Connecticut Green Bank

# Significant Sources of Operating Revenue Last Ten Years ///\_\_\_\_\_\_/

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		4										Year Ended June 30	June 30									ł
		1	2022	1	2021		2020		2019		2018	Î	2017		2016	Ì	2015		2014	1	2013	
		1	Revenue	% of Annual	Revenue	% of Annual	Revenue	% of Annual	Немелие	% of Annual	Revenue	% of Annual	Revenue	% of Annual	Revenue	% of Annual	Revenue	% of Annual	Revenue	% of Annual	Revenue	% of Annual
2	<b>Jtility Remittances:</b> Eversource United Illuminating	(1)(2) \$:	\$20,338,318 4,940,987	80.5% 19.5%	\$ 20,252,554 4,891,861	80.5% 19.5%	\$ 19,993,531 4,860,619	80.4% 19.6%	\$20,975,361 5,119,321	80.4% 19.6%	\$20,842,169 5,101,013	80.3%	\$21,135,147 5,269,202	80.0% 20.0%	\$21,223,577 5,381,507	79.8% 20.2%	\$21,899,541 5,334,446	80,4% 19.6%	\$ 22,322,100 5,457,245	80.4% 19.6%	\$ 22,144,093 5,477,316	60,2% 19,8%
	Total	∽∥	\$25,279,305	100.0%	\$ 25,144,415	100.0%	\$ 24,854,150	100.0%	\$26,094,682	100.0%	\$25,943,182	100.0%	\$26,404,349	100.0%	\$26,605,084	100.0%	\$27,233,987	100.0%	\$ 27,779,345	100.0%	\$ 27,621,409	100.0%
07188	Interest income - promissory notes: C-PACE foans and bonds Program loans Solar bans and lease notes		\$ 2,912,472 2,948,303 282,075	47.4% 48.0% 4.6%	\$ 2,812,621 3,673,418 358,701	41.1% 53.7% 5.2%	\$ 2,618,948 3,030,760 455,905	42.9% 49.6% 7.5%	\$ 1,763,322 1,634,692 511,482	45,1% 41,8% 13,1%	\$ 1,544,710 1,161,816 586,812	46,9% 35,3% 17,8%	\$ 1,422,085 827,775 671,850	48,7% 28,3% 23,0%	\$ 1,447,457 654,803 793,244	50.0% 22.6% 27.4%	\$ 1,408,612 519,977 696,719	53.7% 19.8% 26.5%	\$ 10,551 453,029 571,373	1.0% 43.8% 55.2%	\$ 583,575	0.0% 0.0% 100.0%
	Total	<u>۵</u>	\$ 6,142,850	100.0%	\$ 6,844,740	100.0%	\$ 6,105,613	100.0%	S 3,909,496	100.0%	\$ 3,293,338	100.0%	\$ 2,921,710	100.0%	S 2,895,504	100 0%	\$ 2,625,308	100.0%	\$ 1,034,953	100.0%	S 583,575	100.0%
LL I	RGGI auction proceeds: Renewables Energy efficiency	(3)	\$11,568,905	100.0%	\$ 6,452,886	100.0%	\$ 4,581,628	100.0%	\$ 2,130,255	100.0%	s 1,250,260	100.0%	\$ 2,392,647	100.0%	\$ 6,481,562	100.0%	\$ 5,631,156 10,952,389	34.0%	\$ 7,476,158 12,598,510	37.2% 62.8%	\$ 4,744,657	100.0%
	Total	\$	\$11,568,905	100,0%	\$ 6,452,886	100.0%	\$ 4,581,628	100.0%	\$ 2,130,255	100.0%	\$ 1,250,260	100.0%	\$ 2,392,647	100.0%	\$ 6,481,562	100.0%	\$16,583,545	100.0%	\$ 20,074,668	100.0%	\$ 4,744,657	100.0%
0	<b>Grant revenue:</b> Federal ARPA grants DOE grams Privale foundation	w		0.0% 100.0% 0.0%	\$ 13,268	0.0% 100.0% 0.0%	\$ 76,402	0.0% 100.0% 0.0%	\$ 100,779 100,000	0.0% 50.2% 49.8%	\$ 56,953 24,999	0.0% 69.5% 30.5%	\$ 73,486 25,000	0.0% 74.6% 25.4%	\$ 589,917	0.0% 0.0% 0.0%	\$ 143,614 48,660	0.0% 74.7% 25.3%	\$ 321,642 -	0.0% 0.0%	\$ 8,376,681 1,622,569 36,000	83.5% 16.2% 0.3%
	Total	ŝ	•	100.0%	\$ 13,268	100.0%	S 76,402	100.0%	\$ 200,779	100.0%	\$ 81,952	100.0%	\$ 98,486	100.0%	\$ 589,917	100.0%	\$ 192,274	100.0%	\$ 321,642	100.0%	\$ 10,035,250	100.0%
-	Sales of renewable energy credits/certificates: SHREC proceeds LHEC/ZHEC receipts Gross proceeds - AECs Commissions - RECs	(4) \$ (5) (6)	\$10,533,954 1,499,613 1,032,310	80.6% 11.5% 7.9%	\$ 9,560,919 1,711,148 917,850	78.4% 14.0% 7.6% 0.0%	\$ 7,070,360 1,567,142 1,014,260 (3,750.00)	73.3% 16.2% 0.0%	\$ 4,916,117 1,157,112 420,000 (3,750,00)	75,8% 17,8% 6.5% -0.1%	\$ 2,259,250 852,718 558,399 (10,847.00)	61.7% 23.3% 15.3% -0.3%	\$ 356.647 2,227,500 (13,500.00)	0.0% 13.9% 86.6% -0.5%	\$ 233,793 2,443,524 (23,534,00)	0,0% 8.8% -0.9%	s 1,474,488	0.0% 0.0% 0.0%	\$ 381,444 (4,885.00)	0.0% 0.0% -1.3%	\$ 150,000 (3,000.00)	0.0% 0.0% -2.0%
07	Total	"	\$13,065,877	100.0%	\$ 12,189,917	100.0%	\$ 9,648,012	100.0%	S 6,489,479	100.0%	S 3,659,520	100.0%	\$ 2,570,647	100.0%	\$ 2,653,783	100,0%	\$ 1,474,488	100.0%	\$ 376,559	100.0%	\$ 147,000	100,0%

Source: Current and prior year financial statements and Green Bnak detailed records

# Notes:

(1) Revenue based on Statulory rate of 1 mil per kWh generated by the utility.

(2) In fiscal years 2018 and 2019 the Green Bark made a cash payments to the State of Connecticut of \$14,000,000 per year sourced primarily from utility remittances, a major component of its operating revenues.

(3) The Regional Greenhouse Gas Initiative (RGGI) is a cooperative effort among nine Northeastern and Mid Allantic states to reduce greenhouse gas emissions. RGGI holds quarterly auctions of the member state's CO2 allowances. At auction, a market-based clearing price is determined from prices submitted in the winning bids and is used to value proceeds relumed to the states. The Connecticut Green Bank receives a portion of Connecticut's auction proceeds which is recognized as revenue and invested in Class I Renewable projects.

(4) Public Act No. 15-194 (the Act) encoded on October 1. 2015 and as amended by Public Act 16-212 created a Solar Home Energy Credit (SHREC), owned by the Green Bank, associated with energy generated from qualifying residential solar PV systems that have received incentives under the Green Bank's RSIP. SHRECs are purchased by the State's two investor owned public utilities through a Master Purchase Agreement (MPA).

(5) The Green Bark and its subsidiaries receive LREC/ZREC revenue from the State's (wo investor owned public utilities. RECs are secured when a solar project is registered and energized with a public utility and revenue is paid quarterly based on generation of the project.

(6) CGB owns Class 1 Renewable Energy Credits (RECs) generated by certain commercial renewable energy lacilities for which CGB provided the initial funding. Through its RSIP program, CGB owns the rights to future RECs generated by facilities installed on residential properties. CGB energy contracts to sell RECs generated during specified time periods. RECs trade on the New England Power Pool (NEPOOL) market.

Table 5 (1 of 2)			2013	н н н н Ф	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	, ю	, I Ф	s S	.,,, У	s i i i	(Continued)
		0	2014	\$ 4,000,000 126,088 126,088 3,873,912	н, н	, , , , , , , , , , , , , , , , , ,	s	ь I Ф		., , , , сэ	
			2015	\$ 1,100,000 1,085,956 (232,431) 853,525	.   . 	, , , , , "м	, , , , , , , , , , , , , , , , , ,	 со	 Ф	s , , , ,	
			2016	\$ 1,100,000 1,085,956 (394,249) (691,707	· · · · · ·	, , , , , , , , , , , , , , , , , ,	· · ·   ·   ·	\$ 2,510,837 (8,619) 2,502,218	 Ф	 v	
		For the Year Ended June 30	2017	S 1,100,000 1,085,956 (577,162) 508,794	, , , , , , , , , , , , , , , , , , ,		м	S 2,510,837 (541,664) 1,969,173	\$ 2,957,971 2,957,971	. ø	
ireen Bank	ebt by Type Years ited)	For the Year E	2018	\$ 1,100,000 1,085,956 (712,478) 373,478	\$ 16,000,000 1,000,000 1,000,000 15,000,000	· · · · · ·		\$ 2,510,837 (921,903) 1,588,934	\$ 2,957,971 (53,417) 2,904,554	\$ 9,101,729 - 9,101,729	
Connecticut Green Bank	Outstanding Debt by Type Last Ten Years (Unaudited)		2019	\$ 1,100,000 1,085,956 (789,396) 296,560	\$ 16,000,000 16,000,000 (16,000,000)	· · · · · ·		\$ 2,510,837 (1,143,151) 1,367,686	\$ 2,957,971 (159,640) 2,798,331	\$ 9,101,729 - 9,101,729	
			2020	\$ 1,100,000 1,085,956 (1,085,956)	(1)	\$ 14,000,000 6,000,000 <u>6,000,000</u> 8,000,000	\$ 5,000,000 5,000,000 (4,900,000) 100,000 4,900,000	\$ 2,510,837 (2,510,837)	\$ 2,957,971 (268,681) 2,689,290	\$ 9,101,729 (515,976) 8,585,753	
			2021 (as restated)	0	E	\$ 10,000,000 6,000,000 (6,000,000)	\$ 3,500,000 5,000,000 (4,900,000) 3,400,000 3,400,000	(1)	\$ 2,957,971 (392,399) 2,565,572	\$ 9,101,729 (1,038,173) 8,063,556	
			2022	(1)	0	\$ 10,000,000 6,000,000 (6,000,000)	\$ 3,500,000 5,000,000 (5,000,000)	£	\$ 2,957,971 (526,747) 2,431,224	\$ 9,101,729 (1,566,724) 7,535,005	
				Primary Government - Solar Mosaic Line of Credit (incluing adjustments) Cumulative Advances Cumulative Repayments Cumulative Outstanding Debt Available Line of Credit	Primary Government - Line of Credit - CT Green Bank Line of Credit (including adjustments) Cumulative Advances Cumulative Hepayments Cumulative Outstanding Debt Available Line of Credit	Primary Government - Line of Credit - SHREC Warehouse 1 Line of Credit (including adjustments) Cumulative Advances Cumulative Hepayments Cumulative Outstanding Debt Available Line of Credit	Primary Government - Amalgamated Bank Line of Credit (including adjustments) Cumulative Advances Cumulative Repayments Cumulative Outstanding Debt Available Line of Credit	Primary Government - The Reinvestment Fund Original Term Note Repayments Currulative Outstanding Debt	Primary Government - Meriden Hydro Clean Renewable Energy Bond Repayments Cumulative Outstanding Debt	Primary Government - Connecticut State Colleges and Universities Clean Renewable Energy Bond Repayments Cumulative Outstanding Debt	

Table 5 (2 of 2)	2013	• • • • •	 v	 ю	н н Ф	, 69	\$ 26,700,000		ب	3,594,915 \$	
	2014	, , , ø	с. т (х со	 	w l	s.	\$ 26,700,000	 со	\$ 126,083	3,594,783 \$ 0.04	
	2015	· · ·   •		, , , ю	 v	, S	\$ 26,700,000 3,000,000 3,000,000 23,700,000	 м	\$ 3,853,525	3,587,509 \$ 1.07	
	2016	· · , , , ,	· ·   ,	· ·   ·   •	 v	ع	\$24,000,000 18,000,000 (832,325) 17,167,675 6,000,000		\$20,361,600	3,578,674 \$5.69	
ank Iype For the Year Ended June 30	2017		· o	 	 	s	\$ 27,600,000 27,500,633 (2,322,925) 25,107,708	\$ 1,895,807 (55,295) 1,840,512	\$ 32,384,158	3,573,880 \$ 9.06	
Green Bank bebt by Type Years dited) For the Year I	2018	· · ·	, 	, , , , 0		9	\$ 27,600,000 27,500,633 (3,835,166) 23,665,467	\$ 1,895,807 (150,085) 1,745,722	\$ 40,379,884	3,572,665 \$ 11.30	
Connecticut Green Bank Outstanding Debt by Type Last Ten Years (Unaudited) For t	2019	\$ 38,600,000 (71,243) (101,000) 38,427,757	\$ 1,000,000 1,000,000	 	5		\$ 27,600,000 27,500,633 (4,516,713) 22,983,920	\$ 1,895,807 (244,875) 1,650,932	\$77,626,915	3,565,287 \$ 21,77	
	2020	\$ 38,600,000 (66,062) (2,344,000) 36,189,938	\$ 1,000,000 (1,000,000)	, , , , v	.  ø		\$ 27,600,000 27,500,633 (6,646,333) 20,854,240	\$ 1,895,807 (339,666) 1,556,141	\$ 75,975,362	3,545,837 \$ 21.43	
	2021	\$ 38,600,000 (60,880) (4,474,000) 34,065,120	ŧ	\$ 16,795,000 16,795,000	\$ 24,834,000 24,834,000	<u>S 2,679,421</u>	\$ 27,600,000 27,500,633 (8,996,792) 18,503,841	\$ 1,895,807 (434,457) 1,461,350	\$109,067,860	3,557,006 \$ 30.66	
	e a	\$38,600,000 (55,699) (6,928,911) 31,615,390	(1)	\$ 16,795,000 (1,145,000) 15,650,000	\$24,834,000 (499,000) 24,335,000	\$ 2,527,386	\$27,600,000 27,500,633 (15,686,884) 11,803,769	\$ 1,895,807 (529,247) 1,366,560	\$97,264,334	3,605,597 \$ 26.98	ements
	Primary Government - SHREC ABS Bond	SHREC ABS Bond Discount Repayments Cumulative Outstanding Debt	Primary Government - Kresge Note Original Term Note Transfer of Note to Strategic Partner Cumulative Outstanding Debt	Primary Government - Green Liberty Bonds Series 2020-1 Bepayments Cumulative Outstanding Debt	Primary Government - Green Liberty Bonds Series 2021-1 Series 2021-1 Bond Repayments Cumulative Outstanding Debt	Primary Government Leases payable	CT Solar Lease 2 LLC - Line of Credit Line of Credit (including adjustments) Cumulative Advances Cumulative Repayments Cumulative Outstanding Debt Available Line of Credit	CEFIA Solar Services Inc Connecticut Housing Finance Authority Original Term Nota Repayments Cumulative Outstanding Debt	Total Reporting Entity Cumulative Outstanding Debt	Connecticut Population <sup>(1)</sup> Total Outstanding Debt Per Capita	Sourcoo. Current and mine user financial statements

Source: Current and prior year financial statements.

Notes:

(1) Debt agreement fully repaid in a previous fiscal year and not active in this fiscal year.

(Concluded)

	(1)	Demographic and (2)	Demographic and Economic Statistics - For the State of Connecticut Last Ten Years (Unaudited) (2) (3) (3)	the State of Connecti (3)		(5)
Year Ended June 30	Population	Median Age	Per Capita Income	Median Household Income	Population 3 Years and Over Enrolled in Public School	Unemployment Rate
2022	3,605,597	N/A	N/A	N/A	513,615	4.2%
2021	3,557,006	N/A	N/A	N/A	N/A	7.7%
2020	3,545,837	N/A	N/A	N/A	N/A	10.1%
2019	3,565,287	41.2	\$ 45,359	\$ 78,833	712,565	3.7%
2018	3,572,665	41.0	44,026	76,348	720,366	4.4%
2017	3,573,880	40.9	42,029	74,168	718,887	5.0%
2016	3,578,674	40.9	41,087	73,433	724,486	5.2%
2015	3,587,509	40.8	39,430	71,346	730,132	5.5%
2014	3,594,783	40.7	39,373	70,048	733,536	6.5%
2013	3,594,915	40.6	37,726	67,098	751,810	7.8%
Sources:						

(1) U.S. Census Bureau - Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2019; April 1, 2020; and July 1, 2020

(2) U.S. Census Bureau - Annual Population Estimates for Selected Age Groups by Sex

(3) U.S. Census Bureau - Selected Economic Characteristics, American Community Survey 1-Year Estimates

(4) U.S. Census Bureau - School enrollment, American Community Survey 1-Year Estimates

(5) U.S. Department of Labor - Databases, Tables and Calculators by Subject Local Area Unemployment Statistics

N/A - Not available

Notes:

Table 6

**Connecticut Green Bank** 

Table 7 (1 of 2)		1	Ĩ	ge I ent <sup>(2)</sup>												1	9		6	ient (4)	. 6									(Continued)	
F.C.				Percentage of Total State Employment	3.12%	1.32	0.87	1.03	0.64	0.45	0.41	0.35	0.40	0.36	0.38		Darcentage	of Total	State	Employment	3.26% 1.10	1.01	0.83	0.57	0.49	0.44	0.41	0.37	0.36	(Cor	
			2019	Rank		~ ~	n n	4	9	α	ით	13	9	12	11 15	2016				Rank	- C	en u	04	9	80	6	₽;	⊑ ₽	13		
				Employees <sup>(1)</sup>	57,714	24,365	16.089	19,000	11,862	N/A 8 345	7,625	6,491	7,400	6,600	7,000 5,500					Employees (1)	58,773 19,920	18,135	15.018	10,230	8,800 N/A	8,000	7,400	7,000	6,500		
		d June 30		Percentage of Total State Employment <sup>(2)</sup>	3.41%	1.58	0.96	1.08	0.69	N/A	0.46	0.47	0.43	0.38	0.35 0.32			of Total	State	Employment (2)	3.19% 1.21	1.02	0.88	0.63	0.50	0.43	0.41	0.38	0.36		
	inecticut	For the Year Ended June 30	2020	Rank	-	~ ~	r 5	4	9	٢	- 6	8	10	1	12	2017				Rank	<del>-</del> 0	ი ი	<del>4</del> ت	. 9	ω	- <b>б</b>	10	= =	13		
Connecticut Green Bank	ployers - For The State of Con Last Nine Calendar Years (Unaudited)	Forth		Employees <sup>(1)</sup>	58,818	27,247	16.620	18,700	11,862	N/A 8 106	8,106 7.900	8,053	7,400	6,500	6,000 5.500				1	Employees <sup>(1)</sup>	57,771 21.867	18,425	16,000 16 184	11,430	8,974 N/A	7.730	7,400	6,800 6,800	6,500		
Connecticu	Principal Employers - For The State of Connecticut Last Nine Calendar Years (Unaudited)			Percentage of Total State Employment <sup>(2)</sup>	2.81%	1.60	1.45 0 02	0.91	0.66	0.51	0.47	0.44	0.41	0.33	0.33			Percentage of Total	State	Employment (2)	3.13% 1.05	1.01	0.97	0.64	0.48	0.43	0.40	0.37	0.30		
	Princiț		2021	Rank	-	2	ю ч	r 10	9		00 <b>0</b> 7	, 10 10	: =	12	13	2018				Rank	t 0	0	4 u	o o	ω,	20	9	5 5	4		
				Employees <sup>(1)</sup>	51,374	29,145	26,489 16 837	16,600	12,000	9,370	8,626 8 100	8,053	7,400	6,100	6,000					Employees <sup>(1)</sup>	57,889 19.416	18,652	18,000	11,862	8,835 0,101	7,900	7,400	6,800 7 150	5,500		
				Employer	State of Connecticut	Yale New Haven Health System	Hartford Healthcare	Yale University Bawheen Technologies (fka United Technologies)	General Dynamics Electric Boat	CVS Health (fka Aetna Inc)	Wal-Mart Stores Inc. Sitomize A Lockhood Martin Company	Sikolsky, A Lockriedu Marini Company Trinity Health of New Fnoland	The Travelers Cos. Inc.		~ •					Employer	State of Connecticut	Hartford Healthcare	Raytheon Technologies (fka United Technologies)	General Dynamics Electric Boat	Wal-Mart Stores Inc.	Trinity Health of New England	The Travelers Cos. Inc.	The Hartford Financial Services Group	Monegan Sun Foxwoods Resort Casino		
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Table 7 (2 of 2)

# Principal Employers - For The State of Connecticut Last Nine Calendar Years (Unaudited)

				Fort	For the Year Ended June 30	d June 30			
		2015			2014			2013	
			Percentage of Total State			Percentage of Total State			Percentage of Total State
Employer	Employees <sup>(1)</sup>	Rank	Employment <sup>(2)</sup>	Employees (1)	Rank	Employment <sup>(2)</sup>	Employees <sup>(1)</sup>	Rank	Employment (2)
State of Connecticut	51.646	-	2.89%	54,230	٦	3.05%	53,951	-	3.10%
Vale New Haven Health System	20.071	e	1.12	18,869	3	1.06	18,639	e	1.07
Hartford Healthcare	18,107	4	1.01	18,597	4	1.05	16,951	4	0.98
Bavtheon Technologies (fka United Technologies)		0	1.34	25,000	2	1.40	27,000	2	1.55
Yale University	14,787	5	0.83	14,787	5	0.83	14,750	5	0.85
General Dynamics Electric Boat	9,583	9	0.54	8,896	7	0.50	8,817	9	0.51
Wal-Mart Stores Inc.	8,800	7	0.49	9,289	9	0.52	8,761	7	0.50
Trinity Health of New England	N/A		e	N/A			N/A		i.
Sikorsky. A Lockheed Martin Company	N/A	x		N/A		×	N/A	c	
The Travelers Cos. Inc.	7,300	8	0.41	7,400	6	0.42	7,400	6	0.43
The Hartford Financial Services Group	7,000	თ	0.39	7,000	=	0.39	7,700	÷	0.44
Mohean Sun	6,900	10	0.39	7,300	10	0.41	7,300	10	0.42
Foxwoods Resort Casino	5,301	14	0.30	7,600	8	0.43	7,667	8	0.44

Note:

Connecticut Green Bank was established by the Connecticut General Assembly on July 1, 2011. Accordingly, financial results are only shown beginning with Fiscal Year 2012 (Calendar Year 2013).

