CONNECTICUT
GREEN BANK SM

Board of Directors

Meeting Date

December 18, 2020

Board of Directors

Lonnie Reed
Chair

Binu Chandy
Deputy Director
DECD

Michael Li
Connecticut Department of Energy and Environmental Protection (DEEP)

Shawn Wooden
Treasurer
State of Connecticut

Thomas Flynn
Managing Member
Coral Drive Partners

Matthew Ranelli
Partner
Shipman & Goodwin

Eric Brown
Vice President
CT Business and Industry Association

Kevin Walsh
Senior Operating Partner
Stonepeak Infrastructure Partners

John Harrity
Chair
CT Roundtable on Climate and Jobs

Brenda Watson
Executive Director
Operation Fuel

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

CONNECTICUT
GREEN BANK

December 11, 2020

Dear Connecticut Green Bank Board of Directors:

We have a meeting of the Board of Directors scheduled for **Friday, Friday, December 18, 2020 9:00 a.m.– 11:00 a.m.**

Please take note that this will be an online meeting only! Given the need to continue to maintain "social distancing" in the face of COVID-19, we are holding this meeting online only.

For the agenda, we have the following:

- **Consent Agenda** – we have a number of items on the consent agenda, including, resolutions for:

    - Approval of Meeting Minutes for October 23, 2020
    - Position Description for Executive Vice President of Finance and Administration[1]
    - C-PACE Project (Brookfield) Re-Approval

    We also have some general report-outs, including:

    - Inclusive Prosperity Capital – Q1 of FY 2021 Update

- **Investment Updates and Recommendations** – we have a number of investments we are bringing forth, including:

    - **Working Line of Capital for Inclusive Prosperity Capital** – increasing the existing working line of capital from $150,000 to $1,000,000; and

    - **Modification to Fuel Cell Energy Groton Subbase Project Finance** – adjustment to the existing board-approved transaction (materials coming COB, Tuesday, December 15, 2020).

- **Financing Programs Updates** – an update on the status of the "Lead by Example" program with the State of Connecticut, and Solar Municipal Assistance Program (Solar MAP).

- **Incentive Programs Updates** – an update on several regulatory dockets of interest.

- **Other Business** – overview of the FY 2020 Annual Report, 2020 Connecticut Clean Energy Industry Report, and National Climate Bank Capital Needs Assessment.

[1] Promotion of Jane Murphy – currently the Vice President of Finance and Administration

As you can see, we have a packed agenda with a lot of different matters to address.

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

Until then, continue to be safe, be well, and enjoy the upcoming weekend!

Sincerely,

Bryan Garcia
President and CEO

AGENDA

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

Friday, December 18, 2020
9:00 a.m.– 11:00 a.m.

Dial (669) 224-3412
Access Code: 488-700-101

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

1. Call to order

2. Public Comments – 5 minutes

3. Consent Agenda – 5 minutes

    a. Meeting Minutes from October 23, 2020
    b. Job Description – Executive Vice President of Finance and Administration
    c. C-PACE Project Re-Approval - Brookfield

4. Investment Updates and Recommendations – 60 minutes

    a. Inclusive Prosperity Capital – Working Line of Credit
    b. FuelCell Energy – Groton Project

5. Financing Programs Updates and Recommendations – 20 minutes

    a. Lead by Example – Update
    b. Solar MAP – Update

6. Incentive Programs Updates and Recommendations – 20 minutes

    a. Regulatory Updates

        i. Docket No. 17-12-03RE09 – Small ZREC
        ii. Docket No. 20-07-01 – Renewable Energy Tariff

7. Other Business – 10 minutes

a. Other Business

8. Adjourn

Join the meeting online at https://global.gotomeeting.com/join/488700101
Or call in using your telephone:
Dial (669) 224-3412
Access Code: 488-700-101

Next Regular Meeting: Friday, January 22, 2021 from 9:00-11:00 a.m.
Connecticut Green Bank, 845 Brook Street, Rocky Hill, CT

RESOLUTIONS

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

Friday, December 18, 2020
9:00 a.m.– 11:00 a.m.

Dial (786) 535-3211
Access Code: 365-634-349

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

1. Call to order

2. Public Comments – 5 minutes

3. Consent Agenda – 5 minutes

   a. Meeting Minutes of October 23, 2020

Resolution #1

Motion to approve the meeting minutes of the Board of Directors for October 23, 2020.

   b. Job Description – Executive Vice President of Finance and Administration

Resolution #2

Motion to approve the position descriptions for Executive Vice President of Finance and Administration

   c. C-PACE Project Re-approval - Brookfield

Resolution #3

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

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

WHEREAS, the Green Bank seeks to provide a **$393,337** construction and (potentially) term loan under the C-PACE program to 1106 Federal Road, LLC., the building owner of 1106 Federal Road, Brookfield, Connecticut (the "Loan"), to finance the construction of specified clean energy measures in line with the State's Comprehensive Energy Strategy and the Green Bank's Strategic Plan.

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 in an amount not to be greater than one hundred ten percent of the Loan amount with terms and conditions consistent with the memorandum submitted to the Committee dated December 15, 2019, and as he or she shall deem to be in the interests of the Green Bank and the ratepayers no later than 120 days from the date of authorization by the Board of Directors;

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

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

4. Investment Updates and Recommendations – 60 minutes

   a. Inclusive Prosperity Capital – Working Line of Credit

Resolution #4

WHEREAS, the Connecticut Green Bank ("Green Bank") has an existing partnership with Inclusive Prosperity Capital, Inc. ("IPC") to lessen the burden of government, and to protect, promote and preserve the environment by, among other things, furthering the purpose of the Green Bank as described in Connecticut General Statute Section 16-245n(d)(1)(B);

WHEREAS, on June 13, 2018, the Green Bank Board of Directors ("Board") approved a Memorandum of Understanding ("MOU") governing the Green Bank's partnership with IPC as part of Green Bank's long-term sustainability plan;

WHEREAS, the MOU included a Revolving Line of Credit ("RLC") intended to support IPC startup and operational costs for an amount not to exceed $150,000 outstanding and with a maturity date of June 30, 2021;

WHEREAS, since August 2020, IPC has drawn on and kept outstanding $150k of the original RLC, and has remained current and in good-standing on all repayments associated therewith;

WHEREAS, IPC is seeking to expand and extend the maturity date of the RLC up to $1,000,000 outstanding and with a maturity date of June 30, 2024 (the "Amended Maturity Date") to facilitate smoothing out continued expenditures associated operations and growth, as more fully explained in a memorandum to the Board dated December 18, 2020 (the "Board Memo");

WHEREAS, staff of the Green Bank, having fully considered the proposed uses by IPC for the RLC facility and the sources and likelihood for repayment of the RLC facility not later than the Amended Maturity Date, recommend the expanded and extended RLC to the Board for approval, as more fully explained in the Board Memorandum;

NOW, therefore be it:

RESOLVED, that the Board approves of the expanded and extended RLC for up to $1,000,000 outstanding and with a maturity date of June 30, 2024 consistent with the Board Memo;

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

b. FuelCell Energy – Groton Project

Resolution #5

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, has 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, Green Bank staff recommends that the Green Bank Board of Directors ("Board") approve of the Credit Facility, in an amount not to exceed $8,000,000;

WHEREAS, Green Bank staff recommends that the Green Bank Board of Directors ("Board") approve of a participation by Inclusive Prosperity Capital, Incorporated ("IPC") in the Credit Facility, in an amount not to exceed $3,000,000;

NOW, therefore be it:

RESOLVED, that the Green Bank Board of Directors (the "Board") hereby approves the Credit Facility in an amount not to exceed $8,000,000 for the Navy Project, as a *strategic selection and award* pursuant to Green Bank Operating Procedures Section XII; and

RESOLVED, that the Board hereby approves of a participation by IPC in the Credit Facility, in an amount not to exceed $3,000,000;

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, 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 the date of authorization by the Board of Directors; 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 Term Loan.

5. Financing Programs Updates and Recommendations – 20 minutes

    a. Lead by Example – Update
    b. Solar MAP – Update

6. Incentive Programs Updates and Recommendations – 20 minutes

    a. Regulatory Updates

        i. Docket No. 17-12-03RE09 – Small ZREC
        ii. Docket No. 20-07-01 – Renewable Energy Tariff

7. Other Business – 10 minutes

    a. Other Business

8. Adjourn

Join the meeting online at https://global.gotomeeting.com/join/488700101
Or call in using your telephone:
Dial (669) 224-3412
Access Code: 488-700-101

Next Regular Meeting: Friday, January 22, 2021 from 9:00-11:00 a.m.
Connecticut Green Bank, 845 Brook Street, Rocky Hill, CT

Subject to Changes and Deletions

BOARD OF DIRECTORS OF THE
CONNECTICUT GREEN BANK
Regular Meeting Minutes

Friday, October 23, 2020
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 October 23, 2020.

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

Board Members Present: Binu Chandy, Thomas Flynn, John Harrity, Michael Li, Steve Meier, Matthew Ranelli, Lonnie Reed, Kevin Walsh, Brenda Watson

Board Members Absent: Eric Brown

Staff Attending: Emily Basham, Sergio Carrillo, Shawne Cartelli, Louise Della Pesca, Mackey Dykes, Brian Farnen, Bryan Garcia, Bert Hunter, Matt Macunas, Jane Murphy, Selya Price, Cheryl Samuels, Eric Shrago, Ariel Schneider, Marianna Trief, Mike Yu

Others present: Giulia Bambara (in for Michael Li as needed), Gannon Long from Operation Fuel, Leslie Badger, Justine Sears, and Jennifer Wallace-Brodeur from VEIC.

1. Call to Order

- Lonnie Reed called the meeting to order at 9:02 am.

2. Public Comments

- No public comments.

3. Consent Agenda
a. Meeting Minutes of September 23, 2020

Resolution #1

Motion to approve the meeting minutes of the Board of Directors for September 23, 2020.

Upon a motion made by Brenda Watson and seconded by Binu Chandy, the Board of Directors voted to approve Resolution 1. None opposed or abstained. Motion approved unanimously.

b. Connecticut Green Bank Progress to Targets for FY 2020 (Final)

- Bryan Garcia gave a brief summary about the final FY 2020 progress to targets.

Resolution #2

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

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

WHEREAS, on July 18, 2019, the Board of Directors of the Connecticut Green Bank approved a Comprehensive Plan for FY 2020 and Beyond called Green Bonds US, including an annual budget and targets for FY 2020, which was approved on July 18, 2019 and revised on January 21, 2020;

WHEREAS, on July 24, 2020, the Board of Directors of the Connecticut Green Bank approved of the draft Program Performance towards Targets for FY 2020 memos for the Incentive Programs and Financing Programs.

NOW, therefore be it:

RESOLVED, that Board has reviewed and approved the restated Program Performance towards Targets for FY 2020 memos dated October 23, 2020, which provide an overview of the performance of the Incentive Programs and Financing Programs with respect to their FY 2020 targets.

RESOLVED, that Board has also reviewed and approved the Investment and Public Benefit Performance memo dated October 23, 2020.

Upon a motion made by John Harrity and seconded by Matthew Ranelli, the Board of Directors voted to approve Resolution 2. None opposed or abstained. Motion approved unanimously.

c. Board of Directors and Committees – Regular Meeting Schedule for 2021

- Thomas Flynn commented that the Special Meetings are difficult to plan around and requested there try to be more time in consideration before planning them. Bryan Garcia responded that he will get a more comprehensive schedule to him when it is finalized. Bert Hunter also commented that Special Meetings are unfortunately difficult to control when they occur, but usually Deployment Committee meetings are converted into Special Board Meetings.

Resolution #3

Motion to approve the Regular Meeting Schedules for 2021 for the Board of Directors, ACG Committee, BOC Committee, and Deployment Committee.

Upon a motion made by Kevin Walsh and seconded by John Harrity, the Board of Directors voted to approve Resolution 3. None opposed or abstained. Motion approved unanimously.

d. Position Description – Senior Advisor to the President and CEO

- Bryan Garcia gave a brief summary of the position description which will transition Sergio Carrillo into Selya Price's position, as she stays to support that transition.

Resolution #4

Motion to approve the position descriptions for Senior Advisor to the President and CEO.

Upon a motion made by John Harrity and seconded by Brenda Watson, the Board of Directors voted to approve Resolution 4. None opposed or abstained. Motion approved unanimously.

e. Under $500,000 and No More in Aggregate than $1,000,000 in Approvals

- Bryan Garcia gave an overview of the transaction limits in place and the change to implement a report-out procedure for the Deployment Committee and then approvals being required by the Board of Directors.

Resolution #5

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 October 23, 2020 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 October 23, 2020 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 Brenda Watson and seconded by Steve Meier, the Board of Directors voted to approve Resolution 5. None opposed or abstained. Motion approved unanimously.

f. Other Documents

- Loan Loss Decision Framework Report for FY 2020
- Under $100,000 and No More in Aggregate than $500,000 in Restructurings/Write-Offs
- IPC Progress to Targets for FY 2020
- Connecticut Green Bank Progress to Targets – Q1 of FY 2021

4. Committee Updates and Recommendations

a. Audit, Compliance, and Governance Committee

i. FY 2020 Comprehensive Annual Financial (CAFR) report

- Matthew Ranelli introduced the CAFR and ACG Committee recommendations. He noted the CAFR was presented as clean with no issues found.
- Jane Murphy noted the modifications included in today's meeting are formatting changes and there will be one more draft after this which will have more minor formatting changes. She then summarized the main points of the CAFR, that the Green Bank will be issued a clean, unmodified audit, and that there were no issues found.
- Jane Murphy pointed out that one thing the auditors noted is that the Green Bank does use some estimates in the financial statements which are the same items as in prior years statements. However there has been an increase to loan loss reserves due to the impact of COVID-19 as resolved by the Board at the April 24, 2020 meeting.
- Matthew Ranelli summarized the history of the CAFR and reason for its implementation for background.

Resolution #6

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

WHEREAS, the Committee met on October 15, 2020 and recommends to the Board the approval of the proposed draft Comprehensive Annual Financial Report (CAFR) contingent upon no further adjustments to the financial statements or additional required disclosures which would materially change the financial position of the Green Bank as presented.

NOW, therefore be it:

RESOLVED, that the Board approves of the proposed draft Comprehensive Annual Financial Report (CAFR) contingent upon no further adjustments to the financial statements or

additional required disclosures which would materially change the financial position of the Green Bank as presented.

Upon a motion made by Thomas Flynn and seconded by Binu Chandy, the Board of Directors voted to approve Resolution 6. None opposed or abstained. Motion approved unanimously.

ii. Board of Director Meeting Attendance

- Brian Farnen summarized the results of the ACG Committee that met on October 15, 2020.

5. Incentive Programs Updates and Recommendations

a. Residential Solar Investment Program – Steps 16 and 17

- Bryan Garcia noted that the Utility Accountability bill was the focus of the recent legislative session, so instead the Green Bank had the Board of Directors approve 10 MW beyond 350 MW so that that 350 MW target could actually be reached given cancellations. As well, 22 MW were approved beyond the additional 10 MW to help stabilize the industry due to COVID-19 for a total of 382 MW.
- The Green Bank received a Motion Ruling from PURA in support of the Green Bank's request to continue to allow residential REC aggregation. Given its cost recovery target of $20 for RECs, the staff initiated a right of first refusal process with the EDCs on a long-term REC purchase offer structure to reduce the risk of cost recovery. Steps 16 and 17 are designed to further reduce that risk in cost recovery.
- Sergio Carrillo presented the proposals for Steps 16 and 17, which would begin on October 28, 2020 and December 15, 2020 respectively, as well as the history of Steps 14 and 15. There would be an overall EPBB incentive reduction of 20%, a 10% incentive reduction for LMI PBIs, and no change to regular PBIs as they are already at the lowest level among incentive types.
    - John Harrity asked what the changes would do in terms of cost to consumers in comparison to other states. Bryan Garcia noted that there hasn't been an update done recently in terms of the comparison to other Northeast states, but he thinks it would be similar to where it is currently – that Connecticut provides the lowest level of incentives (including tax credits) and achieves the greatest level of deployment on a per capita basis.

Resolution #7

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

WHEREAS, as of October 12, 2020, the Program has thus far resulted in nearly three hundred and forty-seven (346.5) megawatts of new residential solar PV installation application approvals and nearly three hundred and nine (308.6) MW of completed projects in Connecticut;

WHEREAS, at the September 23, 2020 special meeting, the Green Bank Board of Directors approved up to 32 MW of total additional capacity to be approved for incentives beyond RSIP's statutory 350 MW target, including up to 10 MW to account for RSIP cancellations, and an additional 22 MW, to support the residential solar PV industry toward achieving sustained, orderly development in the context of COVID-19 impacts. The Green Bank will therefore approve up to a total of 382 MW, to be cost recovered through REC sales as described in this memo.

WHEREAS, at the September 23, 2020 special meeting, the Green Bank Board of Directors requested that the Staff return with a recommendation at a future meeting for review and approval of the incentive level for RSIP beyond 350 MW (e.g., reducing the residential solar PV incentives beyond the current Step 15 levels of the RSIP).

NOW, therefore be it:

RESOLVED, that the Board approves of the RSIP Schedule of Incentives set forth in Tables 2 through 4 in the memo "Residential Solar Investment Program – Steps 16 and 17 Recommendations" dated October 23, 2020, reflecting the following incentive reductions for RSIP Step 17 as compared to Step 16:

- 20% for EPBB overall (consisting of a 16% reduction for capacity ≤10 kW and an 37% reduction for capacity >10 kW)
- 10% for LMI PBI

Upon a motion made by Matthew Ranelli and seconded by John Harrity, the Board of Directors voted to approve Resolution 7. None opposed or abstained. Motion approved unanimously.

Michael Li had to leave the meeting following Resolution #7. Quorum was maintained.

6. Financing Programs Updates and Recommendations

a. Mystic Aquarium C-PACE Project

- Mackey Dykes summarized the Mystic Aquarium project which seeks C-PACE reapproval, as delays had caused it to pass its approval period due to lender consent issues and COVID-19. The project cost amount is slightly decreasing even with additional project components, which is due to increased incentives by Eversource.
    - John Harrity commented that the project is fantastic, which should help increase the draw to the Aquarium. Brenda Watson and Thomas Flynn also agreed as it increases their positive environmental impact. Thomas Flynn suggested contacting Mystic Aquarium about future marketing partnerships to further endorse the Green Bank.
    - Matthew Ranelli asked about the selection of the 3% interest rate and asked why the Mystic Aquarium is not considering a Fuel Cell in place of solar. Mackey Dykes answered that the interest rate was selected in place of the previous 5.9% rate to promote more positive cash flows to the Aquarium as they struggle in the

wake of COVID-19 and to match the state financing for the Aquarium. Mackey Dykes also noted there is no natural gas in the area, though a Fuel Cell is being discussed in addition to natural gas lines being extended, though it is contingent on the construction of gas lines.

- Thomas Flynn suggested an in-kind marketing program may be a viable option to make up the difference due to the lower rate. He noted the benefits to the Mystic Aquarium, Green Bank, and general public awareness. Mackey Dykes agreed.

Resolution #8

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

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

WHEREAS, the Green Bank Deployment Committee in September of 2019 approved a $1,285,872 construction and term loan under the C-PACE program to Sea Research Foundation, Inc., the building owner of 55 Coogan Blvd, Mystic, Connecticut, to finance the construction of specified clean energy measures in line with the State's Comprehensive Energy Strategy and the Green Bank's Strategic Plan; and

WHEREAS, the Green Bank, subject to a revised scope of work seeks to provide a $1,259,862 construction and term loan under the C-PACE program at a concessional rate to Sea Research Foundation, Inc., the building owner of 55 Coogan Blvd, Mystic, Connecticut (the "Loan"), to finance the construction of specified clean energy measures in line with the State's Comprehensive Energy Strategy and the Green Bank's Strategic Plan as more fully explained in a memorandum submitted to the Board dated October 16, 2020 (the "Memorandum"); and

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 in an amount not to be greater than one hundred ten percent of the Loan amount with terms and conditions consistent with the Memorandum, 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 the date of authorization by the Board of Directors;

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

RESOLVED, the Green Bank and the borrower will agree upon a marketing plan, either in the Loan documents or a separate marketing agreement, to promote the clean energy project financed by CPACE; 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 above-mentioned legal instruments.

Upon a motion made by Thomas Flynn and seconded by John Harrity, the Board of Directors voted to approve an Amendment to Resolution 8 that the Green Bank will aim to enter a marketing partnership with the Mystic Aquarium as a condition of the lower, preferred interest rate of 3%. None opposed or abstained. Amendment approved unanimously.

Upon a motion made by Matthew Ranelli and seconded by Kevin Walsh and John Harrity, the Board of Directors voted to approve Resolution 8 including the Amendment. None opposed or abstained. Motion approved unanimously as amended.

7. Investment Updates and Recommendations

a. Skyview Commercial Solar Financing Facility Increase

- Louise Della Pesca summarized the proposed expansion of the secured term loan for the Skyview Commercial Solar Financing Facility. The borrower has been a prompt payer and the projects have been performing within expectations. To expand to $7 million would be within the same economic terms, and the borrower has a financeable project pipeline of 4.2 MW through 2021.
    - Matthew Ranelli asked if this borrower selection was a result of an RFP. Louise Della Pesca explained the Green Bank went through Strategic Selection for this borrower and that now there is an open RFP for other developers who may be interested.

Resolution #9

WHEREAS, the Connecticut Green Bank ("Green Bank") has significant experience in the development and financing of commercial solar PPA projects in Connecticut;

WHEREAS, the Green Bank continually seeks new ways to work with private sector partners to meet the demonstrated need for flexible capital to continue expanding access to financing for commercial-scale customers looking to access solar and savings via a PPA;

WHEREAS, the Green Bank has established a working relationship with a private sector Connecticut solar developer, Skyview Ventures ("Skyview"), and through that relationship the Green Bank has an opportunity to deploy capital for the development of clean energy in Connecticut, and specifically toward commercial solar PPA projects developed by Skyview in Connecticut ("Skyview PPA Projects");

WHEREAS, the Green Bank is implementing a Sustainability Plan that invests in various clean energy projects and products to generate a return to support its sustainability in the coming years;

WHEREAS, based on diligence of Green Bank staff of the proposed senior secured loan facility ("Term Loan") the Green Bank Deployment Committee (the "Deployment Committee") passed resolutions at its meeting held on February 27, 2020 to recommend to the Green Bank Board of Directors (the "Board") the approval of the Term Loan transaction in an amount not to

exceed $2.3M as a Strategic Selection and Award pursuant to the Green Bank Operating Procedures Section XII;

WHEREAS, the Board passed resolutions at its meeting held on March 25, 2020 to approve the Term Loan transaction in an amount not to exceed $2.3M as a Strategic Selection and Award pursuant to the Green Bank Operating Procedures Section XII given the special capabilities, uniqueness, strategic importance, urgency and timeliness, and multi-phase characteristics of the Term Loan transaction;

WHEREAS, the Board passed resolutions at its meeting held on April 24, 2020 to expand the approved the Term Loan transaction to an amount not to exceed $3.5M; and

WHEREAS, based on an expanding pipeline of Skyview PPA Projects and diligence of Green Bank staff, Green Bank staff proposes the Term Loan be increased.

NOW, therefore be it:

RESOLVED, that the Board hereby amends and restates its approval of the Term Loan transaction as described in the Project Qualification Memo submitted by the staff to the Board and dated October 14, 2020 (the "Memorandum") to increase the amount of the Term Loan from $3.5 million to $7.0 million and on terms and conditions substantially consistent with those described in the Memorandum as a Strategic Selection and Award pursuant to the Green Bank Operating Procedures Section XII given the special capabilities, uniqueness, strategic importance, urgency and timeliness, and multi-phase characteristics of the Term Loan transaction; and

RESOLVED, that the proper Green Bank officers are authorized and empowered to do all other acts and execute and deliver all other documents as they shall deem necessary and desirable to affect this Resolution.

Upon a motion made by John Harrity and seconded by Brenda Watson, the Board of Directors voted to approve Resolution 9. None opposed and Matthew Ranelli is abstaining. Motion approved.

b. PosiGen

- Bert Hunter summarized the history of PosiGen's performance before COVID-19 and their performance since, which has recovered well despite of the pandemic.
- Bert Hunter reviewed the history and existing Board authorizations with PosiGen as well as the proposal for a new participant, Candide, within the second Lien Facility, up to $5 million at the same rate as the Green Bank.
    - Steve Meier asked for clarification about the position of New Island Capital. Bert Hunter explained they will be replaced by Ares in the future.
- Bert Hunter summarized the PosiGen Arrearages, which is at $581,207 past due. That amount is approximately $400,000 owed balance and $180,000 of late fees. He explained the plan to exchange the past due amount for company stock as a "cashless" exercise which could work better over time. There is a potential for a 6x ROI at exit in 4 years.
    - Kevin Walsh expressed concerns with making sure there are appropriate cash flows in place to be sure the Green Bank is paid. Bert Hunter confirmed there is, as the Green Bank controls the release of PBI Incentive payments to all

companies, including PosiGen.

Resolution #10

WHEREAS, the Connecticut Green Bank ("Green Bank") has an existing partnership with PosiGen, Inc. (together with its affiliates and subsidiaries, "PosiGen") to support PosiGen in delivering a solar lease and energy efficiency financing offering to LMI households in Connecticut;

WHEREAS, the Green Bank Board of Directors ("Board") previously authorized and later amended the Green Bank's participation in a 2nd lien credit facility (the "BL Facility") encompassing all of PosiGen's solar PV system and energy efficiency leases in the United States as part of the company's strategic growth plan, so long as Green Bank's retained risk did not to exceed $14 million;

WHEREAS, PosiGen is currently finalizing an equity round projected to raise approximately $40 million;

WHEREAS, the Candide Group ("Candide") would like to participate in the Green Bank's BL Facility in an amount not-to-exceed $5 million, such that the overall facility would be capped at $19 million with the Green Bank's retained risk not exceeding $14 million as more fully explained in a memorandum submitted to the Board October 16, 2020 (the "Memorandum");

WHEREAS, the Green Bank has warrants in PosiGen that require restructuring for PosiGen to complete its equity round but nonetheless provide the Green Bank a meaningful opportunity to participate in the company's equity upside if renegotiated as explained in the Memorandum.

NOW, therefore be it:

RESOLVED, that the Board authorizes the Green Bank to enable Candide to participate in the BL Facility, subject to PosiGen closing its upcoming equity round, such that the BL Facility would be capped at $20 million with the Green Bank's retained risk not exceeding $14 million and a participation by Candide in the BL Facility not to exceed $5 million;

RESOLVED, that the Board authorizes the Green Bank to renegotiate its existing warrant agreement with PosiGen to facilitate the closing of that round, so long as the Green Bank's anticipated return profile is preserved in accordance with the Memorandum; and

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

Upon a motion made by Matthew Ranelli and seconded by John Harrity, the Board of Directors voted to approve Resolution 10. None opposed and Brenda Watson abstained. Motion approved.

c. Cargill Falls Update

- Marianna Trief summarized the project background and update. The project received its Certificate of Occupancy. Residential occupancy is at 75% but commercial leases have been slow to fill. The smaller turbine of the hydro plant is not completed and is awaiting approval of a permit from the Department of Transportation. As well the project is at $3,100,000 in cost overruns, about 10%. The project team and funders have been exploring funding alternatives, including a $1,850,000 request from the Urban Act Fund. The before and after photos of the indoor spaces looked drastically improved and promising to Board members.

8. Other Business

a. Mapping Household Energy & Transportation Affordability in Connecticut

- Lonnie Reed summarized part of the reasoning behind the importance of this Energy & Transportation Affordability study. Bryan Garcia noted this study was part of the research and development budget from FY2018.
- Emily Basham summarized part of the history and preliminary information that was the foundation for the study. She then introduced the members of VEIC: Justine Sears, Leslie Badger, and Jennifer Wallace-Brodeur.
- Justine Sears gave an overview of the mission of VEIC, the background, scope, and methodology used in the study. She clarified frequent terms and affordability thresholds used.
- Justine Sears reviewed the results of the study. For Building Energy spending, the study found it to be about $444 million, or $1,010 per household. For Transportation spending, the mean annual spending is approximately $12,978 which is about 20% income burden.
    - John Harrity asked if the calculated burden from the Building Energy spending is due to fixed metrics, building efficiency, income, or other means. Justine Sears answered that it is a combination of factors.
    - Gannon Long from Operation Fuel asked how the $111 cost for public transportation was calculated. Justine Sears explained it was an average across the state including land use and level of service, which was from the model used. Gannon Long noted it may not be accurate for many people, which Justine Sears agreed and discussed that with the Department of Transportation but that was the data that was available for the scope of the study.
- Justine Sears summarized the conclusions of the study which is that the energy burden is highest among low income households, upwards of 6-7 times higher, high energy burdens are clustered in urban areas, and that transportation costs are high across the state. She then reviewed policy and program recommendations based on the findings.
- John Harrity commented that an electric, reliable bus system would be a huge effort to lessen the burden on all. Matthew Ranelli also pushed the need to increase ridership and make public transportation more accessible.

9. Mandatory Ethics Training

- The available Board Members joined the Ethics Training after the Board of Directors Meeting adjourned. Those who could not attend today will be sent a link to attend online.

10. Adjourn

Upon a motion made by Binu Chandry and seconded by Steve Meier, the Board of Directors Meeting adjourned at 11:17 am.

Respectfully submitted,

_____

Lonnie Reed, Chairperson

CONNECTICUT GREEN BANK

EXECUTIVE VICE PRESIDENT OF FINANCE AND ADMINISTRATION

Position Grade: 20
Direct Reports: As assigned
Salary Range: $150,649 to $241,039

Reports to: President & CEO
Wage Hour Class: Exempt
Hours Worked: 40
Effective Date: January 1, 2021

SUMMARY:

The Executive Vice President of Finance and Administration performs as the senior finance and administration executive, and as a key member of the leadership of the Green Bank, reports directly to the President and CEO. This position is accountable for managing the financial and management accounting in conformity with accounting principles generally accepted in the United States of America (GAAP) and accounting and financial reporting standards of the Governmental Accounting Standards Board (GASB), reporting (both internal and external), financial planning and analysis, as well as the day to day management of the accounting department and related administrative activities of the Connecticut Green Bank.

The Green Bank, a quasi-public authority, is the nation's first state "Green Bank," leveraging public and private funds to drive investment and scale up clean energy deployment in Connecticut. Working at the Green Bank means being part of a dynamic team of talented people who are passionate about implementing the new green bank model, stimulating the growth of clean energy in Connecticut, strengthening our economy, and protecting our environment.

KEY ACCOUNTABILITIES:

- Plans, directs and coordinates all accounting functions, including financial reporting (both internal and external), financial and liquidity planning and analysis as well as the day to day management of the accounting department and related administrative activities;
- Directs and manages the accumulation and consolidation of all financial data necessary for an accurate accounting of consolidated business results;
- Directs, coordinates and prepares internal and external financial statements;
- Directs and coordinates activities of external auditors (financial & state) for the Green Bank and its subsidiaries;
- Supervises the accounting department staff;
- Provides management with information vital to the decision-making process;
- Assists with developing and monitoring business performance metrics;
- Oversees regulatory reporting, frequently including tax planning and compliance;

- Working with the Managing Director of Operations, prepares budgets and forecasts for review by senior management and approval by the Budget, Operations, and Compensation Committee and the Board;
- Regularly assesses current accounting systems (software and supporting database), operations, and internal control systems, and proactively implements improvements to internal controls and accounting processes and procedures;
- Analyzes and interprets accounting records and reports;
- Analyzes financing transactions and recommends appropriate accounting presentation in financial statements;
- Implements new accounting standards as promulgated by the Government Accounting Standards Board for CGBs consolidated financial statements and as promulgated by the Financial Accounting Standards Board for standalone subsidiary audits;
- Coordinates preparation of estimates and calculations of projected revenue and expense items and periodic cash flow reports;
- Supervises the maintenance of the investment subsidiary ledgers and client amortization schedules;
- With the Chief Investment Officer, directs and manages the collection of client receivables and delinquencies, assessments of any impairment of financing and investment transactions, and establishes appropriate reserves for loan and investment losses;
- Coordinates the production of total payback and other performance reports**,** as well as long term forecasting spreadsheets;
- Performs the treasury function for the organization overseeing all external bank accounts and related cash management processes;
- Oversees the portfolio valuation process and the external and internal audits.
- Develops and evaluates policies, procedures and procedural revisions for review by senior management and approval by the Audit, Compliance, and Governance Committee and Board of Directors;
- Serves as staff co-liaison with the General Counsel and Chief Legal Officer to the Audit-Compliance, and Governance Committee and acts as liaison to state auditors and public auditors;
- Manages state and federal tax filings and reporting requirements for CGB and its subsidiaries;
- Performs other related duties as required.

MINIMUM QUALIFICATIONS REQUIRED
KNOWLEDGE, SKILL AND ABILITY:

Ability to address managerial matters with attention to detail, as well as the facility to keep in mind the larger framework. The ability to prepare, analyze, and interpret financial statements and other complex financial and legal concepts and documents. Requires considerable knowledge of financial and management accounting practices, financial and investment transactions (generally), business operations and general management and the ability to apply relevant State and Federal laws, statutes, and regulations. Requires considerable ability and willingness to function constructively as a leader of or participant in one or more teams. Must possess considerable knowledge of and have the ability to

apply management principles and techniques. Requires the ability to respond flexibly and adapt to changing circumstances. Requires considerable knowledge of the principles, procedures and applications of accounting systems. Considerable interpersonal skills which include oral and written communication skills, negotiating skills, strong portfolio valuation skills, and fluency with accounting software and spreadsheet applications

EXPERIENCE AND TRAINING:

A Bachelor's degree in accounting and nine years' employment experience in a combination of fiscal/administrative functions (e.g. accounting, budget management, personnel, payroll, purchasing, or other relevant business or management disciplines).

Substitutions Allowed:
1. A Masters Degree in accounting may be substituted for one (1) additional year of the General Experience.
2. A certification as a Certified Public Accountant may be substituted for one (1) additional year of the General 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.

