects), supported by the Special Capital Reserve Fund (“SCRF”), for up to 25 years to improve the rating of the bonds issued.

This reference manual focuses on the cross-cutting nature of “environmental markets” within the “environmental infrastructure” definition, with a focus on “carbon offsets and ecosystem services”. It is intended to provide readers with a basic understanding of the markets for carbon offsets and ecosystem services.

¹ <https://portal.ct.gov/Office-of-the-Governor/News/Press-Releases/2021/12-2021/Governor-Lamont-Signs-Executive-Order-Directing-Connecticut-State-Agencies-To-Implement-Actions>

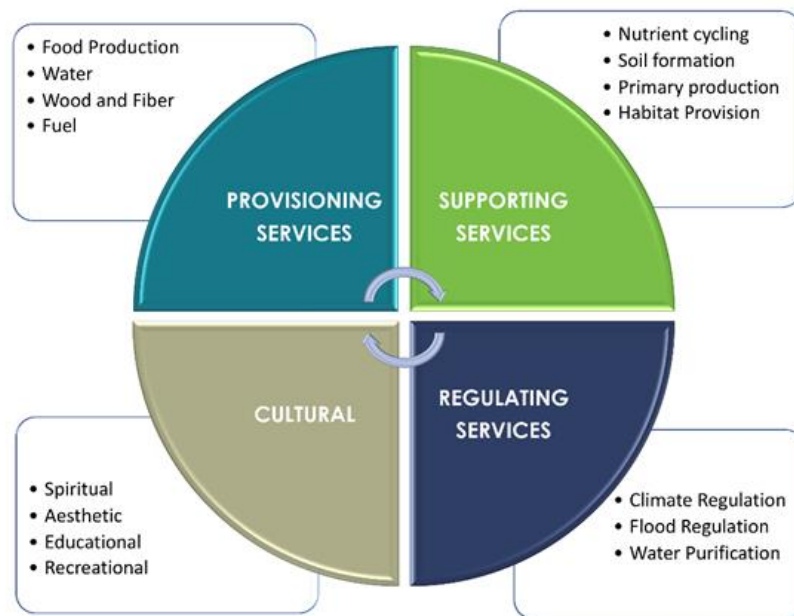
² https://portal.ct.gov/-/media/DEEP/climatechange/GC3/GC3_Phase1_Report_Jan2021.pdf

³ https://www.ctgreenbank.com/wp-content/uploads/2021/07/3_Comprehensive-Plan_FY-2020-and-Beyond_Final.pdf

3. Introducing Ecosystem Services

3.1. Background

Ecosystem services are the “benefits people obtain from ecosystems”.⁴ While scientists and environmentalists have discussed ecosystem services implicitly for decades, the Millennium Ecosystem Assessment (MEA) in the early 2000s popularized this concept. Below is conceptual diagram of ecosystem services as defined by the Millennium Ecosystem Assessment:



Source

Many of these categories (ex. cultural-spiritual) are not well-suited for commercial markets. However, several of these ecosystem services can be broken down into categories that align with traditional financing mechanisms and innovative new approaches. Below are five broad categories that this document will focus on:

1. Carbon
2. Water Quality
3. Water Quantity
4. Wetland and Habitat Protection
5. Parks and Brownfields

⁴ https://www.fs.fed.us/ecosystemservices/About_ES/

These categories allow for ecosystem services projects within different sectors to be considered in alignment with how financial markets and tools categorize their outcomes. For example, Clean Water Act-driven state revolving loan funds (SRFs) tend to only finance water quality projects, not water quantity.

While some projects, such as urban green stormwater infrastructure, may result in both water quantity and water quality benefits, this document discusses water quality and water quantity separately. Water *quality* tends to focus on regulatory municipal stormwater to address Clean Water Act requirements and is fundable under the Clean Water State Revolving Fund (CWSRF). Water *quantity*, however, is most directly related to flooding during high rain events and compliance is voluntary and not a priority of CWSRF funding. While separated for discussion purposes, these projects are often similar and have both water quality and quantity outcomes. The past few years have seen monumental shifts in commodity supply chains and the global economy. One of the more encouraging shifts has been the mainstreaming of ecosystem services markets related to carbon and water. These markets are quickly becoming recognized as ubiquitous and necessary tools for facilitating a transition to a green economy.

State Action to Advance Environmental Markets

In April 2022, Governor Hogan of Maryland signed into law SB0348/HB0653: The Conservation Finance Act of 2022. This is the first state law in the country that will codify the importance of leveraging private finance to advance environmental restoration efforts. The law defines green infrastructure and blue infrastructure, allows the state to purchase environmental outcomes such as water quality and carbon sequestration, and makes it so state revolving loan funds can be used for the acquisition and restoration of forests and other assets.

- Green infrastructure – a land-based natural area or natural feature, or a system or feature designed to protect, mimic, or enhance a natural function, that absorbs and filters pollutants; protects communities from flooding or storm surge; reduces erosion; or sequesters carbon. Green infrastructure includes enhanced or restored natural landscape features, such as forests, streams, wetlands, riparian buffers, headwaters, or floodplains; rain gardens; permeable pavement; pocket parks; bioswales; green roofs; infiltration planters; tree plantings or tree boxes; and rainwater harvesting
- Blue infrastructure – a water-based natural area or natural feature, or a system or feature designed to protect, mimic, or enhance a natural function, that: absorbs and filters pollutants; attenuates shoreline erosion; protects communities from flooding or storm surge; reduces erosion; or sequesters carbon. Blue infrastructure includes enhanced or restored oyster reefs; enhanced or restored seagrass beds; shellfish aquaculture projects; floating wetlands; and restored freshwater mussel populations

[Source](#)

3.2. Structuring Ecosystem Services Markets

While the mainstreaming of ecosystem markets is a recent development, many have been around for years. Others are relatively new to the scene, emerging in the 2020s.

Fundamentally, ecosystem services markets were designed to embed the positive benefits and negative impacts (called externalities) of individuals on natural resources into market-based systems which financially incentivize environmental stewardship, conservation, and rehabilitation of natural ecosystems. Given the amount of new information, historical context, and growing interest, it is important to understand and distinguish some of the important fundamental drivers underlying ecosystem services markets, including the answers to some critical questions such as:

- What are ecosystem services markets?
- Where did they come from?
- Who participates in them?
- What drives supply and demand?
- What does delivery mean in the context of an environmental asset?
- How are prices determined?
- What is the difference between a regulatory and voluntary market?
- And, how can they provide value to both consumers and producers of environmental assets?

Successful ecosystem services markets share some common design elements which influence and create the underlying market conditions required to align financial incentives with positive environmental outcomes. If any one of these design elements is absent, flawed, or not accurately accounted for, market failures (increased polluted air, water, and habitat) are likely to occur. These critical design elements include⁵:

- **Non-Localized Environmental Impacts** – the environmental impacts being addressed by the market need to be looked at from a regional, national, or global perspective, account for the scale of their impacts even if the activities or projects implemented are conducted at the local scale. For example, greenhouse gas (GHG) emissions for a power plant in California increase the GHG emissions across the globe. Polluted water discharged in public waterways impacts the water quality of everyone downstream.

⁵ <https://www.theoutcomesfund.com/in-the-news/swof-original-introduction-to-ecosystem-services-markets-why-do-ecosystem-services-markets-exist-part-1-of-3>

- **Reliable and Accurate Data** – data and the ability to accurately measure and monitor environmental impacts is paramount to effectively implementing a market-based system. Data should be verified by an independent third-party service to validate the integrity of the service and remove conflicts of interest. Without good data practices, there is no way to accurately determine supply and demand or enforce the rules of the market.
- **Target** – a target can be in the form of a cap (i.e., the upper limit of emissions or load in the water context) allowed in a regulatory system, or a reduction goal (i.e., a voluntary pledge to reduce a particular quantity of emissions or water use by a set date) in a voluntary system. Targets are usually set by policy and regulation, rather than economics, and they often become more ambitious over time. Ideally, a target is binding and carries penalties that incentivize compliance.
- **Clearly Defined Market Participants** – to establish market liquidity it is important to have a sufficiently large scope of coverage of the market, comprised of many entities with differing costs of compliance and reduction. This encourages investment in reduction strategies by some and trading to meet targets by others. To reduce transaction costs between parties, it is critical to have a standardized set of terms, definitions, operating rules, boundaries for activities, scientifically grounded methodologies, and units of.
- **Cost Containment** – since the typical laws of supply and demand do not always underpin price, it is often a good idea for ecosystem services markets to practice cost containment by having a floor price and price volatility controls. These measures protect market participants and encourage investment in reductions strategies and projects that create a supply of credits for others in the system to buy or trade.
- **Enforcement** – effective enforcement is one of the most critical aspects of a successful ecosystem services market. While this can be a daunting task, without it, the market often lacks incentives to operate efficiently and effectively. For this reason, most regulated (i.e., legally enforceable compliance) markets carry a premium price compared to voluntary markets.

3.3. Ecosystem Services & Public Health

All the way back in 1870, Frederick Law Olmsted intuited that polluted city air could be “disinfected by sunlight and foliage” from the parks he designed. Despite lacking the scientific tools and modern understanding of public health, Olmsted correctly gauged the positive impact that clean air, clean water, and outdoor space could have for community health.

- **Clean Air:** The connection between clean air and public health is well-established, as evidenced by the passage of the Clean Air Act of 1970. The EPA has concluded that in 2020, the Clean Air Act Amendments would prevent over 230,000 early deaths by reducing ambient particulate matter.⁶ This is also an environmental justice issue, where low income communities are more likely to be surrounded by polluted air and suffer from commensurately higher rates of asthma and other illnesses.
- **Clean Water:** Water treatment is important because excess nutrients from fertilizer, wastewater, and stormwater runoff can cause harmful algal blooms. The EPA found that these algal blooms can cause a variety of adverse health effects (in humans and animals) through direct contact with skin during recreation, consumption through drinking water, or consumption of contaminated shellfish, which can result in neurotoxic shellfish poisoning and other effects.⁷ The EPA estimated that the health impacts on Florida’s coast from high bloom levels was nearly \$140,000.
- **Urban Tree Canopy:** One study showed that the relationship between the urban tree canopy, temperature, and health is estimated to reduce heat mortality and valued tree canopy heat reduction services between \$5.3 billion and \$12.1 billion annually across the entire country, estimating that the urban tree canopy helped avoid 19 percent to 27 percent of heat-related deaths annually.⁸ Heat-related illnesses (HRIs) also disproportionately affect low-income communities, with estimates showing that those suffering from HRIs are 3x more likely to be hospitalized if they are from the bottom income quartile compared to the top income quartile.
- **Public Parks:** Parks are appealing venues for physical activity that can help combat the sedentary lifestyle that produces some chronic diseases, including diabetes, heart disease, cancer, hypertension, arthritis, stroke, depression, and sleep disorders - which account for more than 20%

⁶ <https://www.epa.gov/clean-air-act-overview/benefits-and-costs-clean-air-act-1990-2020-second-prospective-study>

⁷ <https://www.epa.gov/sites/default/files/2015-04/documents/nutrient-economics-report-2015.pdf>

⁸ https://www.tpl.org/sites/default/files/030822_Economic%20Benefits%20NYC_FinalE.pdf

of total US health care costs.⁹ In addition to physical activity benefits, well-maintained parks may promote mental health, social cohesion, and general well-being.

While the connection between public health and the outcomes from ecosystem services is well understood, health outcomes are generally much more difficult to quantify and commoditize in a market structure. This has led to key stakeholders in the health industry, such as insurers, funding investments in green space and green infrastructure, but not tying those investments to specific outcomes that can be financed off of.

Health Insurers Investing in Ecosystem Services

In 2021, Blue Cross Blue Shield of Massachusetts announced that it would provide \$10.6M over five years to address inequalities in environmental, food, and racial justice. Blue Cross Blue Shield acknowledged in their annual report that “that our health is directly linked to our environment”. In particular, they acknowledged that many communities suffer from health disparities due to proximity to highly polluted areas. Blue Cross Blue Shield highlighted several investments they made in ecosystem services, but as noted previously, they are not attempting to quantify or commoditize the specific health outcomes that might materialize as a result of these investments.

- Blue Cross Blue Shield partnered with GreenRoots, a resident-led, grassroots, community-based organization in Chelsea and East Boston, to help fund their work to advance food justice through urban agriculture, address indoor air quality while sharing data on outdoor air quality in easily accessible, multilingual formats, and implement climate justice through the creation of new green spaces.
- In Boston, Blue Cross Blue Shield partnered with the Department of Parks and Recreation to offer free, in-person classes in local parks across the city and virtual workouts for every age and fitness ability
- Blue Cross Blue Shield provided funding support to Eastie Farm, which is dedicated to pursuing climate justice, improving food access, and fostering community resilience through the development of interactive urban agricultural spaces and environmental education programs.

[Source](#)

⁹ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3993093/>

4. Carbon

Projects can be designed to explicitly have carbon sequestration benefits, or the carbon sequestration benefits can be an externality, or ecosystem service, of an environmental infrastructure project designed for other purposes. Carbon sequestration benefits can be quantified and sold in an environmental market as “carbon offsets”. Carbon Offsets are measurable outcomes from carbon sequestration activities, traded in voluntary and compliance markets, whereby regulations, sustainability priorities, and public relations are motivators for buyers and sellers. Due to the different constraints of the voluntary and compliance markets that facilitate the trading of the offsets, the price of offsets can vary. Constraints such as regulatory changes, current events, and public interest can compound supply or demand, shifting prices. For the most up to date prices, head to [Carbon Credits.com](https://www.carboncredits.com).

4.1. Market Structure

Carbon Offsets operate in both compliance and voluntary markets. Compliance markets are regulated by regional, national, or international carbon reduction regimes. In these markets, the price per credit can fluctuate but will apply to all buyers & sellers and price changes can be tracked in real time. Conversely, the voluntary market allows for entities conducting activities that result in a reduction of carbon in the atmosphere to quantify and sell those benefits to businesses, governments, nonprofit organizations, universities, municipalities, and/or individuals looking to purchase carbon offsets to meet their own emissions reduction objectives. In those transactions, the price per credit can be negotiated on a case-by-case basis. Quantifying the market price for the voluntary market requires averaging out available information to create an estimate. Below is a summary of each market.

4.2. Market Sizing

Voluntary Markets

In 2019, corporate carbon-neutral pledges fueled a record transaction volume in the voluntary offset market of at least 104 MtCO₂e, with a value of \$282.3M. Between 2019 and 2020, the number of companies with net-zero pledges doubled, from 500 to more than 1,000.

Compliance Markets

Globally, the financial data firm Refinitiv estimated that the value of the compliance offset market hit €760 billion in 2021.¹⁰ In most cases, compliance programs exist as regional or national cap-and-trade emission trading schemes, such as the Regional Greenhouse Gas Initiative (RGGI), the California Air Resources Board (ARB) Offset Credit program, or the European Union Emissions Trading Scheme (EU ETS). The ETS is the largest compliance market in the world by a significant margin, garnering an estimated €23 billion of annual revenue in 2021.¹¹ Domestically, California's cap-and-trade program generates \$1.7B in annual revenue while RGGI generates ~\$0.5 billion in annual revenue.¹²



[Source](#)

¹⁰ https://www.refinitiv.com/content/dam/marketing/en_us/documents/gated/reports/carbon-market-year-in-review-2022.pdf

¹¹ https://www.refinitiv.com/content/dam/marketing/en_us/documents/gated/reports/carbon-market-year-in-review-2022.pdf

¹² https://www.refinitiv.com/content/dam/marketing/en_us/documents/gated/reports/carbon-market-year-in-review-2022.pdf

4.3. Voluntary Market Registries

The voluntary carbon offset registries track offset projects and issue credits for each unit of emission reduction or removal verified and certified. Carbon offset registries track offset projects and issue credits for each unit of emission reduction or removal verified and certified. All credits need to meet criteria for measurability, verifiability, sustainability, and additionality, but different registries have different criteria and definitions of a “carbon unit”.

The four main offset registries are the Verified Carbon Standard, Gold Standard, Climate Action Reserve, American Carbon Registry.

- The **Verified Carbon Standard** is used by most of the market, approximately 76%, and includes Agriculture Forestry and Land Use, Manufacturing, and Waste Management and Disposal as permitted practice areas, among others.
- The **Gold Standard** is the next most frequently used registry, used by approximately 11% of the market. The Gold Standard is used for renewable energy projects, including Biomass and Solar Power as permitted practice areas.
- The **Climate Action Reserve** is used by approximately 8% of the market and includes Conservation-Based Forest Management and Improved Forest Management as practice areas, among others.
- The **American Carbon Registry** is the leading offset project registry for California’s cap-and-trade program but due to its U.S. focus, it has the smallest international market share of the carbon registries.

After a registry issues offset credits, project developers are able to sell on the marketplace.

4.4. Compliance Market Registries

Regional Greenhouse Gas Initiative (RGGI)

The Regional Greenhouse Gas Initiative (RGGI)¹³ is a cooperative effort among eleven Eastern states to reduce carbon dioxide (CO₂) emissions from power plants within each participating state. The participating RGGI states include **Connecticut**, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, Vermont, and Virginia.

RGGI is a market-based cap-and-invest initiative. Together, the participating states have established a regional cap on CO₂ emissions, which sets a limit on the emissions from regulated power plants within the RGGI states. Within the RGGI states, regulated power plants must acquire one RGGI CO₂ allowance for every short ton of CO₂ they emit. The RGGI states distribute allowances at quarterly auctions, where they can be purchased by power plants and other entities. Over time, the regional cap declines, so that CO₂ emissions decrease in a planned and predictable way. Predictability is key because cap-and-trade markets are designed to give firms efficient incentives to reduce or offset emissions. In the short-term, high-emitting generators operate less frequently in favor of low emitting generators. In the long-term, the market will affect the decisions of firms to develop offset projects, to retire old inefficient generation, to retain existing zero-emissions generation, and to perform maintenance that increases fuel efficiency and lowers carbon-intensity. Predictable CO₂ allowance prices decrease the risks associated with making long-term investments in reducing CO₂ emissions.

The market for RGGI CO₂ allowances consists primarily of purchases in the quarterly auctions that provides public information about the market value of CO₂. However, there is also a secondary market that includes trading of allowances and allowance futures and options contracts in the secondary market. Since CO₂ allowance prices can be volatile, the availability of futures and options contracts allows firms to protect themselves from the risks of such investments. Below is an overview of how credit prices have fluctuated over time in the RGGI market.

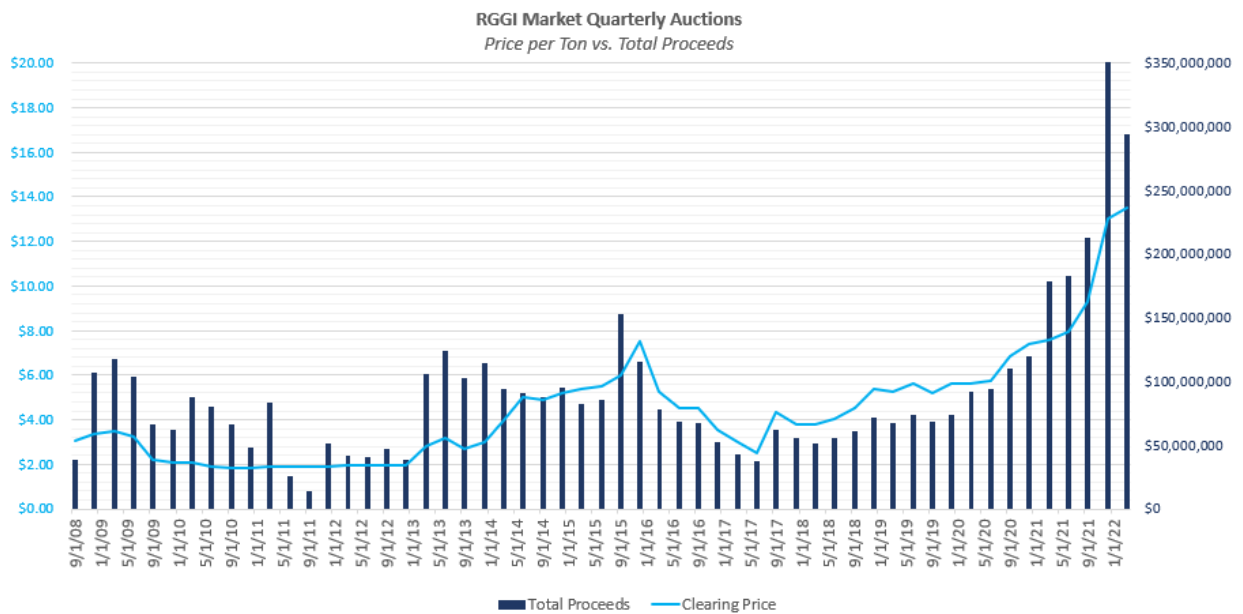
RGGI Offset Allowances

Offset allowances are transferable and may be used by regulated power plants to meet up to 3.3% of compliance obligations. CO₂ offset allowances account for less than 0.01% of the total number of allowances issued by the program since its inception in 2009. Eligible project types include reforestation, improved forest management, avoided conversion, and afforestation.

In Connecticut, afforestation is an eligible activity to generate carbon offset credits that can be traded on the RGGI market.

[Source](#)

¹³ https://www.rggi.org/sites/default/files/Uploads/Fact%20Sheets/RGGI_101_Factsheet.pdf



Source

European Union Emissions Trading System (ETS)

The EU ETS¹⁴ follows a cap-and-trade approach: the EU sets a cap on the amount of greenhouse gases that can be emitted within one calendar year for companies in particular sectors, and those companies need to hold an European Emission Allowance (EUA) for every ton of CO₂ they emit within one calendar year. They receive or buy these permits – and they can trade them. Companies must hold allowances corresponding to their CO₂ emissions, making power production from burning coal and other fossil fuels more expensive and clean power sources more attractive. The system incentivizes firms to become more energy efficient because they can then sell their emissions permits on the market.

¹⁴ <https://www.cleanenergywire.org/factsheets/understanding-european-unions-emissions-trading-system>

California Air Resources Board (CARB) Offset Credit Program

The Cap-and-Trade Regulation establishes a declining limit on major sources of GHG emissions throughout California, incentivizing investment in cleaner, more efficient technologies. The Regulation applies to emissions that cover approximately 80 percent of the State's GHG emissions. CARB creates allowances equal to the total amount of permissible emissions (i.e., the "cap"). One allowance equals one metric ton of carbon dioxide equivalent emissions (using the 100-year global warming potential). Each year, fewer allowances are created and the annual cap declines. The Compliance Offsets Program¹⁵ is an important cost-containment element within the broader Cap-and-Trade Program. Offset Credits are issued to qualifying projects that reduce or sequester greenhouse gases (GHG) within the program's protocols, and those credits represent verified GHG emissions reductions from sources not subject to a compliance obligation in the Cap-and-Trade Program. In addition to their climate and other environmental benefits, offset credits provide important cost containment and compliance flexibility for covered entities.

Global Warming Potential

Global Warming Potential (GWP) allows for different gases with different global warming impacts to be compared by quantifying the amount of energy the emissions of 1 ton of a gas will absorb over a certain amount of time compared to the amount of emissions of 1 ton of carbon dioxide (CO₂).

Compared to CO₂, the GWP for Methane (CH₄) is 27-30x higher, and for Nitrous Oxide (N₂O) it is 273x higher.

Source

¹⁵ <https://ww2.arb.ca.gov/our-work/programs/compliance-offset-program/about>

4.5. Activities

The different carbon registries have different practices that qualify for permit distributions, with each activity having a specific methodology needed to comply with the registry’s qualifications. Below is a list of permitted practices by carbon registry.

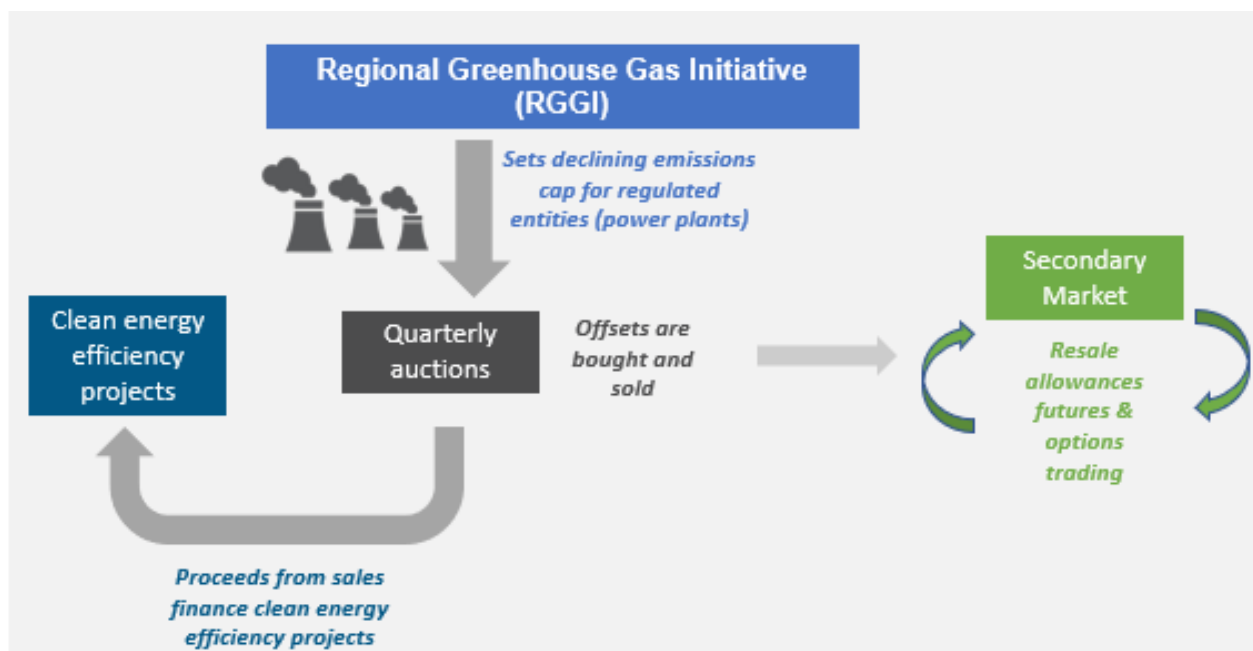
Standard ¹⁶	Verified Carbon Standard	Gold Standard	Climate Action Reserve
Relevant Environmental Markets Permitted Practices	Agriculture / Land Conservation <ul style="list-style-type: none"> • Agriculture Forestry and Land Use • Livestock, Enteric Fermentation, and Manure Management Energy <ul style="list-style-type: none"> • Energy Demand • Energy Distribution • Energy Industries (Renewable/Non-Renewable) • Fugitive Emissions from Fuels (Solid, Oil and Gas) Waste / Recycling <ul style="list-style-type: none"> • Waste Handling and Disposal Other <ul style="list-style-type: none"> • Chemical Industry • Manufacturing Industries • Metal Production • Mining/Mineral Production • Transport 	Energy <ul style="list-style-type: none"> • Biogas • Biomass or Liquid Biofuel • Energy Efficiency • Geothermal • Hydropower • Solar Power • Wind Power 	Agriculture / Land Conservation <ul style="list-style-type: none"> • Avoided Conversion • Conservation-based Forest Management • Improved Forest Management Energy <ul style="list-style-type: none"> • Coal Mine Methane • Landfill Gas Capture/Combustion • Livestock Gas Capture/Combustion • Nitric Acid N2O Waste / Recycling <ul style="list-style-type: none"> • Organic Waste Composting • Ozone Depleting Substances

¹⁶ <https://gspp.berkeley.edu/faculty-and-impact/centers/cepp/projects/berkeley-carbon-trading-project/offsets-database>

4.6. Marketplace Buyers & Sellers

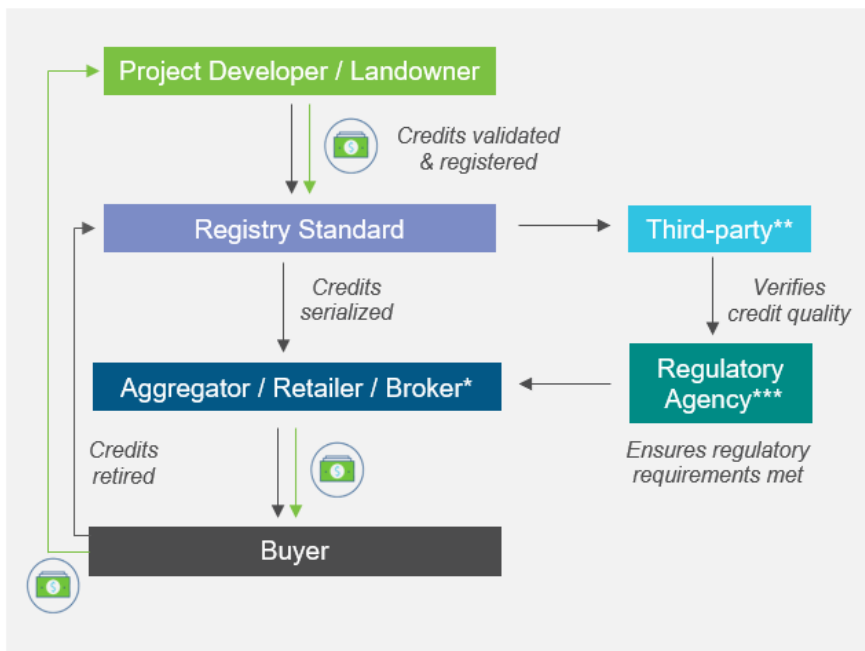
Compliance Markets:

Participants in compliance markets include private companies and governments, depending on the regulatory structure. Compliance market buyers are companies and governments legally mandated to offset their carbon emissions. Sellers are public or private entities conducting activities more than any required level. Participants in compliance markets are motivated by regulations, selling carbon credits when activities have resulted in less carbon emissions than allowed and purchasing carbon credits when activities have resulted in more. In some instances, individuals that do not fall under compliance regulations may choose to purchase credits in compliance markets.



Voluntary Markets:

In voluntary markets, corporations, airlines, and governments with emissions-reduction goals are buyers of carbon offsets. Sellers are entities conducting activities to a sufficient measurable level. Participants in voluntary markets are primarily motivated by Corporate Social Responsibility (CSR) goals, public relations, and environmental and social benefits. Once a registry issues offset credits, the project developer can sell them. But with no centralized voluntary marketplace, finding a buyer can be a multi-step, challenging process. Some project developers sell their offsets directly to end buyers. Others sell their offsets through a broker or an exchange, which provide platforms for buyers and sellers to meet; still others may sell to a retailer, who then resells offsets to an end buyer. Retailers take temporary ownership of an offset, while brokers and exchanges do not. Retailers are more likely to walk companies through the process of offsetting and provide more tailored, customized advice. The transaction phase includes any time an offset is sold. Yet once an end buyer is ready to claim that offset against their own emissions, s/he should retire it. Retired offsets are no longer able to be traded in the market and represent emissions that are permanently “removed” from the atmosphere.



4.7. Pricing

Prices for voluntary offsets are generally lower than the prices for compliance offsets. One reason for this is that there is much larger supply of voluntary carbon offsets on the market, which drives the price downward. Pricing for voluntary offsets is also more difficult to track because most voluntary offsets are transacted bilaterally and over the counter, without a centralized repository for price and volume data.¹⁷ Because compliance program offset credits are generated and traded for regulatory compliance, they typically experience commodity pricing, where all offset credits in a particular program are priced similarly based on the dynamics of supply-and-demand, regardless of project type and other characteristics.

Voluntary offsets, on the other hand, have a wide variation in offset price and volume transacted, which reflects project type, region, co-benefits, standard, as well as buyer preference. Additionally, the heterogeneity of carbon credits means that many credits are being traded in volumes too small to generate reliable daily price signals.

Due to the subjective nature of pricing for voluntary carbon credits and the range of quality for voluntary credits, there can be an opportunity for high quality voluntary carbon offset to secure offset prices higher than the market average. For example, in April 2022 the nonprofit City Forest Credits issued offsets to 13 urban forestry projects across the country, and then sold the credits to a blockchain software development company for \$31 per credit – 6 times the average voluntary offset credit price.¹⁸ With the offsets amounting to 31,533 credits, the total transaction was \$1M.

Compliance Offset Market	2021
<i>By Market / per MtCO2e</i>	Price
California Carbon Allowances (CCAs) Futures (12/21)	\$22.35
California Carbon Allowances Non-Exchange Cleared (SPOT) (12/21)	\$22.35
California Carbon Offsets – Golden CCO	\$15.00
Low Carbon Fuel Standard (LCFS)	\$182.00
RGGI (12/21)	\$8.90

[Source](#)

Global Voluntary Offset Market	2021 (Jan-Aug)
<i>By Registry</i>	Price
Verified Carbon Standard	\$4.17
Gold Standard	\$3.94
Climate Action Reserve	\$2.12
American Carbon Registry	\$11.37

[Source](#)

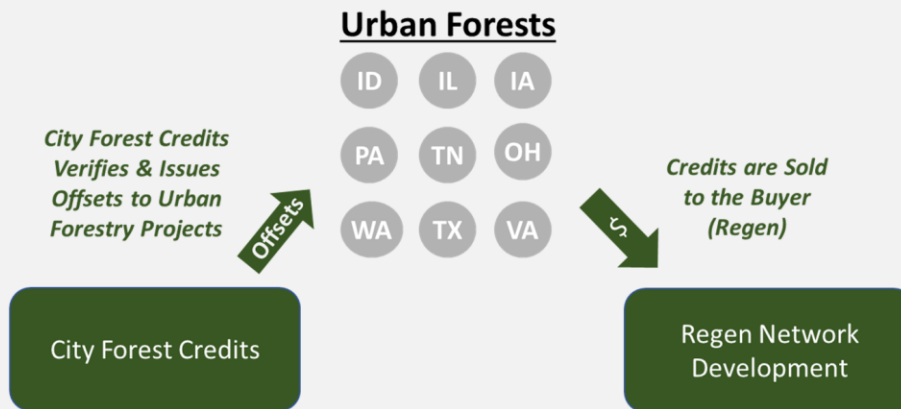
¹⁷ <https://www.forest-trends.org/publications/state-of-the-voluntary-carbon-markets-2020-2/>

¹⁸ <https://www.axios.com/pro/climate-deals/2022/04/04/city-forests-sell-carbon-credits-net-1m>

4.8. Case Study

Carbon Offsets Example: City Forestry Credits

City Forest Credits, a nonprofit, issued the offsets to 13 urban forestry projects across the country. The projects then sold the credits to Regen Network Development, a blockchain software development company that says it's developing "a global marketplace for the Earth's ecosystem assets. The forests are located in Idaho, Illinois, Iowa, Ohio, Pennsylvania, Tennessee, Texas, Virginia and Washington, in cities such as Boise, Chattanooga, Cleveland, Pittsburgh and Richmond. The offsets amounted to 31,533 carbon credits, representing 31,533 metric tons of CO₂. At a cumulative price of ~\$1M, each credit was worth ~\$32. The credits are being retired after the purchase, meaning they can't be resold. The planting projects will include workforce-training programs and focus tree-planting efforts in underserved communities. The purchase is expected to propel further interest in carbon credits from urban forests — both from tree-planting organizations looking for new ways to fund their work, and buyers searching for credits that help mitigate skepticism about the true impact of offset programs.



5. Water Quality

5.1. Market Structure

Water quality markets typically result from federal Clean Water Act or other legal requirements to reduce pollution. Buyers are usually regulated facilities operating under federal permits that limit their discharges—generally National Pollutant Discharge Elimination System (NPDES) permits. Deals may be made through one-on-one negotiations or via market structures such as clearinghouses and banks. Many programs incorporate credit aggregators or banks to collect credits from nonpoint sources and re-sell them to regulated facilities, and some have held reverse auctions to solicit credits from nonpoint sources. Reverse auctions are also sometimes utilized, which is a process similar to an RFP in which a buyer requests bids from prospective sellers for specific types of credits and chooses from among the bids based on price, terms, or other factors. While many markets are for individual watersheds, they can also cover entire river basins. Over 50 formal water quality trading programs exist in the United States, including Connecticut’s Nitrogen Credit Exchange Program¹⁹ that identifies the maximum amount, or the Total Maximum Daily Load (TMDL), of nitrogen that can be discharged to the Long Island Sound. Water quality trading allows these permitted facilities to meet their discharge requirements by purchasing credits from credit providers instead of making more costly improvements to their own treatment facilities.²⁰

Financing Clean Water Act Compliance

Water quality is one of the most established ecosystem services markets in the United States, due in large part to the Clean Water Act requirements.

Clean Water State Revolving Funds may be unable to meet the high demand for low-cost financing to comply with Clean Water Act, incentivizing Green Banks to offer an alternative sub-market direct loan program.

Water quality impacts can come from a range of sources, including:

- **Municipalities** – The EPA’s Municipal Separate Storm Sewer Systems (MS4s) program requires each municipality to take steps to keep the stormwater entering its storm sewer systems clean before that stormwater enters water bodies.²¹ Additionally, wastewater treatment facilities may have to comply with TMDL requirements related to their discharge to waterways.

¹⁹ <https://portal.ct.gov/DEEP/Municipal-Wastewater/Nitrogen-Control-Program-for-Long-Island-Sound>

²⁰ <https://www.landcan.org/pdfs/GuidetoEnvironmentalMarketsforFarmersandRanchers.pdf>

²¹ <https://portal.ct.gov/DEEP/Water-Regulating-and-Discharges/Stormwater/Municipal-Stormwater>

- **Agriculture** – Farmers must monitor their use of fertilizers and pesticides and soil runoff, both of which can negatively impact water quality and put a farmer under regulatory scrutiny.
- **Forests** – Demand for water quality credits can be driven by forestry operations, as operators pursue best management practices (BMPs) to reduce soil erosion and prevent or control pollution.

5.2. Activities

Municipalities:

The MS4 Stormwater Management Plan identifies measurable goals in each of the following six control measures: Public Education and Outreach; Public Participation and Involvement; Illicit Discharge Detection and Elimination; Construction Site Runoff Control; Post-Construction Runoff Control; and Pollution Prevention/Good Housekeeping. Wastewater treatment facilities that do not meet the state TMDL requirements have mandatory compliance schedule incorporated into their permit. Both MS4 Plan and the wastewater treatment facility permit can be drivers for water investment.

Agriculture:

Eligible credit generating agriculture and farmland BMPs commonly include tillage and nutrient management projects. The BMPs that are eligible for generating credits vary by program, but commonly include practices that reduce erosion, increase water infiltration into the soil, filter run-off, and provide a buffer between farming activities and environmentally sensitive areas. The Natural Resource Conservation Service (NRCS), an agency within the U.S. Department of Agriculture, lists close to 100 practices that reduce nutrients in surface water, such as installing filter strips, using nutrient management strategies, planting riparian buffers, or adopting reduced or no-till agriculture.

Forestry:

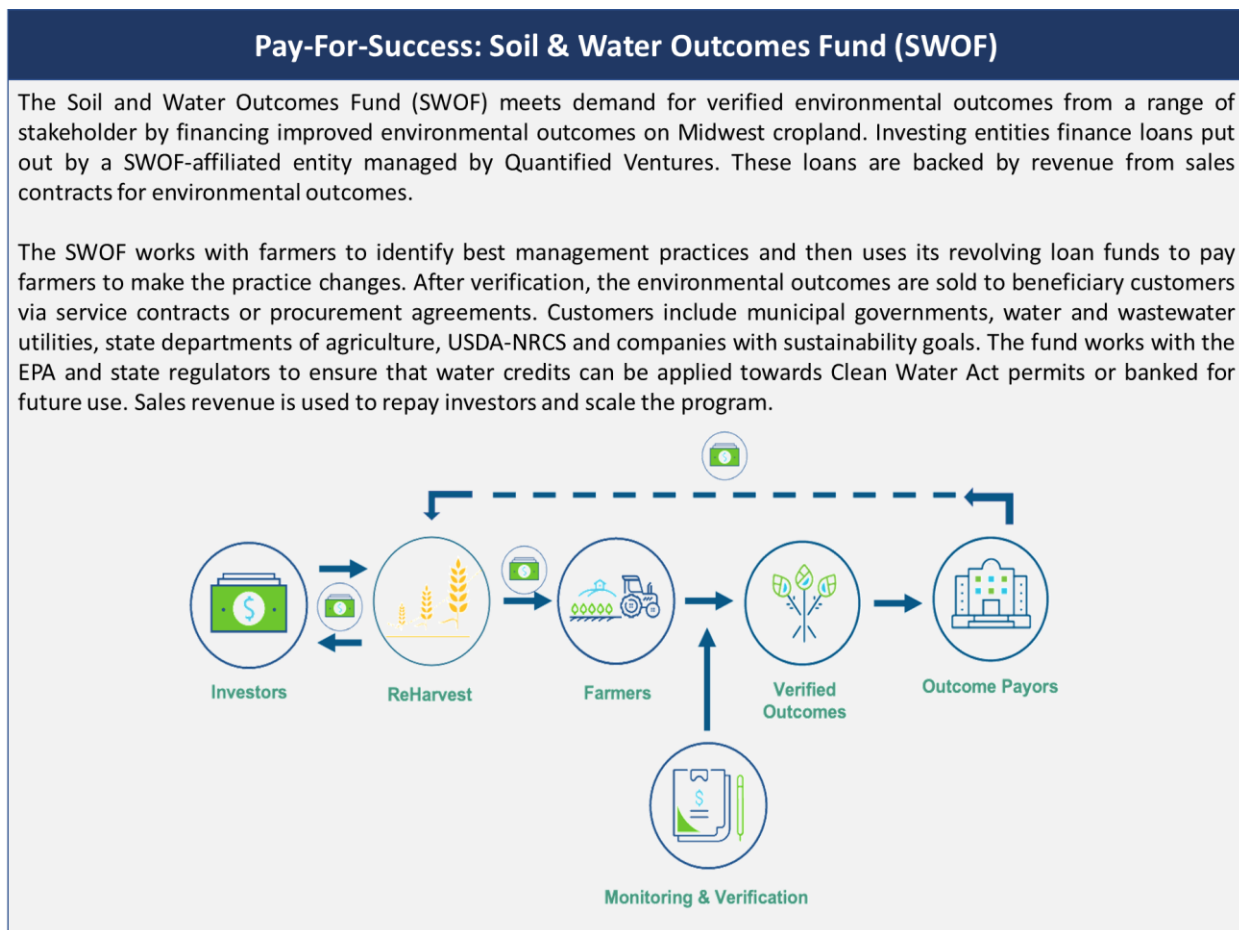
In the forestry sector, water quality enhancing BMPs include limiting stream crossing, preventing the construction of additional roads on the property, establishing wide stream buffers, restricting disturbance to stream buffers, and avoiding or limiting fertilizer application when possible. When operating forest management on the property, additional BMPs include using low-ground-pressure equipment, using alternatives to bladed or plowed lines, and minimizing soil disruption during site prep.²²

²² <https://www.ncforestservice.gov/publications/WQ0115.pdf>

5.3. Marketplace Buyers & Sellers

Buyers are point source pollution facilities, such as public wastewater treatment plants or private industrial sites. Sellers are nonpoint sources in the same watershed as the point source, such as farmers, ranchers, and foresters. Nonpoint sources do not operate under NPDES permits and can sell credits by undertaking voluntary pollution reduction actions. Farmers, ranchers, and foresters can often implement BMPs that achieve the amount of water quality improvement needed for a watershed at a cost much lower than installing point source infrastructure upgrades.