Sources:

(1) Hartford Business Journal, Book of Lists: Connecticut's largest employers

(2) Total State Employment from US Department of Labor - Databases, Tables & Calculators by Subject - Local Area Unemployment Statistics

N/A - Not available

(Concluded)

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**Connecticut Green Bank** 

# Full-Time Equivalent Employees by Function Last Ten Years (Unaudited)

					June 30	e 30				
Function/Program	2022	2021	2020	2019 (1)	2018	2017	2016	2015	2014	2013
Program services: Statutory and infrastructure	12.00	12.00	9.00	8.00	9.00	9.00	9.00	8.00	7.00	7.00
Residential		î	5	1.00	6.00	6.00	6.00	6.00	5.00	3.00
Commercial and industrial	5.00	5.00	3.00	4.00	4.00	4.00	4.00	2.00	4.00	2.00
Institutional	r.	1	9	3.		ā	ł	1.00	1.00	1.00
Administrative and support:										
Executive	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Finance	4.00	5.00	5.00	4.00	6.00	5.00	6.00	5.00	4.00	3.00
Accounting	6.00	7.00	6.00	5.75	5.75	5.75	5.75	5.30	3.50	2.75
Legal and policy	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00	2.00
Marketing	3.00	3.00	3.00	5.00	5.00	6.00	6.00	6.00	5.00	5.00
Operations	6.00	5.00	5.00	3.00	3.50	3.50	3.90	3.50	3.80	4.00
Total	43.00	44.00	38.00	37.75	46.25	46.25	47.65	43.80	39.30	33.75

Source: Connecticut Green Bank internal payroll records

Notes:

(1) Reflects staff reductions as a result of the cash payments of \$14,000,000 made to the State of Connecticut in FY 2019 and FY 2018.

					Operatin	Operating Indicators by Function Last Ten Years (Unaudited)	y Function Irs )						
							For the Year Ended June 30	Ended June	e 30				
	2022	~	2021		2020	2019	2018	2017	7	2016	2015	2014	2013
Clean Energy Investment (\$s in Millions) CGB dollars invested Private dollars invested	\$ 13.3 106.8	ŝ	36.0 244.5	в	32.8 254.6	\$ 30.1 287.2	\$ 25.0 193.3	ф	27.2 \$ 150.1	94.9 2824	\$ 51.4 263.3	\$ 29.1 75.3	\$ 18.4 92.7
Total project investment	\$ 120.1	ю	280.5	Ф	287.4	\$ 317.3	\$ 218.3	ю	177.3 \$	317,3	\$ 314.7	\$ 104.4	\$ 111.1
Number of Clean Enerov Projects	3,418		7,409		8,388	11,693	6,642		4,862	A,238	6,454	2,447	1,114
Annual Energy Savings of Clean Energy (MMBtu)	96,687		311,853		318,736	275,047	261,152		522,748	295,819	697,159	247,909	463,533
Installed Capacity of Clean Energy (MW)			9		50					10	,	•	5 <b>.</b>
Anaerobic digesters			• •		°.						0.6	8	5 <b>a</b>
CHP	Ē		98		, r	0.5	•		0.8		0.3	3.0	0.7
Fuel cell Hydro	6.0		e,		6.0	1.0			0.2	ŝ	0.9	( T	ort a
Solar PV Wind	21.2		71.8		66.3	62.9	56.4	4	48.9	64.9	55.4 5.0	20.4	8.0
Total	22.1		71.8		75.3	64.4	56.4	4	49.9	65.9	62.2	23.4	23.5
Lifetime Broduction of Clean Energy (MWh)													
Litetime Production of Crean Energy (INVVII) Anaerobic digesters					31,536				,	106,171			
Biomass			<b>e</b> 19		• •	65 107		đ			31.930	354.780	- 81.008
Energy efficiency	282,408		185,259		233,412	1,505,382	120,306		69,668	109,031	1,586,377	56,452	4,830
Fuel cell			1 206		618,106 B54	665	315	5	740	806	76	, 84	1,100,002
Geothermai Hydro	907 96,579		000-1		96,579	107,063			20,711		96,579		• • • • • • •
Solar PV	639,410	N,	2,138,850	-	,971,118	1,873,018	1,676,917		1,453,897	1,879,783	1,577,670 118,260	580,420	226,886
Wind Solar thermal	• •				6.8				-	580		•	
Total	1,019,379	N	2,325,415	~	2,951,605	3,551,325	1,797,538	-	639,033	2,096,371	3,410,892	991,736	1,479,556
Jobs Created by Year Direct jobs (# of jobs) Indirect and induced jobs (# of jobs)	540 706		1,145 1,487		1,127 1,492	1,400 1,833	955 1,245		868 1,191	1,949 3,102	1,720 2,659	596 952	579 1,161
Lifetime CO2 Emission Reductions (Tons) Avoided emissions Homes' energy use for one year Passenger vehicles driven for one year	542,837 59,303 107,098	÷.	1,283,122 153,651 277,490	- 0	1,308,323 156,809 2,283,208	1,907,274 228,895 413,377	988,314 115,467 208,597		843,520 99,667 180,094	1,122,416 134,776 243,482	1,881,374 227,343 410,577	356,982 43,648 78,828	210,353 25,364 45,807
Acres of U.S. forests in one year	603,343	-	1,563,243		,595,647	2,328,770			5,720	1,372,598	2,313,025	444,087	ac0,8c2

Source: Internal Connecticut Green Bank Reporting: Key Performance Indicators

Table 9

Connecticut Green Bank

Bank
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lecticut
Conn

# Capital Asset Statistics by Function Last Ten Years (Unaudited)

Source: Current and prior year financial statements...

# Table 10

**NON-FINANCIAL STATISTICS** 

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# 1. Statement of the Connecticut Green Bank

June 30, 2022

Re: Statement of the Connecticut Green Bank on the Non-Financial Statistics Contents of the Annual Comprehensive Financial Report ("ACFR") for FY 2022

#### Dear Reader:

This is the "Non-Financial Statistics" section of the Annual Comprehensive Financial Report for FY 2022. For those of you that may be new to this section, the Green Bank is a data-driven organization not only with respect to the management of financial resources, but also in terms of the social and environmental impact we are helping create in our communities. We invite you to take a look at the methodologies we use to assess impact.<sup>1</sup>

In FY 2022, within the midst of macroeconomic factors such as the global pandemic, war in the Ukraine, and international trade disputes (i.e., tariffs on Chinese manufactured solar panels), alongside a local market in Connecticut that is in transition (e.g., from net metering to tariffs for behind-the-meter clean energy, launch of new programs), we continue to demonstrate the innovative impact of the green bank model, including, but not limited to:

- Residential Solar as the administrator of the Residential Solar Investment Program ("RSIP") per CGS 16-245ff, we have officially achieved the 350 MW public policy target. In reaching this level of deployment, we reached over 45,000 households (including reaching vulnerable communities), mobilized over \$1.4 billion of public and private investment (including about \$160 MM of ratepayer incentives at an average equivalent ZREC price of \$30), and helped create over 16,000 jobs in our communities. The RSIP made Connecticut the most successful residential solar PV deployment market in the entire Northeast (i.e., New England, New Jersey, and New York) on a watts per capita basis, and most likely at the lowest level of ratepayer incentives both effective and efficient. We look forward to our utility colleagues, with the guidance of PURA, to continue working with industry to propel this market forward as a solution to reduce energy costs for families, increase the reliability of the grid, and confront climate change through the Residential Renewable Energy Solutions ("RRES") program.
- <u>Energy Storage Solutions</u> as the co-administrator of the Energy Storage Solutions Program ("ESS") per Public Act 21-53 and Docket No. 17-12-03RE03, we officially launched the 580 MW residential and non-residential upfront and ongoing performance-based incentive program on January, 1, 2022. Through PURA's guidance, we are focused on reducing peak demand through the active and passive dispatch of battery storage (which will lower electric rates), providing participants with opportunities for resilience to keep the lights on when the grid is down, prioritizing deployment in low-income and distressed communities to ensure that they have

<sup>&</sup>lt;sup>1</sup> <u>https://www.ctgreenbank.com/strategy-impact/impact/societal-impacts/</u>

access to this important technology, and fostering the sustained orderly development of a local battery storage industry.

<u>Green Liberty Notes</u> – as a follow-on to the award-winning Green Liberty Bonds, we continue to increase investment opportunities in the Connecticut Green Bank for all people. Through our collaboration with Raise Green, and our partnerships with Eversource Energy and Amalgamated Bank, we created the Green Liberty Notes ("GLN's), a minimum \$100 and maximum \$25,000 one-year note offering whose proceeds will go towards supporting the Small Business Energy Advantage ("SBEA") program. SBEA provides an on-bill financing mechanism to support energy efficiency deployment for small businesses, when combined with incentives through the Energy Opportunities program, helps businesses reduce the burden of energy costs. We have a goal to issue GLNs every quarter for two years.

These are but a few examples of some of the impactful ways the Connecticut Green Bank is mobilizing investment in the green economy of Connecticut.

As we look ahead, there are a number of other market developments that bode well for the future of the Connecticut Green Bank in helping to build the green economy of Connecticut, including:

- <u>Greenhouse Gas Reduction Fund</u> after over a decade of advocacy and demonstrating the efficacy of the green bank model at the local and state levels across the country, Congress passed and President Biden signed the Inflation Reduction Act ("IRA"), which included the \$27 billion Greenhouse Gas Reduction Fund ("GHGRF"). Modelled after, in large part, the Connecticut Green Bank, the GHGRF will provide \$7 billion in competitive grants, loans and other forms of financial and technical assistance for zero emission technologies to low-income and disadvantaged communities, and \$20 billion for a national climate bank that includes green banks, community development financial institutions, and other non-profits focused on avoiding and reducing GHG emissions.
- <u>Environmental Infrastructure</u> per the passage of Public Act 21-115, we initiated efforts to better understand how the green bank model for "clean energy" could apply to "environmental infrastructure" per the scope expansion of the Connecticut Green Bank. We amended our governance documents to incorporate the legislative scope expansion, investigated the capabilities of our Green Liberty Bonds to raise capital (including 50-year bonds), engaged with stakeholders across the environmental infrastructure spectrum, held an offsite strategic retreat, and put forth a Comprehensive Plan to set a course for implementing this scope expansion.
- Zero Emission School Buses per the passage of Public Act 22-25, Connecticut advanced its commitment to reduce GHG emissions by establishing targets for zero emission school buses, including 100% in environmental justice communities by 2030 and 100% in all school districts by 2040. The Connecticut Green Bank is supporting the Department of Energy and Environmental Protection ("DEEP") and the leadership of the Environment Committee, by transferring a portion of the Regional Greenhouse Gas Initiative ("RGGI") allowance proceeds to support vouchers for electric school buses with a focus on environmental justice communities through the Connecticut Hydrogen and Electric Automobile Purchase Rebate ("CHEAPR").

#### CONNECTICUT GREEN BANK 1. STATEMENT OF THE CONNECTICUT GREEN BANK

As we continue to bolster our work on social and environmental impact methodology and transparency, we continue to engage Kestrel Verifiers to assess the Green Bank's methods for representing impact using our indicators. The team from Kestrel has reviewed and endorsed the Green Bank's current methodologies and found the Green Bank's reporting to provide a high degree of transparency both in terms of activity and the underlying methodologies used to calculate this activity. They also reviewed the Green Bank's calculations.

The result, is an ever evolving and more transparent Non-Financial Statistics section that we hope is useful to those striving to learn from the successes and challenges of the Connecticut Green Bank, including how we assess the social and environmental impact we are making by mobilizing more investment in the green economy of Connecticut.

Regards,

En N. Stary

Bryan Garcia President and CEO

Eric Shrago Vice President of Operations

# 2. Statement of Non-Financial Statistics Auditor



Connecticut Green Bank 75 Charter Oak Ave Suite 1-103 Hartford, CT 06106

September 23, 2022

To the Board of Directors Connecticut Green Bank,

#### Report on Non-Financial Metrics included in the 2022 Annual Comprehensive Financial Report

In September 2022, the Connecticut Green Bank engaged Kestrel Verifiers ("Kestrel") to conduct an independent external review of the metrics in the non-financial statistics section of Connecticut Green Bank's Annual Comprehensive Financial Report ("Report") for FY2022.

Kestrel confirmed the presence of science-based and externally validated methodologies, and assessed the degree of transparency exhibited in reporting on the following metrics: benefits to disadvantaged populations, clean energy generated, job years created, public health benefits, and reduction in greenhouse gas emissions.

We commend the Green Bank's meticulous project-level data tracking and the multi-faceted approach to reporting positive impacts on air quality, public health, financial leverage, and the clean energy transition. A remarkable range of metrics are reported such as internal workforce diversity, job years supported, annual CO<sub>2</sub> emissions avoided, public health financial savings, and invested capital. In many cases, the Green Bank includes equivalencies that translate the technical metrics into more approachable numbers for all audiences.

We note that the Green Bank's overall efforts in FY2022 resulted in avoided greenhouse gas emissions, improved air quality, and benefits to public health. Notable achievements include exceeding the Bank's goal to provide 40% of investments to vulnerable communities by 2025 and continuous development and offering of investment opportunities for individual investors to support the transition to a decarbonized economy. The Green Bank's overall impact continues to grow, with FY2022 activities resulting in more than 30 times more annual emissions avoided relative to FY2012.

Kestrel has confirmed that the Green Bonds Reporting section of the Report conforms with the Green Bank's Green Bond Framework. The expected Key Performance Indicators of the bond-financed projects are included, and the report transparently describes the allocation of bond proceeds.

Based on the information provided to Kestrel Verifiers by Connecticut Green Bank and our understanding of best practices in goal setting, measurement and disclosure, it is our opinion that Connecticut Green Bank's metrics, science-based methodologies are sound and represent best practice. It is our opinion that Connecticut Green Bank adequately reports on these metrics and performance against them and demonstrates a high level of transparency.

We commend the Connecticut Green Bank for leadership in reporting.

Sincerely,

Monica Reid CEO Kestrel Verifiers

Kestrel Verifiers | www.kestrelverifiers.com

# 3. Organizational Background

The Connecticut Green Bank is the nation's first green bank. The organization is creating a thriving marketplace to accelerate clean energy adoption and environmental infrastructure improvements in Connecticut by making financing accessible and affordable for homeowners, businesses, and institutions.

### Governance

#### **Board of Directors**

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

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

#### TABLE 1. COMPOSITION OF THE BOARD OF DIRECTORS OF THE CONNECTICUT GREEN BANK FOR FY 2022

The Board of Directors of the Connecticut Green Bank is governed through statute, as well as an <u>Ethics</u> <u>Statement</u><sup>2</sup> and <u>Ethical Conduct Policy</u><sup>3</sup>, <u>Resolutions of Purposes</u><sup>4</sup>, <u>Bylaws</u><sup>5</sup>, <u>Joint Committee Bylaws</u><sup>6</sup>, and <u>Comprehensive Plan</u><sup>7</sup>. The Comprehensive Plan for the Connecticut Green Bank provides a multiyear strategy to support the vision and mission of the organization and the public policy objective of delivering consumers cheaper, cleaner, and more reliable sources of energy while creating jobs and supporting local economic development. An Employee Handbook and <u>Operating Procedures</u><sup>8</sup> have also

<sup>6</sup> Joint Committee Bylaws: <u>https://www.ctgreenbank.com/wp-</u>

<sup>&</sup>lt;sup>2</sup>Ethics Statement: <u>http://www.ctgreenbank.com/wp-content/uploads/2017/02/Green-Bank\_Ethics-Statement-CLEAN-REVISED-102214.pdf</u>

<sup>&</sup>lt;sup>3</sup> Ethical Conduct Policy: <u>https://ctgreenbank.com/wp-content/uploads/2020/06/Green-Bank Ethical-Conduct-Policy BOD CLEAN-REVISED-January-2020.pdf</u>

<sup>&</sup>lt;sup>4</sup> Resolutions of Purposes: <u>https://www.ctgreenbank.com/wp-content/uploads/2021/11/5ai\_Green-Bank-Resolution-of-Purpose-CLEAN-REVISED.pdf</u>

<sup>&</sup>lt;sup>5</sup> Bylaws: https://www.ctgreenbank.com/wp-content/uploads/2021/11/5ai\_Green-Bank\_Revised-Bylaws\_CLEAN.pdf

content/uploads/2015/12/ECMB\_CGB\_Joint\_Committee\_Bylaws\_October\_2014FINAL.pdf

<sup>&</sup>lt;sup>7</sup> Comprehensive Plan: <u>https://www.ctgreenbank.com/wp-content/uploads/2022/08/Comprehensive-Plan\_FY-2023\_FINAL\_080122-1.pdf</u>

<sup>&</sup>lt;sup>8</sup> Operating Procedures: <u>https://www.ctgreenbank.com/wp-content/uploads/2022/05/5ai\_Green-Bank-Operating-Procedures.pdf</u>

been approved by the Board of Directors and serve to guide the staff to ensure that it is following proper contracting, financial assistance, and other requirements.

As noted above, the Connecticut Green Bank's Board of Directors is comprised of twelve (12) ex officio and appointed voting members and one (1) ex officio non-voting members. The leadership of the Board of Directors, includes:

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

During FY 2022, the Board of Directors of the Connecticut Green Bank met seven (7) times, all regularly scheduled meetings. There was an attendance rate of 83% by the Board of Directors and 52 approved resolutions. For a link to the materials from the Board of Directors meetings that are publicly accessible - click here<sup>9</sup>.

Committees of the Board of Directors

There are four (4) committees of the Board of Directors of the Connecticut Green Bank, including:

- Audit, Compliance, and Governance
- Budget, Operations, and Compensation
- Deployment
- Joint Committee of the Energy Efficiency Board and the Connecticut Green Bank

### Audit, Compliance and Governance Committee

The Connecticut Green Bank's Audit, Compliance and Governance (ACG) Committee is comprised of four (4) ex officio and appointed voting members. The leadership of the ACG Committee includes:

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

During FY 2022, the ACG Committee of the Connecticut Green Bank met three (3) times, all regularly scheduled meetings. There was an attendance rate of 100% by the Committee members and 6 approved resolutions. For a link to the materials from the ACG Committee meetings that are publicly accessible – click <u>here</u><sup>10</sup>.

#### Budget, Operations, and Compensation Committee

The Connecticut Green Bank's Budget, Operations, and Compensation (BOC) Committee is comprised of five (5) ex officio and appointed voting members. The leadership of the BOC Committee, includes:

<sup>&</sup>lt;sup>9</sup> Board of Directors meetings: <u>http://www.ctgreenbank.com/about-us/governance/connecticut-grboard-meetings/</u>

<sup>&</sup>lt;sup>10</sup> ACG, B&O, Deployment Committee meetings: <u>https://www.ctgreenbank.com/about-us/governance/connecticut-grittee-meetings/</u>

- <u>Chair</u> –John Harrity, Labor Union Representative (designated as the Chair by the former Chair of the Board Catherine Smith)
- <u>Members</u> Lonnie Reed, Binu Chandy, Brenda Watson, Adrienne Farrar Houël
- **<u>Staff Lead</u>** Eric Shrago, Vice President of Operations

During FY 2022, the BOC Committee of the Connecticut Green Bank met three (3) times, all regularly scheduled meetings. There was an attendance rate of 78% by the Committee members and 1 approved resolution. For a link to the materials from the BOC Committee meetings that are publicly accessible – click <u>here</u><sup>11</sup>.

#### Deployment Committee

The Connecticut Green Bank's Deployment Committee is comprised of six (6) ex officio and appointed voting members. The leadership of the Deployment Committee includes:

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

During FY 2022, the Deployment Committee of the Connecticut Green Bank met four (4) times, all of which were regularly scheduled meetings. There was an attendance rate of 82% by Committee members and five (5) approved resolutions. For a link to the materials from the Deployment Committee meetings that are publicly accessible – click here<sup>12</sup>.

#### Joint Committee

A Joint Committee of the Energy Efficiency Board and the Connecticut Green Bank was established pursuant to Section 16-245m(d)(2) of the Connecticut General Statutes. Per by-laws established and approved by the EEB and Connecticut Green Bank, the Joint Committee is comprised of four (4) appointed and voting members, one (1) ex officio and voting member, and four (4) ex officio and non-voting members. The leadership of the Joint Committee includes:

- <u>Chair</u> Brenda Watson, Executive Director, Operation Fuel (Green Bank designee)
- Vice Chair Vicki Hackett
- <u>Secretary</u> Bryan Garcia, Connecticut Green Bank, and Stacy Sherwood, Connecticut Energy Efficiency Fund (voted in by their peers of the EEB and the Connecticut Green Bank)
- <u>Members</u><sup>13</sup> Bryan Garcia (non-voting), Bert Hunter (non-voting), John Harrity (designated as member of the Committee by BOD Chair)
- <u>Staff Lead</u> Bryan Garcia, President and CEO of the Connecticut Green Bank

During FY 2022, the Joint Committee of the EEB and the Connecticut Green Bank met three (3) times, including three (3) regularly scheduled meetings and no special meetings. There was an attendance rate

<sup>&</sup>lt;sup>11</sup> ACG, B&O, Deployment Committee meetings: <u>http://www.ctgreenbank.com/about-us/governance/connecticut-grittee-meetings/</u>

<sup>&</sup>lt;sup>12</sup> ACG, B&O, Deployment Committee meetings: <u>http://www.ctgreenbank.com/about-us/governance/connecticut-grittee-meetings/</u>

<sup>&</sup>lt;sup>13</sup> Note – these members are representatives from the Connecticut Green Bank.

of 83% by the Joint Committee members and 0 approved resolutions. For a link to the materials from the Joint Committee meetings that are publicly accessible – click <u>here</u><sup>14</sup>.