1106 Federal Road: A C-PACE Project in Brookfield, CT

Address	1106 Federal Road, Brookfield, CT 06804			
Owner	1106 Federal Road, LLC			
Proposed Assessment	$393,337			
Term (*years*)	15			
Term Remaining (*months*)	Pending construction completion			
Annual Interest Rate[1]	5.75%			
Annual C-PACE Assessment	$39,490			
Savings-to-Investment Ratio	1.54			
Average DSCR	[redacted]			
Lien-to-Value	[redacted]			
Loan-to-Value	[redacted]			
Projected Energy Savings (mmBTU)		EE	RE	Total
	Per year		637	637
	Over EUL		11,856	11,856
Estimated Cost Savings (incl. ZRECs and tax benefits)	Per year		$18,408	$18,408
	Over EUL		$449,321	$449,321
Objective Function	30.14 kBTU / ratepayer dollar at risk			
Location	Brookfield			
Type of Building	Commercial Warehouse – Tile & Stone Retail			
Year of Build	1978			
Building Size (*sf*)	19,800			
Year Acquired by Owner	2017			
As-Complete Appraised Value[2]	[redacted]			
Mortgage Lender Consent	[redacted]			
Proposed Project Description	135 kW Solar PV			
Est. Date of Construction Completion	Pending closing			
Current Status	Awaiting Board of Directors Approval			
Energy Contractor	[redacted]			
Notes				

[redacted]

21 New Britain Ave, Suite #211
Rocky Hill, CT 06067
Phone: 860-756-5880
Web: www.ers-inc.com

C-PACE TECHNICAL REVIEW REPORT

TO: Alysse Lembo-Buzzelli, CT Green Bank

FROM: Vijay Gopalakrishnan – ERS

CC: Mackey Dykes, Nicholas Zuba, CT Green Bank

RE: 1106 Federal Road C-PACE Project Technical Review Report

Report Date	12/11/2020
Customer Name	La Pietra Thinstone Veneer of Monroe
Address	1106 Federal Road, Brookfield, CT 06804
Property Type	Tile and Stone Retail
Property Size (sq. ft.)	N/A
Contractor(s)	Efficient Lighting Consultants

EXECUTIVE SUMMARY

This report provides a summary of the technical review conducted by Vijay Gopalakrishnan of ERS for the solar PV project that will be located at 1106 Federal Road in Brookfield, CT. The CT Green Bank provided ERS with the required project documentation for review. The project scope includes upgrading the interior lighting that will be financed through EnergizeCT Small Business Energy Advantage (SBEA) program's on bill financing and the installation of one PV array with a capacity of 135.0-kW (DC).

ERS was provided historical electric usage data for the site which contained the required rate structure information and 12 months of consumption data. Based on the data for the most-recent 12 months, the annual kWh consumption across all electric accounts is 191,280 kWh. Based on the contractor's solar PV analysis conducted using Folsom Labs software (confirmed to be reasonable when compared with PV Watts), the solar PV system is expected to produce 173,100 kWh in the first year. The lighting energy efficiency project results in annual energy savings of 13,586 kWh which does not increase the risk of the solar PV system generating excess energy on an annualized basis. An annual energy escalation rate of 2.99% was applied to the utility rate. One ZREC contract has been approved for this system and the contract offers $100.0 per ZREC with a capacity of 168 maximum annual ZRECs. ERS included the ZREC income in the SIR calculations. ERS also included the cost savings from the lighting energy efficiency

project. The contractor agreed to provide a 20-year warranty on the inverters for this project. We applied a 26% investment tax credit rate in our analysis.

Table 1 lists the project level financial summary. Based on a 15-year finance term and a 20-year EUL, this project has an overall SIR of 1.48.

Table 1. Project Financial Summary

Savings to Investment Ratio (SIR)	1.48
Project cost	$421,746
Amount financed	$393,337
Gross total cost savings over EUL	$877,037
Total PACE + O&M payments over EUL	$592,345
% financed	95%
SBEA financing (not included in C-PACE financed amount)	$18,017
Interest rate	5.750%
Finance term, years	15

PROJECT ENERGY SAVINGS AND TAX CREDITS/INCENTIVES SUMMARY

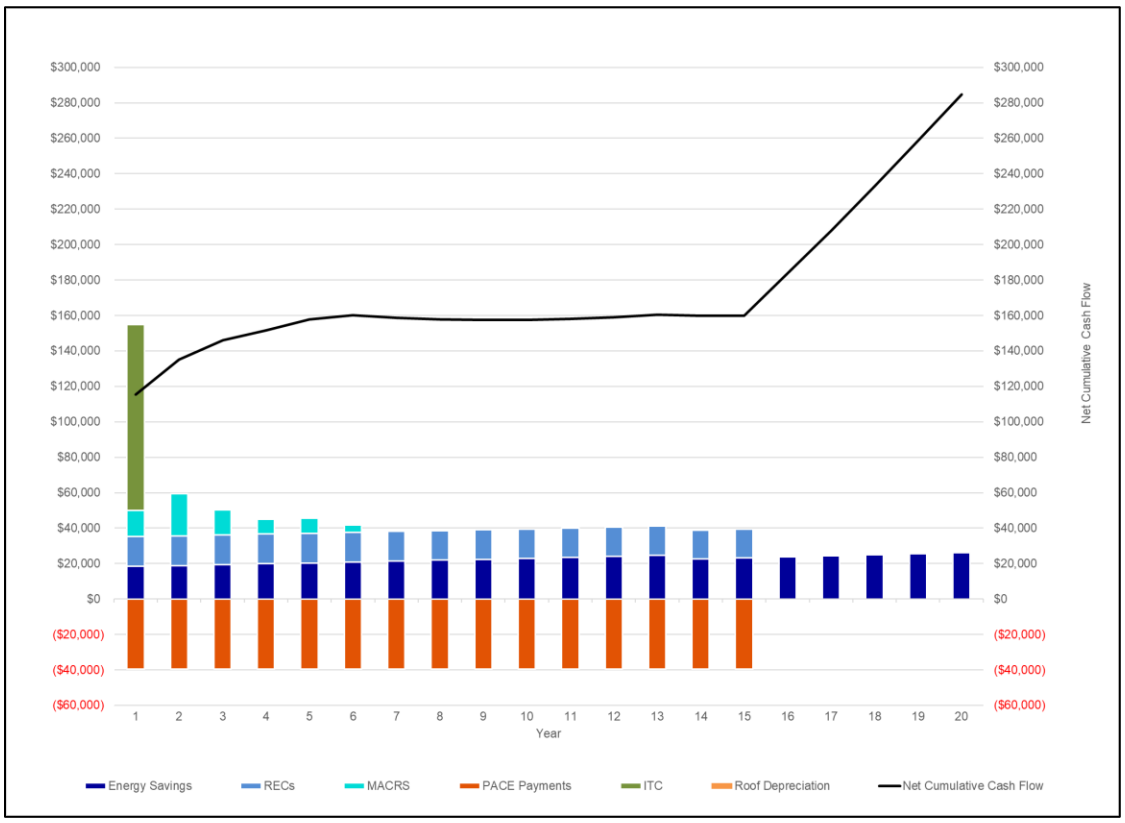
The project scope financed through the C-PACE program includes the installation of a solar PV system with a capacity of 135.0-kW (DC). Concurrently, this project also involves upgrading the lighting system that will be financed separately that will result in energy savings of 13,586 kWh, demand savings of 2.4 kW and estimated first year cost savings of $1,933 (with an EUL of 13 years). The overall project level energy and cost savings, Energy on the Line grant (EOTL), and tax credits summary is presented in Table 2.

Table 2. Measure Energy Savings Summary

Effective useful life – EUL (years)	20
Gross project cost	$421,746
Closing Cost (Including $5k appraisal fee)	$16,311
Energy on the Line Grant (EOTL)	$26,703
Financed amount (including closing costs and EOTL)	$393,337
First year electric energy savings (kWh/yr)	186,686
First year electric energy savings (MMBtu/yr)	637
Total electric savings over EUL (kWh)	3,473,801
Total electric savings over EUL (MMBtu)	11,856
First year energy cost savings ($/yr)	$18,408
EUL energy cost savings ($)	$449,321
Federal ITC	$104,970
MACRS for Solar (total over 6 years)	$73,761
ZRECs (total over 15 years) ($)	$248,986

Figure 1 shows the plot of cash flows over the life of this project.

Figure 1. Project Lifetime Cash Flow Plot



TECHNICAL REVIEW SUMMARY

Below is the project summary checklist that ERS staff referenced to confirm that the C-PACE program guidelines are met for this project.

Project Checklist

☒ Energy assessment included – **Analysis included.**

☒ Renewable energy feasibility study conducted – **The roof was upgraded, but not financed through this project.**

☒ Minimum 12 months of utility data used to establish baseline – **12 months of usage information available in the electric bill provided.**

☒ Copy of utility bills included – **ERS was provided with an Eversource electric bill representing usage for one month. This bill also showed the electric consumption for the previous 12 months.**

☒ No major renovation took place in baseline period – **N/A**

☒ Baseline building energy use consistent with ASTM BEPA E2797-15, per ICP protocol – **N/A**

☒ Measure life is within industry practice – **20 years**

☒ Measure life exceeds finance term – **Measure life is greater than finance term**

☒ Local weather data used for normalization – **Brookfield, CT (appropriate)**

☒ Energy production for renewable energy system is reasonable – **Energy production provided by the contractor analysis was reasonable.**

☒ Project cost estimate is reasonable – **$2.99 per watt is reasonable.**

☒ Projected energy cost escalation is reasonable – **2.99% per year**

☒ Projected annual performance degradation is reasonable – **0.5% per year**

☐ Commissioning plan has been addressed – **Not addressed.**

☐ M&V plan has been addressed – **Not addressed.**

☒ Projected SIR > 1 – **SIR is greater than 1.**

The following sections discuss the measure specific findings from the technical review.

Solar Photovoltaic System

The LaPietra Thinstone Veneer of Monroe facility is proposed to have a new solar PV system with a 135.0-kW (DC) capacity. The solar PV project specifications are listed in Table 3 and Table 4. The project involves two arrays. The panels face roughly due-south and the azimuth angles were verified using Google Maps. The azimuth angles were stated and confirmed to be 177° for the two arrays. The tilt angles are proposed to be 7° and 13° and would be best verified during the commissioning verification visit. The PV module power warranty is 25 years, and the contractor indicated that the project cost included the cost of a 20-year inverter warranty. The contractor has applied for and received one ZREC contract, with a 15-year term. The ZREC value is $100.0 per MWh and that value has been included in the SIR calculations.

Photo 1 shows the overhead view of the facility with the proposed solar panel alignment.

Photo 1. Overhead View (Provided in Proposal)

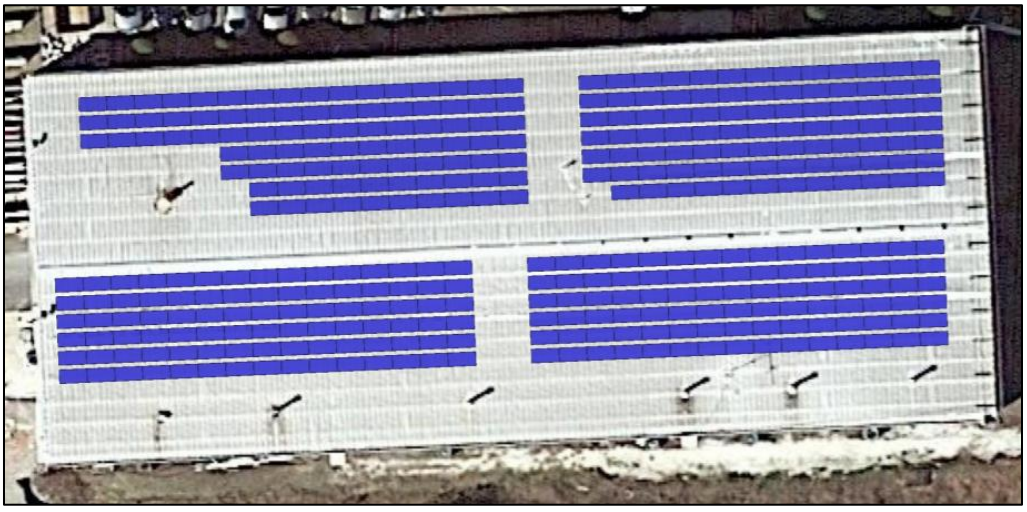


Table 3. Solar PV Specifications

Item	System specifications
Total PV system capacity (kW DC)	135.0
No. of modules	360
Location	Roof
PV module model	Talesun, TP672M-375 (375W)
Module efficiency	Premium
Inverter model	(2) CPS SCA50KTL-DO/US-480 (2 x 50 kW)
Inverter efficiency	98.5%
Tilt angle	7° (67.5 kW) and 13° (67.5 kW)

Lighting Energy Efficiency Project

In addition to the roof upgrade and the solar PV installation, the LaPietra Thinstone Veneer of Monroe facility is also proposing upgrading its lighting which is being processed through the EnergizeCT programs. This effort is currently being represented as owner equity in this project as this portion of the project is not being financed through the PACE programs. We were supplied with the lighting analysis for this project which indicated annual energy savings of 13,586 kWh (representing approximately 7% of the site energy use) and monthly demand savings of 2.4 kW. We applied an EUL of 13 years for this measure.

Potential Savings Impacts

Based on our review of the system specifications, the installation of the proposed solar PV system is expected to meet the predicted electrical generation. The following factors could affect the electric generation from the PV system and the predicted SIR:

- Shading: During the commissioning site visit, potential shading issues will be inspected. If there is shading, the PV generation would be affected.
- Angle of tilt: The angle of tilt, if modified, could change the energy generation form the PV system. This will be verified during the commissioning site visit.
- Inverter and PV module make and model: The calculations for this measure are based on the efficiency of the proposed PV modules and inverters. If the PV module or inverter makes and models change, the generation would need to be recalculated.
- Savings from the lighting project.

Utility Rates Summary

The site is on Eversource rate 30. The details of the tariffs are listed in Table 4.

Table 4. Utility Rate Tariff Summary

Electric Rates	
Electric utility	Eversource
Electric rate	30
Electric energy rate ($/kWh)	$0.09517
Electric peak demand rate ($/kW)	$21.86

Note: In the SIR analysis, we did not include the peak demand charges in the solar PV cost savings when calculating the SIR because solar PV production is highly weather dependent. As a result, there is a chance during any billing cycle that the solar PV panels may not produce power during any one of the on-peak hours, thereby negating the peak demand savings that would be associated with avoiding the electric demand related charges. We however did include the demand cost savings for the lighting energy efficiency project.

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

CONNECTICUT GREEN BANK

MOU Modification Memo

To: Connecticut Green Bank Board of Directors

CC: Bryan Garcia, President and CEO; Brian Farnen, General Counsel and CLO; Eric Shrago, Managing Director of Operations;

From: Bert Hunter, EVP and CIO[1]

Date: December 18, 2020

Re: Expansion of Inclusive Prosperity Capital, Inc. Revolving Line of Credit Under the Memorandum of Understanding

Background

On June 13, 2018 the Connecticut Green Bank ("Green Bank") Board of Directors (the "Board") approved key agreements underpinning the launch of Inclusive Prosperity Capital, Inc. ("IPC") including a Memorandum of Understanding ("MOU") which remains in force today and an outline of IPC's existence as a distinct entity, legal and ethical opinions supporting IPC's spin-out from the Green Bank, and general rules of engagement between IPC and Green Bank post spin-out. The MOU included a Revolving Line of Credit ("RLC") intended to support IPC startup and operational costs:

> 4. **Start-Up Funding** - Green Bank providing revolving line of credit in an amount not to exceed $150,000 at OTT's Short Term Investment Fund (STIF) rate to cover initial startup costs, including:
>
> – the development of IT and telecommunications infrastructure;
> – the implementation of its own accounting software;
> – performance of its own audit and tax filings;
> – the purchase of insurance; and
> – the development of its own branding, among other costs.

IPC has drawn the full $150,000 and currently pays an annual interest rate on drawn funds calculated at the STIF rate (defined above) which has varied monthly since the draw from 0.07% - 0.18%. As IPC continues to grow and incur startup operational costs, IPC is requesting an increase in the amount of the RLC under the MOU to up to $1,000,000, and in exchange IPC is offering to provide security in the form of a first security pledge of services fees to be received by IPC from Green Bank under the IPC PSAs associated with the Green Bank MOU with IPC. Additionally, there would be an increase in the annual interest rate on drawn RLC funds to 30-day LIBOR (or its equivalent post-LIBOR) plus [redacted]%, in line with the current market for secured, short-term credit facilities.

As a 501(c)(3) non-profit, non-stock corporation registered in Connecticut, IPC cannot raise traditional equity for growth and therefore must rely on operating cash, grants, and flexible credit facilities to help fund operations and expansion, especially during this critical "start-up growth" phase of IPC's existence. Since inception in August 2018 through October 2020, IPC has accrued the following expenses across key

[1] This memo written with support of Chris Magalhaes, CIO, IPC

categories (including those contemplated under the original MOU language associated with the RLC), totaling approximately $1.2M:

- **IT/Telecommunications Infrastructure**: [redacted]
  - [redacted] through FYE 6/30/2019
  - [redacted] through FYE 6/30/2020
  - [redacted] through 10/31/2020

- **Professional Services (Account/Audit/Legal/Consulting)**: [redacted]
  - [redacted] through FYE 6/30/2019
  - [redacted] through FYE 6/30/2020
  - [redacted] through 10/31/2020

- **Insurance**: [redacted]
  - [redacted] through FYE 6/30/2019
  - [redacted] through FYE 6/30/2020
  - [redacted] through 10/31/2020

- **Program Development/Administration and Branding**: [redacted]
  - [redacted] through FYE 6/30/2019
  - [redacted] through FYE 6/30/2020
  - [redacted] through 10/31/2020

IPC expects to continue its trajectory of growth and expenditure, in similar fashion to its experience to date, and would look to utilize the expanded RLC facility to facilitate "smoothing out" the expenditures associated with that growth via a flexible capital facility that is drawn upon based on need and repaid with corporate Net Assets. Specifically with respect to repayment, IPC is able to tap both cash from operations (in the form of investment income and fee payments for services provided across its business lines) and cash from financing (in the form of additional capital raised for growth/operations as well as for releasing equity in pre-funded investments) to manage the balance outstanding on the RLC facility. IPC expects to continue to optimize draws and repayments on the RLC relative to cash flows and capitalization by balancing the benefits the RLC affords (i.e. added flexibility for expenditures/growth) with the added costs and interest associated with the facility (i.e. by paying down principal with cheaper sources of capital and balance sheet cash to minimize unnecessary interest expense).

Expanded Facility Details

The expanded and extended RLC facility would increase the available principal balance to IPC from $150k to $1M, and would increase the interest rate to the Green Bank to 30-day LIBOR + [redacted]% P.A. The facility maturity date (i.e. the date by which Green Bank can choose to either demand full repayment or roll the facility) would be extended from June 30, 2021 to June 28, 2024 (i.e., the last business day pursuant to the MOU arrangements between Green Bank and IPC). Security would be in the form of a first security pledge of services fees to be received by IPC from Green Bank under IPC's PSAs with Green Bank. Availability under the RLC would step-down generally in line with anticipated PSA fees due to IPC as follows:

Date	RLC Availability
Prior to 12/31/22	$1,000,000
12/31/22 to 3/30/23	$[redacted]
3/31/23 to 6/29/23	$[redacted]
6/30/23 to 9/29/23	$[redacted]
9/30/23 to 12/30/23	$[redacted]
12/31/23 to 3/30/24	$[redacted]
3/30/24 to 6/27/24	$[redacted]

Since August 10, 2020 IPC has drawn on and kept outstanding $150k of the original RLC, and has remained current and in good-standing on all repayments associated therewith.

IPC Impact to Green Bank and in Connecticut

As noted in the Memo to the Board dated June 12, 2019 for the Board meeting held on June 28, 2019, within the first year of operations IPC had already delivered meaningful benefit to the Green Bank and the Connecticut market.

From the start, IPC has been an important component of the Green Bank's long-term sustainability strategy by managing programs on behalf of the Green Bank and helping drive capital and project deployment to underserved areas of the market:

> **Nonprofit Organization – Inclusive Prosperity Capital**
> The final element of the Sustainability Plan was to create an independent 501(c)3 nonprofit organization for the purposes of reducing operating expenses of the Green Bank, while seeking to continue to serve its mission by attracting mission-oriented investors in underserved market segments and providing investment opportunities for the Green Bank

Through its first year in operation, IPC successfully delivered on its targets and *"…led to a reduction in operating expenses and an increase in investment opportunities for the Green Bank…"* as noted below:

> IPC, though its PSAs with the Green Bank, is delivering on the targets established – see Table 6.
>
> **Table 6. FY 2019 Targets and Actuals (as of June 1, 2019) for IPC**

Product	PSA	Project Targets	Project Actuals (06-01-19)	Investment Target ($MM)	Investment Actuals ($MM) (06-01-19)	Installed Capacity Target (kW)	Installed Capacity Actuals (kW) (06-01-19)
Smart-E Loan	5410	540	595	$8.8	$7.6	600	700
Multifamily[10]	5411	19	18	$2.6	$2.8	300	260
Solar PPA	5412	25	18	$14.1	$12.5	6,300	3,900
Solar for All	5413	586	645	$15.6	$18.6	3,600	4,500
Total		**1,170**	**1,276**	**$41.1**	**$41.4**	**10,800**	**9,360**

> In its first-year contract with the Green Bank, IPC has delivered measurable results supporting its mission to reach underserved market segments.
>
> ☑ **Nonprofit Organization** – the successful creation of Inclusive Prosperity Capital, led by its partners (DEEP, Kresge Foundation, and the Green Bank), has led to a reduction in operating expenses and an increase in investment opportunities for the Green Bank, while attracting other mission-related investors in underserved market segments.

Through its second year in operation, IPC continued the trend by exceeding project targets across all programs with the exception of the Solar PPA due to timing on state solar projects.

Product	PSA	Project Targets	Project Actuals (06-30-20)	Investment Target ($MM)	Investment Actuals ($MM) (06-30-20)	Installed Capacity Target (kW)	Installed Capacity Actuals (kW) (06-30-20)
Smart-E Loan	5410	540	737	$7.2	$10.0	500	900
Multifamily Pre-Development	5411	2	4	$0.1	$1.0	n/a	n/a
Multifamily Term	5411	8	14	$1.3	$8.1	200	2,000
Solar PPA	5412	18	3	$23.5	$1.4	10,600	400
Solar For All	5413	615	625	$17.2	$15.7	4,200	3,900
Total		**1,183**	**1,383**	**$49.3**	**$36.2**	**15,500**	**7,200**

IPC Financial Position and Growth

IPC has grown at almost every level of the organization: number full-time employees (12 to date, and 4 additional in recruitment), capital available for project-level investments (approximately $[redacted]M across 3rd Party Debt, Program-Related Investment ("PRI"), Tax Equity, Grants, and Balance Sheet cash), number of investments (IPC has 1 investment each in the LMI and affordable multifamily sectors in CT and a 3rd multifamily loan in the process of closing, has recently acquired [redacted] distributed solar PV projects sourced by the Green Bank, and is in various stages of co-investing with the Green Bank on additional projects in Connecticut), and financial sustainability.

IPC's consolidated financials as of October 30, 2020 show Total Assets of approximately $[redacted]M relative to Total Liabilities of approximately $[redacted]M for Total Net Assets of $[redacted]M. IPC has thus maintained a solvent and healthy balance sheet as its grown since inception. And while IPC's long-term financial position and health remains positive, IPC does face increasing demand for short-term liquidity in order to facilitate its growth.

Recommendation

Given IPC's successful performance to date under the various key agreements that govern the relationship between the Green Bank and IPC, including the Professional Service Agreements ("PSAs") for programs that IPC administers on behalf of the Green Bank (as discussed further below) and the existing RLC, and given IPC's continued growth and need for liquidity to help fund start-up operational costs (in line with the MOU), Green Bank staff recommends the proposed expansion and extension of the RLC as detailed in this memo.

Resolutions

WHEREAS, the Connecticut Green Bank ("Green Bank") has an existing partnership with Inclusive Prosperity Capital, Inc. ("IPC") to lessen the burden of government, and to protect, promote and preserve the environment by, among other things, furthering the purpose of the Green Bank as described in Connecticut General Statute Section 16-245n(d)(1)(B) ;

WHEREAS, on June 13, 2018, the Green Bank Board of Directors ("Board") approved a Memorandum of Understanding ("MOU") governing the Green Bank's partnership with IPC as part of Green Bank's long-term sustainability plan;

WHEREAS, the MOU included a Revolving Line of Credit ("RLC") intended to support IPC startup and operational costs for an amount not to exceed $150,000 outstanding and with a maturity date of June 30, 2021;

WHEREAS, since August 2020, IPC has drawn on and kept outstanding $150k of the original RLC, and has remained current and in good-standing on all repayments associated therewith;

WHEREAS, IPC is seeking to expand and extend the maturity date of the RLC up to $1,000,000 outstanding and with a maturity date of June 30, 2024 (the "Amended Maturity Date") to facilitate smoothing out continued expenditures associated operations and growth, as more fully explained in a memorandum to the Board dated December 18, 2020 (the "Board Memo");

WHEREAS, staff of the Green Bank, having fully considered the proposed uses by IPC for the RLC facility and the sources and likelihood for repayment of the RLC facility not later than the Amended Maturity Date, recommend the expanded and extended RLC to the Board for approval, as more fully explained in the Board Memorandum;

NOW, therefore be it:

RESOLVED, that the Board approves of the expanded and extended RLC for up to $1,000,000 outstanding and with a maturity date of June 30, 2024 consistent with the Board Memo;

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

Submitted by: Bert Hunter, EVP and CIO

845 Brook Street
Rocky Hill, Connecticut 06067

300 Main Street, 4th Floor
Stamford, Connecticut 06901

T: 860.563.0015
F: 860.563.4877
www.ctcleanenergy.com

CONNECTICUT GREEN BANK

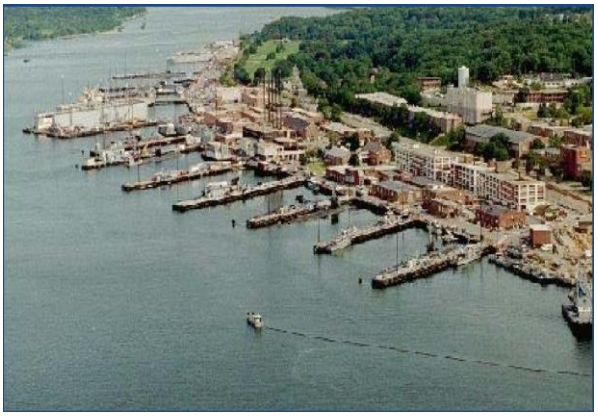
Connecticut Municipal Electric Energy Cooperative (CMEEC)

& US Naval Submarine Base – Groton, CT Fuel Cell Project

A Fuel Cell Debt Financing Strategic Selection

Green Bank Term Loan Facility Modification Request

December 18, 2020



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 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, ~~Statutory & Infrastructure~~Incentive Programs; Jane Murphy, VP of Finance and Administration

Date: December 18, ~~2019~~2020

Re: FuelCell Energy / US Navy / CMEEC / Groton Fuel Cell Project

Term Loan Facility Modification Request

Purpose & Term Loan Modification

The purpose of this memo is to update the board and secure approval with respect to a modification of the term loan facility ("Original Term Loan") previously approved in October 2018 by the Connecticut Green Bank ("Green Bank") Board of Directors (the "Board") with respect to 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: [redacted] (the "Senior Lenders" and together with Green Bank, the "Lenders").

As set forth in detail in this memorandum, staff requests approval by the Board to increase and modify the structure of Green Bank funding (the "Revised Term Loan". To summarize – the original structure including the Green Bank Original Term Loan proposal and modified structure is presented here:

	Original Structure				Revised Structure			
	Amount	Term (Yrs)	Rate	Interest Only	Amount	Term (Yrs)	Rate	Interest Only
[redacted]								

The key changes for the proposed capital structure are:

The restructured facility attracts Tax Equity in a partnership flip structure[1] – which the Green Bank is deeply familiar with given its two solar funds and working with other solar fund managers such as IPC, Skyview Ventures and Sunwealth – retains the participation in the senior debt facility of Liberty Bank and Amalgamated Bank, and results in an acceptable level of investment for Green Bank with cash flows in support of its loan from two projects (one of which is already in operation and unleveraged as explained below).

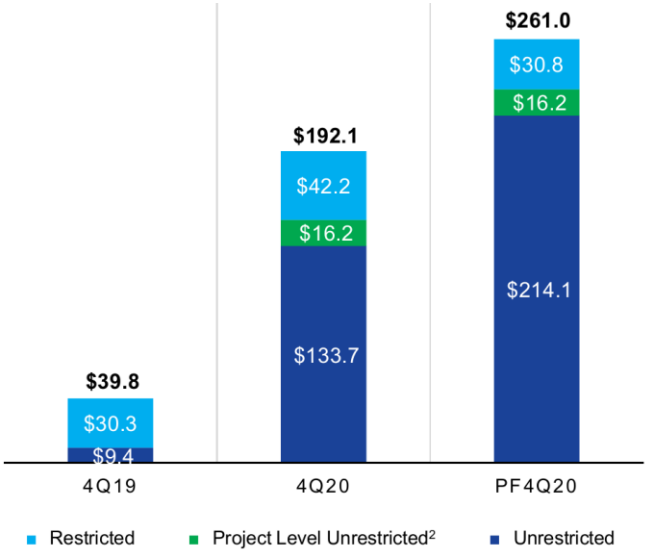
Importantly, for FCE, the sourcing of a tax equity investor, and with the ability of Green Bank to restructure the debt portion of the capital stack, reduces FCE's capital contribution by $10 million (vs. the original structure) which it will put to use in other projects under development in Connecticut, New York and elsewhere.

FuelCell Energy Corporate Update

FCE has, in the past year, significantly improved corporate liquidity and deleveraged its balance sheet, providing a platform for project execution and growth. Its most recent capital raise, on December 4, was a successful issuance of common stock – taking advantage of a resurgence in the value of its shares. Gross proceeds from the sale of common shares by FCE were approximately $162.5 million. This capital raise enabled FCE to repay Orion Energy Partners and related funds ("Orion") approximately $87 million which was outstanding (plus fees) from Orion under a credit agreement entered into between Orion and FCE in October 2019. As a result, FCE's cash and cash equivalents now totals approximately $[redacted] million, including $[redacted] million of unrestricted cash and cash equivalents and $[redacted] million of restricted cash and cash equivalents.

[1] A "partnership flip" structure is the same financing structure used by Green Bank for its two solar funds (SL2 and SL3), and is a commonplace structure to monetize ITC and accelerated depreciation using an investor (the tax equity) able to use these benefits.

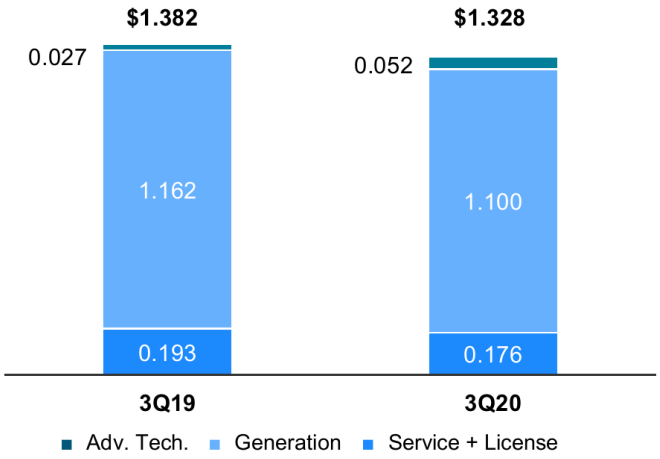
FCE – Cash & Equivalents ($M)



Corporate (parent) level recourse debt is low at $[redacted] million and includes a $[redacted] million PPP loan from Liberty Bank (to be forgiven), a $[redacted] million DECD loan and $[redacted] million in loans from Green Bank (which are related to the Bridgeport and Navy (Groton) projects and benefit from security in project level cash flows, equipment and contracts).

It is fair to say that FCE's balance sheet is in its strongest position in several years and poised to realize upon a deep $1.3 billion pipeline of commercial opportunities.

FCE – Backlog ($B)



- 4% decrease in backlog, reflecting the continued execution under our existing power purchase agreements, service and maintenance contracts, and Advanced Technology programs

FuelCell Navy Project Facility – Mechanical Completion & Commercial Operation Date

As represented in the picture and milestone schedule below, mechanical completion is scheduled for just prior to Christmas with a commercial operation date ("COD") of mid-February 2021. In fact, the plant has been substantially complete since the mid-fall, but CMEEC is progressing with final interconnection procedures in order for the facility to complete the load conditioning process for the two fuel cell modules to achieve COD of February 2021.

- MMH2 and MMH3 procurement & installation of electrical equipment which supports the Navy's "future state" microgrid.

[redacted]

FuelCell Navy Project Facility – Tax Equity Closing & Debt Facility Progress

[redacted]

Green Bank's Existing Approvals and Funding to FuelCell Navy Project

In October 2018, the Board approved as a strategic selection a $5 million credit facility for the Navy Project as a term loan (the "Original Term Loan"). In October 2019, the Board approved using $3 million of this exposure to assist with construction funding (Fifth Third Bank had ceased additional construction advances owing to FCE's strained financial position at the time and due to the fact that the term loan funding commitment from Liberty Bank and Amalgamated Bank had lapsed). Using the Orion facility noted above, FCE repaid Fifth Third Bank and has completed the Navy Project with its own resources (including additional capital from Orion and other cash sources). Accordingly, with the Navy Project facility substantially complete, the funding from Orion completely repaid, and with all of the capital (tax equity and bank debt) now arranged and with the bank debt (Liberty Bank and Amalgamated Bank) seeking credit approval, staff returns to the Board for final approval of the Navy Project Term Loan as modified. A recap of the Navy Project follows below.

Navy Project Background – Highlights

Project and PPA Summary

On October 19, 2017, FCE announced the execution of a power purchase agreement ("PPA") with the Connecticut Municipal Electric Energy Cooperative ("CMEEC")[2] for the supply of power to the U.S. Navy Submarine Base in Groton, Connecticut in order provide the U.S. Navy with energy that is (1.) clean, (2.) resilient (i.e. can operate independent of the grid), and (3.) cost-effective (i.e. reducing energy expenses, which compose approximately 28% of this U.S. Navy sub base's "shore budget")[3]. The Project will be sited on the actual U.S. Navy Submarine Base, on land that CMEEC has leased from the U.S. Navy for this purpose and which CMEEC will in turn sub-lease to FCE for the duration of the Project's operations. Under the terms of the PPA, CMEEC will purchase all of the energy produced by the Project and will in turn utilize that energy for the benefit of the base.

The PPA will be underpinned by the production from two FCE SureSource4000™ power plants which combine for 7.4 MW of total electrical output and an expected annual production in the first full year of operation of over 56,000,000 kWh. The Navy Project will be constructed, owned, operated, and maintained by FCE – a process which aligns with FCE's vertically integrated business strategy and also makes the liquidity provided by the Revised Term Loan facility important for FCE's continued growth and ability to execute on its project development pipeline.

The Navy Project is nearly complete and all construction loans have been repaid with cash from FCE's balance sheet (enhanced by recent equity raises). The Revised Term Loan facility, the Senior Loans and Tax Equity will repay the FCE funding (except for a portion of FCE equity (circa $[redacted] million) to remain invested in the project). The Lenders will be repaid via (i.) PPA cashflows, and (ii.) Class I REC cashflows.