5.4. Case Study

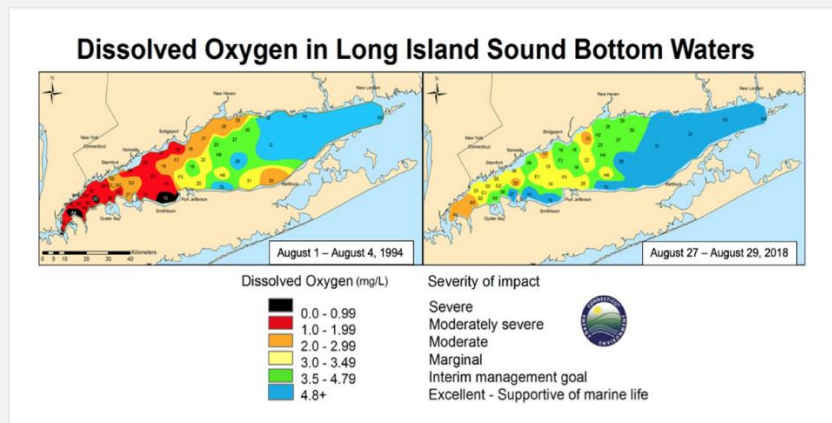


Credit Market Example: Connecticut Nitrogen Credit Exchange Program

In order to combat hypoxia in the Long Island Sound, which resulted from excessive nitrogen discharge from human activities, DEEP developed an innovative nitrogen-trading program, the Connecticut Nitrogen Credit Exchange Program, among 79 sewage treatment plants located throughout the state. This program identifies the “Total Maximum Daily Load” of nitrogen that can be discharged into the Sound without impairing its health. Between 2002-2014, the Nitrogen Credit Exchange has reduced the nitrogen load from that source by nearly 65%.

The program encouraged denitrification at WPCFs with increased Clean Water Fund (CWF) grants, spread nitrogen removal upgrades over thirteen years (thereby reducing the financial impact on the CWF), and provided a fiscal alternative to the immediate expenditure of capital funds. The trading program is estimated to have saved \$300-400 million by targeting facility upgrades that will have the greatest water quality benefits.

The trading program is governed by a general permit and is centrally managed by the Nitrogen Credit Advisory Board, which also sets prices. In 2017, the NCAB established the value of an equalized nitrogen credit for buyers at \$6.61 per equalized pound and sellers at \$2.59 per equalized pound for trading. Also in 2017, thirty-three facilities were required to purchase credits equivalent to 979 lbs in order to remain in compliance with the NGP. Those payments totaled \$2,361,356 and were shared amongst the forty-six facilities selling credits equivalent to 2499 lbs.



[Sources 1, 2, 3](#)

6. Water Quantity

6.1. Market Structure

Communities pursue water quantity projects to enhance resilience to flooding and sea level rise and are of increasing importance with more intense rainfall and hurricanes as a result of climate change. Stormwater is the water quantity challenge that is most often targeted by municipalities and is managed through green and grey infrastructure.

Stormwater runoff refers to water that is not absorbed by soil (because the surface is saturated or sealed), and flows on impermeable land cover, such as roads. In natural settings, the surface is usually permeable and can absorb large amounts water, resulting in minimal stormwater runoff.²³ Urban areas experience high amounts of stormwater runoff due to the large amount of impermeable surface (e.g., roads, sidewalks, parking spaces, housing properties) which results in inhibited infiltration, interrupted hydrological cycles, and thus significantly higher surface runoff volumes and peak flows

Urban conditions cause stormwater to reach receiving streams and sewage systems quickly and in large volumes, resulting in higher peak flows. This is a particularly challenging issue for older cities with combined sewage systems. These systems collect sewage and stormwater and channel it to wastewater treatment facilities. During heavy precipitation events, these systems do not have sufficient capacity to handle the excess water (and resulting overflow) and need to discharge the mixed water directly into streams and rivers, causing pollution and further negative environmental impacts for these water bodies.

Flooding from tidal systems, riverine overflow, and sea level rise are additional water quality challenges that can impact both urban and rural communities. Impermeable surfaces, as well as low elevation of roads, buildings, sea walls and berms, increase community vulnerability to flooding and can result in stormwater system overwhelm, putting people and property at risk.

Financing Water Quantity

With the increased frequency and severity of flood events, municipalities are looking for financing to assist in constructing resilience projects. Clean Water State Revolving Funds are often already overburdened by water quality project needs, emphasizing the need for low-interest loans, financing to supplement state grant funding, innovative new mechanisms such as Environmental Impact Bonds.

²³ <https://www.iisd.org/system/files/publications/stormwater-markets-concepts-applications.pdf>

Municipalities tend to select water quantity projects to implement that are projected to save money, often in a 1-to-1 ratio of dollars invested to dollars saved, due to tight municipal budgets. Market mechanisms can result in more ambitious or numerous projects being implemented because a greater number of stakeholders are investing, with the benefits also being at a greater scale.

6.2. Activities

Communities typically consider a mix of green and grey infrastructure when exploring projects to address water quantity challenges. Green infrastructure in the context of stormwater comprises natural and/or man-made elements that provide, improve, or restore ecological and hydrological functions and processes to manage wet weather impacts.²⁴ According to the U.S. Environmental Protection Agency, green infrastructure “uses vegetation, soils, and natural processes to manage water and create healthier urban environments”.²⁵ Other terms in the literature that are commonly used to refer to green infrastructure are low-impact development, rainwater management or natural stormwater management.

There are numerous green infrastructure activities that can help reduce the risks of stormwater and flooding, for example:

- **Green Roofs** – Green roofs usually consist of four layers: waterproof membrane, drainage layer, growing medium, and vegetative cover layer.
- **Rainwater Harvesting** – Capture of runoff generated from impermeable areas in a storage facility (wide range of sizes available). Shared and integrated rainwater harvesting systems are two common types.
- **Rain Gardens / Bioretention** – Relatively small, ground-level spaces consisting of a mixture of sand, vegetation, and organic filter media to treat polluted runoff.
- **Bioswales** – Narrow, below-ground-level sloped drainage areas with grass or vegetation. These can continue over long distances. Located next to roads and walking paths, at roadway medians, shoulders, and parking lots.
- **Planter Boxes** – Bio-infiltration-based structures with vertical walls. Located in transportation corridors or parking areas.
- **Permeable Pavements** – There are different types including porous asphalt, permeable concrete, permeable pavers, open-matrix pavement.
- **Constructed Wetlands** – Relatively large, natural ponds to collect rainwater. Detention ponds stay dry during times of no rainfall whereas retention ponds hold a constant amount of water.

²⁴ <https://www.iisd.org/system/files/publications/stormwater-markets-concepts-applications.pdf>

²⁵ <https://www.iisd.org/system/files/publications/stormwater-markets-concepts-applications.pdf>

- **Urban Tree Canopy** – Trees can be planted on private and public properties and can promote stormwater absorption and soil stabilization.
- **Land Conservation** – Protection of natural open spaces and sensitive areas within and adjacent to urban areas, such as riparian areas, wetlands, and steep hillsides. Land conservation measures take place on a neighborhood or city scale.

In the stormwater management context, grey infrastructure refers to the typical built infrastructure solutions employed to manage water, including gutters, sewers, and tunnels, among other project types. Combining grey and green infrastructure to manage water quantity can result in lower costs to municipalities and more resilient utility systems.²⁶

6.3. Marketplace Buyers & Sellers

Participants in the stormwater market is dependent on the implementation tool used. Below are some of the financial tools used in the stormwater market:

- **Credit Trading** – Stormwater retention credits are a common option for the trading of allowances. One example is Washington D.C.’s specific credit for property developers. Since projects are required by the municipality to meet a 1.2-inch runoff retention standard, developers are allowed to buy credits when their projects do not comply with the limit.
- **Environmental Impact Bonds** – Environmental Impact Bonds (EIBs) represent innovative financing mechanisms aiming at mobilizing private capital investors to supplement public investment. A distinctive feature of this kind of public-private partnership is that the investors are only repaid if the desired social outcomes are achieved. Quantified Ventures worked with Washington D.C. to issue the first “Pay-for-Success” EIB in September 2016. The 30-year tax-exempt municipal bond (with a mandatory tender in year five) foresees payments by either the municipal water utility or investors based on predetermined performance requirements.
- **In-Lieu Fees** – In-lieu fee programs are designed to allow developers that are not able to meet the runoff regulation requirements, to pay a fee for the expected runoff volume that their projects could generate. These fees are used by governments for the construction of runoff mitigation facilities like the ones implemented in Park Ridge, Illinois; Aspen, Colorado; and San Antonio, Texas.

²⁶ https://files.wri.org/d8/s3fs-public/integrating-green-gray_0.pdf

- **Permittee-Responsible Mitigation (Offsets)** – Also known as **payment for performance (P4P)**, the offset or voluntary action compensation is implemented after benefits are accrued (regardless of the focus of the intervention). The metrics used can vary. For example, MS4 activities in Maryland are quantified based on acres of impervious surfaces while Pennsylvania looks at the volume of sediment.²⁷

There is no centralized market for buyers and sellers in this market because the risks and benefits of these investments are confined to discrete geographic areas. Generally, investments in utility-scale green infrastructure are made by municipalities and other government actors rather than private organizations. However, there is an opportunity to include private actors in the market.

Unlike carbon offsets or water quality markets, there is no commoditized external market for avoided stormwater runoff and flood risk reduction. Therefore, private individuals and organizations have few external incentives to pursue costly activities such as green roofs or permeable pavements.

²⁷ <https://www.aacounty.org/departments/public-works/wprp/education-outreach/watershed-grant-program/index.html>

6.4. Case Study

Environmental Impact Bond Example: Hampton, Virginia

Quantified Ventures partnered with the Chesapeake Bay Foundation and the City of Hampton, VA to design and issue a \$12M EIB. Hampton's three critical nature-based projects are expected to add more than 8.6 million gallons of storage capacity for stormwater that would otherwise contribute to flooding and polluted runoff in the Newmarket Creek watershed, a key environmental, economic, and transportation corridor. Water equity in the City will be enhanced as low- to moderate-income communities that have suffered the most from chronic flooding will see improved conditions.

The City attracted the usual mainstream municipal bond investors based on Hampton's excellent credit rating as well large ESG-oriented bond investors, who were attracted by the bond's enhanced impact measurement. The increased investor demand led to the bond being well oversubscribed – with the majority bought by ESG funds – putting downward pressure on interest costs. The project is still under construction and has no outcomes to report as of June 2022.



7. Wetland & Habitat Protection

7.1. Market Structure

Wetland, habitat, and biodiversity markets focus on the replacement of wetlands, habitat, vegetation, and other natural features that are damaged by development or land use actions. Credits are generally produced through restoration of specific habitat types, although occasionally credits can be achieved through protection of intact habitats. Wetland mitigation banking is commonly used to compensate for wetland impacts from development, but it is also used for impacts from agriculture.

There are two types of mitigation banks. Wetland or stream mitigation banks offer mitigation credits to offset ecological losses that occur in wetlands and streams. These are regulated and approved by the U.S. Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency (USEPA). Conservation banks offer mitigation credits to offset losses of endangered species and/or their habitats. These are regulated and approved by U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS).

The market is constrained by the complex and time-consuming process for certifying mitigation and conservation banks, but simpler processes may be possible. While formal banks provide the most dependable way to supply wetland and habitat credits, it is difficult to navigate the extensive review and approval process for new banks in Washington. This option will appeal to only the most dedicated farmers and ranchers. An alternative would be to pair agencies that need wetland and habitat credits with farmers who may be able to supply them in permitting processes.

In Lieu Fees for Wetlands in Connecticut

Connecticut's In Lieu Fee program allows permittees to pay a fee in lieu of taking on mitigation themselves. Instead, local organizations like land trusts, and other environmental nonprofits, are given the opportunity to apply for and receive grant funding to protect and enhance wetlands.

The Environmental Protection Agency has defined four distinct components of a mitigation bank:

1. **Bank site** – the physical acreage that is restored, established, enhanced, or preserved.
2. **Bank instrument** – the formal agreement between the bank owners and regulators establishing liability, performance standards, management and monitoring requirements, and the terms of bank credit approval.
3. **Interagency Review Team (IRT)** – the interagency team that provides regulatory review, approval, and oversight of the bank.

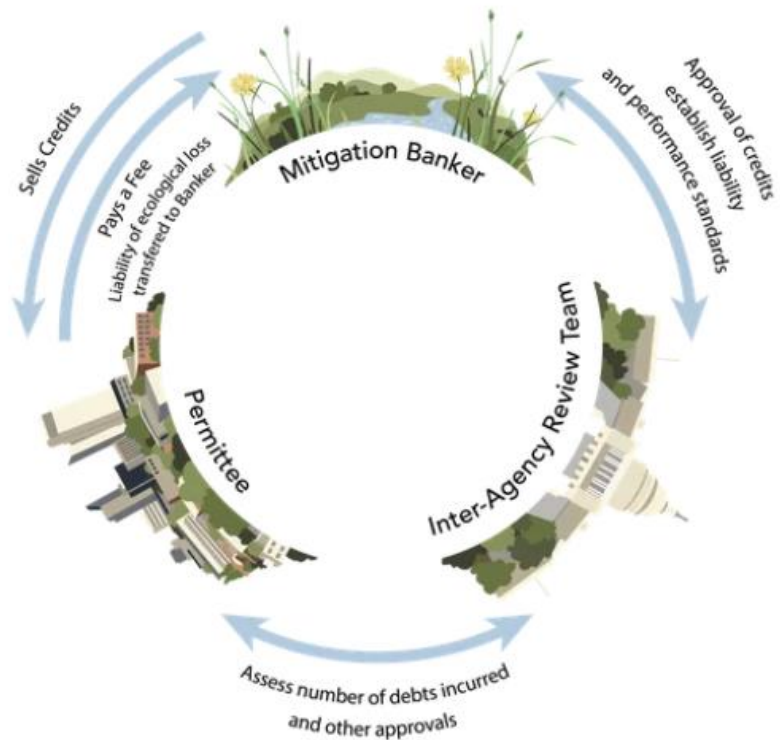
4. **Service area** – the geographic area within which permitted impacts can be compensated for at a given bank. Regulatory agencies determine service areas based on physical and ecological attributes such as watersheds, soil types, species recovery units, or species and population distributions.

7.2. Activities

Environmental activities can be split into two broad buckets: agronomic and structural. Agronomic practices are on-farm strategies that farmers incorporate to improve soil quality, enhance water usage, manage crops, and improve the environment, whereas structural practices entail construction of human-made structures necessary to protect environmental outcomes. Examples of agronomic practices include cover crops, conservation tillage, and reduced use of pesticides. Examples of structural practices include drainage management, flood control, and wetland management.

7.3. Marketplace Buyers & Sellers

Buyers are typically public and private entities with development projects that result in damages to wetlands and other habitats and who must offset these damages in order to secure permits for their projects. If a development project has wetland impacts, local, state and federal laws require that these impacts be mitigated through restoration of wetlands on the development site or, in areas with mitigation banks, by buying credits from the bank. The largest buyers are typically utilities and road and highway agencies that have limited opportunities to avoid wetland impacts for their large, linear projects. Other buyers can include wind development projects and oil and gas pipeline projects. While impacts to other habitats and biodiversity are just as common, there are fewer

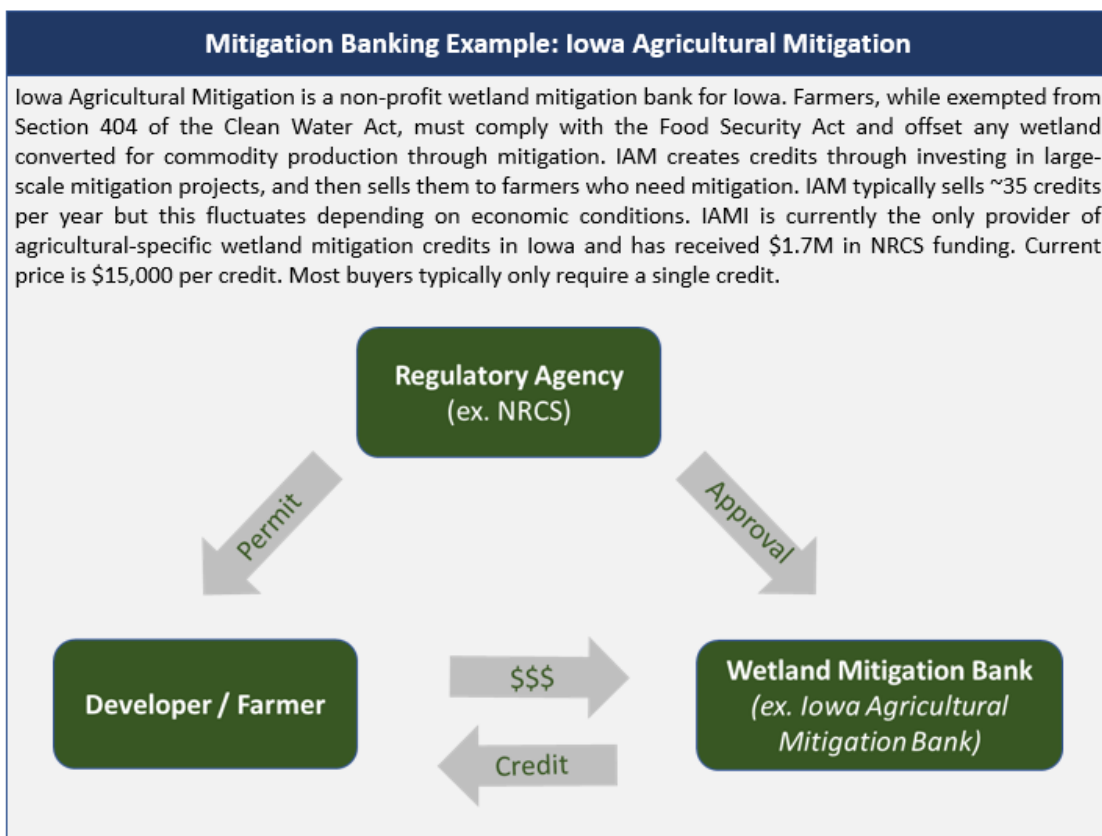


buyers because the regulation of these resources is not as stringent as for wetlands. Sellers could include farmers and ranchers with land that is suitable for wetland or for habitat restoration.

Mitigation Banks involve three different parties²⁸:

1. **Mitigation Bank Owner** – completes environmental restoration on a specific site to sell mitigation credits
2. **Regulatory agencies and inter-agency review team** – approves mitigation project and require mitigation for infrastructure and development projects
3. **Client/Permittee** – needs to offset environmental impacts from infrastructure projects ranging from a new housing development to a transportation expansion

7.4. Case Study



²⁸ <https://wesmitigation.com/services/mitigation-banking-101/>

8. Parks and Brownfields

8.1. Market Structure

Parks and Recreation

Public parks and recreation facilities are typically provided as a public good and are offered for free or low cost and maintained by local municipalities or state agencies. The facilities often lack an adequate revenue stream to directly fund maintenance and improvements and operate at a loss despite providing valuable services to a community.

Nationwide, outdoor recreation is a massive economic driver which generates \$689 billion in annual consumer spending and is responsible for 4.3 million jobs²⁹, \$65.3 billion in federal tax revenue, and \$59.2 billion³⁰ in state and local tax revenues. This represents 1.8% of the United States GDP, five times bigger than the United States film industry. Demand has also increased dramatically due to the COVID-19 pandemic, with the percent of the population that participated in outdoor recreation rising to 52.9% in 2020 - up from 50.7% in 2019 - the largest one-year jump on record. Outdoor recreation added \$3.3 billion in value to Connecticut's economy in 2020.³¹

Across the country, land managers in rural communities are facing increasing strain from the impacts of overuse and climate change. However, due to stagnant or declining budgets, land managers have neither the resources to properly mitigate climate impacts nor to strategically capitalize on increased visitation. Instead, land managers become locked in a pattern of deferred maintenance and siloed decision-making. When land managers are only able to fund necessary maintenance rather than investing in projects of strategic importance, opportunities for the surrounding communities to benefit from the public lands are diminished. This is an area where innovative financing can provide upfront capital for strategic projects and unite land managers and stakeholders around a common vision.

Brownfield & Community Rejuvenation in Meriden

The City of Meriden, Connecticut, has layered ecosystem services projects to revitalize its downtown. The City's "Meriden Green" project began in 2007 and included brownfield site repair, the construction of large urban park, flood mitigation and stormwater management, and housing redevelopment. The project leveraged private, local, state, and federal investment to complete the project.

[Source](#)

²⁹ <https://www.bea.gov/> Bureau of Economic Affairs 2021; <https://www.bea.gov>

³⁰ Outdoor Recreation Roundtable 2020; <https://www.bea.gov/sites/default/files/2021-11/orsa1121.pdf>

³¹ <https://www.bea.gov/news/2021/outdoor-recreation-satellite-account-us-and-states-2020>

Funding is only a single part of holistic approach to parks and recreation-based economic development that leverages and connects existing tools and agencies to integrate conservation, recreation, and economic development goals so that all parties are working toward the same vision. Because stakeholders involved in rural economic development tend to be fragmented across multiple programs and departments, bridging the disconnect between land managers and local communities requires a collective approach that intentionally integrates these players into a formal structure. This approach will require changing the way projects are funded and the types of agencies that are considered in the parks and recreation ecosystem. At the federal and state level, there is a need to connect public works, health, and economic development agencies on projects whose benefits span across their portfolios, while at the local level there is a need to provide innovative financial solutions to support local, under-funded governments that need it. The long-term goal is to adapt stakeholders' definition of community development to link parks and recreation and adjacent economies.

Environmental Justice and Brownfields

In urban areas, safe and vibrant outdoor recreation is a critical component of public health and community wellbeing. Neighborhood parks can provide space for respite, athletic pursuits, and interaction with nature. Parks and other urban green spaces can also provide environmental benefits, by absorbing stormwater, reducing extreme heat, sequestering carbon, and providing cleaner air and a reduction in asthma rates. However, these sorts of amenities are often uncommon in low-income communities and communities of color, and the loss in benefits from these green assets can be compounded by other environmental injustices.

Communities that experience disproportionate public health effects from fossil fuels, transportation emissions, and other forms of pollution are referred to as “environmental justice communities”. Studies have connected harms including asthma, low birth weights, and lead poisoning to the disproportionate exposure to air pollution and toxic chemicals in low-income neighborhoods.³² Environmental justice communities face increased exposure to the harms of climate change. In urban areas, environmental justice communities are more likely to be impacted by the effects of extreme heat waves, and less likely to have reliable or affordable ways to cool down. When they face extreme weather impacts in the form of fire or flooding, environmental justice communities are more likely to experience longer outages and less likely to be able to afford to start a new life elsewhere. The Fourth National Climate Assessment found that low-income communities in urban and rural areas face disproportionate harms.³³ In June 2022, the Department of Health and Human Services announced the establishment of the Office of Environmental

³² DOI: <https://doi.org/10.1007/s40572-015-0069-5>; <https://doi.org/10.1016/j.landurbplan.2014.01.017>

³³ <https://nca2018.globalchange.gov/>

Justice in the Office of Climate Change and Health Equity to coordinate the Department's efforts to protect the health and wellbeing of vulnerable populations and disadvantaged communities.³⁴

Low-income communities and communities of color are also more likely to live in fence-line communities that are near polluting fossil fuel infrastructure. These communities have long fought for regulatory interventions to mitigate the harms caused by fossil fuel infrastructure, including heavy industrial manufacturing, and are increasingly forcing the decommissioning of this infrastructure. However, once the polluting facilities are closed, capital is required to rebuild, repair, and renew damaged community infrastructure. Currently, communities depend on scarce philanthropy and governmental grants to undertake these rebuilding efforts.

In some cases, the land where the now-closed facility operated has suffered such strong environmental degradation that it will be classified as a brownfield site. A "brownfield" is a property where the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. It is estimated that there are more than 450,000 brownfields in the United States, with over 500 in Connecticut.³⁵ Cleaning up and reinvesting in these properties increases local tax bases, facilitates job growth, utilizes existing infrastructure, takes development pressures from undeveloped, open land, and both improves and protects the environment.

Private investors are often wary of the high costs and regulatory burden associated with redeveloping a brownfield property, which results in these sites being undervalued on the market. Financial mechanisms that can incentivize brownfield remediation and address the market inequities can make it possible for investment and revenue to flow into the surrounding communities.

8.2. Activities

There is an enormous range of potential parks and recreation activities that public lands can be used for, including:

- **Public parks** – Public parks that are well maintained, facilitate multi-season activities, and are accessible to a wide number of nearby residents can provide a much-needed recreation and relaxation site for a community. Amenities such as playgrounds, picnic shelters, game areas, and walking paths can add to the utility and appeal of the park and the installation of green infrastructure can enhance the park's ecosystem services.

³⁴ <https://public-inspection.federalregister.gov/2022-11192.pdf>

³⁵ <https://portal.ct.gov/DEEP/Remediation--Site-Clean-Up/Brownfields/Brownfields-Site-Inventory>

- **Game Areas (ex. tennis, basketball)** – The establishment of game areas can benefit a community by providing unstructured recreation and facilities for youth or adult sports leagues that will benefit residents, attract visitors, and promote the local economy.
- **Walking and Hiking Trails** – Walking and hiking trails can provide a recreation activity that improves public health and can attract visitors who partake in the activity elsewhere.
- **Mountain Biking Trails** – Mountain biking trails require limited construction and maintenance and can facilitate recreation for mountain biking sport enthusiasts, which can lead to increased tourism for rural areas and contribute to the local economy.
- **Camping** – In rural areas, campgrounds can allow for increased use of a recreation area, allowing for individuals to spend more time in the natural space and providing lodging that caters to different interests.
- **Hunting** – In rural areas, hunting can provide a recreation opportunity in a variety of landscapes.
- **Boating/Fishing** – In waterfront communities, a boating and/or fishing recreation service can utilize natural outdoor features to support economic growth in an area. The inclusion of blue infrastructure in site planning can enhance the ecosystem services of the amenity.

Parks and recreation facilities can be categorized as “active” or “passive”, tend to have different stakeholder ownership and management.³⁶

- **Active Recreation:** Municipalities tend to be the lead stakeholder for active outdoor recreation sites and the highest use frequency index is for swimming
- **Passive Recreation:**
 - **Statewide** – hunting
 - **Municipalities** – boating, fishing, passive park use, beach use, trails
 - **Other** – camping

In instances where the public land is a brownfield site, there are required steps to remediate the degradation of the land that must occur before it transitions to being a place of outdoor recreation. These steps include an analysis of the proposed cleanup process, a codified community relations plan, and ongoing assessment of the cleanup activities. These activities can be expensive and time consuming, often disincentivizing private investments and forcing interested parties to rely on grant opportunities.

³⁶ Information is pulled from the Connecticut Green Bank’s Environmental Infrastructure Parks and Recreation Observations from January 2022 Stakeholder Outreach

8.3. Marketplace Buyers & Sellers

The “buyers” of outdoor recreation services are the users, but often they are not purchasing outdoor recreation outcomes directly. Rather, the benefit of this market is captured in the environmental and public health outcomes or the money that recreation users spend offsite but as a direct result of partaking in the recreation. For example, if a family decides to go camping, while they may pay a nominal campground fee, the economic value generated is primarily focused on what they are spending on food, equipment, gas, and other goods and services that support that activity.

Conversely, the “sellers” of outdoor recreation services are often public land managers who do not generate revenue directly from the users of their land. The outdoor recreation “buyers” and “sellers” can consider a pay-for-success model, whereby the benefits of the project are quantified and trigger investment repayment from the revenue-collecting “buyer”, to bridge the disconnect.

When the land being developed for parks and recreation or commercial purposes is a brownfield site, the costs of clean-up and redevelopment are higher, disincentivizing buyers. This often results in the property being left in limbo because the existing owners may have little use for the sites while its condition is discouraging potential buyers. However, if those costs can be overcome and brownfield sites can be redeveloped, there are likely to be significant economic benefits. In addition to the economic benefits, brownfield remediation and urban parks can have significant health benefits. In fact, many health providers have begun supporting investments in urban parks because improved community health translates to lower costs for those payors.

More than 400 studies have shown the numerous health benefits from spending time in nature. Over the past decade, medical professionals have begun to prescribe time in nature as a treatment and strategy for improved health outcomes.³⁷ It has also been shown that with a few outliers, there are fewer opportunities to experience nature in a safe and healthy way in socioeconomically disadvantaged communities. In urban areas, robust and healthy tree canopies are most often found in wealthy and white neighborhoods, emphasizing the importance of centering environmental justice when considering where to invest in public green space.³⁸

³⁷ <https://www.parkrx.org/health-benefits>

³⁸ <https://www.americanforests.org/tools-research-reports-and-guides/tree-equity-score/>

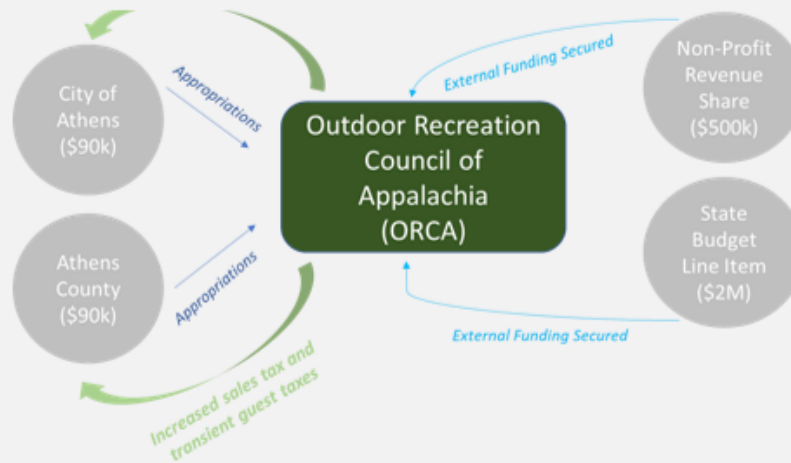
8.4. Case Study

Revenue-Sharing Example: Baileys Trail System

Quantified Ventures structured an outcomes-based transaction to fully fund the construction and operations of the Baileys Trail System, an 88-mile, premier mountain biking trail system in Athens County, Ohio, on the Wayne National Forest. Private investment will provide the upfront cost of building the Baileys Trail System with repayment tied to the successful achievement of the economic development outcomes, in this case increased sales tax and transient guest taxes.

Athens County, the City of Athens, the City of Nelsonville, the Village of Chauncey, and York Township formed the Outdoor Recreation Council of Appalachia (ORCA) to manage the cross-boundary infrastructure.

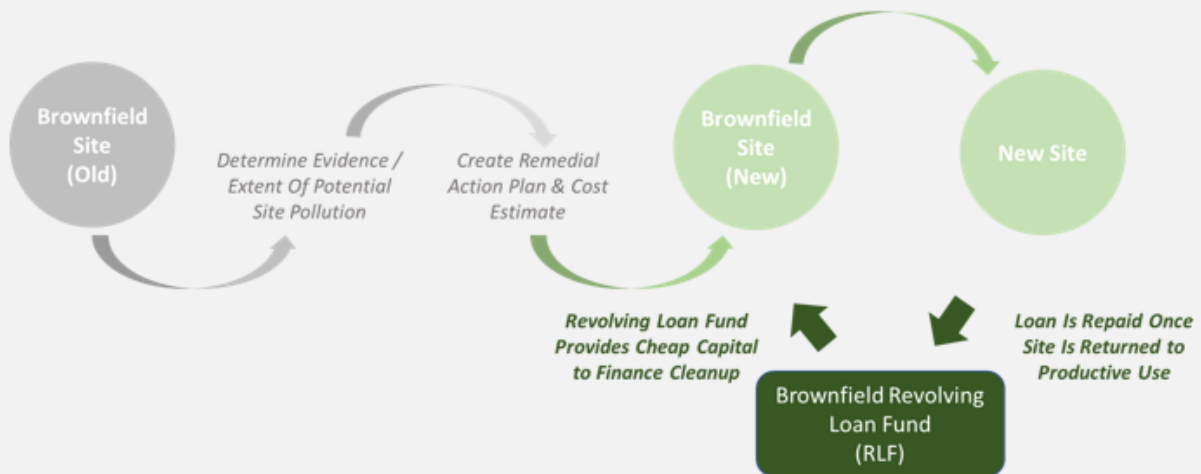
The City of Athens and Athens County will provide \$90,000 each, or \$180,000 total annually for twenty years. The City and County have committed to additional tax increment payments based on increases in hotel and sales taxes respectively. Those funds are projected to increase over time as visitation increases.



Revolving Loan Fund Example: West Virginia Brownfields RLF

The Brownfields Revolving Loan Fund makes financing available to public, private and non-profit borrowers for the remediation of properties contaminated with hazardous substances. Conducting environmental cleanups enables these properties to be redeveloped and returned to productive use. Not only will the removal of hazardous substances improve community health, but the remediation of these properties can make them desirable for development and will improve the property values of the surrounding properties.

Brownfields RLF can offer low-interest loans to eligible local government entities, nonprofits, and private sector businesses to assist them in the cleanup of properties contaminated with petroleum or hazardous substances. Interest rates for government and non-profit borrowers range from 0% to 1.5%. Rates for private sector businesses range from 1.0% to 3%. Repayment terms of up to 10 years can be negotiated.



9. Key Terms and Acronyms

- **Externality:** the positive and negative impacts of actions beyond their primary goal
- **Ecosystem Service:** the benefits people obtain from ecosystems.³⁹
- **Environmental infrastructure:** means structures, facilities, systems, services and improvement projects related to (A) water, (B) waste and recycling, (C) climate adaptation and resiliency, (D) agriculture, (E) land conservation, (F) parks and recreation, and (G) environmental markets, including, but not limited to, carbon offsets and ecosystem services.⁴⁰
- **Carbon Offsets:** Carbon Offsets are measurable outcomes from carbon sequestration activities, traded in voluntary and compliance markets, whereby regulations, sustainability priorities, and public relations are motivators for buyers and sellers.
- **Carbon Registry:** entities that track offset projects and issue credits for each unit of emission reduction or removal verified and certified.
- **National Pollutant Discharge Elimination System (NPDES) permits:** A program that addresses water pollution by regulating point sources that discharge pollutants to waters of the United States. Created in 1972 by the Clean Water Act, the NPDES permit program is authorized to state governments by EPA to perform many permitting, administrative, and enforcement aspects of the program.⁴¹
- **Municipal Separate Storm Sewer Systems (MS4s) program:** A program administered by the U.S. Environmental Protection Agency that requires each municipality to take steps to keep the stormwater entering its storm sewer systems clean before that stormwater enters water bodies.⁴²
- **Total Maximum Daily Load (TMDL):** the calculation of the maximum amount of a pollutant allowed to enter a waterbody so that the waterbody will meet and continue to meet water quality standards for that pollutant.⁴³
- **Environmental Impact Bonds (EIBs):** A bond whereby the payment terms are linked to agreed-upon environmental outcomes.
- **Pay-for-Success:** A contracting and financing mechanism in which investors provide upfront capital for a program or intervention, with payments tied to the achievement of specific measurable outcomes.
- **Environmental Justice Communities:** Communities that experience disproportionate public health effects from fossil fuels, transportation emissions, and other forms of pollution. Studies

³⁹ https://www.fs.fed.us/ecosystemservices/About_ES/

⁴⁰ <https://portal.ct.gov/Office-of-the-Governor/News/Press-Releases/2021/12-2021/Governor-Lamont-Signs-Executive-Order-Directing-Connecticut-State-Agencies-To-Implement-Actions>

⁴¹ <https://www.epa.gov/npdes>

⁴² <https://portal.ct.gov/DEEP/Water-Regulating-and-Discharges/Stormwater/Municipal-Stormwater>

⁴³ <https://www.epa.gov/tmdl/overview-total-maximum-daily-loads-tmdls>

have connected harms including asthma, low birth weights, and lead poisoning to the disproportionate exposure to air pollution and toxic chemicals in low-income neighborhoods.⁴⁴

- **Brownfield:** a property where the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. It is estimated that there are more than 450,000 brownfields in the United States, with over 500 in Connecticut.⁴⁵
- **In-Lieu Fee:** In-lieu fee programs are designed to allow developers that are not able to meet the runoff regulation requirements, to pay a fee for the expected runoff volume that their projects could generate.

⁴⁴ DOI: <https://doi.org/10.1007/s40572-015-0069-5>; <https://doi.org/10.1016/j.landurbplan.2014.01.017>

⁴⁵ <https://portal.ct.gov/DEEP/Remediation--Site-Clean-Up/Brownfields/Brownfields-Site-Inventory>



Land Conservation

Stakeholder Engagement and Research
on Environmental Infrastructure

LAND CONSERVATION

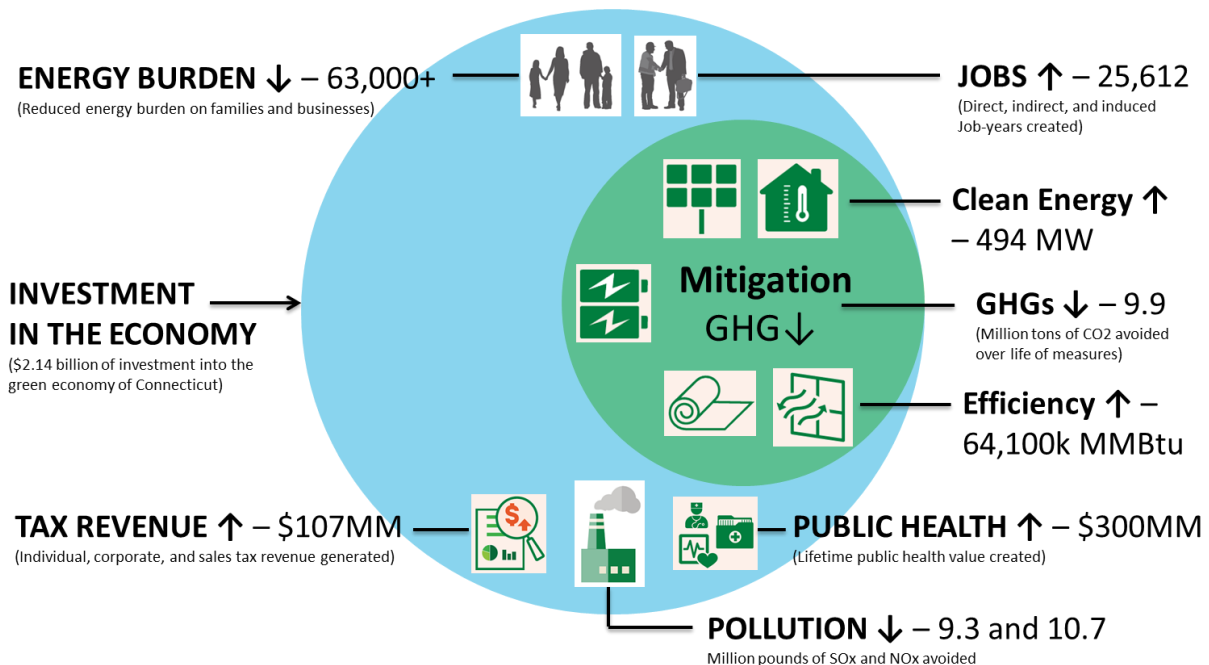
STAKEHOLDER ENGAGEMENT AND RESEARCH ON ENVIRONMENTAL INFRASTRUCTURE

A. OVERVIEW

On July 6, 2021, Governor Ned Lamont signed Public Act 21-115 “An Act Concerning Climate Change Adaptation” (“the Act”) into law.¹ The bipartisan-supported public policy was among the sixty-one (61) recommendations made by the Governor’s Council on Climate Change (“GC3”),² including a recommendation to expand the scope of the Connecticut Green Bank (“Green Bank”) beyond “clean energy” to include “environmental infrastructure” (i.e., Recommendation #57).