# **Open Connecticut**

Open Connecticut centralizes state financial information to make it easier to follow state dollars. In Connecticut, quasi-public agencies are required to submit annual reports to the legislature, including a summary of their activities and financial information. In addition, as of Public Act 19-102, quasi-public agencies are required to provide checkbook-level vendor payment data for display on Open Connecticut. The Connecticut Green Bank was among the first to voluntarily submit this information, as well as employee payroll data, to the State Comptroller since the inception of Open Connecticut, and it will continue doing so to satisfy the importance of transparency and public disclosure. To access this information, click <u>here</u><sup>15</sup>.

# Ethics and Transparency

#### **Statement of Financial Interest**

It is required by state ethics laws and a determination of the Governor's standard that senior-level staff (i.e., Director-level and above) and members of the Board of Directors annually file a Statement of Financial Interest (SFI). The Governor's standard is the following:

"Governor Lamont has adopted the established standard which requires "filing of Annual Statements of Financial Interests by all persons in the Executive Branch and Quasi-Public Agencies who exercise (i) significant policy-making, regulatory or contractual authority; (ii) significant decision-making and/or supervisory responsibility for the review and/or award of State contracts; or (iii) significant decisionmaking and/or supervisory responsibility over staff that monitor State contracts." ."

These statements include information such as names of all associated business, income over \$1,000, a list of all real property, and a list of creditors. SFIs that have been filed are available to the public under the Freedom of Information Act. The SFIs serve two purposes. First, the financial disclosure provides a checklist or reminder to the official/employee to be mindful of potential conflicts of interest. Second, the statements serve as a tool to maximize public confidence in governmental decision making.

With respect to the 2021 SFI filing required by May 2, 2022, the Connecticut Office of State Ethics (the "OSE") received the following from the Connecticut Green Bank – see Table 2.

 TABLE 2. SUMMARY OF STATE OF FINANCIAL INTEREST FILINGS WITH THE OFFICE OF STATE ETHICS FOR FY 2022

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

<sup>&</sup>lt;sup>14</sup> Joint Committee meeting: <u>http://www.ctgreenbank.com/about-us/governance/connecticut-grittee-meetings/</u>

<sup>&</sup>lt;sup>15</sup> Open Connecticut: <u>http://www.osc.ct.gov/openCT/quasi.html</u>

# **Small and Minority Business Procurement**

The State of Connecticut's Supplier Diversity Program was established to ensure Connecticut small businesses have an opportunity to bid on a portion of the State's purchases. Through Fiscal Year 2015, the program required agencies and political subdivisions to set aside 25% of their annual budgets for construction, housing rehabilitation, and purchasing goods and services (after approved exemptions by the Department of Administrative Services) to be awarded to certified small businesses, with 25% of this amount to be awarded to certified minority business enterprises. Although reporting is no longer required, the Connecticut Green Bank is performing this analysis to ensure we maintain our voluntarily commitment to meeting our diversity goals in procurement.

Year	Goal	Actual	Percentage
2012	\$59,775	\$39,520	66%
2013	\$62,598	\$59,340	95%
2014	\$135,320	\$120,560	89%
2015	\$221,750	\$251,980	114%
2016	\$910,922	\$568,067	62%
2017	\$533,198	\$850,016	159%
2018	\$432,861	\$607,679	140%
2019	\$232,037	\$518,299	223%
2020	\$249,098	\$453,515	182%
2021	\$338,714	\$583,522	172%
2022	\$452,418	\$321,826	71%
Total	\$3,628,690	\$4,374,324	120%

#### TABLE 3. SMALL BUSINESS PROCUREMENT<sup>16</sup>

#### TABLE 4. MINORITY BUSINESS ENTERPRISE PROCUREMENT<sup>17</sup>

Year	Goal	Actual	Percentage
2012	\$4,944	\$31,474	211%
2013	\$15,649	\$52,308	334%
2014	\$33,830	\$88,427	261%
2015	\$55,438	\$153,319	277%
2016	\$227,730	\$152,958	67%
2017	\$133,300	\$106,230	80%
2018	\$108,215	\$46,171	43%
2019	\$58,009	\$16,177	28%
2020	\$62,274	\$123,622	199%
2021	\$84,679	\$154,433	182%
2022	\$113,104	\$28,432	25%

<sup>&</sup>lt;sup>16</sup> In an act of disclosure, CGB has revised years 2016 through 2022 to include all Marketing expenditures.

Prior years, CGB had DAS approval on Program Marketing Exemptions. See prior year financial reports if interested. <sup>17</sup> In an act of disclosure, CGB has revised years 2016 through 2022 to include all Marketing expenditures. Prior years, CGB had DAS approval on Program Marketing Exemptions.

#### CONNECTICUT GREEN BANK 3. ORGANIZATIONAL BACKGROUND

Total	\$907,172	\$953,551	105%
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## **Operational Efficiency**

The Green Bank has significantly improved its operational efficiency with respect to reduced financial resources, real estate, and human capital to deliver more impact through the investment in and deployment of clean energy in Connecticut. As demonstrated in Table 5, since FY 2012, staff has grown by 1.5 times (i.e., 14 FTEs), office space has increased by 3.8 times, and general administration has increased by 2.3 times since 2012.

#### TABLE 5. HUMAN AND FINANCIAL RESOURCES OF THE GREEN BANK FY 2012 VS FY 2022

	Human Re	Sources	Financial Resources				
Fiscal Year	FTE	Office Space (ft2)	Total Expenses	General Admin & Program Admin	General Admin	SBC Revenue	RGGI Revenue
2012	29.1	3,626	\$32,510,209	\$4,532,520	\$1,387,854	\$27,025,088	\$2,052,748
2022	43	13,682	\$35,819,421	\$22,931,896	\$3,214,422	\$25,279,305	\$11,568,905
Multiple	1.5x	3.8x	1.1x	5.05x	2.3x	0.94x	5.6x

With a fifty percent increase in FTEs, the impact of the organization has grown significantly. Private Investment and clean energy deployment have increased over 10 and nearly 12-fold respectively as demonstrated in Table 6.

#### TABLE 6. GREEN BANK IMPACT FY 2012 VS FY 2022

	Impact						
Fiscal Year	Private Investment	Clean Energy Deployment (MW)	Expected Annual Generation (MWh)	Annual Saved / Produced (MMBtu)	Job Years Supported	Annual CO2 Emissions Avoided (tons <sup>18</sup> )	
2012	\$10,184,827	1.9	3,278	11,183	151	1,242	
2022	\$106,831,949	23.9	50,950	96,688	1,246	27,037	
Multiple	10.5x	12.6x	15.5x	8.7x	8.25x	21.8x	

As a quasi-public organization, the Connecticut Green Bank strives to leverage its resources in attracting investment and in deploying clean energy as efficiently as possible. Reviewing the Green Bank's human capital, real estate, and expenses versus the amount of private investment and clean energy deployed shows a marked increase during the organization's first ten years of existence.

<sup>&</sup>lt;sup>18</sup> Tons in this ACFR is to mean short tons, not metric tons.

Impact Delivered to Human and Financial Resources Used							
Fiscal	Private Investment / FTE	Clean Energy Deployment / FTE	Private Investment / Total	Private Investment / General	Private Investment / Office Space	Clean Energy Deployment / Office Space	
Year	(\$/FTE)			Admin	(\$/ft2)	(kW/ft2)	
2012	\$349,994	100	0.31	7.34	\$2,809	0.8	
2022	\$2,484,464	556	2.98	33.24	\$7,808	1.75	
Multiple	7.1x	5.56x	9.62x	4.52x	2.8x	2.2x	

#### TABLE 7. GREEN BANK DEPLOYMENT EFFICIENCY FY 2012 VS FY 2022

# Workforce and Diversity

In order to achieve its mission, the Connecticut Green Bank is primarily reliant upon its most valuable asset: its people. Program Staff design and implement products and programs that bring clean energy into the targeted markets in the state. Investment Staff are responsible for tapping and leveraging efficient sources of capital, and Support Staff handle marketing, legal, operations, and accounting functions. In Fiscal Year 2022, the Green Bank added four new positions and eliminated one position. There were five new members hired to fill open vacancies. The organization had a turnover rate of 13%.

The Green Bank realizes that part of having a strong team is ensuring that different perspectives are included in its workforce. To that end, the Green Bank monitors the diversity of its team and, per Connecticut regulations, informs the Governor's office of this. Table 8 is the report that will be filed for the fiscal year ending June 30, 2022.

Category or class	Grand Total	Total Male	Total Female	White Male	White Female	Black Male	Black Female	Hispanic Male	Hispanic Female	Other Male	Other Female
ALL CATEGORIES											
Officials/Manage rs	8	6	2	3	1	1		2			1
Professionals	25	11	14	11	14					0	
Administrative - Clerical	10	1	9	1	4	0	2	0	2	0	1
TOTALS	44	19	25	15	19	1	2	2	2	1	2

#### TABLE 8. GREEN BANK WORKFORCE ANALYSIS FY 2022

# 4. Measures of Success

The Green Bank develops a comprehensive plan every two to three years, establishing performance targets associated with the organization's overall objectives as well as individual program objectives. Results are reported in this document through Key Performance Indicators, which have various levels of detail. This section presents performance results across all the programs – that is, at the Green Bank portfolio level. At the highest level, management is interested in the number of "Closed" Projects, the amount of Capital Deployed, and the amount of Clean Energy Generated. Table 9 below highlights these indicators. It is, of course, important to recognize that these data show the summation of numbers of projects, deployed funds, and clean energy generated across all of the Green Bank's programs, each of which has its own unique set of projects, funds, clean energy generation, and fossil fuel reduction. These are each presented in the later sections of this report, in the program specific presentations.

	Actual	Target	% of Target
Fiscal Year		Closed Projects	
2012	288	0	0%
2013	1,114	0	0%
2014	2,448	4,396	56%
2015	6,458	4,485	144%
2016	7,236	14,252	51%
2017	4,873	6,846	71%
2018	6,638	5,966	111%
2019	11,687	7,748	151%
2020	8,321	8,629	96%
2021	6,992	5,186	135%
2022	3,418	3,413	100%
Total	59,473	60,921	98%
		Capital Deployed <sup>20</sup>	
2012	\$9,901,511	\$0	0%
2013	\$111,044,476	\$0	0%
2014	\$101,791,981	\$56,439,000	180%
2015	\$309,805,997	\$291,602,500	106%
2016	\$314,383,133	\$591,131,745	53%
2017	\$175,371,795	\$264,858,518	66%
2018	\$211,372,256	\$218,296,752	97%
2019	\$316,349,831	\$258,917,500	122%
2020	\$282,733,593	\$296,910,000	95%
2021	\$267,513,775	\$175,138,842	153%
2022	\$118,333,631	\$128,921,193	92%
Total	\$2,218,601,979	\$2,282216,050	97%

TABLE 9. GREEN BANK ACTUALS VS TARGETS BY FY CLOSED<sup>19</sup>

<sup>&</sup>lt;sup>19</sup> Residential solar projects that receive financing also receive an incentive under the Residential Solar Incentive Program and Multifamily and Commercial Lease projects may also use C-PACE, so they are counted in each sector's results. In this document, unless we are separating out a specific program, these projects have been removed from the total to avoid double counting.

<sup>&</sup>lt;sup>20</sup> Capital Deployment is defined by the Green Bank as the total project cost of projects financed or incentivized by the organization except for the residential programs where capital deployment only includes the amount financed.

#### CONNECTICUT GREEN BANK 4. MEASURES OF SUCCESS

	Actual	Target	% of Target			
	Clean Energy Capacity Installed (MW)					
2012	1.9	0	0%			
2013	23.5	0	0%			
2014	23.4	30	79%			
2015	62.2	56	112%			
2016	65.9	120	55%			
2017	50.0	66	76%			
2018	56.4	49	116%			
2019	64.3	72	89%			
2020	74.0	78	95%			
2021	66.1	48	137%			
2022	22.2	37	61%			
Total	509.8	554	92%			

The above metrics show that the Green Bank continues to deploy capital to new projects that lead to increased investment in and deployment of clean energy.

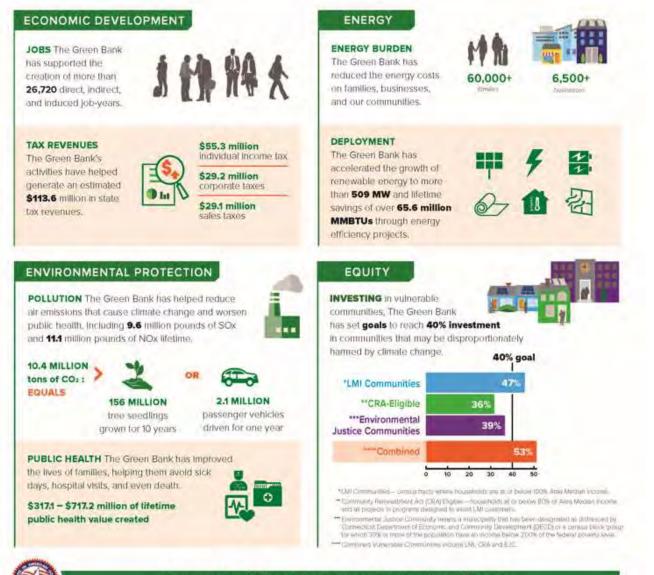
FY12 FY22

The following infographic illustrates the activity and impact of the Connecticut Green Bank from FY 2012 through FY 2022:



# Societal Impact Report

Since the Connecticut Green Bank's inception through the bipartisan legislation in July 2011, we have mobilized more than **\$2.26 billion of investment** into the State's green economy. To do this, we used **\$322.4 million** in Green Bank dollars to attract **\$1.95** billion in private investment, a leverage ratio of **\$7.00** for every **\$1**. The impact of our deployment of renewable energy and energy efficiency to families, businesses, and our communities is shown in terms of economic development, environmental protection, equity, and energy (data from FY 2012 through FY 2022).



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

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## Activity

The Connecticut Green Bank tracks projects through three phases as they move through the pipeline from application through implementation – Approved, Closed, and Completed. "Approved" signifies that the appropriate authority within the Connecticut Green Bank, whether President & CEO, Deployment Committee, or Board of Directors, has approved the agency's investment in the project per the Comprehensive Plan and Budget. "Closed" indicates all financial and legal documents have been executed and any additional funding has been secured. "Completed" indicates the project has closed, all construction and installation are completed, and the project is operational. The full forward-looking estimates of the energy, economic, equity, and environmental benefits from these projects begin to be fully accounted and reported after they close. Table 10 below presents annual project activity by these three phases.

Fiscal Year	Approved	Closed	Completed
2012	739	288	18
2013	1,244	1,114	759
2014	2,819	2,448	1,207
2015	7,404	6,458	3,936
2016	8,031	7,236	9,526
2017	5,829	4,873	5,430
2018	7,602	6,638	5,926
2019	12,572	11,687	7,257
2020	9,044	8,321	7,889
2021	7,858	6,992	6,270
2022	3,712	3,418	4,262
Total	66,854	59,473	52,480

#### TABLE 10. GREEN BANK PROJECT ACTIVITY BY FY CLOSED

Summary by fields such as "Number of projects" does not capture the extent of the organization's activities in a year as different projects have different sizes. Further demonstration of the organization's reach can be seen in the number of multifamily units impacted by closed projects each year in Table 11.

Fiscal Year	Affordable	Market Rate	Total
2012	0	0	0
2013	0	0	0
2014	120	0	120
2015	326	82	408
2016	1,442	191	1,633
2017	1,300	0	1,300
2018	533	0	533
2019	1,519	132	1,651
2020	698	103	801
2021	227	0	227
2022	102	82	184
Total	6,267	590	6,857

#### TABLE 11. GREEN BANK NUMBER OF MULTIFAMILY HOUSING UNITS IMPACTED BY FY CLOSED

# Capital Deployed

## Clean Energy Investment

The Connecticut Green Bank's intent, stated in the Comprehensive Plan, is to use public funds to attract multiples of private investment into Connecticut's green energy economy, to decrease reliance on public funds over time, and expand the scale of clean energy investments in the state. Table 12, through Table 16 show activity to date on this subject.

Fiscal Year	CGB Investment	Private Investment	Total Investment <sup>21</sup>
2012	\$3,401,642	\$6,499,869	\$9,901,511
2013	\$18,460,123	\$92,681,093	\$111,141,216
2014	\$31,846,075	\$75,264,439	\$107,110,514
2015	\$58,708,735	\$261,878,720	\$320,587,455
2016	\$38,045,595	\$282,346,363	\$320,391,957
2017	\$30,095,447	\$150,392,965	\$180,488,411
2018	\$28,480,168	\$193,270,935	\$221,751,103
2019	\$32,538,831	\$287,073,855	\$319,612,686
2020	\$33,055,947	\$253,121,685	\$286,177,632
2021	\$34,529,656	\$236,193,802	\$270,723,458
2022	\$13,280,982	\$106,831,949	\$120,112,932
Total	\$322,443,201	\$1,945,555,674	\$2,267,998,874

TABLE 12. GREEN BANK CLEAN ENERGY INVESTMENT BY SOURCE - PUBLIC AND PRIVATE BY FY CLOSED

Table 12 shows the average total investment of public and private funds per project, by fiscal year, and in total. In reviewing the results from year to year it is important to note that the mix, size, and financial requirements of projects differ significantly across the program portfolio offered by the Green Bank.

<sup>&</sup>lt;sup>21</sup> Total Investment is defined by the Green Bank as the total project cost of projects financed or incentivized by the organization and includes closing costs, capitalized interest, and credit enhancements

#### TABLE 13. GREEN BANK ACTUALS BY PROGRAM BY FY CLOSED

				Close	ed Projec	ts						
Program Name	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Grand Total
AD					1							1
Campus Efficiency Now			2									2
CEBS		1	1			1						3
СНР		2	1	2		1						6
Commercial Lease				9	17	20	19	12	23	32	12	144
Comprehensive Energy Strategy				1		1		1	2			5
Cozy Home Loan			1	1								2
CPACE		3	23	42	43	28	56	30	41	32	20	318
CPACE backed Commercial Lease				7	10	10	10	7	3	1	3	51
Grid		1		1								2
Low Income - PosiGen				4	333	661	642	847	759	970	330	4,546
Multifamily Pre-Dev					4	4	7	5	4			24
Multifamily Term			1	7	27	15	12	17	13	5	3	100
Residential Solar	288	1,109	2,384	6,381	6,785	4,445	5,150	6,468	6,849	5,206	1,592	46,657
SBEA								4,339	617	438	652	6,046
Smart-E		3	137	269	221	523	1,747	828	721	958	909	6,316
Solar Lease			107	610	472							1,189
Solar Loan		3	140	136								279
Grand Total	288	1,122	2,797	7,470	7,913	5,709	7,643	12,554	9,032	7,642	3,521	65,691

Total Investment												
Program Name	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Grand Total
AD					\$10,500,000							\$10,500,000
Campus Efficiency Now			\$751,229									\$751,229
CEBS		\$250,000	\$535,190			\$1,648,000						\$2,433,190
СНР		\$3,189,000	\$6,300,000	\$642,578		\$3,401,392						\$13,532,970
Commercial Lease				\$6,611,608	\$8,351,179	\$20,061,900	\$14,270,306	\$5,903,561	\$4,968,573	\$23,457,471	\$3,527,276	\$87,151,873
Comprehensive Energy Strategy				\$34,000,000		\$4,538,212		\$6,503,800	\$20,738,702			\$65,780,714
Cozy Home Loan			\$8,575	\$10,698								\$19,273

#### CONNECTICUT GREEN BANK 4. MEASURES OF SUCCESS

						Total Investme	nt					
Program Name	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Grand Total
CPACE		\$1,512,144	\$21,785,167	\$29,445,393	\$29,293,679	\$10,257,896	\$22,807,349	\$18,081,439	\$24,778,562	\$40,665,089	\$22,506,884	\$221,133,604
CPACE backed Commercial Lease				\$3,775,428	\$6,742,300	\$5,026,267	\$2,831,025	\$2,231,942	\$905,682	\$1,684,519	\$1,655,323	\$24,852,485
Grid		\$70,800,000		\$22,500,000								\$93,300,000
Low Income - PosiGen				\$109,380	\$9,572,692	\$18,121,147	\$17,905,647	\$24,876,234	\$20,076,595	\$28,099,263	\$9,379,672	\$128,140,629
Multifamily Pre-Dev					\$102,150	\$124,149	\$743,806	\$263,250	\$998,036			\$2,231,392
Multifamily Term			\$420,000	\$6,282,061	\$33,903,565	\$10,770,967	\$8,749,441	\$36,529,687	\$6,807,662	\$4,195,139	\$2,060,000	\$109,718,523
Residential Solar	\$9,901,511	\$35,426,043	\$73,933,113	\$214,056,259	\$217,530,669	\$120,218,237	\$147,111,739	\$195,767,752	\$205,174,273	\$166,366,312	\$57,985,080	\$1,443,470,988
SBEA								\$47,681,205	\$10,912,879	\$8,778,001	\$11,892,905	\$79,264,990
Smart-E		\$71,924	\$2,420,079	\$7,427,583	\$6,121,602	\$10,779,285	\$34,158,262	\$11,307,273	\$11,308,492	\$16,249,542	\$16,488,177	\$116,332,219
Solar Lease			\$4,324,454	\$23,672,593	\$18,325,441							\$46,322,488
Solar Loan		\$91,924	\$4,461,833	\$4,505,386								\$9,059,143
Grand Total	\$9,901,511	\$111,341,034	\$114,939,640	\$353,038,968	\$340,443,277	\$204,947,453	\$248,577,576	\$349,146,142	\$306,669,456	\$289,495,336	\$125,495,317	\$2,453,995,709

	MW											
Program Name	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Grand Total
AD					1.0							1.0
Campus Efficiency Now			0.0									0.0
CEBS		0.0	0.1			0.0						0.1
СНР		0.7	3.0	0.1		0.8						4.6
Commercial Lease				2.2	2.8	9.8	6.8	2.7	2.0	13.8	1.7	41.8
Comprehensive Energy Strategy				0.0		0.2		1.0	7.7			8.9
Cozy Home Loan			0.0	0.0								0.0
CPACE		0.1	3.6	6.0	3.7	2.0	6.0	4.2	4.8	2.5	2.5	35.6
CPACE backed Commercial Lease				1.3	2.6	1.9	1.3	1.0	0.4	0.0	0.8	9.2
Grid		14.8		5.0								19.8
Low Income - PosiGen				0.0	2.2	4.2	4.3	5.9	4.8	6.7	2.2	30.3
Multifamily Pre-Dev												
Multifamily Term				1.0	1.3	2.3	0.1	1.0	1.1	0.0	0.9	7.8
Residential Solar	1.9	7.9	17.1	48.6	53.2	34.6	41.8	55.0	57.7	47.1	15.5	380.4

#### CONNECTICUT GREEN BANK 4. MEASURES OF SUCCESS

					MW							
Program Name	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Grand Total
SBEA								0.0	0.0	0.0	0.0	0.0
Smart-E		0.0	0.3	1.3	1.0	1.3	3.9	0.9	0.9	0.8	0.2	10.7
Solar Lease			0.8	4.9	3.8							9.6
Solar Loan		0.0	1.1	1.1								2.2
Grand Total	1.9	23.5	26.1	71.6	71.7	57.1	64.2	71.7	79.4	71.0	23.9	562.0

	Average
Fiscal Year	Investment
2012	\$34,380
2013	\$99,768
2014	\$43,754
2015	\$49,642
2016	\$44,277
2017	\$37,038
2018	\$33,406
2019	\$43,485
2020	\$37,132
2021	\$41,288
2022	\$43,362
Total	\$46,139

TABLE 14. GREEN BANK CLEAN ENERGY PROJECTS - AVERAGE PUBLIC AND PRIVATE INVESTMENTS BY FY CLOSED

#### Leverage Ratio

The table below shows in ratio form the extent to which public monies are driving private investment into the Green Bank's programs and the clean energy economy. The Green Bank's "leverage ratio," as it is commonly referenced, is calculated by dividing the total monies available in each period – here the Green Bank's fiscal year periods – by the amount of public investment. Table 15 presents these ratios by fiscal year and the Green Bank's program categories and Table 16 presents these ratios by program segments. The increases in leverage over time illustrate the success of the Green Bank model at crowding in private capital and making limited public funds go further.