Green Bank views this Project, and the goals of providing clean, resilient, and cost-effective energy to the US Navy Submarine Base, as collectively of strategic national importance, local economic/development significance and significant environmental benefits:

> "The submarine base in Groton is home to 15 nuclear submarines and generates about $4.5 billion a year for Connecticut's economy when employment, sale of goods and services and other factors, including housing, are considered" – The CT Mirror, September 13, 2017[4]

In addition to direct benefits from the base, FCE is a Connecticut-domiciled company and the inclusion of (i.) [redacted].

[2] On 26 May 2020, Fitch Ratings announced it has upgraded CMEEC's Issuer Default Rating (IDR) to 'AA-' from 'A+'. Fitch has also upgraded CMEEC bonds to 'AA-' from 'A+.

[3] "FuelCell Energy Finalizes 7.4 Megawatt Utility Project to Power a Strategic Military Installation", https://investor.fce.com/press-releases/press-release-details/2017/FuelCell-Energy-Finalizes-74-Megawatt-Utility-Project-to-Power-a-Strategic-Military-Installation/default.aspx, Accessed August 21, 2018.

[4] "Senate heads toward political fight over new base closing round", https://ctmirror.org/2017/09/13/senate-heads-toward-political-fight-over-new-base-closing-round/, Accessed October 18, 2018.

Navy Project Investment/Risk Profile

From both Tax Equity and the Lenders' perspective, the Navy Project carries key attributes that make it an attractive asset. As part of FCE's strategic goals to own as many of these projects on balance sheet as possible in order to build a stable and significant cash flow for FCE and build enterprise value, FCE seeks to be the ultimate owner of the Navy Project together with Tax Equity using a partnership flip structure (explained in a prior footnote). Below are key investment attributes, though an extensive list of Navy Project risks and mitigants to the Green Bank's position are discussed further in the sections below:

- Construction & Technology Risk: Full engineering, procurement, and construction ("EPC") wrap provided by FCE (together with customary construction bonding for the EPC contractor), coupled with a 20-year service contract (also provided by FCE) covering full maintenance and production requirements, include stack replacements after 7 and 14 years;

- Development & Siting Risk: Navy Project sited on the U.S. Naval Submarine Base, Groton CT, with construction substantially complete and with a commercial operations date of mid-February 2021;

- Counterparty Risk: Experienced fuel cell manufacturer and operator (over 200 MW of clean power generating plants in operation, with another 85 MW of new projects awarded and commencing construction over the next 18 months – including projects awarded to FCE under the CT-DEEP RFP and Long Island Power Authority RFP and the DEEP Shared Clean Energy Facilities (SCEF) RFP);[5]

- Credit/Repayment Risk: Approximately 50,000,000 – 60,000,000 kWh of annual electricity production, monetized by both PPA cashflows and Class I Renewable Energy Credits ("RECs")[6], with an Investment Grade offtaker (rated AA- by Fitch).

Use of Proceeds – High Efficiency Fuel Cell Navy Project

The Revised Term Loan, as part of the Term Loans, will help finance the largest configuration to date of FCE's Direct FuelCell ("DFC") fuel cell technology, which is the most efficient fuel cell installed by FCE. Green Bank had the benefit of reviewing this technology during underwriting for the FCE Triangle project in Danbury, CT, which was approved for a credit facility by the Board in 2017 (now lapsed; FCE self-funded Triangle).

The Navy Project will similarly utilize in-state developed, designed, and manufactured technology to create a new benchmark of product efficiency across the fuel cell industry, converting natural gas into electricity at an efficient fuel-to-electricity ratio while also reducing pollution by up to 99.99% in comparison to conventional power generating plants and with a lower carbon footprint than the NE-ISO average (See: Strategic Selection and Importance, Connecticut Impact – Benefits to the RPS & Environmental Benefits). The innovative

[5] FCE and Doosan submitted bids into the Shared Clean Energy Facilities program. Several bids submitted did not conform to the bid requirements and ultimately PURA publicly ruled that the noncompliant bids should be disqualified. FCE's and Doosan's bids were awarded. FCE signed the contracts and returned them in accordance with the program requirements, which were publicly announced. Multiple disqualified solar providers (7) filed motions for reconsideration after the bid awards, following which, on November 16, 2020, PURA reversed itself and ordered Eversource to reconsider the bids, essentially "un-disqualifying" the disqualified solar bids, and select new winners no later than December 4. Eversource has filed with PURA stating that it is awaiting action from DEEP in order to complete the process as directed by PURA. As a result, it is unclear which, if any, SCEF projects might be finally awarded to FCE.

[6] Contracted RECs ("LRECs") are not available for this project due to its size and location in CMEEC service territory.

technology achieves additional electrical output through a proprietary design developed by FCE, which has extensive experience deploying innovative fuel cell projects (as discussed in the section above).

Construction Facility – Fifth Third Bank & Orion Energy (Repaid)

Green Bank together with IPC arranged for a construction loan facility provided by Fifth-Third Bank. The Fifth Third Bank facility was repaid by funding from Orion, and Orion, in turn, was repaid on December 4 from funds FCE raised in the equity markets in early December.

Term Loan Facility – [redacted] & Green Bank

Summary Terms and Conditions

The Term Loan facility is comprised of a $20,000,000 senior-subordinated term loan package whereby $12 million is comprised of a jointly-proposed senior secured term loan (the "Senior Loans") held by [redacted] (the "Senior Lenders"), and $8 million represents the Green Bank Revised Term Loan, which is subordinated to the Senior Loans.

The $12 million Senior Loans are expected to be priced at approximately [redacted]% for the shorter maturity loan (amortizing over 7 years) from [redacted] and approximately [redacted]% for the longer term loan (amortizing over 14 years) from [redacted]. The senior loans will be advanced upon the Navy Project's commercial operation date ("COD") of mid-February 2021, and will be supported by a [redacted]x Debt Service Coverage Ratio (DSCR) sized against PPA and contracted REC cashflows together with a [redacted]-month debt service reserve account supplemented by an additional cash reserve estimated at approximately $[redacted] million in order to maintain the [redacted]x DSCR across the first 7 years of the financing term (following retirement of the [redacted] loan, cash flow should be sufficient without the supplemental cash reserve amount). This structure ensures that the Senior Lenders only face production and CMEEC credit risk (and not uncontracted Class I REC risk, as discussed further below), which has the effect of optimizing for both (i.) the Senior Loans interest rate, and (ii.) the amount of debt that can be sized under that facility. As the Green Bank and FCE are currently in the process of finalizing the terms and conditions associated with the Senior Loans and the Green Bank loan, variations to the structure may arise that, while they represent value to the Senior Lenders, would not put any additional risks onto the Green Bank's position ([redacted]).

The Green Bank's position in the Revised Term Loan is a subordinate, secured interest in the Navy Project, relative to the Senior Loans, that is repaid via a combination of (i.) PPA cashflows, (ii.) REC cashflows, (iii) supplemental cash flows [redacted] and (iv) a debt service reserve account. The Green Bank note is fully amortizing over a 20-year term, but carries an interest rate of [redacted]% to account for its subordinated position in the structure and longer term.

The Revised Term Loan has a 7 year interest only period in order to accommodate the requirement by [redacted] that their loan amortizes in the first 7 years. At the same time, the Revised Term Loan has a 50/50 cash sweep with FCE which, together with a firm amortization requirement starting in the 8th year, and with a continuing 50/50 cash sweep, Green Bank's loan amortizes in 15 years with debt service coverage ratio of not less than [redacted]x throughout.

Because the Senior Loans are sized against purely PPA cashflows (and a relatively insignificant REC cash flow assumption), the Green Bank's repayment profile necessarily includes REC cashflows. Because the Navy Project

does not qualify for contracted LRECs (the Navy Project is located in CMEEC service territory and is thus ineligible for the LREC program), those REC cashflows take the form of Class I RECs that are not contracted beyond a short term (up to 4 or 5 year maximum) period and are priced by supply and demand dynamics in the Connecticut Class I REC market. In order to compensate for that additional risk, the Green Bank is requiring, in addition to Navy Project cashflows, a pledge of [redacted] and an agreed quantity of cash in a debt service reserve account. The economic benefits of (i.) Navy Project cashflows, (ii.) a pledge of [redacted], and (iii), an agreed quantity of cash in a debt service reserve account, combined with the qualitative benefits of Navy Project being of strategic national and local importance, creates a risk profile that Green Bank staff believes is in line with the purpose, goals, and benefits of the Revised Term Loan.

Strategic Selection and Importance

Connecticut Impact

Support for the Connecticut CES

Fuel cells, as an electrical power generating technology, convert hydrogen fuel sources (e.g. natural gas) into electricity via a chemical process without the combustion cycle typically found in traditional generation technologies, and thus without the associated pollution[7]. Fuel cells are defined as a Class I renewable energy source as per CGS §16-1(a)(20), and operate at an effective annual capacity factor of ~90%, providing clean, consistent, and reliable power to associated off-takers, whether grid-tied or behind-the-meter. In aggregate, the fuel cell industry is of strategic importance to Connecticut as it relates to economic development, job creation and retention, and clean energy deployment

Green Bank staff believes that by providing key pieces of the capital stack and financing structures for strategic fuel cell assets in Connecticut, such as the Revised Term Loan, Green Bank can help promote the foundation for a viable transition from subsidizing to financing models for a key clean energy technology that promotes environmental, energy, and economic benefits for the state. This approach and its progress towards the intended goal of leveraging private capital towards project finance investment continues to show promise, as evidenced by the results of the $8 million Credit Facility leveraging a $22.4 million Construction Facility, a $12 million Senior Loan facility, a $15 million tax equity investment and $18 million of sponsor (FCE) investment for the Navy Project, achieves an overall leverage ratio of $8 in private capital to $1 of Green Bank investment.

Grid Stability & Support

From a power generation perspective, fuel cells benefit the existing electric distribution system as distributed baseload plants that stabilize loads (versus intermittent renewable energy technologies such as solar and wind), provide voltage support, and mitigate system upgrade requirements[8], resulting in enhanced system stability and cost-savings.

[7] FuelCell Energy, "How a Fuel Cell Works," http://www.fuelcellenergy.com/?page_id=15806, (February 26, 2017).
[8]Connecticut Department of Energy & Environmental Protection, "Testimony Submitted by DEEP Commissioner Robert J. Klee, and Katie Dykes, Chair, Public Utility Regulatory Authority," *Public Hearing – February 21, 2017 – Energy and Technology Committee*, https://www.cga.ct.gov/2017/ETdata/Tmy/2017HB-07036-R000221-Klee,%20Robert,%20Commissioner-DEEP-TMY.PDF, (February 26, 2017).

Benefits to the RPS and Environmental Benefits

From a clean energy power generation perspective, fuel cells provide Connecticut with a viable means of achieving its current Renewable Portfolio Standard ("RPS") policy of 20% of energy generation from Class I renewable energy sources by 2020[9], and provide potential off-takers with clean and reliable power that can be used in standalone and aggregated (e.g. microgrid) applications. This is especially true for the US Navy submarine base at Groton. In fact, fuel cells have enabled Connecticut to meet its Class I RPS with more in-state deployment of clean renewable energy as opposed to out-of-state generation.

Looking at the Navy Project from its pollution reduction potential, accordingly to an EPA report published on March 9, 2020, the average non-baseload output emissions rate across the New England eGRID subregion is 931 lbs of CO_2 per MWh of power produced[10]. In contrast, the technology underpinning the Navy Project has a CO_2 emissions rate ranging between 520 – 680 lbs per MWh. Comparing the midpoint of the Navy Project's emissions rate with the average regional non-baseload production rate, the Navy Project saves, on average, 331 lbs of CO_2 per MWh (36%) of power produced. The Navy Project is expected to produce 56,239 MWh of electricity during its first year of operation, offsetting 18,615,100 lbs of CO_2, or the equivalent of 9,300 tons of CO_2 in that first year of operation. Across the 20-year financing term, the Navy Project is expected to produce up to 1,087,686 MWh of electricity, offsetting approximately 180,000 tons of CO_2. Comparing the project's CO_2 reduction capacity with the performance of other Green Bank projects in meeting pollution reduction goals, during its 2020 Fiscal Year Green Bank approved, closed, or completed clean energy projects which, in aggregate, will offset 1,474,033 tons of lifetime CO_2 emissions. The proposed Navy Project, by offsetting 180,000 tons of CO_2, would by itself account for approximately 12% of expected CO_2 emissions reductions from all Green Bank financing and development activities in its 2020 Fiscal Year.

Economic Impact

From an economic perspective, Connecticut is home to over 600 companies that take part in the fuel cell industry supply chain, which account for over 2,600 direct and indirect jobs[11], and which in 2015 contributed $726 million in total revenue and investment and roughly $40 million in state and local tax revenue[12], which is a material portion of commercial tax revenues for the state. Support of the Navy Project will directly lead to not only the creation and retention of jobs associated with the Navy Project, but also to FCE's ability to ultimately grow its workforce as other projects in its pipeline come on line and as it implements its long-term growth strategy.

---

[9]Connecticut Department of Energy & Environmental Protection – Public Utilities Regulatory Authority, "Connecticut Renewable Portfolio Standard," http://www.ct.gov/pura/cwp/view.asp?a=3354&q=415186, (February 26, 2017).

[10]United States Environmental Protection Agency, "eGRID2018 Summary Tables," https://www.epa.gov/sites/production/files/2020-01/documents/egrid2018_summary_tables.pdf

[11]Department of Economic and Community Development, "Testimony Before the Energy and Technology Committee 2/21/17 – RE: HB7036: An Act of Promoting the Use of Fuel Cells for Electric Distribution System Benefits and Reliability," *Public Hearing – February 21, 2017 – Energy and Technology Committee*, https://www.cga.ct.gov/2017/ETdata/Tmy/2017HB-07036-R000221-Smith,%20Catherine,%20Commissioner-Department%20of%20Economic%20and%20Community%20Development-TMY.PDF, (February 26, 2017).

[12]Connecticut Center for Advanced Technology, Inc., "Testimony of Joel M. Rinebold, Director of Energy Initiatives, Connecticut Center for Advanced Technology, Inc., Before the Energy and Technology Committee February 21, 2017, Regarding Governor's Bill No. 7036 – An Act Promoting the Use of Fuel Cells for Electric Distribution System Benefits and Reliability," *Public Hearing – February 21, 2017 – Energy and Technology Committee*, https://www.cga.ct.gov/2017/ETdata/Tmy/2017HB-07036-R000221-Rinebold,%20Joel,%20Director%20of%20Energy%20Initiatives-CT%20Center%20for%20Advanced%20Technology-TMY.PDF, (February 26, 2017).

Green Bank Strategic Alignment

With the goal of creating a viable market for the transition from subsidy-based to financing-based models of development for fuel cells in Connecticut, financing the Navy Project is also of strategic importance to Green Bank, as the Navy Project exhibits the following criteria, which are required of all Green Bank strategic selection and award investments:

- **Special Capabilities –** FCE has significant experience in manufacturing and developing fuel cells (as discussed in the "Navy Project Background – Highlights" section above), and is a locally-domiciled market leader in the industry. FCE can spearhead the pivot away from tax incentives and state procurement subsidies via cost reductions derived from technological innovation and market penetration.

- **Uniqueness –** The Navy Project is of strategic national importance, supporting the U.S. Navy submarine base in Groton, CT, and will be part of an eventual microgrid (supported by a grant from DEEP) to strengthen resiliency for the Navy submarine base.

- **Strategic Importance –** The Navy Project is aligned with Green Bank goals, including the creation and retention of local jobs associated with FCE, the deployment of an innovative technology that will play an integral role in the economic transformation of the fuel cell industry, and the development of a clean energy generating asset that, both on an individual basis and as similar projects are deployed at scale, will continue to provide a combination of cleaner, cheaper, and more reliable energy, while creating jobs and supporting local economic development.

- **Urgency and Timeliness –** There is an urgent need to act on the opportunity as the Navy Project is already substantially complete, closing on Tax Equity (in December) and approaching the commercial operation date of mid-February 2021 (with the senior lenders submitting to their credit committees soon).

- **Multiphase Project –** Successful execution of the Credit Facility will set the stage for the Green Bank to support the development of similarly strategic projects both for FCE (e.g., the CT DEEP RFP and SCEF projects) and for the greater fuel cell industry within Connecticut.

Green Bank Project Risk and Mitigants

The Green Bank faces risks by means of the Navy Project itself and the Green Bank's subordinated position in the term financing structure of the Navy Project. Green Bank staff believes it has identified and mitigated those risks.

Staff recommends the authorization of the Credit Facility on the basis that Navy Project risks have been reasonably mitigated, and that the strategic importance of the Navy Project, to both the state and Green Bank, warrant the investment:

Manufacturer Risk

A. Overview

Tax Equity and the Lenders need to be comfortable with FCE's financial condition and prospects for continuing as a going concern. Considering the substantial cash position ($[redacted] million unrestricted) and minimal ($[redacted] million) parent level leverage, and after extensive review of FCE's financial condition and interviews with its management, including its CFO, staff is comfortable that FCE is firmly on a credible and reasonable path to long-term sustainable operations, confirming that Green Bank, the other lenders and tax equity can have reasonable assurance that FCE can stand behind its obligations under both the outstanding Bridgeport loan (which continued to perform as anticipated) and the proposed Revised Term Loan.

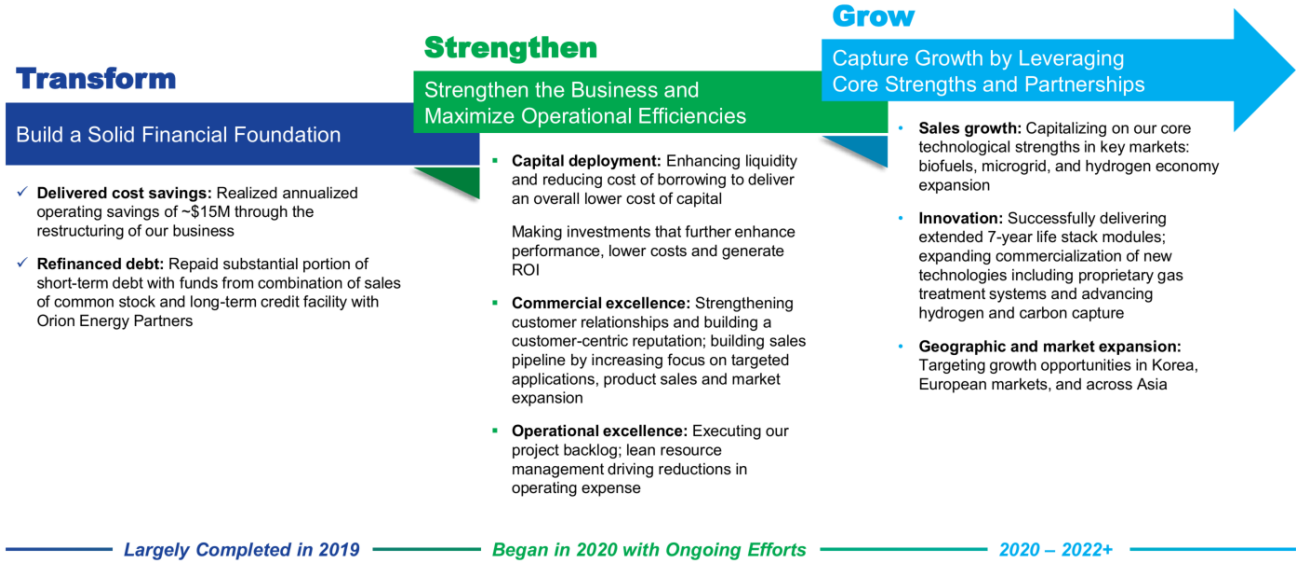
B. Business Summary

FCE is engaged in designing, manufacturing, installing, operating and maintaining fuel cell power solutions. FCE also provides turnkey power generation solutions to the customers, including power plant installation, operations and maintenance. FCE offers its services to various sectors, including utility companies, municipalities, universities, government entities and a range of industrial and commercial enterprises. FCE, by utilizing its DFC plants, is commercializing a tri-generation distributed hydrogen configuration that generates electricity, heat and hydrogen for industrial and/or transportation uses, as well as a fuel cell carbon capture solution for coal or gas-fired power plants. In addition, FCE is developing with Exxon Mobil Research and Engineering a carbon capture system that utilizes FCE's carbonate fuel cell technology. Moreover, FCE is executing a hydrogen generation project with Toyota. Under the arrangements, Toyota will purchase the hydrogen through a long-term purchase agreement as well as a portion of the electricity generated, with enough hydrogen to meet the daily driving needs of 1,500 vehicles.

C. Financial Condition

FCE has successfully competed in several RFPs (CT-DEEP, SCEF (see prior footnote) and Long Island (NY) Power Authority) and is currently sitting on its largest backlog of projects in company history. FCE's continued success will depend on its ability to align adequate financing structures (such as those contemplated herein) with those projects for development, construction, and term facilities. The backlog takes the form of long-term cashflows, underpinned by project-related PPAs and service contracts, which reflects FCE's strategic transition to generate stable, recurring cash flows that will help support the company's long-term growth and cost reduction strategies. As per the diagram below, this strategic focus on long-term cashflow generation is expected to result in FCE becoming EBITDA positive in either FY2021 or FY2022:

Powerhouse Business Strategy
Well Positioned for Long-Term Growth and Value Creation



The financial position depicted below is a proforma as of July 31, 2020 reflecting in the final column the recent capital raise (but at a somewhat lower amount (~$30 million) than actually raised).

	As of July 31, 2020		
(in thousands)	Historical	As Adjusted for the Capitalization Transactions	As Further Adjusted for This Offering[(1)]
		(unaudited)	
Cash and cash equivalents, unrestricted	$ 66,284	$ 165,821	$ 202,327
Long-term debt and financing obligations, including current portion of long-term debt and financing obligations	$ 166,245	$ 166,245	$ 93,762
Stockholders' equity:			
Common stock ($0.0001 par value); 337,500,000 shares authorized; 236,172,797 shares issued and outstanding, actual, 291,497,797 shares issued and outstanding, as adjusted and 311,320,016 shares issued and outstanding, as further adjusted	24	29	31
Additional paid-in capital	1,242,518	1,342,055	1,465,908
Accumulated deficit	(1,145,340)	(1,145,340)	(1,156,857)
Accumulated other comprehensive loss	(877)	(877)	(877)
Treasury stock, Common, at cost (44,322 shares)	(403)	(403)	(403)
Deferred compensation	403	403	403
Total stockholders' equity:	96,325	195,867	308,205
Total capitalization	$ 262,570	$ 362,112	$ 401,967

FUELCELL ENERGY, INC.
Consolidated Statements of Operations and Comprehensive Loss
(Unaudited)
(Amounts in thousands, except share and per share amounts)

	Nine Months Ended July 31,	
	2020	2019
Revenues:		
Product	$ —	$ —
Service and license	19,697	25,866
Generation	14,795	8,560
Advanced Technologies	19,380	15,285
Total revenues	53,872	49,711
Costs of revenues:		
Product	7,512	14,362
Service and license	16,418	15,166
Generation	17,576	9,047
Advanced Technologies	12,046	9,016
Total costs of revenues	53,552	47,591
Gross profit	320	2,120
Operating expenses:		
Administrative and selling expenses	19,041	23,622
Research and development expenses	3,323	12,435
Total costs and expenses	22,364	36,057
Loss from operations	(22,044)	(33,937)
Interest expense	(11,026)	(7,807)
Change in fair value of common stock warrant liability	(39,311)	—
Gain on extinguishment of financing obligation	1,801	—
Other income (expense), net	370	(556)
Loss before provision for income taxes	(70,210)	(42,300)
Provision benefit for income taxes	(41)	(89)
Net loss	(70,251)	(42,389)
Series A warrant exchange	—	(3,169)
Series B preferred stock dividends	(2,531)	(2,410)
Series C preferred stock deemed dividends and redemption value adjustment, net	—	(6,522)
Series D preferred stock deemed dividends and redemption accretion	—	(9,752)
Net loss attributable to common stockholders	$ (72,782)	$ (64,242)

	Nine Months Ended July 31,	
(Amounts in thousands)	2020	2019
Net loss	$ (70,251)	$ (42,389)
Depreciation and amortization [1]	13,828	8,319
Provision for income taxes	41	89
Other (income)/expense, net[2]	(370)	556
Change in fair value of common stock warrant liability	39,311	-
Gain on extinguishment of financing obligation	(1,801)	-
Interest expense	11,026	7,807
EBITDA	$ (8,216)	$ (25,618)
Stock-based compensation expense	1,261	2,325
Legal settlement [3]	(2,200)	-
Adjusted EBITDA	$ (9,155)	$ (23,293)

FCE operations improved considerably year on year for the 9 months ended July 31, 2020. After adjusting for the income recognized in the prior year from the Exxon Mobil Research & Engineering license agreement ($4m in the current period vs $10m in the prior period), Adjusted EBITDA improved from a loss of $35.6m to a net loss of $12.2m. Overall, Adjusted EBITDA improved from a loss of $25.6m to a loss of $8.2m reflecting better cost management following FCE's restructuring and a smaller loss on the product revenue segment. Historically, adjusted EBITDA is as follows and continues to show an improving trend with breakeven EBITDA achievable in the next fiscal year or so, depending upon execution against FCE's pipeline of activities and net revenues from generation activities and service and license revenues.

FYE Oct	2013	2014	2015	2016	2017	2018	2019	2020
Adj EBITDA	($25m)	($22m)	($24m)	($41m)	($36m)	($33m)	($31m)	($14m)e[13]

[13] Estimated, based on actual results through FY20-Q3 and estimates by 5 analysts

D. Diversified Business Mix

In addition to FCE's Energy Supply Business, FCE is taking advantage of the ability of its technology to meet applications for various energy and storage-related purposes, including carbon capture, hydrogen for transportation, and energy storage:

E. Liquidity & Capital Resources

Benefitting from several capital raises during FY2020, FCE has amassed a substantial cash position ($[redacted] million unrestricted) with minimal ($[redacted] million) parent level leverage. Two project-level financings (one including Green Bank and Liberty Bank) are performing well, and parent-level indebtedness is as follows:

- $[redacted] million PPP loan from Liberty Bank (to be forgiven);
- $[redacted] million DECD loan (potentially to be forgiven in part depending upon jobs); and
- $[redacted] million in loans from Green Bank (related to the Bridgeport and Navy (Groton) projects and benefit from security in project level cash flows, equipment and contracts)

With a corporate cash "burn rate" of $[redacted] million annually, and even accounting for project development requirements, staff believes FCE has more than adequate cash liquidity for a minimum of the next [redacted] years.

FCE's ability to execute on the full potential of its backlog is greatly increased by the availability of financing facilities such as for the Navy Project. Given that several of the projects that comprise this backlog consist of PPA-backed arrangements with investment grade utility offtakers, such as with the Navy Project, Green Bank considers these projects as highly "bankable".

F. Conclusion

FCE has successfully navigated some significant balance sheet and corporate liquidity challenges over the past 15 months. Clearly, several successful equity raises reflect confidence of the capital markets in FCE's business model. These recent events have raised, Green Bank staff's confidence in FCE's ability to deliver on its solid pipeline of opportunities, many of these in Connecticut, including this Navy Project as well as FCE's success in securing projects under the CT-DEEP RFP, the SCEF RFP and Long Island (NY) Power Authority RFP.

Continuing successful implementation of FCE's strategy will allow FCE to better align its operations with current reality, and to diversify revenues so as to enhance FCE's path to sustained growth.

That said, FCE also needs to remain successful in continuing to develop its core business – and the existing fuel cells and its next generation high efficiency modules should position the company well to succeed competitively as the power generation marketplace progressively moves to cleaner, sustainable and higher availability sources.

Class I REC Risk

The Navy Project will operate, at least initially, without a long-term REC pricing contract (i.e., >5 years) in place, although RECs have been contracted for the first 2 to 3 years. This means that REC cash flows can vary due not only to variations in production but also to variations in the supply and demand dynamics of the Class I REC market in Connecticut.

While the overall risk profile of the Navy Project is composed of different types of risk, including those that directly and indirectly impact production and REC market pricing, the Green Bank is exposed to REC pricing risk due to its position in the term financing capital stack and therefore requires its own consideration.

For each specific type of risk outlined below in subsequent sections, there are specific structures, concepts, and mitigants that staff has designed to minimize Green Bank exposure to certain downside scenarios. There are, however, several overarching mitigants that will be put in place due to the overall concept of risk, and in effect, can be applied to almost all of the defined Navy Project risks. Those overarching mitigants are identified below:

General Risk Mitigants:

A.) The Credit Facility will benefit from a pledge of cash flows [redacted]

B.) The Credit Facility will be secured by a subordinated lien on, and security interest in, all Navy Project assets, and collateral assignment of all Navy Project cash flows (the "Project Collateral"), subordinated to the Senior Lenders.

C.) Green Bank staff has conducted extensive cash flow modeling and stress tests, under various "downside" scenarios, specifically with regards to the price of Class I RECS, to better understand and assess Green Bank's risk exposure and repayment prospects. Such modeling has helped (i.) in determining appropriate levels of risk mitigation, and (ii.) in giving staff confidence in the undertaking of financing the project, given the implemented structural and conditional mitigants. Such stress testing indicates that even if Class I RECs are priced at $5 per REC across the 20-year financing term, the Green Bank would still receive its principal and interest in full.

Technology Risk

The Navy Project represents the largest commercial implementation to date of the latest configuration of FCE's DFC fuel cell technology, which is capable of achieving up to 60% electric power generation system compared with up to 47% in previous configurations. As such, there is a lack of performance history in the field, although there has been significant in-house testing of the technology, as explained below. Should the Navy Project underperform – because the main revenue drivers of the Navy Project are monetized on a per kilowatt hour ("kWh") basis – the Navy Project's ability to adequately cover debt service payments to Green Bank will be impaired.

Technology Risk Mitigants:

1.) The incremental $5 million in Green Bank funds ($3 million already disbursed as previously approved by the Board for construction purposes (parent level obligation plus security in Bridgeport cash flows)) will not be advanced until COD and the advance of Senior Loans, at which point the Navy Project will be fully operational and will have undergone systematic testing to ensure operating performance aligns with expectations.

2.) FCE has developed and operated a small-scale version of the technology on its corporate location providing valuable operating data and experience with the high-efficiency unit.

3.) FCE has significant experience and expertise in developing and operating innovative fuel cells, such as the Bridgeport Project, which remains the largest standalone fuel cell in the United States.

4.) At the portfolio level, FCE's long-term average historical fleet performance is at an availability factor of [redacted]% and a capacity factor of [redacted]%, and with technology improvements FCE expects that capacity factor to increase to [redacted]%.

Production Risk

Aside from performance risk associated with any relatively new technology (which, as explained above, staff believes are reasonable under the circumstances as the technology is derivative of existing successful technology), Navy Project cash flows available for debt service can fluctuate due to a range of unexpected operational issues, ranging from unexpected outages from fuel line disruptions to disturbance from the surrounding urban environment.

Production Risk Mitigants:

1.) Green Bank pro forma modeling scenarios account for an initial cash reserve and annual allocations of cash to support O&M and planned restacking.

2.) FCE will operate and maintain the Navy Project into which it will have sourced approximately $[redacted] million of developmental capital by the time the Navy Project reaches COD.

3.) The PPA agreement between FCE and CMEEC requires a minimum production guarantee from FCE for the benefit of CMEEC, creating an incentive for FCE to maintain production beyond solely debt service requirements.

Credit Risk

As the off-taker in the PPA, purchasing energy from FCE and reselling it to the U.S. Navy as part of its purpose as an electric energy cooperative utility servicing the submarine base, Navy Project cashflows are dependent on CMEEC's ability to pay for electric energy produced from the Navy Project. Furthermore, CMEEC is leasing the land on which the Navy Project is sited from the U.S. Navy and subleasing that land to FCE in order to operate and maintain the Navy Project. Should either CMEEC become financially impaired or the U.S. Navy terminate its land lease with CMEEC, the ability of the Navy Project to repay the Green Bank with Navy Project cashflows is at risk.

Credit risk mitigants:

1.) CMEEC is an investment-grade rated entity (AA- by Fitch);

2.) CMEEC has been operating for over 40 years, and its member utilities provide electricity to 70,000 customers within Connecticut[14].

3.) CMEEC has a executed lease with the U.S. Navy, for the purpose of the Navy Project, the terms of which are aligned with the terms of CMEEC's sublease and PPA agreements with FCE for the Navy Project.

Commodity Risk – Natural Gas

Because the terms of FCE's PPA with CMEEC dictate that CMEEC is responsible for fuel (natural gas) and fuel costs for the Navy Project, there is no natural gas/commodity risk to the Navy Project and the lenders/Green Bank.

Portfolio/Exposure Risk

Green Bank currently has a $7.8 million loan outstanding to FCE for the Bridgeport Project, and $3 million for construction funding for the Navy Project (explained above). The addition of the Credit Facility ($5 million incremental, $8 million total), would bring Green Bank's total exposure to FCE and FCE projects up to $15.8 million.

Green Bank credit exposure to FCE following approval of the Groton Term Loan would be:

Project	Financing Facility	Credit Exposure
Bridgeport (15 MW)	Acquisition Funding Facility – Subordinated	$ 6.0 million
Bridgeport (15 MW)	Performance Assurance Finance Facility – Subordinated	$ 1.8 million
Navy Project (7.4 MW)	Long Term Loan (construction takeout) – Subordinated	$ 8.0 million
~~Triangle (3.7 MW)~~	~~Long Term Loan (developer takeout) – Senior~~	~~LAPSED~~
	Aggregate Exposure:	**$15.8 million**

As noted above, IPC would like to participate in the Navy Project, up to $3 million, which would reduce Green Bank's exposure to $12.8 million. As part of this credit approval, staff is requesting approval to sell a participation to IPC of up to $3 million in the Green Bank loan for the Navy Project.

[14] https://cmeec.com/about/

Portfolio/Exposure Risk Mitigants:

1.) Mitigants such as the Navy Project Collateral, the Guaranty, and the potential to either syndicate or cross-collateralize across projects all combine to limit the exposure to losses that Green Bank could experience on principal invested.

2.) Staff's stress-testing of financial models show that, even under duress, the project can reasonably be expected to perform in a manner sufficient to deliver a return of principal, plus interest, to Green Bank, over the course of the financing term.

Proforma Projection Model for Debt Service

Staff has worked with FCE to develop reasonable projection model estimates for the Navy Project. Based on these estimates, staff anticipates that over the 20-year term the Navy Project will generate sufficient cash flow to service the Loan and effectively amortize the balance over a 15-year period. [redacted]

Capital Flow Diagram and Tables

Capital Flow Diagram - Term Financing

[redacted]

Sources and Uses – Navy Project Construction

Strategic Plan

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

As confirmed in the Bridgeport Fuel Cell Project Qualification Memo approved by the Board and Deployment Committee on November 30, 2012, pursuant to the Green Bank's mandate to foster the growth, development, and commercialization of renewable energy sources and related enterprises, and to stimulate demand for renewable energy and the deployment of renewable energy sources that serve end use customers in Connecticut, the Board has determined that is in keeping with Conn. Gen. Stat. Section 16-245n for Green Bank to fund certain commercial activities that support projects involving the use of fuel cell technology for distributed generation ("DG") power production.