Since its founding over a decade ago,³ the Green Bank has focused its efforts on using a limited amount of public resources to mobilize multiples of private investment in Connecticut to increase and accelerate the deployment of “clean energy” to deliver social and environmental impact – see Figure 1.⁴

Figure 1. Decennial Impact of the Green Bank with focus on “Clean Energy” Deployment and Mitigation of GHG Emissions



Given its mission “to confront climate change and provide all of society a healthier and more prosperous future by increasing and accelerating the flow of private capital into markets that energize the green economy,” the Green Bank helps the State of Connecticut achieve its ambitious public policy objectives (e.g., GHG emission reductions targets, renewable portfolio standards). In so doing, by 2025, no less

¹ <https://ct-n.com/ctnplayer.asp?odID=18751>

² https://portal.ct.gov/-/media/DEEP/climatechange/GC3/GC3_Phase1_Report_Jan2021.pdf

³ CGS 16-245n

⁴ <https://www.ctgreenbank.com/wp-content/uploads/2021/12/FY12-FY21-CGB-ImpactReport-web.pdf>

than 40 percent of investment and benefits from its programs are to be directed to vulnerable communities.⁵

The Act, expands the scope of the Green Bank beyond “clean energy” to include “environmental infrastructure,” and includes the following key provisions:

- **Definition** – “environmental infrastructure” means structures, facilities, systems, services and improvement projects related to (A) water, (B) waste and recycling, (C) climate adaptation and resiliency, (D) agriculture, (E) land conservation, (F) parks and recreation, and (G) environmental markets, including, but not limited to, carbon offsets and ecosystem services;
- **Comprehensive Plan** – requirement for the Green Bank to develop a Comprehensive Plan⁶ prior to implementing any programs or initiatives related to “environmental infrastructure”;
- **Reporting** – inclusion of the Banks Committee and the Environment Committee, alongside the Energy and Technology Committee and Commerce Committee in terms of reporting; and
- **Bonding** – the ability to issue 25-year bonds for “clean energy” and 50-year bonds for “environmental infrastructure” (i.e., no more than the useful life of the projects), supported by the Special Capital Reserve Fund (“SCRF”), for up to 25 years to improve the rating of the bonds issued.

This document attempts to summarize the findings from the research and outreach efforts conducted by the Green Bank⁷ on “land conservation” from October 2021 through January of 2022 and includes the following sections: (A) overview, (B) key public policies, (C) market potential, (D) target, (E) funding and financing programs, (F) other programs, (G) stakeholder outreach, (H) findings, (I) opportunities, (J) history of leadership and innovation, (K) references, and (L) definitions.

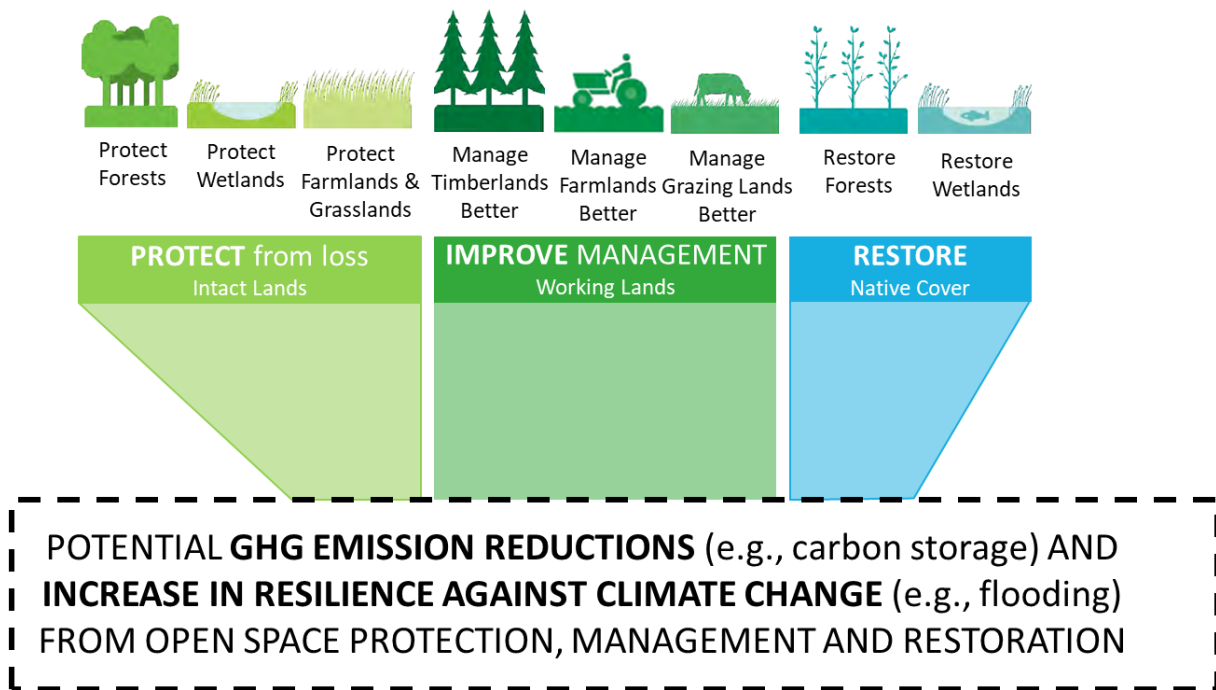
Nature-based solutions (e.g., land conservation) such as protecting intact lands from loss (e.g., forests), improving the management of working lands (e.g., sustainably certified timberlands), and restoring native land cover, including coastlines, can support the Green Bank’s mission by both mitigating the GHG emissions that cause climate change (e.g., forest carbon sequestration) and increasing resilience against the impacts of climate change (e.g., flood protection) – see Figure 2.

⁵ “Vulnerable communities” means populations that may be disproportionately impacted by the effects of climate change, including, but not limited to, low and moderate income communities, environmental justice communities pursuant to section 22a-20a, communities eligible for community reinvestment pursuant to section 36a-30 and the Community Reinvestment Act of 1977, 12 USC 2901 et seq., as amended from time to time, populations with increased risk and limited means to adapt to the effects of climate change, or as further defined by DEEP in consultation with community representatives.

⁶ https://www.ctgreenbank.com/wp-content/uploads/2021/07/3_Comprehensive-Plan_FY-2020-and-Beyond_Final.pdf

⁷ Led by Bryan Garcia (President and CEO) and Ashley Stewart (Consultant)

Figure 2. Nature Based Solutions to Confront Climate Change - Mitigation and Resilience



B. KEY PUBLIC POLICIES

The following are key public policies that advance “land conservation” in Connecticut, including, but not limited to:

1. **State Plan of Conservation and Development** (CGS 16a-24) – is an overarching statement of state policy in matters pertaining to land and water resource conservation and development. The Office of Policy and Management (“OPM”) prepares revisions to the State Conservation and Development Plan (“State C&D Plan”) on a recurring 5-year cycle and submits it for adoption by the Connecticut General Assembly (“CGA”). Once adopted, the State C&D Plan is then implemented by state agencies whenever they undertake certain actions.⁸ The current State C&D Plan (i.e., for 2018-2023), includes the relevant “clean energy” and “environmental infrastructure” items, including, but not limited to:
 - A. **Greenhouse Gas Mitigation** – reducing carbon dioxide emissions in the state consistent with the recommendations of the Connecticut Climate Change Preparedness Plan (i.e., 5.10);
 - B. **Climate Adaptation and Resilience** – including developing and deploying innovative energy technologies, and promoting distributed generation and microgrids to provide reliable electrical power or energy-dependent community services during outages and peak demand periods (i.e., 1.12) and minimizing the potential risks and impacts from natural hazards by considering potential impacts of climate change on existing and future development (i.e., 1.13); and

⁸ Quasi-publics are not subject to this requirement

- C. **Land Conservation** – protecting permanently preserved open space areas, Connecticut Heritage Areas, and archaeological areas of regional and statewide significance (i.e., 4.1), limiting improvements to permanently protected open space areas to those that are consistent with long-term preservation of the natural resource and open space values of the site (i.e., 4.2), expanding the state’s open space and greenway network through the acquisition and maintenance of important multi-functional land and other priorities identified in the state’s open space plan (i.e., 4.3), encouraging collaborative ventures with municipalities, private non-profit land conservation organizations and other entities to provide a system of appropriately preserved and managed natural areas and resources that allow for a diversity of well-functioning habitats and the sustainable use of resources (i.e., 4.5), and promoting innovative land conservation and banking practices that further local, regional, and state conservation and development objectives, and minimize the need to expand infrastructure to support new development in rural areas (i.e., 4.18).
2. **Open Space Target** (CGS 23-8)⁹ – establishes a mandate to conserve 21% (i.e., 673,210 acres) of state land area as held by open space land, with 10% from the state (e.g., forests, parks) and not less than 11% from partners (e.g., municipalities, water companies, or non-profit land conservation organizations). The Comprehensive Open Space Acquisition Strategy (or “Green Plan”)¹⁰ is the comprehensive strategy for achieving the state goal by 2023, which includes priorities for strategic acquisitions of open space for climate change resiliency and preserving open space in perpetuity for state lands with high conservation value.

It should be noted that Connecticut’s 2020 Forest Action Plan¹¹ includes several relevant desired future conditions, including:

- Connecticut will increase the amount of forest protected from development following priority criteria based on core forest areas, connection, Forest Legacy potential, and vulnerability;
 - People of Connecticut will understand and value the urban forests as essential parts of healthy urban ecosystems;
 - Connecticut forests will support a viable forest products industry that provides marketable products from renewable and diverse forest resources; and
 - Management of Connecticut’s forests will use the best available scientific information and the best available data as the basis for sound conservation and management decisions.
3. **Community Investment Act** (Public Act 05-228)¹² – “An Act Concerning Farm Land Preservation, Land Protection, Affordable Housing and Historic Preservation,” also known as the Community Investment Act (“CIA”), CIA provides a dedicated and consistent source of funding for state

⁹ <https://law.justia.com/codes/connecticut/2012/title-23/chapter-447/section-23-8/>

¹⁰ <https://portal.ct.gov/DEEP/Open-Space/The-Green-Plan>

¹¹ <https://portal.ct.gov/-/media/DEEP/forestry/2020-Approved-CT-Forest-Action-Plan.pdf>

¹² <https://www.cga.ct.gov/2005/ACT/Pa/pdf/2005PA-00228-R00SB-00410-PA.pdf>

preservation of open space (Department of Energy and Environmental Protection or “DEEP”), farmland (Department of Agriculture or “DoAg”), historic sites (Department of Economic and Community Development or “DECD”), and affordable housing (Connecticut Housing Finance Authority or “CHFA”). Through a \$40 surcharge on local land recordings (i.e., \$1 to Town Clerk, \$3 to local government, \$10 supplemental income to dairy farmers, and \$26 to State Treasurer), about \$22 MM is raised each year, which is equally distributed in four (4) parts to the priority funding areas.

4. **Use Value Assessment Law** (Public Act 490 or CGS 12-107a-f)¹³ – passed by the CGA in 1963, allows farm, forest, or open space land to be assessed at its use value rather than its fair market or highest and best use value (as determined by the property's most recent "fair market value" revaluation) for purposes of local property taxation. Without the lower use value assessment, most landowners would have to sell the land because they would not be able to afford the property taxes on farm, forest, or open space land. It must be noted that Public Act 490 allows farmers to continue to farm, and other landowners to continue to own forest and open space land without being forced to sell it to pay the local property taxes. When the legislature passed Public Act 490 in 1963, it included in the law's wording that "it was in the public interest to encourage the preservation of farm, forest, and open space land." Studies done across the nation have conclusively proven that property tax revenues generated by farm, forest, or open space land, are far greater than the expenditures by the town to service that land. For example, under the current structure, the residential sector costs a town more to service than the amount of property tax generated from that sector. Thus, farm, forest, and open space land can actually help control and maintain reasonable rates of property taxation for all of a town's taxpayers.
5. **Ten Mill Program** (CGS 12-96) – Ten Mill Program was developed in 1913 and required forest landowners to make a 100-year commitment to maintaining land as forest land in exchange for municipalities holding the property at a 10-mill rate and the valuation of the land at evaluation for 50 years after. The Ten Mill program has not added new properties since the 1970's, however, both programs provide support to landowners that encourages conservation and open space.
6. **Executive Order 21-3** – On December 16, 2021, Governor Ned Lamont signed Executive Order 21-3 which calls for 23 actions supporting more than thirty recommendations from the Governor's Council on Climate Change, including several recommendations on working lands:¹⁴
 - A. **Forest Climate Resilience and Mitigation Potential** – DEEP engagement of stakeholders to ensure Connecticut's forests continue to be resilient against the impacts of climate change and to maximize forest potential to sequester and store carbon in support of Connecticut's GHG emission reduction goals.
 - B. **Agriculture Climate Resilience and Mitigation Potential** – DoAg engagement of stakeholders to ensure Connecticut's working lands and soils continue to be resilient

¹³ https://www.cga.ct.gov/current/pub/chap_203.htm#sec_12-107a

¹⁴ It should be noted that Connecticut is a member of the United States Climate Alliance, and one of the original signatories to the Natural and Working Lands Challenge in 2018 – <http://www.usclimatealliance.org/nwlchallenge>

against the impacts of climate change and to maximize forest potential to sequester and store carbon in support of Connecticut’s GHG emission reduction goals.

- C. **Climate Resilience Using Nature-Based Solutions on State Properties** – DEEP and Department of Administrative Services (“DAS”) to develop guidance for state agencies to use nature-based solutions for flood and erosion control and stormwater management, integrate coastal marsh migration in state projects in coastal areas, and utilize low impact development and green infrastructure in new state construction and state-funded construction or redevelopment.

In order to identify opportunities to mobilize private investment, it is important to understand the public policy context in which “land conservation” operates. With the focus on the Green Bank’s mission (i.e., confront climate change), public policy provides a mechanism to catalyze private investment.

C. MARKET POTENTIAL

The following is the market potential for “land conservation” from the perspective of forest land – see Table 1.

Table 1. Market Potential for Land Conservation in Connecticut based on Forest Land

3,205,762 Acres Land in Connecticut				
1,869,761 Acres Forest Land			1,336,001 Acres Non-Forest Land	
298,994 Acres Protected Core Forests	568,857 Acres Unprotected Core Forest	1,001,910 Acres Non-Core Forest	1,130,000 Acres Urban Area	206,001 Acres Other Non-Urban and Non-Forest

Connecticut’s forest products industry contributes at least \$2.1 billion to the state’s economy, while forest-based recreation generates approximately \$1.2 billion per year – forest-based employment accounts for 8,200 jobs in Connecticut.¹⁵

It should be noted that New England is the most forested region in the United States.¹⁶ Approximately 56-61% of Connecticut is forested with approximately two (2) people for every acre of forest land. 191 MMT of carbon is stored in Connecticut’s forests, which has increased by 9 MMT over the last decade¹⁷ – approximately 33 MMTCO₂ or 3.3 MMTCO₂ per year (or nearly 8 percent of annual GHG emissions in Connecticut).^{18,19} The urban area of Connecticut includes nearly 90% of the population and trees store about 23 MMT of carbon and continue to sequester at the rate of about 750,000 tons per year. If estimates are accurate of carbon sequestered and stored in forests and related soils, then there are about a decade’s worth of emission reductions equivalent to 20% of total emissions – see Figure 3.

¹⁵ North East State Foresters Association, *The Economic Importance of CT’s Forest Based Economy 2015*.

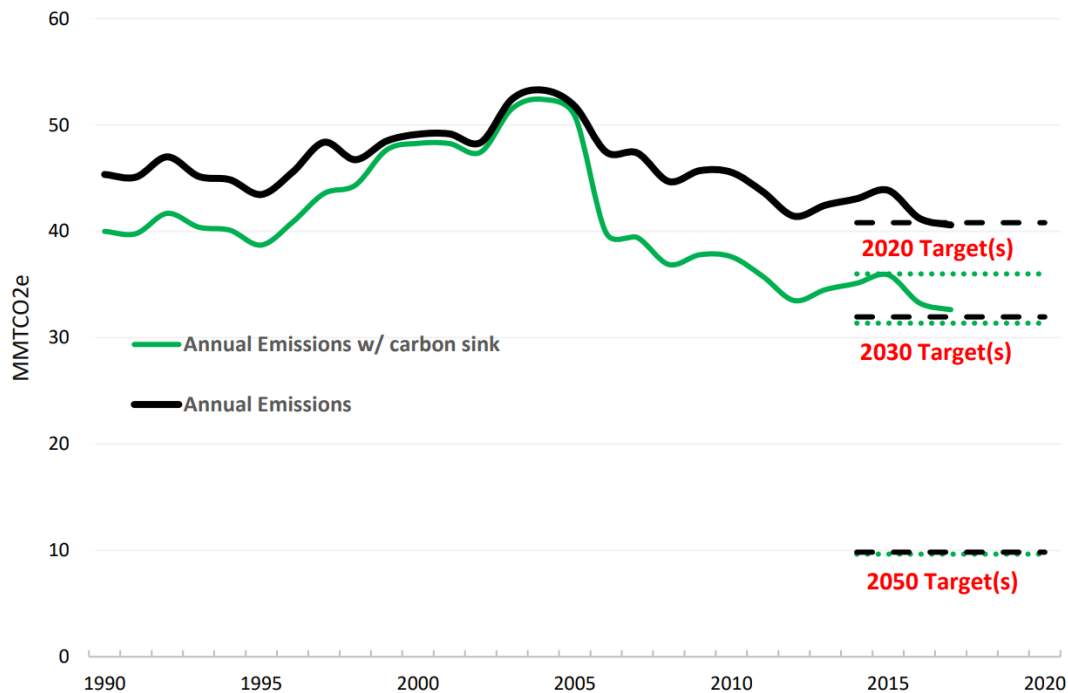
¹⁶ New England Forest Foundation

¹⁷ “Forests Sub-Group Final Report 2020” of the Working & Natural Lands Working Group of the Governor’s Council in Climate Change (p. 6)

¹⁸ Atomic weight of carbon is 12 atomic mass units versus carbon dioxide at 44 because 2 oxygen atoms each weigh 16 atomic units, therefore 1 ton of carbon equals 3.7 tons of CO₂ or 1 metric ton of carbon equals 4.1 metric tons of CO₂

¹⁹ Press Release issued by DEEP on September 7, 2021 entitled “CT Not on Track to Meet Statutory Emissions Targets, New Greenhouse Gas Inventory Finds”

Figure 3. Connecticut Sector-Wide GHG Emissions and Future Emissions Targets, including Carbon Sink Accounting



To retain the multiple benefits that forests provide such as carbon storage, biodiversity, clean water, clean air, resiliency, public health, wood products for human use, and green infrastructure, there is a “no net loss of forest” goal. Of Connecticut’s forest lands, 71% is owned by private individuals, corporate landholders (e.g., water companies), and nonprofit land trusts, with 17%, 11% and 1% of the remaining forest land owned by the state, municipalities, and federal government, respectively.

From the perspective of wetlands, there are approximately 220,000 acres in Connecticut representing about 7% of land within the state, which includes tidal and inland wetlands. Of the 91 miles of coastline, tidal wetlands are the most vulnerable natural resource in the face of climate change and rising sea levels.²⁰ These resources are among the most biologically productive resources in the world, provide habitat for wildlife, improve water quality by trapping sediments and filtering contaminants, protect shorelines, and are a source of carbon sinks. Inland wetlands, including the 5,800 miles of rivers and 65,000 acres of lakes,²¹ are key resources in terms of stormwater retention and rivers and ponds provide water retention to mitigate flooding, and they are essential to surface and underground fresh water, provide critical habitat to wildlife, and are a source of carbon sinks. As noted above, wetlands provide a number of ecosystem services, including provision services (e.g., food, water), regulating services (e.g., carbon sequestration, moderation of extreme storms), support services (e.g., habitat, biodiversity), and cultural services (e.g., recreation, tourism, physical and mental health).

D. TARGET

The following is a breakdown of the “land conservation” target outlined in the CGS 23-8 – see Table 2.

²⁰ “Wetlands Sub-Group Report 2020” of the Working & Natural Lands Working Group of the Governor’s Council on Climate Change (p. 6)

²¹ “Rivers Sub-Group Report 2020” of the Working & Natural Lands Working Group of the Governor’s Council on Climate Change (p. 4)

Table 2. Progress Towards the Open Space Land Target in Connecticut

3,205,762 Acres Land in Connecticut								
320,576 Acres State Goal (@10%)				352,634 Acres Partner Goal (@≥11%)				2,532,552 Acres No Land Conservation (@79%)
175,000 Acres State Forests ²²	36,000 Acres State Parks ²³	46,000 Acres Wildlife Area and Other ²⁴	63,500 Acres left to achieve target	84,000 Acres Cities and Towns	99,000 Acres Water Companies	66,000 Acres Non-Profit Land Trusts	104,000 Acres left to achieve target	

Of the open space goal of 21% by 2023 (i.e., 673,210 acres), approximately 510,249 acres are conserved (as of December 31, 2019), or 76% of the open space goal comprising 261,806 acres of state (i.e., 82% of the 10% state target) and 248,953 acres of partner (i.e., 71% of the partner target) – leaving an estimated 162,451 acres of open space left to achieve.

If the average land acquisition cost is \$9,000 per acre, then approximately \$1.5 billion of public and private investment in land conservation would be needed to acquire and protect over 160,000 acres of open space in order to achieve the 21% target.²⁵

E. FUNDING AND FINANCING PROGRAMS

The following is an alphabetical breakdown of the current funding (i.e., grants) programs in support of “land conservation” in Connecticut, including, but not limited to:

- **Agriculture Conservation Easement Program** (“ACEP”) – protects the agriculture viability and related conservation values of eligible land through agricultural land easements that help private and tribal landowners, land trusts, and other entities such as state and local governments protect croplands and grasslands on working farms and ranches by limiting non-agricultural uses of the land through conservation easements. Under the Land Easement component, the Natural Resources Conservation Service (“NRCS”) of the USDA, may contribute up to 50 percent of the fair market value of the agricultural land easement, and up to 75 percent where NRCS determines that grasslands and special environmental significance will be protected. Projects must have non-federal matching funds in hand.
- **Charter Oak Open Space Trust Account** – a defunct program for several years now, which included two accounts to fund new open space purchase programs, including 40% to the Charter Oak State Parks and Forest Account for state acquisition of open space and watershed

²² 33 locations

²³ 107 locations

²⁴ Including wildlife management areas, fish hatcheries, flood control, natural area preserve, water access, wildlife sanctuaries, and other

²⁵ It should be noted that although the definition of Open Space Land under CGS 12-107(b)(3) includes “...and not excluding farmland...”, that farmland was not included in the progress towards the open space target analysis above. If it were to be included, then it would demonstrate more progress towards the protected land goal bringing the state closer to the 21% goal, but still short of the goal. The use of “open space land” refers to public recreational use when farmlands aren’t generally accessible to the public.

land, and 60% to the Charter Oak Open Space Grant Program to provide grants to municipalities and nonprofit land conservation organizations to acquire open space or watershed protection land.

- **Community Forest Program** (“CFP”) – is a competitive grant program through the US Forest Service that provides financial assistance to tribal entities, local governments, and qualified conservation non-profit organizations to acquire and establish community forests that provide community benefits. Community benefits include economic benefits through active forest management, clean water, wildlife habitat, educational opportunities, and public access for recreation.
- **Connecticut Farmland Preservation Program** (CGS 7-131d) – administered by DoAg to leverage state, local, and private funds to permanently protect farms. Initiated in 1998, is funded by state bonding and the CIA, and has four (4) public policy priorities – open space (i.e., DEEP), agriculture preservation (i.e., DoAg), historic preservation (i.e., DECD), and affordable housing (i.e., CHFA).

Since 1978, DoAg has permanently protected 386 farms on 46,142 acres by awarding \$128 MM in Farmland Preservation Program grant funds (or \$2,778/acre).²⁶ Current law allows the Commissioner the ability to pay up to \$20,000 per acre, subject to appraisal.

- **Connecticut Open Space and Watershed Land Acquisition Grant Program** (“OSWA”) (CGS 7-131d) – a matching grants program to provide financial assistance to municipalities, land trusts, and water companies to acquire open space and watershed lands. Initiated in 1998, is funded by state bonding and the CIA, provides financial assistance to municipalities and nonprofit land conservation organizations to acquire land for open space, and to water companies to acquire land to be classified as Class I or Class II water supply property, and is administered by DEEP to leverage state, local, and private funds to create a cooperative open space acquisition program.

Since 1998, DEEP has awarded over \$150 MM in open space grant funds to protect over 41,000 acres (or \$3,659/acre).

- **Connecticut Wetland Mitigation and In Lieu Fee Program** (“ILF”)²⁷ – Per the [Clean Water Act \(CWA\)](#)—landmark environmental protection legislation passed in 1972 that applies to all waters of the United States—parties seeking to construct projects (“permittees”) that will have an impact on wetlands must take all reasonable measures to avoid such impacts, to minimize unavoidable impacts, and to provide mitigation for the remaining unavoidable impacts. On the one hand, permittees could themselves be held responsible for taking on wetland and/or stream mitigation projects, but studies have shown that many mitigation sites in southern New England have a high failure rate because they fail to meet performance standards (Minkin and Ladd, 2003). For this reason, the National Audubon Society, Inc., through its state office, Audubon Connecticut, became the “sponsor” of a Connecticut “In Lieu Fee” program as of 2013. The program allows permittees to pay a fee *in lieu of* taking on mitigation themselves. Instead, local organizations like land trusts, and other environmental nonprofits, are given the opportunity to apply for and receive grant funding to protect and enhance wetlands.

²⁶ Status of State PACE Programs by the American Farmland Trust and USDA’s Farmland Information Center

²⁷ <https://ct.audubon.org/conservation/in-lieu-fee-program>

- **Forest Legacy Program** (“FLP”) – DEEP partners with the US Forest Service (“USFS”) to implement the FLP. The FLP helps to identify and conserve environmentally important forests. The program protects working forests, those forests that protect water quality and provide habitat, forest products, opportunities for recreation and other public benefits. The program encourages and supports acquisition of conservation easements. Conservation easements are legally binding agreements transferring a negotiated set of property rights from one party to another, without transferring property ownership. Most FLP conservation easements restrict development, require sustainable forestry practices, and protect various environmental values. There are also limited instances under the program where properties are purchased outright for their conservation values. In both instances, the federal government may fund up to 75% of program costs, with at least 25% coming from private, state or local sources.

- **Land and Water Conservation Fund** (“LWCF”) – LWCF is a federal program that was established by an Act of Congress in 1965 to provide funds and matching grants to federal, state and local governments for the acquisition of land and water, and easements on land and water, for the benefit of all Americans. The main emphases of the fund are recreation and the protection of national natural treasures in the forms of parks and protected forest and wildlife areas. In August 2020, the President Trump signed the Great American Outdoors Act into law, which requires that the LWCF be funded at \$900 million yearly, a significant increase from previous funding levels.

- **Long Island Sound Futures Fund** – National Fish and Wildlife Foundation (“NFWF”) and the Long Island Sounds Study’s (“LISS”) Long Island Sound Futures Fund (“LISFF”) provides grant funding for projects that support the restoration and improvement of the health of the Sound. Since 2005, the LISFF has invested \$32 MM in projects (i.e., grants ranging from \$50,000 to \$1 MM) to improve water quality, restore the natural environment, and engage and inform communities about the importance of a healthy Long Island Sound.

- **Recreation and Natural Heritage Trust Program** (“RNHT”) – administered by DEEP, is the main program to purchase or conserve state lands for conservation and public use or benefit.

Since 1998, the State Bond Commission has approved \$177 MM to go towards the RNHTP to protect over 49,000 acres (or \$3,612/acre).

- **Regional Greenhouse Gas Initiative** (“RGGI”) – funded primarily by the proceeds from the sale of RGGI allowance proceeds by energy producers, RGGI funds have been used at times to support forest conservation. In 2020, DEEP invested nearly \$1 MM of RGGI funds to support grant programs through the CT Urban Forest Council, UConn, and DEEP’s Urban Forestry program to support urban tree planting, improving the management and maintenance of existing trees and/or wooded areas, local educational, outreach or planning efforts, and community organization capacity-building that will lead to improvements in local tree canopy cover with an emphasis on environmental justice communities and tangible climate change benefits.²⁸

²⁸ “Policy on Resilient Forests for Connecticut’s Future (PRFCT Future)” (December 14, 2021)

The following is a breakdown of the current financing (i.e., loans) programs that could support land conservation in Connecticut:

- **State Revolving Fund** (“SRF”) – since 1988, Connecticut has received over \$650 MM from the federal government through the Clean Water SRF, while providing cumulative assistance (i.e., including state investment) of \$2.8 billion of investment primarily in centralized wastewater treatment infrastructure (in comparison to stormwater, energy conservation, and water conservation infrastructure).²⁹ With the passage of the bipartisan supported “Investing in Infrastructure and Jobs Act” (“IIJA” or Bipartisan Infrastructure Law “BIL”) in November of 2021, there were additional resources allocated to the SRF for water quality and drinking water (i.e., \$445 million).³⁰ SRF could be used to invest in green infrastructure projects (e.g., land conservation, nature-based solutions) for both mitigation and adaptation.

Accessing funding or financing resources for land conservation in Connecticut can be difficult, as evidenced by the unlikelihood of Connecticut achieving the open space land target (i.e., 21% by 2023). Identifying new mechanisms to access additional funding and financing resources, especially those that seek to unlock more private capital investment, could provide a catalyst to increase and accelerate investment in land conservation in Connecticut. The IIJA presents an opportunity to access funding and financing resources through formula or competitive grants for “land conservation”.

F. OTHER PROGRAMS

The following are other items of note with respect to “land conservation”:

- **No Child Left Inside** – launched in 2006, *No Child Left Inside*[®] is a promise to introduce children to the wonder of nature – for their own health and well-being, for the future of environmental conservation, and for the preservation of the beauty, character and communities of the state.
- **Passport to the Parks** – beginning in 2018, Connecticut offered all residents with Connecticut license plates on their vehicles free entry and parking at all state parks and beaches. Connecticut wants to make state parks, forests, trails, historic sites and beaches more available to residents so they can enjoy the many attractions and beauty they offer.
- **State Natural Heritage, Open Space & Land Acquisition Review Board** – is an independent advisory group of volunteers appointed by the Governor and leadership within the CGA under CGS 7-131(e) to oversee OWSA and RNHT programs.
- **Land Registry** – Public Use and Benefit Land Registry (“Land Registry”) pilot portal allows users to browse state lands, determine property ownership, and research, view, and download copies of parcel information, including deeds, surveys, and land management plans. The Land Registry is valuable for many reasons. It provides a public record and notice of title, conservation purpose, funding amounts, and land management plans, when applicable. Furthermore, the Registry can potentially expand public access to open space lands purchased with State conservation funds by highlighting their locations across Connecticut.

²⁹ Including Title II and VI funds – <https://www.epa.gov/sites/default/files/2021-02/documents/ct.pdf>

³⁰ <https://www.whitehouse.gov/wp-content/uploads/2021/08/CONNECTICUT-The-Infrastructure-Investment-and-Jobs-Act-State-Fact-Sheet.pdf>

G. STAKEHOLDER OUTREACH

In an effort to understand the public policy and marketplace context for “land conservation” in Connecticut, the Green Bank met with many organizations.³¹

These 24 organizations primarily represent non-profit organizations but include public and for-profit organizations as well.

The objectives of these one-hour conversations included:

- **Introductions** – to get a better understanding of the mission and initiatives of the various public, nonprofit, and for-profit stakeholders operating within the “land conservation” space, and to introduce the Green Bank;
- **Environmental Infrastructure** – inform the various stakeholders about the “environmental infrastructure” policy,³² process the Green Bank is pursuing to develop a Comprehensive Plan, and to elicit discussion on the following areas:
 - **Relevance** – how relevant “environmental infrastructure” and its components (e.g., land conservation) are to the stakeholder’s mission and initiatives;
 - **Policies and Targets** – what local, state, and federal policies (e.g., Community Investment Act), including plans (e.g., Green Plan) are important from the stakeholder’s perspective, and what targets (e.g., 21% open space land by 2023) are they seeking to achieve;
 - **Metrics** – what are the key metrics stakeholders believe are important in terms of monitoring and evaluating success from investments in “environmental infrastructure” improvements and “land conservation”;
 - **Vulnerable Communities** – how does the stakeholder’s organization think about the impacts that must be addressed from climate change to build the resilience of vulnerable communities; and
 - **Stakeholder Identification** – who else should the Green Bank meet with on the topic.

From these conversations, the Green Bank was able to develop a better understanding as to the role it might play in terms of financing “land conservation” from the perspective of its mission – to confront climate change.

³¹ **Land Conservation** – American Forest Foundation, Audubon Connecticut, Connecticut Audubon, Connecticut Land Conservation Council, Conservation Finance Network, DEEP, Ecosystem Investment Partners, Goldman Sachs, Highstead, New England Forestry Foundation, New England Society of American Foresters, Quantified Ventures, Save the Sound, The Nature Conservancy, TNC’s Nature Vest Program, and Yale Forest School
Parks and Recreation – Connecticut Forest and Parks Association, Connecticut Greenways Council, Connecticut Recreation and Parks Association, DEEP, Green Eco Warriors, Keney Park Sustainability Project, Sierra Club, Trust for Public Lands, and Urban Resources Initiative.

³² Public Act 21-115 – An Act Concerning Climate Change Adaptation”

H. FINDINGS

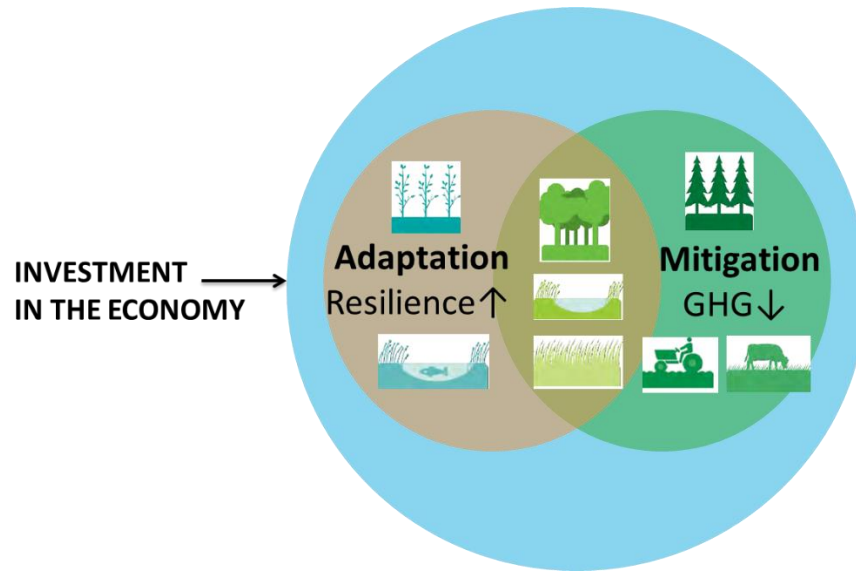
Based on the various meetings with public, nonprofit, and private stakeholders, the following are key findings with respect to land conservation (it should be noted that additional findings have been generalized in the footnote):³³

- **Consistent with Mission to Confront Climate Change** – land conservation reduces GHG emissions (e.g., preventing forest conversion to development, better forest management practices, substituting wood for steel in building materials, and storing carbon in new construction) (see Table 3) and increases resilience (e.g., flood protection, stormwater management), and therefore is consistent with the Green Bank’s mission to “confront climate change” through the protection, management, and/or restoration of open space land (e.g., forests, wetlands, grasslands, farmlands, timberlands, grazing lands) – see Figure 4.

Table 3. Carbon Emissions, Foregone Sequestration, Total Opportunity from Avoided Deforestation (MMTCO₂e/Year/Acre)³⁴

	Carbon Emissions		Foregone Sequestration		Total Opportunity	
	1990s	2000s	1990s	2000s	1990s	2000s
CT	0.35	0.42	0.08	0.09	0.43	0.51

Figure 4. Impact of Investment in Land Conservation – Increase Resilience and Reduce GHG Emissions



- **Must Access Federal Resources** – leverage Green Bank assets to successfully access formula grant or competitive solicitations from federal sources that can be efficiently and effectively invested by state and local partners (e.g., land trusts, non-profits, etc.).

³³ Additional findings – land conservation and nature-based solutions are infrastructure, adaptation is community-centered and important for community engagement, Connecticut is along important ecosystem migration routes for wildlife, Nature Vest is a “green bank,” policies are important for performance-based environmental outcomes (i.e., pay for performance) environmental markets requires lawyers (i.e., public policy) and scientists (i.e., pre and post project impacts)

³⁴ Williams CA, Hasler N, Xi L (2021) “Avoided Deforestation: A Climate Mitigation Opportunity in New England and New York”, a report prepared for the United States Climate Alliance Natural and Working Lands Research Program, pp.1-42.

It should be noted that although the Green Bank can't access the SRF,³⁵ that \$445 million of additional SRF resources will be received by Connecticut over five years through the IJJA – and SRF resources can be directed towards green infrastructure projects (e.g., land conservation, nature-based solutions) as demonstrated by TNC and Nature Vest.³⁶

- **Money is Not Always the Problem** – as important as local, state, federal, and private funding and financing resources are, sometimes not having enough people, having onerous processes, an inability to speak to or monetize co-benefits (e.g., job creation, resilience), or lack of understanding of important tools (e.g., conservation finance) can substantially inhibit progress towards increasing investment in land conservation. There is also an opportunity to prioritize and engage with a broader representation of Connecticut communities in addressing environmental infrastructure that has multiple benefits – it will be important to identify opportunities that enable investment in projects that provide numerous outcomes.

- **Need Mechanisms to Monetize Environmental Markets** – stakeholders recognize that environmental markets (e.g., carbon offsets, ecosystem services, resource certification) may be able to provide additional sources of revenue (e.g., from compliance, voluntary, and/or other markets) to finance projects (e.g., proceeds from revenue bonds). For example, carbon stocks are generally higher in older forests, while the amount of carbon stock added in a given year is higher in younger forests.³⁷ In Connecticut, the cost of climate mitigation from avoided deforestation is between \$10 (i.e., in parts of Litchfield County) to over \$500 (i.e., in all of Fairfield County) per MTCO_{2e}.³⁸ Successful projects require public recognition of environmental commodities (i.e., through public policy and compliance markets, procurement, or other means), significant potential (i.e., private landowners of forests with strong GHG mitigation and/or resilience potential), credible partners (e.g., science-based nonprofit conservation organizations, credit-worthy long-term purchasers of carbon offsets), and reliable monitoring and evaluation.

- **Impact Metrics** – the following is a “high level” breakdown of the types of metrics appropriate for land conservation – see Table 4.

Table 4. Relevant Metrics Identified by Stakeholders on Land Conservation

Inputs	Outputs	Outcomes
<ul style="list-style-type: none"> ○ Investment in projects ○ Sources of public (e.g., local, state, federal) and private funds ○ Leverage (i.e., public vs. private funds) ○ Individual investment (e.g., Community Match Fund, 	<ul style="list-style-type: none"> ○ # of projects ○ Location of projects ○ Quantity of land conserved (e.g., acres, restrictions, use, easements) ○ Quality of land conserved (e.g., ecosystem services) 	<ul style="list-style-type: none"> ○ GHG emissions reduced or sequestered ○ Resilience improvement (e.g., # people at reduced risk of flooding, heat exposure) ○ Comparative benefits between project types (e.g., coastal wetlands vs. inland wetlands)

³⁵ Per Public Act 21-115

³⁶ Cumberland Forest Project conserving 253,000 acres of conservation easement along Central Appalachia from Kentucky to Virginia. <https://www.nature.org/en-us/magazine/magazine-articles/cumberland-forest-project/>

³⁷ Williams CA, Hasler N, Xi L (2021) “Avoided Deforestation: A Climate Mitigation Opportunity in New England and New York”, a report prepared for the United States Climate Alliance Natural and Working Lands Research Program, pp.1-42.

³⁸ Ibid (21)

<p>Green Liberty Bonds and Notes)</p> <ul style="list-style-type: none"> ○ Funding (i.e., grants) vs. financing (i.e., loans) ○ Technical assistance (e.g., climate-smart practices) ○ Protected lands (e.g., conservation easements) supporting local needs ○ Access to land 	<ul style="list-style-type: none"> ○ Reduction in land loss to development ○ Urban tree canopy cover ○ Renewable energy (e.g., solar PV, wind) on forestland ○ Increased engagement of BIPOC community to land conservation ○ Sustainably managed lands ○ Better and easier access to information ○ Increase in cash flow to property owners 	<ul style="list-style-type: none"> ○ Water quality improvement (e.g., stormwater management, nitrogen sediment in streams) ○ Jobs created ○ Land use and zoning (e.g., housing vs. land conservation vs. renewable energy siting) ○ Greater public access ○ Leadership of BIPOC communities in building resilience for their own communities ○ Advancements in public policy to recognize the value of land conservation (e.g., tax credits, carbon offsets, ecosystem services, urban conservation, rural development, pay for performance) ○ Strengthened municipal plans that prioritize “no net loss of core forests” ○ Increased investments in land conservation and greenspace development viewed as a community necessity and essential component of sustainable community ○ Health benefits ○ Wildlife habitat ○ Timber for building or wood products that store carbon for decades
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It is important to note that effective measurement of data on the benefits of environmental commodities (e.g., carbon offsets, ecosystem services) is vital to supporting compliance, voluntary, and other markets (e.g., FSC certification, Connecticut Grown, climate-smart practices).

- **Vulnerable Communities** – not enough nature-based solutions and green spaces in urban communities, which results in investments in gray infrastructure (e.g., wastewater treatment plants) vs. green infrastructure (e.g., nature-based solutions, urban tree canopy cover, parks) thereby increasing, for example, energy usage, urban heat island effects, and air pollution which disproportionately impacts vulnerable communities as a result of climate change. Inequitable access to the benefits of open space results in compounded challenges in vulnerable communities. Benefits include improved health, better air and water quality, and increase in quality of life connected to open space and natural spaces. Increase in development, especially poorly planned development, leads to greater demand on gray infrastructure, which adversely impacts vulnerable communities (e.g., flooding, pollution).

These are the key findings from the stakeholders on land conservation.