Fiscal Year	Commercial	Infrastructure	Residential	Strategic	Total
2012	3.8	2.9	0	0	2.9
2013	2.2	3.2	24.8	12.2	6.0
2014	2.3	3.9	9.9	0	3.4
2015	4.5	6.5	4.0	17.5	5.5
2016	3.8	11.0	9.7	0	8.4
2017	4.8	10.3	6.1	1.2	6.0
2018	6.3	11.7	8.1	0	7.8
2019	5.5	12.9	13.1	5.4	9.8
2020	4.3	14.0	9.5	3.1	8.7
2021	5.0	13.7	9.6	0	7.8
2022	4.1	15.4	7.7	0	9.0
Total	3.8	9.1	8.0	7.6	7.0

TABLE 15. GREEN BANK SECTOR LEVERAGE RATIOS BY FY CLOSED

#### TABLE 16. GREEN BANK PROGRAM LEVERAGE RATIOS BY FY CLOSED

Fiscal Year	Financing	Incentive	Total
2012	0	2.9	2.9
2013	12.0	3.1	6.0
2014	2.9	3.9	3.4
2015	4.3	6.6	5.5
2016	6.5	10.7	8.4
2017	3.4	8.8	6.0

#### CONNECTICUT GREEN BANK 4. MEASURES OF SUCCESS

Fiscal Year	Financing	Incentive	Total
2018	5.8	9.9	7.8
2019	8.2	12.0	9.8
2020	4.8	12.8	8.7
2021	4.5	12.4	7.8
2022	4.2	15.5	9.0
Total	5.2	8.9	7.0

# Clean Energy Produced and Avoided Energy Use

The data below present the clean energy outputs of the projects supported by the Green Bank. Data are presented as electric capacity (MW), electricity production (MWh), and Energy Saved or Produced (MMBtu) – see Table 17.

		Est	imated Generat	ion (MWh)	Energy Saved/Produced (MMBtu) <sup>23</sup>			
Fiscal Year	MW	Annual	Lifetime <sup>24</sup>	Lifetime Clean Energy Produced (kWh) / Green Bank Investment (\$)	Annual	Lifetime	Lifetime Combined Energy Generated & Saved (MMBtu) / Green Bank Investment (\$)	
2012	1.9	2,210	55,238	16.2	7,539	188,473	55,407	
2013	23.5	131,562	1,479,603	80.2	463,525	5,273,193	285,653	
2014	23.4	51,592	995,539	31.3	247,824	4,549,412	142,856	
2015	62.2	209,540	3,424,349	58.3	697,265	11,202,755	190,819	
2016	65.9	91,676	2,107,571	55.4	295,822	6,760,529	177,695	
2017	50.0	71,572	1,669,161	55.5	523,166	9,440,204	313,675	
2018	56.4	77,736	1,866,572	65.5	258,943	5,966,320	209,490	
2019	64.3	209,326	3,580,643	110.0	274,103	6,397,359	196,607	
2020	74.0	163,304	2,876,888	87.0	310,954	6,922,598	209,421	
2021	66.1	96,329	2,214,786	64.1	287,828	6,717,038	194,530	
2022	22.2	50,950	1,019,378	76.8	96,687	2,215,183	166,794	
Total	509.8	1,155,796	21,289,727	66.0	3,463,657	65,633,065	203,549	

TABLE 17. GREEN BANK INSTALLED CAPACITY, ESTIMATED GENERATION AND ENERGY SAVED AND/OR PRODUCED BY FY CLOSED<sup>22</sup>

# Clean Energy Technology Deployment

The Connecticut Green Bank takes a technology-agnostic approach to its financing products, and therefore will consider any commercially available technology that meets eligibility guidelines.

<sup>&</sup>lt;sup>22</sup> Residential solar projects that receive financing also receive an incentive under the Residential Solar Incentive Program and Multifamily and Commercial Lease projects may also use C-PACE, so they are counted in each sector's results. These projects have been removed from the total to avoid double counting.

<sup>&</sup>lt;sup>23</sup> The MMBTU's include those forecast to be saved from green bank energy efficiency projects and the forecast MWh from generation projects converted to MMBTU's.

<sup>&</sup>lt;sup>24</sup> The lifetime numbers are based on the aggregation of projects' impact for one year multiplied by the useful life of the technology for each project

Table 18 presents the number of projects by technology and Table 19 by project type by FY closed.

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:
  - o ethanol
  - o 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
  - $\circ\,$  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.<sup>25</sup>

<sup>&</sup>lt;sup>25</sup> <u>https://www.cga.ct.gov/current/pub/chap\_277.htm#sec\_16-1</u>, updated by Connecticut Public Act 11-80

#### TABLE 18. GREEN BANK PROJECTS BY TECHNOLOGY <sup>26</sup> BY FY CLOSED <sup>27</sup>

Fiscal Year	AD	Biomass	СНР	EE <sup>28</sup>	Fuel Cell	Geothermal	Hydro	PV	Solar Thermal	Wind	Other/ None	Total
						# Projects						
2012	0	0	0	0	0	0	0	288	0	0	0	288
2013	0	0	2	4	1	0	0	1,107	0	0	0	1,114
2014	0	0	1	104	0	2	0	2,341	0	0	0	2,448
2015	0	1	4	135	0	2	1	6,314	0	1	0	6,458
2016	1	0	1	126	0	8	0	7,097	1	0	2	7,236
2017	0	0	1	385	0	7	1	4,472	0	0	7	4,873
2018	0	0	0	1,351	0	5	0	5,261	0	0	21	6,638
2019	0	0	2	5,062	0	10	1	6,596	0	0	16	11,687
2020	1	0	0	1,236	2	14	0	7,059	0	0	9	8,321
2021	0	0	0	1,300	0	23	0	5,658	0	0	11	6,992
2022	0	0	0	1,509	0	24	1	1,872	0	0	12	3,418
Total	2	1	11	11,212	3	95	4	48,065	1	1	78	59,473
	8			1		MW		I.	1 1		1 1	
2012	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0	1.9
2013	0.0	0.0	0.7	0.0	14.8	0.0	0.0	8.0	0.0	0.0	0.0	23.5
2014	0.0	0.0	3.0	0.0	0.0	0.0	0.0	20.4	0.0	0.0	0.0	23.4
2015	0.0	0.6	0.3	0.0	0.0	0.0	0.9	55.4	0.0	5.0	0.0	62.2
2016	1.0	0.0	0.0	0.0	0.0	0.0	0.0	64.8	0.0	0.0	0.0	65.9
2017	0.0	0.0	0.8	0.0	0.0	0.0	0.2	49.0	0.0	0.0	0.0	50.0
2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	56.4	0.0	0.0	0.0	56.4

<sup>&</sup>lt;sup>26</sup> Commercial and Residential projects can be a combination of RE and EE measures. Therefore, the data presented includes the EE generation for those projects, but it is assigned to the applicable RE technology.

<sup>&</sup>lt;sup>27</sup> 98% of RSIP projects are accompanied by energy efficiency measures These are typically identified during the required energy assessment required by the program. See the Residential Solar Investment Program case study for more information.

<sup>&</sup>lt;sup>28</sup> Every RSIP project has HES IE or HES equivalent. Solar for All also include deeper EE measures (see case study).

Fiscal Year	AD	Biomass	СНР	EE <sup>28</sup>	Fuel Cell	Geothermal	Hydro	PV	Solar Thermal	Wind	Other/ None	Total
2019	0.0	0.0	0.6	0.0	0.0	0.0	1.0	62.8	0.0	0.0	0.0	64.3
2020	0.3	0.0	0.0	0.0	7.8	0.0	0.0	65.8	0.0	0.0	0.0	74.0
2021	0.0	0.0	0.0	0.0	0.0	0.0	0.0	66.1	0.0	0.0	0.0	66.1
2022	0.0	0.0	0.0	0.0	0.0	0.0	0.9	21.2	0.0	0.0	0.0	22.2
Total	1.3	0.6	5.3	0.0	22.6	0.0	3.0	471.8	0.0	5.0	0.0	509.8
					Expected Lifeti	me Savings or	Generation (MW	/h)				
2012	0	0	0	0	0	0	0	55,238	0	0	0	55,238
2013	0	0	81,008	4,862	1,166,832	0	0	226,901	0	0	0	1,479,603
2014	0	0	354,780	59,724	0	61	0	580,974	0	0	0	995,539
2015	0	0	31,930	1,591,514	0	61	96,579	1,586,005	0	118,260	0	3,424,349
2016	106,171	0	0	114,448	0	712	0	1,885,585	655	0	0	2,107,571
2017	0	0	94,017	87,951	0	584	20,711	1,465,202	0	0	697	1,669,161
2018	0	0	0	174,748	0	236	0	1,690,678	0	0	910	1,866,572
2019	0	0	65,197	1,527,339	0	512	107,063	1,880,532	0	0	0	3,580,643
2020	31,536	0	0	269,684	618,106	574	0	1,956,988	0	0	0	2,876,888
2021	0	0	0	226,317	0	949	0	1,987,519	0	0	0	2,214,786
2022	0	0	0	282,408	0	982	96,579	639,410	0	0	0	1,019,378
Total	137,707	0	626,932	4,338,994	1,784,938	4,669	320,932	13,955,033	655	118,260	1,607	21,289,727

Solar PV deployment makes up the largest portion of Connecticut Green Bank's projects by technology: about 81% of all clean energy projects deployed are from solar PV. When comparing deployment to clean energy production, solar PV produces the most energy (66% of all clean energy production), fuel cells also contribute a large proportion given the efficiency of the technology (8% of all clean energy production), and energy efficiency is saving energy (20% from energy savings). The Green Bank also supports additional deployment of energy efficiency not captured in the above tables by requiring an energy assessment for all residential solar PV projects incentivized through the Residential Solar Investment Program (RSIP). RSIP-wide, energy assessments have been performed for an estimated 98% of completed RSIP projects, of which approximately 87% were performed through the utility-administered Home Energy Solutions (HES) program or via the DOE Home Energy Score (DOE HES) overall. If the Green Bank were to include residential energy assessments (or audits) in the number of projects supported through its residential solar PV program, then nearly 55% of all projects are energy efficiency.

### TABLE 19. GREEN BANK PROJECT TYPES BY FY CLOSED<sup>29</sup>

Fiscal Year	EE <sup>30</sup>	RE	RE/EE	Other/None	Total
	<u> </u>	# F	Projects		
2012	0	288	0	0	288
2013	4	1,109	1	0	1,114
2014	104	2,337	7	0	2,448
2015	135	6,246	77	0	6,458
2016	125	6,876	233	2	7,236
2017	385	3,978	503	7	4,873
2018	1,348	4,739	530	21	6,638
2019	5,061	5,952	658	16	11,687
2020	1,236	6,358	721	6	8,321
2021	1,300	4,790	891	11	6,992
2022	1,509	1,577	320	12	3,418
Total	11,207	44,250	3,941	75	59,473
			MW		
2012	0.0	1.9	0.0	0.0	1.9
2013	0.0	23.4	0.1	0.0	23.5
2014	0.0	22.8	0.6	0.0	23.4
2015	0.0	60.4	1.8	0.0	62.2
2016	0.0	63.7	2.2	0.0	65.9
2017	0.0	46.1	3.9	0.0	50.0
2018	0.0	51.2	5.2	0.0	56.4
2019	0.0	59.2	5.1	0.0	64.3
2020	0.0	68.5	5.5	0.0	74.0
2021	0.0	59.4	6.6	0.0	66.1
2022	0.0	19.1	3.0	0.0	22.2
Total	0.0	475.8	33.9	0.0	509.8
	E	Expected Lifetime Sa	vings or Gener	ation (MWh)	
2012	0	55,238	0	0	55,238
2013	4,862	1,471,866	2,875	0	1,479,603
2014	59,724	918,177	17,638	0	995,539
2015	1,591,514	1,779,345	53,490	0	3,424,349
2016	114,448	1,907,776	85,347	0	2,107,571
2017	87,951	1,423,725	156,788	697	1,669,161
2018	174,425	1,487,512	203,725	910	1,866,572
2019	1,527,339	1,837,398	215,906	0	3,580,643

<sup>&</sup>lt;sup>29</sup> Note that projects that are part of the Residential Solar Investment Program have an EE component not reflected in this table.

<sup>&</sup>lt;sup>30</sup> Every RSIP project has HES IE or HES equivalent. Solar for All also include deeper EE measures (see case study).

Fiscal Year	EE <sup>30</sup>	RE	RE/EE	Other/None	Total
2020	269,684	2,373,700	233,503	0	2,876,888
2021	226,317	1,703,290	285,178	0	2,214,786
2022	282,408	545,702	191,268	0	1,019,378
Total	4,338,671	15,503,730	1,445,719	1,607	21,289,727

# The Green Bank Model

# Assets – Current and Non-Current

The Connecticut Green Bank's successful shift to a financing model from one formerly driven by grants and subsidies is evidenced by a net positive change in assets since its inception. The growth of the Green Bank's financing programs has led to a steady increase in non-current assets over time as more and more loans and leases are closed. Since 2013, the Green Bank's balance sheet has grown by a factor of 2.8x representing the value of our investments.

#### Table 20. Current and Non-Current Assets

	Year Ended June 30,									
	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Current Assets										
Cash and cash equivalents	\$ 52,277,220	\$ 42,861,047	\$ 8,156,093	\$ 18,947,214	\$ 19,830,102	\$ 37,148,283	\$ 48,072,061	\$ 39,893,649	\$ 71,411,034	\$ 68,105,014
Receivables:										
Accounts	4,210,087	3,892,590	3,250,767	1,774,989	1,017,356	403,727	1,430,622	35,155	4,547,770	1,795,314
Program loans	9,547,825	9,038,575	4,396,615	3,756,932	2,138,512	1,910,048	1,378,242	10,264,825	652,447	
Utility remittance	2,041,786	2,044,619	2,214,775	1,893,965	2,377,065	2,507,659	2,670,634	2,518,850	3,402,401	2,604,826
Solar lease notes	1,016,267	990,505	967,530	942,056	908,541	869,831	845,479	803,573	766,086	704,032
SBEA promissory notes	1,129,900	1,185,782	1,549,492	1,709,491					-	
Leases receivable	987,476	1,058,634							-	
Interest	1,162,737	1,171,584	-				-		-	
Other	2,085,934	111,123	2,298,036	3,004,781	1,642,417	771,083	430,002	313,228	303,147	145,521
Prepaid expenses and other assets	1,554,577	2,264,815	1,925,122	1,846,104	1,847,848	10,012,025	4,245,806	1,030,251	619,639	520,814
Contractor loans		-					2,272,906	3,112,663	-	
Prepaid warranty management	261,131	259,148	259,148	259,148	259,148					
Total Current Assets	76,274,940	64,878,422	25,017,578	34,134,680	30,020,989	53,622,656	61,345,752	57,972,194	81,702,524	73,875,521
Noncurrent Assets										
Restricted cash and cash equivalents	21,645,395	21,900,295	14,909,508	16,667,797	24,368,185	22,063,406	9,749,983	8,799,005	9,513,715	9,536,656
Investments	912,217	1,231,792	3,031,135	3,288,657	3,328,531	3,328,531	4,492,282	2,600,000	2,600,000	1,000,000
Receivables										
Program loans	82,287,432	82,898,451	81,285,206	64,800,014	43,525,021	40,296,113	31,889,275	30,253,119	12,750,457	3,788,094
Solar lease notes	1,987,394	2,969,206	3,979,704	5,361,206	6,358,184	7,242,822	8,162,635	9,015,437	9,778,315	10,536,136
Renewable energy credits	229,019	348,716	407,360	468,736	547,556	654,767	812,770	933,054	1,069,390	1,217,491
SBEA promissory notes	1,275,487	690,752	968,608	1,799,007			-			
Leases receivable	16,281,320	17,049,036					-			
Other	4,122,609	3,163,239					-			
Prepaid warranty management, less current portion	3,221,310	3,466,587	3,725,735	3,984,883	4,234,756		-			
Fair Value of interest rate swap	93,107				171,478		-			
Capital assets, net of depreciation and amortization	76,164,896	79,694,398	79,971,996	80,523,040	73,417,221	61,510,207	58,114,914	26,971,087	3,074,337	362,505
Asset retirement obligation, net						2,535,104	2,261,472	1,029,196		
Total noncurrent assets	208,220,186	213,412,472	188,279,252	176,893,340	155,950,932	137,630,950	115,483,331	79,600,898	38,786,214	26,440,882
Total Assets	\$ 284,495,126	\$ 278,290,894	\$ 213,296,830	\$ 211,028,020	\$ 185,971,921	\$ 191,253,606	\$ 176,829,083	\$ 137,573,092	\$ 120,488,738	\$ 100,316,403

# Ratio of Public Funds Invested

As highlighted below in Figure 1 and Figure 2, the Connecticut Green Bank has moved toward this model by increasing the overall ratio of financing to subsidies. In addition, it should be noted that funds used for subsidies through the RSIP (including administrative and financing costs) are recovered through the sale of SHRECs to the electric distribution companies (i.e., Avangrid and Eversource Energy) through 15-year Master Purchase Agreements ("MPA"). The declining incentive block design of the RSIP means that the subsidies continue to decrease at an increasing rate and the private capital sourced increases at an increasing rate. This trend has developed even as total investment in clean energy has increased to over \$2.0 billion in total from 2012 through 2022. In this way the Connecticut Green Bank has been able to do more at a faster pace while managing ratepayer resources more efficiently.

#### FIGURE 1. GREEN BANK CAPITAL DEPLOYMENT BY FY CLOSED

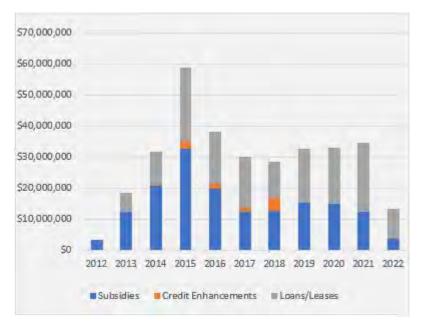


FIGURE 2. CUMULATIVE GREEN BANK FUNDS INVESTED BY TYPE BY FY CLOSED

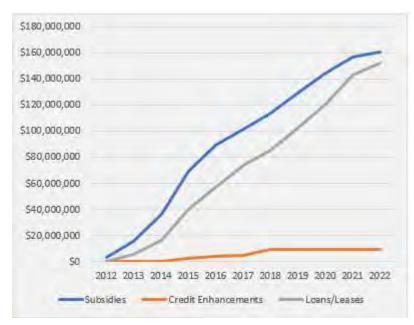


TABLE 21. GREEN BANK RATIO OF CAPITAL INVESTED AS SUBSIDIES, CREDIT ENHANCEMENTS, AND LOANS AND LEASES BY FY CLOSED<sup>31</sup>

Fiscal Year	Subsidies (Grants & Incentives)	% Subsidies	Credit Enhancements <i>(LLR &amp; IRB)</i>	% Credit Enhancements	Loans and Leases (includes sell downs)	% Loans and Leases	Total
2012	\$3,401,642	100%	\$0	0%	\$0	0%	\$3,401,642
2013	\$12,443,213	67%	\$6,609	0%	\$6,010,302	33%	\$18,460,123
2014	\$20,637,392	65%	\$516,623	2%	\$10,692,059	34%	\$31,846,075
2015	\$32,842,367	56%	\$1,961,111	3%	\$23,905,257	41%	\$58,708,735
2016	\$19,850,676	52%	\$1,518,620	4%	\$16,676,298	44%	\$38,045,595
2017	\$12,385,377	41%	\$1,237,754	4%	\$16,472,316	55%	\$30,095,447
2018	\$12,600,658	44%	\$4,308,452	15%	\$11,571,058	41%	\$28,480,168
2019	\$15,275,585	47%	\$30,779	0%	\$17,232,467	53%	\$32,538,831
2020	\$14,909,468	45%	\$0	0%	\$18,146,479	55%	\$33,055,947
2021	\$12,303,121	36%	\$0	0%	\$22,226,535	64%	\$34,529,656
2022	\$3,670,893	28%	\$0	0%	\$9,610,090	72%	\$13,280,982
Total	\$160,320,391	50%	\$9,579,948	3%	\$152,542,861	47%	\$322,443,201

# Creation of Private Investment Opportunities

As stated above, the Connecticut Green Bank's approach to leveraging limited public resources has created new opportunities for the private market investment. These financial innovations have broad impact in Connecticut and beyond. In FY 2022, the Green Bank, was catalyzed upward of \$22.2 million dollars of clean energy financings. These include:

#### Smart-E

The Smart-E residential loan program is a financing program developed in partnership with Energize CT and local lenders that uses a credit enhancement (i.e., \$2 million loan loss reserve) to stimulate the market for residential energy efficiency (including high efficiency heating and cooling equipment and insulation), solar PV, energy storage, and health and safety loans in Connecticut. Through the product, the Connecticut Green Bank lowers the cost of capital for Connecticut residential customers seeking to clean energy upgrades and reduces the loan performance risks to lenders. The loan loss reserve is used to encourage lenders to offer below market interest rates and longer maturities for unsecured loans, mitigates their losses, and encourages customers to undertake measures that would prove uneconomical at higher interest rates.