Staff recommends that these same criteria be applied to fuel cell facilities, such as the Navy Project, for the reasons included throughout this Memo, and in particular as laid out in the **Strategic Selection and Importance** section of this Memo.

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?

The Navy Project is expected to produce 56,239 MWh during the first year of operation, and up to 1,087,686 MWh during its 20-year useful life. Compared with $8,000,000 of ratepayer funds at risk, the Navy Project is expected to yield up to 135 kWh per $1 of ratepayer funds over a 20-year term.

Terms and Conditions

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

The Credit Facility carries an interest rate of 8.00% over a 20-year, fully amortizing term with an initial 7 year interest only period coupled with a 50/50 excess cash flow share. The Credit Facility will be advanced upon COD, expected in February 2020, and will be secured by a subordinated lien and position on Navy Project assets and cashflows. I[redacted].

Capital Expended

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

$8,000,000

Risk

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

$8,000,000

Financial Statements

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

The loan would result in a $8,000,000 reduction of cash and a $8,000,000 increase in promissory notes (Statutory & Infrastructure program).

Target Market

Who are the end-users of the engagement?

The U.S. Navy submarine base located in Groton, CT.

Green Bank Role, Financial Assistance & Selection/Award Process

Lender via Strategic Selection process pursuant to the Green Bank Operating Procedures (see **Strategic Selection and Importance** section of this Memo).

Program Partners

FuelCell Energy, Inc., and Inclusive Prosperity Capital, Inc.

Risks and Mitigation Strategies

Lending risks and mitigation strategies have been addressed in the **Project Risks and Mitigants** section of this Memo.

CMEEC Groton US Navy Proforma - 2020-1012 - Liberty + Amalgamated 12/13/2020

FuelCell Energy Confidential - SureSource Project Proforma - Groton Sub Base - Connecticut

Year of Operation	1	2	3	4	5	6	7	8	9	10
Cash Flow Date (000)s	31-Dec-21	31-Dec-22	31-Dec-23	31-Dec-24	31-Dec-25	31-Dec-26	31-Dec-27	31-Dec-28	31-Dec-29	31-Dec-30

CMEEC Groton US Navy Proforma - 2020-1012 - Liberty + Amalgamated

12/13/2020

FuelCell Energy Confidential - SureSource Project Proforma - Groton Sub Base - Connecti										
Year of Operation	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Cash Flow Date (000)s	**31-Dec-31**	**31-Dec-32**	**31-Dec-33**	**31-Dec-34**	**31-Dec-35**	**31-Dec-36**	**31-Dec-37**	**31-Dec-38**	**31-Dec-39**	**31-Dec-40**

[redacted]

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, has 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, Green Bank staff recommends that the Green Bank Board of Directors ("Board") approve of the Credit Facility, in an amount not to exceed $8,000,000;

WHEREAS, Green Bank staff recommends that the Green Bank Board of Directors ("Board") approve of a participation by Inclusive Prosperity Capital, Incorporated ("IPC") in the Credit Facility, in an amount not to exceed $3,000,000;

NOW, therefore be it:

RESOLVED, that the Green Bank Board of Directors (the "Board") hereby approves the Credit Facility in an amount not to exceed $8,000,000 for the Navy Project, as a *strategic selection and award* pursuant to Green Bank Operating Procedures Section XII; and

RESOLVED, that the Board hereby approves of a participation by IPC in the Credit Facility, in an amount not to exceed $3,000,000;

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, 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 the date of authorization by the Board of Directors; 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 Term Loan.

Submitted by: Bryan Garcia, President and CEO; Bert Hunter, EVP and CIO;

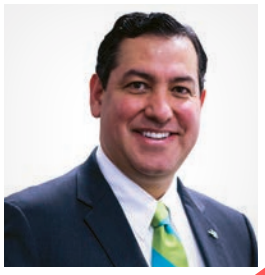
CONNECTICUT GREEN BANK SM

2020 Annual Report

Supporting Stronger, More Prosperous Communities of the Future

Combating Climate Change in the Face of COVID-19 Challenges

In last year's annual report, I introduced the concept of Connecticut Green Bank 2.0, with an updated mission statement: 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. Guiding this mission is our vision for "...a world empowered by the renewable energy of community" – or said another way "...a planet protected by the love of humanity." As we made our way through the first two-thirds of FY20, we were unwaveringly focused on the existential threat of climate change and positive impact we could make for families, businesses, and institutions through clean energy investment.



Bryan Garcia, President and CEO
Connecticut Green Bank

In the second quarter of 2020, a new threat created an unprecedented challenge for everyone. The public health crisis caused by the COVID-19 pandemic had a strong negative impact on the demand and supply-sides of the clean energy marketplace in Connecticut. Projects were canceled or delayed as shelter-in-place and social distancing measures were necessary to slow the spread. Companies furloughed or laid-off employees or reduced the schedules of its workers, who were concerned about exposure to the virus as well as lost income. The recovery period is feared to be long and difficult over the coming year.

While our ninth fiscal year may have presented the most unique challenges to our organization yet, the Green Bank successfully continued to build public private partnerships that leverage limited public funds by attracting private capital to spark the growth of green energy in Connecticut.

A few quick highlights that will be covered in this report:

• We issued our first Green Liberty Bonds to the citizens of Connecticut and beyond. Originally planned to launch in April 2020, in celebration of the 50th anniversary of Earth Day, we went to market in early July and sold more than $16 million of these lower dollar denomination bonds to retail and institutional investors.

• In partnership with local contractors and financial institutions, we continued to help families, especially in vulnerable communities, reduce the burden of energy costs through our clean energy programs. Connecticut remains an example of a "solar with justice" state, ensuring greater access to and investment in solar energy for low-to-moderate income families and communities of color.

• In collaboration with the electric distribution companies and our private capital partners, we continue to provide businesses with easy and affordable access to capital to finance clean energy improvements.

• We achieved our best leverage ratio in our history in FY20. For every $1 of public funds received, we brought in $8.50 of private investment to "scale-up" deployment of clean energy.

The image on this page (a version also appears on the cover) illustrates the shift we are striving to create. COVID-19 has changed our world, and offers us the opportunity to grow back greener, cleaner, more prosperous, and more equitable so all of our communities can thrive.

Highlights & Milestones

In FY 2020, our ninth year of operation, the Green Bank continued to achieve new successes in our finance and incentive businesses. While the pandemic created unique challenges locally and globally, we attained our best single-year leverage ratio of $8.50 in private investment for every public dollar. In total, we played a direct or indirect role in mobilizing more than $275 million of private investment in clean energy financing. Some highlights include:

• **A new way for more people to invest in combating climate change** — In July 2020, our first Green Liberty Bond was sold to retail and institutional investors in $1,000 denominations. The bond sold out with more than $16 million issued in two days. (See pages 6 - 7)

• **More businesses improve their bottom line** — By improving energy efficiency or accessing renewable energy, local businesses are able to better control their costs. Through C-PACE and our solar power purchase agreement, businesses of all types are benefiting when they need it most. (See page 8)

• **Making homes better** — Faced with increased energy usage as "staying home" took on new meaning due to the pandemic, homeowners continued to turn to the Smart-E loan and its network of local lenders and contractors. (See page 9)

• **More solar on more homes in all communities** — The Residential Solar Investment Program (RSIP) surpassed $1 billion of capital invested as progress continues toward its statutory goal of 350 megawatts (MW) deployed with more than 40,000 homes adding solar. These projects are being installed equitably for families earning more or less than 100% of Area Media Income (See page 11)

• **Open opportunity for project originators** — Seeking a way to unlock more capital for projects that didn't fit into existing programs, we rolled out an open request for proposals for Capital Solutions. (See page 5)

Who We Are

The Connecticut Green Bank is a quasi-public state agency that promotes green energy deployment in Connecticut by using public dollars to attract private investment. Launched in 2011, we are the nation's first green bank, and we continue to be a leader in America's Green Bank movement.

2020 Awards

Recipient of *Environmental Finance's* 2020 Bond Awards in two categories: the Award for Innovation – Green Bond Structure and the Award for Asset-Backed or Asset-Based Bond.

9,335

Number of Approved Projects in FY 2020

$312,471,359

Total Public & Private Investment in FY 2020

OUR VISION

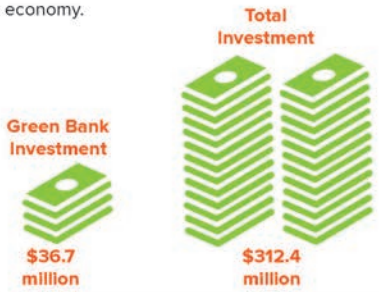
A world empowered by the renewable energy of community

FY20 By the Numbers

Since the Connecticut Green Bank's inception through the bipartisan passage of Public Act 11-80 on July 1, 2011, we have accelerated the deployment of clean energy to benefit families, businesses, and our communities. The impact of our green bank innovation is shown below in terms of investment, economic development, and environmental protection in FY20 (July 1, 2019 - June 30, 2020).

INVESTMENT IN CONNECTICUT

Investment In FY20, the Green Bank used **$36.7 million** to attract **$275.7 million** in private investment into the State's economy.



Leverage ratio The Green Bank's leverage ratio is the relationship between private investment and Green Bank investment.

For every $1 of Green Bank investment, we attract $8.5 of private investment.

Tax revenues The Green Bank's activities have helped generate an estimated **$12.5 million** in state tax revenues in FY20.

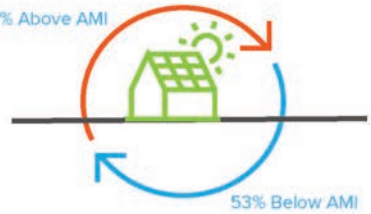
- $6.6 million individual income tax
- $3.3 million corporate taxes
- $2.6 million sales taxes

ECONOMIC DEVELOPMENT

Jobs The Green Bank has supported the creation of over 2,600 direct, indirect, and induced job-years in FY20.

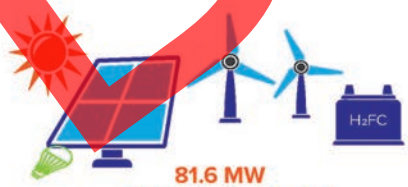
Energy burden In FY20, the Green Bank reduced the energy costs on more than 10,000 families and businesses in our communities.

Accessible and affordable The Green Bank has supported residential solar PV installation to surpass income parity, a statistic that bucks national trends.



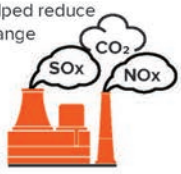
ENVIRONMENTAL PROTECTION

Deployment The Green Bank has accelerated the growth of clean energy to surpass 434 MW in total, with 81.6 MW installed in FY20.



81.6 MW of installed capacity

Pollution The Green Bank has helped reduce air emissions that cause climate change and worsen public health. In FY20, this equaled 1,415,529 pounds of SOx, 1,691,902 pounds of NOx, and



1,474,033 tons of CO_2 over the life of the projects, which equals

22.1 million tree seedlings grown for 10 years

or

150.4 million gallons of gasoline not consumed

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

$28.6 - $64.7 million of lifetime public health value created in FY20

** More data can be found in the Connecticut Green Bank Comprehensive Annual Financial Report for FY19*

Creation of Private Investment Opportunities

The Connecticut Green Bank's approach to leveraging limited public resources has created new opportunities for private market investment. These financial innovations have broad impact in our state and across the country.

Capital Solutions Program Seeks Proposals that Need Green Bank Support

In January 2020, the Green Bank Board of Directors approved an open request for proposals (RFP) for the use of Green Bank capital. The Capital Solutions Program allows project developers, companies, and others to bring clean energy proposals to the Green Bank for our consideration and investment. Projects financed through the RFP would either not happen or be realized at a much slower pace or with less impact without the Green Bank's participation. Since its launch, $48 million worth of transactions have been proposed to the Green Bank for review.

Supporting Further Growth of Solar for All

To further the expansion of solar and energy efficiency for low-to-moderate income families in the state, the Green Bank provided PosiGen $3 million in additional funding under a financing facility secured by solar home renewable energy credits. The Green Bank also worked with PosiGen to secure $65 million in re-financing through Ares Capital to continue to grow their operations in Connecticut and across the country.

Helping Our Partners Reach More Residents

In March 2020, the Green Bank and Inclusive Prosperity Capital, Inc. agreed to lend $7.7 million to Capital for Change (C4C), a Connecticut Community Development Financial Institution. C4C has long partnered with the Green Bank and the Connecticut Energy Efficiency Fund in the administration of programs and sought the Green Bank's expertise to source capital to continue to operate as a lender for the energy efficiency fund, the Green Bank's Smart-E program, and its LIME loan program for multifamily properties.

Additionally, the Green Bank and its lending partner Amalgamated Bank provided a $27 million revolving credit facility to finance C4C's portfolio of Smart-E loans. This facility will enable C4C to provide additional solar and energy efficiency financing for families in single family homes throughout the state.

Money for Municipal Solar Installations

In April 2020, the Green Bank agreed to loan Skyview Ventures up to $3.5 million for the development of additional commercial solar assets. The target assets are sited on various municipal properties, with the respective municipalities as energy off-takers. In connection with the loan, each solar installation is secured by a power purchase agreement by and between Skyview and the off-taker as well as a zero-emission renewable energy credit contract between Skyview and Eversource or United Illuminating.

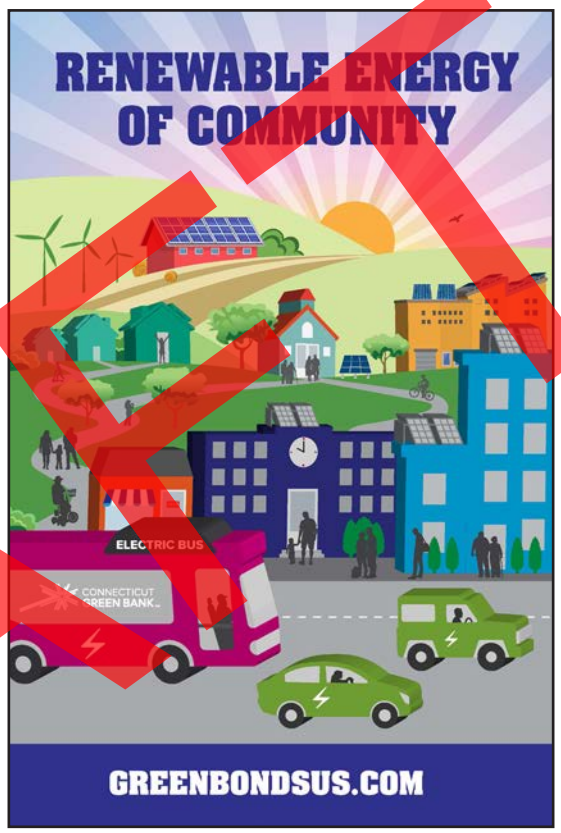
Democratizing Investment with Green Liberty Bonds

To build a planet protected by the love of humanity, more people need to be able to participate in and benefit from the green bank movement which accelerates the green energy economy for all. To create a new way for everyday citizens to invest in confronting climate change, the Green Bank launched the Green Liberty Bond in 2020. The Green Liberty Bond sub-category of green bonds is sold directly to the people, the proceeds of which are independently certified as financing projects with climate and environmental benefits.

Originally planned for issuance in April in honor of the 50th celebration of Earth Day, the issuance was delayed due to COVID-19, but was a success despite the challenges created by the global pandemic.

The offering of more than $16 million in bonds to retail and institutional investors occurred in July. The inaugural issuance sold-out in two days and demand was so strong that the supply of bonds could not meet the interest of those seeking to invest in Connecticut's green economy.

With priority given to Connecticut citizen investors, their orders for nearly $5 million of bonds were filled before the national orders. Proceeds from this issuance supported the Residential Solar Investment Program (RSIP) which provides incentives to Connecticut homeowners to go solar to save money on their electricity bills.



The Renewable Energy of Community

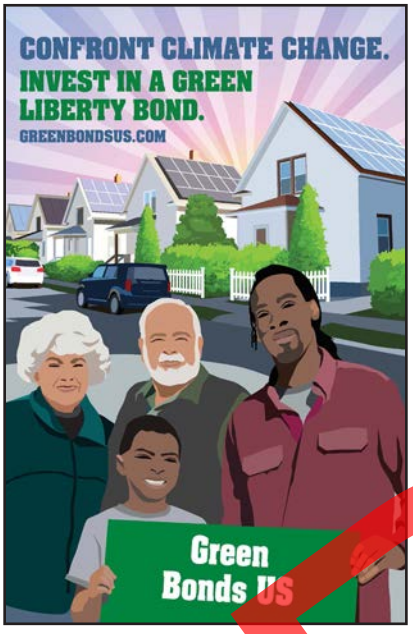
Environmental Finance Bestows Two Awards

In March 2020, when *Environmental Finance's* 2020 Bond Awards winners were announced, the Connecticut Green Bank was recognized with two honors: the Award for Innovation – Green Bond Structure and the Award for Asset-Backed or Asset-Based Bond. These awards highlight the innovation and success of the Green Bank's April 2019 $38.6 million in green asset backed securities, which was its first rated debt issuance, and the first ever solar asset-backed security (ABS) transaction by a green bank. The awards were judged by an independent panel comprising of 30 of the world's largest green, social and sustainability bond investors. The proceeds from this green bond supported the many families reducing the burden of energy costs by putting solar PV systems on the rooftops of their homes.

For more on Green Liberty Bonds visit www.greenlibertybonds.com

A Climate Change Battle Cry

The marketing campaign that announced and promoted the Green Liberty Bonds featured imagery reminiscent of the Series E War Bond posters from the 1940s, showing themes of democracy, bipartisan action, and unity. “Green” -- the environment -- can bond and unite us. Background on our Green Liberty Bond posters follows:



Inclusive Capitalism

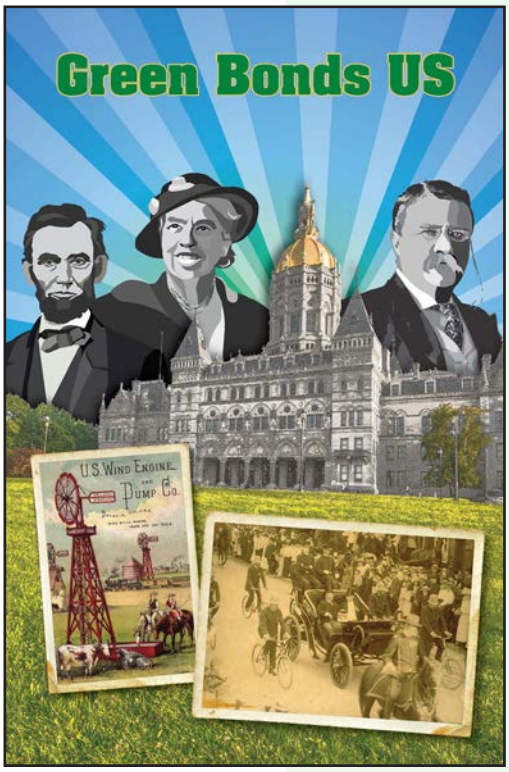
Inclusive Capitalism. The people shown are based on real solar customers and the homes in the background are based on a street in Bridgeport where four homes in a row are powered by solar. This shows that investment in the green economy, through solar and energy efficiency, can benefit everyone, lowering bills and supporting job growth.

Democracy in America. This poster depicts a march for climate action and justice. It speaks to bipartisan unity which has often driven the environmental cause forward. Some of the characters shown symbolize current or past champions in the fight for environmental and social change.

Democracy in America

Yankee Ingenuity. Based on historical achievements, this poster features the state capitol building with key bipartisan historical figures looming in the background and Connecticut-related green energy references in the foreground. The wind turbine represents Daniel Halladay, a manufacturer, distributor, and inventor from Coventry (1826-1916), whose self-governing wind turbine inspired modern day wind turbines. Albert Pope, a Civil War hero, manufacturer, distributor, and entrepreneur who lived in Hartford (1843-1909), initially focused on making America’s first bicycles (Columbia Bicycle Company). He then turned his attention to making the first electric vehicles from an assembly line using mass production techniques employing thousands of people in what was the center of the automobile industry in the late 1800’s. In 1902, President Theodore Roosevelt, a Republican and environmental conservationist, rode in a Columbia Electric Victoria Phaeton in Hartford, possibly the first and only Presidential motorcade in an electric vehicle.

First Lady Eleanor Roosevelt is depicted to represent the importance of engaging local community groups and businesses to support War Bond efforts. On Monday, March 22, 1943, she was in Hartford at the Bushnell Memorial to deliver a speech called “The Importance of the Home Front” wearing a corsage of war stamps provided to her by the Girl Scouts.



Yankee Ingenuity

Keeping Our Local Business & Nonprofit Community Strong

From bakeries like DiMare Pastry in Stamford to offices like Brick Walk Professional Building in Fairfield to unique manufacturers like Stencil Ease in Old Saybrook and L.C. Doane in Ivoryton, more and more Connecticut businesses are taking advantage of solar energy to power their buildings and reduce operating expenses. These owners turned to two innovative financing solutions to make this work: Commercial Property Assessed Clean Energy (C-PACE) and the Green Bank Solar Power Purchase Agreement (PPA).

"The growth of C-PACE is thanks to the efforts of contractors, municipal officials, capital providers, property owners and other stakeholders who have all come together to build a cleaner, greener and more prosperous future," said Bryan Garcia, President and CEO of the Green Bank. The roof of DiMare Pastry is shown above, thanks to a drone photo from project installer 64Solar.

More than 315 C-PACE projects have been closed in Connecticut since 2012. This is a total investment of nearly $185 million in improvements in businesses and nonprofits in our state. In FY20 alone, 45 commercial and industrial property owners used C-PACE to make smart energy upgrades to their buildings, immediately increasing their cash flow. According to PACENation, the non-profit industry group that promotes PACE financing, only California and Ohio had more total investment deployed through the end of 2019 using C-PACE than Connecticut.

This investment means lifetime savings of more than $286 million for the participating building owners and businesses.

Serving Those Who Serve Others

Lowering energy burdens so businesses can focus on their mission is a key piece of the Green Bank's vision. This is especially important for nonprofits that truly need to stretch each dollar. More than 40 nonprofits and houses of worship have used C-PACE to finance energy efficiency updates or to add solar through our PPA. While this is roughly 15 percent of all C-PACE projects, the positive impact is certainly multiplied when these organizations are able to reduce their energy costs to shift that money to other needs within the community.

Staying Home, Improving Home Energy Usage

In 2020, “home” took on new meaning for many Connecticut residents. Due to the COVID-19 pandemic and the changes to daily life it caused, homes became schools, work-from-home offices, and places of security. With people spending more time at home, increased energy use was common so people began to explore opportunities to improve their home by upgrading heating and cooling systems, adding insulation or improving their windows. Energy audits through the Energize CT Home Energy Solutions (HES) and Home Energy Solutions - Income Eligible (HES-IE) programs added a virtual option.

homeowner testimonials

Despite the disruption of the pandemic, the Smart-E Loan continued to be a go-to financing solution for residents seeking an easy, affordable way to pay for energy efficiency improvements to their homes. With no down payment required and low interest rates with flexible terms, Smart-E loans make sense for homeowners.

In Fiscal Year 2020, Smart-E loans closed for 737 energy efficiency and renewable energy projects completed for $11.5 million of investment into Connecticut homes. Since the program’s start in 2014, nearly 4,500 projects have been completed, exceeding $78 million of private investment.

homeowner testimonials

A Community of Contractors & Lenders

It’s worth noting that the Smart-E loan program is a true community effort. All of the funds invested come through a network of community banks, local credit unions and lenders, not from the Green Bank. The installations are completed by the more than 400 contractors who offer the Smart-E Loan as a financing option. This community of contractors gives residents plenty of options when selecting a local company.

Helping the Most Vulnerable in Our Multifamily Communities

In late 2019, the Green Bank's Multifamily Housing Program reached a milestone: it had provided financing and technical assistance to more than 100 funded multifamily projects since 2014. By the end of FY20, the project count had reached 114.

The impact on people is much more profound. The program has now touched more than 9,000 units of multifamily housing, and 90% of these units are deemed affordable, serving the state's most vulnerable communities.

Updates to Plaza on the Green Reduce Costs & Improve Conditions for Residents

In our FY18 annual report, we highlighted a loan for Plaza on the Green in Waterbury, a 157-unit apartment complex adjacent to the town green that primarily provides affordable housing to seniors.

The property owners were challenged with excessively high utility costs (27 percent of their total operating), and the residents were dealing with comfort, health and safety issues.

A building assessment and energy audit of the property identified energy improvements, including conversion of the building's heating source from old inefficient electric resistance heaters to natural gas boilers, replacement of the domestic hot water system, installation of LED lighting, other upgrades to reduce energy usage.

The improvements were funded by a $2.6 million LIME Loan from Capital for Change, with capital participation by the Housing Development Fund (HDF) and the Connecticut Green Bank using a MacArthur Foundation program-related investment, and $200,000 in energy efficiency incentives from Eversource.

In the first full year with energy efficiency upgrades, Plaza had a net utility savings of $224,560 or 45% of their previous costs.

The projected cost savings over the 15-year term of the loan is $3 million.

The loan for this project is unsecured and underwritten based on using cash flow from energy, water and maintenance savings to service the debt.

This is an important and necessary financing solution for many multifamily properties seeking to make similar capital improvements. This financial structure is necessary because the requirements of existing multifamily debt often prevent additional secured debt to be placed on a property. However, unsecured loans, like the LIME Loan, may be permitted.

A “Solar with Justice” State

Participation in the green energy economy can benefit everyone. Historically, however, going solar was challenging for people in low-to-moderate income communities. In 2014, the Green Bank set out to address these issues in hope of creating greater equity in solar adoption.

Since then, through a special incentive for households earning less than 100 percent of Area Median Income (AMI) and a partnership with PosiGen, Connecticut is ensuring greater access to and investment in solar energy and energy efficiency upgrades for low-to-moderate income families and communities of color. Connecticut was featured as a success story in a December 2019 report from the Clean Energy States Alliance (CESA) called “Solar with Justice: Strategies for Powering Up Under-Resourced Communities and Growing an Inclusive Solar Market.”

In 2012, less than a third of solar projects were installed for families at or below 100 percent of AMI. Now, more than half of all solar projects completed are benefiting these families. This means, more than 20,000 households, who in the past might have not been able to access solar, are seeing savings on their electricity bills.

In FY20, more than 800 low- to moderate-income households added solar and energy efficiency upgrades through our Solar For All partnership with PosiGen. Since that program started in 2015, more than 3,300 families have used it to go solar. The average PosiGen customer in Connecticut saves $450 annually. This program helps close the energy affordability gap for residents who need it most.

Overall, the Residential Solar Investment Program (RSIP), administered by the Green Bank, surpassed $1 billion of capital invested as the program continued to its statutory goal of 350 megawatts (MW) deployed.

Climate Crisis Showcase at the Bushnell Theater

In November 2019, The Connecticut Forum and Smart Seed Fund sponsored a Climate Crisis event and showcase at the Bushnell Theater in Hartford. The event brought 2,800 attendees together to hear from on-stage panelists Ayana Elizabeth Johnson, Gina McCarthy and David Wallace-Wells. The showcase highlighted the work of Connecticut’s environmentally-focused organizations, giving attendees access to local resources that are working to combat climate change. Green Bank staff gave out information on Smart-E loans, going solar, and other ways to make a difference.

Nick Caito Photo

From the Governor

In 2020, states like Connecticut continued to take the lead on environmental issues. As a member of the bipartisan U.S. Climate Alliance, a coalition of 25 states that have pledged to continue combatting climate change, Connecticut is leading by example. We are implementing policies that align with the goals of the Paris Agreement. We are working hard to reduce greenhouse gas emissions. Most importantly, we are proving that economic growth and climate action are not opposing forces, but instead work together to create new jobs and more prosperous communities.

The Connecticut Green Bank's achievements reinforce this fact. Through the smart use of ratepayer funds, leveraging each dollar to bring in nearly seven dollars from private partners, the Green Bank has deployed over $2 billion of clean energy investment in our state. This creates jobs and tax revenues, and

Connecticut Governor Ned Lamont

lowers energy burdens on families and businesses who deserve every opportunity to thrive. It also improves air quality by reducing harmful pollution, which improves the resiliency of our towns and cities.

In September 2019, I signed Executive Order No. 3 to strengthen our state's efforts to tackle the existential threat of climate change. We have an obligation to act now and to continue to build upon previous commitments to the health and resilience of our citizens and communities. One of the directives of this Executive Order charges the Department of Energy and Environmental Protection (DEEP) to analyze pathways and recommend strategies for achieving a 100 percent zero carbon target for the energy grid by 2040. This aligns with previously established targets for state sustainability, including a 45 percent reduction in greenhouse gas emissions below 2001 levels by 2030.

These goals are more important than ever as we strive to protect the economic prosperity, health and safety of Connecticut residents, especially given the ongoing impact of COVID-19. Moving forward, the Green Bank will continue to play an important role in accelerating the flow of private capital into markets that energize the green economy to create the benefits for all.

I applaud the Green Bank on its successes in FY 2020, and look forward to their continued leadership.

Supporting the Work of Sustainable CT

Interacting with municipal leaders and volunteers has always been a part of the Green Bank's mission. In recent years, a portion of our connection to municipalities has come through our sponsorship and support of Sustainable CT, a voluntary municipal certification program focused on recognizing thriving, resilient and equitable communities.

In 2017, the Green Bank was awarded the Innovation in American Government Award from the Ash Center at Harvard University's Kennedy School. The $100,000 grant that accompanied this honor has been used to help Sustainable CT move forward with innovative programs. This includes their Fellowship Program, which placed fellows into the state's Council of Governments to help implement Sustainable CT, and their Community Match Fund, which matches crowdfunding donations raised for approved Sustainable CT projects.

Read more at ctgreenbank.com/news-events/media-coverage/

In FY20 the Green Bank and related projects were frequently covered in the news media. There are too many articles to mention, but you can see the full list at the link above.

From Board of Directors Chair

I am most grateful to Governor Lamont for appointing me Chair of the Connecticut Green Bank's Board of Directors during such a critical time. Covid and new weather events constantly remind us that unfettered climate change threatens our very existence. There is a growing need to ensure we do what it takes to become resilient to their impacts, especially in vulnerable communities. The time to act is now. The Connecticut Green Bank has long served as a national leader and model for other states, and I am proud to lead the Board as we continue in this role.

During my five terms in the State House of Representatives co-chairing the Energy & Technology Committee, I worked hard to enact bipartisan public policies that reflect the importance of a modern low carbon, more equitable energy system designed to benefit everyone. I recognize that significant investments must be made to reach our state climate goals, and that key to funding this transition is

Lonnie Reed

leveraging public money to attract private investors from local and national banks, asset management and private equity companies as well as individuals who are seeking green energy holdings.

In my first year as Chair, the Board has overseen many exciting initiatives to increase participation and investment in Green Bank programs. An open, ongoing RFP for innovative developers seeking Capital Solutions was rolled out, so Green Bank funds could be more easily accessed to move projects forward in a timely manner. Financing structures for bond issuances were created to enable greater private participation in Green Bank investments, while scaling up clean energy backing and deployment in our state. This came to fruition when the first Green Liberty Bond was issued in July. Our inaugural bond issuance was snapped up in two days. Demand outpaced supply, another sign that the desire to invest in the clean energy economy is growing in Connecticut and beyond.

While 2020 was a unique year marked by challenges unlike any faced in our lifetimes, steady progress persists. Solar installations are happening, albeit more slowly, on the roofs of low- and moderate-income homeowners burdened by energy costs. Business owners still include renewables and energy efficiency in their plans to reduce emissions and increase their bottom lines. Connecticut continues to show how pursuing our common goals of healthier, better lives can unite us and that *Green does Bond us*.