I. OPPORTUNITIES

The following is a list of opportunities for consideration by the Green Bank given the broad categories of information and data, environmental markets and conservation finance, funding and financing sources, and other potential opportunities:

1. **Information and Data** – as a foundation, access to high quality information is important from which to base investment decisions. Stimulating further investment in land conservation may require the Green Bank supporting research (e.g., economic value of land conservation) to identify opportunities that advance public policy to create investment opportunities that support target outcomes (e.g. nature-based solutions, urban climate mitigation and resilience) through community-led initiatives. The following is a breakdown of opportunities for consideration with respect to information and data:
 - A. **Climate Change Vulnerability Index** (“CCVI”)³⁹ – including Social Vulnerability (“SV”) mapping created for Resilient Connecticut,⁴⁰ is an index-based spatial model assembled by the Connecticut Institute for Resilience and Climate Adaptation (“CIRCA”) that identifies community vulnerability to flood, wind, and heat-related impacts of climate change. The CCVI characterizes areas based on an equation using sensitivity⁴¹ plus exposure⁴² minus adaptive capacity.⁴³ The CCVI can be used to assist with resiliency planning and to make educated decisions about future development and green infrastructure investment. The Green Bank should consider adopting the CCVI, and/or SV mapping, as a component of the “vulnerable communities” definition to (1) identify areas of investment with respect to land conservation, and (2) assess risk from existing investments in infrastructure.
 - B. **Pipeline Assessment** – work with CIRCA and DEEP to continuously build and assess the pipeline of potential GHG emission mitigation and climate change adaptation and resilience projects (e.g., type, size, scope, estimated impact, location) related to land conservation and nature-based solutions (e.g., coastal wetlands, forests).
 - C. **Yale School of the Environment** – Yale School of the Environment, and its work supporting conservation finance (e.g., partnership with the Conservation Finance Network, Tools for Engaging Landowners Effectively or “TELE”)⁴⁴ presents a unique opportunity to continuously inform and develop conservation finance practitioners in Connecticut. The Green Bank should consider providing local stakeholders with access to information (e.g., promoting Conservation Finance Network) and professional

³⁹ <https://resilientconnecticut.uconn.edu/wp-content/uploads/sites/2761/2021/10/CCVI-Fact-Sheet-2.pdf>

⁴⁰ <https://resilientconnecticut.uconn.edu/resources/>

⁴¹ The degree to which a built, natural, or human system will be impacted by changes in climate conditions.

⁴² The degree of the stress that certain asset is going through with climate variability. This includes changes such as the magnitude and frequency of extreme events.

⁴³ The ability of a system to adjust to changes, manage damages, take advantage of opportunities, or cope with consequences.

⁴⁴ <https://www.engaginglandowners.org/> - TELE is a project of the Sustaining Family Forests Initiative, which is a collaboration between the [Family Forest Research Center](#), the [U.S. Forest Service](#), the [Center for Nonprofit Strategies](#), and the [Yale School of the Environment](#), aimed at gaining and disseminating comprehensive knowledge about family forest owners throughout the United States.

development opportunities (e.g., sponsorship of bootcamps on conservation finance) to accelerate the advancement and practice of conservation finance in Connecticut.

- D. **Land Value, Carbon and Ecosystem Services Potential** – knowing the average cost of acquiring land (i.e., \$ per acre), including those open space lands that are inland, as well as along coasts and rivers, and the carbon storage and sequestration and ecosystem service value and potential of such lands, will help the Green Bank determine how the investment of Green Bank funds while mobilizing private investment can maximize GHG emissions reduced, and resiliency against climate change increased. The Green Bank should consider supporting or conducting such a study to understand the baseline potential for nature-based solutions to confront climate change in Connecticut.
 - E. **Global Warming Solutions Act** – as recommended by the Policy on Resilient Forests for Connecticut’s Future (“PRFCT”), support advocacy efforts to amend Public Act 08-98 to include definitions for “carbon sink” and “negative emissions”, and annual monitoring and reporting of CO2 sequestered, and carbon stored through biological processes alongside the data reported on the transportation, electricity, and other sectors.
2. **Environmental Markets and Conservation Finance** – in terms of identifying potential carbon offset and/or ecosystem services revenue streams within compliance and voluntary markets that can support financing of land conservation projects, the following is a breakdown of opportunities for consideration with respect to environmental markets and conservation finance. It should be noted that there is an important role for public policy and government to encourage the creation of environmental value through measurable outcomes-based performance.
- A. **Performance-Based Land Conservation** – whether it be forest carbon markets within compliance (e.g., California cap-and-trade program)⁴⁵ or voluntary (e.g., Amazon purchasing offset credits) markets, or ecosystem services markets for “pay for performance” restoration projects (e.g., reducing nitrogen discharge in rivers in Maryland), producing and selling measurable benefits can generate revenues to support private investment in land conservation projects.
 - B. **Conservation Finance Policy** – modelled after clean energy policy in Connecticut,⁴⁶ or passed Senate Bill 348 (i.e., “Conservation Finance Act” in Maryland), consider “pay for performance” conservation finance policies in Connecticut that reward private investment in green and blue infrastructure projects that deliver measurable and verified environmental outcomes (e.g., carbon offsets, ecosystem services). It is important to put value on the land (e.g., forest carbon, forest certification) instead of always taking it off the land (e.g., timber) by implementing floor prices, guarantees, and hosting auctions for the sale of ecosystem services, allocating public funds for development of investment ready nature-based solutions for land and sea, providing catalytic capital for blended finance.

⁴⁵ <https://ww2.arb.ca.gov/our-work/programs/compliance-offset-program/arb-offset-credit-issuance>

⁴⁶ Zero and low emission renewable energy credit programs (i.e., “ZREC” and “LREC”) provided performance-based incentives per MWh of Class I renewable energy produced to support Connecticut’s implementation of its renewable portfolio standard (“RPS”).

For example, research conducted by Earth Economics for Audubon Connecticut, calculated the ecosystem services value of the East River Marsh as the following – see Table 5.⁴⁷

Table 5. Annual, per Acre Benefits from the East River Marsh

Benefit	Low Marsh	High Marsh
<i>Resilience</i>		
Flood Protection	\$506	\$506
Storm Protection	\$5,872	\$14,680
<i>Environment</i>		
Carbon Sequestration	\$2,203	\$4,047
Existence Value ⁴⁸	-	\$1,748
Habitat Value	\$1,232	\$1,232
Water Quality	\$2,803	\$2,803
<i>Community</i>		
Aesthetic Value	\$952	\$952
Recreation	\$382	\$382
Annual Total	\$13,951	\$26,350

- C. **Forest Carbon Market Partnerships** – partner with land conservation non-profit organizations (e.g., American Forest Foundation, TNC-Nature Vest, New England Forestry Foundation, NCx) to invest Green Bank capital (i.e., debt and/or equity) into structures (e.g., Family Forest Carbon Program, Exemplary Forestry Investment Fund) that support small landowner participation in forest carbon markets and other ecosystem services in Connecticut (e.g., Pawcatuck Borderlands, Quabbin Corridor, and Berkshire Wildlife Linkage).⁴⁹⁵⁰⁵¹ Consider adopting or developing a Verra standard for forest carbon offsets.⁵²

- 3. **Funding and Financing Sources** – identifying additional funding (i.e., grants) and financing (e.g., loans) that can increase and accelerate investment, the following is a breakdown of opportunities for consideration with respect to funding and financing of land conservation:

- A. **Green Liberty Bonds** – leverage the strength of the Green Bank balance sheet, with the award-winning climate bond structure of the Green Liberty Bonds modelled after the War Bonds of the 1940’s, to support investments in land conservation:

⁴⁷ East River Marsh – Preserving Marsh Resilience for Coastal Communities by Earth Economics for Audubon (2021)

⁴⁸ Existence value is the value that people place on knowing certain ecosystems or species exist, even if they never plan to use or benefit from those ecosystems or species in any direct way.

⁴⁹ <https://www.forestfoundation.org/what-we-do/increase-carbon-storage/family-forest-carbon-program/>

⁵⁰ <https://newenglandforestry.org/learn/initiatives/efif/>

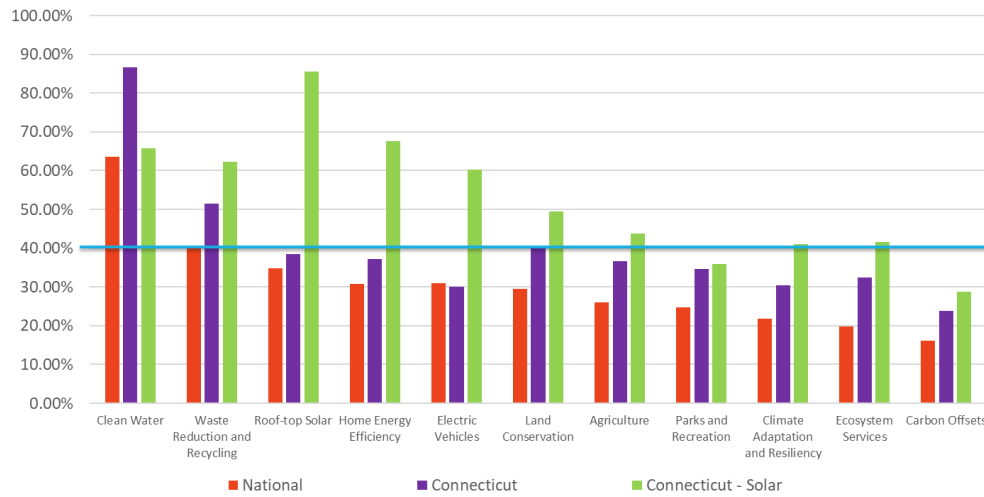
⁵¹ “A Safe Harbor for Nature: New England’s Resilient and Connected Network of Lands” by TNC.

⁵² <https://verra.org/worlds-most-widely-used-standard-for-carbon-offset-credits-strengthened-to-advance-forest-preservation-and-restoration/>

- i. **Pilot Revolving Loan Fund for Buy-Protect-Sell** – modelling the Conservation Fund’s successful \$150 MM green bond issuance in 2019 (i.e., 10-year rated A3 by Moody’s), which created the Working Forest Fund,⁵³ working with DEEP, DoAg, and nonprofit land conservation organizations, provide loans to land trust to help them move quickly to permanently protect critical open space from development.
- ii. **Infrastructure Modernization** – working with DOAg, to identify opportunities to invest in forestry industry infrastructure modernization projects (e.g., portable mills) that would support climate-smart practices and products to develop and grow in the Connecticut marketplace.

From research conducted by the Green Bank, it can be seen that retail investors in bonds are interested in land conservation, including citizens who are also interested in investing in rooftop solar and home energy efficiency – see Figure 5.

Figure 5. Retail Investor Use of Proceed Interest in Clean Energy and Environmental Infrastructure



- B. **Partnership for Climate-Smart Commodities** – working with UCONN and DoAg, submit a proposal, matched by a Green Liberty Bond, through the \$1 billion competitive solicitation of the United States Department of Agriculture’s (“USDA”) Commodity Credit Corporation (i.e., USDA-NRCS-COMM-22-NOFO0001139) in response to the climate crisis by supporting actions within the agriculture sector to produce climate-smart commodities.⁵⁴ As the lead primary applicant, UCONN would support producers adopt and sustainably implement climate-smart practices, and as the co-lead, the Green Bank, with its expertise from the Residential Solar Investment Program (see Figure 6),

⁵³ The Working Forest Fund invests green bond proceeds to buy the most at-risk private forests. Once it owns the forest, it protects the land (i.e., easement), develops sustainable harvesting, wildlife, and habitat restoration plans, and then resells the land to private or public buyers to repay the loan. This fund has permanently conserved 500,000 acres, permanently storing over 210 MMTCO₂e.

⁵⁴ Defined as an agricultural commodity that is produced using agriculture (i.e., farming, ranching, or forestry) practices that reduce greenhouse gas emissions or sequester carbon.

would adapt the clean energy model to climate-smart agriculture (see Figure 7), and support consumers access climate-smart commodities from such producers.

Figure 6. Residential Solar Investment Program – From SHRECs to Green Liberty Bonds

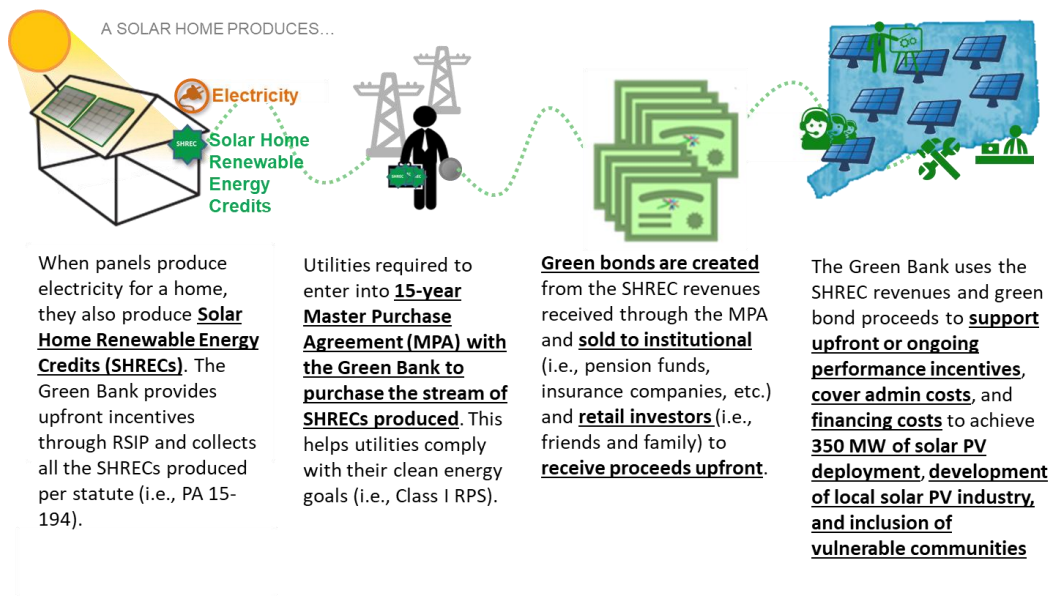
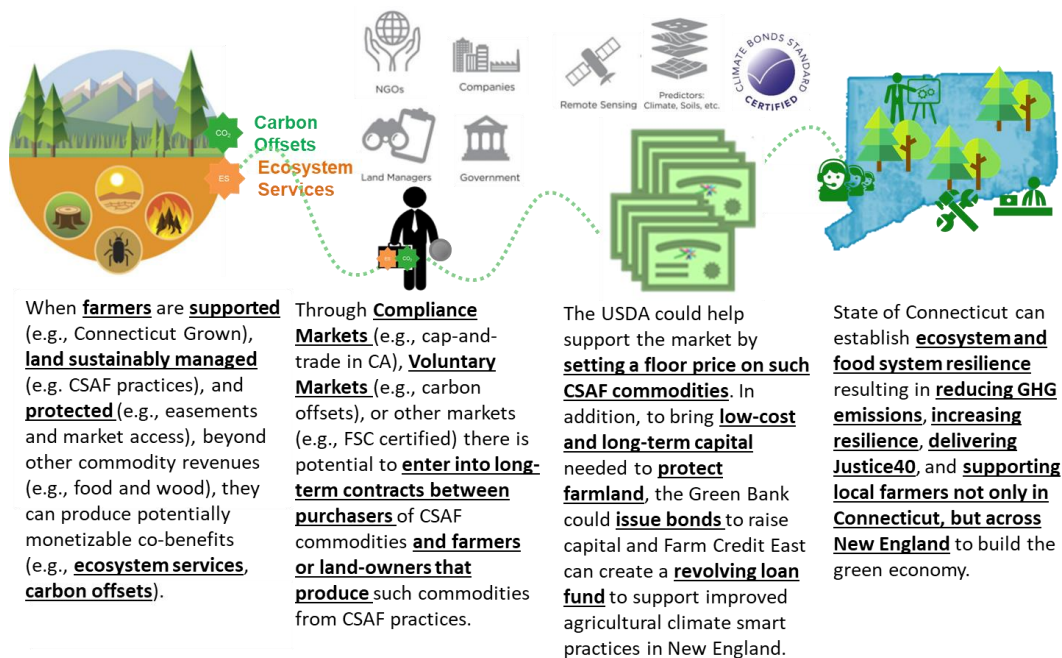


Figure 7. Climate Smart Controlled Environment Agriculture (CEA) for Tribes and Small Farms in New England: Building Profitable, Sustainable and Resilient Farms

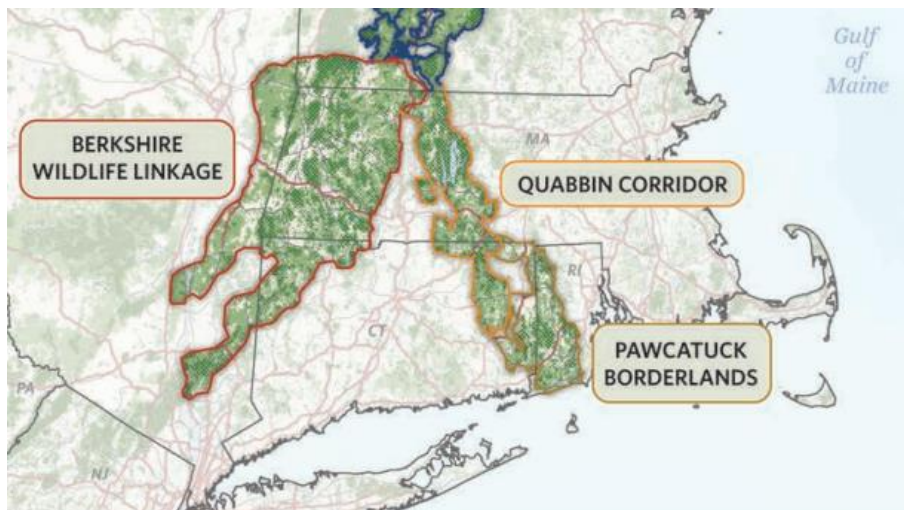


C. **Community Match Fund** (“CMF”) – a program of Sustainable CT, the Community Match Fund provides fast, flexible funding, and support for community engagement on a wide-

range of sustainability projects. This societal value uses an innovative, online tool to connect grant contributions from the “crowd,” which are matched by various donor interests, including, but not limited to individuals, foundations, and the State of Connecticut. As of January 1, 2022, the Fund has raised \$1.3 MM from nearly 10,000 individual contributors, which was matched by \$1.1 MM from various sponsors, and supported 195 projects. The Green Bank could consider working with entities like Sustainable CT, with tools like the CMF, to enable funding for land conservation to be matched by the crowd, while also ensuring that equity and vulnerable communities are front and center in receiving the benefits of such investment.

- D. **State Revolving Funds** – although not a Green Bank resource, existing and additional SRF resources could be used by the state to provide low-cost and long-term capital to finance green infrastructure projects (e.g., land conservation) in Connecticut, or in partnership with other states across the Northeast region. The Green Bank could recommend to its state colleagues that a portion of the SRF be used for green infrastructure projects in Connecticut as is being done by other states. For example, the Rhode Island Infrastructure Bank requires municipal borrowers to identify green infrastructure projects for 10% of the value of their clean water loans; the Commonwealth of Virginia invested \$20 MM of its SRF in a \$130 MM transaction to protect 253,000 acres across three-states to acquire land in Central Appalachia. Regional collaboration on the SRF and land conservation could target focal landscapes in the Berkshire Wildlife Linkage (i.e., 1,579,566 acres in the landscape with 31% protected including lands in MA, NY, and VT), Quabbin Corridor (i.e., 475,864 acres in the landscape with 37% protected including lands in MA and NH), and/or Pawcatuck Borderlands (i.e., 473,397 acres in the landscape with 23% protected including lands in MA and RI) – see Figure 8.⁵⁵

Figure 8. Regional Opportunity for the State Revolving Fund and Nature-Based Solutions to Climate Change



- 4. **Other Potential Opportunities** – there are a number of other potential opportunities that can support land conservation and the advancement of conservation finance, including:

⁵⁵ “A Safe Harbor for Nature – New England’s Resilient and Connected Network of Land” by The Nature Conservancy

- A. **Clean Energy and Sustainability Accelerator** – within the climate change programs proposed as part of the Build Back Better Act (“BBBA”) is the Clean Energy and Sustainability Accelerator (“CESA”). Modelled after the Connecticut Green Bank, the \$29 billion allocated under CESA would provide state and local government with access to capital to finance projects that reduce GHG emissions and increase resilience, including nature-based solutions.
- B. **Climate Conservation Corps** – within the climate change programs proposed as part of the BBBA is the Climate Conservation Corps. Modelled after the Civilian Conservation Corps under President Franklin Roosevelt, the climate program centered around equity and environmental justice, could hire hundreds of thousands of young people to help restore forests and wetlands. The Green Bank could include within its investment activity, the requirement for developers to include Climate Conservation Corps members. If Climate Conservation Corps is passed through the BBBA, then Connecticut should prioritize the involvement of BIPOC⁵⁶ populations and hire a leader from the BIPOC community to run it.
- C. **30% by 2030 Goal** – to continue to increase the role land conservation has on mitigating GHG emissions and making Connecticut more resilient to the impacts of climate change, consideration could be given to increase the open space land target policy from 21% by 2023 to 30% by 2030, which would include farmland within the overall open space land target. Supporting the “no net loss of forest” goal and related goals such as increasing urban tree canopy are also important.

These are a few of the opportunities identified by the Green Bank to support its mission and advance land conservation and conservation finance in Connecticut.

Developing a method for prioritizing what opportunities under consideration are ultimately pursued, given the limited human and financial resources, and organizational structure of the Green Bank, is an activity for a later date.

J. HISTORY OF LEADERSHIP AND INNOVATION

The history of leadership and innovation in “clean energy” technology in Connecticut is marked, including those like:

- **Daniel Halladay** – an entrepreneur who lived in Coventry, CT who invented the self-regulating wind pump in the mid- to late-1800’s, which enabled the transcontinental railroad;⁵⁷⁵⁸
- **Albert Pope** – an entrepreneur who manufactured thousands of electric vehicles in the early 1900’s in Hartford, CT, including one that transported President Roosevelt in the first presidential motorcade;⁵⁹ and

⁵⁶ Black, Indigenous, or People of Color

⁵⁷ https://en.wikipedia.org/wiki/Daniel_Halladay

⁵⁸ https://en.wikipedia.org/wiki/Albert_Augustus_Pope

⁵⁹ <https://whereilivect.org/made-in-connecticut-albert-popes-amazing-automobiles/>

- **Bernard Baker** – an entrepreneur who lived in Bethel, CT who invented and manufactured fuel cells, which provide high reliable power.⁶⁰

Beyond technology, Connecticut is also marked by leadership in society, including:

- **Freeman Sisters** – entrepreneurs who lived in Bridgeport, CT whose historic landmark homes once served as a destination in the Underground Railroad, and now stand in the shadows of a coal-fired power plant demonstrating environmental injustice in our society; and
- **Gina McCarthy** – an innovator who served as Connecticut’s Commissioner of the Department of Environmental Protection under Governor Rell, to later become the Administrator of the USEPA under President Obama, and National Climate Advisor under President Biden.

The history of leadership and innovation in “environmental infrastructure” in Connecticut is also significant, especially when it comes to “land conservation” including:

- **Gifford Pinchot** – an innovator who was born in Simsbury, CT who established the Society of American Foresters, served as the first Chief of the US Forest Service, and endowed the Yale Forest School, which today stands as the Yale School of the Environment.^{61,62}

It is this history of leadership and innovation in “clean energy” and “environmental infrastructure” that makes the Constitution State a special place from which to initiate and launch unique ideas that transform technology and society.

K. REFERENCES

In addition to the conversations with stakeholders, the Green Bank reviewed the following documents to support its findings and opportunities:

- **Green Plan** – Comprehensive Open Space Acquisition Strategy (2016-2020 Green Plan)
- **Forest Action Plan** – Connecticut’s 2020 Forest Action Plan
- **Governor’s Council on Climate Change** – Taking Action on Climate Change and Building a More Resilient Connecticut for All (January 2021)
- **Working and Natural Lands Working Group** – reports by Forests, Rivers, and Wetlands Subgroups of the Governor’s Council on Climate Change (November 2020)
- **WAP** – 2015 Connecticut Wildlife Action Plan

L. DEFINITIONS

The following are important definitions when it comes to land conservation in Connecticut:

⁶⁰ https://en.wikipedia.org/wiki/Bernard_S._Baker

⁶¹ https://en.wikipedia.org/wiki/Gifford_Pinchot

⁶² Check with Doris Johnson at DEEP to see if there are other historical land conservation leaders, including present BIPOC leaders.

- **Conservation Easement** – is a deed restriction or deed covenant that landowners voluntarily place on part or all of their land. The easement limits development in order to protect the land’s natural resources.
- **Conservation Restriction** (CGS 47-42a)⁶³ – conservation restriction means a limitation, whether or not stated in the form of a restriction, easement, covenant or condition, in any deed, will or other instrument executed by or on behalf of the owner of the land described therein, including, but not limited to, the state or any political subdivision of the state, or in any order of taking such land whose purpose is to retain land or water areas predominantly in their natural, scenic or open condition or in agricultural, farming, forest or open space use.
- **Core Forest** – forests that are at least 300 feet from non-forest development (e.g., roads, bridges, farms), and are classified as core forests.⁶⁴ Small, medium and large core forests are patches that are 250 acres, 250-500 acres, and 500+ acres respectively.
- **Environmental Infrastructure** – means structures, facilities, systems, services and improvement projects related to (A) water, (B) waste and recycling, (C) climate adaptation and resiliency, (D) agriculture, (E) land conservation, (F) parks and recreation, and (G) environmental markets, including, but not limited to, carbon offsets and ecosystem services.
- **Forest Land** (CGS 12-107(b)(3))⁶⁵ – forest land means any tract or tracts of land aggregating twenty-five acres or more in area bearing tree growth that conforms to the forest stocking, distribution and condition standards established by the State Forester pursuant to subsection (a) of section 12-107d, and consisting of (A) one tract of land of twenty-five or more contiguous acres, which acres may be in contiguous municipalities, (B) two or more tracts of land aggregating twenty-five acres or more in which no single component tract shall consist of less than ten acres, or (C) any tract of land which is contiguous to a tract owned by the same owner and has been classified as forest land pursuant to this section.
- **Open Space Land** (CGS 12-107(b)(3))⁶⁶ – open space land means any area of land, including forest land, land designated as wetland under section 22a-30 and not excluding farm land, the preservation or restriction of the use of which would (A) maintain and enhance the conservation of natural or scenic resources, (B) protect natural streams or water supply, (C) promote conservation of soils, wetlands, beaches or tidal marshes, (D) enhance the value to the public of abutting or neighboring parks, forests, wildlife preserves, nature reservations or sanctuaries or other open spaces, (E) enhance public recreation opportunities, (F) preserve historic sites, or (G) promote orderly urban or suburban development.
- **Preservation Restriction** (CGS 47-42a)⁶⁷ – preservation restriction means a limitation, whether or not stated in the form of a restriction, easement, covenant or condition, in any deed, will or other instrument executed by or on behalf of the owner of land, including, but not limited to, the state or any political subdivision of the state, or in any order of taking of such land whose purpose is to preserve historically significant structures or sites.

⁶³ https://www.cga.ct.gov/current/pub/chap_822.htm

⁶⁴ http://clear.uconn.edu/projects/landscape/v2/forestfrag/measuring/core_explained.htm

⁶⁵ https://www.cga.ct.gov/current/pub/chap_203.htm#sec_12-107b

⁶⁶ https://www.cga.ct.gov/current/pub/chap_203.htm#sec_12-107b

⁶⁷ https://www.cga.ct.gov/current/pub/chap_822.htm

- **Preserved Open Space** – any area of land that has been acquired and is used for open space purposes, including DEEP’s State Parks, State Forests, Wildlife Areas, and Class I and II watershed lands.
- **Protected Open Space** – any area of land with a restriction that would limit its use to open space, including lands subject to conservation restrictions, deed restrictions, or certain reserved rights.
- **Resilience** – means the ability to prepare for and adapt to changing conditions and withstand and recover rapidly from deliberate attacks, accidents or naturally occurring threats or incidents, including, but not limited to, threats or incidents associated with the impacts of climate change.
- **Vulnerable Communities** – means populations that may be disproportionately impacted by the effects of climate change, including, but not limited to, (1) low and moderate income communities, (2) environmental justice communities pursuant to section 22a-20a, (3) communities eligible for community reinvestment pursuant to section 36a-30 and the Community Reinvestment Act of 1977, 12 USC 2901 et seq., as amended from time to time, (4) populations with increased risk and limited means to adapt to the effects of climate change, or (5) as further defined by the Department of Energy and Environmental Protection in consultation with community representatives.



Parks and Recreation

Stakeholder Engagement and Research
on Environmental Infrastructure

PARKS AND RECREATION

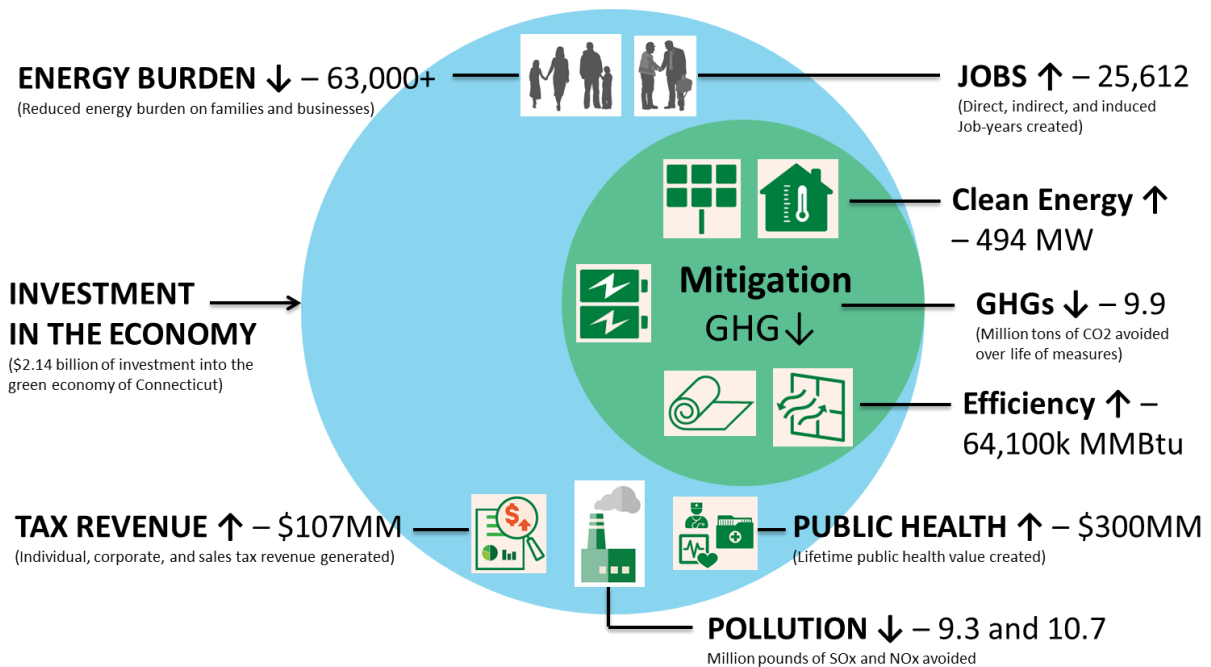
RESEARCH ON ENVIRONMENTAL INFRASTRUCTURE

A. OVERVIEW

On July 6, 2021, Governor Ned Lamont signed Public Act 21-115 “An Act Concerning Climate Change Adaptation” (“the Act”) into law. The bipartisan-supported public policy was among the sixty-one (61) recommendations made by the Governor’s Council on Climate Change (“GC3”), including a recommendation to expand the scope of the Connecticut Green Bank (“Green Bank”) beyond “clean energy” to include “environmental infrastructure” (i.e., Recommendation #57).

Since its founding over a decade ago, the Green Bank has focused its efforts on using a limited amount of public resources to mobilize multiples of private investment in Connecticut to increase and accelerate the deployment of “clean energy” to deliver social and environmental impact – see Figure 1.

Figure 1. Decennial Impact of the Green Bank with focus on “Clean Energy” Deployment and Mitigation of GHG Emissions



Given its mission “to confront climate change and provide all of society a healthier and more prosperous future by increasing and accelerating the flow of private capital into markets that energize the green economy,” the Green Bank helps the State of Connecticut achieve its ambitious public policy objectives (e.g., GHG emission reductions targets, renewable portfolio standards). In so doing, by 2025, no less than 40 percent of investment and benefits from its programs are to be directed to vulnerable communities.¹

¹ “Vulnerable communities” means populations that may be disproportionately impacted by the effects of climate change, including, but not limited to, low and moderate income communities, environmental justice communities pursuant to section 22a-20a, communities eligible for community reinvestment pursuant to section 36a-30 and the Community Reinvestment Act

The Act, expands the scope of the Green Bank beyond “clean energy” to include “environmental infrastructure,” and includes the following key provisions:

- **Definition** – “environmental infrastructure” means structures, facilities, systems, services and improvement projects related to (A) water, (B) waste and recycling, (C) climate adaptation and resiliency, (D) agriculture, (E) land conservation, (F) parks and recreation, and (G) environmental markets, including, but not limited to, carbon offsets and ecosystem services;
- **Comprehensive Plan** – requirement for the Green Bank to develop a Comprehensive Plan² prior to implementing any programs or initiatives related to “environmental infrastructure”;
- **Reporting** – inclusion of the Banks Committee and the Environment Committee, alongside the Energy and Technology Committee and Commerce Committee in terms of reporting; and
- **Bonding** – the ability to issue 25-year bonds for “clean energy” and 50-year bonds for “environmental infrastructure” (i.e., no more than the useful life of the projects), supported by the Special Capital Reserve Fund (“SCRF”), for up to 25 years to improve the rating of the bonds issued.

This document attempts to summarize the findings from the research and outreach efforts conducted by the Green Bank³ on “parks and recreation” from October 2021 through January of 2022 and includes the following sections: (A) overview, (B) key public policies, (C) market potential, (D) target, (E) funding and financing programs, (F) other programs, (G) stakeholder outreach, (H) findings, (I) opportunities, (J) history of leadership and innovation, (K) references, and (L) definitions.

Infrastructure investments in “parks and recreation” can support the Green Bank’s mission by both mitigating the GHG emissions that cause climate change (e.g., carbon sinks from urban tree canopy cover) and increasing resilience against the impacts of climate change (e.g., stormwater management through urban parks).

B. KEY PUBLIC POLICIES

The following are key public policies that advance “parks and recreation” in Connecticut, including, but not limited to:

1. **State Plan of Conservation and Development** (CGS 16a-24) – is an overarching statement of state policy in matters pertaining to land and water resource conservation and development. The Office of Policy and Management (“OPM”) prepares revisions to the State Conservation and Development Plan (“State C&D Plan”) on a recurring 5-year cycle and submits it for adoption by the Connecticut General Assembly (“CGA”). Once adopted, the State C&D Plan is then implemented by state agencies whenever they undertake certain actions.⁴ The current State

of 1977, 12 USC 2901 et seq., as amended from time to time, populations with increased risk and limited means to adapt to the effects of climate change, or as further defined by DEEP in consultation with community representatives.

² https://www.ctgreenbank.com/wp-content/uploads/2021/07/3_Comprehensive-Plan_FY-2020-and-Beyond_Final.pdf

³ Led by Bryan Garcia (President and CEO) and Ashley Stewart (Consultant)

⁴ Quasi-publics are not subject to this requirement

C&D Plan (i.e., for 2018-2023), includes the relevant “clean energy” and “environmental infrastructure” items, including, but not limited to:

- A. **Greenhouse Gas Mitigation** – reducing carbon dioxide emissions in the state consistent with the recommendations of the Connecticut Climate Change Preparedness Plan (i.e., 5.10);
 - B. **Climate Adaptation and Resilience** – including developing and deploying innovative energy technologies, and promoting distributed generation and microgrids to provide reliable electrical power or energy-dependent community services during outages and peak demand periods (i.e., 1.12) and minimizing the potential risks and impacts from natural hazards by considering potential impacts of climate change on existing and future development (i.e., 1.13); and
 - C. **Parks and Recreation** – encouraging and promoting access to parks and recreational opportunities, including trails, greenways, community gardens, and mixed-income housing (i.e., 2.8) and protecting the ecological, scenic, and recreational value of lakes, rivers, and streams by promoting compatible land uses and management practices in accordance with adopted plans.
2. **Open Space Target** (CGS 23-8)⁵ – establishes a mandate to conserve 21% (i.e., 673,210 acres) of state land area as held by open space land, with 10% from the state (e.g., forests, parks) and not less than 11% from partners (e.g., municipalities, water companies, or non-profit land conservation organizations). The Comprehensive Open Space Acquisition Strategy (or “Green Plan”)⁶ is the comprehensive strategy for achieving the state goal by 2023, which includes priorities for strategic acquisitions of open space for climate change resiliency and preserving open space in perpetuity for state lands with high conservation value.
 3. **Community Investment Act** (Public Act 05-228)⁷ – “An Act Concerning Farm Land Preservation, Land Protection, Affordable Housing and Historic Preservation,” also known as the Community Investment Act (“CIA”), CIA provides a dedicated and consistent source of funding for state preservation of open space (Department of Energy and Environmental Protection or “DEEP”), farmland (Department of Agriculture or “DoAg”), historic sites (Department of Economic and Community Development or “DECD”), and affordable housing (Connecticut Housing Finance Authority or “CHFA”). Through a \$40 surcharge on local land recordings (i.e., \$1 to Town Clerk, \$3 to local government, \$10 supplemental income to dairy farmers, and \$26 to State Treasurer), about \$22 MM is raised each year, which is equally distributed in four (4) parts to the priority funding areas.
 4. **Passport to the Parks** – beginning in 2018, Connecticut offered all residents with Connecticut license plates on their vehicles free entry and parking at all state parks and beaches. Connecticut wants to make state parks, forests, trails, historic sites and beaches more available to residents so they can enjoy the many attractions and beauty they offer. Passports to the Parks raises \$20

⁵ <https://law.justia.com/codes/connecticut/2012/title-23/chapter-447/section-23-8/>

⁶ <https://portal.ct.gov/DEEP/Open-Space/The-Green-Plan>

⁷ <https://www.cga.ct.gov/2005/ACT/Pa/pdf/2005PA-00228-R00SB-00410-PA.pdf>

MM per year for park operations and maintenance through a \$5/year/vehicle motor vehicle registration fee. This policy supports parks and removes historic cost barriers to enter them.

5. **Great American Outdoors Act (“GAOA”)** – permanently funds the Land and Water Conservation Fund (“LWCF”) at \$900 MM a year, a significant source of resources from the United States Government (“USG”) for open space and parks. GAOA also provides \$9.5 billion over five years to address longstanding maintenance backlogs in our national parks, forests, and other public lands.

In order to identify opportunities to mobilize private investment, it is important to understand the public policy context in which “parks and recreation” operates. With the focus on the Green Bank’s mission (i.e., confront climate change), public policy provides a mechanism to catalyze private investment.

C. MARKET POTENTIAL

The following is a breakdown of the market potential for “parks and recreation” from the perspective of active⁸ and passive⁹ outdoor recreation facilities, and on “land” or “water” based activities from the Statewide Comprehensive Outdoor Recreation Plan (“SCORP”) – see Table 1.

Table 1. Outdoor Recreation Facilities in Connecticut (2005)

Outdoor Recreation Type	# of Facilities	DIRPS ¹⁰ per 10,000 Residents	Ownership		
			Statewide Average	Municipal Average	Other Average
Active – Land	4,788	1.4	4%	77%	20%
Active – Water	137	0.4	2%	69%	30%
Passive – Land	1,957	1.0	27%	46%	27%
Passive – Water	1,130	1.1	22%	45%	33%
Total	8,012	1.2	14%	62%	24%

Despite the age of the data, several general observations can be made with respect to active and passive outdoor recreation, including:

- **Active Recreation** – in a state with the headquarters of the Entertainment Sports Programming Network (“ESPN”), municipalities are the dominant stakeholder when it comes to active outdoor recreation facilities, with the highest use frequency index for swimming;
- **Passive Recreation** – when it comes to passive outdoor recreation facilities, the ownership between stakeholders is dominated by:
 - **Statewide** – hunting;

⁸ Active outdoor recreation facilities based on 2005 data (X – #) and 2017 use frequency index data, if available (# – Y), include fields, courts, and courses for baseball and softball (984 – 16.0), basketball (645 – 23.0), football (154 – 10.0), golf (125 – 13.6), multi-use (624), soccer (495 – 14.6), tennis (384 – 11.2), and volleyball (74 – 23.0), as well as playgrounds (1,065), swimming pools (137 – 60.9), and winter sports (238 – 9.3)

⁹ Passive outdoor recreation facilities based on 2005 data (X – #) and 2017 use frequency index data, if available (# – Y) include access to sites for beaches (176 – 60.1), boating (285 – 10.9), camping (88 – 13.5), fishing (669 – 19.0), gardens (109), historic landmarks (99 – 35.9), hunting (88 – 3.5), picnics (677), and trails (896 – 102.8)

¹⁰ Discrete Identifiable Recreation Places

- **Municipalities** – beach, boating, fishing, gardens, historic, picnic areas, and trails with the highest use frequency index for hiking on both public and private lands;¹¹
- **Other** – camping.
- **Access Prevention** – in terms of what is preventing access to recreation, surveys indicate that 88% and 56% of citizens get to facilities by automobile or walking, respectively, and 20% to 23% of survey respondents indicate that fees are too high and facilities are too far.

The “No Child Left Inside” and “Passport to the Parks” programs, promote Connecticut citizens enjoying active and passive outdoor recreation facilities on land or water-based activities.

The Trust for Public Land’s (“TPL”) ParkScore Index is a comprehensive rating system to measure how cities are meeting the needs for parks.¹² In an effort to assess ParkScore, the following data are for Connecticut’s “Top 10” most populated municipalities – see Table 2.