#### CGB CPACE Portfolio

CGB funded \$3.2MM worth of new CPACE loans for its portfolio.

#### State Solar PPA Debt

The Green Bank provided \$1.5MM worth of debt to PPA State to fund supporting state solar Power Purchase Agreement projects.

<sup>&</sup>lt;sup>31</sup> This table excludes the loan loss reserves for the Smart-E loan due to its rolling nature. The loan loss reserves in this table are calculated at the close of the loan and are not updated to reflect paid down principal.

#### Municipal Solar PPA Debt

The Green Bank provided \$740K worth of debt to PPA State to fund supporting municipal solar Power Purchase Agreement projects.

#### Other PPA Development.

The Green Bank advanced \$300,000 in debt to Inclusive Solar Manager CT I for two commercial solar PPA projects. These projects are for solar at a a school and another located at a housing authority. In addition, the Green Bank purchased commercial PPA projects for \$96k to support PPA growth in the state. Further, the Green Bank expanded the commercial solar lending facility with Skyview Ventures in CT by deploying a further \$1M against 6 PPA projects at two schools, a senior center and assisted facility.

#### SBEA/BEA

The Green Bank purchased three tranches of loans at discount for \$819K which will earn the CGB \$46K in effective present value interest. The overall facility with Amalgamated bank that uspports these purchases and that has successfully recapitalized the SBEA program was renewed.

#### Posigen Loan Restructure

The Green Bank restructured a loan of \$6.9MM with Posigen that supported the organization's LMI Solar program. This restructuring our PosiGen facility by creating a Junior facility with PosiGen allows for liquidity to Posigen.

#### Budderfly Loan facility

The Green Bank funded a \$5MM loan facility with Budderfly to help finance energy efficiency improvements for quick serve restaurants and other small businesses. This investment came to the Green Bank through our open RFP for capital solutions.

# Societal Benefits – E<sup>4</sup> Framework

### Societal Benefits and the Evaluation Framework

One of the Connecticut Green Bank's evaluation activities is intended to understand how the increase in investment and deployment of clean energy supported by the Green Bank results in benefits to society, including economy, environment, energy, and equity (also known as the E<sup>4</sup>). Working with internal and external subject matter experts, the Connecticut Green Bank has established an evaluation framework to guide the assessment, monitoring and reporting of the program impacts and processes, including, but not limited to economy, environmental, energy, and equity benefits arising from clean energy investment. The evaluation framework can be found here<sup>32</sup>.

<sup>&</sup>lt;sup>32</sup> CGB Evaluation Framework: <u>https://www.ctgreenbank.com/wp-content/uploads/2018/03/CGB\_DECD\_Jobs-Study\_Fact-Sheet.pdf</u>

### Societal Benefits: Economy - Jobs

The Connecticut Green Bank stimulates economic activity in the state through its program related and strategic lending and investing. This economic activity can be measured by job creation. The Green Bank, in conjunction with the Connecticut Department of Economic and Community Development commissioned a study by Navigant Consulting in 2010 to quantify those jobs. This study was updated in 2016 and in 2018 and is the basis for how the Green Bank measures its impact on job creation. This study and calculator were reviewed by the Connecticut Department of Economic and Community Development which deemed them a reasonable estimation and an appropriate tool for assessing this impact. For more information on this study and the methodology, click <u>here<sup>33</sup></u>. An overview of our Jobs methodology can be found <u>here<sup>34</sup></u>. Essentially, investments into clean energy can be translated into manufacturing, engineering, installation, and project management jobs in the clean energy sector.

TABLE 22. GREEN BANK JOB YEARS SUPPORTED BY FY CL	LOSED 35
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Fiscal Year	Direct Jobs	Indirect and Induced Jobs	Total Jobs
2012	58	93	151
2013	579	1,161	1,740
2014	596	952	1,549
2015	1,720	2,660	4,380
2016	1,949	3,101	5,050
2017	870	1,193	2,063
2018	955	1,244	2,199
2019	1,399	1,832	3,231
2020	1,103	1,455	2,558
2021	1,110	1,444	2,554
2022	540	706	1,246
Total	10,879	15,841	26,720

# Societal Benefits: Economy - Tax Revenue

The aforementioned economic stimulation by the Connecticut Green Bank also generates tax revenue through personal and corporate income taxes as well as sales and use taxes. Tax revenues go into the State's General Fund, where they are used for a wide variety of public benefit activities such as education, transportation, and public safety. In 2018, the Green Bank engaged Navigant Consulting to conduct a study on the levels of this revenue generation. The result of this study is the Navigant Tax Calculator. The Green Bank has adopted this calculator to estimate the impact of its projects to state tax revenues. This study and calculator were reviewed by the Connecticut Department of Revenue Services which found them to be both a reasonable estimation and an appropriate tool for assessing this impact. For

<sup>&</sup>lt;sup>33</sup> Clean Energy Jobs in Connecticut: <u>http://ctgreenbank.com/wp-content/uploads/2017/02/CTGReenBank-Clean-Energy-Jobs-CT-August102016.pdf</u>

<sup>&</sup>lt;sup>34</sup> CGB Economic Development Factsheet: <u>https://www.ctgreenbank.com/wp-content/uploads/2018/03/CGB\_DECD\_Jobs-Study\_Fact-Sheet.pdf</u>

<sup>&</sup>lt;sup>35</sup> See Appendix for Job Year Factors.

more information on the Navigant study and the methodology, click <u>here</u><sup>36</sup>. An overview of our Tax methodology can be found <u>here</u><sup>37</sup>.

Fiscal Year	Individual Income Tax Revenue Generated	Corporate Tax Revenue Generated	Sales Tax Revenue Generated	Total Tax Revenue Generated
2012	\$267,742	\$79,970	\$0	\$347,712
2013	\$2,895,068	\$925,510	\$4,143,940	\$7,964,519
2014	\$2,807,482	\$1,753,691	\$811,104	\$5,372,277
2015	\$8,740,049	\$4,473,361	\$3,994,256	\$17,207,666
2016	\$9,265,086	\$4,034,490	\$2,855,474	\$16,155,050
2017	\$4,137,889	\$2,366,463	\$1,908,401	\$8,412,753
2018	\$5,077,268	\$3,045,564	\$2,263,644	\$10,386,476
2019	\$7,351,892	\$4,332,627	\$5,524,192	\$17,208,710
2020	\$5,994,353	\$3,131,685	\$2,563,111	\$11,689,149
2021	\$5,888,940	\$3,318,613	\$2,869,670	\$12,077,223
2022	\$2,840,718	\$1,749,754	\$2,214,736	\$6,805,208
Total	\$55,266,487	\$29,211,728	\$29,148,529	\$113,626,745

#### TABLE 23. GREEN BANK TAX REVENUES GENERATED BY FY CLOSED<sup>38</sup>

# Societal Benefits: Environment – Emissions and Equivalencies

The Green Bank assesses the impact of its projects in terms of local environmental protection benefits produced by projects. These benefits are primarily in the form of cleaner air in the state and are measured in terms of tons of Carbon Dioxide (CO2) and pounds of Nitrous Oxide (NOx), Sulfur Dioxide (SOx) and particulate matter (PM 2.5) not emitted. The Green Bank has developed its measurement methodology for these measurements in conjunction with outside experts from the Connecticut Department of Energy and Environmental Protection and at the United States Environmental Protection Agency. These agencies have found the methodology to be a reasonable estimation and an appropriate tool for assessing this impact. For more information on this methodology, click <u>here<sup>39</sup></u>. For more information on the EPA's AvERT, click <u>here<sup>40</sup></u>. Note that the lifetime values are based on the aggregation of projects' impact for one year multiplied by the useful life of the technology for each project.

#### TABLE 24. GREEN BANK AVOIDED EMISSIONS BY FY CLOSED<sup>41</sup>

CO2 Emissions Avoided (tons)						
Fiscal Year	Annual	Lifetime	Green Bank Investment (\$) / Project Lifetime Tons of Avoided CO <sub>2</sub> Emissions			

<sup>&</sup>lt;sup>36</sup> Tax Report: <u>https://www.ctgreenbank.com/wp-content/uploads/2018/09/Tax-Study\_Final\_Report\_01-19-18.pdf</u>

<sup>&</sup>lt;sup>37</sup> Tax Methodology: <u>https://www.ctgreenbank.com/wp-content/uploads/2018/09/CGB-Eval-Tax-Methodology-7-24-18.pdf</u>

<sup>&</sup>lt;sup>38</sup> See Appendix for Average Emission Rates.

<sup>&</sup>lt;sup>39</sup> CGB Environmental Impact Factsheet: <u>https://www.ctgreenbank.com/wp-content/uploads/2017/05/CGB-Environmental-Impact-051617.pdf</u>

<sup>&</sup>lt;sup>40</sup> Environmental Protection Agency AvERT User Manual: <u>https://www.ctgreenbank.com/wp-</u>

content/uploads/2017/05/AVERT\_fact\_sheet\_user\_manual\_03-01-17.pdf

<sup>&</sup>lt;sup>41</sup> See Appendix for Average Emission Rates.

0040	4.040	04.044	\$100 F0
2012	1,242 13,254	31,041 210,370	\$109.58 \$87.75
2013			
	15,647	358,796	\$88.76
2015	114,519	1,887,559	\$31.10
2016	47,636	1,127,537	\$33.74
2017	35,444	856,242	\$35.15
2018	42,195	1,016,828	\$28.01
2019	111,653	1,920,208	\$16.95
2020	58,703	1,266,654	\$26.10
2021	52,652	1,214,299	\$28.44
2022	27,037	542,837	\$24.47
Total	519,982	10,432,372	\$30.91
	NOx E	missions Avoided (	-
-			Green Bank Investment (\$) / Project Lifetime Pounds of
Fiscal Year	Annual	Lifetime	Avoided NO <sub>x</sub> Emissions
2012	1,638	40,938	\$83.09
2013	70,846	822,165	\$22.45
2014	20,437	471,283	\$67.57
2015	112,274	1,946,817	\$30.16
2016	50,677	1,196,889	\$31.79
2017	32,280	781,204	\$38.52
2018	39,501	955,924	\$29.79
2019	100,611	1,763,329	\$18.45
2020	84,992	1,504,725	\$21.97
2021	50,002	1,162,008	\$29.72
2022	24,740	503,621	\$26.37
Total	587,997	11,148,904	\$28.92
·	SOx E	missions Avoided (	oounds)
			Green Bank Investment (\$) / Project Lifetime Pounds of
Fiscal Year	Annual	Lifetime	Avoided SO <sub>x</sub> Emissions
2012	2,116	52,907	\$64.30
2013	55,541	699,388	\$26.39
2014	22,860	526,676	\$60.47
2015	104,341	1,836,680	\$31.96
2016	41,147	959,272	\$39.66
2017	23,329	563,479	\$53.41
2018	32,841	795,267	\$35.81
2019	87,720	1,532,393	\$21.23
2020	68,791	1,252,357	\$26.39
2021	43,157	1,001,569	\$34.48
2022	21,522	437,116	\$30.38
Total	503,366	9,657,105	\$33.39
I	-	Emissions Avoided	(pounds)
			Green Bank Investment (\$) / Project Lifetime Pounds of
Fiscal Year	Annual	Lifetime	Avoided PM 2.5 Emissions
2012	111	2,772	\$1,227.29
2013	473	11,604	\$1,590.82
		04 700	\$1,002.42
2014	1,353	31,769	φ1,00Z.4Z
	1,353 9,185	153,167	\$383.30
2014 2015 2016			

2018	3,563	86,062	\$330.93
2019	8,941	154,167	\$211.06
2020	4,580	103,484	\$319.43
2021	4,433	102,697	\$336.23
2022	2,070	41,156	\$322.70
Total	41,810	857,422	\$376.06

To help put this environmental impact into everyday terms, the Green Bank calculates the environmental "equivalencies" of reduced emissions, as shown in Table 25. The Green Bank calculates environmental equivalencies using factors from the EPA's environmental equivalency calculator, which was also reviewed and deemed to be a reasonable estimation of impact by the Connecticut Department of Energy and Environment. The calculator translates abstract reductions into everyday equivalencies. For example, avoided carbon dioxide emissions can translate to avoided emissions from vehicles, or the number of tree seedlings needed to sequester an equivalent amount of carbon. For more information on this methodology, click here<sup>42</sup>. The EPA environmental equivalency calculator can be found here<sup>43</sup>.

	Greenhouse gas emissions from:								
	Passenger vehic	les driven for one year	Miles driven by an av	erage passenger vehicle					
Fiscal Year	Annual	Lifetime of Asset	Annual	Lifetime of Asset					
2012	245	6,124	2,830,887	70,772,178					
2013	2,615	41,505	30,218,761	479,629,635					
2014	3,087	70,788	35,673,914	818,030,985					
2015	22,594	372,404	261,095,146	4,303,511,262					
2016	9,398	222,456	108,607,883	2,570,711,346					
2017	6,993	168,931	80,809,723	1,952,176,726					
2018	8,325	200,614	96,202,833	2,318,302,106					
2019	22,029	378,846	254,562,578	4,377,949,425					
2020	11,582	249,903	133,838,161	2,887,888,824					
2021	10,388	239,574	120,043,068	2,768,522,049					
2022	5,334	107,098	61,643,031	1,237,632,560					
Total	102,589	2,058,244	1,185,525,985	23,785,127,095					
		CO <sub>2</sub> en	nissions from:						
	Gallons of g	asoline consumed	Homes' energy	y use for one year					
Fiscal Year	Annual	Lifetime of Asset	Annual	Lifetime of Asset					
2012	126,748	3,168,697	136	3,391					
2013	1,352,991	21,474,554	1,448	22,982					
2014	1,597,235	36,625,865	1,709	39,197					
2015	11,690,065	192,681,972	12,511	206,208					
2016	4,862,722	115,098,974	5,204	123,179					
2017	3,618,110	87,405,200	3,872	93,541					
2018	4,307,309	103,797,804	4,610	111,084					
2019	11,397,581	196,014,806	12,198	209,775					
2020	5,992,363	129,300,025	6,413	138,377					

TABLE 25. GREEN BANK GREENHOUSE GAS EQUIVALENCIES (BASED ON REDUCTIONS OF CO2 TONS) BY FY CLOSED

<sup>&</sup>lt;sup>42</sup> <u>http://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references</u>

<sup>&</sup>lt;sup>43</sup> EPA Greenhouse Gas Equivalencies Calculator: <u>https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator</u>

2021	5,374,712	123,955,592	5,752	132,657
2022	2,759,956	55,412,770	2,954	59,303
Total	53,079,792	1,064,936,259	56,806	1,139,695
		Carbon see	questered by:	
	Tree seedling	s grown for 10 years	Acres of U.S.	forests in one year
Fiscal Year	Annual	Lifetime of Asset	Annual	Lifetime of Asset
2012	18,625	465,635	1,380	34,501
2013	198,820	3,155,652	14,732	233,818
2014	234,711	5,382,113	17,391	398,788
2015	1,717,837	28,314,312	127,283	2,097,950
2016	714,569	16,913,613	52,946	1,253,215
2017	531,676	12,844,056	39,395	951,681
2018	632,952	15,252,924	46,899	1,130,166
2019	1,674,857	28,804,067	124,099	2,134,239
2020	880,568	19,000,435	65,246	1,407,838
2021	789,806	18,215,079	58,521	1,349,647
2022	405,571	8,142,819	30,051	603,343
Total	7,799,992	156,490,706	577,941	11,595,185

### Social Cost of Carbon

Using the methodology adopted by the Obama Administration in 2014, the Green Bank has estimated the total avoided economic costs of the carbon emissions avoided as a result of these projects. This was done by forecasting out when the projected estimated emissions savings are likely to occur and then applying the prices identified by the White House Council on Environmental Quality at the various discount rates adjusted to 2022 dollars<sup>44</sup>.

Table 26 shows the annual forecasted emissions avoided and the related social cost of those emissions at various discount rates. Using the 3% discount rate, in alignment with the initial study, the overall value of the Green Banks projects in terms of emissions avoided is \$505,001,171.

#### TABLE 26. AVOIDED CO2 EMISSIONS FORECAST AND THE SOCIAL COSTS OF CARBON

	Estimated CO2	Economic Value of Avoided Emissions at Different Discount Rates							
Year	annual emissions avoided	5% Average	3% Average	2.5% Average	High Impact (95th Pct at 3%)				
2011		\$0	\$0	\$0	\$0				
2012	5,140	\$59,363	\$172,691	\$275,227	\$485,694				
2013	9,742	\$112,525	\$337,576	\$542,167	\$951,349				
2014	28,079	\$324,309	\$1,002,408	\$1,592,060	\$2,859,812				
2015	128,605	\$1,485,382	\$4,726,216	\$7,426,911	\$13,638,509				
2016	180,096	\$2,080,105	\$6,807,618	\$10,589,628	\$19,855,552				
2017	218,269	\$2,521,003	\$8,708,920	\$13,063,380	\$24,751,668				
2018	259,932	\$3,002,213	\$10,644,210	\$16,102,779	\$30,567,988				

<sup>44</sup> https://obamawhitehouse.archives.gov/sites/default/files/omb/inforeg/scc tsd final clean 8 26 16.pdf

	Estimated CO2	Economic Value of Avoided Emissions at Different Discount Rates							
Year	annual emissions avoided	5% Average	3% Average	2.5% Average	High Impact (95th Pct at 3%)				
2019	364,349	\$4,590,798	\$15,302,661	\$22,953,991	\$44,377,716				
2020	429,403	\$5,410,478	\$18,485,799	\$27,503,262	\$54,104,777				
2021	475,167	\$5,987,100	\$20,954,849	\$30,933,349	\$61,367,773				
2022	524,444	\$6,607,989	\$23,127,962	\$34,691,943	\$69,383,887				
2023	523,566	\$7,146,670	\$23,638,985	\$35,183,606	\$70,916,955				
2024	523,566	\$7,146,670	\$24,188,729	\$35,733,349	\$72,566,187				
2025	520,787	\$7,108,746	\$24,607,199	\$36,090,558	\$73,821,596				
2026	449,502	\$6,607,675	\$21,710,933	\$32,094,422	\$65,132,798				
2027	443,783	\$6,523,603	\$21,900,666	\$32,152,042	\$65,701,999				
2028	440,983	\$6,945,479	\$22,225,532	\$32,412,234	\$66,213,564				
2029	425,741	\$6,705,425	\$21,904,390	\$31,739,014	\$65,266,141				
2030	360,916	\$5,684,421	\$18,569,110	\$27,285,223	\$56,465,253				
2031	345,814	\$5,809,668	\$18,155,214	\$26,506,612	\$55,191,851				
2032	338,363	\$5,684,492	\$18,119,317	\$26,290,774	\$55,068,513				
2033	325,896	\$5,817,243	\$17,793,920	\$25,664,308	\$54,066,141				
2034	320,329	\$5,717,868	\$17,826,295	\$25,562,234	\$54,151,575				
2035	320,329	\$6,054,213	\$18,162,640	\$25,898,579	\$55,160,611				
2036	318,000	\$6,010,196	\$18,364,487	\$26,044,182	\$56,095,161				
2037	313,767	\$6,259,649	\$18,449,493	\$26,026,963	\$56,336,843				
2038	306,248	\$6,109,641	\$18,328,923	\$26,046,364	\$55,951,449				
2039	281,541	\$5,912,368	\$17,145,866	\$24,240,708	\$52,324,454				
2040	235,769	\$4,951,156	\$14,605,911	\$20,547,298	\$44,560,405				
2041	200,396	\$4,418,734	\$12,624,954	\$17,674,935	\$38,506,109				
2042	165,268	\$3,644,164	\$10,585,429	\$14,750,188	\$32,276,881				
2043	125,677	\$2,903,131	\$8,049,591	\$11,348,603	\$24,940,535				
2044	78,896	\$1,822,492	\$5,136,113	\$7,207,127	\$15,905,383				
2045	38,404	\$927,451	\$2,540,410	\$3,548,509	\$7,822,850				
	10,432,372	\$158,126,977	\$505,001,171	\$735,856,245	\$1,516,787,979				

# Societal Benefits: Environment – Public Health

The avoided emissions described above result in cleaner air which correlates to public health benefits. Air pollution influences the prevalence and severity of asthma, bronchitis, coronary and respiratory disease, and even death.

With the adoption of the AvERT tool for assessing environmental impacts, the Green Bank is able to leverage this information to gauge public health benefits of its activities. The Green Bank assesses public health benefits and illnesses, or deaths avoided using data from the AvERT tool. After the Connecticut Department of Public Health and Connecticut Department of Energy & Environmental Protection reviewed the EPA's Co-Benefit Risk Assessment Tool (CoBRA) in 2017 and found it to be a reasonable estimation and an appropriate tool for assessing this impact, the Green Bank's Board of Directors approved its use. The CoBRA tool reports back low and high estimates of avoided incidents, locations, and associated costs of the health outcomes described above. These public health impacts are quantified

and presented as total estimated public health savings of the policies in dollars. For more information on this methodology, click <u>here</u><sup>45</sup>. An overview of CoBRA can be found <u>here</u><sup>46</sup>. The factors used to measure impact from CoBRA can be found in the appendix.