Board of Directors

Lonnie Reed, Board Chair, Documentary Filmmaker and Former State Representative

Matthew Ranelli, Board Secretary, Partner, Shipman & Goodwin, LLP

Eric Brown, VP, Manufacturing Policy & Outreach, Connecticut Business & Industry Association (CBIA)

Binu Chandy, Deputy Director of the Office of Brownfield Remediation & Development at the DECD, as Ex Officio

Thomas M. Flynn, Senior Director, Private Equity Services Operation Group, Alvarez & Marsal

John Harrity, Former President, Connecticut State Council of Machinists

Michael Li, Deputy Commissioner at CT DEEP, as Ex Officio

Steven Meier, Senior Principal Investment Officer, Office of the Treasurer, as Ex Officio

Kevin Walsh, Former Managing Director and Group Head, Power and Renewable Energy, GE Capital, Energy Financial Services

Brenda Watson, Executive Director, Operation Fuel

Connecticut Green Bank

STATEMENTS OF NET POSITION

(in thousands)

	2020	2019	Increase (Decrease)
Cash and cash equivalents - unrestricted	$ 8,156	$ 18,947	$ (10,791)
Other current assets	16,861	15,187	1,674
Program loans & other long term assets	93,398	79,703	13,695
Capital assets, net	79,972	80,523	(551)
Cash and cash equivalents - restricted	14,910	16,668	(1,758)
Total assets	**$ 213,297**	**$ 211,028**	**$ 2,269**
Deferred amount for pensions	$ 6,266	$ 7,756	$ (1,490)
Deferred amount for OPEB	5,189	1,732	3,457
Deferred amount for asset retirement obligations	2,658	2,829	(171)
Total deferred outflows of resources	**$ 14,113**	**$ 12,317**	**$ 1,796**
Current liabilities	$ 22,616	$ 17,716	$ 4,900
Long term liabilities	69,513	77,042	(7,529)
Fair value of interest rate swap	1,164	523	641
Pension liability	25,174	25,805	(631)
OPEB liability	28,485	24,000	4,485
Total liabilities	**$ 146,952**	**$ 145,086**	**$ 1,866**
Deferred amount for pensions	$ 1,380	$ 81	$ 1,299
Deferred amount for OPEB	2,336	1,896	$ 440
Total deferred inflows of resources	**$ 3,716**	**$ 1,977**	**$ 1,739**
Net position, unadjusted			
Invested in capital assets	$ 4,529	$ 3,794	$ 735
Restricted Net Position:			
Non-expendable	64,388	66,902	(2,514)
Restricted - energy programs	10,585	11,537	(952)
Unrestricted Net Position	(2,760)	(5,951)	3,191
Total net position, unadjusted	**$ 76,742**	**$ 76,282**	**$ 460**
Net position, adjusted			
Unrestricted Net Position	$ (2,760)	$ (5,951)	$ 3,191
Contingent liabilities - programs and projects[1]	(64,196)	(76,578)	12,382
Total net position, adjusted	**$ (66,956)**	**$ (82,529)**	**$ 15,573**

[1] *See Note 15 to Connecticut Green Bank's 2020 audited financial statements for further detail.*

For the years ended June 30, 2020 and 2019:

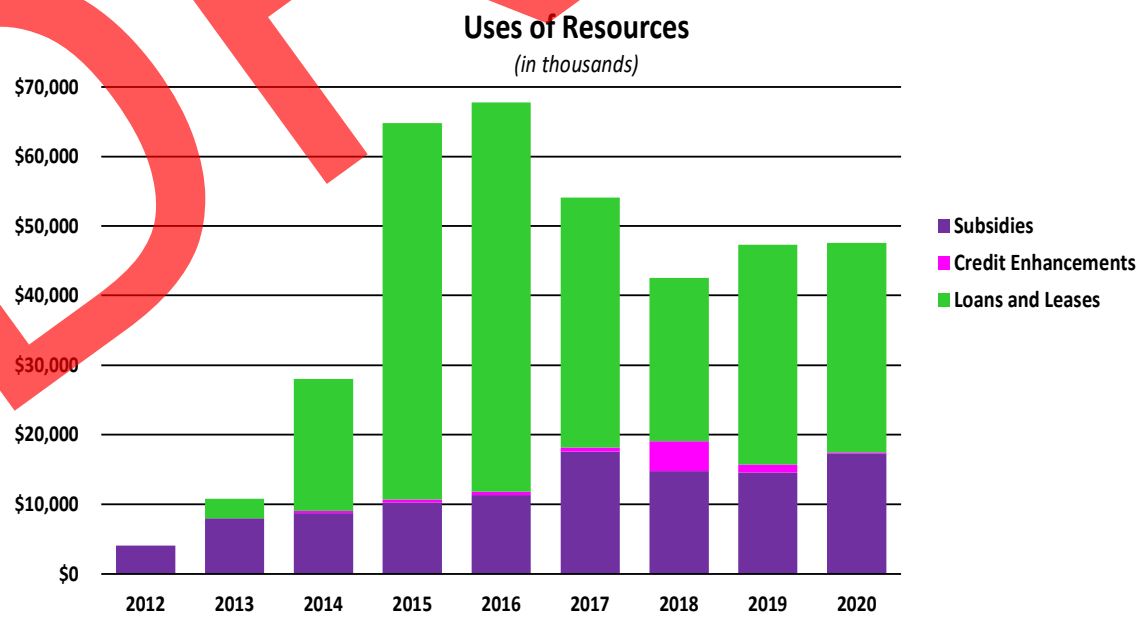
(in thousands)

STATEMENTS OF REVENUE, EXPENSE AND CHANGE IN NET POSITION

	2020	2019 [2]	Increase (Decrease)
Revenues	**$ 53,324**	**$ 45,632**	**$ 7,692**
Operating Expenses:			
Grants and incentive programs	$ 16,344	$ 14,672	$ 1,672
Program administration expenses	16,461	17,505	(1,044)
Cost of goods sold - energy systems	4,006	2,877	1,129
General and administrative expense	6,937	5,722	1,215
Provision for loan losses	4,962	2,909	2,053
Total Operating Expenses	**$ 48,710**	**$ 43,685**	**$ 5,025**
Operating Income	**$ 4,614**	**$ 1,947**	**$ 2,667**
Non-operating revenue (expense)	(4,010)	(4,105)	95
Payments to State of Connecticut	$ --	(14,000)	14,000
Capital contributions	453	1,696	(1,243)
Distributions	(597)	(590)	(7)
Total Non-Operating Revenue (Expenses)	**$ (4,154)**	**$ (16,999)**	**$ 12,845**
Net Change	**$ 460**	**$ (15,052)**	**$ 15,512**

[2] *2019 has been restated to agree to the 2020 Comprehensive Annual Financial Report (June 30, 2020).*

For more details on the financial statements, please access the Comprehensive Annual Financial Report (June 30, 2020) at www.ctgreenbank.com



CONNECTICUT
GREEN BANK SM

The Connecticut Green Bank is the nation's first green bank.

Our mission is 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.

845 Brook Street
Rocky Hill CT 06067

700 Canal Street, 5th Floor
Stamford CT 06902

860.563.0015
www.ctgreenbank.com

September
2020

Connecticut Clean Energy Industry Report

energize CONNECTICUT SM

[bw] RESEARCH PARTNERSHIP

The following report details all clean energy-related jobs across the state from 2017 to 2019, specific to the Connecticut definition of clean energy activities. The Connecticut Green Bank, Department of Energy and Environmental Protection, Eversource, and United Illuminating, Southern Connecticut Gas and Connecticut Natural Gas, subsidiaries of AVANGRID Inc., operating through the Joint Committee, collaborated with BW Research Partnership, to develop a clean energy technology definition based on the state's clean energy and climate change policies. For a detailed list of clean energy sub-technologies for the state of Connecticut, please refer to Appendix A of this report. Employment in this report is broken out into five major technology sectors and clean energy-specific sub-technologies. The major clean energy sectors are as follows:

- **Energy Efficiency**
- **Clean Energy Generation**
- **Alternative Transportation**
- **Clean Grid & Storage**
- **Clean Fuels**

In addition to jobs data, the report details clean energy employment by value chain segment, clean energy wages and wage premiums, employer hiring difficulties, geographic opportunity zones, and the demographic distribution of clean energy workers compared to state- and nationwide averages. All data presented in this report is based on the 2020 United States Energy and Employment Report (USEER) data collection effort, a joint project of the National Association of State Energy Officials (NASEO) and the Energy Futures Initiative (EFI).[1]

About Energize CT and Joint Committee

Energize CT

- Energize CT is an initiative of the Energy Efficiency Fund, the Connecticut Green Bank, the State and your local electric and gas utilities with funding from a charge on customer energy bills. **www.EnergizeCT.com**

Joint Committee

- Pursuant to Section 16-245m(d)(2) of the Connecticut General Statutes, the Joint Committee shall examine opportunities to coordinate programs and activities contained in the plan developed under Section 16-245n(c) (i.e., Comprehensive Plan of the Green Bank) with the programs and activities contained in the plan developed under Section 16-245m(d)(1) (i.e., Conservation and Load Management Plan), and to provide financing to increase the benefits of programs funded by the plan developed under Section 16-245m(d)(1) so as to reduce the long-term cost, environmental impacts, and security risks of energy in the state.

To support the Joint Committee, the following is a principal statement to guide its activities: The Energy Efficiency Board and the Connecticut 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.

About the Partners

The Connecticut Green Bank is the nation's first green bank. Its mission is 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 Connecticut Department of Energy and Environmental Protection (DEEP) is charged with conserving, improving and protecting the natural resources and the environment of the state of Connecticut as well as making cheaper, cleaner and more reliable energy available for the people and businesses of the state. The agency is also committed to playing a positive role in rebuilding Connecticut's economy and creating jobs – and to fostering a sustainable and prosperous economic future for the state.

United Illuminating, Southern Connecticut Gas and Connecticut Natural Gas, subsidiaries of AVANGRID Inc. is a leading, sustainable energy company with $32 billion in assets and operations in 24 U.S. states. AVANGRID has two primary lines of business: Avangrid Networks and Avangrid Renewables. Avangrid Networks owns eight electric and natural gas utilities, serving 3.2 million customers in New York and New England.

Eversource is New England's largest energy delivery company, with approximately 3.7 million electric and natural gas customers in Connecticut, Massachusetts and New Hampshire.

[1] www.USEnergyJobs.org

By Eric Brown

This Connecticut Clean Energy Industry Report provides a glimpse into the progress we have been making to build a more vibrant and sustainable clean energy economy in Connecticut. This report, developed in collaboration by Avangrid, Connecticut Green Bank, DEEP, and Eversource through the Joint Committee, highlights how our families, businesses, and our economy benefit from sustained growth in this sector.

During our analysis for this report, our state was hit by a global pandemic that saw "shelter in place" and "social distancing" policies stunting all economic activity. COVID-19 has had a significant detrimental impact on Connecticut's small clean energy businesses. Sales plummeted, construction jobs stalled, and nearly 15 percent of our workforce was unemployed. The leaders of these determined small businesses suggest it could take between six and twelve months for operations to return to pre-pandemic levels. This sudden downturn reminds us of our need to strive for continuous innovation in the leveraging of ratepayer funds to create a more self-sustaining, resilient industry going forward.

Since 2015, Connecticut has made steady progress building its clean energy industry. Prior to the pandemic, there were more than 44,400 clean energy workers employed in over 4,300 companies within Connecticut's $6.5 billion clean energy economy. The sector has seen nearly 10 percent growth between 2015 and 2019. Over 80 percent of these employees work within the energy efficiency sector installing high efficiency HVAC systems and Energy Star® appliances and equipment. About 10 percent of clean energy employees work in clean energy generation, primarily solar energy and nuclear power. The clean energy workforce consists predominantly of essential construction workers, as well as professional services, trade, manufacturing, utilities, and other services.

Connecticut continues to lead on policy innovation. As the country progresses towards a clean energy future, the Constitution State continues to advance bipartisan-supported public policies that are leading to the deployment of cleaner energy while improving reliability and affordability, reducing the burden of energy costs on families and businesses, modernizing our energy infrastructure for a 21st century clean energy economy, and reducing greenhouse gas emissions. Through EnergizeCT and the partners of the Joint Committee, we are implementing state energy policy through award-winning programs across all sectors and populations of Connecticut with continuous innovation towards greater leveraging of ratepayer funds and a uniformly positive customer experience.

Clean energy is delivering positive impacts on society. In 2019 alone, over $1.2 billion of investment in Connecticut's clean energy economy was mobilized through Energize CT. This investment generated over $75 million in tax revenues to the State of Connecticut through sales tax, individual tax, and corporate tax revenues. This investment in clean energy reached more than 262,000 customers, reducing the burden of energy costs from their homes and buildings, while deploying the equivalent of nearly 150 MW of clean energy from energy efficiency and renewable energy technologies. By deploying more clean energy in our communities, we not only contribute to economic development, but we also improve the environment by avoiding over 250,000 tons of greenhouse gas emissions that cause global climate change and local air pollution from NOx, SOx, and particulate matter that cause public health problems.

Clean energy is improving the lives of our most vulnerable and small businesses. Connecticut has been focused on reducing the percentage of household income spent on energy for our most vulnerable communities through the deployment of clean energy. Through the Home Energy Solutions – Income Eligible Program, we have reduced the energy burden on households through home energy assessments in combination with insulation. Connecticut is known as a "Solar with Justice" state since it is at "parity" when it comes to low-to-moderate income (LMI) families and "beyond parity" when it comes to communities of color (i.e., Black and Hispanic families) demanding solar PV.

Energy costs have an impact on our small businesses as well, which is why through the Small Business Energy Advantage Program, we have reduced energy costs through improved energy efficiency for businesses.
As small businesses begin to reopen from the COVID-19 pandemic, their ability to control costs and reduce usage is even more crucial than before, and the clean energy industry can play an important role during this recovery.

While COVID-19 has impacted our progress, it has not weakened our resolve. Through EnergizeCT, we are committed to building a vibrant, resilient, and growing clean energy industry for Connecticut that can withstand future pandemics, budget pressures or other unforeseen challenges.

2019 Joint Committee Achievements

Invested over **$1.2 billion** in the clean energy industry

Impacted more than **262,000 customers**

Avoided **228,142 tons** of CO2 emissions

31 million tons of NOx, SOx, and PM avoidance

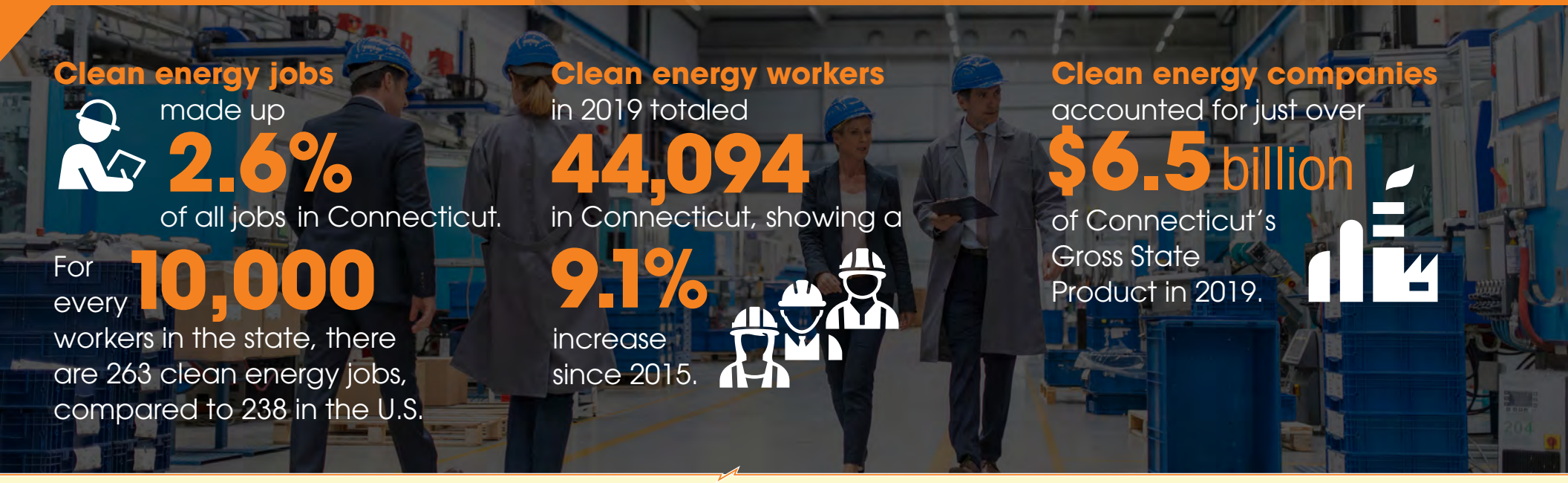
Supported over **40,000** clean energy jobs

Contributed **$6.5 billion** to the gross state product

Economic value of public health contribution surpasses **$6.4 million**

Energy equivalent of **149 power plants** or the energy to power **53,703 homes** for a year

Tax revenue of more than **$76 million generated**



- Clean energy companies across the state have created 3,691 new jobs between 2015 and 2019, and full-time equivalent clean energy jobs are growing even faster than the overall clean energy labor market.
- At the end of 2019, clean energy jobs comprised 2.6 percent of all jobs in Connecticut. Clean energy employment grew by 9.1 percent between 2015 and 2019.
- Since 2015, full-time equivalent clean energy jobs in Connecticut have grown by 13.9 percent, indicating that employees are spending more of their time on clean energy work in the state. (see page 12 for more on this).
- Energy efficiency workers represent eight in ten clean energy jobs across the state. This sector has also seen the greatest absolute growth since 2017, creating 1,257 new jobs—a growth rate of 3.6 percent. Within the sector, HVAC and ENERGY STAR® and efficient lighting technologies account for the majority of activity.
- Between 2017 and 2018, solar employment in Connecticut dropped by 2.2 percent, as a result of changing domestic business models for solar and global trade tariffs; however, this decline was less drastic compared to a nationwide job loss of 4.2 percent over the same time period. The solar industry recovered in 2019, mirroring national trends.
- The majority of surveyed clean energy jobs pay more than their corresponding occupational average, especially for entry-level workers. In total, just over three-quarters (76.9 percent) of clean energy jobs in Connecticut earn more than the corresponding occupational average across all levels of experience. For entry-level workers in particular, 92 percent of surveyed occupations are paid a premium.
- Hiring difficulty in Connecticut was lower than the national average.
- The clean energy economy is a good source of jobs for Veterans but has low representation of ethnic and racial minorities and women.

It is important to note that this report was commissioned before the global Coronavirus (COVID-19) pandemic, which has significantly altered labor market and employment realities across nearly all industries in the United States. The 2020 Connecticut Clean Energy Industry Report is based on data collected in the last quarter of 2019, before the advent of COVID-19 and resulting social distancing and shelter-in-place orders. Due to the shuttering of doors for numerous businesses across the state and nation, employment figures included throughout this report serve as a pre-pandemic baseline of clean energy industry employment in Connecticut. While the full economic impact of the pandemic is yet unknown, BW Research estimates that Connecticut lost 5,337 jobs through August.[2]

	Total Jobs Lost by Month	Cumulative Job Losses
March	(1,037)	(1,037)
April	(5,191)	(6,228)
May	(323)	(6,551)
June	887	(5,664)
July	131	(5,533)
August	197	(5,337)

In the aftermath of the pandemic-induced recession, Connecticut will have an opportunity to capitalize on the previously strong clean energy job growth. The clean energy industry is likely well-poised to see a more rapid comeback compared to other sectors of the economy. Since many jobs in the clean energy sector can be conducted while maintaining physical distancing and using personal protective equipment (PPE). Furthermore, the state's clean energy industry is supported by policies and programs that ensure the continued deployment of clean energy technologies, maintaining steady demand that should return as shelter-in-place policies have subsided.

Figure 1. Covid-19 Job Losses By Technology Sector, August 2020

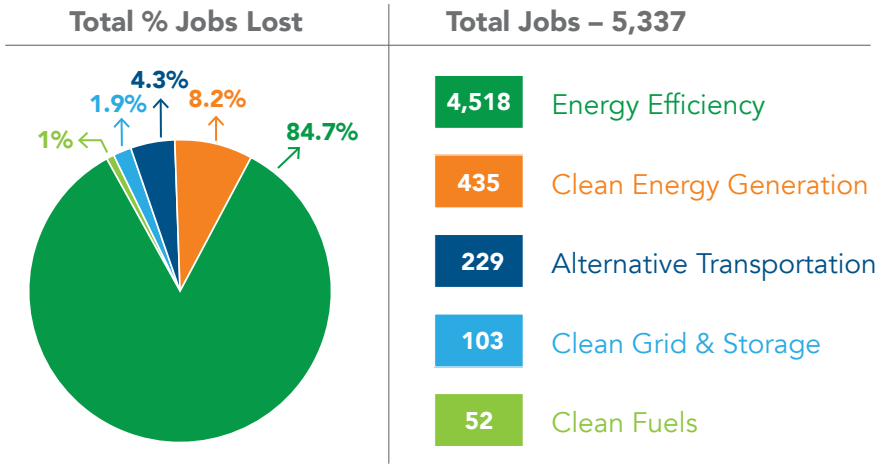
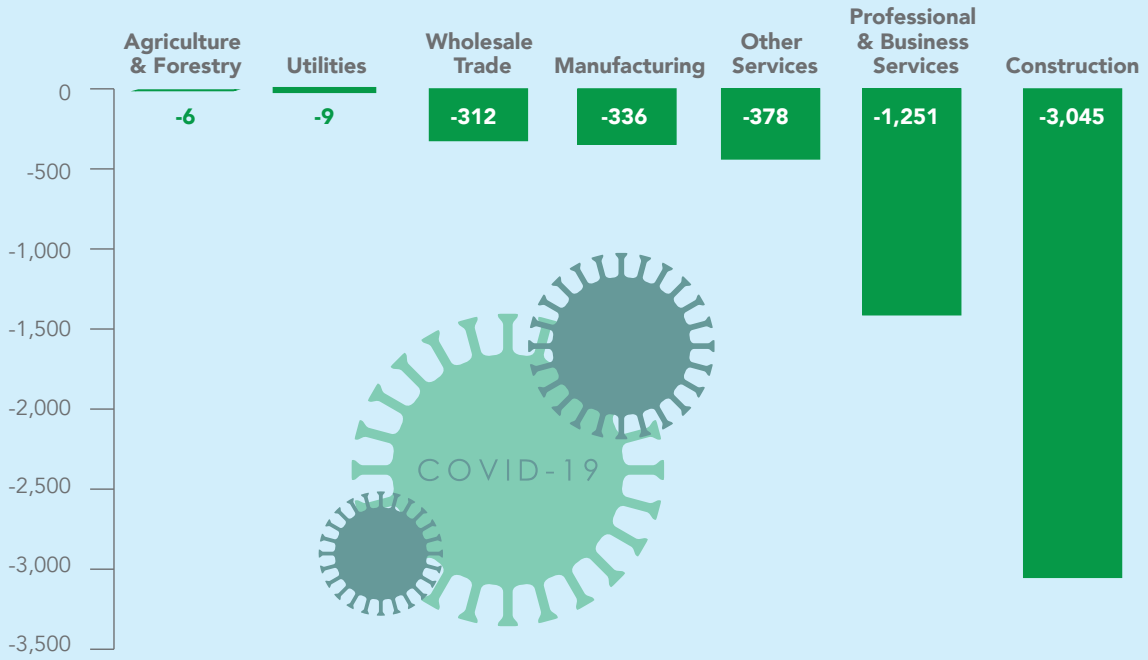


Figure 2. Covid-19 Job Losses By Value Chain Sector, March-August 2020



[2] Further analysis related to the COVID-19 pandemic's economic impacts can be found at http://bwresearch.com/covid19.

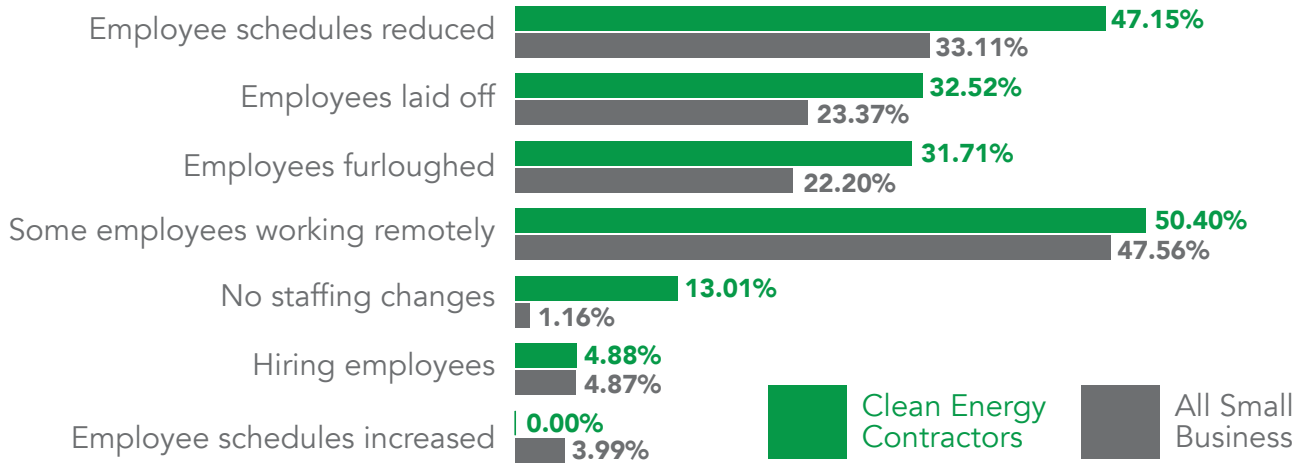
In April, the Connecticut Green Bank and the Connecticut Department of Energy and Environmental Protection, in collaboration with the Governor's Office and AdvanceCT, with assistance from Eversource, Connecticut Natural Gas, Southern Connecticut Gas and United Illuminating conducted a survey of Connecticut's clean energy industry to assess the impacts of COVID-19 and to help guide recovery efforts.

Administered from April 14 – 24, the survey garnered 153 total responses. Over 60% of the respondents were small business owners (52%) and executives (9%) with remaining from managers (26%), accounting (5%), and human resources (1%). There were 121 unique clean energy companies represented, with 91% of these companies having less than 50 employees and 48% with fewer than 10 employees.

The negative impact on clean energy industry workers was more pronounced than the average impact across Connecticut job sectors. Higher percentages of clean energy industry employees had their schedules reduced (47.15%), were laid off (32.52%), and were furloughed (31.71%) than the State averages.

"All small business" is based on an analysis of corresponding questions from a survey administered by AdvanceCT from April 17-24, 2020 comprising about 1,800 responses from all Connecticut businesses as a benchmark for comparison.

Figure 3. How has your business been impacted by COVID-19 in terms of its employees?



Connecticut Green Bank wins the 2017 Innovations in American Government Award from the Kennedy School of Government at Harvard University.

According to SEIA since 2017, Connecticut has the highest residential installed watts per capita in the Northeast region of the US.

Connecticut Green Bank honored by Environmental Finance for green bond issuance

2019 Awards:

American Council for an Energy-Efficient Economy (ACEEE) has consistently ranked Connecticut as one of the top states for energy efficiency (2017 – 2019)

Energize Connecticut, in partnership with Eversource and AVANGRID, Inc. subsidiaries CNG, SCG and UI, received the ENERGY STAR® Partner of the Year – Sustained Excellence Award in Energy Efficiency Program Delivery in 2017, 2018 and 2019

2018 Awards:

AESP Outstanding Award for residential program delivery

ACEEE Exemplary Award for two programs, small business and multifamily

2017 Awards:

EPA Merit Award for the Second Year in a Row for Portfolio Manager Implementation

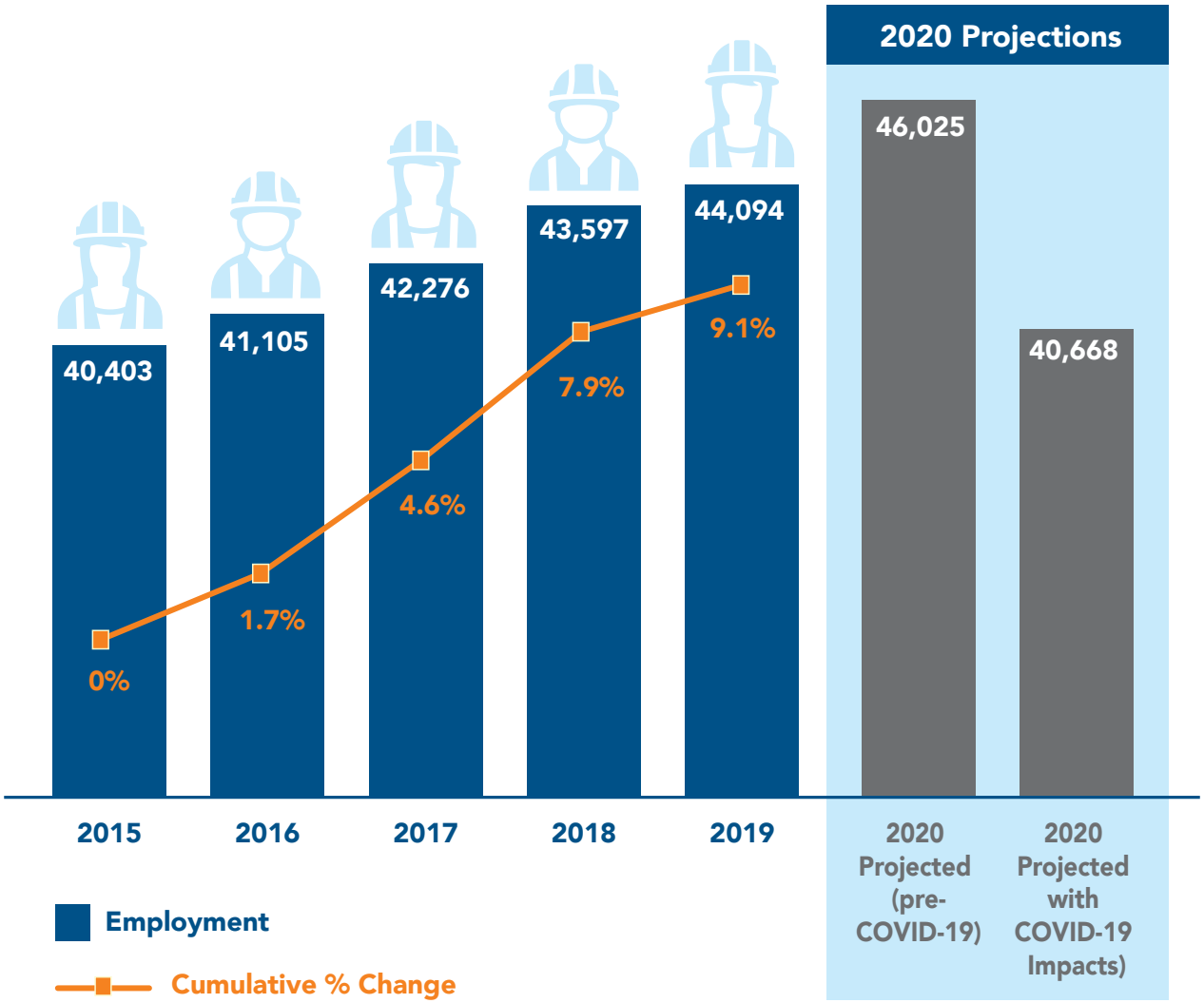
Green Circle Sustainability Award

Energy Star Certified Homes Marker Leader Award

As of the end of 2019, there were just over 44,000 clean energy workers across the state of Connecticut. Clean energy jobs increased by 9.1 percent between 2015 and 2019, creating 3,691 new jobs in four years. In total, clean energy jobs accounted for 2.6 percent of all jobs in Connecticut at the end of 2019. In fact, while total jobs in Connecticut declined between 2018 and 2019, clean energy jobs continued to grow.[3] In 2019, Connecticut accounted for one percent of all clean energy jobs nationwide.

Connecticut has an above average concentration of clean energy jobs compared to the nation. Clean energy jobs were 10 percent more concentrated in the state compared to the national average. This metric indicates that across Connecticut, clean energy jobs account for a larger-than-average share of total jobs. For every 10,000 workers in Connecticut, there were 263 clean energy jobs while for every 10,000 workers in the United States, there are a total of 238 clean energy jobs.

Figure 4. Clean Energy Employment In Connecticut, 2015-2020 Projected



[3] Total employment for Connecticut is from the Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW), 2018 Annual Average and Q2 2019. Data was extracted on February 10, 2020.

Roughly eight in ten clean energy jobs (81.6 percent) are found in the energy efficiency sector. Energy efficiency jobs total to 36,000 workers across the state and grew by 3.6 percent, or 1,257 jobs, in two years. Following energy efficiency, clean energy generation is the second largest clean energy sector. These businesses employ 4,830 clean energy workers and created 282 jobs since 2017—a growth rate of 6.2 percent.

Alternative transportation firms comprise just over four percent of clean energy jobs in Connecticut. These companies increased employment by 12.2 percent since 2017, creating an additional 203 jobs for a total of 1,865 workers. The clean grid and storage and clean fuels sectors are smaller components of Connecticut's clean energy industry. Together, these two sectors account for 3.2 percent of the clean energy workforce and created 77 new jobs since 2017.