Table 2. "Top 10" Most Populated Municipalities in Connecticut and ParkScore

City	Population	Acres	% Land as Parks	Acres of Land as Parks	Acres of Parks per 10,000 Residents	# of Parks	Parks per 10,000 Residents	10-Minute Walk
Hartford	121,203	11,136	9%	1,002	83	218	18.0	99%
New Haven	130,764	11,968	12%	1,436	110	128	9.8	96%
West Hartford	63,063	13,952	20%	2,790	442	48	7.6	82%
Stamford	129,302	24,064	5%	1,203	93	54	4.2	74%
New Britain	72,303	8,576	7%	600	83	23	3.2	73%
Bridgeport	143,653	10,304	7%	721	50	35	2.4	73%
Waterbury	106,458	18,240	6%	1,094	103	30	2.8	60%
Norwalk	88,326	14,656	3%	440	50	45	5.1	55%
Bristol	59,639	16,896	4%	676	113	20	3.4	51%
Danbury	84,732	26,880	5%	1,344	159	17	2.0	37%

ParkScore provides excellent quantitative data in which to make general observations about the state of parks within a municipality in comparison to the national average. For example, the national average for the percentage of residents with a 10-minute walk to parks and the median percentage of municipal lands as parks is 55% and 15%, respectively. For example, 99% of citizens residing in Hartford have a 10-minute walk to a park, which is high compared to the national average, yet only 9% of land in Hartford is parks, which is low compared to the national average.

The quality of parks is difficult to discern. To better understand the quality of parks, TPL partnered with the Urban Resources Institute (“URI”) to compare New Haven against the nation’s most populous cities

¹¹ Managed by the Connecticut Forest and Parks Association, the Blue-Blazed Hiking System includes more than 825 miles of hiking to explore the woodlands, remote ridges, and wild places of Connecticut.

¹² The “% of Land as Parks,” “# of Parks,” and “10-Minute Walk” data were used from TPL’s ParkScore data set.

on five (5) categories reflective of an excellent city park system: Acreage,¹³ Access,¹⁴ Investment,¹⁵ Amenities,¹⁶ and Equity¹⁷ – see Table 3.¹⁸

Table 3. TPL and URI Analysis of New Haven Compared to Other Cities

City	Overall	Acreage	Access	Investment	Amenities	Equity
New Haven, CT	60	36	95	35	71	65
Boston, MA	-	47	100	79	65	79
Baltimore, MD	-	25	81	68	40	83
Buffalo, NY	-	25	85	47	61	64

The TPL-URI research also delves deeper into the twenty (20) neighborhoods of New Haven to collect data with respect to population, acres of parks, and acres per 1,000 population, as well as demographic data including income and people of color. Based on data from TPL from 14,000 cities, parks that serve low-income households are four (4) times as crowded as parks that serve high-income households, and parks that serve people of color are five (5) times as crowded as parks that serve majority-white populations.¹⁹ Such analyses in municipalities across Connecticut could elucidate opportunities for areas of improvement, including improving the public health of residents with access to parks and the economic development impact of property values within proximity to parks.

Although Connecticut has the highest urban tree cover in the United States at 62%,²⁰ there are opportunities to improve urban tree canopy cover to reduce heat island effects in urban neighborhoods across the state that lack the shading benefits that tree canopies provide to reduce heat and improve air quality while supporting better public health.²¹ For example, Bridgeport, Hartford, and New Haven’s tree canopy cover is 27%,²² 25%,²³ and 38%²⁴ respectively.

D. TARGET

There is no public policy target for “parks and recreation” in Connecticut beyond the open space land target outlined in CGS 23-8 and Green Plan, respectively (i.e., 21% by 2023) – see the “land conservation” document for quantitative details. It is the expectation that the open space land policy

¹³ Acreage score indicates the relative abundance of large ‘destination’ parks, which include large natural areas that provide critical mental health as well as climate and conservation benefits.

¹⁴ Access score indicates the percentage of the city’s residents that live within a walkable half-mile of a park – the average distance that most people are willing to walk to reach a destination.

¹⁵ Investment score indicates the relative financial health of a city’s park system, which is essential to ensuring parks are maintained at a high level for all to enjoy.

¹⁶ Amenities score indicates the relative abundance of six park activities popular among a multi-generational cross-section of user groups (i.e., playgrounds, basketball courts, dog parks, senior and recreation center, splashpads, and permanent restrooms).

¹⁷ Equity score indicates how fairly parks and park space are distributed within a city, including percentage of people of color and low-income households within a 10-minute walk of a park, and comparison of the amount of park space between neighborhoods by race and income.

¹⁸ For example, a score of 90 means that the municipality is within the top 90 percent across the country.

¹⁹ “The Heat is On” by The Trust for Public Lands

²⁰ Connecticut’s 2020 Forest Action Plan (p. 7)

²¹ “Tree Canopy Assessment – Southern Connecticut Region” by the Southern Connecticut Regional Council of Governments and the University of Vermont Spatial Analysis Laboratory.

²² A Report on the City of Bridgeport’s Existing and Possible Urban Tree Canopy

²³ Hartford Connecticut’s Tree Canopy Action Plan 2020

²⁴ A Report on the City of New Haven’s Existing and Possible Urban Tree Canopy

and goal would provide public recreation opportunities on state, municipal, private, and water utility lands.

Beyond a target the U.S. Bureau of Economic Analysis conducts research on special topics, including the outdoor recreation economy. The Outdoor Recreation Satellite Account measures the economic activity as well as the sales or receipts generated by outdoor recreational activities. These statistics measure each industry’s production of outdoor goods and services – see Table 4.

Table 4. Connecticut GSP and Employment for 2020 – Comparison for Outdoor Recreation²⁵ vs. Clean Energy²⁶

Economic Activity	GSP (\$MM’s)	Percent of GSP	Employment	% of Employment
Outdoor Recreation	\$3,298	1.2	41,721	2.6
Clean Energy	\$6,640	2.4	41,488	2.6

Expenditures in the outdoor recreation economy in Connecticut includes – see Table 5.

Table 5. Expenditures in the Outdoor Recreation Economy in Connecticut

Conventional Outdoor Recreation Activities²⁷ (\$MM’s)	Other Outdoor Recreation Activities²⁸ (\$MM’s)	All Other Supporting Outdoor Recreation (\$MM’s)	Government Expenditures (\$MM’s)	Total Outdoor Recreation Activities (\$MM’s)
\$1,411	\$572	\$1,158	\$156	\$3,298

E. FUNDING AND FINANCING PROGRAMS

The following is an alphabetical breakdown of the current funding (i.e., grants) programs in support of “parks and recreation” in Connecticut, including, but not limited to:

- **Brownfield Remediation Program** – the Infrastructure Investment and Jobs Act (“IIJA” or Bipartisan Infrastructure Law – “BIL”) provides \$1.5 billion in supplemental funding to the EPA for brownfield remediation programs – \$1.2 billion of funds are set aside for competitive grants for site assessment and remediation projects. Funding can be accessed by quasi-public entities.
- **Charter Oak Open Space Trust Account** – a defunct program for several years now, which included two accounts to fund new open space purchase programs, including 40% to the Charter Oak State Parks and Forest Account for state acquisition of open space and watershed land, and 60% to the Charter Oak Open Space Grant Program to provide grants to municipalities and nonprofit land conservation organizations to acquire open space or watershed protection land.
- **Connecticut Open Space and Watershed Land Acquisition Grant Program** (“OSWA”) (CGS 7-131d) – a matching grants program to provide financial assistance to municipalities, land trusts,

²⁵ “Outdoor Recreation Satellite Account, US and States, 2020” by the Bureau of Economic Analysis (November 9, 2021)

²⁶ “Connecticut Clean Energy Industry Report” (September 2021)

²⁷ Boating, fishing, RV’ing, and snow activities

²⁸ Amusement parks, water parks, festivals, sporting events, concerts, game areas (e.g., golf, tennis)

and water companies to acquire open space and watershed lands. Initiated in 1998, is funded by state bonding and the CIA, provides financial assistance to municipalities and nonprofit land conservation organizations to acquire land for open space, and to water companies to acquire land to be classified as Class I or Class II water supply property, and is administered by DEEP to leverage state, local, and private funds to create a cooperative open space acquisition program.

Since 1998, DEEP has awarded over \$150 MM in open space grant funds to protect over 41,000 acres (or \$3,659/acre).

- **Hazardous Substance Superfund Remediation** – the IIJA provides \$3.5 billion in supplemental funding to the EPA Superfund Program to support cleanup of large sites contaminated by commercial or industrial pollution that poses risks to people’s health and the environment. This program is administered in partnership with states.
- **Land and Water Conservation Fund (“LWCF”)** – LWCF is a federal program that was established by an Act of Congress in 1965 to provide funds and matching grants to federal, state and local governments for the acquisition of land and water, and easements on land and water, for the benefit of all Americans. The main emphases of the fund are recreation and the protection of national natural treasures in the forms of parks and protected forest and wildlife areas. In August 2020, the President Trump signed the Great American Outdoors Act into law, which requires that the LWCF be funded at \$900 million yearly, a significant increase from previous funding levels.
- **National Park Service – Rivers, Trails and Conservation Assistance Program (“NPS-RTCA”)** – NPS-RTCA’s technical assistance program supports locally-led conservation and outdoor recreation projects. The program assists communities and land managers in evolving climate resiliency strategies, developing or restoring parks, conservation areas, rivers, and wildlife habitats, as well as creating outdoor recreation opportunities and programs that engage future generations in the outdoors.
- **Recreation and Natural Heritage Trust Program (“RNHT”)** – administered by DEEP, is the main program to purchase or conserve lands for conservation and public use or benefit.

Since 1998, the State Bond Commission has approved \$177 MM to go towards the RNHTP to protect over 49,000 acres (or \$3,611/acre).

- **Sustainability and Equity (Raise) Grant Program** – the IIJA provides \$7.5 billion in supplemental funding to the DOT for bikeway, trail, and pedestrian projects.

The following is a breakdown of the current financing (i.e., loans) programs that could support parks and recreation in Connecticut:

- **State Revolving Fund (“SRF”)** – since 1988, Connecticut has received over \$650 MM from the federal government through the Clean Water SRF, while providing cumulative assistance (i.e., including state investment) of \$2.8 billion of investment primarily in centralized wastewater treatment infrastructure (in comparison to stormwater, energy conservation, and water

conservation infrastructure).²⁹ With the passage of the bipartisan supported “Investing in Infrastructure and Jobs Act” (“IIJA” or Bipartisan Infrastructure Law “BIL”) in November of 2021, there were additional resources allocated to the SRF for water quality and drinking water (i.e., \$445 million).³⁰ SRF could be used to invest in green infrastructure projects (e.g., land conservation, nature-based solutions) for both mitigation and adaptation.

Accessing funding or financing resources for “parks and recreation” in Connecticut can be difficult. Identifying new mechanisms to access additional funding and financing resources, especially those that seek to unlock more private capital investment, could provide a catalyst to increase and accelerate investment in parks and recreation in Connecticut. The IIJA presents an opportunity to access funding and financing resources through formula or competitive grants for “parks and recreation”.

F. OTHER PROGRAMS

The following are other items of note with respect to “parks and recreation”:

- **Greenways** – it should be emphasized, that greenways are an integral part of the parks and recreation system as “linear parks” and provide active economic development (i.e., tourism), public health, and transportation opportunities. There is and/or will be 195 miles of greenway in Connecticut, that is frequently visited by millions of users a year, especially during COVID, who use the greenways for walking, jogging, and cycling on the trails for exercise, recreation, and relaxation.
- **No Child Left Inside** – launched in 2006, *No Child Left Inside*[®] is a promise to introduce children to the wonder of nature – for their own health and well-being, for the future of environmental conservation, and for the preservation of the beauty, character and communities of the state.
- **State Natural Heritage, Open Space & Land Acquisition Review Board** – is an independent advisory group of volunteers appointed by the Governor and leadership within the CGA under CGS 7-131(e) to oversee OWSA and RNHT programs.

G. STAKEHOLDER OUTREACH

In an effort to understand the public policy and marketplace context for “parks and recreation” in Connecticut, the Green Bank met with many organizations.³¹

These 24 organizations primarily represent non-profit organizations but include public and for-profit organizations as well.

The objectives of these one-hour conversations included:

²⁹ Including Title II and VI funds – <https://www.epa.gov/sites/default/files/2021-02/documents/ct.pdf>

³⁰ <https://www.whitehouse.gov/wp-content/uploads/2021/08/CONNECTICUT-The-Infrastructure-Investment-and-Jobs-Act-State-Fact-Sheet.pdf>

³¹ **Land Conservation** – American Forest Foundation, Audubon Connecticut, Connecticut Audubon, Connecticut Land Conservation Council, Conservation Finance Network, DEEP, Ecosystem Investment Partners, Goldman Sachs, Highstead, New England Forestry Foundation, New England Society of American Foresters, Quantified Ventures, Save the Sound, The Nature Conservancy, TNC’s Nature Vest Program, and Yale Forest School
Parks and Recreation – Connecticut Forest and Parks Association, Connecticut Greenways Council, Connecticut Recreation and Parks Association, DEEP, Green Eco Warriors, Keney Park Sustainability Project, Sierra Club, Trust for Public Lands, and Urban Resources Initiative.

- **Introductions** – to get a better understanding of the mission and initiatives of the various public, nonprofit, and for-profit stakeholders operating within the “parks and recreation” space, and to introduce the Green Bank;
- **Environmental Infrastructure** – inform the various stakeholders about the “environmental infrastructure” policy,³² process the Green Bank is pursuing to develop a Comprehensive Plan, and to elicit discussion on the following areas:
 - **Relevance** – how relevant “environmental infrastructure” and its components (e.g., parks and recreation) are to the stakeholder’s mission and initiatives;
 - **Policies and Targets** – what local, state, and federal policies (e.g., Community Investment Act), including plans (e.g., Green Plan) are important from the stakeholder’s perspective, and what targets (e.g., 21% open space land by 2023) are they seeking to achieve;
 - **Metrics** – what are the key metrics stakeholders believe are important in terms of monitoring and evaluating success from investments in “environmental infrastructure” improvements and “parks and recreation”;
 - **Vulnerable Communities** – how does the stakeholder’s organization think about the impacts that must be addressed from climate change to build the resilience of vulnerable communities; and
 - **Stakeholder Identification** – who else should the Green Bank meet with on the topic.

From these conversations, the Green Bank was able to develop a better understanding as to the role it might play in terms of financing “parks and recreation” from the perspective of its mission – to confront climate change.

H. FINDINGS

Based on the various meetings with public, nonprofit, and private stakeholders, the following are key findings with respect to parks and recreation (it should be noted that additional findings have been generalized in the footnote):³³

- **Consistent with Mission to Confront Climate Change** – “parks and recreation” reduces GHG emissions (e.g., carbon sequestration) and increases resilience (e.g., stormwater management, heat stress), and therefore is consistent with the Green Bank’s mission to “confront climate change”. Parks provide an excellent ability to address stormwater, bioswales, and mitigate flooding, and also sequester carbon through urban tree canopy cover.

³² Public Act 21-115 – An Act Concerning Climate Change Adaptation”

³³ Additional findings – opportunity to connect land trusts to hiking trails, BIPOC communities prioritize basic needs, municipalities shy away from open space investment because no staff to maintain, municipalities are giving up on federal grant programs because they are too onerous (e.g., reporting requirements), nonprofit membership groups have access to practitioners and contractors.

- **Public Health Improvement** – although no research was provided nor cited, stakeholders continuously spoke to the ability of urban and rural parks to provide public health benefits,³⁴ including, but not limited to outdoor places as respite from being inside (e.g., managing through COVID), and reducing heat stress (e.g., shade from trees, cooling from splashpads and pavilions). In subsequent analyses by the Green Bank in reading the literature, there were various relevant references noted, including:
 - “A wealth of research indicates that escaping to a neighborhood park, hiking through the woods, or spending a weekend by the lake can lower a person’s stress levels, decrease blood pressure and reduce the risk of asthma, allergies, diabetes, and cardiovascular disease, while boosting mental health and increasing life expectancy.”³⁵
 - “Spending time and living near green spaces have been associated with various improved mental health outcomes, including less depression, anxiety, and stress. Several studies have demonstrated a dose-response relationship between more time spent in green spaces and lower depression rates. Therefore, green space may be a potential buffer between inequitable neighborhood conditions and poor medical health outcomes.”³⁶
 - “Neighborhoods with more socioeconomically disadvantaged residents and families of color tend to have fewer nearby residential parks, and financial and transportation limitations that prevent access to parks and wilderness outside of city limits...For these reasons, promoting nature contact and ensuring equitable access to green spaces could play a role in improving health outcomes and behaviors, and reducing health disparities.”³⁷
 - “...a one-hundred dollar increase, in 2010 dollars, in per capita parks and recreation operational expenditures was associated with a decrease in mortality of 3.9 to 3.4 deaths per 100,000,...While a conceptual linkage between parks funding, use, availability, programming and health could be made, our analysis provides robust empirical evidence linking funding and health. When considering the topic of healthcare spending, we view parks and recreation as an indirect form of healthcare spending. Evidence suggests that many individuals view parks and recreation as an essential component of the healthcare system.”³⁸

- **Inadequate Investment in Economic Development** – parks serve as public places to support the economic development of a community. Municipal budgets often cut financial and human resources to parks first because they are not a public works priority. Park programs have to be self-sufficient (e.g., fees for services) like small businesses to survive. The availability of funding

³⁴ “Reconnecting people to the healing value of nature,” as noted by Herb Virgo from the Keney Park Sustainability Project, a 693-acre park located in Bloomfield, Hartford, and Windsor

³⁵ *How Much Nature is Enough? 120 Minutes a Week, Doctors Say* as reported by Knvul Sheikh of the New York Times (June 13, 2019)

³⁶ *Effect of Greening Vacant Land on Mental Health of Community-Dwelling Adults* by Eugenia C. South, et al. *Jama Network Open* (July 20, 2018)

³⁷ *Nature and Children’s Health: A Systematic Review* by Amber L. Fyfe-Johnson, et al. *Pediatrics* (October 2021)

³⁸ “The relationship between parks and recreation per capita spending and mortality from 1980 to 2010: A fixed effects model” in *Preventative Medicine Reports* by J. Tom Mueller, et al (January 2019)

resources to support parks and recreation is inadequate. Investment in parks is an investment in the infrastructure supporting economic development, housing, public health, and transportation – which goes beyond DEEP, and is inclusive of other state agencies, including DECD, DOH, DPH, and DOT, respectively.

- **Money is Not Always the Problem** – as important as local, state, federal, and private funding and financing resources are, sometimes not having enough people (including lack of diversity), having onerous or inappropriate processes (e.g., urban tree removal for powerline protection), an inability to speak to co-benefits (e.g., job creation, resilience, wellness), or lack of engagement of local communities can substantially inhibit progress towards increasing investment in parks and recreation.
- **Impact Metrics** – the following is a “high level” breakdown of the types of metrics appropriate for parks and recreation – see Table 6.

Table 6. Relevant Metrics Identified by Stakeholders on Parks and Recreation

Inputs	Outputs	Outcomes
<ul style="list-style-type: none"> ○ Investment in parks ○ Investment in projects ○ Sources of public (e.g., local, state, federal) and private funds ○ Leverage (i.e., public vs. private funds) ○ Individual investment (e.g., Community Match Fund, Green Liberty Bonds and Notes) ○ Funding (i.e., grants) vs. financing (i.e., loans) 	<ul style="list-style-type: none"> ○ # and types of amenities ○ Location of projects ○ Acres conserved (including donations vs. purchases) ○ # of users or visitors ○ Annual accessibility ○ Park revenues ○ # of closures ○ Tree density/linear street mile ○ Distance to a park ○ Acres/population ○ Acres/income ○ Increased engagement of BIPOC community to parks and recreation 	<ul style="list-style-type: none"> ○ GHG emissions reduced or sequestered ○ Resilience improvement (e.g., # people at reduced risk of flooding, heat exposure) ○ Water quality improvement (e.g., stormwater management, bioswales) ○ Jobs created ○ Address and quantify social determinants of health (i.e., wellness) ○ Leadership of BIPOC communities in building resilience for their own communities ○ Local property value ○ Tax revenue to state and local government from park tourism ○ Advancements in public policy to recognize the value of parks and recreation (e.g., municipal budgets)

- **Vulnerable Communities** – are being disproportionately impacted by the impacts of climate change (i.e., those who have contributed the least are being impacted the most). Structural racism is evidenced in vulnerable communities by applications for assistance (e.g., government grants) not being conducive to funding BIPOC communities and leaders (e.g., lack of trust), lack of inclusion of and inability for vulnerable populations to participate in regulatory processes (e.g., compensation for time), lack of workforce development opportunities, including accessible locations for training, and more.

These are the key findings from the stakeholders on parks and recreation.

I. OPPORTUNITIES

The following is a list of opportunities for consideration by the Green Bank given the broad categories of information and data, environmental markets and conservation finance, funding and financing sources, and other potential opportunities:

1. **Information and Data** – as a foundation, access to high quality information is important from which to base decisions. The following is a breakdown of opportunities for consideration with respect to information and data:
 - A. **ParkScore** – support the expansion of the TPL-URI ParkScore tool assessing the five (5) areas of quality parks beyond New Haven, and apply to the “Top 5” most populated cities in Connecticut. Explore the possibility of Sustainable CT including within its points-based system, as well as raising funds through the Community Match Fund.
 - B. **Pipeline Assessment** – work with CIRCA and DEEP to continuously build and assess the pipeline of potential GHG emission mitigation and climate change adaptation and resilience projects (e.g., type, size, scope, and estimated impact) related to parks and recreation (e.g., Meriden Green).³⁹
 - C. **Data Collection and Research** – support data collection and research that attempts to quantify the carbon offset, ecosystem services, public health, and economic development values of urban and rural parks. The research should seek to answer the question of “how does investment in parks result in co-benefits to climate change” with a focus on resilience and public health.
2. **Environmental Markets and Conservation Finance** – in terms of identifying potential carbon offset and/or ecosystem services revenue streams within compliance and voluntary markets that can support financing of parks and recreation, the following is a breakdown of opportunities for consideration with respect to environmental markets and conservation finance:
 - A. **Conserve Urban Lands as Parks** – improving access to parks and recreation in vulnerable communities, can restore brownfields and abandoned lots, reduce GHG emissions, increase resilience against the impacts of climate change (e.g., flooding, stormwater management), and improve health wellness. Finding ways to support the growth and development of urban parks (e.g., Remington Woods in Bridgeport,⁴⁰ Olin Power Farm in Hamden, Keney Park in Hartford, CT) and greening abandoned lots through public-private partnerships that can improve the local economy, improve public health, and confront climate change. Identifying mechanisms, including stormwater management, to raise funds for capital improvements and/or investments in new assets (e.g., urban

³⁹ <https://www.meridenct.gov/city-services/parks-and-recreation/meriden-green/>

⁴⁰ 420 acres (i.e., 350 acres in Bridgeport and 70 acres in Stratford), including a 40 acre lake sitting on an old Remington arms testing site and now brownfield owned by Corteva. Corteva currently undergoing site remediation which will require 3-4 years to complete and approximately \$80 million of remediation costs.

ecology wellness and/or sustainability centers) to modernize parks in vulnerable and BIPOC communities and make them more accessible will improve opportunities for economic development and public health.

- B. **Urban Tree Canopy** – support municipal efforts to increase urban tree canopy cover. When planted properly, a tree can save homeowners up to 20 percent on their energy costs, while simultaneously reducing stormwater runoff, improving air quality, reducing urban heat island effects, absorbing carbon, and increasing property value through curb appeal. Hartford has an aggressive tree planting program to grow from 25% (i.e., approximately 568,000 trees) to 35% (i.e., an additional 150,000 trees) tree canopy cover by 2070.⁴¹ Headquartered within the Hartford community, the Green Bank should support neighborhood tree planting, with a focus on the priority area of the Sheldon-Charter Oak neighborhood. Consideration could be given to exploring city forest credits for tree planting, with the Green Bank purchasing carbon offsets.⁴²

 - C. **Park Prescriptions (ParkRx)**– as the birthplace of renown park designer and landscape architect Frederick Law Olmstead, and the self-proclaimed “Insurance Capital of the World,” Hartford is the epicenter to where “park prescriptions” (or “ParkRx”) should be developed, researched, practiced, and disseminated. ParkRx advantages include low-cost relative to conventional medical interventions, safety, practicality, not requiring dispensing by highly trained professionals, and multiple co-benefits⁴³ – including a number of benefits that nature provides, including psychological, cognitive, physiological, social, spiritual, and tangible well-being.⁴⁴ The Green Bank could initiate public-private partnerships (e.g., collaboration with Aetna, a subsidiary of CVS Health and managed health care company) that results in ParkRx being used to prevent and treat chronic disease and promote health wellness, while investing in and continuously maintaining urban and rural parks and recreation infrastructure, especially by increasing access to such infrastructure by vulnerable communities. Work with the Department of Insurance, AccessHealthCT, Aetna, and the City of Hartford to develop ParkRx to enable increased investment in parks and recreation that will not only confront climate change but improve public health.
3. **Funding and Financing Sources** – in terms of identifying additional funding (i.e., grants) and financing (e.g., loans) that can increase and accelerate investment, the following is a breakdown of opportunities for consideration with respect to funding and financing of parks and recreation:
- A. **Green Liberty Bonds** – leverage the strength of the Green Bank balance sheet, with the award-winning climate bond structure of the Green Liberty Bonds modelled after the War Bonds of the 1940’s, to support investments in parks and recreation:
 - i. **Pilot Revolving Loan Fund for Buy-Protect-Sell** – modelling the Conservation Fund’s successful \$150 MM green bond issuance in 2019 (i.e., 10-year rated A3

⁴¹ Hartford Connecticut’s Tree Canopy Action Plan 2020.

⁴² <https://www.cityforestcredits.org/>

⁴³ “Nature Contact and Human Health: A Research Agenda” in Environmental Health Perspectives by Frumkin, Howard et al (July 2017)

⁴⁴ “What are the Benefits of Interacting with Nature?” in the International Journal of Environmental Reserahc and Public Health by Keniger, Lucy, et al (2013)

by Moody's), which created the Working Forest Fund,⁴⁵ and the Farmland Protection and Affordability Investment ("Farmland PAI") program of Washington State,⁴⁶ purchase land, including urban lots and potential linear greenways (e.g., abandoned railway lines), and work with appropriate stakeholder partners (e.g., community based organizations) to develop them into parks, community gardens, urban farms, and greenways and connect to ParkRx.

- ii. **Passport to Parks Bonds** – work with DEEP to issue Green Liberty Bonds to raise capital from individual and institutional investors today for capital improvements and additional recreational assets needed at state parks backed by the expected revenues from Passport to Parks (i.e., generates approximately \$20 MM a year). Focus the use of proceeds from such bonds on parks located within proximity to vulnerable communities to increase access to the co-benefits of such investments (e.g., resilience, public health).
 - iii. **Municipal Resilience or Stormwater Bonds** – work with local governments to develop a program to regularly issue Green Liberty Bonds and/or Green Liberty Notes to raise capital from individual and institutional investors today for capital improvements (e.g., bioswales) and additional recreational assets (e.g., trailways) at municipal places that improve resilience (e.g., coastal wetlands) backed by conveyance fees or reserve funds.⁴⁷
- B. **Community Match Fund** ("CMF") – a program of Sustainable CT, the Community Match Fund provides fast, flexible funding, and support for community engagement on a wide-range of sustainability projects. It uses an innovative, online tool to connect grant contributions from the "crowd," which are matched by various donor interests. As of January 1, 2022, the Fund has raised \$1.3 MM from nearly 10,000 individual contributors, which was matched by \$1.1 MM from various sponsors, and supported 195 projects. Work with Sustainable CT to enable the CMF to work for parks and recreation (e.g., ParkScore), as well as expand opportunities for points within the sustainability certification program.
- C. **State Revolving Funds** – although not a Green Bank resource, existing and additional SRF resources could be used by the state to provide low-cost and long-term capital to finance green infrastructure projects (e.g., parks and recreation) in Connecticut. The Green Bank could recommend to its state colleagues that a portion of the SRF be used for green infrastructure projects in Connecticut as is being done by other states. Under the new guidelines for SRF resources, 49% of federal funds can be used as grants or forgivable loans for vulnerable communities. Consideration could be given to protecting parks, especially urban parks, where such loan forgiveness or grants in vulnerable

⁴⁵ The Working Forest Fund invests green bond proceeds to buy the most at-risk private forests. Once it owns the forest, it protects the land (i.e., easement), develops sustainable harvesting, wildlife, and habitat restoration plans, and then resells the land to private or public buyers to repay the loan. This fund has permanently conserved 500,000 acres, permanently storing over 210 MMTCO_{2e}.

⁴⁶ <http://www.wshfc.org/farmranch/FarmPAISlides.pdf>

⁴⁷ Public Act 19-77 "An Act Authorizing Municipal Climate Change and Coastal Resiliency Reserve Funds"

communities could support such opportunities for improving green spaces and access to parks.

- D. **Infrastructure Investment and Jobs Act** – there are a number of competitive grant programs that can be accessed to provide resources to cleanup brownfields. Exploring whether or not these funds can be accessed to cleanup former industrial property and convert them to urban parks (e.g., Bridgeport, Hamden) should be considered. In addition to clean-up programs, there are other programs for park planning, mobility, and other programs relevant to increasing and improving parks and recreation. The Green Bank could consider leveraging the strength of its financial position as a source of resources to hire grant writer(s), and/or serve as matching funds to improve success in competing for and winning federal resources through the IJA.
4. **Other Potential Opportunities** – there are a number of other potential opportunities that can support financing of parks and recreation, including:
- A. **Clean Energy and Sustainability Accelerator** – within the climate change programs proposed as part of the Build Back Better Act (“BBBA”) is the Clean Energy and Sustainability Accelerator (“CESA”). Modelled after the Green Bank, the \$29 billion allocated under CESA would provide state and local government with access to capital to finance projects that reduce GHG emissions, including nature-based solutions (e.g., parks and recreation).
- B. **Climate Conservation Corps** – within the climate change programs proposed as part of the BBBA is the Climate Conservation Corps. Modelled after the Civilian Conservation Corps under President Franklin Roosevelt, the climate program centered around equity and environmental justice, could hire hundreds of thousands of young people to help restore and support parks. The Green Bank could include within its investment activity, the requirement for developers to include Climate Conservation Corps members. If Climate Conservation Corps is passed through the BBBA, then Connecticut should prioritize the involvement of BIPOC⁴⁸ populations and hire a leader from the BIPOC community to run it.
- C. **Olmstead 200** – The acclaimed landscape architect Frederick Law Olmstead was born in Hartford, CT. In honor of the 200th anniversary of his birth in 1822, consideration could be given to initiating an urban parks design contest.⁴⁹ For example, the Green Bank could put up a prize money to the best design of an urban park in Connecticut with a focus on Keney Park (Bloomfield, Hartford, and Windsor), Olin Power Farm (Hamden), and Remington Woods (Bridgeport and Stratford). Connecting Olmstead’s birthplace with the “Insurance Capital of the World” as noted above, is an opportunity for ParkRx to support public health wellness.

⁴⁸ Black, Indigenous, or People of Color

⁴⁹ <https://olmsted200.org/>

- D. Host Federal Official** – through the Intergovernmental Personnel Act (“IPA”),⁵⁰ the Green Bank could temporarily host a professionally skilled federal official from the Environmental Protection Agency, National Park Service, Health and Human Services, or other relevant agency to facilitate cooperation between the federal government and the Green Bank. Such an assignment would need to ensure that it is for sound public purposes and furthers the goals and objectives of the participating organizations.

These are a few of the opportunities identified by the Green Bank to support its mission and advance parks and recreation in Connecticut. Developing a method for prioritizing what opportunities under consideration are ultimately pursued, given the limited human and financial resources, and organizational structure of the Green Bank, is an activity for a later date.

J. HISTORY OF LEADERSHIP AND INNOVATION

The history of leadership and innovation in “clean energy” technology in Connecticut is marked, including those like:

- **Daniel Halladay** – an entrepreneur who lived in Coventry, CT who invented the self-regulating wind pump in the mid- to late-1800’s, which enabled the transcontinental railroad;^{51,52}
- **Albert Pope** – an entrepreneur who lived in Hartford, CT who manufactured thousands of electric vehicles in the early 1900’s, including one that transported President Roosevelt;⁵³ and
- **Bernard Baker** – an entrepreneur who lived in Bethel, CT who invented and manufactured fuel cells, which provide high reliable power.⁵⁴

Beyond technology, Connecticut is also marked by leadership in society, including:

- **Freeman Sisters** – entrepreneurs who lived in Bridgeport, CT whose historic landmark homes once served as a destination in the Underground Railroad, and now stand in the shadows of a coal-fired power plant demonstrating environmental injustice in our society; and
- **Gina McCarthy** – an innovator who served as Connecticut’s Commissioner of the Department of Environmental Protection under Governor Rell, to later become the Administrator of the USEPA under President Obama, and climate czar under President Biden.

The history of leadership and innovation in “environmental infrastructure” in Connecticut is also significant, especially when it comes to “parks and recreation,” including:

- **Fredrick Olmsted** – an innovator who was born in Hartford, CT who is known as an American landscape architect for designing iconic parks such as Central Park in New York City.^{55,56}

⁵⁰ [https://www.usgs.gov/human-capital/intergovernmental-personnel-act-ipa-mobility-program-guidance#:~:text=The%20Intergovernmental%20Personnel%20Act%20\(IPA,and%20the%20non%2DFederal%20entity](https://www.usgs.gov/human-capital/intergovernmental-personnel-act-ipa-mobility-program-guidance#:~:text=The%20Intergovernmental%20Personnel%20Act%20(IPA,and%20the%20non%2DFederal%20entity)

⁵¹ https://en.wikipedia.org/wiki/Daniel_Halladay

⁵² https://en.wikipedia.org/wiki/Albert_Augustus_Pope

⁵³ <https://whereilivect.org/made-in-connecticut-albert-popes-amazing-automobiles/>

⁵⁴ https://en.wikipedia.org/wiki/Bernard_S._Baker

⁵⁵ https://en.wikipedia.org/wiki/Frederick_Law_Olmsted

⁵⁶ Check with State Historian Walt Woodward and former State Archaeologist Nick Bellantoni for additional thoughts

- **Stephen Kellert** – a professor of the Yale School of the Environment, pioneered the theory of biophilic design, an emerging field that promotes improved health and wellbeing by creating connections between people and nature in the built environment.⁵⁷

It should also be noted that the Entertainment and Sports Programming Network (“ESPN”) is the global leader in sports media, and headquartered in Bristol, CT.

It is this history of leadership and innovation in “clean energy” and “environmental infrastructure” that makes the Constitution State a special place from which to initiate and launch unique ideas that transform technology and society.

K. REFERENCES

In addition to the conversations with stakeholders, the Green Bank reviewed the following documents to support its findings and opportunities:

- **Green Plan** – Comprehensive Open Space Acquisition Strategy (2016-2020 Green Plan)
- **Going Outside in Connecticut** – Statewide Comprehensive Outdoor and Recreation Plan (SCORP) for 2017-2022

L. DEFINITIONS

The following are important definitions when it comes to “parks and recreation” in Connecticut:

- **Ecosystem Services** – there are four types of ecosystem services, including:
 - **Provisioning Services** – provide goods to people including food, water, and materials;
 - **Regulating Services** – refer to benefits gained by natural control of ecosystem processes (e.g., clean air, filter water, bacteria decompose waste, flood control);
 - **Cultural Services** – provide humans meaningful interaction with nature; and
 - **Supporting Services** – provide indirect benefits through provision of habitat, biodiversity, and support for all other ecosystem services.
- **Environmental Infrastructure** – means structures, facilities, systems, services and improvement projects related to (A) water, (B) waste and recycling, (C) climate adaptation and resiliency, (D) agriculture, (E) land conservation, (F) parks and recreation, and (G) environmental markets, including, but not limited to, carbon offsets and ecosystem services.
- **Greenway** (CGS 23-100) – means a corridor of open space that (1) may protect natural resources, preserve scenic landscapes and historical resources or offer opportunities for recreation or nonmotorized transportation, (2) may connect existing protected areas and provide access to the outdoors, (3) may be located along a defining natural feature, such as a

⁵⁷ <https://environment.yale.edu/news/article/remembering-stephen-kellert-longtime-professor-of-social-ecology>

waterway, along a man-made corridor, including an unused right-of-way, traditional trail routes or historic barge canals or (4) may be a greenspace along a highway or around a village.

- **Open Space Land** (CGS 12-107(b)(3))⁵⁸ – open space land means any area of land, including forest land, land designated as wetland under section 22a-30 and not excluding farm land, the preservation or restriction of the use of which would (A) maintain and enhance the conservation of natural or scenic resources, (B) protect natural streams or water supply, (C) promote conservation of soils, wetlands, beaches or tidal marshes, (D) enhance the value to the public of abutting or neighboring parks, forests, wildlife preserves, nature reservations or sanctuaries or other open spaces, (E) enhance public recreation opportunities, (F) preserve historic sites, or (G) promote orderly urban or suburban development.
- **Parks and Recreation** – parks and recreation are resources and services provided for the purposes of leisure, entertainment, and recreational pursuits. Resources may be public spaces and facilities like parks, nature preserves, open space areas, greenways, trails, and built structures for sport, recreation, or arts programs. Examples of services include recreation activity programs, athletic leagues, special events, arts programs, and environmental education programs. The field of parks and recreation also encompasses resources and services offered by sector, though they are only delivered to members or paying visitors. Examples include YMCAs, health and fitness centers, resorts, and guide services. There are also quasi-public providers like power companies, land trusts, and other authorities that manage resources that may be used for recreation purposes. An example in Connecticut is the MDC reservoir trail.⁵⁹
- **Resilience** – means the ability to prepare for and adapt to changing conditions and withstand and recover rapidly from deliberate attacks, accidents or naturally occurring threats or incidents, including, but not limited to, threats or incidents associated with the impacts of climate change.
- **Vulnerable Communities** – means populations that may be disproportionately impacted by the effects of climate change, including, but not limited to, (1) low and moderate income communities, (2) environmental justice communities pursuant to section 22a-20a, (3) communities eligible for community reinvestment pursuant to section 36a-30 and the Community Reinvestment Act of 1977, 12 USC 2901 et seq., as amended from time to time, (4) populations with increased risk and limited means to adapt to the effects of climate change, or (5) as further defined by the Department of Energy and Environmental Protection in consultation with community representatives.

⁵⁸ https://www.cga.ct.gov/current/pub/chap_203.htm#sec_12-107b

⁵⁹ As defined by the Connecticut Recreation and Parks Association



Agriculture

Stakeholder Engagement and Research
on Environmental Infrastructure

AGRICULTURE

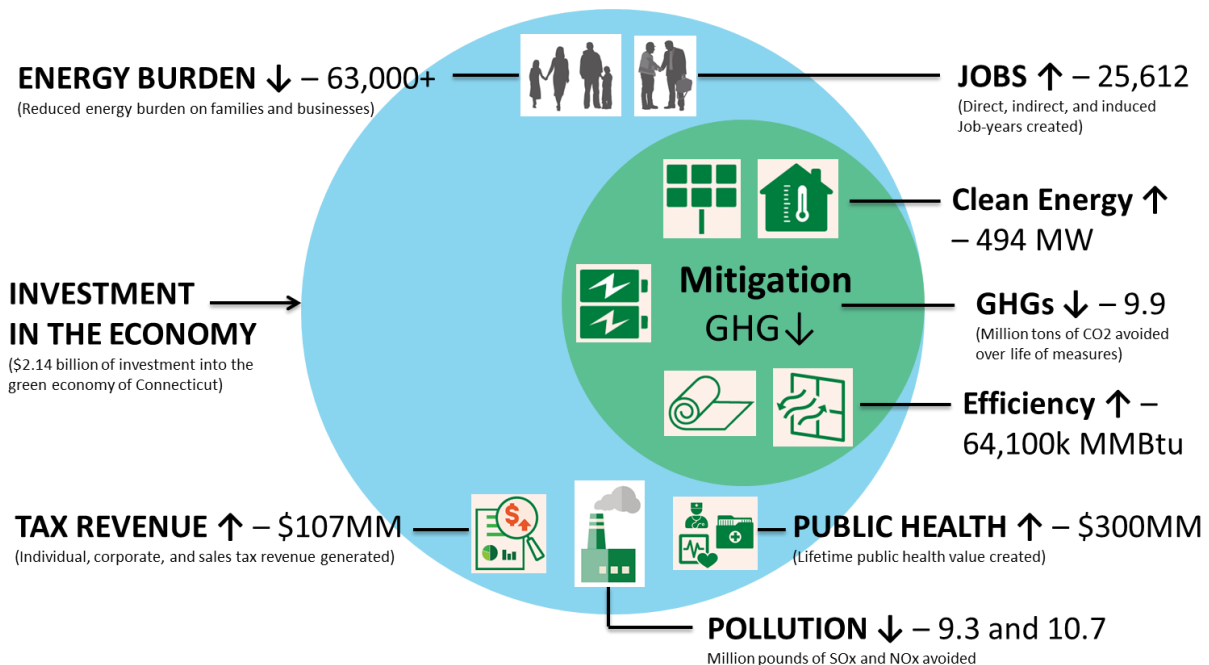
RESEARCH ON ENVIRONMENTAL INFRASTRUCTURE

A. OVERVIEW

On July 6, 2021, Governor Ned Lamont signed Public Act 21-115 “An Act Concerning Climate Change Adaptation” (“the Act”) into law. The bipartisan-supported public policy was among the sixty-one (61) recommendations made by the Governor’s Council on Climate Change (“GC3”), including a recommendation to expand the scope of the Connecticut Green Bank (“Green Bank”) beyond “clean energy” to include “environmental infrastructure” (i.e., Recommendation #57).

Since its founding over a decade ago, the Green Bank has focused its efforts on using a limited amount of public resources to mobilize multiples of private investment in Connecticut to increase and accelerate the deployment of “clean energy” to deliver social and environmental impact – see Figure 1.

Figure 1. Decennial Impact of the Green Bank with focus on “Clean Energy” Deployment and Mitigation of GHG Emissions



Given its mission “to confront climate change and provide all of society a healthier and more prosperous future by increasing and accelerating the flow of private capital into markets that energize the green economy,” the Green Bank helps the State of Connecticut achieve its ambitious public policy objectives (e.g., GHG emission reductions targets, renewable portfolio standards). In so doing, by 2025, no less than 40 percent of investment and benefits from its programs are to be directed to vulnerable communities.¹

¹ “Vulnerable communities” means populations that may be disproportionately impacted by the effects of climate change, including, but not limited to, low and moderate income communities, environmental justice communities pursuant to section 22a-20a, communities eligible for community reinvestment pursuant to section 36a-30 and the Community Reinvestment Act of 1977, 12 USC 2901 et seq., as amended from time to time, populations with increased risk and limited means to adapt to the effects of climate change, or as further defined by DEEP in consultation with community representatives.