TABLE 27. ECONOMIC SAVINGS DUE TO PUBLIC HEALTH FROM GREEN BANK PROJECTS (BASED ON REDUCTIONS OF EMISSIONS) BY
FY CLOSED

Fiscal Year	An	nual	Life	etime	Green Bank Investme (\$) / Lifetime Public Health Savings		
	Low	High	Low	High	Low	High	
2012	\$42,865	\$96,778	\$1,071,624	\$2,419,440	\$3.17	\$1.41	
2013	\$1,021,887	\$2,309,385	\$12,873,814	\$29,088,027	\$1.43	\$0.63	
2014	\$528,321	\$1,193,030	\$12,255,640	\$27,672,792	\$2.60	\$1.15	
2015	\$3,151,380	\$7,123,931	\$54,606,282	\$123,393,402	\$1.08	\$0.48	
2016	\$1,612,100	\$3,640,184	\$38,428,982	\$86,769,361	\$0.99	\$0.44	
2017	\$1,190,439	\$2,689,376	\$28,857,699	\$65,192,010	\$1.04	\$0.46	
2018	\$1,417,856	\$3,203,443	\$34,179,845	\$77,222,975	\$0.83	\$0.37	
2019	\$2,889,702	\$6,541,566	\$50,808,500	\$115,030,969	\$0.64	\$0.28	
2020	\$1,878,203	\$4,253,483	\$37,237,464	\$84,362,104	\$0.89	\$0.39	
2021	\$1,418,416	\$3,214,186	\$32,889,825	\$74,537,063	\$1.05	\$0.46	
2022	\$692,255	\$1,567,901	\$13,926,930	\$31,549,351	\$0.95	\$0.42	
Total	\$15,843,423	\$35,833,263	\$317,136,604	\$717,237,494	\$1.02	\$0.45	

<sup>&</sup>lt;sup>45</sup> <u>https://www.ctgreenbank.com/wp-content/uploads/2018/03/CGB-Eval-PUBLICHEALTH-1-25-18-new.pdf</u>

<sup>&</sup>lt;sup>46</sup> https://www.epa.gov/statelocalenergy/co-benefits-risk-assessment-cobra-health-impacts-screening-and-mapping-tool

# Societal Benefits: Energy – Savings from Solar PV Financing

Working in consultation with the Department of Energy and Environmental Protection and Public Utilities Regulatory Authority, the Green Bank devised a methodology to estimate the savings customers have due to the solar they installed. The methodology takes the actual solar PV production data and assigns a hypothetical expense to that production, had it been purchased from the utilities. This is then compared against the contractual lease, loan, or PPA prices. For more information on this methodology, click <u>here</u><sup>47</sup>. This analysis is only for products where the Green Bank has clear insight to the energy production of systems and the cost. For the PPA, PosiGen, Solar Loan and Solar Lease 2 we are using their actual monthly solar expense and their savings is based on the difference between their hypothetical utility expense and their solar expense cost.

Product	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
Solar Loan	\$0	\$0	\$7,229	\$116,300	\$145,807	\$123,867	\$142,323	\$178,722	\$181,659	\$176,586	\$179,213	\$1,251,706
PPA	\$0	\$0	\$0	\$4,626	\$61,845	\$112,902	\$368,347	\$686,417	\$716,264	\$646,140	\$650,122	\$3,246,663
Solar Lease 2	\$0	\$0	\$1,269	\$68,715	\$403,208	\$416,815	\$500,164	\$692,990	\$776,039	\$771,364	\$635,521	\$4,266,085
PosiGen	\$0	\$0	\$0	(\$35)	\$32,916	\$83,190	\$304,225	\$1,043,116	\$1,128,994	\$1,440,658	\$1,581,062	\$5,614,126
Total	\$0	\$0	\$8,498	\$189,606	\$643,776	\$736,774	\$1,315,059	\$2,601,245	\$2,802,956	\$3,034,748	\$3,045,918	\$14,378,580

#### TABLE 28. ANNUAL SAVINGS BY YEAR

# Societal Benefits: Equity - Investment in Vulnerable Communities

The Green Bank stimulates economic activity in the state through its program related and strategic lending and investing, specifically in vulnerable communities. Investment can be tracked by census tract, or other means, to determine how vulnerable communities benefit from the Green Bank's programs and products. An overview of our Equity methodology can be found <u>here</u><sup>48</sup>. The Comprehensive Plan of the Green Bank has established a goal that by 2025 no less than 40 percent of investment and benefits will inure to vulnerable communities through its incentive and financing programs. To help the Green Bank measure progress, it tracks investments and benefits (e.g., # project units, deployment) in vulnerable communities, with a focus on those communities eligible for Community Reinvestment Act – See Table 29, as well as environmental justice communities<sup>49</sup> – See Table 30.

<sup>&</sup>lt;sup>47</sup> <u>https://www.ctgreenbank.com/wp-content/uploads/2021/09/CGB-Eval-Solar-Methodology-combined-6-8-2021-final.pdf</u>

<sup>&</sup>lt;sup>48</sup> <u>https://www.ctgreenbank.com/wp-content/uploads/2021/10/Equity\_Investment\_in\_Vulnerable\_Communities.pdf</u>

<sup>&</sup>lt;sup>49</sup> As defined by CGS 22a-20a <u>https://portal.ct.gov/DEEP/Environmental-Justice/Environmental-Justice</u>

		# Pro	oject Units <sup>52</sup>		MW				Total Investment			
Fiscal		Over 80%	80% or	% at 80%		Over 80%	80% or Below	% at 80% or			80% or Below	% at 80%
Year	Total	AMI	Below AMI	or Below	Total	AMI	AMI	Below	Total	Over 80% AMI	AMI	or Below
2012	288	273	15	5%	1.9	1.9	0.1	4%	\$9,901,511	\$9,514,915	\$386,596	4%
2013	1,114	1,027	87	8%	23.5	8.1	15.3	65%	\$111,141,216	\$37,829,389	\$73,311,827	66%
2014	2,567	2,181	386	15%	23.4	18.4	5.0	21%	\$107,110,514	\$86,736,906	\$20,373,608	19%
2015	6,749	5,533	1,216	18%	62.2	54.1	8.1	13%	\$320,587,455	\$249,319,939	\$71,267,515	22%
2016	8,311	5,501	2,810	34%	65.5	52.1	13.4	20%	\$319,178,904	\$233,774,001	\$85,404,902	27%
2017	6,146	3,273	2,873	47%	50.0	33.0	17.0	34%	\$180,488,411	\$108,344,425	\$72,143,986	40%
2018	8,383	4,627	3,756	45%	55.3	39.4	15.9	29%	\$218,341,089	\$147,843,213	\$70,497,876	32%
2019	9,250	4,972	4,278	46%	64.1	44.7	19.4	30%	\$271,196,941	\$163,486,172	\$107,710,769	40%
2020	8,572	5,361	3,211	37%	66.3	48.2	18.1	27%	\$256,398,228	\$174,428,512	\$81,969,716	32%
2021	6,649	4,412	2,237	34%	66.0	50.6	15.4	23%	\$260,439,466	\$184,533,504	\$75,905,962	29%
2022	2,772	1,946	826	30%	22.0	16.8	5.1	23%	\$107,227,375	\$79,196,106	\$28,031,268	26%
Total	60,801	39,106	21,695	36%	500.2	367.4	132.8	27%	\$2,162,011,110	\$1,475,007,083	\$687,004,027	32%

TABLE 29. GREEN BANK COMMERCIAL AND RESIDENTIAL<sup>50</sup> ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS ABOVE OR BELOW 80% BY FY CLOSED<sup>51</sup> - CRA ELIGIBLE COMMUNITIES

#### TABLE 30. GREEN BANK COMMERCIAL AND RESIDENTIAL<sup>53</sup> ACTIVITY IN ENVIRONMENTAL JUSTICE COMMUNITIES BY FY CLOSED<sup>54 55</sup>

<sup>54</sup> Excludes projects in unknown bands.

<sup>&</sup>lt;sup>50</sup> Residential Owner-occupied properties of 1-4 units and multifamily housing greater than 4 units. This table has been adjusted to include all the Low-Income Solar Lease (ESA) and Multifamily Affordable Housing projects as 80% or Below AMI regardless of which census tract the project falls into as these programs are designed to serve the LMI market.

<sup>&</sup>lt;sup>51</sup> Excludes projects in unknown bands.

<sup>&</sup>lt;sup>52</sup> For projects in a single-family dwelling or a commercial building the unit count is one and for projects in a multifamily building the unit counter is equal to the number of housing units within the building.

<sup>&</sup>lt;sup>53</sup> Residential Owner-occupied properties of 1-4 units and multifamily housing greater than 4 units. This table has been adjusted to include all the Low-Income Solar Lease (ESA) and Multifamily Affordable Housing projects as 80% or Below AMI regardless of which census tract the project falls into as these programs are designed to serve the LMI market.

<sup>&</sup>lt;sup>55</sup> As defined by CGS 22a-20a <u>https://portal.ct.gov/DEEP/Environmental-Justice/Environmental-Justice</u>

		# Pro	oject Units				MW		Total Investment			
Fiscal		Not EJ	EJ	% EJ		Not EJ	EJ	% EJ		Not EJ	EJ	% EJ
Year	Total	Community	Community	Community	Total	Community	Community	Community	Total	Community	Community	Community
2012	288	244	44	15%	1.9	1.7	0.3	14%	\$9,901,511	\$8,557,222	\$1,344,289	14%
2013	1,114	967	147	13%	23.5	7.8	15.7	67%	\$111,141,216	\$35,101,876	\$76,039,340	68%
2014	2,567	2,100	467	18%	23.4	19.0	4.4	19%	\$107,110,514	\$83,538,748	\$23,571,766	22%
2015	6,749	5,042	1,707	25%	62.2	47.6	14.7	24%	\$320,587,455	\$219,379,219	\$101,208,236	32%
2016	8,314	5,503	2,811	34%	65.9	46.5	19.4	29%	\$320,391,957	\$210,127,789	\$110,264,168	34%
2017	6,146	3,211	2,935	48%	50.0	29.6	20.4	41%	\$180,488,411	\$104,061,686	\$76,426,725	42%
2018	8,388	4,262	4,126	49%	56.4	33.2	23.2	41%	\$221,751,103	\$133,159,998	\$88,591,105	40%
2019	9,251	4,531	4,720	51%	64.3	42.2	22.1	34%	\$271,931,481	\$156,967,678	\$114,963,803	42%
2020	8,580	4,939	3,641	42%	74.0	53.0	21.0	28%	\$275,264,753	\$192,805,053	\$82,459,700	30%
2021	6,664	4,423	2,241	34%	66.1	50.7	15.4	23%	\$261,945,457	\$179,933,974	\$82,011,483	31%
2022	2,783	1,974	809	29%	22.2	16.5	5.6	25%	\$108,220,026	\$78,126,638	\$30,093,388	28%
Total	60,844	37,196	23,648	39%	509.8	347.6	162.2	32%	\$2,188,733,885	\$1,401,759,881	\$786,974,003	36%

# **Community Impacts**

# **Community and Market Descriptions**

Communities across Connecticut are demonstrating leadership by supporting the deployment of clean energy. The Connecticut Green Bank distributes reports to communities on an annual basis to provide them with information about their performance in comparison to others in the state. There are many leaders of clean energy deployment across Connecticut, and we have assembled the "Top 5" in energy, economy, and environment for FY 2022 as well as FY 2012 through FY 2022. It should be noted that in a 2016 United Nations report, an estimated \$90 trillion must be invested globally through 2030 to make progress toward all these Sustainable Development Goals in order to confront climate change.<sup>56</sup> This equates to an average annual investment per capita of approximately \$790<sup>57</sup>.

TABLE 31. THE "TOP 5" ON ENERGY, ECONOMY, AND ENVIRONMENTAL PERFORMANCE - FY 2022 CLOSED ACTIVITY

Municipality	Watts / Capita	Municipality	Investment / Capita	Municipality	Total Lifetime CO2 Emissions (Tons)
Kent	156.0	Bloomfield	\$438.21	Putnam	50,870
Putnam	100.8	Kent	\$398.86	Bridgeport	14,722
Union	39.9	Putnam	\$217.97	Southington	13,021
Avon	36.9	Union	\$167.68	West Hartford	12,722
Stonington	34.3	Bethlehem	\$111.72	Avon	10,753

TABLE 32. THE "TOP 5" ON ENERGY, ECONOMY, AND ENVIRONMENTAL PERFORMANCE - FY 2012 – 2022 CLOSED ACTIVITY

Municipality	Watts / Capita
Colebrook	3,819.2
Windsor	507.0
Canaan	448.8
Somers	441.1
Kent	401.3

Municipality	Investment / Capita
Colebrook	\$17,136.32
Windsor	\$1,981.85
Canaan	\$1,868.66
Bloomfield	\$1,415.97
Woodbridge	\$1,359.43

Municipality	Total Lifetime CO2 Emissions (Tons)
Bridgeport	1,214,336
Hartford	209,531
Waterbury	208,292
Manchester	190,899
Stratford	188,954

<sup>&</sup>lt;sup>56</sup> https://www.un.org/pga/71/wp-content/uploads/sites/40/2017/02/Financing-Sustainable-Development-in-a-time-of-turmoil.pdf

<sup>&</sup>lt;sup>57</sup> \$90,000,000,000/7.6B people/15 years until 2030 = \$790

### Projects In Vulnerable Communities

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

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

CT DEEP's Environmental Justice Program<sup>58</sup> as described <u>here</u> defines Environmental Justice Communities as "Environmental justice community" means (A) a United States census block group, as determined in accordance with the most recent United States census, for which thirty percent or more of the population consists of low income persons who are not institutionalized and have an income below two hundred per cent of the federal poverty level; [,] or (B) a distressed municipality, as defined in subsection (b) of section 32-9p;". Click <u>here</u><sup>59</sup> for more information on Distressed Communities and defined census block groups.

		# Proj	ect Units				MW			Total Inv	estment	
Fiscal Year	Total	Not Vulnerable	Vulnerable	% Vulnerable	Total	Not Vulnerable	Vulnerable	% Vulnerable	Total	Not Vulnerable	Vulnerable	% Vulnerable
2012	288	215	73	25%	1.9	1.5	0.5	23%	\$9,901,511	\$7,675,503	\$2,226,008	22%
2013	1,114	844	270	24%	23.5	6.2	17.3	74%	\$111,141,216	\$27,502,724	\$83,638,492	75%
2014	2,567	1,613	954	37%	23.4	12.5	10.9	46%	\$107,110,514	\$62,602,938	\$44,507,576	42%
2015	6,749	3,921	2,828	42%	62.2	39.8	22.4	36%	\$320,587,455	\$181,614,637	\$138,972,818	43%
2016	8,314	3,540	4,774	57%	65.9	34.1	31.8	48%	\$320,391,957	\$143,897,435	\$176,494,522	55%
2017	6,146	1,950	4,196	68%	50.0	19.2	30.8	62%	\$180,488,411	\$65,438,315	\$115,050,096	64%
2018	8,388	2,819	5,569	66%	56.4	24.1	32.2	57%	\$221,751,103	\$93,054,864	\$128,696,238	58%
2019	13,590	7,377	6,213	46%	64.3	28.2	36.2	56%	\$319,612,686	\$148,334,628	\$171,278,057	54%
2020	9,197	4,025	5,172	56%	74.0	39.9	34.1	46%	\$286,177,632	\$147,698,290	\$138,479,342	48%
2021	7,102	3,354	3,748	53%	66.1	37.2	28.9	44%	\$270,723,458	\$129,296,833	\$141,426,625	52%

TABLE 33. GREEN BANK COMMERCIAL AND RESIDENTIAL<sup>60</sup> ACTIVITY IN VULNERABLE AND NOT VULNERABLE COMMUNITIES BY FY CLOSED<sup>61</sup>

<sup>&</sup>lt;sup>58</sup> <u>https://portal.ct.gov/DEEP/Environmental-Justice/Environmental-Justice</u>

<sup>&</sup>lt;sup>59</sup> <u>https://portal.ct.gov/DEEP/Environmental-Justice/Environmental-Justice-Communities</u>

<sup>&</sup>lt;sup>60</sup> Residential Owner-occupied properties of 1-4 units and multifamily housing greater than 4 units.

<sup>&</sup>lt;sup>61</sup> Excludes projects in unknown communities.

	# Project Units						MW		Total Investment				
Fiscal Year	Total	Not Vulnerable	Vulnerable	% Vulnerable	Total	Not Vulnerable	Vulnerable	% Vulnerable	Total	Not Vulnerable	Vulnerable	% Vulnerable	
2022	3,435	2,022	1,413	41%	22.2	11.7	10.5	47%	\$120,112,932	\$61,442,260	\$58,670,671	49%	
Total	66,890	31,680	35,210	53%	509.8	254.4	255.4	50%	\$2,267,998,874	\$1,068,558,428	\$1,199,440,446	53%	

TABLE 34. COMMERCIAL AND RESIDENTIAL <sup>62</sup> PERFORMANCE INDICATORS BY PARTICIPATION IN METROPOLITAN STATISTICAL
AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS ABOVE OR BELOW 100% BY FY CLOSED <sup>63</sup>

		KW per Projec 1000*MW/tota		Tota	al Investment (\$000s)	per MW	Investment per Project Unit (\$)			
Fiscal Year	Total	Not Vulnerable	Vulnerable	Total	Not Vulnerable	Vulnorable		Not Vulnerable	Vulnerable	
2012	6.7	6.9	6.2	\$5,103	\$5,163	\$4,909	\$34,380	\$35,700	\$30,493	
2013	21.1	7.3	64.0	\$4,739	\$4,453	\$4,840	\$99,768	\$32,586	\$309,772	
2014	9.1	7.8	11.4	\$4,577	\$4,991	\$4,098	\$41,726	\$38,811	\$46,654	
2015	9.2	10.2	7.9	\$5,153	\$4,562	\$6,205	\$47,501	\$46,318	\$49,142	
2016	7.9	9.6	6.7	\$4,865	\$4,222	\$5,555	\$38,536	\$40,649	\$36,970	
2017	8.1	9.8	7.3	\$3,609	\$3,410	\$3,733	\$29,367	\$33,558	\$27,419	
2018	6.7	8.6	5.8	\$3,934	\$3,857	\$3,991	\$26,437	\$33,010	\$23,109	
2019	4.7	3.8	5.8	\$4,969	\$5,269	\$4,735	\$23,518	\$20,108	\$27,568	
2020	8.0	9.9	6.6	\$3,869	\$3,703	\$4,064	\$31,116	\$36,695	\$26,775	
2021	9.3	11.1	7.7	\$4,096	\$3,473	\$4,900	\$38,119	\$38,550	\$37,734	
2022	6.4	5.8	7.4	\$5,421	\$5,258	\$5,604	\$34,967	\$30,387	\$41,522	
Total	7.6         8.0         7.3		\$4,449	\$4,201	\$4,696	\$33,906	\$33,730	\$34,065		

#### TABLE 35. GREEN BANK COMMERCIAL AND RESIDENTIAL<sup>64</sup> RELATIONSHIP OF PERFORMANCE INDICATORS BETWEEN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS ABOVE OR BELOW 100% BY FY CLOSED<sup>65</sup>

	KW per Project Unit	Total Investment per MW (\$000s)	Investment per Project Unit (\$)
Fiscal Year	Ratio of Not Vulnerable to Vulnerable	Ratio of Not Vulnerable to Vulnerable	Ratio of Not Vulnerable to Vulnerable
2012	1.11	1.05	1.17
2013	0.11	0.92	0.11
2014	0.68	1.22	0.83
2015	1.28	0.74	0.94
2016	1.45	0.76	1.10
2017	1.34	0.91	1.22
2018	1.48	0.97	1.43
2019	0.66	1.11	0.73
2020	1.50	0.91	1.37
2021	1.44	0.71	1.02
2022	0.78	0.94	0.73
Total	1.11	0.89	0.99

<sup>&</sup>lt;sup>62</sup> Residential Owner-occupied properties of 1-4 units and multifamily housing greater than 4 units.

<sup>&</sup>lt;sup>63</sup> Excludes projects in unknown bands.

<sup>&</sup>lt;sup>64</sup> Residential Owner-occupied properties of 1-4 units and multifamily housing greater than 4 units.

<sup>&</sup>lt;sup>65</sup> Excludes projects in unknown bands.

### Projects by Income Bands

In addition to tracking funding and clean energy deployment in distressed municipalities, the Green Bank works to ensure that low to moderate income (LMI) census tracts across the entire state benefit from its programs. The Green Bank defines low to moderate income as 100% or less of the Area Median Income (AMI) of a Metropolitan Statistical Area (MSA). Table 38 groups the Green Bank's residential projects by the average area median income (AMI) of their census tract from the American Community Survey (ACS) 5-Year Estimate data. Table 39 groups the Green Bank 's residential projects by the average state median income (SMI) of their census tract from the American Community Survey (ACS) 5-Year Estimate data.

TABLE 36. OVERVIEW OF CONNECTICUT POPULATION AND HOUSEHOLDS BY METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS<sup>66 67 68</sup>

MSA AMI Band	Total Population	% Total Population Distribution	Total Households	% Total Household Distribution	Total Owner Occupied 1-4 Unit Households	% Owner Occupied 1- 4 Unit Household Distribution	Total Owner/Rental Occupied 5+ Unit Households	% Owner/Rental Occupied 5+ Unit Household Distribution
<60%	605,886	17%	231,327	17%	68,662	8%	78,211	32%
60%-80%	540,866	15%	219,099	16%	105,090	12%	53,058	22%
80%-100%	662,005	19%	274,020	20%	166,052	19%	56,675	23%
100%-120%	692,148	19%	276,247	20%	209,603	24%	32,063	13%
>120%	1,051,590	29%	384,523	28%	326,890	37%	21,904	9%
Total	3,570,549	100%	1,385,437	100%	876,387	100%	241,958	100%

#### TABLE 37. OVERVIEW OF CONNECTICUT POPULATION AND HOUSEHOLDS BY METROPOLITAN STATISTICAL AREA (MSA) STATE MEDIAN INCOME (SMI) BANDS<sup>69 70 71</sup>

						% Owner	Total	
					Total Owner	Occupied 1-	<b>Owner/Rental</b>	% Owner/Rental
		% Total		% Total	Occupied 1-4	4 Unit	Occupied 5+	Occupied 5+ Unit
MSA SMI	Total	Population	Total	Household	Unit	Household	Unit	Household
Band	Population	Distribution	Households	Distribution	Households	Distribution	Households	Distribution
<60%	642,923	18%	251,790	18%	73,061	8%	84,395	35%

<sup>66</sup> 2020 American Community Survey (ACS).