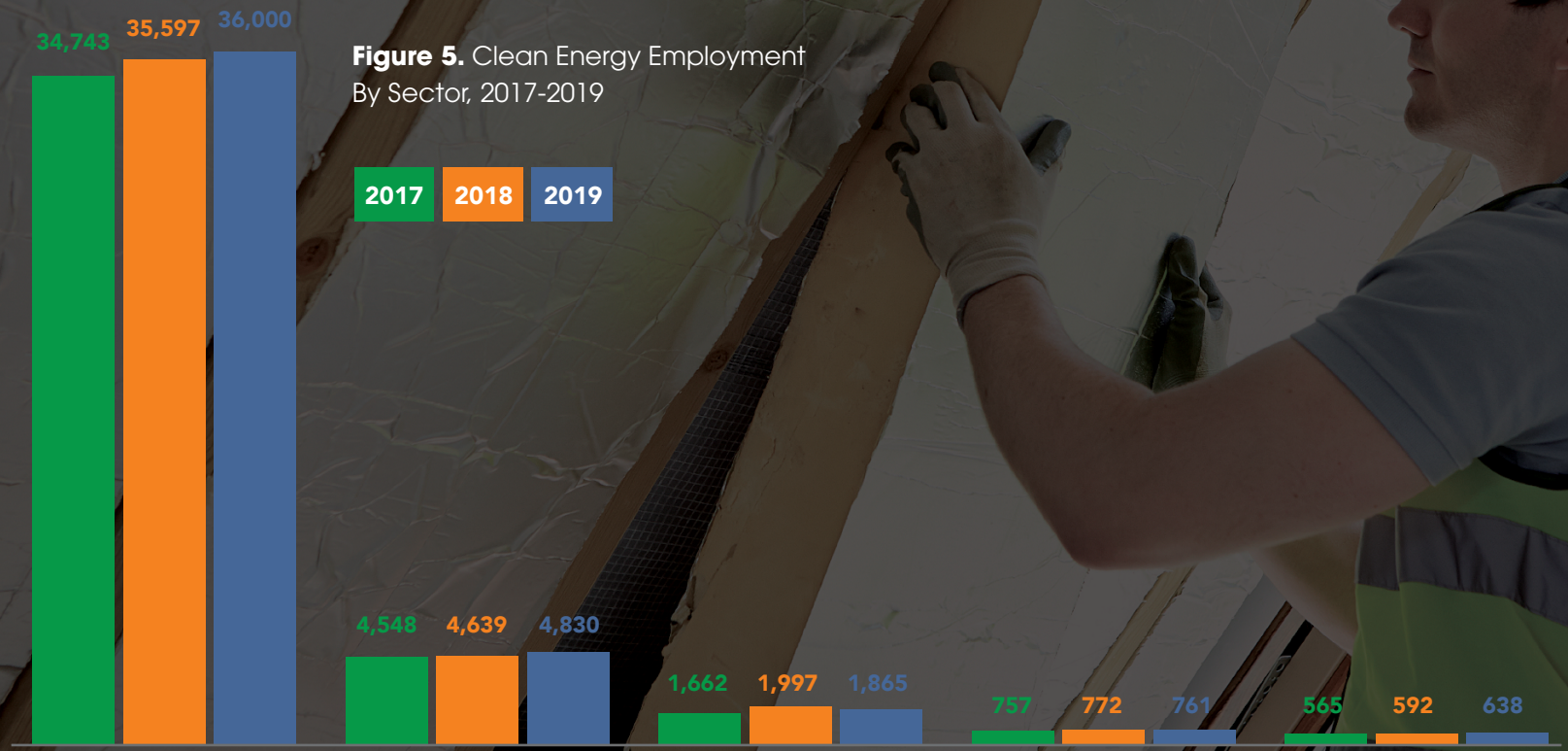
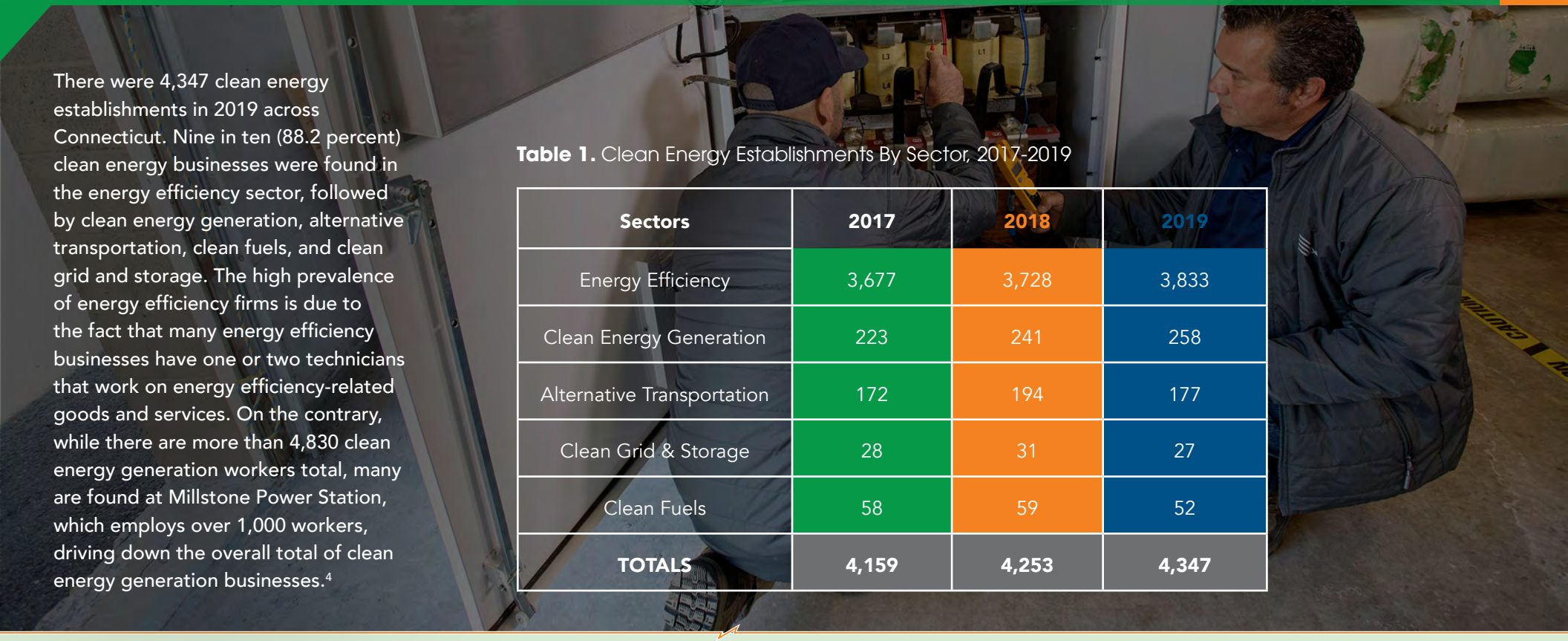


Figure 5. Clean Energy Employment By Sector, 2017-2019



There were 4,347 clean energy establishments in 2019 across Connecticut. Nine in ten (88.2 percent) clean energy businesses were found in the energy efficiency sector, followed by clean energy generation, alternative transportation, clean fuels, and clean grid and storage. The high prevalence of energy efficiency firms is due to the fact that many energy efficiency businesses have one or two technicians that work on energy efficiency-related goods and services. On the contrary, while there are more than 4,830 clean energy generation workers total, many are found at Millstone Power Station, which employs over 1,000 workers, driving down the overall total of clean energy generation businesses.[4]

Table 1. Clean Energy Establishments By Sector, 2017-2019

Sectors	2017	2018	2019
Energy Efficiency	3,677	3,728	3,833
Clean Energy Generation	223	241	258
Alternative Transportation	172	194	177
Clean Grid & Storage	28	31	27
Clean Fuels	58	59	52
TOTALS	**4,159**	**4,253**	**4,347**

Top Five Fastest Growing Sub-Sectors

Top 5 Highest Growth Sub-Sectors (Absolute Job Growth):
Traditional HVAC (453 new jobs since 2017)
ENERGY STAR® and Efficient Lighting (449 new jobs)
Advanced Materials (244 new jobs)
High Efficiency HVAC and Renewable Heating and Cooling (138 new jobs)
Wind (114 new jobs)

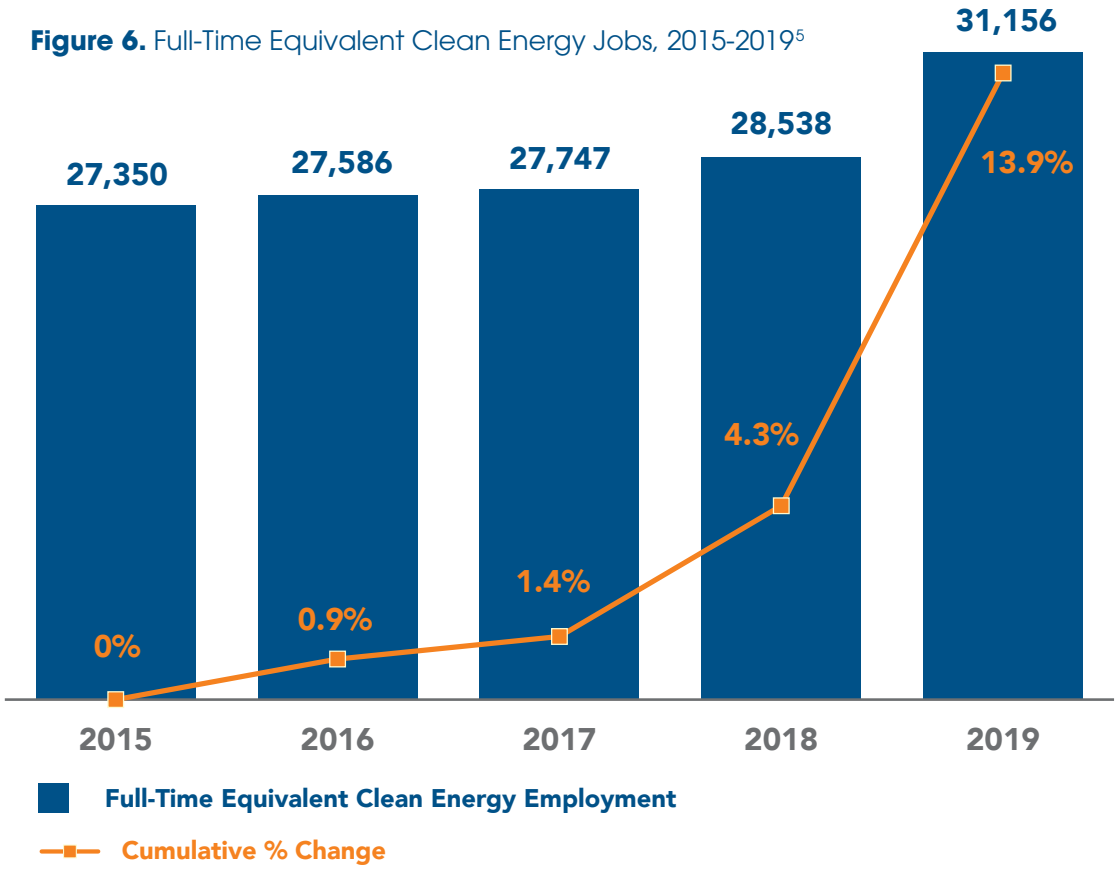
Top 5 Highest Growth Sub-Sectors (Proportional Job Growth):
Other Ethanol and Non-Woody Biomass (254.8 percent growth since 2017)
Wind (158.7 percent growth)
Woody Biomass (114.2 percent growth)
Traditional Hydropower (108.5 percent growth)
Bioenergy and Combined Heat and Power (49.8 percent growth)

[4] https://www.nei.org/CorporateSite/media/filefolder/resources/fact-sheets/state-fact-sheets/Connecticut-State-Fact-Sheet.pdf

An increase in FTE jobs indicates that more clean energy workers are dedicating an increasing amount of their work week, or labor hours, to clean energy-specific activities possibly due to increased policy support and financial incentives creating more demand for clean energy goods and services.

Intensity, or concentration, of clean energy work has been on the rise in Connecticut. In fact, full-time equivalent clean energy jobs are growing faster than the overall clean energy labor market. Between 2015 and 2019, the number of full-time equivalent clean energy workers in Connecticut increased by 3,805 jobs, for a growth rate of 13.9 percent in four years. As of the last quarter of 2019 there were 31,156 FTE clean energy jobs in Connecticut. This indicates that employees are spending more of their time on clean energy work in the state.

Figure 6. Full-Time Equivalent Clean Energy Jobs, 2015-2019[5]



FTE Clean Energy Jobs Explained

An example can illustrate the importance of tracking FTE clean energy employment. If a Heating Ventilation, and Air Conditioning (HVAC) firm had 6 installers in 2018 who occasionally installed heat pumps, and now has 6 installers who exclusively do so, there would be no change in the total number of clean energy workers reported. However, because the number of labor hours working with heat pumps has increased, FTE jobs would show a corresponding increase.

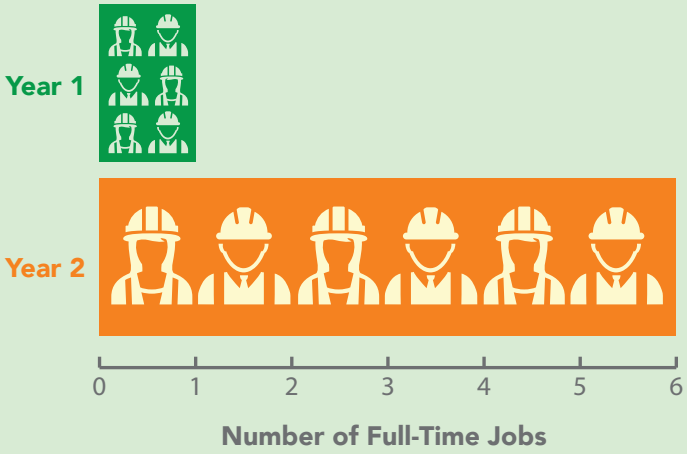


Figure 7. FTE Clean Energy Jobs Explained

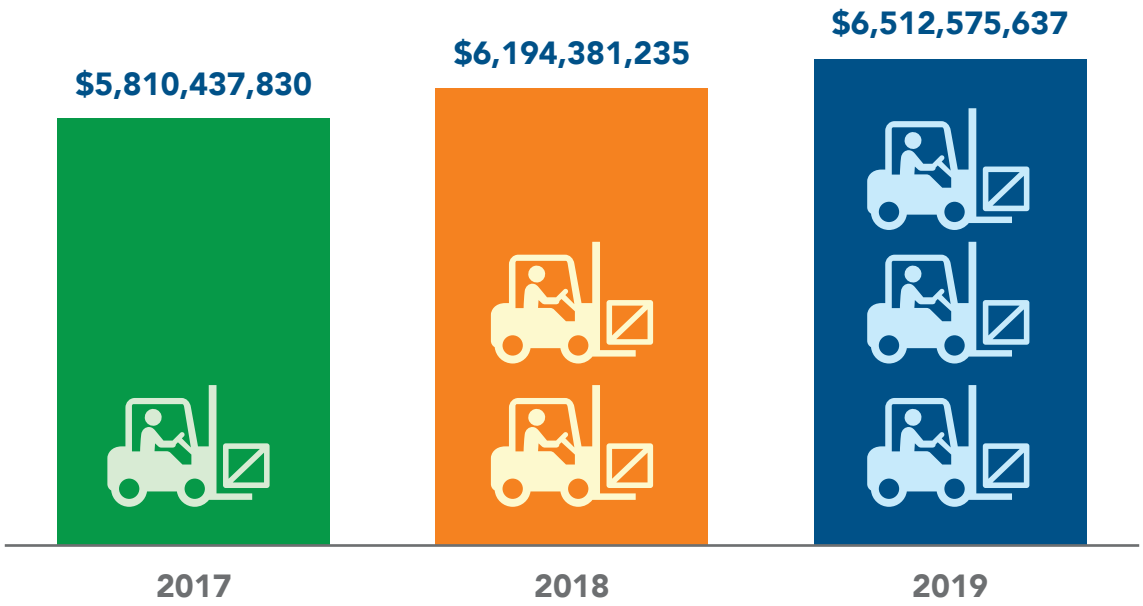
[5] These jobs were extrapolated using a combination of state-level and census region data. The data was adjusted based on revenue distribution by technology and weighted according to how much time workers were reported to spend on clean energy activities (0-49 percent, 50-99 percent, or 100 percent). For a full description of this methodology, please refer to Appendix A.

In 2019, clean energy accounted for $6.5 billion of Connecticut's Gross State Product (GSP). This represents a 12 percent increase since 2017. To date, the clean energy industry accounts for 2.6 percent of total gross domestic product in the state.[6]

Table 2. Clean Energy Gross State Product (GSP) By Value Chain, 2019

Value Chain	2019 Clean Energy GSP
Manufacturing	$2,078,550,282
Professional and Business Services	$2,132,314,807
Sales	$527,047,848
Construction	$692,684,480
Utilities	$1,057,284,841
Other Services	$18,662,105
Agriculture	$6,031,270
TOTAL	**$6,512,575,637**

Figure 8. Clean Energy Gross State Product (GSP), 2017-2019



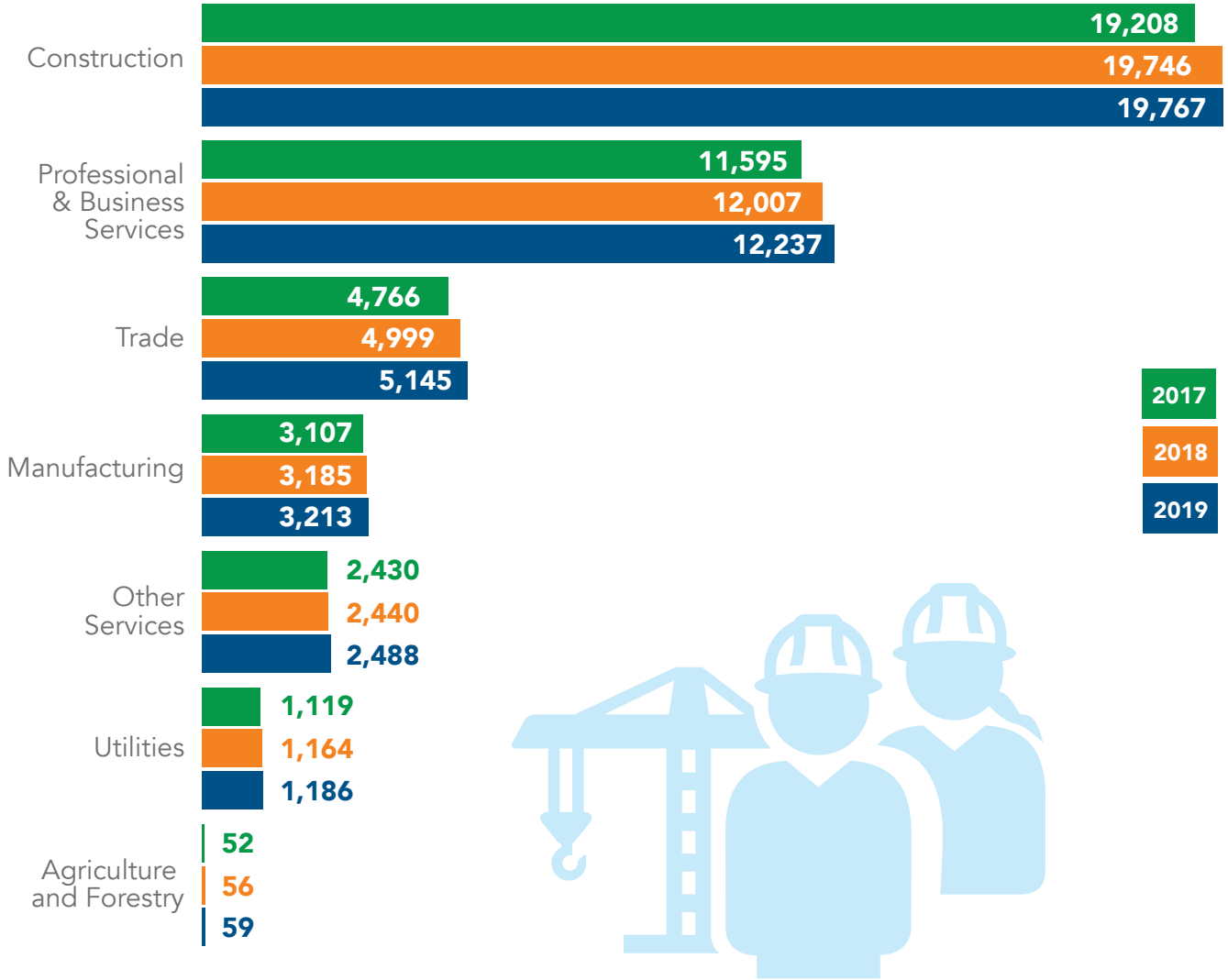
[6] Total Connecticut Gross Domestic Product from Bureau of Economic Analysis (BEA), 2019.

Construction jobs account for just under half of all clean energy jobs in Connecticut (44.8 percent). Between 2017 and 2019, the construction industry grew by 2.9 percent adding 559 jobs to the clean energy labor market.

Connecticut's clean energy economy also includes a significant proportion of professional services, such as engineering, software development, research and design, or finance. These individuals represent about a quarter of all clean energy jobs (27.8 percent). Clean energy professional services grew by 5.5 percent in two years, adding 642 jobs for a total of just over 12,200 workers.

Wholesale trade, manufacturing, utilities, agriculture, and other activities such as non-profit work altogether comprise the remaining 27.4 percent of clean energy jobs. All value chain segments grew between 2017 and 2019.

Figure 9. Clean Energy Employment By Value Chain Segment, 2017-2019



The energy efficiency and clean grid and storage sectors have the majority of employment concentrated in the construction industry; these two sectors have an above-average concentration of construction workers compared to Connecticut's overall clean energy industry average of 45 percent.

Professional service workers are mostly found in the energy efficiency sector, followed by clean grid and storage and clean energy generation.

The 58 percent of workers in "other services" for alternative transportation are focused on automotive repair and maintenance.

Table 3. Value Chain Employment By Clean Energy Sector, 2019

Clean Energy Sector	Clean Energy Generation	Clean Grid & Storage	Energy Efficiency	Clean Fuels	Alternative Transportation	TOTAL
Agriculture and Forestry	–	–	–	59	–	**59**
Utilities	1,186	–	–	–	–	**1,186**
Construction	1,277	476	18,014	–	–	**19,767**
Manufacturing	351	64	2,316	164	318	**3,213**
Trade	433	39	3,950	351	371	**5,145**
Professional & Business Services	867	146	11,065	60	99	**12,237**
Other Services	716	37	655	3	1,076	**2,488**
TOTAL	**4,830**	**761**	**36,000**	**638**	**1,865**	**44,094**

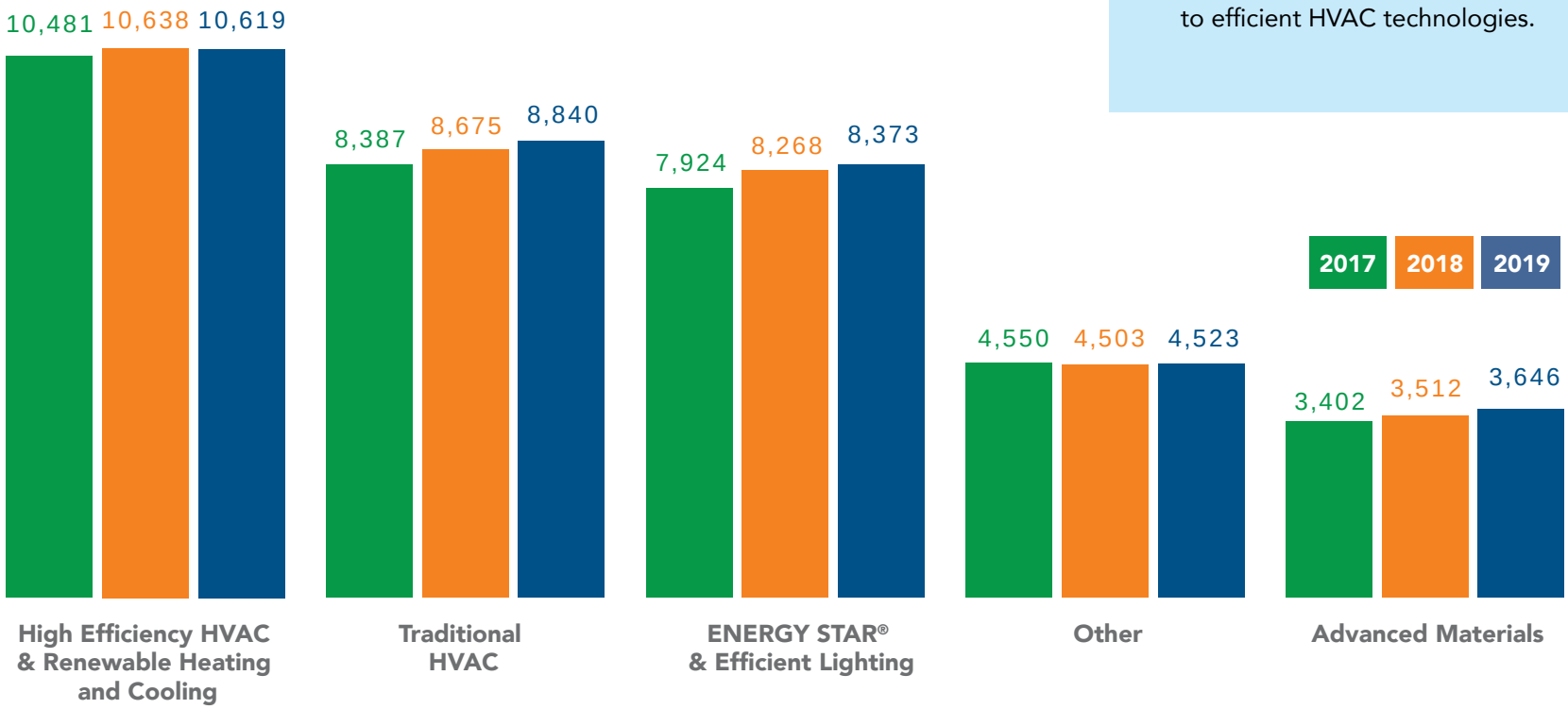
Table 4. Value Chain Proportional Employment By Clean Energy Sector, 2019

Clean Energy Sector	Clean Energy Generation	Clean Grid & Storage	Energy Efficiency	Clean Fuels	Alternative Transportation	Connecticut Clean Energy Average
Agriculture and Forestry	0.0%	0.0%	0.0%	9.3%	0.0%	0.1%
Utilities	24.6%	0.0%	0.0%	0.0%	0.0%	2.7%
Construction	26.4%	62.5%	50.0%	0.0%	0.0%	44.8%
Manufacturing	7.3%	8.4%	6.4%	25.8%	17.1%	7.3%
Trade	9.0%	5.1%	11.0%	55.1%	19.9%	11.7%
Professional & Business Services	17.9%	19.1%	30.7%	9.5%	5.3%	27.8%
Other Services	14.8%	4.9%	1.8%	0.4%	57.7%	5.6%

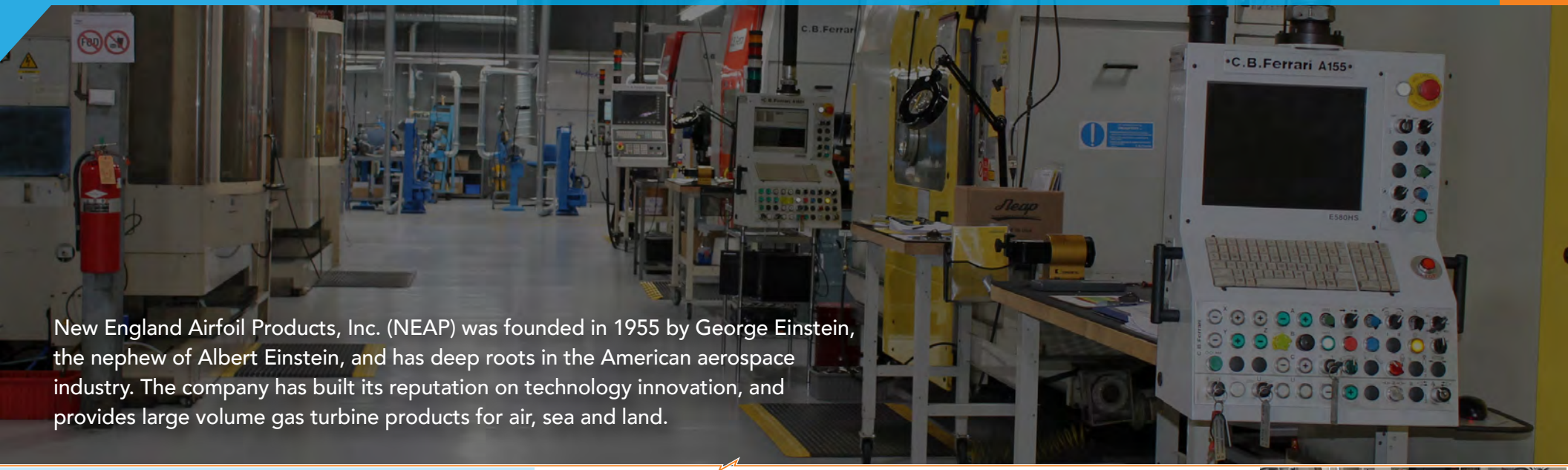
The major areas of energy efficiency activity include HVAC as well as ENERGY STAR® and efficient lighting technologies. Together, high efficiency HVAC and renewable heating and cooling[7] plus traditional HVAC account for 54 percent of the energy efficiency workforce, with high efficiency HVAC technologies accounting for a slightly larger portion of jobs (29.5 percent).

It should be noted that traditional HVAC workers are those individuals that spend at least a portion, or less than half, of their time on energy-efficient heating and cooling technologies and the remainder on traditional, non-efficient technologies. High efficiency HVAC workers dedicate the majority to all of their labor hours to efficient HVAC technologies.

Figure 10. Energy Efficiency Employment By Sub-Technology, 2017-2019



[7] Renewable heating and cooling refers to establishments that are involved in heating, ventilation, and air conditioning (HVAC) from renewable energy sources or work that increases the energy efficiency of HVAC systems, such as solar thermal or air source heat pumps.



New England Airfoil Products, Inc. (NEAP) was founded in 1955 by George Einstein, the nephew of Albert Einstein, and has deep roots in the American aerospace industry. The company has built its reputation on technology innovation, and provides large volume gas turbine products for air, sea and land.

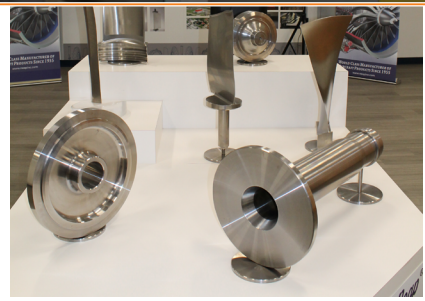
Results Summary

- More than $50,000 in annual energy savings
- 600 million kilowatt-hours saved over the anticipated lifespan of the new equipment, LED lighting and controls
- NEAP added more than 125 full-time employees and took on new assignments over the past three years

Annual energy savings & environmental benefits are equivalent to:

- 470 tons of carbon dioxide emissions avoided
- 90 cars taken off the road for a year

The Challenge



Purchased in 2016 by Pietro Rosa TBM, a leading international manufacturer of compressor airfoils and mission-critical components, NEAP set out to update the machinery and equipment and expand the Farmington, CT, facility's production capacity to serve customers including the USAF and NASA.

The Eversource Solution:

The international manufacturer turned to Eversource for technical expertise. To date, NEAP has invested more than $20 million in new manufacturing equipment, expanded its workforce and worked with Eversource on facility upgrades to enhance energy efficiency. Together, several new energy efficient improvements were introduced including:

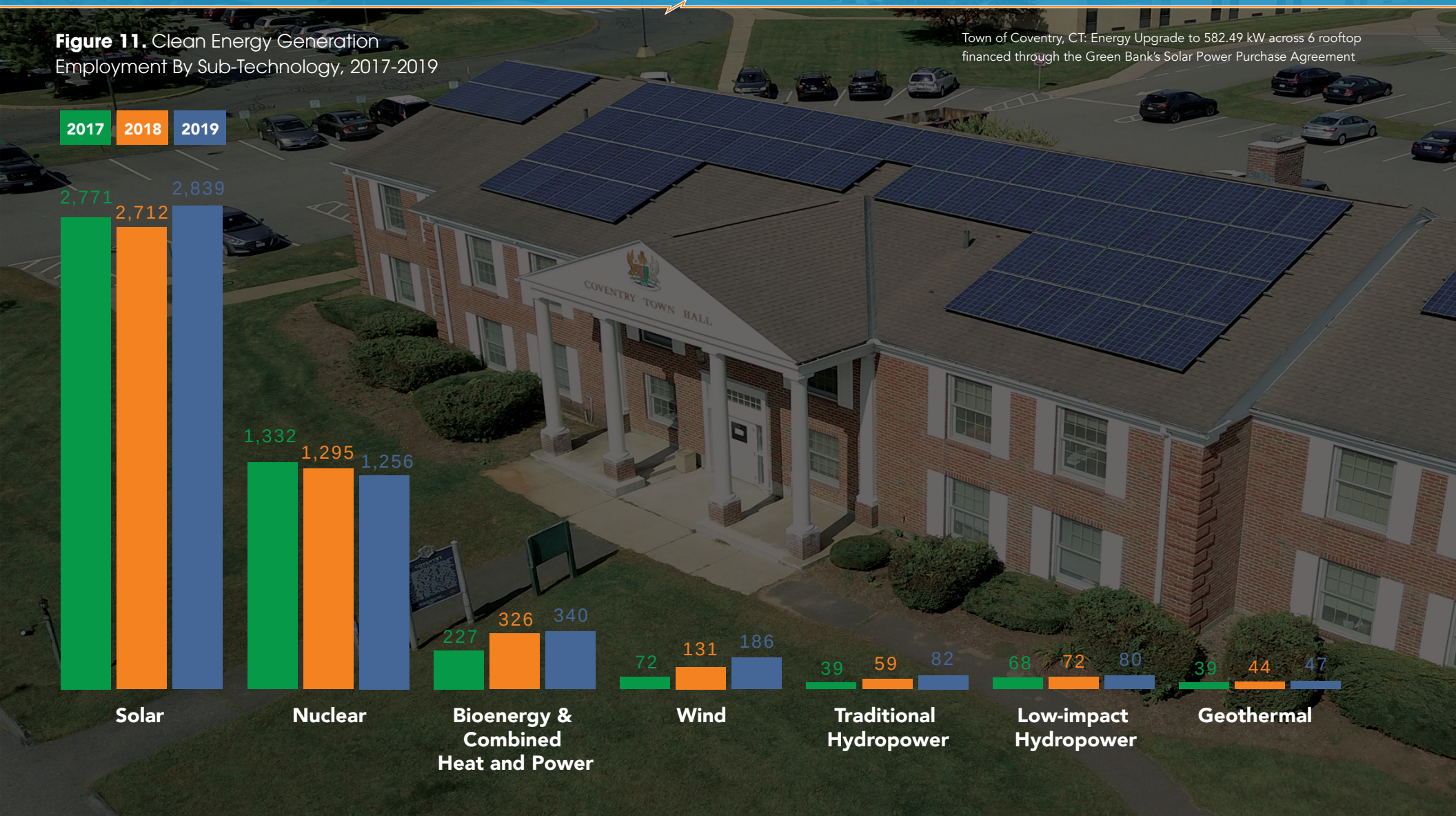
- An energy-efficient LED lighting system that uses up to 75 percent less electricity and reduces operating and maintenance costs by nearly 80 percent.
- Specification and installation of a new air compressor with variable-frequency drives (VFDs) to regulate air handlers, exhaust heat and cut energy use by more than 35 percent, as compared to non-VFD models.

The savings from the completed projects has freed up capital and allowed NEAP to expand production capacity, invest in workforce development and fuel business growth.

Solar and nuclear power generation are the largest components of the clean energy generation workforce in Connecticut. The state's solar industry rebounded following a two percent decline between 2017 and 2018 resulting from changes in domestic business models (e.g., collapse of Solar City) and global trade tariffs (i.e., US tariffs of Chinese imports). In total, over the last two years, the solar sector grew by 2.4 percent, or 67 additional jobs. Between 2018 and 2019 alone, Connecticut's solar businesses grew employment by 4.7 percent, or 127 jobs—more than double the previous year's loss.

Nuclear power generation jobs have declined since 2017, shedding 76 workers for a loss of 5.7 percent over two years. These declines also mirror nationwide trends, as the United States continues to focus more heavily on natural gas and renewable electric power generation.

Figure 11. Clean Energy Generation Employment By Sub-Technology, 2017-2019

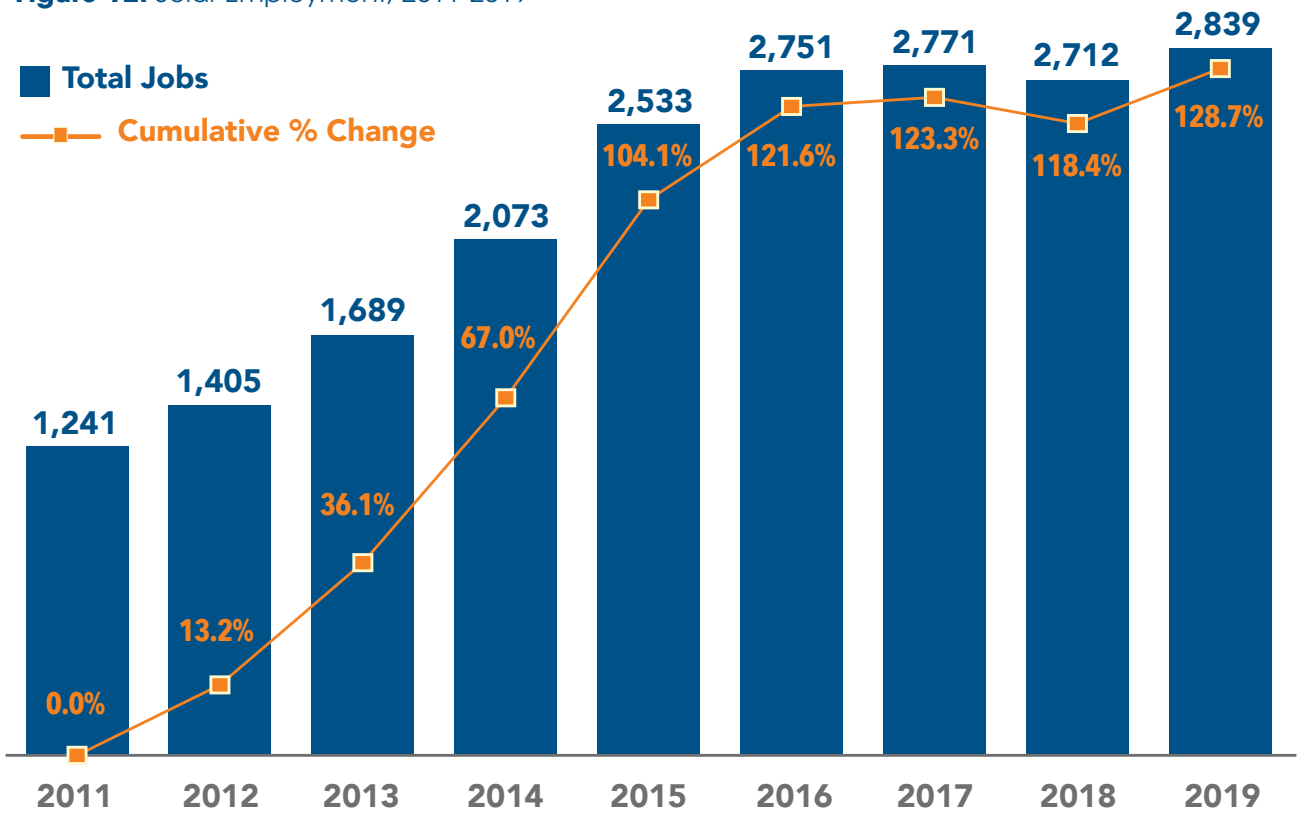


Town of Coventry, CT: Energy Upgrade to 582.49 kW across 6 rooftop financed through the Green Bank's Solar Power Purchase Agreement

Supportive state policies and programs have helped increase demand for solar deployment in Connecticut, which has helped increase jobs in recent years. For example, the Residential Solar Investment Program (RSIP) launched in 2012 has helped more than 40,000 homeowners go solar by providing incentives. According to recent findings from Solar Energy Industries Association (SEIA), Connecticut had a higher watts per capita residential solar installation rate from 2017-2019 than seven neighboring northeast states.