The Act, expands the scope of the Green Bank beyond “clean energy” to include “environmental infrastructure,” and includes the following key provisions:

- **Definition** – “environmental infrastructure” means structures, facilities, systems, services and improvement projects related to (A) water, (B) waste and recycling, (C) climate adaptation and resiliency, (D) agriculture, (E) land conservation, (F) parks and recreation, and (G) environmental markets, including, but not limited to, carbon offsets and ecosystem services;
- **Comprehensive Plan** – requirement for the Green Bank to develop a Comprehensive Plan² prior to implementing any programs or initiatives related to “environmental infrastructure”;
- **Reporting** – inclusion of the Banks Committee and the Environment Committee, alongside the Energy and Technology Committee and Commerce Committee in terms of reporting; and
- **Bonding** – the ability to issue 25-year bonds for “clean energy” and 50-year bonds for “environmental infrastructure” (i.e., no more than the useful life of the projects), supported by the Special Capital Reserve Fund (“SCRF”), for up to 25 years to improve the rating of the bonds issued.

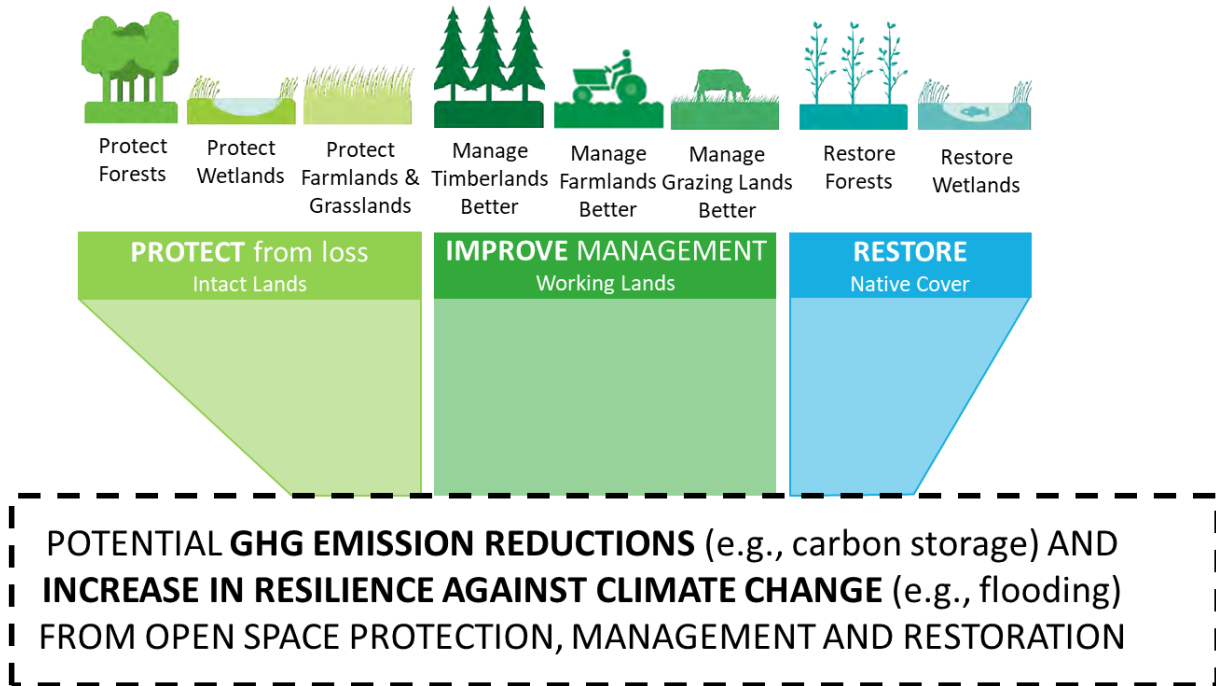
This document attempts to summarize the findings from the research and outreach efforts conducted by the Green Bank³ on “agriculture” from December 2021 through March of 2022 and includes the following sections: (A) overview, (B) key public policies, (C) market potential, (D) target, (E) funding and financing programs, (F) other programs, (G) stakeholder outreach, (H) findings, (I) opportunities, (J) history of leadership and innovation, (K) references, and (L) definitions.

Nature-based solutions (e.g., agriculture) such as protecting farmlands from loss and improving farming practices, can support the Green Bank’s mission by both mitigating the GHG emissions that cause climate change (e.g., climate smart agriculture) and increasing resilience against the impacts of climate change (e.g., flood protection) – see Figure 2.

² https://www.ctgreenbank.com/wp-content/uploads/2021/07/3_Comprehensive-Plan_FY-2020-and-Beyond_Final.pdf

³ Led by Bryan Garcia (President and CEO) and Ashley Stewart (Consultant)

Figure 2. Nature Based Solutions to Confront Climate Change - Mitigation and Resilience



B. KEY PUBLIC POLICIES

The following are key public policies that advance “agriculture” in Connecticut, including, but not limited to:

1. **State Plan of Conservation and Development** (CGS 16a-24) – is an overarching statement of state policy in matters pertaining to land and water resource conservation and development. The Office of Policy and Management (“OPM”) prepares revisions to the State Conservation and Development Plan (“State C&D Plan”) on a recurring 5-year cycle and submits it for adoption by the Connecticut General Assembly (“CGA”). Once adopted, the State C&D Plan is then implemented by state agencies whenever they undertake certain actions.⁴ The current State C&D Plan (i.e., for 2018-2023), includes the relevant “clean energy” and “environmental infrastructure” items, including, but not limited to:
 - A. **Greenhouse Gas Mitigation** – reducing carbon dioxide emissions in the state consistent with the recommendations of the Connecticut Climate Change Preparedness Plan (i.e., 5.10);
 - B. **Climate Adaptation and Resilience** – utilizing the state’s renewable power generation potential to the extent compatible with the state goals for environmental protection, and minimize potential impacts to rural and suburban character and agricultural and scenic resources when siting new power generation facilities and/or transmission infrastructure (i.e., 4.8); and

⁴ Quasi-publics are not subject to this requirement

- C. **Agriculture** – supporting community-based agriculture, historic preservation, and access to urban green spaces and waterways (i.e., 1.11), encouraging and promoting access to parks and recreational opportunities, including trails, greenways, community gardens, and mixed-income housing (i.e., 2.8), promoting agricultural businesses and supportive industries that are vital to the regional economy, preserve prime farmland through the acquisition of development rights, and when avoidance of such lands is not practical, minimize the loss of or conversion of agricultural lands by state-sponsored development actions (i.e., 4.10), promoting Connecticut’s commercial and recreational fishing and aquaculture industries (i.e., 4.11), preserving and maintaining traditional working lands for the production of food, fiber, horticultural plant production, and supporting niche agricultural operations that enhance community food security throughout Connecticut (i.e., 5.8).
2. **Executive Order 21-3** – On December 16, 2021, Governor Ned Lamont signed Executive Order 21-3 which calls for 23 actions supporting more than thirty recommendations from the Governor’s Council on Climate Change, including several recommendations on working lands:⁵
- A. **Forest Climate Resilience and Mitigation Potential** – DEEP engagement of stakeholders to ensure Connecticut’s forests continue to be resilient against the impacts of climate change and to maximize forest potential to sequester and store carbon in support of Connecticut’s GHG emission reduction goals.
 - B. **Agriculture Climate Resilience and Mitigation Potential** – DoAg engagement of stakeholders to ensure Connecticut’s working lands and soils continue to be resilient against the impacts of climate change and to maximize forest potential to sequester and store carbon in support of Connecticut’s GHG emission reduction goals.
 - C. **Climate Resilience Using Nature-Based Solutions on State Properties** – DEEP and Department of Administrative Services (“DAS”) to develop guidance for state agencies to use nature-based solutions for flood and erosion control and stormwater management, integrate coastal marsh migration in state projects in coastal areas, and utilize low impact development and green infrastructure in new state construction and state-funded construction or redevelopment.
3. **Use Value Assessment Law** (Public Act 490 or CGS 12-107a-f)⁶ – passed by the CGA in 1963, it allows a farm, forest, or open space land to be assessed at its use value rather than its fair market or highest and best use value (as determined by the property's most recent "fair market value" revaluation) for purposes of local property taxation. Without the lower use value assessment, most landowners would have to sell the land because they would not be able to afford the property taxes on farm, forest, or open space land. It must be noted that Public Act 490 allows farmers to continue to farm, and other landowners to continue to own forest and open space land without being forced to sell it to pay the local property taxes. When the legislature passed Public Act 490 in 1963, it included in the law's wording that "it was in the public interest to encourage the preservation of farm, forest, and open space land." Studies

⁵ It should be noted that Connecticut is a member of the United States Climate Alliance, and one of the original signatories to the Natural and Working Lands Challenge in 2018 – <http://www.usclimatealliance.org/nwlchallenge>

⁶ https://www.cga.ct.gov/current/pub/chap_203.htm#sec_12-107a

done across the nation have conclusively proven that property tax revenues generated by farm, forest, or open space land, are far greater than the expenditures by the town to service that land. For example, under the current structure, the residential sector costs a town more to service than the amount of property tax generated from that sector. Thus, farm, forest, and open space land can actually help control and maintain reasonable rates of property taxation for all of a town's taxpayers.

4. **Ten Mill Program** (CGS 12-96) – Ten Mill Program was developed in 1913 and required forest landowners to make a 100-year commitment to maintaining land as forest land in exchange for municipalities holding the property at a 10-mill rate and the valuation of the land at evaluation for 50 years after. The Ten Mill program has not added new properties since the 1970's, however, both programs provide support to landowners that encourages conservation and open space.
5. **Property Tax Exemptions** (CGS 12-81) – including farming tools (38), farm products, including produce and animals (39-42), and temporary structures (73). In addition to PA 490, a municipality may also vote to abate up to 50 percent of the property taxes of various farms (e.g., dairy, fruit, nursery) if the farm employs nontraditional cultivation methods (i.e., CGS 12-81m). And farm machinery (except motor vehicles) and building (per building) up to \$100,000 in value is already exempt from local property taxes, and a municipality may vote to provide an additional \$100,000 exemption for machinery and/or buildings (e.g., housing for seasonal employees).
6. **Open Space Target** (CGS 23-8)⁷ – establishes a 21% (i.e., 673,210 acres) of state land area by 2023 held by open space land, with 10% from the state (e.g., forests, parks) and not less than 11% from partners (e.g., municipalities, water companies, or non-profit land conservation organizations). The Comprehensive Open Space Acquisition Strategy (or “Green Plan”)⁸ is the comprehensive strategy for achieving the state goal, which includes priorities for strategic acquisitions of open space for climate change resiliency and preserving open space in perpetuity for state lands with high conservation value.
7. **Community Investment Act** (Public Act 05-228)⁹ – “An Act Concerning Farm Land Preservation, Land Protection, Affordable Housing and Historic Preservation,” also known as the Community Investment Act (“CIA”), CIA provides a dedicated and consistent source of funding for state preservation of open space (Department of Energy and Environmental Protection or “DEEP”), farmland (Department of Agriculture or “DoAg”), historic sites (Department of Economic and Community Development or “DECD”), and affordable housing (Connecticut Housing Finance Authority or “CHFA”). Through a \$40 surcharge on local land recordings (i.e., \$1 to Town Clerk, \$3 to local government, \$10 supplemental income to dairy farmers, and \$26 to State Treasurer), about \$22 MM is raised each year, which is equally distributed in four (4) parts to the priority funding areas. DoAg is required to distribute CIA funds as follows: \$100,000 for the “Connecticut Grown” program, \$75,000 for Connecticut Farm Link Program, and \$1 million for the Agriculture Viability Grants Program. CIA also funds DoAg’s Farmland Preservation

⁷ <https://law.justia.com/codes/connecticut/2012/title-23/chapter-447/section-23-8/>

⁸ <https://portal.ct.gov/DEEP/Open-Space/The-Green-Plan>

⁹ <https://www.cga.ct.gov/2005/ACT/Pa/pdf/2005PA-00228-R00SB-00410-PA.pdf>

Programs and supports the Connecticut Food Policy Council, Connecticut Seafood Advisory Council, and Connecticut Farm Wine Development Council.

8. **Forest Management Act** (CGS 23-20(b))¹⁰ – makes several changes in the Public Act 490 tax relief program for owners of eligible forest land and authorizes the Commissioner of DEEP to apply for certification or licensure of publicly owned woodlands and products from those woodlands under at least one of nine specified sustainable forest programs.¹¹ The 490 program provides farm, forest, and open-space landowners with tax relief to reduce the financial pressure to convert their property to other uses. Forest landowners whose property meets certain criteria may apply to the state forester for the relief.

9. **Climate Smart Agricultural Practices** – as part of the passage of the budget by the Connecticut General Assembly within the 2022 legislative session, “An Act Concerning Climate Smart Agricultural Practices” was passed. Beyond providing \$14 MM in funding resources to support farmers through the policy, the DoAg may pay or reimburse nonprofit organizations, soil and water conservation districts, UCONN Extension Services, or municipalities for providing technical assistance, distributing grant funds to producers, and other activities that will increase the number of farmers who are implementing climate-smart agriculture and forestry practices.

In order to identify opportunities to mobilize private investment, it is important to understand the public policy context in which “agriculture” operates. With the focus on the Green Bank’s mission (i.e., confront climate change), public policy provides a mechanism to catalyze private investment.

C. MARKET POTENTIAL

Land Cover

The following is a breakdown of the markets potential for “agriculture” (i.e., farmland), including other natural forms of land cover (i.e., forestland and wetlands) – see Table 1.

Table 1. Land Cover in Connecticut (2015)¹²

3,179,253 Acres				
Land and Water in Connecticut				
921,827 Acres Developed Land ¹³ 29%	233,847 Acres Farmland 7%	1,873,471 Forestland ¹⁴ 59%	129,153 Wetlands ¹⁵ 4%	20,955 Other Lands ¹⁶ 1%

More than 70% of Connecticut’s land is farmland, forestland, or wetland – see Figure 3.

¹⁰ Kingdon Woodland Assurance Scheme, or Smart Wood Program

¹¹ Sustainable Forestry Initiative Program, American Tree Farm System, Canadian Standards Association’s Sustainable Management System Standards, Finnish Standard, Forest Stewardship Council, Pan-European Forest Certification Program, Swedish Standards, United Kingdom Woodland Assurance Scheme, or Smart Wood Program

¹² UCONN CLEAR Project – 2015 Land Cover

¹³ Includes “Developed,” “Turf & Grass,” and “Other Grasses” classifications

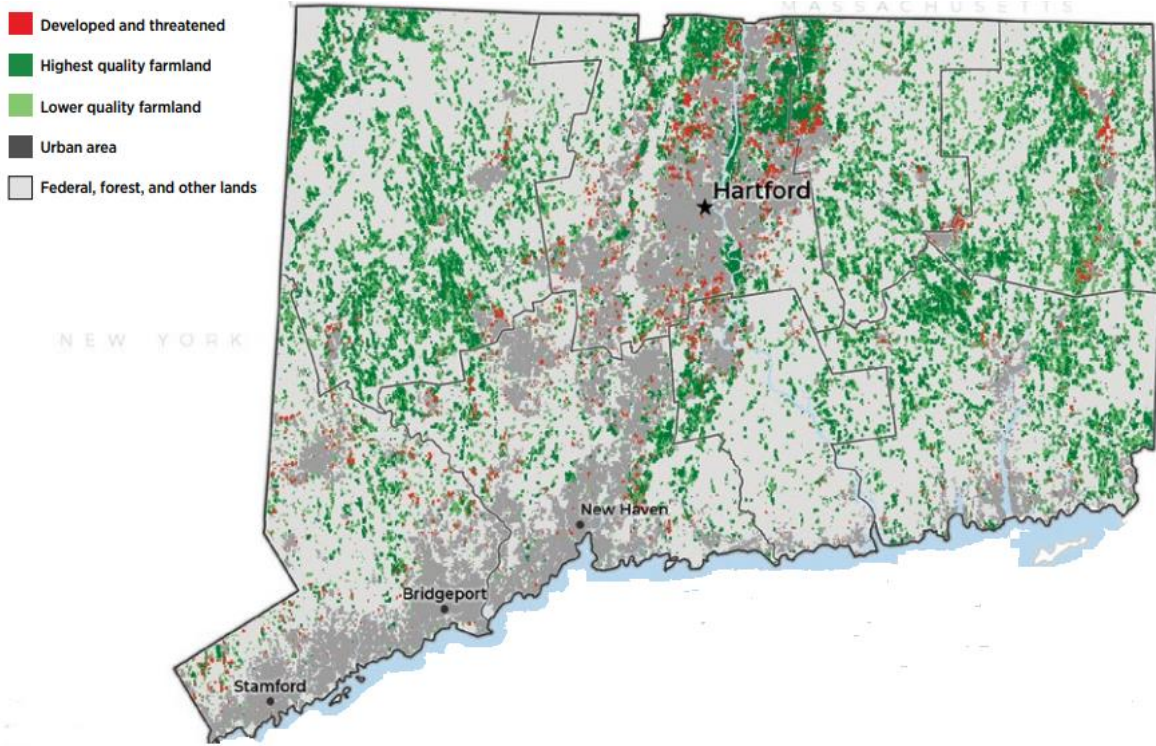
¹⁴ Includes “Deciduous Forest,” “Coniferous Forest,” “Forested Wetland,” and “Utility-Rights-of-Way (Forest)” classifications

¹⁵ Includes “Water,” “Non-Forested Wetlands,” and “Tidal Wetlands” classifications

¹⁶ Includes “Barren” classification

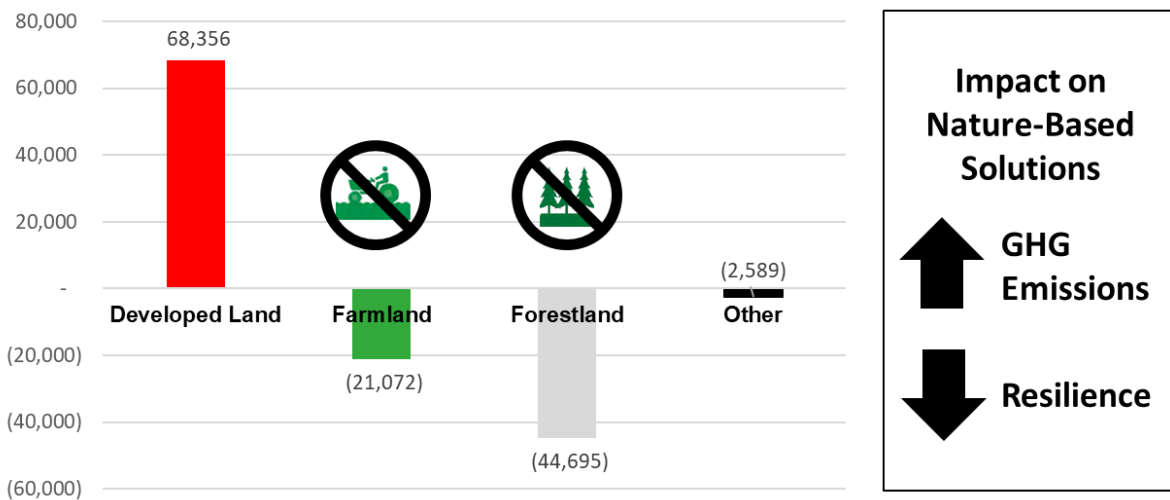
It should be noted that CGS 23-20(b) allows DEEP to apply for sustainable forest management status for its 175,000 acres of state forests at 33 locations. State forests achieving such certification status may create opportunities to sell sustainably harvested timber or other wood products from state-owned forestlands.

Figure 3. Statewide Land Cover Map of Connecticut



Over the past twenty years, farmland and forestland have been lost to development – see Figure 4.

Figure 4. Statewide Land Cover Change (Acres) from 1995-2015



From 2001 through 2016, approximately 6% of the state’s farmland was converted to urban or low-density residential development – placing the state in the top three nationally in percent of farmland lost to development.¹⁷ This loss of farmland and forestland, results in an increase in GHG emissions and a reduction in resilience as a result of development. Therefore a “no net loss of farmlands and forestlands” policy is important when it comes to confronting climate change in Connecticut.¹⁸

Use Value and Local Property Taxes

Recognizing the many public benefits nature provides the residents and businesses of the state, it is a policy in Connecticut that owners of farms, forests, and open space NOT experience burden through excessive property tax assessments that do not represent or align with the owner’s current land-use. Public Act 490, known as the current-use law, allows farms, woodlots, or open space to be assessed at its use value, rather than its fair market or highest and best use value for purposes of local property taxation – see Table 2.

Table 2. 2020 Recommended Land Use Values per Acre per Public Act 490 (Effective October 1, 2020)

Category	State-Wide	River Valley
Tillable A	\$1,880	\$2,530
Tillable B	\$1,280	\$1,810
Tillable C	\$1,110	\$1,690
Tillable D	\$850	\$1,170
Orchard E	\$990	\$990
Pasture F	\$280	\$280
Swamp, Ledge, Scrub G	\$40	\$40
Woodland, Forestland	\$390	\$390

Assessed property tax is calculated at the town mill rate times the number of acres times the value of the land – in case of Public Act 490 land, the value is use value per the table above.

The following is a breakdown of natural lands (i.e., farmland, forestland, and wetlands, including open space land) in Connecticut served by the use value for property taxes under Public Act 490 – see Table 3.

Table 3. Natural Lands in Connecticut Served by Public Act 490

2,236,471 Acres Natural Lands 70%		921,827 Acres Developed Land (including Other) 30%
856,385¹⁹ Acres Natural Lands Served by Public Act 490 38%	1,380,086 Acres	

¹⁷ “Planning for Agriculture – A Guide for Connecticut Municipalities: Emerging Agricultural Trends” by the American Farmland Trust and Connecticut Department of Agriculture (2020 Edition) (Page 19)

¹⁸ It should be noted that Connecticut is a signatory to the Natural and Working Lands Challenge of the United States Climate Alliance where there is an action to support an Alliance-wide goal to maintain natural and working lands as a net sink of carbon and protect and increase carbon storage capacity, while balancing near and long-term sequestration objectives.

¹⁹ As of September 15, 2021 with 83% of towns reporting – <https://portal.ct.gov/DEEP/Forestry/Forest-Land-Taxation/Classification-of-Land-as-Forest-Land>

233,895 Acres Farmland 27%	465,774 Acres Forestland 54%	149,942 Acres Open Space Land 18%	6,774 Acres Other Land 1%	Natural Lands <u>not</u> Served by Public Act 490 62%	
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Farmers pay an estimated \$34.5 MM per year in property taxes.²⁰

Economic Development and Other Factors

The agriculture industry in Connecticut is worth \$5.2 billion,²¹ supports 29,163 jobs, 5,521 farms totaling approximately 381,539 acres, including from cropland (i.e., 148,609 acres), pastureland (i.e., 31,923 acres), and woodlands (i.e., 201,007 acres) and 69% of farms are less than 50 acres, including:

- **Ownership** – 72% are owned and operated vs. leased from others, 6.5% of farms and 10% of farmland is operated by tenant farmers who own none of the land they farm; and
- **Demographics** – 31% of producers are 65 or older, over 40% of producers are woman, and less than 2% of producers are BIPOC (compared to 37% BIPOC population in Connecticut).²²
- **Example Products** – from land and sea farms, including, but not limited to:
 - **Dairy Farms** – there are 90 licensed dairy farms that produce 428 million pounds of milk in 2019 (i.e., enough to satisfy about 86% of the milk consumed by Connecticut residents), and nearly \$80 million in dairy products in 2020;
 - **Poultry Farms** – there are 1265 egg-laying and 159 meat producing chicken farms, with \$260 million in poultry and poultry product sales in 2020; and
 - **Shellfish Farms** – 300 licensed farmers, 75,000 acres of shellfish farms are available for cultivation in Connecticut’s coastal waters, producing 450,000 bushels of hard clams and 200,000 bushels of oysters, and \$30 million in shellfish products per year, the fastest growing agriculture sector in the state.

It is estimated that for every \$1 million of expenditures in agriculture, that between 20 to 40 jobs are created (e.g., 5, 8, and 35 jobs per \$1 million of expenditures from poultry and egg production, dairy cattle and milk production, and commercial fishing, respectively).²³

Farms require on average 35 cents in Cost of Community Services (“COCS”) for each dollar of property tax paid, in comparison to 25 cents for commercial and industrial, and \$1.12 for residential.

D. TARGET

There are two potential targets for agriculture in Connecticut – Farmland Preservation Program for Connecticut or Forestland and Farmland Protection in New England.

²⁰ 2017 Census of Agriculture – Connecticut (14)
²¹ \$4.8 billion value of land and buildings and \$0.3 billion value of machinery and equipment
²² US Census Bureau, 2020
²³ “Climate 21 Project” transition memo for the US Department of Agriculture

Farmland Preservation Program in Connecticut – 130,000 Acres

The long-term goal of the Farmland Preservation Program, which was set back in the 1980’s, is to preserve 130,000 acres of farmland – see Table 4.

Table 4. Progress Towards the Farmland Preservation Program Target in Connecticut

3,205,762 Acres Land in Connecticut				
381,539 Acres²⁴ Farmland			2,824,223 Acres Non-Farmland	
148,609 Acres Farmland	113,355 Acres Woodland	31,923 Acres Pastureland		87,652 Acres Other ²⁵
130,000 Acres Preserved Farmland Goal				
48,744 Preserved		81,256 Acres Not Preserved		

As of October 2020, the Farmland Preservation Program has protected nearly 49,000 acres on 418 farms with agricultural conservation easements – leaving 81,000 acres of farmland left to preserve.²⁶ If the average real estate value of an acre of farmland in Connecticut in 2019 was \$12,200, and Purchasing Development Rights (“PDR”) is 30-50% of value, then between \$300 to \$500 MM of public investment (e.g., through DoAg and/or USDA-NRCS) would be needed to protect 81,000 acres of farmland to achieve the 130,000 acres of farmland preserved target.

If 100% of Connecticut farms incorporated better management practices that had the potential to remove carbon from the atmosphere, including non-till, legume cover cropping, and spreading more compost, it would remove 94,902 MTCO₂e from the atmosphere each year²⁷ – the equivalent of 150 MW of residential solar PV.²⁸ USDA expects to reduce net emissions and enhance carbon sequestration by more than 120 million MTCO₂e per year by 2025.

Wildlands and Woodlands Vision for New England – 70 and 7 by 2060

The Wildlands and Woodlands vision calls for retaining and permanently protecting (e.g., conservation easements) at least 70 percent of the landscape in forestland (i.e., 90% woodlands and 10% wildlands) and another 7 percent in farmland by 2060 – see Figures 5 and 6.

²⁴ USDA Economic Research Service – 2017 data

²⁵ Land in house lots, ponds, roads, wasteland, etc.

²⁶ Connecticut Department of Agriculture, Farmland Preservation Programs Report (January 2022)

²⁷ “Planning for Agriculture – A Guide for Connecticut Municipalities: Emerging Agricultural Trends” by the American Farmland Trust and Connecticut Department of Agriculture (2020 Edition) (Page 17)

²⁸ Based on Connecticut Green Bank analysis – see Annual Comprehensive Finance Report for FY21 (p. 218-241)

Figure 5. Wildlands and Woodlands Vision for New England in 2060

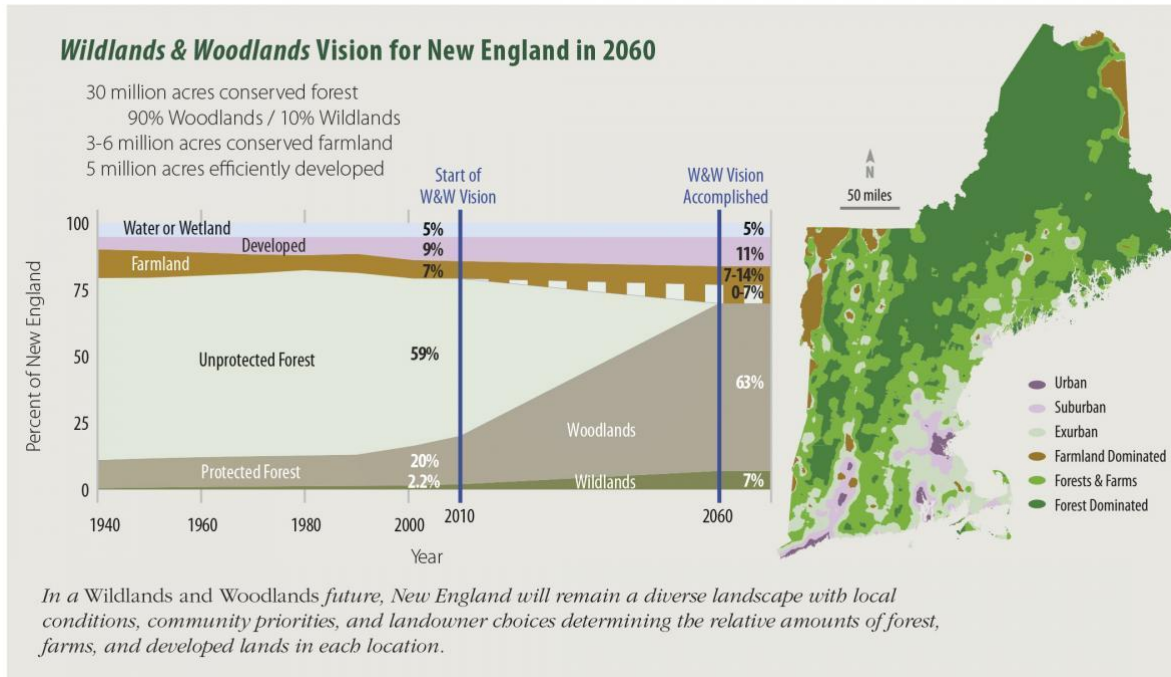
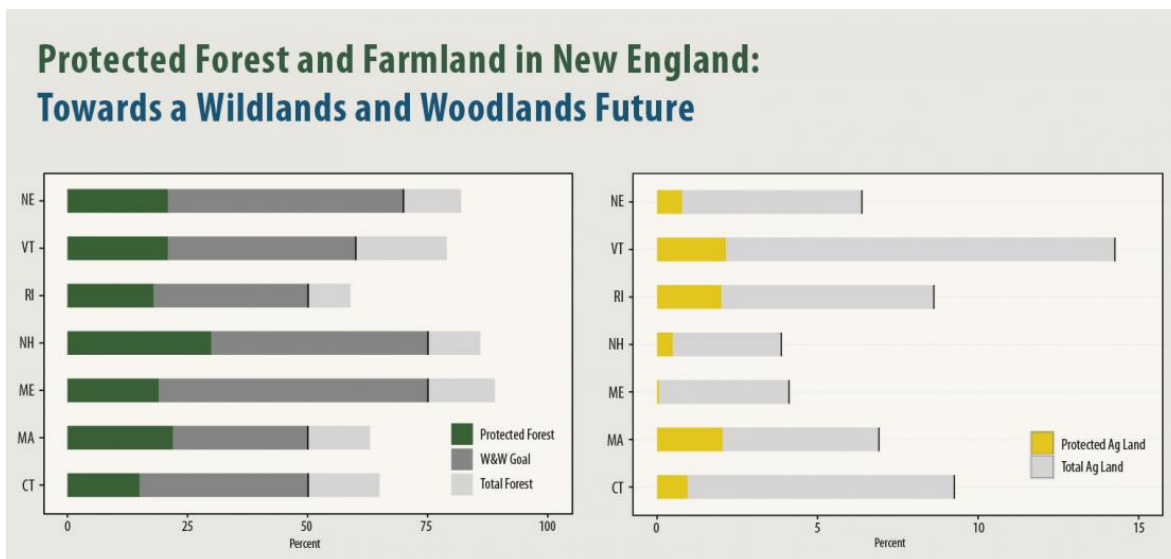


Figure 6. Protected Forestland and Farmland in New England



The single greatest challenge for achieving this goal is funding for the purchase of land and especially of easements on private lands to ensure that they remain undeveloped in perpetuity.

Forestland

Currently, in Connecticut, 59% of land is forestland (i.e., 1,873,471 acres) – of which, approximately 33% of forestland is protected by Public Act 490 (i.e., 622,490 acres).²⁹ Not only would a “no net loss of

²⁹ Including forestland, open space land, and other lands

forestland” policy have to be pursued, but an additional 222,853 acres of developed land (i.e., excluding wetlands or 7% of additional land cover) would have to be converted to forestland to achieve the 70 percent of landscape as forestland target (i.e., about 6,400 acres per year). This would require growing smarter in cities and suburbs by encouraging efficient land use and smart growth, and redeveloping built landscape such as former industrial mills on recovering rivers and commercial brownfields. A significant effort would have to be initiated to permanently protect the 2,225,477 acres (i.e., 70% of land) as forestland through property tax benefits, conservation easements, and/or other mechanisms.

Farmland

Currently, in Connecticut, 7% of total land is farmland (i.e., 233,847 acres) – of which, about 46,000 acres or 20% is protected by agriculture conservation easements.³⁰ A “no net loss of farmland” policy would have to be pursued, and continued efforts to permanently protect farmland would require going beyond property tax benefits towards securing agriculture easements.

E. FUNDING AND FINANCING PROGRAMS

The following is an alphabetic breakdown of the current funding (i.e., grants) programs in support of “agriculture” in Connecticut, including, but not limited to:

- **Agriculture Conservation Easement Program** (“ACEP”) – USDA-NRCS’s ACEP protects the agriculture viability and related conservation values of eligible land through agricultural land easements that help private and tribal landowners, land trusts, and other entities such as state and local governments protect croplands and grasslands on working farms and ranches by limiting non-agricultural uses of the land through conservation easements. Under the Land Easement component, the Natural Resources Conservation Service (“NRCS”) of the USDA, may contribute up to 50 percent of the fair market value of the agricultural land easement (i.e., matching resources for DoAg Purchase of Development Rights (“PDR”) program), and up to 75 percent where NRCS determines that grasslands and special environmental significance will be protected. Projects must have non-federal matching funds in hand.
- **Connecticut Farmland Preservation Program** (CGS 7-131d) – administered by DoAg to leverage state, local, and private funds to permanently protect farms. Initiated in 1978, is funded by state bonding and the CIA, and has four (4) public policy priorities – open space (i.e., DEEP), agriculture preservation (i.e., DoAg), historic preservation (i.e., DECD), and affordable housing (i.e., CHFA).

Since 1978, DoAg has permanently protected 386 farms on 46,142 acres (i.e., about a third of the total acreage goal) by awarding \$128 MM in Farmland Preservation Program grant funds (or \$2,778/acre).³¹ Current law allows the Commissioner the ability to pay up to \$20,000 per acre, subject to appraisal.

It should be noted that USDA NRCS contributes \$2-\$4 million per year to the program as partners.

³⁰ These are DoAg supported easements, and does not include easements through DEEP’s OSWA program (i.e., see Land Conservation), nor USDS-NRCS programs.

³¹ Status of State PACE Programs by the American Farmland Trust and USDA’s Farmland Information Center

- **Connecticut Open Space and Watershed Land Acquisition Grant Program** (“OSWA”) (CGS 7-131d) – a matching grants program to provide financial assistance to municipalities, land trusts, and water companies to acquire open space and watershed lands, including the Urban Green and Community Garden Program for vulnerable communities. Initiated in 1998, is funded by state bonding and the CIA, provides financial assistance to municipalities and nonprofit land conservation organizations to acquire land for open space, and to water companies to acquire land to be classified as Class I or Class II water supply property, and is administered by DEEP to leverage state, local, and private funds to create a cooperative open space acquisition program.

Since 1998, DEEP has awarded over \$150 MM in open space grant funds to protect over 41,000 acres (or \$3,659/acre).

- **Connecticut Agriculture Viability Grants Program** – for matching grants up to \$50,000 to plan and implement local farmland preservation strategies, to institute agriculture-friendly land use regulations, or to develop marketing initiatives to support local farm businesses.
- **Conservation Stewardship Program** (“CSP”) – for producers who practice conservation and environmental stewardship, by providing them technical and financial assistance through the USDA-NRCS to help them advance their efforts adopting additional conservation activities and maintaining their baseline level of conservation.
- **Emergency Watershed Protection Program** – program administered by NRCS to respond to floods, fires, windstorms, and other natural disasters. The program funds removing debris, protecting eroded banks, correcting damaged drainage facilities, repairing levees, and purchasing flood plain easements. For construction activities, it provides up to 75% of the project costs.
- **Environmental Quality Incentives Program** (“EQIP”) – cost-share assistance program that provides up to 75 percent (90 percent for historically underserved producers) of the cost to implement certain structural and management practices on eligible agricultural land, including the following management practices: conservation tillage, cover cropping, nutrient management, and integrated pest management. EQIP payments are capped at \$450,000 in aggregate payments over five years.
- **Farmland Restoration Grant Program** – a component of the climate-smart agricultural practices bill that passed the Connecticut General Assembly 2022 session, will provide farmers with resources to implement climate-smart practices.

The following is a breakdown of the current financing (i.e., loans, tax credits) programs that could support agriculture in Connecticut:

- **Business and Industry Loan Guarantee Program** – through the USDA’s Rural Development programs, this program provides a loan guarantee that allows businesses to work with commercial lenders who might not otherwise extend credit. A borrower may be a cooperative organization or a number of other forms, including individuals and land trusts. Loans can be used for preventing a business from closing, expand or convert a business, or purchase land, machinery, or equipment. The total loan amount may not exceed \$10 MM.

- **Municipal Loan Program** (CGS 22-26mm) – the Commissioner of Agriculture shall administer a program providing eligible municipalities with a loan for purchasing or agricultural lands, through the “municipal purchasing of agricultural land account” within the General Fund. Such loan shall be for a period not to exceed five years and shall not be subject to interest. Municipalities shall be eligible for such loan if they provide not less than twenty percent of the purchase price of such lands and may apply for such loan on a form prescribed by the Commissioner.

- **Rural Energy Savings Program** (“RESP”) – RESP provides loans to rural utilities and other companies who provide energy efficiency loans to qualified consumers to implement durable cost-effective energy efficiency measures. The terms of the RESP loans are up to 20 years at 0% interest rate, up to 5% interest rate for relending to end-use customers for up to 10 years, and up to 4% of the loan may be used for start-up costs. Funds may be used for the purpose of implementing energy efficiency measures to decrease energy use or costs for rural families and small business. On September 20, 2020, the Green Bank submitted an application into the USDA’s Rural Utilities Service’s RESP to borrow \$10 MM for the purpose of financing clean energy projects in rural communities throughout Connecticut. The proceeds from the RESP would be used as capital to finance projects through the Green Bank Solar PPA, Capital Solutions, and C-PACE programs, along with Shared Clean Energy Facilities projects. As of June 1, 2022, the USDA has not yet made a determination on the Green Bank application.

- **Tax Considerations** – per Internal Revenue Code section 170(h) criteria, donations of agricultural conservation easements generally qualifies as a tax-deductible charitable gift. This means that a landowner can claim the value of the easement as a federal income tax deduction. The value of an agricultural conservation easement is the difference between the property’s fair market value (the “before” value) and its value as restricted by the easement (the “after” value) as determined by a qualified appraiser. Landowners may claim a federal tax deduction for a donated portion of a sale (i.e., difference between easement appraised value and its actual sales price). The federal tax code in 2006 established an enhanced tax deduction for conservation easements that allows landowners to claim a deduction of up to 50 percent of their adjusted gross income in any given year and to spread those deductions over a period of 15 years – corporations are limited to 10 percent deductions.

Accessing funding or financing resources for agriculture in Connecticut can be difficult. Identifying new mechanisms to access additional funding and financing resources, especially those that seek to unlock more private capital investment, could provide a catalyst to increase and accelerate investment in agriculture in Connecticut. The Infrastructure Investment and Jobs Act (“IIJA”) presents an opportunity to access funding and financing resources through formula or competitive grants for “agriculture”.

F. OTHER PROGRAMS

The following are other items of note with respect to “agriculture”:

- **Connecticut Farm Link Program** – established by DoAg in 2007, and funded by CIA, it connects farmers seeking land with farmland owners looking to sell or lease acreage. CT Farmlink provides resource information and some technical assistance about farm leasing, farm transfer, farm succession planning, family farm estate planning, and farm transfer strategies.
www.ctfarmlink.org

- **COMET Farm** – is a farm and ranch carbon and greenhouse gas accounting system developed by the USDA-NRCS. The tool guides farmers through describing how their farm and ranch management practices compare the carbon changes and greenhouse gas emissions between current and future scenarios. <https://comet-farm.com/Home>
- **Center for Land-Use Education and Research (“CLEAR”)** – within the College of Agriculture, Health, and Natural Resources at the UCONN, CLEAR’s mission is to provide information and assistance to land-use decision-makers and other audiences in support of better land-use decisions, healthier natural resources, and more resilient communities. <http://clear.uconn.edu/projects/landscape/CT/landcoverviewer.htm#top>
- **Open Space Review Board** – is an independent advisory group of volunteers appointed by the Governor and leadership within the CGA under CGS 7-131(e) to oversee OWSA and RNHT programs.
- **Various Other Boards and Councils** – including, but not limited to Connecticut Farm Wine Development Council, Connecticut Food Policy Council, Connecticut Seafood Development Council, Farmland Preservation Advisory Board, and DEI in Connecticut Agriculture Working Group.³²

G. STAKEHOLDER OUTREACH

In an effort to understand the public policy and marketplace context for “agriculture” in Connecticut, the Green Bank met with many organizations.³³

These 16 agriculture-related organizations primarily represent non-profit organizations but included public and for-profit organizations as well.