<sup>67</sup> The suite of products offered by the Connecticut Green Bank do not currently address rental properties of 1-4 units.

<sup>68</sup> Excludes population and households in unknown bands.

<sup>69</sup> 2020 American Community Survey (ACS).

<sup>70</sup> The suite of products offered by the Connecticut Green Bank do not currently address rental properties of 1-4 units.

<sup>71</sup> Excludes population and households in unknown bands.

MSA SMI Band	Total Population	% Total Population Distribution	Total Households	% Total Household Distribution	Total Owner Occupied 1-4 Unit Households	% Owner Occupied 1- 4 Unit Household Distribution	Total Owner/Rental Occupied 5+ Unit Households	% Owner/Rental Occupied 5+ Unit Household Distribution
60%-80%	616,580	17%	248,676	18%	130,854	15%	53,195	22%
80%-100%	676,639	19%	280,307	20%	183,587	21%	50,871	21%
100%-120%	627,810	18%	248,173	18%	182,994	21%	33,940	14%
>120%	988,543	28%	356,270	26%	305,801	35%	19,510	8%
Total	3,570,549	100%	1,385,437	100%	876,387	100%	241,958	100%

#### TABLE 38. GREEN BANK RESIDENTIAL<sup>72</sup> ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS BY FY CLOSED<sup>73</sup>

Fiscal Year	MSA AMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Households	% Total Household Distribution	Project Units / 1,000 Total Households	Total Investment / Total Household	Watts / Total Household
2012	<60%	7	2%	0.0	2%	\$183,647	2%	228,062	17%	0.0	\$0.81	0.2
2012	60%-80%	8	3%	0.0	2%	\$202,949	2%	207,439	15%	0.0	\$0.98	0.2
2012	80%-100%	33	11%	0.2	10%	\$970,970	10%	239,356	18%	0.1	\$4.06	0.8
2012	100%-120%	83	29%	0.5	28%	\$2,820,118	28%	280,563	21%	0.3	\$10.05	2.0
2012	>120%	157	55%	1.1	57%	\$5,723,828	58%	404,748	30%	0.4	\$14.14	2.7
2012	Total	288	100%	1.9	100%	\$9,901,511	100%	1,360,184	100%	0.2	\$7.28	1.4
2013	<60%	22	2%	0.1	1%	\$482,131	1%	224,259	17%	0.1	\$2.15	0.5
2013	60%-80%	63	6%	0.4	5%	\$1,878,819	5%	222,791	16%	0.3	\$8.43	1.8
2013	80%-100%	126	11%	0.8	11%	\$3,918,983	11%	236,905	17%	0.5	\$16.54	3.5
2013	100%-120%	220	20%	1.5	19%	\$6,733,660	19%	264,685	20%	0.8	\$25.44	5.5
2013	>120%	676	61%	5.1	64%	\$22,376,479	63%	407,204	30%	1.7	\$54.95	12.4
2013	Total	1,107	100%	7.9	100%	\$35,390,072	100%	1,355,849	100%	0.8	\$26.10	5.8
2014	<60%	86	3%	0.4	3%	\$2,041,406	3%	224,369	17%	0.4	\$9.10	2.0
2014	60%-80%	170	7%	1.0	6%	\$4,685,391	6%	216,437	16%	0.8	\$21.65	4.5
2014	80%-100%	528	21%	2.6	15%	\$12,506,212	16%	231,014	17%	2.3	\$54.14	11.1

<sup>72</sup> Residential Owner-occupied properties of 1-4 units and multifamily housing greater than 4 units.

<sup>73</sup> Excludes projects in unknown bands.

Fiscal Year	MSA AMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Households	% Total Household Distribution	Project Units / 1,000 Total Households	Total Investment / Total Household	Watts / Total Household
2014	100%-120%	610	24%	4.3	26%	\$20,601,755	27%	278,174	21%	2.2	\$74.06	15.5
2014	>120%	1,146	45%	8.4	50%	\$37,904,164	49%	406,185	30%	2.8	\$93.32	20.7
2014	Total	2,540	100%	16.7	100%	\$77,738,929	100%	1,356,206	100%	1.9	\$57.32	12.3
2015	<60%	283	4%	1.6	3%	\$7,086,446	3%	240,062	18%	1.2	\$29.52	6.6
2015	60%-80%	656	10%	4.0	8%	\$18,789,354	8%	193,188	14%	3.4	\$97.26	20.6
2015	80%-100%	1,226	18%	7.8	16%	\$38,314,101	17%	264,609	20%	4.6	\$144.80	29.6
2015	100%-120%	1,603	24%	12.0	25%	\$57,223,067	26%	240,485	18%	6.7	\$237.95	50.1
2015	>120%	2,919	44%	22.1	47%	\$102,199,480	46%	414,212	31%	7.0	\$246.73	53.4
2015	Total	6,687	100%	47.6	100%	\$223,612,447	100%	1,352,583	100%	4.9	\$165.32	35.2
2016	<60%	874	11%	3.9	7%	\$35,889,972	14%	236,643	17%	3.7	\$151.66	16.3
2016	60%-80%	1,096	13%	6.5	12%	\$27,894,074	11%	199,269	15%	5.5	\$139.98	32.8
2016	80%-100%	1,801	22%	10.9	20%	\$51,218,250	19%	261,240	19%	6.9	\$196.06	41.6
2016	100%-120%	1,964	24%	13.3	24%	\$59,938,424	23%	251,604	19%	7.8	\$238.23	53.0
2016	>120%	2,508	30%	21.1	38%	\$90,564,080	34%	405,921	30%	6.2	\$223.11	51.9
2016	Total	8,243	100%	55.6	100%	\$265,504,800	100%	1,354,713	100%	6.1	\$195.99	41.1
2017	<60%	1,148	19%	3.9	11%	\$16,510,119	12%	242,723	18%	4.7	\$68.02	16.0
2017	60%-80%	1,117	18%	5.5	16%	\$22,665,983	17%	190,564	14%	5.9	\$118.94	28.9
2017	80%-100%	1,266	21%	6.8	19%	\$26,465,404	20%	250,616	18%	5.1	\$105.60	27.2
2017	100%-120%	1,053	17%	7.6	21%	\$27,375,830	20%	280,637	21%	3.8	\$97.55	26.9
2017	>120%	1,501	25%	11.6	33%	\$42,537,408	31%	397,174	29%	3.8	\$107.10	29.1
2017	Total	6,085	100%	35.3	100%	\$135,554,744	100%	1,361,755	100%	4.5	\$99.54	25.9
2018	<60%	2,387	29%	3.9	9%	\$25,779,254	14%	234,319	17%	10.2	\$110.02	16.7
2018	60%-80%	1,001	12%	5.9	14%	\$23,845,267	13%	219,309	16%	4.6	\$108.73	26.9
2018	80%-100%	1,334	16%	8.2	19%	\$32,703,512	18%	232,794	17%	5.7	\$140.48	35.3
2018	100%-120%	1,488	18%	10.0	24%	\$39,948,889	22%	278,265	20%	5.3	\$143.56	36.0
2018	>120%	2,093	25%	14.2	34%	\$59,565,501	33%	402,643	29%	5.2	\$147.94	35.3
2018	Total	8,303	100%	42.3	100%	\$181,842,422	100%	1,367,374	100%	6.1	\$132.99	30.9
2019	<60%	1,966	21%	4.9	9%	\$46,781,257	20%	234,319	17%	8.4	\$199.65	20.7
2019	60%-80%	1,271	14%	7.8	14%	\$29,971,877	13%	219,309	16%	5.8	\$136.67	35.6
2019	80%-100%	1,907	21%	10.1	18%	\$38,524,575	16%	232,794	17%	8.2	\$165.49	43.5

Fiscal Year	MSA AMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Households	% Total Household Distribution	Project Units / 1,000 Total Households	Total Investment / Total Household	Watts / Total Household
2019	100%-120%	1,820	20%	14.1	25%	\$54,430,870	23%	278,265	20%	6.5	\$195.61	50.6
2019	>120%	2,237	24%	18.7	34%	\$69,502,160	29%	402,643	29%	5.6	\$172.61	46.3
2019	Total	9,201	100%	55.5	100%	\$239,210,739	100%	1,370,746	100%	6.7	\$174.51	40.5
2020	<60%	1,214	14%	5.4	9%	\$24,134,997	11%	231,327	17%	5.2	\$104.33	23.2
2020	60%-80%	1,194	14%	7.7	13%	\$29,248,272	13%	219,099	16%	5.4	\$133.49	35.3
2020	80%-100%	1,526	18%	11.1	19%	\$41,211,355	18%	274,020	20%	5.6	\$150.40	40.5
2020	100%-120%	2,216	26%	14.3	24%	\$53,364,489	24%	276,247	20%	8.0	\$193.18	51.6
2020	>120%	2,356	28%	20.6	35%	\$75,783,785	34%	384,523	28%	6.1	\$197.09	53.5
2020	Total	8,506	100%	59.0	100%	\$223,742,897	100%	1,385,437	100%	6.1	\$161.50	42.6
2021	<60%	752	11%	4.0	8%	\$16,526,605	8%	231,327	17%	3.3	\$71.44	17.3
2021	60%-80%	904	14%	6.1	12%	\$25,357,908	13%	219,099	16%	4.1	\$115.74	27.7
2021	80%-100%	1,257	19%	9.3	19%	\$35,848,429	18%	274,020	20%	4.6	\$130.82	34.0
2021	100%-120%	1,514	23%	11.8	24%	\$45,718,417	23%	276,247	20%	5.5	\$165.50	42.6
2021	>120%	2,157	33%	18.5	37%	\$71,181,029	37%	384,523	28%	5.6	\$185.12	48.1
2021	Total	6,584	100%	49.7	100%	\$194,632,388	100%	1,385,437	100%	4.8	\$140.48	35.8
2022	<60%	273	10%	1.4	8%	\$6,207,646	8%	231,327	17%	1.2	\$26.83	5.9
2022	60%-80%	348	13%	1.9	11%	\$8,943,394	11%	219,099	16%	1.6	\$40.82	8.6
2022	80%-100%	497	18%	2.9	17%	\$14,147,737	18%	274,020	20%	1.8	\$51.63	10.7
2022	100%-120%	646	24%	4.2	25%	\$19,699,205	24%	276,247	20%	2.3	\$71.31	15.3
2022	>120%	978	36%	6.8	39%	\$31,434,984	39%	384,523	28%	2.5	\$81.75	17.6
2022	Total	2,742	100%	17.2	100%	\$80,432,966	100%	1,385,437	100%	2.0	\$58.06	12.4
Total	<60%	9,012	15%	29.4	8%	\$181,623,480	11%	231,327	17%	39.0	\$785.14	127.1
Total	60%-80%	7,828	13%	46.8	12%	\$193,483,287	12%	219,099	16%	35.7	\$883.09	213.7
Total	80%-100%	11,501	19%	70.8	18%	\$295,829,527	18%	274,020	20%	42.0	\$1,079.59	258.4
Total	100%-120%	13,217	22%	93.6	24%	\$387,854,722	23%	276,247	20%	47.8	\$1,404.01	339.0
Total	>120%	18,728	31%	148.0	38%	\$608,772,899	37%	384,523	28%	48.7	\$1,583.19	385.0
Total	Total	60,286	100%	388.7	100%	\$1,667,563,914	100%	1,385,437	100%	43.5	\$1,203.64	280.6

Fiscal Year	MSA SMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Households	% Total Household Distribution	Project Units / 1,000 Total Households	Total Investment / Total Household	Watts / Total Household
2012	<60%	10	3%	0.1	3%	\$227,144	2%	249,608	18%	0.0	\$0.91	0.2
2012	60%-80%	6	2%	0.0	2%	\$144,970	1%	204,836	15%	0.0	\$0.71	0.2
2012	80%-100%	66	23%	0.4	21%	\$2,125,276	21%	293,878	22%	0.2	\$7.23	1.4
2012	100%-120%	77	27%	0.5	26%	\$2,689,978	27%	260,689	19%	0.3	\$10.32	2.0
2012	>120%	129	45%	0.9	48%	\$4,714,144	48%	351,157	26%	0.4	\$13.42	2.6
2012	Total	288	100%	1.9	100%	\$9,901,511	100%	1,360,184	100%	0.2	\$7.28	1.4
2013	<60%	32	3%	0.2	2%	\$850,831	2%	251,171	19%	0.1	\$3.39	0.8
2013	60%-80%	55	5%	0.3	4%	\$1,569,188	4%	211,049	16%	0.3	\$7.44	1.5
2013	80%-100%	195	18%	1.3	16%	\$5,931,082	17%	295,748	22%	0.7	\$20.05	4.3
2013	100%-120%	222	20%	1.5	19%	\$7,302,512	21%	247,329	18%	0.9	\$29.53	6.1
2013	>120%	603	54%	4.6	58%	\$19,736,460	56%	350,547	26%	1.7	\$56.30	13.0
2013	Total	1,107	100%	7.9	100%	\$35,390,072	100%	1,355,849	100%	0.8	\$26.10	5.8
2014	<60%	125	5%	0.6	4%	\$3,093,731	4%	264,100	19%	0.5	\$11.71	2.4
2014	60%-80%	166	7%	1.0	6%	\$4,577,316	6%	189,153	14%	0.9	\$24.20	5.1
2014	80%-100%	706	28%	3.9	23%	\$19,040,790	24%	288,116	21%	2.5	\$66.09	13.6
2014	100%-120%	593	23%	4.1	25%	\$19,394,290	25%	242,617	18%	2.4	\$79.94	17.1
2014	>120%	950	37%	7.0	42%	\$31,632,801	41%	372,193	27%	2.6	\$84.99	18.9
2014	Total	2,540	100%	16.7	100%	\$77,738,929	100%	1,356,206	100%	1.9	\$57.32	12.3
2015	<60%	432	6%	2.2	5%	\$10,592,504	5%	236,756	18%	1.8	\$44.74	9.4
2015	60%-80%	863	13%	5.1	11%	\$23,978,096	11%	235,289	17%	3.7	\$101.91	21.7
2015	80%-100%	1,427	21%	10.2	21%	\$48,826,412	22%	262,503	19%	5.4	\$186.00	38.8
2015	100%-120%	1,775	27%	12.2	26%	\$57,855,049	26%	247,545	18%	7.2	\$233.72	49.5
2015	>120%	2,190	33%	17.8	37%	\$82,360,386	37%	370,463	27%	5.9	\$222.32	48.0
2015	Total	6,687	100%	47.6	100%	\$223,612,447	100%	1,352,583	100%	4.9	\$165.32	35.2
2016	<60%	917	11%	4.3	8%	\$36,618,997	14%	235,940	17%	3.9	\$155.20	18.2

#### TABLE 39. GREEN BANK RESIDENTIAL<sup>74</sup> ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) STATE MEDIAN INCOME (SMI) BANDS BY FY CLOSED<sup>75</sup>

<sup>74</sup> Residential Owner-occupied properties of 1-4 units and multifamily housing greater than 4 units.

<sup>75</sup> Excludes projects in unknown bands.

Fiscal Year	MSA SMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Households	% Total Household Distribution	Project Units / 1,000 Total Households	Total Investment / Total Household	Watts / Total Household
2016	60%-80%	1,340	16%	8.7	16%	\$37,213,840	14%	235,390	17%	5.7	\$158.09	36.8
2016	80%-100%	2,058	25%	12.6	23%	\$56,972,136	21%	278,870	21%	7.4	\$204.30	45.3
2016	100%-120%	1,774	22%	13.0	23%	\$55,931,911	21%	248,827	18%	7.1	\$224.78	52.1
2016	>120%	2,154	26%	17.1	31%	\$78,767,915	30%	355,650	26%	6.1	\$221.48	48.1
2016	Total	8,243	100%	55.6	100%	\$265,504,800	100%	1,354,713	100%	6.1	\$195.99	41.1
2017	<60%	1,107	18%	3.6	10%	\$14,553,874	11%	227,939	17%	4.9	\$63.85	15.8
2017	60%-80%	1,469	24%	7.0	20%	\$28,911,780	21%	235,460	17%	6.2	\$122.79	29.6
2017	80%-100%	1,307	21%	7.8	22%	\$29,048,068	21%	285,522	21%	4.6	\$101.74	27.3
2017	100%-120%	959	16%	7.1	20%	\$26,406,131	19%	242,028	18%	4.0	\$109.10	29.4
2017	>120%	1,243	20%	9.8	28%	\$36,634,892	27%	370,765	27%	3.4	\$98.81	26.5
2017	Total	6,085	100%	35.3	100%	\$135,554,744	100%	1,361,755	100%	4.5	\$99.54	25.9
2018	<60%	2,190	26%	3.7	9%	\$20,557,078	11%	231,517	17%	9.5	\$88.79	16.1
2018	60%-80%	1,455	18%	7.8	18%	\$35,248,757	19%	235,228	17%	6.2	\$149.85	33.2
2018	80%-100%	1,575	19%	9.8	23%	\$39,096,953	22%	287,930	21%	5.5	\$135.79	33.9
2018	100%-120%	1,330	16%	8.6	20%	\$35,124,984	19%	240,427	18%	5.5	\$146.09	35.8
2018	>120%	1,753	21%	12.4	29%	\$51,814,650	28%	372,228	27%	4.7	\$139.20	33.2
2018	Total	8,303	100%	42.3	100%	\$181,842,422	100%	1,367,374	100%	6.1	\$132.99	30.9
2019	<60%	1,989	22%	5.0	9%	\$47,324,768	20%	234,069	17%	8.5	\$202.18	21.2
2019	60%-80%	1,519	17%	9.7	17%	\$36,364,000	15%	235,553	17%	6.4	\$154.38	41.0
2019	80%-100%	2,347	26%	13.5	24%	\$53,158,820	22%	297,796	22%	7.9	\$178.51	45.3
2019	100%-120%	1,547	17%	12.0	22%	\$44,548,821	19%	242,705	18%	6.4	\$183.55	49.3
2019	>120%	1,799	20%	15.4	28%	\$57,814,330	24%	360,613	26%	5.0	\$160.32	42.8
2019	Total	9,201	100%	55.5	100%	\$239,210,739	100%	1,370,746	100%	6.7	\$174.51	40.5
2020	<60%	1,236	15%	5.6	10%	\$24,838,351	11%	251,790	18%	4.9	\$98.65	22.3
2020	60%-80%	1,505	18%	9.9	17%	\$37,264,251	17%	248,676	18%	6.1	\$149.85	39.8
2020	80%-100%	2,148	25%	13.3	23%	\$49,593,974	22%	280,307	20%	7.7	\$176.93	47.4
2020	100%-120%	1,644	19%	12.7	21%	\$47,235,266	21%	248,173	18%	6.6	\$190.33	51.0
2020	>120%	1,973	23%	17.5	30%	\$64,811,056	29%	356,270	26%	5.5	\$181.92	49.2
2020	Total	8,506	100%	59.0	100%	\$223,742,897	100%	1,385,437	100%	6.1	\$161.50	42.6
2021	<60%	786	12%	4.2	8%	\$17,115,385	9%	251,790	18%	3.1	\$67.97	16.7

Fiscal Year	MSA SMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Households	% Total Household Distribution	Project Units / 1,000 Total Households	Total Investment / Total Household	Watts / Total Household
2021	60%-80%	1,160	18%	8.0	16%	\$32,538,551	17%	248,676	18%	4.7	\$130.85	32.0
2021	80%-100%	1,327	20%	9.7	20%	\$37,523,898	19%	280,307	20%	4.7	\$133.87	34.8
2021	100%-120%	1,327	20%	10.4	21%	\$40,490,279	21%	248,173	18%	5.3	\$163.15	41.7
2021	>120%	1,984	30%	17.4	35%	\$66,964,274	34%	356,270	26%	5.6	\$187.96	48.8
2021	Total	6,584	100%	49.7	100%	\$194,632,388	100%	1,385,437	100%	4.8	\$140.48	35.8
2022	<60%	284	10%	1.5	9%	\$6,654,018	8%	251,790	18%	1.1	\$26.43	5.9
2022	60%-80%	471	17%	2.6	15%	\$12,230,957	15%	248,676	18%	1.9	\$49.18	10.5
2022	80%-100%	511	19%	3.2	18%	\$15,017,295	19%	280,307	20%	1.8	\$53.57	11.3
2022	100%-120%	617	23%	3.7	22%	\$17,862,657	22%	248,173	18%	2.5	\$71.98	15.0
2022	>120%	859	31%	6.2	36%	\$28,668,039	36%	356,270	26%	2.4	\$80.47	17.4
2022	Total	2,742	100%	17.2	100%	\$80,432,966	100%	1,385,437	100%	2.0	\$58.06	12.4
Total	<60%	9,108	15%	31.0	8%	\$182,426,681	11%	251,790	18%	36.2	\$724.52	123.2
Total	60%-80%	10,009	17%	60.0	15%	\$250,041,704	15%	248,676	18%	40.2	\$1,005.49	241.2
Total	80%-100%	13,667	23%	85.7	22%	\$356,334,705	21%	280,307	20%	48.8	\$1,271.23	305.7
Total	100%-120%	11,865	20%	85.8	22%	\$354,841,879	21%	248,173	18%	47.8	\$1,429.82	345.9
Total	>120%	15,637	26%	126.2	32%	\$523,918,945	31%	356,270	26%	43.9	\$1,470.57	354.2
Total	Total	60,286	100%	388.7	100%	\$1,667,563,914	100%	1,385,437	100%	43.5	\$1,203.64	280.6

In recent years the Green Bank has focused on increasing its penetration in the LMI market to deliver inclusive prosperity through the green economy. It has done so through several products and initiatives, among them the LMI solar incentive, its partnership with PosiGen, ongoing education to the market about the good credit quality of low- and moderate-income homeowners, market research made available to industry participants for targeting candidate projects (customer segmentation, demographic and geographic data), and its affordable multifamily housing energy financing products. The Green Bank has focused on increasing its penetration in the LMI market shown in Table 40 and Table 43 to deliver inclusive prosperity through the green economy by AMI and SMI bands. With the end of the RSIP in FY22, there was less activity in the LMI market.