On the non-residential side, the Zero Emissions Renewable Energy Credit (ZREC), offered through the utility companies, provides a revenue stream to commercial property owners based on kilowatt hour (kWh) of solar energy produced. The increased promotion of solar power purchase agreements (PPAs) has also supported solar deployment on municipal, nonprofit and other commercial properties.

Figure 12. Solar Employment, 2011-2019



Commercial Property Assessed Clean Energy (C-PACE) financing has created nearly 1,800 jobs across more than 300 projects at businesses across the state, like this solar installation on a recreational facility in Trumbull.

The Hartford Area Habitat for Humanity (HAHFH)

The Hartford Area Habitat for Humanity (HAHFH) and partners Eversource, Home Energy Technologies, Posigen and Connecticut Green Bank celebrated the construction of Habitat's first Zero Energy Ready Home (ZERH), located at 153 Roosevelt in South Hartford in May 2019.

Since 2002, HAHFH has built ENERGY STAR standard homes. For their 30th anniversary, they wanted to build a high-performance, sustainable home that would decrease the burden of homeownership making it more affordable for their clients.

Home ownership has a lasting impact on families, and is critical to building stronger communities. The ZERH movement into Hartford's affordable housing sector, and partnerships like these, help lower emissions and achieve a clean-energy future.

To achieve the ZERH designation, the Roosevelt home achieved several criteria, such as optimal thermal protection, whole house water protection, high-performance heating and cooling, high-efficiency components, comprehensive indoor air quality, and solar ready construction.

The 1,200 square foot, three-bedroom home features ENERGY STAR-certified appliances, low-flow fixtures, a heat pump hot water heater, air tight construction and solar panels. It also achieved a Home Energy Rating System (HERS) index of –15, which is the industry standard for measuring a home's energy efficiency.

As a ZERH, the Roosevelt home will be at least 40-50 percent more energy efficient than a typical new home, leaving the homeowners with a net zero energy bill, and a carbon free-home.

Unveiled during a dedication ceremony on May 31, 2019, the Roosevelt home is built to Department of Energy's Zero Energy Ready Home standards, and is so energy efficient it can offset all or most of its energy consumption.

Solar PV and EE Improves Economy for Low and Moderate Income Residents

With the highest energy costs in the continental United States, Connecticut residents are realizing the value of making their home more energy efficient to reduce demand and adding solar photovoltaic systems to create their own electricity. More than 40,000 households are using solar energy, including a growing number of low- and moderate-income families.

"Everyone said it was crazy to go solar, now they all want it. People don't realize there are savings," said Melvin, a Bridgeport homeowner who went solar in June 2015. "Our bill during the winter was $460 and now it is $15." After his positive experience, Melvin convinced three neighbors to also seek the benefits of going solar and having a more efficient home.

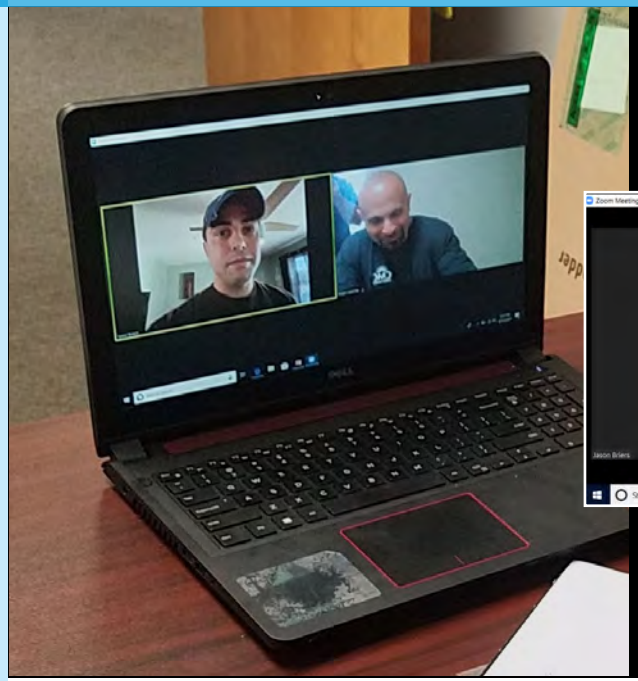
Solar PV Increased Commercial Business Bottomline

Glenbrook Industrial Park in Stamford used C-PACE financing for the installation of a 135 kW solar PV system and upgrades to their roof. Projected savings over the effective useful life of the upgrades is expected to surpass $1 million. The 181,216-square-foot facility houses various artisans and light manufacturing firms.

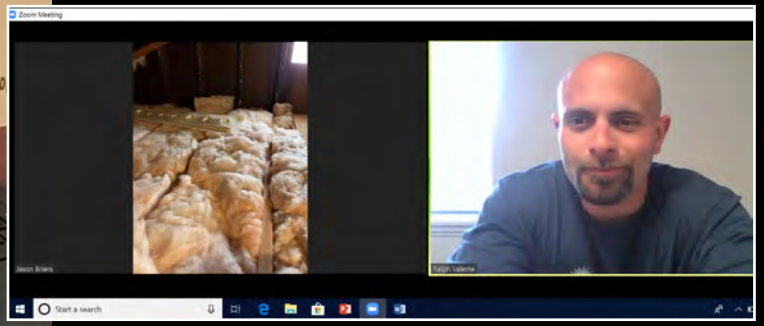
In one easy visit, utility-approved technicians will evaluate a home's energy performance and install basic weatherization and energy-saving measures such as sealing air leaks and installing energy-efficient lighting, faucet aerators and low-flow showerheads. The average home in Connecticut receives about $1,000 in services and realizes $200-$250 in savings on their annual energy bills. Additionally, the technicians will provide written recommendations for deeper energy-saving measures such as Wi-Fi thermostats, insulation, high-efficiency heating and cooling, water heating, windows and appliances. To help customers make smart energy choices, recommendations will include information on rebates and financing along with payback and investment information specific to the home. These services are available for homeowners, renters, and landlords of 4 units or less and single-family homes. Additional opportunities are available for income eligible customers and multi-family building of 5 plus units.

In the wake of COVID-19, a virtual pre-assessment to Home Energy Solutions is now being offered as a safe, convenient first step for customers to make energy-saving improvements. This pre-assessment is available through live, virtual discussions with a technician at no cost.

Home energy assessments morph to meet customer needs to deliver efficiency and meet safety protocols.



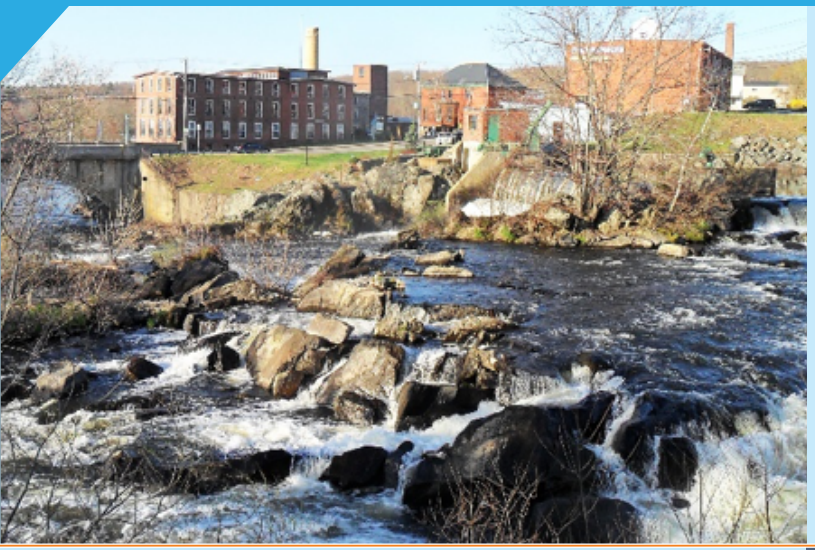
Technicians connect with customers using a variety of video chat tools to virtually assess homes and collect information from customers.



Technology allows technician insights to the home before scheduling the on-site visit.

Customers can identify key information on equipment and heating types for technicians.

And when they have access, the customer can provide other key perspectives of their home and existing conditions for the technicians.



Economic Gains Flow from Hydro Project Combined with Energy Efficiency for Mixed Use Property

A small hydroelectric retrofit project like the one at Cargill Falls Mill in Putnam can create benefits for many stakeholders. In this case, the historic mill building will be redeveloped into 82 mixed-income residential units and 30,000 square feet of commercial space, integrating the approximately 900 kW hydroelectric plant on site. When completed, this project, which uses $6.2 million in Green Bank financing for the restoration of the powerhouse and deep energy retrofits of the property, will help revitalize downtown Putnam and provide much-needed affordable housing in the state's "quiet corner".

Harnessing the Wind to Meet Future Goals

In June 2019, Governor Ned Lamont, with bipartisan support from the Connecticut General Assembly signed *Public Act 19-71, An Act Concerning the Procurement of Energy Derived from Offshore Wind*, which was a major step toward the goal of a 100% zero-carbon electricity supply by 2040. Since then, projects that would benefit coastal cities, like Bridgeport and New London, and create thousands of jobs in the process have been discussed and continue through the approval process. The development of offshore wind projects is seen as a key component of the state's clean energy future.

The largest share of alternative transportation workers is found across firms that work with hybrid electric vehicles. These companies employ 860 workers, or 46 percent of the alternative transportation workforce in Connecticut. Following hybrid electric vehicles, electric vehicle and plug-in hybrid vehicle companies comprise a respective 23 and 21 percent of clean transportation jobs. All sub-sectors have grown since 2017, together creating about 200 new jobs in two years.

Between 2017 and 2018, hybrid electric, electric, and plug-in hybrid vehicles respectively increased by 15 percent, 27 percent, and 35 percent, resulting 335 new alternative transportation workers. The following year, between 2018 and 2019, each sub-sector declined slightly—a collective loss of 136 workers.

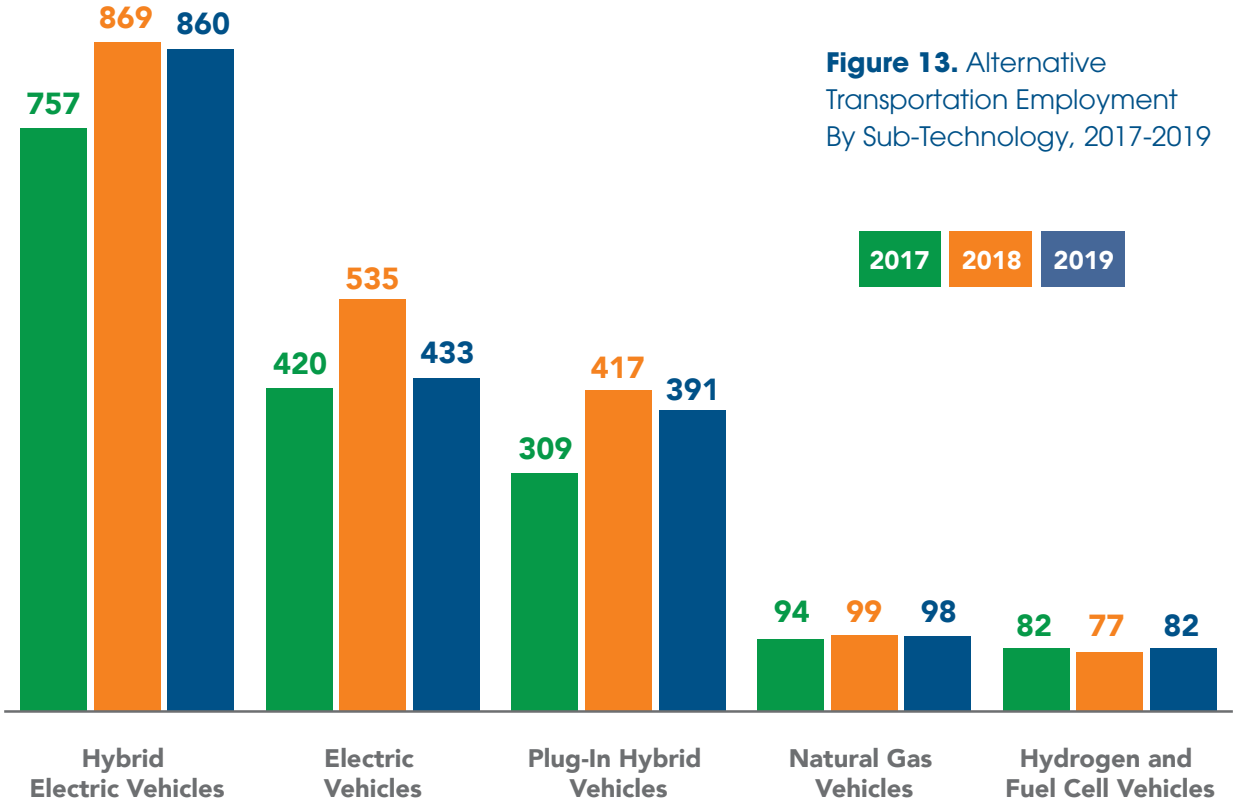


Figure 13. Alternative Transportation Employment By Sub-Technology, 2017-2019

EV and CHEAPR Incentive

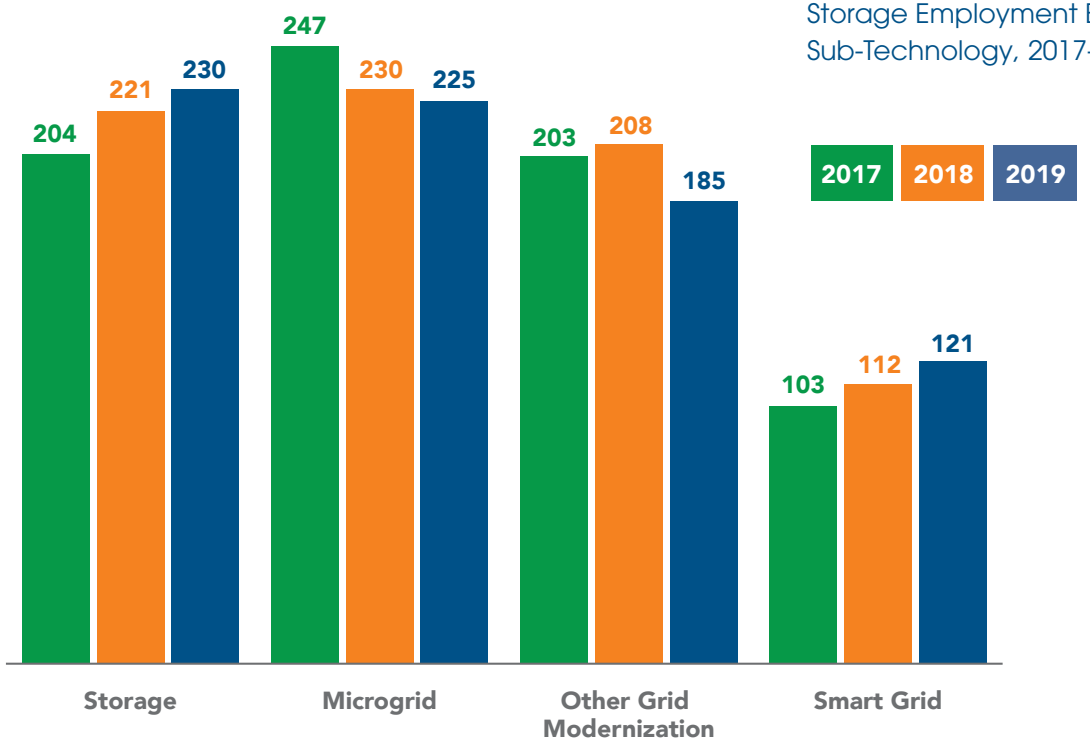
The EV and CHEAPR initiative provides incentives of up to $5,000 for around 30 recognized battery electric vehicles, plug-in hybrid electric vehicles and fuel cell electric vehicles. These incentives can be realized on new as well as used EV's and given that the eligible vehicles are sold by automobile dealerships franchised in Connecticut. Additionally, EVConnecticut also provides incentives to municipal and state agencies for establishing EV charging stations to promote an EV charging network to provide reliance on EV's for long range travels.

A small sector in Connecticut's clean energy economy, clean grid and storage accounted for 761 jobs in 2019. Storage companies[8] support 30.2 percent of jobs, closely followed by microgrid firms (29.6 percent), other grid modernization (24.3 percent), and smart grid companies (15.9 percent).

Storage and smart grid companies represent all the job growth since 2017, growing a respective 12.8 percent and 17.8 percent—a net increase of 44 jobs in two years. Microgrid and other grid modernization firms lost 41 jobs over the same time frame.

[8] Per the Connecticut definition, storage companies include pumped hydropower storage, battery storage (including battery storage for solar generation), mechanical storage, thermal storage, biofuels (including ethanol and biodiesel), and nuclear fuels.

Figure 14. Clean Grid And Storage Employment By Sub-Technology, 2017-2019



Equitable Modern Grid – Docket No. 17-12-03

On October 2, 2019, the Connecticut Public Utilities Regulatory Authority (PURA) announced its **Framework for an Equitable Modern Grid**, or Grid Modernization dockets, beginning with six dockets covering energy affordability, electric storage, advanced metering infrastructure, zero emissions vehicles, innovation pilots, and interconnection standards.

PURA's energy affordability docket is addressing the barriers to energy affordability and equity for all customer classes. PURA's docket on advanced metering infrastructure will evaluate proposals for the full deployment of smart meters in the state. PURA's docket on electric storage programs and measures looks to leverage the multiple benefits storage can provide to ratepayers. PURA's docket on electric vehicles will establish programs and enable infrastructure investments to meet Connecticut's commitment to the deploying 125,000 – 150,000 electric vehicles by 2025. PURA's docket on Innovation Pilots will identify a prospective structure to support the ongoing development of innovative technology in Connecticut. Lastly, PURA's docket on the utility's interconnection guidelines and procedures will modify the interconnection process to reduce costs and better facilitating the interconnection of distributed energy resources.

The United States Energy and Employment Report (USEER) does not explicitly capture fuel cell employment outside of the "hydrogen and fuel cell" sub-technology within the motor vehicles sector. As such, fuel cell jobs often exist across multiple sectors in addition to motor vehicles, such as electric power generation; transmission, distribution, and storage; and fuels. While it is difficult to extrapolate the total number of individuals engaged in fuel cell technologies across Connecticut, it is widely known that the state is a national leader in stationary hydrogen fuel cell technologies. Future USEER data collection will incorporate improved methodologies to fully extrapolate fuel-cell related employment totals.

In 2016, The US Department of Energy's Fuel Cell Technologies Office recognized Connecticut as one of the top 3 fuel cell states in the country due to high levels of funding and deployment. The report found that more than 600 companies are part of the state's fuel cell and hydrogen supply chain.[9] FuelCell Energy (378 employees), Doosan Fuel Cell America (66 employees), and Proton OnSite (125 employees).[10] are among the largest fuel cell companies in the country, earning Connecticut the nickname of the "Silicon Valley" for fuel cell technology.[11] A 2017 economic analysis found that Connecticut's hydrogen and fuel cell supply chain contributed more than $600 million in revenue and investments and 2,800 direct, indirect, and induced jobs to the region's economy.[12]

Fuel cells are currently classified in Connecticut statute as a Class I renewable energy source, lending it preferential status for Renewable Energy Credits in pursuit of the state's Renewable Portfolio Standard. Fuel cells are supported through the LREC procurement, microgrid policies, and competitive procurements. In addition, Congress has extended the national investment tax credit for fuel cells—currently at 26 percent—through 2022.[13]

According to the Connecticut Hydrogen-Fuel Cell Coalition—which is administered by the Connecticut Center for Advanced Technology and comprised of industry, academic, and government stakeholders—the total capacity of existing or approved fuel cells in the state exceeds 105 megawatts (MW) across nearly 100 sites.[14] A 2018 report by the Northeast Electromechanical Energy Storage Cluster (NEESC) determined that Connecticut has the potential to install 170 MW of hydrogen fuel cells, with an annual output of approximately 1.44 million megawatt hours.[15]

Connecticut has also sought to leverage transportation applications of hydrogen fuel cells. The state's transit system was one of the first to demonstrate fuel cell busses, at one time boasting five fuel cells busses in their fleet.[16,17] The state is also home to two publicly-available refueling stations for hydrogen cars, with eleven more in development.[18] The NEESC recommends that the state develop six to seven hydrogen refueling stations for a goal of supporting nearly 600 fuel cell electric vehicles.[19]

Supporting a State Strength: Fuel Cell Technology

Connecticut has long been a pioneering state when it comes to the fuel cell industry, particularly manufacturing and development. In recent years, the Green Bank has worked with Fuel Cell Energy (FCE) to secure financing on major deployment projects that benefit Connecticut, including a $23 million financing facility to support the 7.4 megawatts (MW) power plant being built for the US Navy Submarine Base in Groton.

[9] US Department of Energy. State of the States: Fuel Cells in America 2016, 7th Edition. November 2016.
[10] Company employment estimates are taken from DatabaseUSA.com via Emsi Business Listings and should be used with caution. The estimate for Proton OnSite was taken from the company's Owler business listing: https://www.owler.com/company/protononsite.
[11] https://www.ctpost.com/local/article/Fuel-cell-companies-reach-out-to-legislators-for-12653242.php
[12] Northeast Electromechanical Energy Storage Cluster. Connecticut Hydrogen Economy. January 2018.
[13] https://www.greentechmedia.com/articles/read/will-high-temperature-fuel-cells-scale
[14] http://chfcc.org/ct-fuel-cell-installations-and-approved-projects/
[15] Northeast Electromechanical Energy Storage Cluster. Connecticut Hydrogen Economy. January 2018.
[16] National Renewable Energy Laboratory. Fuel Cell Buses in U.S. Transit Fleets: Current Status 2017. November 2017.
[17] https://www.hartfordbusiness.com/article/ct-laying-groundwork-for-next-green-wave-hydrogen-cars
[18] Northeast Electromechanical Energy Storage Cluster. Connecticut: Market Potential for Hydrogen and Fuel Cell Transportation Applications. February 2017.
[19] Northeast Electromechanical Energy Storage Cluster. Connecticut Hydrogen Economy. January 2018.

Other biofuels, which is defined as any other fuel that is derived directly from living matter, accounts for 46.5 percent of total clean fuels employment in Connecticut. This is followed by nuclear fuels (29.5 percent), woody biomass (17.7 percent), and other ethanol and non-woody biomass[20] (6.3 percent).

Though small, woody biomass jobs have grown the most since 2017. These businesses have created 60 jobs in two years—a growth rate of 114 percent.

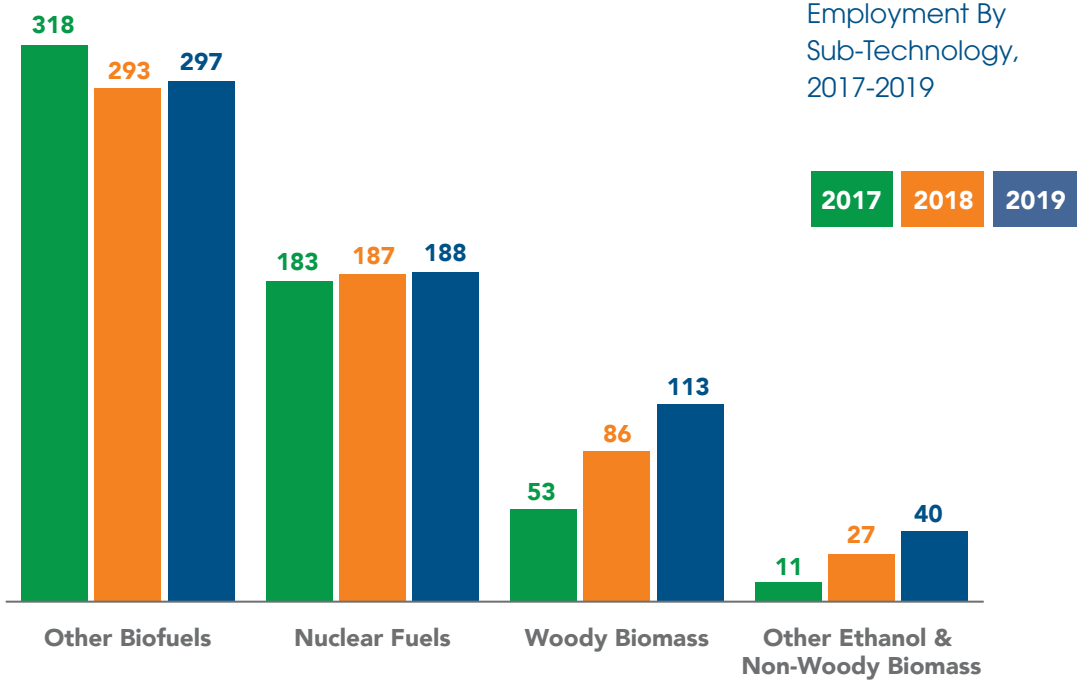


Figure 15. Clean Fuels Employment By Sub-Technology, 2017-2019

[20] Other ethanol and non-woody biomass (including biodiesel) covers all fuels made from other materials such as straw, manure, vegetable oil, animal fats, etc.

From Food Waste to Energy and Jobs

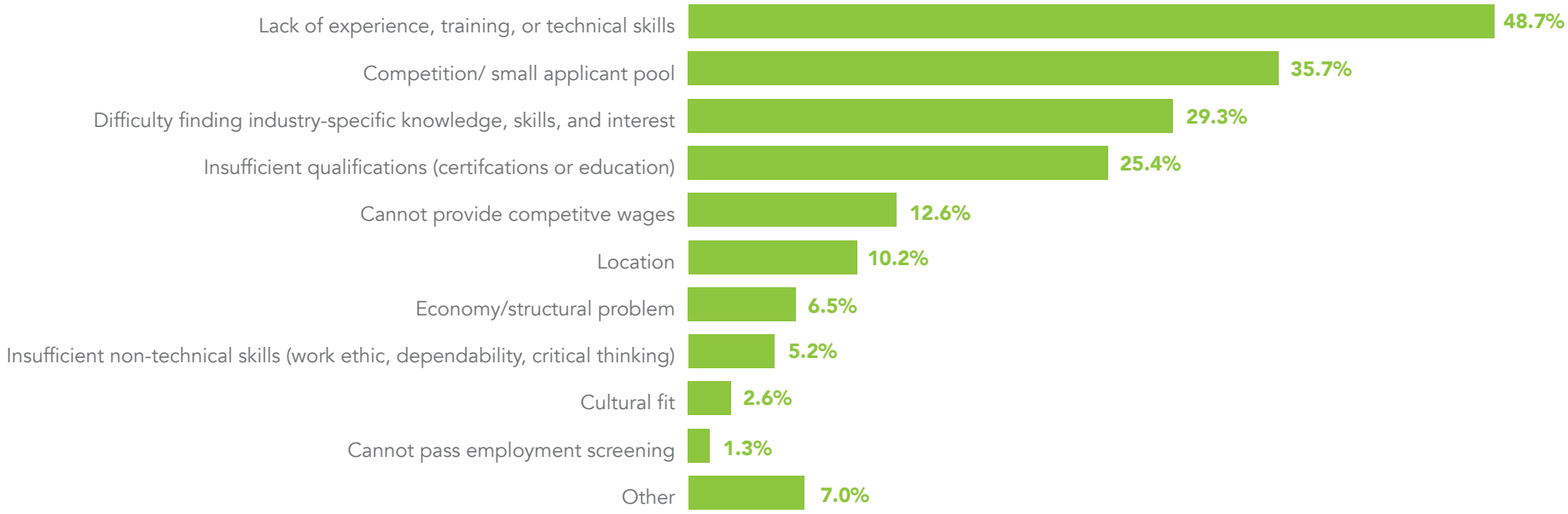
In 2016, the state's only food waste-to-energy plant, Quantum Biopower, opened in Southington, with support from the Connecticut Green Bank, People's United Bank, and the Department of Energy and Environmental Protection. The plant uses the anaerobic digestion process to generate about 1.2 megawatts of Class 1 electricity annually, offsetting an estimated 5,000 tons of greenhouse gas emissions through the recycling of 40,000 tons of food waste.

Prior to COVID-19, the majority of clean energy employers reported hiring difficulty in Connecticut. Just over three quarters (77 percent) of employers indicated that they had difficulty hiring between the end of 2018 and the end of 2019; three in ten reported that hiring was very difficult. However, hiring difficulty for Connecticut clean energy employers was lower compared to the national average. Across the United States, 84 percent of employers had hiring difficulty between 2018 and 2019.

The top reported reasons for hiring difficulty include lack of experience, competition and a small applicant pool, and difficulty finding industry-specific knowledge.

Figure 16. Employer-Reported Hiring Difficulty, 2019

Figure 17. Reasons For Hiring Difficulty In Connecticut, 2019



Clean energy employment is concentrated across Hartford, Fairfield, and New Haven counties in Connecticut. These three counties together account for about eight in ten clean energy workers across the state (79.4 percent).

Figure 18. Clean Energy Employment By County, 2019[21]

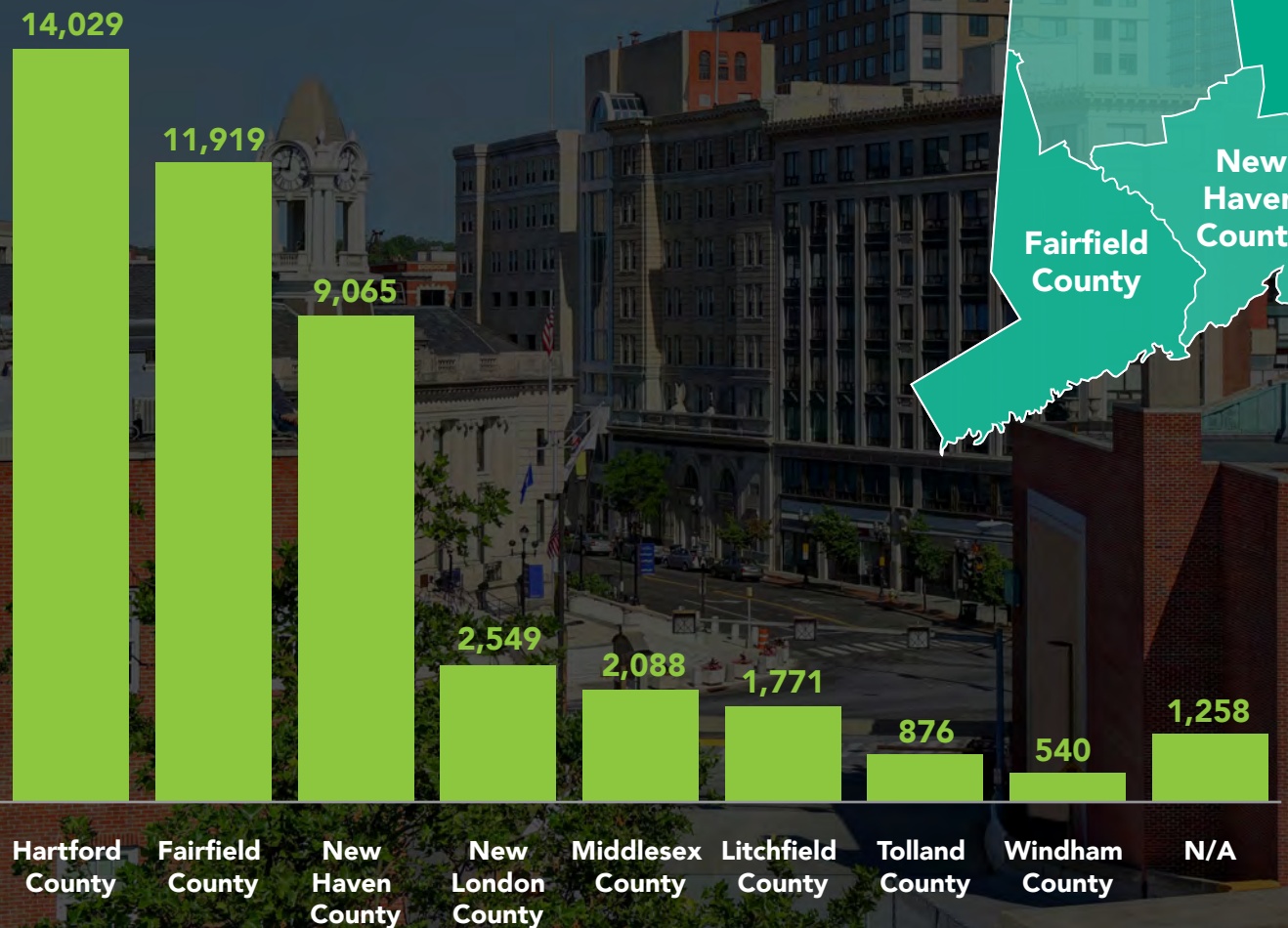
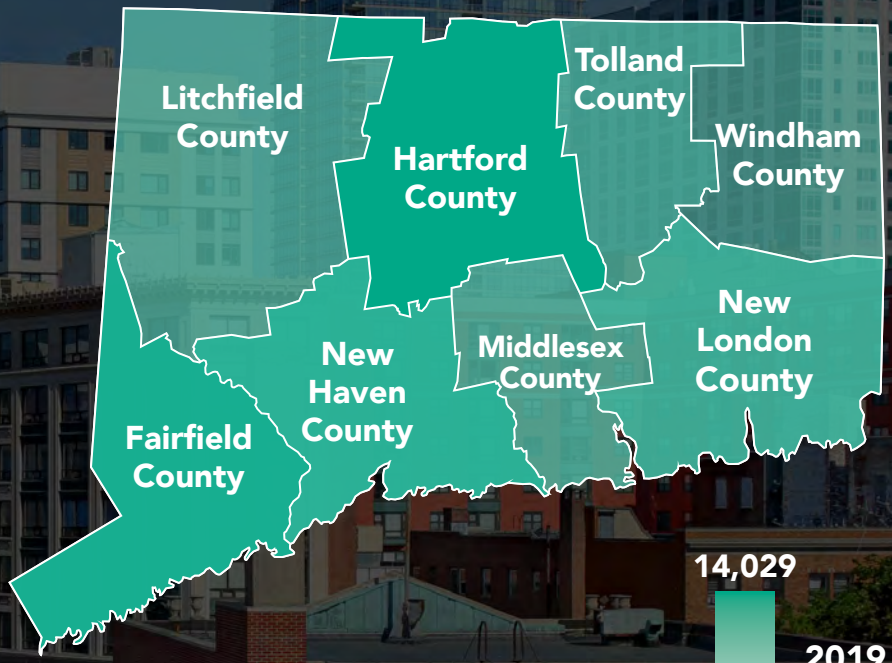


Figure 19. Map Of Clean Energy Employment By County, 2019



[21] Employment categorized as "n/a" could not be assigned to a single location.