The objectives of these one-hour conversations included:

- **Introductions** – to get a better understanding of the mission and initiatives of the various public, nonprofit, and for-profit stakeholders operating within the “agriculture” space, and to introduce the Green Bank;
- **Environmental Infrastructure** – inform the various stakeholders about the “environmental infrastructure” policy,³⁴ process the Green Bank is pursuing to develop a Comprehensive Plan, and to elicit discussion on the following areas:

³² <https://portal.ct.gov/DOAG/Boards/Boards/Boards-Councils-and-Commissions>

³³ **Agriculture** – American Farmland Trust, Berkshire Agriculture Ventures, City Seed, Connecticut Farm Bureau Association, Connecticut Farmland Trust, Connecticut Resource and Conservation Development, Dirt Capital Partners, DoAg, Gather New Haven, Green Wave, The Last Green Valley, Natural Resources Conservation Service, UCONN, Washington State Housing Finance Commission, Working Lands Alliance, and Yale Forest School

Land Conservation – American Forest Foundation, Audubon Connecticut, Connecticut Audubon, Connecticut Land Conservation Council, Conservation Finance Network, DEEP, Ecosystem Investment Partners, Goldman Sachs, Highstead, New England Forestry Foundation, New England Society of American Foresters, Quantified Ventures, Save the Sound, The Nature Conservancy, TNC’s Nature Vest Program, and Yale Forest School

Parks and Recreation – Connecticut Forest and Parks Association, Connecticut Greenways Council, Connecticut Recreation and Parks Association, DEEP, Green Eco Warriors, Keney Park Sustainability Project, Sierra Club, Trust for Public Lands, and Urban Resources Initiative.

³⁴ Public Act 21-115 – An Act Concerning Climate Change Adaptation”

- **Relevance** – how relevant “environmental infrastructure” and its components (e.g., agriculture) are to the stakeholder’s mission and initiatives;
- **Policies and Targets** – what local, state, and federal policies (e.g., Community Investment Act), including plans (e.g., Green Plan) are important from the stakeholder’s perspective, and what targets (e.g., 130,000 acres of preserved farmland) are they seeking to achieve;
- **Metrics** – what are the key metrics stakeholders believe are important in terms of monitoring and evaluating success from investments in “environmental infrastructure” improvements and “agriculture”;
- **Vulnerable Communities** – how does the stakeholder’s organization think about the impacts that must be addressed from climate change to build the resilience of vulnerable communities;³⁵ and
- **Stakeholder Identification** – who else should the Green Bank meet with on the topic.

From these conversations, the Green Bank was able to develop a better understanding as to the role it might play in terms of financing “agriculture” from the perspective of its mission – to confront climate change.

H. FINDINGS

Based on the various meetings with public, nonprofit, and private stakeholders, the following are key findings with respect to agriculture (it should be noted that additional findings have been generalized in the footnote):³⁶

- **Consistent with Mission to Confront Climate Change** – “agriculture,” including its lands and a range of stewardship practices by farmers, ranchers, and forest landowners, sequester carbon and reduce GHG emissions, while also improving resilience to extreme weather (e.g., flood control), and therefore is consistent with the Green Bank’s mission to “confront climate change”. As the impacts of climate change are outpacing the ability for gray infrastructure (e.g., stormwater systems) to manage it, green infrastructure (e.g., agriculture) provides an excellent ability to mitigate flooding, and sequester carbon through climate smart practices and resilience through production of commodities (e.g., carbon offsets, ecosystem services).

³⁵ As defined by Public Act 20-05

³⁶ Additional findings – there are a number of additional funding sources for agriculture assistance (e.g., Supplemental Nutrition Assistance Program or “SNAP”, Women, Infants, and Children or “WIC”), eel grass is for water as lichen is for air, kelp starts to deteriorate in 24 hours, can sink kelp to store carbon, farms must be places for food production and not a living space for the rich, role of local land-use boards determining battlegrounds for agriculture, value of volunteer time for federal resource match is \$33 per hour, need for crop insurance as filing for losses is cumbersome and not currently being practiced, PFAS contamination, manure management problems from phosphorus, culverts being undersized, stream bank erosion, dam removal (i.e., \$800,000 cost) vs. improvement (i.e., \$9 MM cost last for 50-100 years), from seeds to soils.

- **Agricultural Land is an Endangered Species** – there is a need to slowdown the loss of farmland in Connecticut from development, and protect it to provide benefits (e.g., food security,³⁷ public health, local and regional economic development, housing) to citizens and communities of Connecticut – if we lose it, it is gone forever. The cost of community services (“COCS”) versus the potential for local property tax revenues³⁸ come into conflict for land-use planners when faced with decisions to support agriculture versus development. It is important to not only protect marginal farmlands, but to specifically protect prime farmland because maintaining and continuously improving soil quality is vital for delivering the full benefits agriculture industry can provide across the state. Clean energy development (e.g., large solar fields or large scale solar) is adversely impacting farmlands, especially when sited on prime farmland. Dual-use solar on land (e.g., agrivoltaics) that has not been designated prime farmland by DoAg, nor important by USDA-NRCS could be explored.

- **Business is Difficult but Necessary** – the \$580 MM agriculture industry in Connecticut³⁹ bears significant expenses. Primary amongst the cost of farming in Connecticut is labor (i.e., \$170 MM), equipment and supplies (\$49 MM), energy (i.e., \$44 MM),⁴⁰ and interest from debt (\$14 MM). In managing profits and expenses, farmers, generally, resist debt because loans create challenges to profit margins. With the everchanging climate, weather patterns are creating challenges to growing seasons and there is a need to invest in the modernization of infrastructure for the agriculture industry in Connecticut (e.g., urban agriculture, smart farms, livestock processing, distribution networks) to make the state more resilient to such dramatic changes.⁴¹ Crop insurance – of which about 74% or 290 million acres in 2016 and \$8 billion from the federal government in 2019 subsidizing the crop insurance system – protects farmers against large financial loss caused by crop failures or market fluctuations (e.g., commodity price fluctuations).⁴²

- **Money is Not Always the Problem** – as important as local, state, federal, and private funding and financing resources are, sometimes not having enough people in government (e.g., streamlining farmland protection efforts), shortage of farm labor, having onerous processes (i.e., “red tape”), an inability to speak to co-benefits (e.g., job creation, resilience), or lack of understanding of important tools (e.g., conservation finance) can substantially inhibit progress towards increasing investment in agriculture.

- **Need Mechanisms to Monetize Environmental Markets** – stakeholders recognize that environmental markets (e.g., carbon offsets, ecosystem services) may be able to provide additional sources of revenue from “climate-smart practices”⁴³⁴⁴ to support the growth and

³⁷ It should be noted that based on data from the Bureau of Economic Analysis, 11.8% of households in Connecticut experience food insecurity – with 4.9% as very low food secure households.

³⁸ And the impacts of Public Act 490 on use value for local property taxation

³⁹ 2017 Census of Agriculture – Connecticut (7)

⁴⁰ Other major expenses include seeds, plants, vines, and trees (i.e., \$60 MM), feed (i.e., \$52 MM), and depreciation (\$33 MM)

⁴¹ As highlighted by the public health impact of COVID, there are only 3 days of perishable food available this side of the Hudson.

⁴² “The Case for Crop Insurance Reform” by Cortney Ahern Renton and Claire Huntley Lafave in the Conservation Finance Forum (April 8, 2020)

⁴³ Native Energy produced carbon offsets (certified by the Voluntary Carbon Standard) from the 275-acre Laurel Brook Farm in East Canann from over 800 cows producing 2,000 TCO₂ offsets per year

⁴⁴ Various agricultural and forestry practices (e.g., replacing synthetic nitrogen over time, soil health shares) within the COMET planner and 2017 NASS AgCensus data within the United States Climate Alliance Report

development of the agriculture industry in Connecticut. Successful projects require public and/or private recognition of environmental commodity value, involvement of producers (i.e., farmers, including those who are working farmlands, pasturelands, and forestlands) adopting “climate-smart practices,” engagement of scientists and conservation organizations providing technical assistance, credit-worthy long-term purchasers of such commodities, and reliable certifiers and verifiers.

- **Blue Agriculture Potential** – regenerative ocean farming of seaweed and shellfish (i.e., Integrated Multi-Tropic Agriculture or “IMTA” or “3D-Ocean Farming”) is a Connecticut innovation.⁴⁵ Connecticut’s blue agriculture industry is not an offshore fisheries industry, but instead a \$30 MM shellfish industry in the estuary waters of Connecticut and New York’s Long Island Sound. Farmers can bid for 5 to 15-year leases (i.e., 75,000 acres) and request permits to farm (i.e., currently 25,000 acres of active production) for seaweed and shellfish to produce 10 to 30 tubs of seaweed and 250,000 shellfish per acre, which as a bio-remediator absorbs nitrogen and phosphorus from non-point source pollution (e.g., stormwater and combined sewage overflow from Connecticut, air pollution from the west) and store carbon,⁴⁶ generate \$300,000 in revenue per farm, and provide 2 to 3 fulltime jobs and 7 to 10 seasonal jobs.⁴⁷ Seaweed can also produce bioplastics, bioenergy, and other consumer products.

- **Impact Metrics** – the following is a “high level” breakdown of the types of metrics appropriate for agriculture – see Table 5.

Table 5. Relevant Metrics Identified by Stakeholders on Agriculture

Inputs	Outputs	Outcomes
<ul style="list-style-type: none"> ○ # of Farmers ○ Diversity of Farmers ○ # of Farms ○ Types of farms (farmlands, pasturelands, forestlands, oceanlands) ○ Acres of Farms ○ New farmlands (e.g., community gardens, controlled environment agriculture) ○ New practices (e.g., climate-smart) ○ Infrastructure Investment ○ Agricultural Conservation Easements ○ Programs for BIPOC farmers ○ Municipal land-use boards support of agriculture ○ Location of farms (e.g., urban farms) 	<ul style="list-style-type: none"> ○ Produce ○ Types of Produce ○ Culturally relevant crops ○ Agriculture revenues and expenses (including per acre) ○ Wholesale and retail price ○ Infrastructure (e.g., housing, production, processing, distribution, energy costs) ○ Cost to transport ○ Community Supported Agriculture subscriptions ○ Protected farmland 	<ul style="list-style-type: none"> ○ Profitable Connecticut Grown producers ○ Increased ownership of farms by BIPOC farmers ○ Connecticut Grown consumers ○ Climate smart commodities (e.g., carbon offsets) including total, price, and term ○ Ecosystem services (e.g., resilience, public health, water quality, soil quality) ○ Jobs ○ Food security (e.g., reduced food imports) ○ Fewer crop losses (e.g., crop insurance claims)

⁴⁵ <https://www.youtube.com/watch?v=6GchLfXTgII>

⁴⁶ Through the Kelp Climate Fund, Green Wave provides farmers \$0.10/pound of kelp farmed - <https://www.greenwave.org/kelp-climate-fund>

⁴⁷ Seaweed is 25% carbon and about 2-3% nitrogen according to Green Wave

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- **Vulnerable Communities** – even though BIPOC represent nearly one-quarter of the U.S. population, they operate less than 5% of farms, and cultivate less than 1% of farmland – in Connecticut, approximately 1.4% of farmers are BIPOC, compared to the BIPOC population being nearly 37% in the state.⁴⁸ About 6.5% of farms and 10.0% of farmland is operated by tenant farmers who own none of their land. Increasing BIPOC access to farming and ownership of farms by BIPOC entrepreneurs is needed.

These are the key findings from the stakeholders on agriculture.

I. OPPORTUNITIES

The following is a list of opportunities for consideration by the Green Bank given the broad categories of information and data, environmental markets and conservation finance, funding and financing sources, and other potential opportunities:

1. **Information and Data** – as a foundation, access to high quality information is important from which to base decisions. The following is a breakdown of opportunities for consideration with respect to information and data:
 - A. **Connecticut Grown** – is the marketing brand for promoting products made in Connecticut and sold to consumers. Continuing to increase the awareness of the logo by and the purchasing of products from consumers is an important demand-side approach for fostering the sustained orderly development of the local agriculture industry. Considering community-based marketing approaches such as Solarize,⁴⁹ into an agriculture-focused community-based campaign for CSA’s, farmers markets, food waste collection, etc. can increase consumer demand for Connecticut Grown products.
 - B. **Connecticut Farm Link** – to improve the capabilities of connecting farmland owners to farmland seekers and producers, support for improving the Connecticut Farm Link technology may be necessary. Currently, there are more farmland seekers than owners, and farmland owners rely on traditional realtor sites like Zillow and Realtor.com to list their properties.
 - C. **Land Grant and Sea Grant Universities** – Connecticut has robust land grant (i.e., UCONN – Storrs) and sea grant (i.e., UCONN – Avery Point) universities, and the Yale School of the Environment’s Forestry School, which owns nearly 8,000 acres of managed forestland in Connecticut. Utilizing these resources for research, education, and outreach to confront climate change through agriculture is necessary.
 - D. **Yale School of the Environment** – Yale School of the Environment, and its work supporting conservation finance (e.g., partnership with the Conservation Finance Network) presents a unique opportunity to continuously inform and develop conservation finance practitioners in Connecticut. The Green Bank should consider

⁴⁸ “Farmland Needed – How Connecticut Can Help Farmers Access the Land They Need to Succeed” by the American Farmland Trust and Connecticut Department of Agriculture (January 2021)

⁴⁹ <https://cbey.yale.edu/research/solarize-your-community-an-evidence-based-guide-for-accelerating-the-adoption-of>

providing local stakeholders with access to information (e.g., promoting Conservation Finance Network) and professional development opportunities (e.g., sponsorship of bootcamps on conservation finance) to accelerate the advancement and practice of conservation finance in Connecticut.

- E. **Land Trusts** – included within the data warehouse the inventory of land trusts across the state where there are easements held.
2. **Environmental Markets and Conservation Finance** – in terms of identifying potential carbon offset and/or ecosystem services revenue streams within compliance and voluntary markets that can support financing of agriculture, the following is a breakdown of opportunities for consideration with respect to environmental markets and conservation finance:
 - A. **Partnership for Climate-Smart Commodities** – see below under “Funding and Financing” section.
 - B. **Procurement** – similar to power purchase agreements for clean energy, assisting producers connect with consumers of climate-smart products and commodities through guaranteed offtake agreements,⁵⁰ including community-supported agriculture.
 3. **Funding and Financing Sources** – in terms of identifying additional funding (i.e., grants) and financing (e.g., loans) that can increase and accelerate investment, the following is a breakdown of opportunities for consideration with respect to funding and financing of agriculture:
 - A. **Green Liberty Bonds** – issue a \$25 MM bond⁵¹ to raise proceeds to support investments in agriculture, including, but not limited to:
 - i. **Pilot Revolving Loan Fund for Buy-Protect-Sell** – modelling the Farmland Protection and Affordability Investment (“Farmland PAI”) Program of Washington State, working in collaboration with DoAg and nonprofit agricultural conservation organizations, provide loans to land trusts to help them move quickly to permanently protect critical farmland from development. A \$25 MM pilot revolving loan fund⁵² would offer low interest rates and better terms to support land trusts buy land now for later protection and management (i.e., working land easements), and sale, including priority for BIPOC farmers and farm ownership. The Green Bank needs to understand if it can pursue this approach as a foundational strategy for agriculture (and land conservation). A growing number of states also offer loan programs to assist beginning farmers and ranchers with eligible purchases of farmland, equipment, buildings, and livestock through Aggie Bonds.⁵³ Food systems are ripe for the attention that state and municipal clean energy bond finance has received over the last decade

⁵⁰ <https://www.conservationfinancenetwork.org/2019/07/24/how-guaranteed-offtake-can-drive-sustainable-agriculture>

⁵¹ Amount is for discussion purposes only, and set at an amount to match a Connecticut proposal into the USDA’s Commodity Credit Corporation’s “Partnership for Climate Smart Commodities” funding opportunity announcement.

⁵² Assuming the average price for agriculture land is \$12,200 per acre, this fund could support over 2,000 acres of farmland, revolving on average every 5 years.

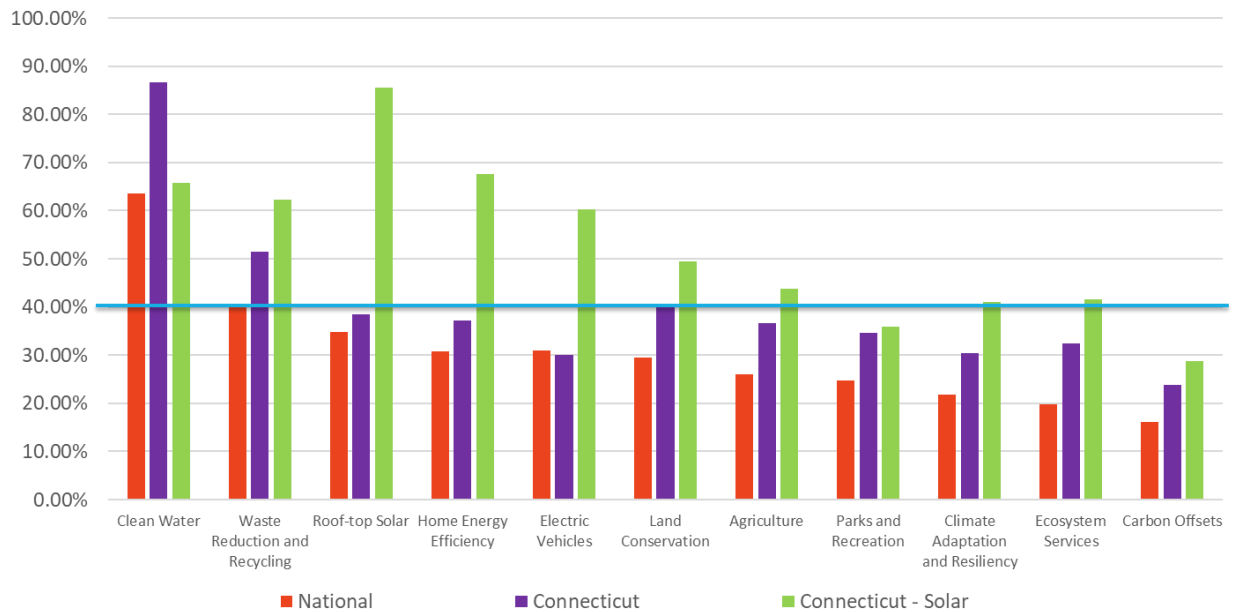
⁵³ <https://www.cdfa.net/cdfa/cdfaweb.nsf/0/3515CC91CAB651C1882579360059F5E7>

from philanthropy and green banks providing credit enhancements to strengthen credit ratings of municipal bonds.⁵⁴

- ii. **Infrastructure Modernization** – working with DoAg, to identify opportunities to invest in critical agriculture industry infrastructure modernization projects (e.g., production, processing, and distribution facilities, resource hubs, cooperative farming models) that would support climate-smart practices and products to develop and grow in the Connecticut marketplace.⁵⁵ This would also include financing physical infrastructure such as food and farm-waste to energy projects, food banks, regional markets, equipment, and industrial kitchens – and technological and promotional infrastructure such as Connecticut Farm Link, “Connecticut Grown – Climate Smart,” and direct delivery of community supported agriculture memberships. Low cost and long-term financing for clean energy (e.g. dual-use solar, battery storage, combined heat and power, fuel cells) to lower energy costs and meet qualifications for forage and crop yield should be considered.

From research conducted by the Green Bank, it can be seen that retail investors in bonds are interested in agriculture, including Connecticut citizens who are also interested in investing in rooftop solar and home energy efficiency – see Figure 7.

Figure 7. Retail Investor Use of Proceed Interest in Clean Energy and Environmental Infrastructure



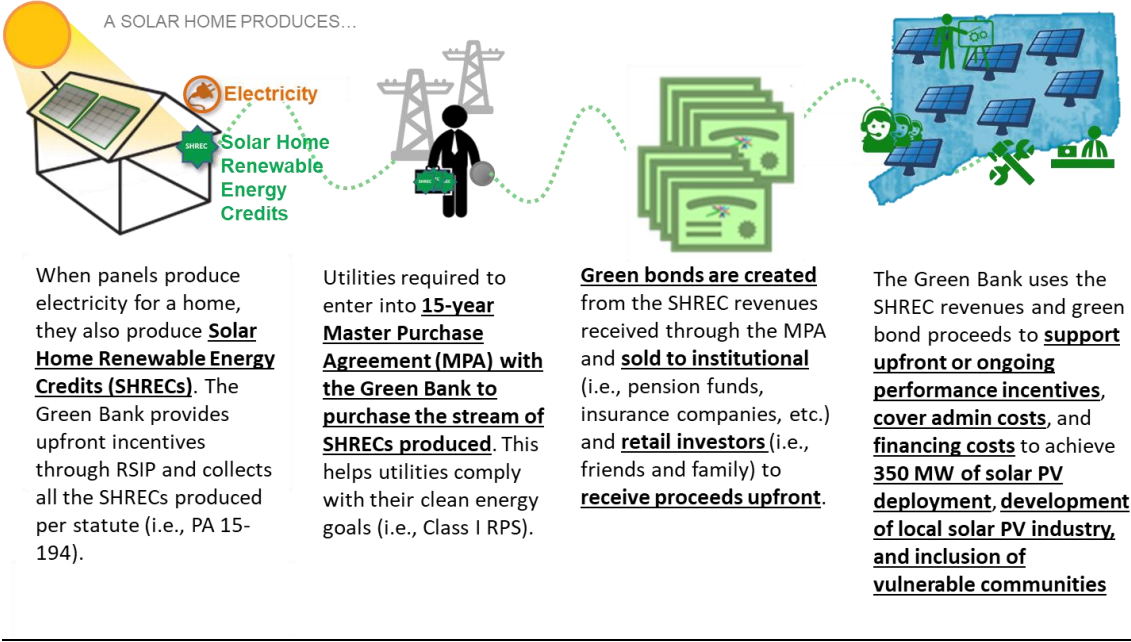
- B. **Partnership for Climate-Smart Commodities** – working with UCONN and DoAg, submit a \$50 MM proposal, matched by a \$25 MM Green Liberty Bond, through the \$1 billion

⁵⁴ “Soil Wealth: Investing in Regenerative Agriculture across Asset Classes” by Croatan Institute, Delta Institute, and Organic Agriculture Revitalization Strategy (July 2019)

⁵⁵ For example, providing financing to the redevelopment of Connecticut’s Regional Agriculture Market in Hartford in collaboration with DoAg and CRDA

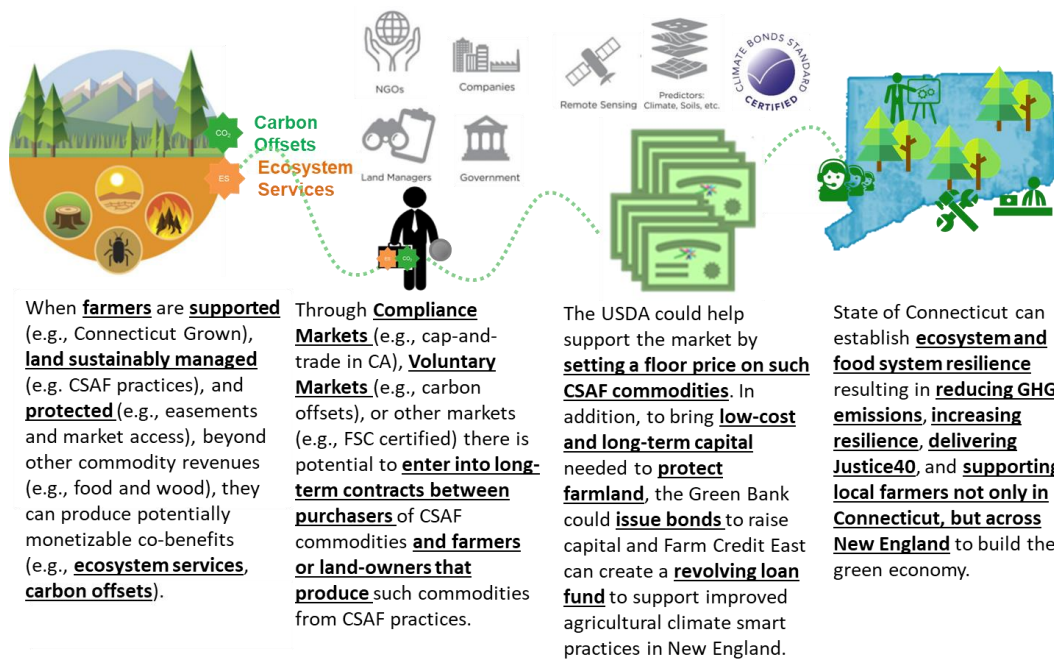
competitive solicitation of the United States Department of Agriculture’s (“USDA”) Commodity Credit Corporation (i.e., USDA-NRCS-COMM-22-NOFO0001139) in response to the climate crisis by supporting actions within the agriculture sector to produce climate-smart commodities.⁵⁶ As the lead primary applicant, UCONN would support producers adopt and sustainably implement climate-smart practices, and as the co-lead, the Green Bank, with its expertise from the Residential Solar Investment Program (see Figure 8), would adapt the clean energy model to climate-smart agriculture (see Figure 9). Included with the proposal is \$5 MM for performance-based incentives based on certified and verified carbon offsets.

Figure 8. Residential Solar Investment Program – From SHRECs to Green Liberty Bonds



⁵⁶ Defined as an agricultural commodity that is produced using agriculture (i.e., farming, ranching, or forestry) practices that reduce greenhouse gas emissions or sequester carbon.

Figure 9. Climate Smart Controlled Environment Agriculture (CEA) for Tribes and Small Farms in New England: Building Profitable, Sustainable and Resilient Farms



C. Community Match Fund (“CMF”) – a program of Sustainable CT, the Community Match Fund provides fast, flexible funding, and support for community engagement on a wide-range of sustainability projects. This societal value uses an innovative, online tool to connect grant contributions from the “crowd,” which are matched by various donor interests, including, but not limited to individuals, foundations, and the State of Connecticut. As of January 1, 2022, the Fund has raised \$1.3 MM from nearly 10,000 individual contributors, which was matched by \$1.1 MM from various sponsors, and supported 195 projects. The Green Bank could consider working with entities like Sustainable CT, with tools like the CMF, to enable funding for agriculture to be matched by the crowd, while also ensuring that equity and vulnerable communities are front and center in receiving the benefits of such investment.

4. Other Potential Opportunities – there are a number of other potential opportunities that can support financing of agriculture, including:

A. Public Policy – working with DoAg, consider public policies to advance farmland protection in Connecticut with the goal of “no net loss of farmlands and forestlands to development,” including, but not limited to:

i. Establishing Statutory Goals – similar to the Open Space goal (i.e., 22% by 2023, which may include agriculture), renewable energy goal (i.e., RPS), and GHG emission reduction goal (i.e., Global Warming Solutions Act), establish targets for farmland protection as the foundation to goal setting, including bringing new farmers into the agriculture industry.

- ii. **Negative Emissions** – as proposed by the Connecticut Forest and Parks Association with respect to Senate Bill 10, add a “negative emissions” definition,⁵⁷ require “negative emissions” in GHG emissions inventory, and recognize the importance of nature-based solutions within the Global Warming Solutions Act.
 - iii. **Conservation Finance Act** – consider public policies that provide incentives for performance-based outcomes modelled after proposed Senate Bill 348 “Conservation Finance Act” in Maryland,⁵⁸ which would enable more private investment in nature-based solutions that result in measurable improvements to ecosystems, including carbon offsets and ecosystem services.
- B. Sustainable CT** – commits municipalities to take on a variety of tasks to promote sustainability and earn points for community designation, including “Developing Agriculture-Friendly Practices,” including:
- i. **4.3.1.** – adopt land use policies and regulations that allow and support active agricultural uses;
 - ii. **4.3.2.** – allow active agriculture use of municipal land or provide outreach on CT Farmlink (linking available municipal or private lands to farmers looking for land to farm).
 - iii. **4.3.3.** – develop a Transfer or Purchase of Development Rights program.
 - iv. **4.3.4.** – hold a farmer forum to identify critical needs or issues for agriculture in the community.

Promote the existing areas noted above while exploring the possibility of additional points to advance agriculture in Connecticut.

- C. Commitment to Prime Farmland** – given their inefficiency⁵⁹ and footprint, and given the importance of quality soil for agriculture and food security, the Green Bank should consider never providing capital to finance solar PV projects on prime farmland unless dual-use solar (e.g., agrivoltaics). It should be noted that the Green Bank has financed clean energy projects on farmland (i.e., farm waste to energy – AD and CHP)⁶⁰ and forestland (i.e., wind power).⁶¹

These are a few of the opportunities identified by the Green Bank to support its mission and advance agriculture in Connecticut. Developing a method for prioritizing what opportunities under consideration are ultimately pursued, given the limited human and financial resources, and organizational structure of the Green Bank, is an activity for a later date.

⁵⁷ “Negative emissions” means greenhouse gases that are removed from the atmosphere through nature-based solutions such as soils, forests, wetlands, and other working or natural lands, or through negative emissions technologies.

⁵⁸ <https://mgaleg.maryland.gov/mgawebsite/Legislation/Details/SB0348>

⁵⁹ Solar PV has capacity factor of 15% versus wind of 35%, hydro of 35%, AD of 30-80%, and fuel cells of 90%.

⁶⁰ <https://aggridenergy.com/fort-hill-ag-grid-digester/>

⁶¹ https://www.thewindpower.net/windfarm_en_22885_colebrook-south.php

J. HISTORY OF LEADERSHIP AND INNOVATION

The history of leadership and innovation in “clean energy” technology in Connecticut is marked, including those like:

- **Daniel Halladay** – an entrepreneur who lived in Coventry, CT who invented the self-regulating wind pump in the mid- to late-1800’s, which enabled the transcontinental railroad;⁶²⁶³
- **Albert Pope** – an entrepreneur who lived in Hartford, CT who manufactured thousands of electric vehicles in the early 1900’s, including one that transported President Roosevelt;⁶⁴ and
- **Bernard Baker** – an entrepreneur who lived in Bethel, CT who invented and manufactured fuel cells, which provide high reliable power.⁶⁵

Beyond technology, Connecticut is also marked by leadership in society, including:

- **Freeman Sisters** – entrepreneurs who lived in Bridgeport, CT whose historic landmark homes once served as a destination in the Underground Railroad, and now stand in the shadows of a coal-fired power plant demonstrating environmental injustice in our society; and
- **Gina McCarthy** – an innovator who served as Connecticut’s Commissioner of the Department of Environmental Protection under Governor Rell, to later become the Administrator of the USEPA under President Obama, and climate czar under President Biden.

The history of leadership and innovation in “environmental infrastructure” in Connecticut is also significant, especially when it comes to “agriculture,” including:

- **Martin Luther King, Jr.** – worked as a summer laborer on the tobacco farms in Simsbury, CT as a teenager, while attending Morehouse College as a student in Atlanta, GA. This would prove to be a formative experience that shaped his life, and by extension, the course of history.

It is this history of leadership and innovation in “clean energy” and “environmental infrastructure” that makes the Constitution State a special place from which to initiate and launch unique ideas that transform technology and society.

K. REFERENCES

In addition to the conversations with stakeholders, the Green Bank reviewed the following documents to support its findings and opportunities:

- **Building Blocks for Climate Smart Agriculture and Forestry** – A USDA resource, including Implementation Plan and Progress Report (May 2016)

⁶² https://en.wikipedia.org/wiki/Daniel_Halladay

⁶³ https://en.wikipedia.org/wiki/Albert_Augustus_Pope

⁶⁴ <https://whereilivect.org/made-in-connecticut-albert-popes-amazing-automobiles/>

⁶⁵ https://en.wikipedia.org/wiki/Bernard_S._Baker

- **Conservation Options for Connecticut Farmland** – A Guide for Landowners, Land Trusts, and Municipalities (2020 Edition) by the American Farmland Trust
- **Climate 21 Project** – Biden-Harris Transition Memo for the Department of Agriculture
- **Economic Impacts of Connecticut’s Agricultural Industry** – by the UCONN College of Agriculture, Health and Natural Resources: Report No. 6 (September 2017)
- **Planning for Agriculture** – A Guide for Connecticut Municipalities: Emerging Agricultural Trends (2020 Edition) by the American Farmland Trust and Connecticut Department of Agriculture
- **Wildlands and Woodlands – Farmlands and Communities: Broadening the Vision for New England** – by The Harvard Forest, Highstead Foundation, and New England Forestry Foundation (2017)

L. DEFINITIONS

The following are important definitions when it comes to “agriculture” in Connecticut:

- **Agriculture** (CGS 1-1(q)) – shall include cultivation of the soil, dairying, forestry, raising or harvesting any agricultural or horticultural commodity, including the raising, shearing, feeding, caring for, training and management of livestock, including horses, bees, the production of honey, poultry, fur-bearing animals and wildlife, and the raising or harvesting of oysters, clams, mussels, other molluscan shellfish or fish; the operation, management, conservation, improvement or maintenance of a farm and its buildings, tools and equipment, or salvaging timber or cleared land of brush or other debris left by a storm, as an incident to such farming operations; the production or harvesting of maple syrup or maple sugar, or any agricultural commodity, including lumber, as an incident to ordinary farming operations or the harvesting of mushrooms, the hatching of poultry, or the construction, operation or maintenance of ditches, canals, reservoirs or waterways used exclusively for farming purposes; handling, planting, drying, packing, packaging, processing, freezing, grading, storing or delivering to storage or to market, or to a carrier for transportation to market, or for direct sale any agricultural or horticultural commodity as an incident to ordinary farming operations, or, in the case of fruits and vegetables, as an incident to the preparation of such fruits or vegetables for market or for direct sale.
- **Agriculture Conservation Easement** – is an easement specifically designed for agricultural land. It is a deed restriction or deed covenant that landowners donate or are paid to place on their property.
- **Aquaculture** (CGS 1-1(q)) – means the farming of the waters of the state and tidal wetlands and the production of protein food, including fish, oysters, clams, mussels and other molluscan shellfish, on leased, franchised and public underwater farmlands.
- **Community Supported Agriculture (“CSA”)** – is a food production and distribution system that directly connects farmers and consumers with Connecticut grown products. Consumers purchase shares of a farm’s harvest in advance and then receive a portion of the crops as they are harvested.

- **Conservation Easement** – is a deed restriction or deed covenant that landowners voluntarily place on part or all of their land. The easement limits development in order to protect the land’s natural resources.
- **Environmental Infrastructure** – means structures, facilities, systems, services and improvement projects related to (A) water, (B) waste and recycling, (C) climate adaptation and resiliency, (D) agriculture, (E) land conservation, (F) parks and recreation, and (G) environmental markets, including, but not limited to, carbon offsets and ecosystem services.
- **Farm** (CGS 1-1(q)) – includes farm buildings, and accessory buildings thereto, nurseries, orchards, ranges, greenhouses, hoopouses and other temporary structures or other structures used primarily for the raising and, as an incident to ordinary farming operations, the sale of agricultural or horticultural commodities.
- **Farm Land** (CGS 12-107b) – means any tract or tracts of land, including woodland and wasteland, constituting a farm unit.
- **Open Space Land** (CGS 12-107(b)(3))⁶⁶ – open space land means any area of land, including forest land, land designated as wetland under section 22a-30 and not excluding farm land, the preservation or restriction of the use of which would (A) maintain and enhance the conservation of natural or scenic resources, (B) protect natural streams or water supply, (C) promote conservation of soils, wetlands, beaches or tidal marshes, (D) enhance the value to the public of abutting or neighboring parks, forests, wildlife preserves, nature reservations or sanctuaries or other open spaces, (E) enhance public recreation opportunities, (F) preserve historic sites, or (G) promote orderly urban or suburban development.
- **Option to Purchase at Agriculture Value (“OPAV”)** – is a voluntary legal agreement that restricts the sale of land to only certain farmers or to family members, and restricts the sale price to agricultural value (versus the higher fair market value). An OPAV is placed when the landowner sells or donates an OPAV to a land trust or government agency. Once land has an OPAV, its value is usually lowered (because the land is no longer able to be sold to all willing buyers and must be sold for agricultural value). This decreased value can make land with an OPAV more affordable for buyers, including farmers who may want to purchase the land.
- **Prime Farmland** – based on Natural Resources Conservation Service (“NRCS”) criteria, “prime” farmland is land with soils that have the best combination of physical and chemical characteristics for producing crops.
- **Purchase of Development Rights (“PDR”)** – also referred to as the Purchase of an Agricultural Conservation Easement (“PACE”) in other states, PDR is process by which an entity, usually a town or state government, purchase the development rights from a willing landowner, restricting future use of the land. Typically a conservation easement restricts residential and non-farm commercial development of the property in perpetuity, while allowing continued use of the land for farming. The landowner retains ownership of the land and may sell it or pass

⁶⁶ https://www.cga.ct.gov/current/pub/chap_203.htm#sec_12-107b

land on to heirs. The current, and all future owners, must abide by the terms of the easement. Easements are held by state, local government, and/or land conservation organization, and the entity that holds the easement is responsible for ensuring that the terms of the easement are upheld. Land under an agricultural conservation easement may be permanently assessed at its use value.

- **Resilience** – means the ability to prepare for and adapt to changing conditions and withstand and recover rapidly from deliberate attacks, accidents or naturally occurring threats or incidents, including, but not limited to, threats or incidents associated with the impacts of climate change.
- **Vulnerable Communities** – means populations that may be disproportionately impacted by the effects of climate change, including, but not limited to, (1) low and moderate income communities, (2) environmental justice communities pursuant to section 22a-20a, (3) communities eligible for community reinvestment pursuant to section 36a-30 and the Community Reinvestment Act of 1977, 12 USC 2901 et seq., as amended from time to time, (4) populations with increased risk and limited means to adapt to the effects of climate change, or (5) as further defined by the Department of Energy and Environmental Protection in consultation with community representatives.
- **Working Lands Easement** – help private and tribal landowners, land trusts, and other entities such as state and local governments protect croplands and grasslands on working farms and ranches by limiting non-agricultural uses of the land through conservation easements.



2022 Connecticut Green Bank Strategic Retreat

Summary Report



Overview

Retreat Themes

- Building on a Strong Foundation
- New Kid on the Block
- An Exciting, Uncharted Crossroads
- Divergent Approaches
- Reframing 'Vulnerable Communities'

A New Mission

Creating a Road Map

- Building on our Strengths
- Short- and Long-Term Changes

Building Relationships

- Empowering Vulnerable Communities
- Collaborating with New Partners

Metrics

Insights & Ideas to Carry Forward





Retreat Overview

Theme:

Confronting Climate Change in the Constitution State through Investment in Environmental Infrastructure

Location:

Pocantico Center, Tarrytown, NY

Date:

April 27 & 28, 2022

As is the case with all materials resulting from meetings held at The Pocantico Center, the views expressed in this report are not necessarily those of the Rockefeller Brothers Fund, its trustees, or its staff.

Retreat Overview, cont'd

Guests:

Matt Ranelli, Shipman and Goodwin
Adrienne Farrar Houel, Greater Bridgeport Community Enterprises
Brenda Watson, Operation Fuel
Dominick Grant, Dirt Capital Partners
John Harrity, Connecticut Roundtable on Climate and Jobs
Chelsea Gazillo, American Farmland Trust
Javier Silva, Federal Reserve Bank of New York
Ashley Stewart, Sustainable CT
Josh Ryor, Public Utilities Regulatory Authority
Ashley Lucht, Quantified Ventures
Walker Holmes, Trust for Public Lands
John Truscinski, Connecticut Institute for Resilience and Climate Adaptation
Taryn Akiyama, Climate Finance Advisors
Bryan Hurlburt, Connecticut Department of Agriculture

CT Green Bank Team Members:

Lonnie Reed, Chair of the Board of Directors
Bryan Garcia, President & CEO
Mackey Dykes, Vice President of Financing Programs
Brian Farnen, General Counsel & Chief Legal Officer
Bert Hunter, Executive Vice President and Chief Investment Officer
Eric Shrago, Vice President of Operations
Sergio Carrillo, Director of Incentive Programs
Sara Harari, Associate Director of Innovation & Sr. Advisor to the President
Emily Basham, Senior Manager of Partnership Development
Rudy Sturk, Associate Director of Marketing & Communication Strategy
Cheryl Lumpkin, Executive Assistant

Facilitators:

Jonathan Raab, Raab Associates
Monica Eager, dpict

Expanding Our Mission

In June 2021, with bipartisan support, Governor Lamont's House Bill 6441, was passed, which extends the Green Bank mission beyond clean energy to include environmental infrastructure.

This increased scope will encompass structures, facilities, systems, services, and improvement projects related to water, waste and recycling, climate adaptation and resiliency, agriculture, land conservation, parks and recreation, and environmental markets such as carbon offsets and ecosystem services.

This is an endorsement of the green bank model, which has successfully invested public resources to mobilize multiples of private capital investment into our green economy over the last decade.

At this Retreat, we invited a group of leaders, experts, and allies to envision how the Green Bank will change, adapt, and grow to incorporate environmental infrastructure.

Retreat Themes

Building on a Strong Foundation

Following our last Retreat (February 2019), the Green Bank launched **Green Bonds US**, a new strategy that enables us to issue bonds to support the Connecticut green economy while engaging citizens in new ways to invest in confronting climate change.

Throughout this Retreat, participants discussed ways to build on existing platforms (e.g., Green Liberty Bonds, partnership with SustainableCT and support for Community Match Fund) to raise capital to invest in environmental infrastructure. We have a lot of the right tools already built, the question we faced is how to deploy them in a new arena.



New Kid on the Block

Unlike previous expansions where we were breaking new ground, in environmental infrastructure, we're the newest entrant to a crowded, but under-resourced, field. This has a few interesting implications:

- We need to be careful to manage expectations
- We can build on the experience of previous organizations, but should be aware that we have capabilities and limitations that others may not that allow us to play a unique role (projects that don't pencil with other organizations might work for us and vice versa)
- Throughout the Retreat we heard about other organizations and agencies doing good work that we can partner with and build from



An Exciting, Uncharted Crossroads

Known: We Can Make a Difference

Unknown: Where's the Best Place to Start?



The environmental infrastructure scope is incredibly broad. How we tackle it will have an impact on the organizational structure but also increase our potential impact.

- Because the opportunity is so broad, and the need so large, it can be intimidating to select the right path forward. We recognize that there's no one right way to do this.