Stamford in Fairfield County, CT

Clean energy training programs are largely focused in the same counties that have a high proportion of clean energy jobs. These counties include the following: New Haven (30 percent), Hartford (19 percent), and Fairfield (14 percent).

Just over a third of programs are also offered via web-based portals, making these accessible to all residents and age groups with internet and computer access. The proportion of web offerings is likely to increase in the future, as the COVID-19 pandemic continues to change the nature of work and education.

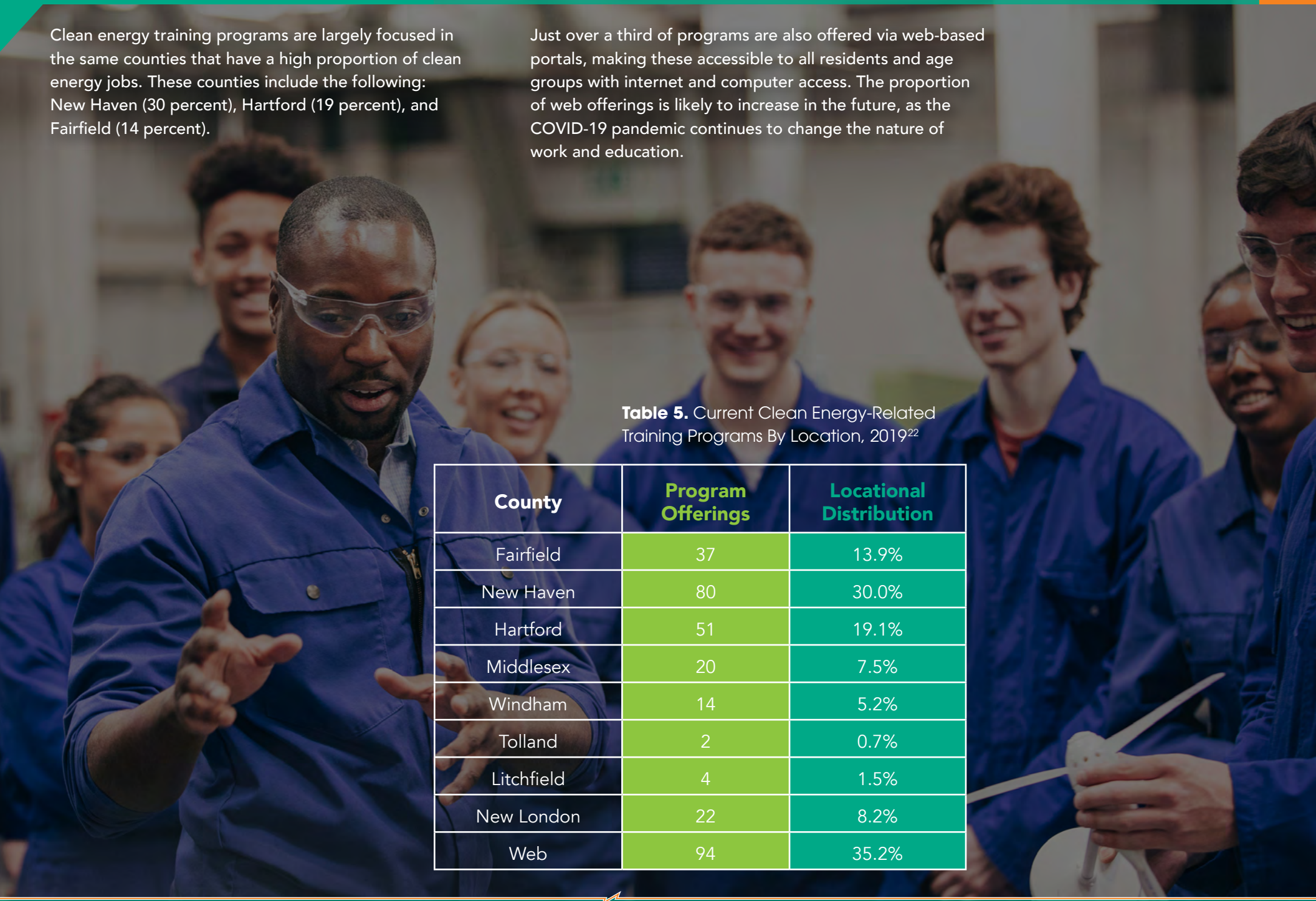


Table 5. Current Clean Energy-Related Training Programs By Location, 2019[22]

County	Program Offerings	Locational Distribution
Fairfield	37	13.9%
New Haven	80	30.0%
Hartford	51	19.1%
Middlesex	20	7.5%
Windham	14	5.2%
Tolland	2	0.7%
Litchfield	4	1.5%
New London	22	8.2%
Web	94	35.2%

[22] The locational distribution will not sum to 100 percent because many programs are offered in multiple counties. As such, the denominator is not the number of programs, but the number of locations. For example, if one program is offered in three counties, it is counted three times in the percent distribution.

With the passage of Public Act 19-35 "An Act Concerning a Green Economy and Environmental Protection," the Office of Workforce Competitiveness (OWC) is charged with establishing a career ladder for jobs in the green technology industry. In collaboration with OWC, BW Research and the Joint Committee, have produced ten (10) career profiles in clean energy that identify the requisite level of education, salary range, health care and retirement benefits, and more for the following clean energy technology jobs:

- Heating, Air Conditioning, and Refrigeration Mechanics and Installers
- Construction Laborers
- Insulation Workers, Floor, Ceiling and Wall
- Electricians
- Solar Photovoltaic Installers
- Sales Representative
- Construction Managers
- Bookkeeping, Accounting, and Auditing Clerks
- Engineers
- General and Operations Managers

These career profiles, as well as access to clean energy related training programs, are available at **www.ctgreenjobs.com.**

CONNECTICUT DEPARTMENT OF LABOR
Partner of the American Job Center Network

Connecticut's clean energy economy is slightly less diverse than the national clean energy labor market, though this may be in part due to the fact that the state in general has a lower proportion of Hispanic or Latinx and Black or African American workers compared to the nation overall.

Clean energy occupations are a good source of jobs for Veterans in the state, with 10.6 percent of clean energy positions in Connecticut held by Veterans of the U.S. Armed Forces. This is higher than the overall statewide average (four percent), the U.S. clean energy average (nine percent), and the U.S. overall proportion of Veterans in the workforce (six percent).

Union membership rates are higher-than-average for clean grid and storage (11.4 percent) and alternative transportation (8.5 percent).

Table 6. Clean Energy Workforce Demographics, 2019[23]

Workforce Demographic	Connecticut Clean Energy	Connecticut Overall	US Clean Energy	US Overall
Male	72.0%	51.7%	72.6%	53.0%
Female	28.0%	48.3%	27.4%	47.0%
Hispanic or Latino	10.1%	16.8%	16.5%	17.6%
Not Hispanic or Latino	89.9%	83.1%	83.5%	82.4%
American Indian or Alaska Native	0.8%	0.6%	1.4%	1.3%
Asian	6.0%	5.0%	8.2%	6.5%
Black or African American	5.8%	12.1%	8.4%	12.3%
Native Hawaiian or other Pacific Islander	0.7%	0.1%	1.0%	0.2%
White	82.0%	79.7%	73.1%	77.7%
Two or more races	4.8%	2.5%	7.9%	2.8%
Veterans	10.6%	4.1%	9.0%	5.7%
55 and over	14.8%	27.4%	13.6%	23.6%
Union	6.8%	14.5%	7.9%	6.2%

Table 7. Connecticut Union Membership Rate By Clean Energy Sector, 2019

Clean Energy Sector	Union Membership Rate
Clean Energy Average	6.8%
Clean Fuels	4.6%
Clean Energy Generation	4.2%
Clean Grid & Storage	11.4%
Energy Efficiency	7.0%
Alternative Transportation	8.5%

[23] Demographic data is pulled from the United States Energy and Employment Report 2019 (USEER 2019); the Bureau of Labor Statistics: Current Population Survey, Veterans News Release, and Union Membership Rates; as well asEmsi Population Demographics.

Data for the 2020 Connecticut Clean Energy Industry Report is taken from the US Energy and Employment Report (USEER). The survey was administered by phone and web. The phone survey was conducted by ReconMR, and the web instrument was programmed internally. Each respondent was required to use a unique ID in order to prevent duplication.

In total, 537 business establishments in Connecticut participated in the survey effort. These responses were used to develop incidence rates among industries as well as to apportion employment across various industry categories in ways currently not provided by state and federal labor market information agencies. The margin of error for incidence is +/- 4.22 percent for Connecticut at a 95 percent confidence interval.

The full research methodology for USEER may be found at: **https://www.usenergyjobs.org/**

About BW Research

BW Research is a full-service consulting and research firm that specializes in workforce and economic development for public entities, including workforce investment boards, economic development agencies, cities, counties, and educational institutions. BW Research has substantial experience in developing customized research projects and a deep understanding of the clean energy sector and its employers, workforce, and supply chain dynamics. BW Research has designed and conducted over 500 studies for public, private, and not-for-profit agencies throughout the United States and internationally.

The historic powerhouse at the Upper Collinsville Dam on the Farmington River in Canton will produce 1 MW of hydroelectric power when restoration is complete.

A clean energy job is defined as any worker who is directly involved with the research, development, production, manufacture, distribution, sales, implementation, installation, or repair of components, goods, or services related to the following sectors of Clean Energy Generation; Clean Grid and Storage; Energy Efficiency; Clean Fuels; and Alternative Transportation. These jobs also include supporting services such as consulting, finance, tax, and legal services related to energy.

Included in these sectors for Connecticut are the following sub-technologies that are considered clean energy-related activities. The clean energy definition for Connecticut was developed through an iterative process with the Connecticut Green Bank, the Department of Energy and Environmental Protection, Eversource, and United Illuminating. The sub-technologies below were selected based on their compliance with clean energy-specific policies across the state, such as the Renewable Portfolio Standard and Zero Emission Vehicle Standard.[24]

CLEAN ENERGY GENERATION

- Solar Photovoltaic Electric Generation
- Concentrated Solar Electric Generation
- Wind Generation
- Geothermal Generation
- Bioenergy/Biomass Generation
- Low-Impact Hydroelectric Generation, including wave/kinetic generation
- Traditional Hydroelectric Generation
- Nuclear Generation
- Combined Heat and Power

CLEAN GRID & STORAGE

- Electric Power Transmission and Distribution
- Smart Grid
- Microgrids
- Other Grid Modernization

STORAGE

- Pumped Hydropower Storage
- Battery Storage, including battery storage for solar generation
  - – Lithium Batteries
  - – Lead-Based Batteries
  - – Other Solid-Electrode Batteries
  - – Vanadium Redox Flow Batteries
  - – Other Flow Batteries
- Mechanical Storage, including flywheels, compressed air energy storage, etc.
- Thermal Storage
- Biofuels, including ethanol and biodiesel
- Nuclear Fuel

CLEAN FUELS

- Other Ethanol/Non-Woody Biomass, including biodiesel
- Woody Biomass/Cellulosic Biofuel
- Other Biofuels
- Nuclear Fuel

ALTERNATIVE TRANSPORTATION

- Hybrid Electric Vehicles
- Plug-In Hybrid Vehicles
- Electric Vehicles
- Natural Gas Vehicles
- Hydrogen Vehicles
- Fuel Cell Vehicles
- Other Vehicles

ENERGY EFFICIENCY

- ENERGY STAR Certified Appliances, excluding HVAC
- ENERGY STAR Certified Heating Ventilation and Air Conditioning (HVAC), including boilers and furnaces with an AFUE rating of 90 or greater and air and central air conditioning units of 15 SEER or greater
- Traditional HVAC goods, control systems, and services[25]
- ENERGY STAR Certified Electronics (TVs, Telephones, Audio/Video, etc.)
- ENERGY STAR Certified Windows and Doors
- ENERGY STAR Certified Roofing
- ENERGY STAR Certified Seal and Insulation
- ENERGY STAR Certified Commercial Food Service Equipment
- ENERGY STAR Certified Data Center Equipment
- ENERGY STAR Certified LED Lighting
- Other LED, CFL, and Efficient Lighting
- Solar Thermal Water Heating and Cooling
- Other Renewable Heating and Cooling (geothermal, biomass, heat pumps, etc.)
- Advanced Building Materials/Insulation
- Recycled Building Materials
- Reduced Water Consumption Products and Appliances
- Other Energy Efficiency

[24] Including, but not limited to Public Act 08-98, Public Act 11-80, Public Act 17-3, Public Act 18-50, Public Act 18-82, Public Act 19-71, and Executive Order 3

[25] "Traditional HVAC" workers are those that spend a portion of their time on energy efficient products and services; it is not inclusive of all HVAC workers, only those that are reported to spend less than 50 percent of their labor hours on efficient products and services. "ENERGY STAR®/High AFUE HVAC" workers spend the majority of their labor hours (more than 50 percent) working with energy efficient HVAC technologies. The employment data makes this distinction in order to capture all HVAC workers that spend any portion of their labor hours on efficient HVAC technologies, but separates the two job categories in order to appropriately track how much high efficiency HVAC activity is occurring.

energize CONNECTICUT℠

www.energizect.com

CONNECTICUT GREEN BANK

CONNECTICUT ENERGY ENVIRONMENT

CNG SCG UI

Part of the AVANGRID Family

EVERSOURCE

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

CONNECTICUT GREEN BANK

October 27, 2020

Alex Kragie
Director
American Green Bank Consortium
154 West 14th Street, 2nd Floor
New York, NY 10011

Jeff Schub
Executive Director
Coalition for Green Capital
154 West 14th Street, 2nd Floor
New York, NY 10011

Dear Mr. Kragie and Mr. Schub:

On behalf of the Connecticut Green Bank, we want to express our appreciation to the American Green Bank Consortium ("the Consortium") and the Coalition for Green Capital ("the Coalition") for its steadfast advocacy for a National Climate Bank.

Over the years, Connecticut's political leaders have been committed partners and advocates on national green bank legislation modelled after the lessons learned from Connecticut. Our Congressional delegation, including Senator Richard Blumenthal, Senator Chris Murphy, and Congressman Jim Himes, have co-sponsored bills with the Coalition. Our Governors, including Ned Lamont and Dannel Malloy have supported the advancement of the green bank model through the United States Climate Alliance as a solution to climate change.[1] And our legislators have continuously expressed bipartisan support of the Connecticut Green Bank by enacting public policies that enable more private capital investment in the state's green economy.

The progress you are making to advance efforts to establish a green bank for our country to confront climate change[2] is preparing states from Maine to Hawaii to get prepared for more public-private partnerships to increase investment in solutions to confront climate change while building thriving, growing, and sustainable green economies.

It is with this spirit of collaboration, innovation, and belief in the betterment of our nation, that the Connecticut Green Bank provides to the Consortium a "high level" capital needs assessment should the National Climate Bank come to fruition.

To that end, the Connecticut Green Bank submits its initial capital needs assessment of $1.5 billion over the next 5 to 10 years to modernize and decarbonize the state's electric infrastructure, while becoming more resilient to the impacts of climate change, with over 40% dedicated to low- to moderate-income and vulnerable communities – see Table 1.

[1] Letter from the United States Climate Alliance sent to Congress on July 21, 2020 – click here.

[2] "Clean Energy and Sustainability Accelerator" included in the Moving Forward Act passed by the House of Representatives, inclusion of the National Climate Bank Act within the Clean Economy Jobs and Innovation Act passed by the House of Representatives, and from the support of various Congressional committees, including the Select Committee on the Climate Crisis and Senate Democrats' Climate Committee Report.

Table 1. Connecticut Capital Needs Assessment from the National Climate Bank

Title	Investment Opportunity	Period	Investment per Year
Establishing Statewide AMI	$450,000,000	5 Years	$90,000,000
Building Resilient Microgrids at Critical Facilities	$200,000,000	10 Years	$20,000,000
Scaling Up the Deployment of DERs	$400,000,000	10 Years	$40,000,000
Transitioning LMI Families from Fossil Fuels	$200,000,000	10 Years	$20,000,000
Enabling Nature Based Solutions for Resilience	$250,000,000	10 Years	$25,000,000
Total	**$1,500,000,000**	**5-10 Years**	**$195,000,000**

Although only a portion of the investment needed to confront climate change in Connecticut, investment from the National Climate Bank into the Connecticut Green Bank will unlock multiples of private capital investment in our state's green economy.[3]

And lastly, Connecticut urges that the National Climate Bank consider the inclusion of the buildout of the transmission system(s) for offshore wind in its capital needs assessment for the Northeast region, including New Jersey, New York, and New England. Perhaps through the Alliance, working with the Coalition and the Consortium, we can engage Northeast leaders in such an important infrastructure project to reduce barriers such as transmission constraints and lower the costs of piecemeal transmission investments.

We appreciate your ongoing efforts to bring the National Climate Bank to fruition.

Sincerely,

Lonnie Reed
Chair

Bryan Garcia
President and CEO

About the Connecticut Green Bank

The Connecticut Green Bank was established by the Connecticut General Assembly in 2011 in a bipartisan fashion. As the nation's first green bank, its 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. This is accomplished by leveraging limited public resources to scale-up and mobilize private capital investment into Connecticut. Since its inception, the Green Bank has invested nearly $300 million of ratepayer funds to attract and mobilize $1.65 billion of private investment. This investment has helped create over 23,000 job-years, reduce the burden of energy costs on over 55,000 families and businesses, avoid air pollution of nearly 9 million tons of CO_2, 8.4 million pounds of SO_x, and 9.7 million pounds of NO_x, improve public health outcomes by between

[3] The Connecticut Green Bank has achieved over a 6:1 leverage ratio of private to public funds

$230 to $525 million resulting from avoided air pollution, and generate nearly $100 million of tax revenues for the state. In 2017, the Connecticut Green Bank received the Innovations in American Government Award from the Harvard Kennedy School Ash Center for Democratic Governance and innovation for their “Sparking the Green Bank Movement” entry. For more information about the Connecticut Green Bank, please visit www.ctgreenbank.com.

National Climate Bank Capital Needs Assessment

Connecticut

Green Bank Name	Connecticut Green Bank
Geographies Served	State of Connecticut
Capital Need	$450,000,000 over 5 years
Expected Use of Capital	**Establishing Statewide Advanced Metering Infrastructure** Of the $975 million in capital needed for capital and O&M costs, support the deployment of an Advanced Metering Infrastructure ("AMI") in 1.2 million residential, commercial, and industrial electric end-use customers in Eversource Energy ("Eversource") service territory in Connecticut.[4] Eversource estimates that AMI will reduce 2.5 MMTCO2 over a 20-year period.
Sector	Grid Modernization – AMI
Preferred Form of Capital	Low-cost and long-term debt placed within the capital structure of Eversource Energy to reduce electric rates from financing costs for the investment in AMI to support Connecticut's modernization, decarbonization, and resilient infrastructure efforts.
Environmental Justice	AMI will provide the metering infrastructure enabling the widespread deployment of clean energy technologies (e.g., demand response, renewable heating and cooling, BTM solar PV, battery storage, electric vehicles, etc.) that will result in the reduction of energy burden (i.e., percentage of household income spent on energy) for vulnerable communities, while also making the grid more resilient to the impacts of climate change by understanding where disruptions in electricity provided to the system have occurred.
Eligible Technologies	AMI will provide the "backbone" to enabling the widespread deployment of clean energy technologies on the grid that will result in increased mitigation of GHG emissions, while making Connecticut more resilient to the impacts of climate change. Any interval data metering equipment, including metering and related communications equipment, would be eligible.
Operational Support Needs	N/A
Technical Assistance Needs	N/A

Green Bank Name	Connecticut Green Bank
Geographies Served	State of Connecticut
Capital Need	$200,000,000 over 10 years
Expected Use of Capital	**Building Resilient Microgrids at Critical Facilities across Connecticut** Connecticut has experienced significant grid outages resulting from weather-related incidents associated with climate change taking down

[4] Docket No. 17-12-03RE02 – click here

	the transmission and distribution system. In order to make Connecticut more resilient to the impacts of climate change, it must seek to continuously and strategically modernize its electric distribution infrastructure through strategic undergrounding, as well as the deployment of baseload BTM fuel cells serving as microgrids for critical facilities. A state with extensive and aging tree coverage, in combination with thousands-and-thousands of miles of above ground electric transmission and distribution lines and worsening weather, has caused policymakers to explore the desirability and feasibility to underground electric lines and/or pursue microgrids. Overhead electric distribution lines cost between $136,000 to $197,000 per mile in comparison to underground lines which cost $724,000 per mile in suburban areas and $823,000 per mile in urban areas.[5] In comparison, fuel cells cost $5,000/kW to install. To complement the need of the state to strategically underground the transmission and distribution systems, the Green Bank proposes a non-wires alternative using fuel cell technology. The proposal includes at least two (1) 400-kW fuel cell located at a critical facility in each of the 169 cities and towns in Connecticut – or 135.2 MW of fuel cells.
Sector	Grid Modernization –Fuel Cell Microgrids at Critical Facilities in each Municipality
Preferred Form of Capital	Low-cost and long-term debt placed within the capital structure of a power purchase agreement ("PPA") and energy savings agreement ("ESA") financing for baseload onsite fuel cell at a critical facility.[6]
Environmental Justice	The use of proceeds will go towards targeting vulnerable communities by improving the resilience of their electric distribution infrastructure. Fuel cells are manufactured in Connecticut, thereby creating local manufacturing jobs.
Eligible Technologies	Molten carbonate (MCFC), phosphoric acid (PAFC), and proton exchange membrane (PEM) fuel cells in microgrid applications for critical facilities for both power and waste heat (i.e., CHP mode) for maximum technology efficiency.
Operational Support Needs	N/A
Technical Assistance Needs	N/A

Green Bank Name	Connecticut Green Bank
Geographies Served	State of Connecticut
Capital Need	$400,000,000 over 10 years
Expected Use of Capital	**Scaling Up the Deployment of Distributed Energy Resources**

[5] https://www.cga.ct.gov/2011/rpt/2011-R-0338.htm

[6] Fuel cells are estimated to cost $5,000/kW installed. 60% of the capital structure would be comprised of debt, with 50% of the debt from private lenders and 50% from the Connecticut Green Bank.

	One of the essential "wedges" of Connecticut's climate change plan, is to decarbonize the electric sector through the deployment of energy efficiency and renewable energy technologies. In order for Connecticut to decarbonize its electric grid, it needs to continue to deploy distributed energy resources (e.g., demand response, conservation, BTM solar PV, battery storage, etc.) for residential, commercial and industrial end-use customers.
Sector	Residential, Commercial and Industrial End-Use Customers
Preferred Form of Capital	Low-cost and long-term debt placed within the capital structures of various clean energy financing programs administered by the Green Bank, including: ▪ Energize CT Smart-E Loan ▪ Commercial Property Assessed Clean Energy (C-PACE) ▪ Green Bank Solar Power Purchase Agreement (PPA) ▪ Small Business Energy Advantage (SBEA) ▪ Low Income Multifamily Energy Loan (LIME Loan), including Navigator (i.e., predevelopment) and Catalyst (i.e., term) Loans Capital from the NCB, in combination with private sources (e.g., from local, state, regional, and national banks), will keep financing costs low and make distributed energy resources more accessible and affordable to end-use residential, commercial, and industrial customers.
Environmental Justice	Increasing investment in vulnerable communities is a priority of the Connecticut Green Bank. In order to reduce the Energy Affordability Gap[7] and reduce the Energy Burden,[8] the Green Bank continues to demonstrate how innovative financing of the deployment of distributed energy resources provides important economic savings benefits for our most vulnerable citizens.
Eligible Technologies	Class I and III renewable energy, CHP, conservation and load management resources as outlined within Connecticut's renewable portfolio standards.
Operational Support Needs	N/A
Technical Assistance Needs	N/A

Green Bank Name	Connecticut Green Bank
Geographies Served	State of Connecticut
Capital Need	$200,000,000 over 10 years
Expected Use of Capital	**<u>Transitioning LMI Families from Fossil Fuels to Clean Electricity</u>** Two of the three essential "wedges" of Connecticut's climate change plan are to decarbonize transportation and heating. As the single largest source of greenhouse gas emissions in Connecticut, transportation must

[7] Amount of energy and transportation household income spending above what is considered affordable at 6% and 15% respectively.

[8] Percentage of household income spent on energy

	be transitioned to electric vehicles. As the second largest source of greenhouse gas emissions in Connecticut, heating our residential buildings must be transitioned to renewable heating and cooling.
Sector	Low-to-Moderate-Income Residential End-Use Customers
Preferred Form of Capital	Low-cost and long-term debt placed within the capital structures of various clean energy financing programs administered by the Green Bank, including: ▪ Energize CT Smart-E Loan On Bill Repayment (e.g., PAYS – Pay-As-You-Save) ▪ Shared Clean Energy Facilities (SCEF) Capital from the NCB, in combination with private sources focused on supporting the Community Reinvestment Act (e.g., local, state, regional, and national banks), will enable the weatherization and thermalization of the homes of LMI families, and supporting the low-cost purchasing and/or leasing of used electric vehicles in combination with the installation of electric vehicle recharging stations.
Environmental Justice	Increasing investment in vulnerable communities is a priority of the Connecticut Green Bank. In order to reduce the Energy Affordability Gap and reduce the Energy Burden, the Green Bank continues to demonstrate how innovative financing of the deployment of distributed energy resources provides important economic savings benefits for our most vulnerable citizens.
Eligible Technologies	Insulation, renewable heating and cooling (e.g., air source heat pumps, ground source heat pumps, heat pump water heaters, etc.), and EV's and EV infrastructure.
Operational Support Needs	N/A
Technical Assistance Needs	Developing and implementing an on-bill repayment program in collaboration with the electric and natural gas distribution companies.

Green Bank Name	Connecticut Green Bank
Geographies Served	State of Connecticut
Capital Need	$250,000,000 over 10 years
Expected Use of Capital	**<u>Enabling Nature Based Solutions for Resilience</u>** Connecticut has pristine natural resources that can serve to mitigate greenhouse gas emissions and improve the resilience of its communities from the impacts of climate change through: ▪ **<u>Agriculture</u>** – farm operations account for over 380,000 acres of land across the state and 50,000 acres of managed aquaculture; ▪ **<u>Forests</u>** – there are about 1.8 million acres of forests in Connecticut storing about 190 MMTCO2, not including the tree canopies within our urban centers that have the potential to

	reduce heat island effects; and ▪ **<u>Wetlands</u>** – span 220,000 acres over Connecticut's 3.5 million acres of land surface. NCB resources would be invested to conserve, protect, and manage natural working lands to mitigate greenhouse gas emissions (i.e., carbon sinks or storage) and adapt to the impacts of climate change (i.e., improve the resilience of the state and its communities to respond to events).
Sector	Nature and Working Lands
Preferred Form of Capital	Unlike many other capital uses supporting climate change challenges, the financial benefits of this initiative are potentially indirect. These benefits may only be captured by novel measurements, such as quantifications of losses avoided from serious incidents or major disasters that otherwise would result in destruction of physical infrastructure and the built environment. Other benefits may arise from economic growth and related increments of tax revenues that would not be experienced but for these investments in natural / working lands. Less direct returns often require investments that are socialized, effectively grants. Accordingly, we would ask for either an allocation of equity perpetually dedicated to these purposes or 0% debt with an exceptionally long repayment period (30, 40 or 50 years) to match the benefit period of the investments which could be of equal duration, if not indefinite.
Environmental Justice	A thriving, sustainable, and equitable food system that provides nourishment and job opportunities for vulnerable communities (e.g., rural and urban farming). Forests and rivers provide opportunities for getting outdoors and enjoying the parks and recreation (e.g., "No Child Left Inside"), as well as supporting youth development opportunities (e.g., Youth Conservation Corps).
Eligible Technologies	Restoration, conservation, and protection of nature.
Operational Support Needs	The Green Bank might require additional staff capacity to undertake a leadership role, but at present a specific quantification of that need is difficult to access.
Technical Assistance Needs	Many of the skills and expertise to undertake this initiative would be found in a to be formed "cross-agency" task force in combination with a public private partnership with other stakeholders (such as local governments, the property casualty insurance industry and federal agency resources (such as from the Department of Interior, Army Corps of Engineers or FEMA).

Exhibit A
Supporting Materials

Connecticut Market

Based on EIA data, Connecticut is among the highest electricity rate states in the country. A state that deregulated its electric utility industry in the early 2000's, Connecticut currently has the 2nd worst residential rates (behind Hawaii), 3rd worst commercial rates (behind Hawaii and Alaska), and the 4th worst industrial rates (behind Hawaii, Alaska, and Rhode Island) – see Table 1.

Table 2. Electricity Rates for Connecticut End-Use Customers (preliminary through May 2020)

	Residential	Commercial	Industrial
Electricity Rate	$0.2396	$0.1687	$0.1432

Residential Market

There are approximately 3,592,000 residents in Connecticut living in 1,360,000 housing units – see Table 2. Of these housing units, about 1,125,000 (i.e., 83%) are single family (i.e., residential 1-4 units) and 230,000 (i.e., 17%) are multifamily (i.e., residential 5 or more units). There are over 1,500,000 residential electricity customers in Connecticut consuming nearly 13,100,000 MWh of electricity and paying nearly $2.8 billion in electricity costs per year.

Table 3. Distribution of Housing Units in Connecticut by Income and Ownership

<table>
<tr><td colspan="6"># of Housing Units
1,360,000</td></tr>
<tr><td colspan="2">Non-LMI
685,000
50%
(≥100% AMI)</td><td colspan="4">LMI
695,000
50%
(<100% AMI)</td></tr>
<tr><td>Own
559,000
41%</td><td>Rent
126,000
9%</td><td colspan="2">Moderate Income
230,000
17%
(80-100% AMI)</td><td colspan="2">Low Income
445,000
33%
(<80% AMI)</td></tr>
<tr><td rowspan="2"></td><td rowspan="2"></td><td>Own
148,000
11%</td><td>Rent
82,000
6%</td><td>Own
162,000
12%</td><td>Rent
283,000
21%</td></tr>
</table>

Commercial and Industrial Market

There is approximately 675 million square feet of commercial and industrial buildings in Connecticut – see Table 3.

Table 4. Square Feet of Commercial and Industrial Building Space in Connecticut

Hospitality	Industrial	Retail	Commercial	Total
18,724,855	287,180,874	197,739,420	169,989,282	673,634,431
2.8%	42.6%	29.3%	25.2%	100.0%

In terms of agriculture, there is nearly 350,000 acres of agricultural land, with about 180,000 acres of that land considered to be "high-quality" or "nationally significant" – best suited to long-term, intensive crop production.

There are nearly 160,000 commercial and industrial electric customers in Connecticut consuming nearly 15,600,000 MWh of electricity and paying over $2.5 billion in electricity costs per year.

Connecticut Green Bank

Connecticut Green Bank ("Green Bank") is a quasi-state entity created by Connecticut General Statutes ("CGS") Section 16-245n, formed in July of 2011 through the bipartisan passage of Public Act 11-80. The Green Bank's statutory purposes are:

- To develop programs to finance and otherwise support clean energy investment in residential, municipal, small business, and large 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 to foster the growth, development, and commercialization of clean energy sources and related enterprises; and

- To stimulate demand for clean energy and the deployment of clean energy sources with the state that serves end-use customers in the state.

The vision of the Green Bank is "…a world empowered by the renewable energy of community," and mission is to "confront climate change and provide all of society with 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 achieves its vision and mission through the following three (3) 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 by making the benefits of the green economy inclusive and accessible to all individuals, families, and businesses; and

3. To pursue investment strategies that advance market transformation in green investing while supporting the organization's pursuit of financial sustainability.

For more details on the Green Bank, access its Comprehensive Plan – Green Bonds US at https://ctgreenbank.com/wp-content/uploads/2020/07/Green-Bank_Revised-Comprehensive-Plan_062620a.pdf

Climate Change Plan

Connecticut climate change plan focuses on both mitigation and adaptation, including:

- **Mitigation** – short, medium, and long-term goals for reducing GHG emissions:

    - **Near-Term** – 10% below 2001 levels by 2020;

- **Mid-Term** – 45% below 2001 levels by 2030; and

- **Long-Term** – no less than 80% from 2001 levels by 2050.

In the near- to mid-terms, the Green Bank's strategies to reduce GHG emissions focuses on decarbonizing electricity generation, decarbonizing transportation, and decarbonizing buildings.

- **Adaptation** – to identify climate impacts anticipated for the state, including improving the state's resilience by preparing for and adapting to changing conditions and withstanding and recovering rapidly from the threats or incidents associated with the impacts of climate change.

  In the near- to mid-term, the Green Bank's strategies to help Connecticut become more resilient to the impacts of climate change include undergrounding distribution infrastructure and microgrids.

Key Definitions

- **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 greenhouse gas 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 storage, distribution, manufacturing technologies or facilities and any Class I renewable energy source, as defined in section 16-1.

- **Critical Facility** – means any hospital, police station, fire station, water treatment plant, sewage treatment plant, public shelter, correctional facility or production and transmission facility of a television or radio station, whether broadcast, cable, or satellite, licensed by the Federal Communications Commission, and commercial area of a municipality, a municipal center, as identified by the chief elected official of any municipality, or any other facility or area identified by the Department of Energy and Environmental Protection as critical.

- **Microgrid** – means a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid and that connects and disconnects from such grid to enable it to operate in both grid-connected or island mode.

- **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, 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.

CONNECTICUT GREEN BANK SM

845 Brook Street
Rocky Hill, CT 06067

300 Main Street, 4th Floor
Stamford, CT 06901