Divergent Approaches

We're Ready to Go on Environmental Infrastructure!

- We're ready to jump in and find early wins.
- We can work through our existing relationships built on clean energy projects to offer new solutions
- Deploy in areas we think will be sure wins, then use those new success stories to build to more ambitious projects/communities/programs
- We should start having an impact as soon as possible

We Need to Spend More Time Learning and Strategizing

- We should spend more time building a new stakeholder network and commissioning/conducting research on environmental infrastructure
- From this work, we should develop a criteria to prioritize our expansion (e.g. greatest impact, greatest need, reaching underserved populations)
- We should be careful not to waste the reputational capital we have by moving too soon
- We need to identify how revenues can be generated in order to be able to issue bonds to raise proceeds for investment

Reframing 'Vulnerable Communities'

Today, the Green Bank identifies 'Vulnerable' based on identity:

- Is the customer low-income? BIPOC? A non-English speaker? Elderly?

Or, based on location:

- Is the customer in a DECD-identified distressed community? A census tract with certain characteristics?
- Do they live in multifamily affordable housing?



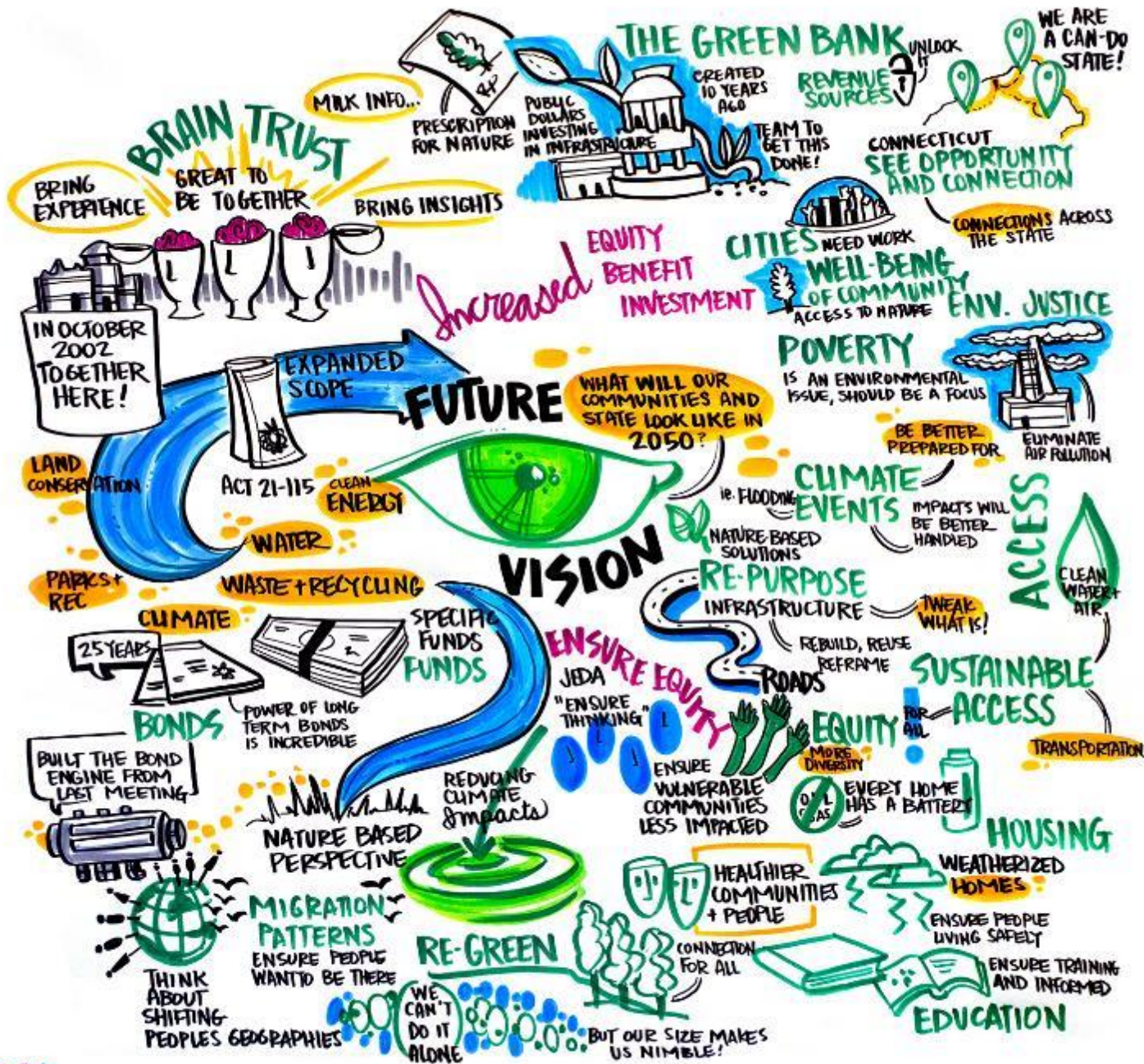
As we tackle this new mission, we must build on our definition of vulnerable communities to not only incorporate identity but also to encompass a community's relationship to environmental infrastructure. **This definition is more expansive, less categorical, and all-encompassing.** More complex, but more ways to be impactful.



Example: Waste & Recycling

- **Collection:** Do customers have a collection service in their area? If yes, what are the demographics of the workforce? If no, what are their alternatives?
- **Transportation:** Who lives along transportation routes for waste? What is the impact on those residents?
- **Processing:** Who is being impacted where are processing facilities located and how?

A New Mission



Visions of the Future

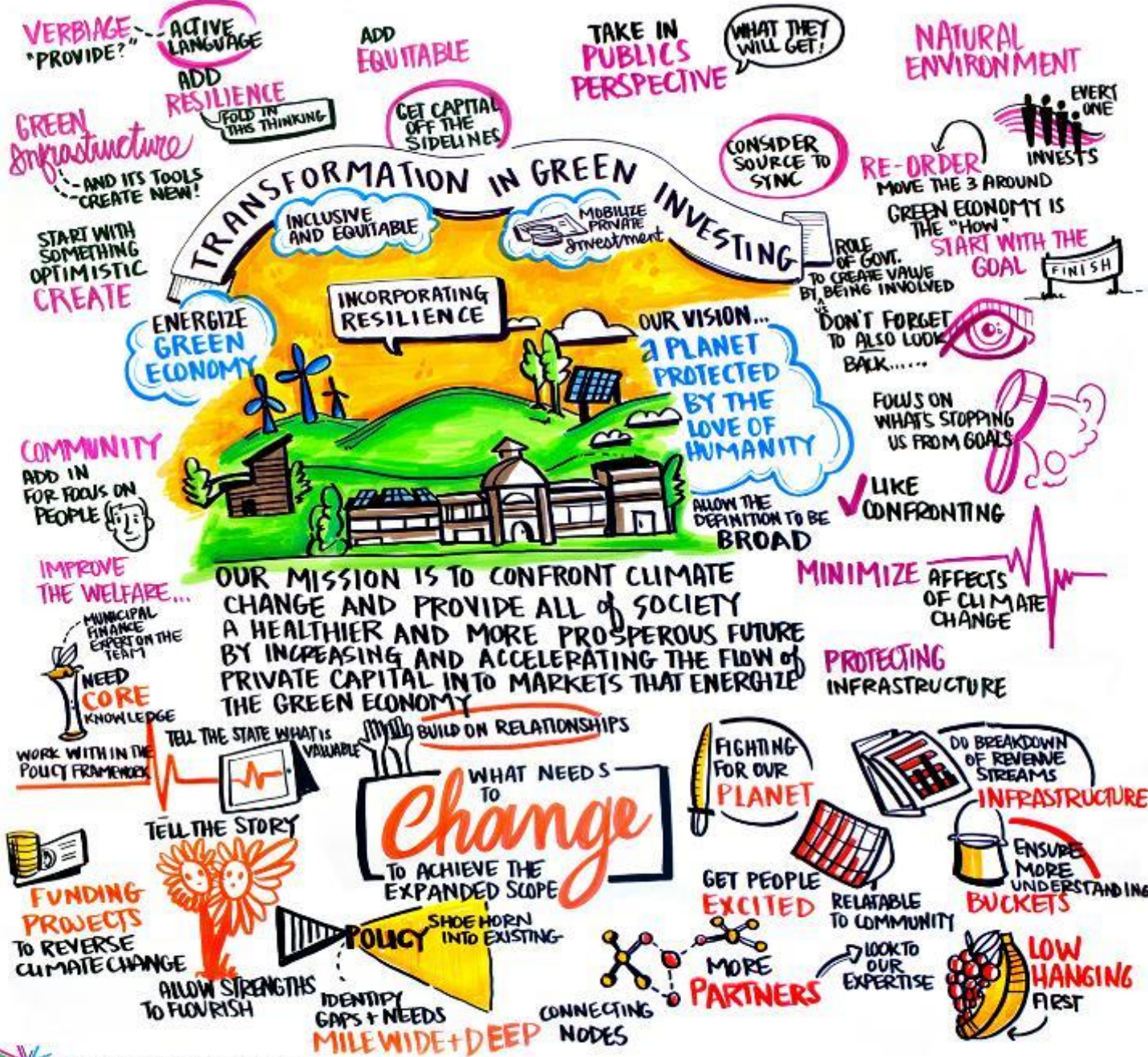


What will our communities and state look like in 2050?

- Connecticut will be a place people want to move to, work in, and raise their families
- There will be clean air, water, and energy with accessible transportation
- Severe storms will have low- or no-impact

We can't create this change alone, but we can lead

- Connecticut driving regional change: we're a smaller state which means we can be more nimble and iterate on and improve our response to climate change
- The Green Bank driving change in state: we are uniquely positioned to instigate and accelerate change in the state by providing access to capital



Suggesting Modifications to the Mission Statement

Each participant was given a copy of the mission statement to review through the lens of our collective future vision. A lively discussion followed with some clear themes emerging.

The mission statement should:

- Focus on communities and equity
- Speak to resilience or adaptation
- Balance the harshness of "confront" climate change with a positive creativity

Current statement:

Our mission is to confront climate change and provide all of society a healthier, more prosperous future by increasing and accelerating the flow of private capital into markets that energize the green economy.

New Mission Statement

New statement (for discussion):

Our mission is to confront climate change and provide all Connecticut **communities** a healthier, more **resilient** future by increasing and accelerating investment into the green economy.

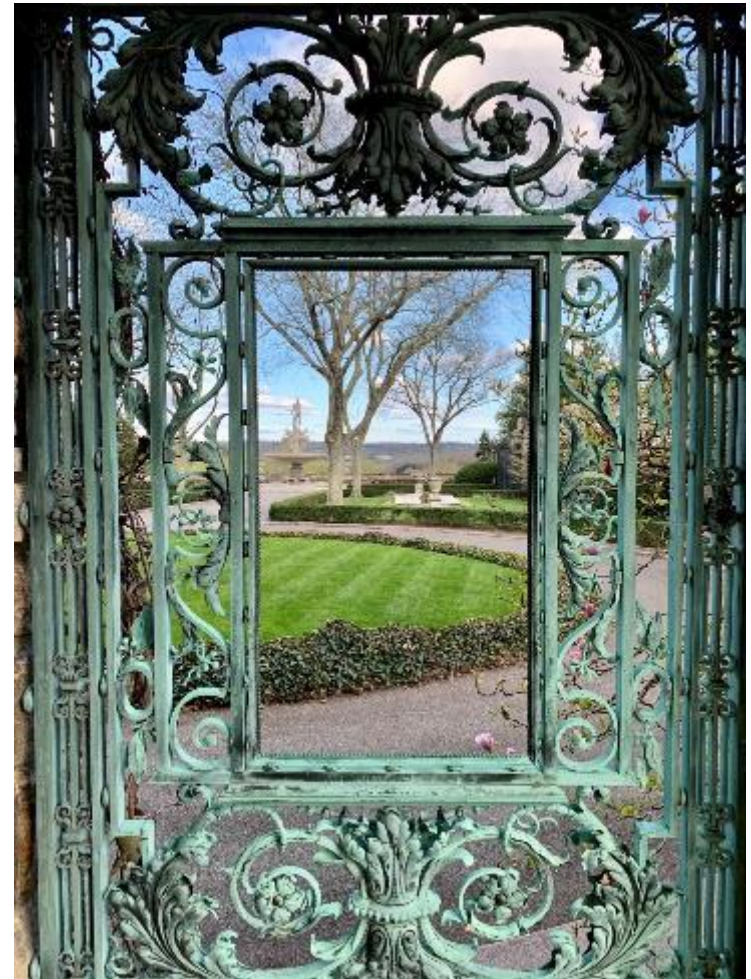
Alternative (for discussion) – We confront climate change by increasing and accelerating investment into Connecticut's green economy to create more **resilient**, healthier, and **equitable communities**.

**Guiding this mission is our vision for
"... a planet protected by the love of humanity."**

Creating a Road Map

Building on Our Strengths

- **Green Delta:** Our involvement doesn't just enable infrastructure development, it does it in a way that helps the state achieve multiple goals, from Justice40 to workforce development.
- **Our Team:** Our organization successfully attracts and retains high quality talent. We have a culture that enables creativity and encourages innovation. We actively and earnestly break the mold of a slow-moving state agency by being responsive, flexible, and forward-looking.
- **Our Approach:** We act as an intermediary between policy and markets, serving as an explainer-in-chief for a nexus of stakeholders. We bring an ability to establish clear goals, convene disparate groups, and drive change. We are a trusted partner that creates credible products that generate real benefits.

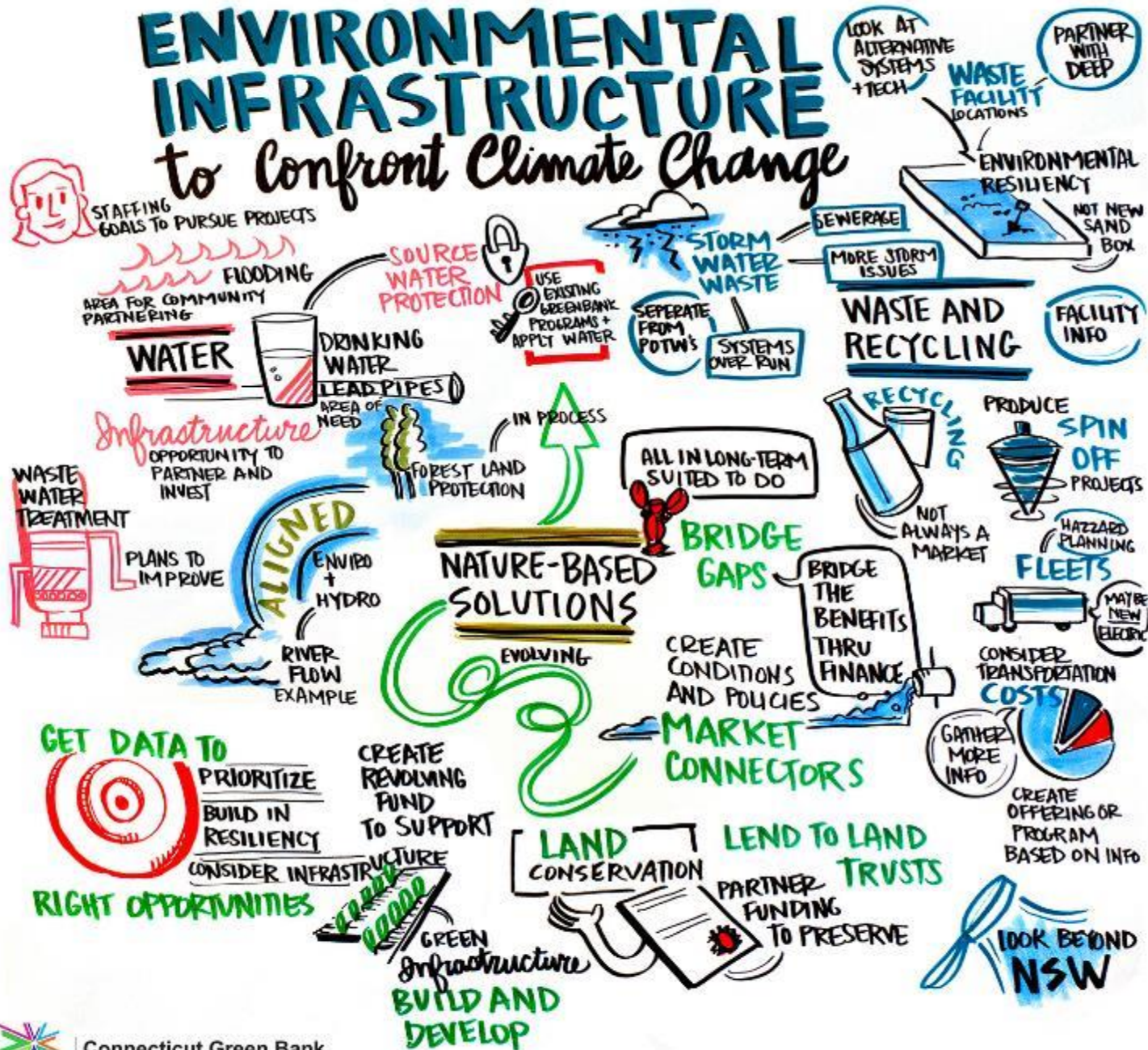


Incorporating Environmental Infrastructure

Short Term

- **Grow capacity and competency.** Recognizing our role as a trusted expert in clean energy, we will need to expand our knowledge and expertise and build out dedicated staff to accommodate our growth into environmental infrastructure. This will include not only hiring a new Director of Environmental Infrastructure, supported by a Manager of Community Engagement, but also staffing up other teams including legal and finance with experts.
- **Expand existing programs.**
 - Revisit existing products and programs with a resiliency lens to include environmental infrastructure projects as eligible measures, including expanding the C-PACE and Smart-E programs. Consider working with DEEP, EDCs, and ECMB to expand HES contractor expertise. Require end-of-life plans to be submitted to secure funding/incentives through any CGB program.
 - Ensure the infrastructure we deploy in areas highly vulnerable to climate change risk (such as coastal flood plains) maximizes resiliency (such as installing batteries above ground level).
- **Establish partnerships:** Expand our stakeholder engagement process to build relationships early in the program development pipeline
- **Information Gathering:**
 - Consider doing mapping work to overlap flood zones, distressed municipalities, highly burdened, aquifers, infrastructure in need of replacement, etc to identify focus areas
 - Conduct waste transportation market study, "water investigation" or research on pilot area
 - Partner with DEEP, DoAg, PURA, and other agencies (e.g., DRS) to identify funding needs and gaps, including competing for federal infrastructure resources.

ENVIRONMENTAL INFRASTRUCTURE to Confront Climate Change



Incorporating Environmental Infrastructure

Long Term

- **Enabling Policy and Regulation:** As we gain experience deploying capital in this sector, identify market barriers that can be addressed with policy or regulatory changes. Possible changes could include, but not limited to:
 - Water quality labeling or certifications by household or by town
 - Improved regulations for water authorities
 - RGGI-like waste-cap system (all gets weighed and manifested)
 - Lead on policies that enable conservation and nature-based solutions
- **Long-Term Allies:** Layering on top of the stakeholder engagement process to build relationships early in the program development pipeline outlined in short term goals, Green Bank should identify and formalize long-term partnerships needed to deliver programs
- **Support Development of Ecosystem Services Markets:** Green Bank could be valuable in proving the value of carbon offsets and ecosystem services revenue streams
- **Workforce Development.** Increased investment must be coupled with increased training and workforce development to scale up deployment of nature-based solutions. As a key capital driver, Green Bank should be hands on in expanding workforce development and delivering job creation.
- **Define Outcomes and Strategies.** Continuing our data-driven approach, derive market strategies and outcomes from the lessons learned along the way that can be used to create "industry standards" in environmental infrastructure.

Building Relationships

Joining the Network

Throughout the Retreat, we heard about the benefits that we could realize through creating new partnerships and relationships. These partnerships fell into two broad categories:

Vulnerable Communities. We need to work in new ways with vulnerable communities, not only informing them of funding opportunities, but inviting them to collaborate on new products and programs.

Already Active Stakeholders. We are entering an arena populated with other public, private, and non-profit entities doing good work. We should build new relationships to guide and support our work.



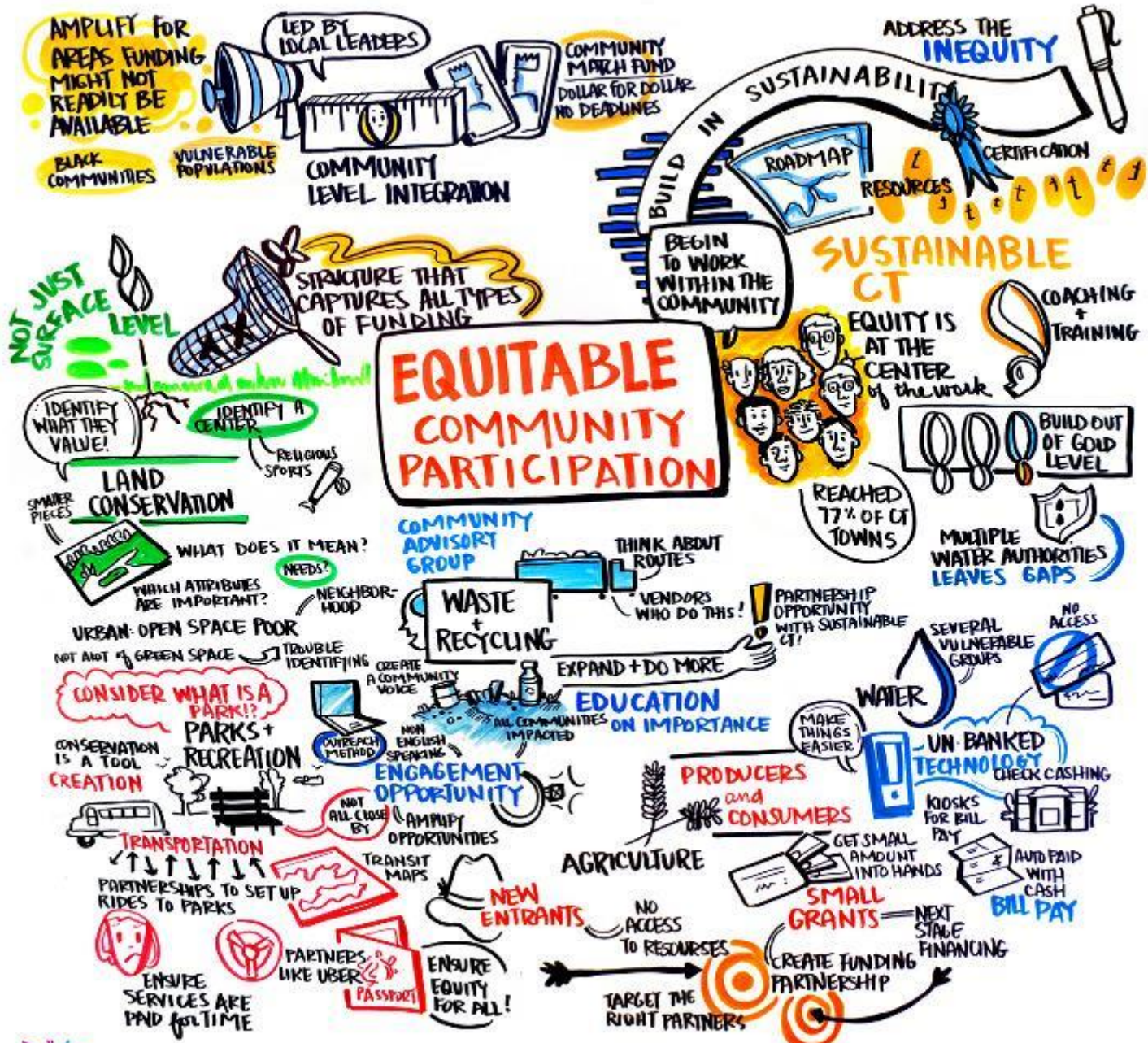
Collaborating With Vulnerable Communities

Expanded Mission, Increased Vulnerability. Expanding our mission expands the definition and scope of who is vulnerable. Communities vulnerable to the impacts of inequitable energy development are also vulnerable to the impacts of climate change we expect to see in Connecticut in the coming decades. It is important to recognize vulnerabilities can be compounded and to prioritize understanding these intersections so that we can better design and deliver solutions.

Reaching Vulnerable Communities. Partnerships with outside entities connected to vulnerable communities are a key channel to collaborating with and learning from vulnerable communities. We must build new partnerships with communities and organizations connected to the broader definition of vulnerability to not only inform them of our work, but to invite them into our program design process.

- Existing partnerships remain important connections to vulnerable communities. As we continue to work together, we need to hold those partners accountable to maintain relationships with the community

How we learn. This might require we become more flexible in how we talk about climate impacts and how we learn from our partners. Value contributions from all stakeholders, especially those with lived experience. Incorporate payment for contribution of time and expertise (e.g., honorarium).



Empowering Impacted Communities



Inform

Provide the community with balanced, objective information to assist them in understanding the problem and potential opportunities and solutions



Consult

Listen to and acknowledge community concerns and aspirations, provide feedback on how community input is influencing decisions



Involve

Ensure that community concerns are directly reflected in the alternatives developed



Collaborate

Incorporate community advice and innovation into solutions



Empower

Place the final decision in the hands of the community

Adapted from Sustainable CT

Our current stakeholder engagement tends to fall into the ‘inform’ and ‘consult’ categories of the engagement framework. As we move forward into environmental infrastructure (especially now in our learning and growing stage) we need to create a long-term engagement process that explicitly involves, collaborates and empowers impacted communities. This process should include:

- Be a disciplined approach to stakeholder engagement and management
- Include a diverse stakeholder group to identify mainstream needs, not one-offs
- Continuous input and feedback from stakeholders as we chart a new path
- Feedback on: areas of need, ‘what it will take’ to get there, how new products and programs are being received, how they can be improved
- Feedback from: vulnerable communities, municipalities, sister agencies, etc.

Collaborating with Public, Private, and Non-Profit Stakeholders

Retreat participants identified a **preliminary** list of stakeholders the Green Bank should partner with to succeed in our new mission including:

Federal & State Agencies:

- Department of Agriculture, U.S. Department of Agriculture
- Federal Emergency Management Agency
- Environmental Protection Agency
- Department of Energy & Environmental Protection
- Department of Economic & Community Development
- Public Utility Regulatory Authority
- CT Division of Emergency Management and Homeland Security
- Housing & Urban Development
- Department of Social Services
- Department of Treasury
- Department of Public Health
- Office of State Traffic Planning
- Office of Planning and Management

Other Public Stakeholders:

- UCONN
- CT Institute for Resilience & Climate Adaptation
- Transport Hartford
- Water Authorities
- American Waterworks Association
- Council on Environmental Quality
- Municipalities
- Councils of Government, Council Small Towns, CT Conference of Municipalities

- Economic Development Authority
- Municipal Tax Districts
- Transit Authorities

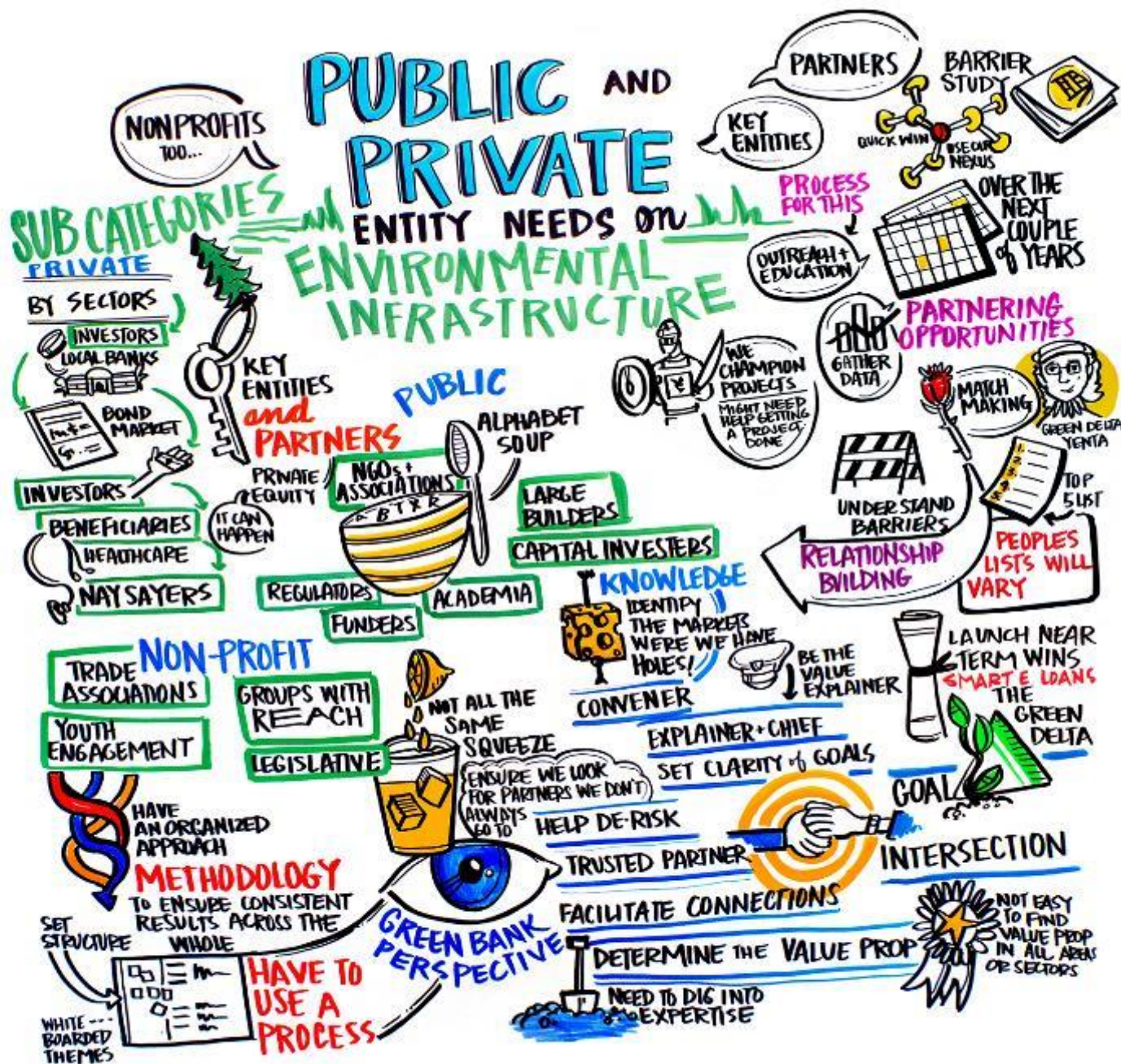
Private Organizations:

- Trade Associations/Labor
- Engineering Consultants
- Contractors / Developers
- Waste Management Companies
- Banks
- Investors/Private Equity

Non-Profits:

- Sustainable CT
- Farmers' Market Nutrition Program
- Food Banks
- Foundations
- Youth Groups (4H Clubs, Sunrise)
- CitySeed
- Nonprofit Farms
- Operation Fuel
- Environmental Advocacy Groups
- Trust for Public Lands
- National Water Efficiency Alliance
- Environmental Justice Groups
- CT Coalition for Environmental Justice





Metrics

Metrics – Methodology

While our current metrics track both quantitative and qualitative benefits, to keep us on track towards new goals, we'll need new data.

- We should be trying to speak the same language as other players in this field (compliance markets, public company ESGs, etc.)
- Tracking qualitative benefits:
 - Don't undervalue the importance of storytelling to communicate the stakeholder experience
 - Find ways to track changes in perception about safety, community cohesion, civic pride, impacts of climate change



Environmental Infrastructure Metrics

All types of infrastructure:

- \$ invested (including \$ into vulnerable geographies/communities)
- Improved resilience
 - Value associated with loss (# & duration of events)
- People served/protected
- Jobs created
- Tax revenue
- Health
 - Air Quality changes
 - Changes in health metrics/insurance rates

Water:

- Gallons treated
- Change in water quality
- \$ Savings
- Health impacts
- Reduce CCFs (residential)

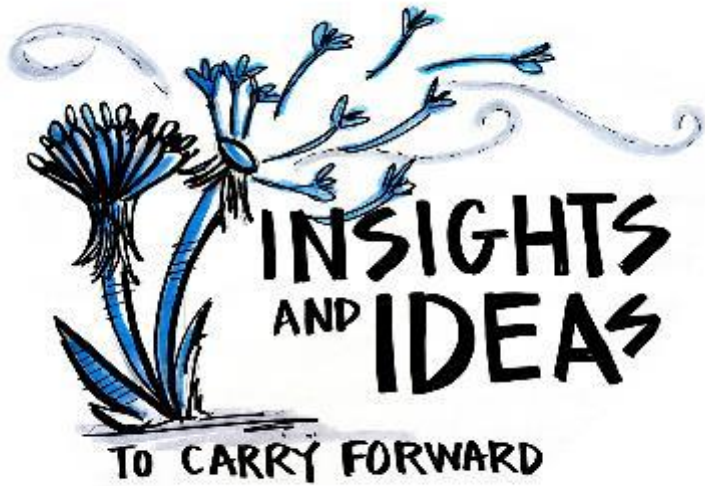
Nature-Based Solutions:

- Temperature reductions
- Acres created/protected
- Tons of carbon sequestered
- Number of heat-related hospitalizations
- Reduction in impervious surfaces

Waste/Recycling:

- Pounds created/processed/diverted (both in & out of state)
- Waste diverted
- Reduction in local emissions





Charting Our New Course

We have the tools and pathways to succeed in expanding our mission to encompass environmental infrastructure:

- A network of diverse organizations are already working towards supporting green infrastructure – identify and pursue opportunities to engage them.
- By bringing a Green Delta mindset to this space and proven tools (Green Liberty Bonds, Community Match Fund, etc.) we can accelerate the deployment of infrastructure that supports society in multiple ways.
- To succeed, we will need to evolve our community engagement practices towards empowerment, inviting underserved communities into our decision-making processes.
- We will also need to hire a new leader, supported to engage the community, to chart this course and secure the experience we need in-house to succeed.

Misc

- We need to have a shared set of definitions at the state level – support this work
- Support policy mandates to support anaerobic digesters
- As we move into EV space, support cleaner fleet for waste & recycling transportation
- Consider partnering with an agency/entity that issues grants to increase our reach into new markets.
- Establish ourselves as a means to access federal funds (especially those that require a match), we can play a role as distributor



CONNECTICUT GREEN BANK

DIRECTOR OF ENVIRONMENTAL INFRASTRUCTURE PROGRAMS

Position Grade: 18
Direct Reports: As Assigned
Salary Range: \$116,561-\$186,497

Reports to: President and CEO
Wage Hour Class: Exempt
Hours Worked: 40¹
Effective Date: July 1, 2022

SUMMARY:

The Connecticut Green Bank (hereafter “CGB”), Director of Environmental Infrastructure Programs oversees the development and implementation of a new business unit of the CGB to transform public and private investment in environmental infrastructure.² As a new business unit of the CGB, the Director will be tasked with designing, implementing, and overseeing new programs to deploy environmental infrastructure in the state with a focus on decarbonization and climate resilience. [A core goal of this position is ensuring increased investment in vulnerable communities.](#)³

CGB, a quasi-public authority, is the nation’s first state “Green Bank,” leveraging public funds to increase and accelerate private investment in the green economy of Connecticut. Working at the Green Bank means being part of a dynamic team of talented people who are passionate about implementing the green bank model, stimulating the growth and development of clean energy and environmental infrastructure investment in Connecticut – growing our economy, strengthening our communities, and protecting our environment.

EXAMPLES OF DUTIES:

- Works with the Board of Directors and the President and CEO to build the Environmental Infrastructure Business Unit, including ensuring that no less than 40 percent of investment and benefits from such programs are directed towards vulnerable communities
- Lead program development for all identified sectors of environmental infrastructure to deploy projects that deliver quantifiable climate-related benefits. Program development includes identifying and engaging stakeholders, [especially in vulnerable communities](#), originating projects, and supporting deployment of infrastructure.
- Supporting the EVP and CIO to develop and implement strategies to attract and secure private capital for financing environmental infrastructure projects and programs, [especially in vulnerable communities](#), including providing input on investment transaction structure

¹ [It is expected that the person that occupies this position will work in the office most of the week. The Green Bank does have a telecommuting policy which allows between 2-3 days of telecommuting per week.](#)

² "Environmental infrastructure" means structures, facilities, systems, services and improvement projects related to (A) water, (B) waste and recycling, (C) climate adaptation and resiliency, (D) agriculture, (E) land conservation, (F) parks and recreation, and (G) environmental markets, including, but not limited to, carbon offsets and ecosystem services.

³ [As defined by Public Act 20-05](#)

- Works with the General Counsel and CLO, and EVP and CIO, to develop, draft, and negotiate financing terms and structure for transaction originations
- Works with the VP of Operations to supervise staff including managers, associates, and assistants as appropriate
- Manages the selection of consultants, where necessary, to support the program in areas where the organization does not have specific in-house expertise, including writing grants to support projects or programs and origination of transactions
- Works with the marketing team to develop and implement strategies for community engagement resulting in transaction originations
- Works with state agencies (e.g., Connecticut Department of Energy and Environmental Protection, Department of Agriculture, Department of Public Health) to consolidate existing project pipelines and creating a Green Bank screening and prioritization of pipeline, while working to align programs and initiatives to take advantage of shared resources and programmatic synergies in order to support public policies and targets
- Develops and coordinates an advisory committee with other state agencies with a focus on program coordination, technical assistance on carbon offsets and ecosystem services, and support for implementing public policy goals.
- Contributes to the growth and development of all areas of environmental infrastructure including transaction origination, structuring, product and program development, and client service delivery, including delivering, monitoring, and tracking quantifiable climate-related benefits
- Ensures all operational (i.e., staff and policies) and organizational (i.e., contracting and reporting) requirements are being implemented and carried out, including overseeing requests for qualifications for consultants to provide technical, legal, financial, and other assistance for environmental infrastructure
- Contributes to and leads the development of comprehensive plan with a particular emphasis on strategy, budget, and human resources related to environmental infrastructure
- Represents the organization on appropriate task forces, committees, and boards relevant to environmental infrastructure
- Represents the organization to the public in speaking engagements

MINIMUM QUALIFICATIONS REQUIRED
KNOWLEDGE, SKILL AND ABILITY:

- Entrepreneurial experience starting up new programs or initiatives, including demonstrated experience originating and completing transactions
- Passion for advancing the field of environmental finance by developing innovative funding and financing models
- Ability to work with and connect external stakeholders, [especially in vulnerable communities](#), including strong facilitation, negotiation, and coordination skills
- Ability to work in a team environment as a lead contributor, manager, and facilitator
- Considerable experience in program and project origination and management
- Considerable ability to develop programs, manage stakeholder processes toward results, and interpret environmental policy
- Breadth of knowledge across multiple disciplines (e.g., finance, law and policy) and environmental infrastructure (e.g., land conservation, agriculture, water) to realize revenues from carbon offsets and ecosystem services
- Knowledge of or experience working with environmental infrastructure issues, regulations, or markets at the Local, State and Federal government levels

- Demonstrated ability to understand environmental science and the interaction with supply and demand in environmental markets, including project origination and finance
- Business development and ability to market the benefits of environmental infrastructure financing products to potential customers
- Expertise in scalable models for financing environmental infrastructure (e.g., environmental impact bonds, pay for success, buy-protect-sell)
- Knowledge and experience of public finance is a plus
- Considerable interpersonal skills, as well as oral and written communications and presentation skills

EXPERIENCE AND TRAINING:

General Experience:

A Bachelor's Degree (but a Master's degree is preferred) in environmental science, engineering, economics, political science, business administration, or related field. Seven (7) to ten (10) years of experience in any and all areas related to environmental infrastructure. Experience supervising staff and working across departments is preferred. Experience working with and facilitating collaborative outcomes with various stakeholder groups in environmental infrastructure design and project development.

Special Experience:

Two (2) years of the general experience must have been in supervising staff and with full responsibility for a program implementation.

Substitutions Allowed:

1. A Master's Degree in environmental science, engineering, economics, business administration or other related field may be substituted for one additional year of the general experience
2. A professional certification in a relevant field may substitute for one additional year of experience

Physical Requirements:

1. Frequent communications, verbal and written
2. Frequent use of math/calculations
3. Visually or otherwise identify, observe and assess
4. Repetitive use of hands and fingers -typing and/or writing

Physical Demands: The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions. While performing the duties of this job, the employee is frequently required to sit; use hands to finger, handle, or feel; reach with hands and arms and talk or hear. The employee is occasionally required to stand and walk. The employee must occasionally lift and/or move up to 20 pounds. Specific vision abilities required by this job include close vision.

Work Environment: The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions. The noise level in the work environment is usually moderate.



Government Finance Officers Association

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Chicago, Illinois 60601-1210

312.977.9700 fax: 312.977.4806

7/15/2022

Lonnie Reed
Chairperson
Connecticut Green Bank

Dear Ms. Reed:

We are pleased to notify you that your annual comprehensive financial report for the fiscal year ended June 30, 2021 qualifies for GFOA's Certificate of Achievement for Excellence in Financial Reporting. The Certificate of Achievement is the highest form of recognition in governmental accounting and financial reporting, and its attainment represents a significant accomplishment by a government and its management.

When a Certificate of Achievement is awarded to a government, an Award of Financial Reporting Achievement (AFRA) is also presented to the individual(s) or department designated by the government as primarily responsible for its having earned the Certificate. This award has been sent to the submitter as designated on the application.

We hope that you will arrange for a formal presentation of the Certificate and Award of Financial Reporting Achievement, and give appropriate publicity to this notable achievement. A sample news release is included to assist with this effort.

We hope that your example will encourage other government officials in their efforts to achieve and maintain an appropriate standard of excellence in financial reporting.

Sincerely,

A handwritten signature in black ink that reads "Michele Mark Levine". The signature is written in a cursive, flowing style.

Michele Mark Levine
Director, Technical Services



CONNECTICUT
GREEN BANKSM

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