		# Pro	oject Units			I	WW		Total Investment			
Fiscal Year	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below
2012	288	240	48	17%	1.9	1.7	0.3	15%	\$9,901,511	\$8,543,945	\$1,357,565	14%
2013	1,107	896	211	19%	7.9	6.5	1.3	17%	\$35,390,072	\$29,110,139	\$6,279,933	18%
2014	2,540	1,756	784	31%	16.7	12.7	4.0	24%	\$77,738,929	\$58,505,919	\$19,233,009	25%
2015	6,687	4,522	2,165	32%	47.6	34.2	13.4	28%	\$223,612,447	\$159,422,547	\$64,189,900	29%
2016	8,243	4,472	3,771	46%	55.6	34.4	21.2	38%	\$265,504,800	\$150,502,505	\$115,002,295	43%
2017	6,085	2,554	3,531	58%	35.3	19.1	16.2	46%	\$135,554,744	\$69,913,238	\$65,641,506	48%
2018	8,303	3,581	4,722	57%	42.3	24.3	18.0	43%	\$181,842,422	\$99,514,389	\$82,328,033	45%
2019	9,201	4,057	5,144	56%	55.5	32.7	22.8	41%	\$239,210,739	\$123,933,030	\$115,277,709	48%
2020	8,506	4,572	3,934	46%	59.0	34.8	24.2	41%	\$223,742,897	\$129,148,273	\$94,594,624	42%
2021	6,584	3,671	2,913	44%	49.7	30.3	19.4	39%	\$194,632,388	\$116,899,446	\$77,732,941	40%
2022	2,742	1,624	1,118	41%	17.2	11.0	6.2	36%	\$80,432,966	\$51,134,189	\$29,298,777	36%
Total	60,286	31,945	28,341	47%	388.7	241.7	147.0	38%	\$1,667,563,914	\$996,627,620	\$670,936,294	40%

TABLE 40. GREEN BANK RESIDENTIAL<sup>76</sup> ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS ABOVE OR BELOW 100% BY FY CLOSED<sup>77</sup>

<sup>&</sup>lt;sup>76</sup> Residential Owner-occupied properties of 1-4 units and multifamily housing greater than 4 units.

<sup>&</sup>lt;sup>77</sup> Excludes projects in unknown bands.

TABLE 41. GREEN BANK RESIDENTIAL <sup>78</sup> PERFORMANCE INDICATORS BY PARTICIPATION IN METROPOLITAN STATISTICAL AREA
(MSA) AREA MEDIAN INCOME (AMI) BANDS ABOVE OR BELOW 100% BY FY CLOSED <sup>79</sup>

		per Project 0*MW/total		Total Inv	/estment per (\$000s)	MW	Investment per Project Unit (\$)			
Fiscal Year	Total	Over 100% AMI	100% or Below AMI	Total	Over 100% AMI	100% or Below AMI	Total	Over 100% AMI	100% or Below AMI	
2012	6.7	6.9	6.0	\$5,103	\$5,177	\$4,682	\$34,380	\$35,600	\$28,283	
2013	7.1	7.3	6.4	\$4,498	\$4,462	\$4,672	\$31,969	\$32,489	\$29,763	
2014	6.6	7.2	5.1	\$4,652	\$4,596	\$4,831	\$30,606	\$33,318	\$24,532	
2015	7.1	7.6	6.2	\$4,702	\$4,667	\$4,791	\$33,440	\$35,255	\$29,649	
2016	6.8	7.7	5.6	\$4,771	\$4,374	\$5,414	\$32,210	\$33,654	\$30,496	
2017	5.8	7.5	4.6	\$3,838	\$3,655	\$4,053	\$22,277	\$27,374	\$18,590	
2018	5.1	6.8	3.8	\$4,300	\$4,103	\$4,565	\$21,901	\$27,790	\$17,435	
2019	6.0	8.1	4.4	\$4,310	\$3,786	\$5,061	\$25,998	\$30,548	\$22,410	
2020	6.9	7.6	6.1	\$3,790	\$3,707	\$3,910	\$26,304	\$28,248	\$24,045	
2021	7.5	8.2	6.7	\$3,920	\$3,863	\$4,008	\$29,561	\$31,844	\$26,685	
2022	6.3	6.8	5.5	\$4,679	\$4,650	\$4,730	\$29,334	\$31,487	\$26,206	
Total	6.4	7.6	5.2	\$4,290	\$4,124	\$4,563	\$27,661	\$31,198	\$23,674	

 TABLE 42. GREEN BANK RESIDENTIAL<sup>80</sup> RELATIONSHIP OF PERFORMANCE INDICATORS BETWEEN METROPOLITAN STATISTICAL

 AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS ABOVE OR BELOW 100% BY FY CLOSED<sup>81</sup>

	KW per Project Unit	Total Investment per MW (\$000s)	Investment per Project Unit (\$)
Fiscal Year	Ratio of Above 100% AMI to Below 100% AMI	Ratio of Above 100% AMI to Below 100% AMI	Ratio of Above 100% AMI to Below 100% AMI
2012	1.14	1.11	1.26
2013	1.14	0.95	1.09
2014	1.43	0.95	1.36
2015	1.22	0.97	1.19
2016	1.37	0.81	1.10
2017	1.63	0.90	1.47
2018	1.77	0.90	1.59
2019	1.82	0.75	1.36
2020	1.24	0.95	1.17
2021	1.24	0.96	1.19
2022	1.22	0.98	1.20
Total	1.46	0.90	1.32

<sup>&</sup>lt;sup>78</sup> Residential Owner-occupied properties of 1-4 units and multifamily housing greater than 4 units.

<sup>&</sup>lt;sup>79</sup> Excludes projects in unknown bands.

<sup>&</sup>lt;sup>80</sup> Residential Owner-occupied properties of 1-4 units and multifamily housing greater than 4 units.

<sup>&</sup>lt;sup>81</sup> Excludes projects in unknown bands.

		# Pi	oject Units				MW			Total Invest	tment	
Fiscal		Over 100%	100% or	% at 100% or		Over 100%	100% or Below	% at 100% or		Over 100%	100% or	% at 100% or
Year	Total	SMI	Below SMI	Below	Total	SMI	SMI	Below	Total	SMI	Below SMI	Below
2012	288	206	82	28%	1.9	1.4	0.5	26%	\$9,901,511	\$7,404,122	\$2,497,389	25%
2013	1,107	825	282	25%	7.9	6.1	1.8	23%	\$35,390,072	\$27,038,972	\$8,351,100	24%
2014	2,540	1,543	997	39%	16.7	11.2	5.5	33%	\$77,738,929	\$51,027,091	\$26,711,837	34%
2015	6,687	3,965	2,722	41%	47.6	30.0	17.5	37%	\$223,612,447	\$140,215,435	\$83,397,013	37%
2016	8,243	3,928	4,315	52%	55.6	30.1	25.6	46%	\$265,504,800	\$134,699,827	\$130,804,973	49%
2017	6,085	2,202	3,883	64%	35.3	16.9	18.4	52%	\$135,554,744	\$63,041,022	\$72,513,721	53%
2018	8,303	3,083	5,220	63%	42.3	21.0	21.3	50%	\$181,842,422	\$86,939,634	\$94,902,789	52%
2019	9,201	3,346	5,855	64%	55.5	27.4	28.1	51%	\$239,210,739	\$102,363,151	\$136,847,588	57%
2020	8,506	3,617	4,889	57%	59.0	30.2	28.8	49%	\$223,742,897	\$112,046,322	\$111,696,575	50%
2021	6,584	3,311	3,273	50%	49.7	27.8	21.9	44%	\$194,632,388	\$107,454,553	\$87,177,834	45%
2022	2,742	1,476	1,266	46%	17.2	9.9	7.3	42%	\$80,432,966	\$46,530,696	\$33,902,270	42%
Total	60,286	27,502	32,784	54%	388.7	212.0	176.7	45%	\$1,667,563,914	\$878,760,824	\$788,803,090	47%

#### TABLE 43. GREEN BANK RESIDENTIAL<sup>82</sup> ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) STATE MEDIAN INCOME (SMI) BANDS ABOVE OR BELOW 100% BY FY CLOSED<sup>83</sup>

 <sup>&</sup>lt;sup>82</sup> Residential Owner-occupied properties of 1-4 units and multifamily housing greater than 4 units.
 <sup>83</sup> Excludes projects in unknown bands.

TABLE 44. GREEN BANK RESIDENTIAL <sup>84</sup> PERFORMANCE INDICATORS BY PARTICIPATION IN METROPOLITAN STATISTICAL AREA
(MSA) STATE MEDIAN INCOME (SMI) BANDS ABOVE OR BELOW 100% BY FY CLOSED <sup>85</sup>

	ĸw	per Project	Unit	Total Inv	vestment per (\$000s)	· MW	Investment per Project Unit (\$)			
Fiscal Year	Total	Over 100% SMI	100% or Below SMI	Total	Over 100% SMI	100% or Below SMI	Total	Over 100% SMI	100% or Below SMI	
2012	6.7	7.0	6.1	\$5,103	\$5,134	\$5,014	\$34,380	\$35,942	\$30,456	
2013	7.1	7.4	6.3	\$4,498	\$4,447	\$4,670	\$31,969	\$32,775	\$29,614	
2014	6.6	7.2	5.6	\$4,652	\$4,566	\$4,826	\$30,606	\$33,070	\$26,792	
2015	7.1	7.6	6.4	\$4,702	\$4,670	\$4,758	\$33,440	\$35,363	\$30,638	
2016	6.8	7.7	5.9	\$4,771	\$4,479	\$5,114	\$32,210	\$34,292	\$30,314	
2017	5.8	7.7	4.7	\$3,838	\$3,721	\$3,946	\$22,277	\$28,629	\$18,675	
2018	5.1	6.8	4.1	\$4,300	\$4,145	\$4,452	\$21,901	\$28,200	\$18,181	
2019	6.0	8.2	4.8	\$4,310	\$3,735	\$4,870	\$25,998	\$30,593	\$23,373	
2020	6.9	8.4	5.9	\$3,790	\$3,709	\$3,876	\$26,304	\$30,978	\$22,847	
2021	7.5	8.4	6.7	\$3,920	\$3,871	\$3,981	\$29,561	\$32,454	\$26,635	
2022	6.3	6.7	5.7	\$4,679	\$4,687	\$4,669	\$29,334	\$31,525	\$26,779	
Total	6.4	7.7	5.4	\$4,290	\$4,145	\$4,464	\$27,661	\$31,953	\$24,061	

 TABLE 45. GREEN BANK RESIDENTIAL<sup>86</sup> RELATIONSHIP OF PERFORMANCE INDICATORS BETWEEN METROPOLITAN STATISTICAL

 AREA (MSA) STATE MEDIAN INCOME (SMI) BANDS ABOVE OR BELOW 100% BY FY CLOSED<sup>87</sup>

	KW per Project Unit	Total Investment per MW (\$000s)	Investment per Project Unit (\$)
Fiscal Year	Ratio of Above 100% SMI to Below 100% SMI	Ratio of Above 100% SMI to Below 100% SMI	Ratio of Above 100% SMI to Below 100% SMI
2012	1.15	1.02	1.18
2013	1.16	0.95	1.11
2014	1.30	0.95	1.23
2015	1.18	0.98	1.15
2016	1.29	0.88	1.13
2017	1.63	0.94	1.53
2018	1.67	0.93	1.55
2019	1.71	0.77	1.31
2020	1.42	0.96	1.36
2021	1.25	0.97	1.22
2022	1.17	1.00	1.18
Total	1.43	0.93	1.33

<sup>&</sup>lt;sup>84</sup> Residential Owner-occupied properties of 1-4 units and multifamily housing greater than 4 units.

<sup>&</sup>lt;sup>85</sup> Excludes projects in unknown bands.

<sup>&</sup>lt;sup>86</sup> Residential Owner-occupied properties of 1-4 units and multifamily housing greater than 4 units.

<sup>&</sup>lt;sup>87</sup> Excludes projects in unknown bands.

### Projects by CRA Eligibility

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

TABLE 46. GREEN BANK COMMERCIAL AND RESIDENTIAL<sup>88</sup> ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS ABOVE OR BELOW 80% BY FY CLOSED<sup>89</sup>

	# Project Units				MW				Total Investment			
Fiscal Year	Total	Over 80% AMI	80% or Below AMI	% at 80% or Below	Total	Over 80% AMI	80% or Below AMI	% at 80% or Below	Total	Over 80% AMI	80% or Below AMI	% at 80% or Below
2012	288	273	15	5%	1.9	1.9	0.1	4%	\$9,901,511	\$9,514,915	\$386,596	4%
2013	1,114	1,027	87	8%	23.5	8.1	15.3	65%	\$111,141,216	\$37,829,389	\$73,311,827	66%
2014	2,567	2,181	386	15%	23.4	18.4	5.0	21%	\$107,110,514	\$86,736,906	\$20,373,608	19%
2015	6,749	5,533	1,216	18%	62.2	54.1	8.1	13%	\$320,587,455	\$249,319,939	\$71,267,515	22%
2016	8,311	5,501	2,810	34%	65.5	52.1	13.4	20%	\$319,178,904	\$233,774,001	\$85,404,902	27%
2017	6,146	3,273	2,873	47%	50.0	33.0	17.0	34%	\$180,488,411	\$108,344,425	\$72,143,986	40%
2018	8,383	4,627	3,756	45%	55.3	39.4	15.9	29%	\$218,341,089	\$147,843,213	\$70,497,876	32%
2019	9,250	4,972	4,278	46%	64.1	44.7	19.4	30%	\$271,196,941	\$163,486,172	\$107,710,769	40%
2020	8,572	5,361	3,211	37%	66.3	48.2	18.1	27%	\$256,398,228	\$174,428,512	\$81,969,716	32%
2021	6,649	4,412	2,237	34%	66.0	50.6	15.4	23%	\$260,439,466	\$184,533,504	\$75,905,962	29%
2022	2,772	1,946	826	30%	22.0	16.8	5.1	23%	\$107,227,375	\$79,196,106	\$28,031,268	26%
Total	60,801	39,106	21,695	36%	500.2	367.4	132.8	27%	\$2,162,011,110	\$1,475,007,083	\$687,004,027	32%

 <sup>&</sup>lt;sup>88</sup> Residential Owner-occupied properties of 1-4 units and multifamily housing greater than 4 units. This table has been adjusted to include all the Low-Income Solar Lease (ESA) and Multifamily
 Affordable Housing projects as 80% or Below AMI regardless of which census tract the project falls into as these programs are designed to serve the LMI market.
 <sup>89</sup> Excludes projects in unknown bands.

		per Project 0*MW/total เ		Total In	vestment per (\$000s)	Investment per Project Unit (\$)			
Fiscal Year	Total	Over 80% AMI	80% or Below AMI	Total	Over 80% AMI	80% or Below AMI	Total	Over 80% AMI	80% or Below AMI
2012	6.7	6.8	5.8	\$5,103	\$5,133	\$4,461	\$34,380	\$34,853	\$25,773
2013	21.1	7.9	176.0	\$4,739	\$4,647	\$4,787	\$99,768	\$36,835	\$842,665
2014	9.1	8.4	12.9	\$4,577	\$4,708	\$4,090	\$41,726	\$39,769	\$52,781
2015	9.2	9.8	6.6	\$5,153	\$4,606	\$8,822	\$47,501	\$45,061	\$58,608
2016	7.9	9.5	4.8	\$4,870	\$4,484	\$6,373	\$38,404	\$42,497	\$30,393
2017	8.1	10.1	5.9	\$3,609	\$3,282	\$4,245	\$29,367	\$33,102	\$25,111
2018	6.6	8.5	4.2	\$3,948	\$3,748	\$4,446	\$26,046	\$31,952	\$18,769
2019	6.9	9.0	4.5	\$4,231	\$3,655	\$5,560	\$29,319	\$32,881	\$25,178
2020	7.7	9.0	5.6	\$3,868	\$3,622	\$4,519	\$29,911	\$32,537	\$25,528
2021	9.9	11.5	6.9	\$3,945	\$3,649	\$4,914	\$39,170	\$41,825	\$33,932
2022	7.9	8.6	6.2	\$4,883	\$4,710	\$5,448	\$38,682	\$40,697	\$33,936
Total	8.2	9.4	6.1	\$4,322	\$4,015	\$5,173	\$35,559	\$37,718	\$31,666

 TABLE 47. GREEN BANK COMMERCIAL AND RESIDENTIAL<sup>90</sup> PERFORMANCE INDICATORS BY PARTICIPATION IN METROPOLITAN

 STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS ABOVE OR BELOW 80% BY FY CLOSED<sup>91</sup>

# TABLE 48. GREEN BANK COMMERCIAL AND RESIDENTIAL<sup>92</sup> RELATIONSHIP OF PERFORMANCE INDICATORS BETWEEN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS ABOVE OR BELOW 80% BY FY CLOSED<sup>93</sup>

	KW per Project Unit	Total Investment per MW (\$000s)	Investment per Project Unit (\$)
Fiscal Year	Ratio of Above 80% AMI to Below 80% AMI	Ratio of Above 80% AMI to Below 80% AMI	Ratio of Above 80% AMI to Below 80% AMI
2012	1.18	1.15	1.35
2013	0.05	0.97	0.04
2014	0.65	1.15	0.75
2015	1.47	0.52	0.77
2016	1.99	0.70	1.40
2017	1.70	0.77	1.32
2018	2.02	0.84	1.70
2019	1.99	0.66	1.31
2020	1.59	0.80	1.27
2021	1.66	0.74	1.23
2022	1.39	0.86	1.20
Total	1.53	0.78	1.19

<sup>&</sup>lt;sup>90</sup> Residential Owner-occupied properties of 1-4 units and multifamily housing greater than 4 units.

<sup>&</sup>lt;sup>91</sup> Excludes projects in unknown bands.

<sup>&</sup>lt;sup>92</sup> Residential Owner-occupied properties of 1-4 units and multifamily housing greater than 4 units.

<sup>&</sup>lt;sup>93</sup> Excludes projects in unknown bands.

## **Distressed Communities**

Connecticut's "distressed communities<sup>94</sup>" are particularly affected by the state's high energy prices. On average, Connecticut's neediest households owe \$1,678 more in annual energy bills than they can afford<sup>95</sup>. The Green Bank's financing products and marketing efforts seek to bring lower and more predictable energy costs to homes and businesses in these communities.

TABLE 49. DISTRESSED AND NOT DISTRESSED MUNICIPALITIES, POPULATION, AND HOUSEHOLDS IN CONNECTICUT

	2021 <sup>97</sup> DECD Distressed Designation											
	Municipalities	% of All Municipalities	Population	% of State Population	Households	% of total Households						
Distressed	25	15%	964,777	27%	375,703	27%						
Not Distressed	144	85%	2,605,772	73%	1,009,734	73%						
Total         169         100%         3,570,549         100%         1,385,437         100%												

For more information on DECD Distressed Municipality criterions, click here<sup>96</sup>

#### TABLE 50. GREEN BANK COMMERCIAL AND RESIDENTIAL<sup>98</sup> ACTIVITY IN DISTRESSED COMMUNITIES BY FY CLOSED<sup>99</sup>

Fiscal Year	Distres sed	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Households	% Total Household Distribution	Project Units / 1,000 Total Households	Total Investment / Total Household	Watts / Total Household
2012	Yes	35	12%	0.2	10%	\$997,129	10%	447,962	33%	0.1	\$2.23	0.4
2012	No	253	88%	1.7	90%	\$8,904,382	90%	912,222	67%	0.3	\$9.76	1.9
2012	Total	288	100%	1.9	100%	\$9,901,511	100%	447,962	33%	0.1	\$2.23	0.4
2013	Yes	119	11%	15.5	66%	\$75,138,078	68%	912,222	67%	0.3	\$9.76	1.9

<sup>94</sup> Distressed Municipalities are defined by the Connecticut Department of Economic and community Development by a combination of per capita income, poverty rates, unemployment rates, growth, age of buildings, education.

<sup>95</sup> Mapping Household Energy & Transportation Affordability in Connecticut: <u>https://www.ctgreenbank.com/wp-content/uploads/2020/11/Mapping-Household-Energy-and-Transportation-Affordability-Report-Oct-2020.pdf</u> \$21,678 is the average energy affordability gap for Households earning less than 100% of the Federal Poverty Level. For households earning less than 200% FPL the average energy affordability gap is \$858.

<sup>96</sup> Department of Economic and Community Development: <u>https://portal.ct.gov/DECD/Content/About\_DECD/Research-and-Publications/02\_Review\_Publications/Distressed-Municipalities</u>

<sup>97</sup> As designated by DECD in 2021.

<sup>98</sup> Residential Owner-occupied properties of 1-4 units and multifamily housing greater than 4 units.

<sup>99</sup> Excludes projects in unknown communities.

Fiscal Year	Distres sed	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Households	% Total Household Distribution	Project Units / 1,000 Total Households	Total Investment / Total Household	Watts / Total Household
2013	No	995	89%	7.9	34%	\$36,003,137	32%	1,360,184	100%	0.2	\$7.28	1.4
2013	Total	1,114	100%	23.5	100%	\$111,141,216	100%	426,564	31%	0.3	\$176.15	36.4
2014	Yes	389	15%	3.9	17%	\$21,470,661	20%	929,285	69%	1.1	\$38.74	8.5
2014	No	2,178	85%	19.5	83%	\$85,639,853	80%	1,355,849	100%	0.8	\$81.97	17.3
2014	Total	2,567	100%	23.4	100%	\$107,110,514	100%	416,415	31%	0.9	\$51.56	9.5
2015	Yes	1,498	22%	13.1	21%	\$94,022,507	29%	939,791	69%	2.3	\$91.13	20.7
2015	No	5,251	78%	49.1	79%	\$226,564,948	71%	1,356,206	100%	1.9	\$78.98	17.3
2015	Total	6,749	100%	62.2	100%	\$320,587,455	100%	423,559	31%	3.5	\$221.98	30.9
2016	Yes	2,434	29%	16.9	26%	\$99,438,223	31%	929,024	69%	5.7	\$243.87	52.9
2016	No	5,880	71%	48.9	74%	\$220,953,735	69%	1,352,583	100%	5.0	\$237.02	46.0
2016	Total	8,314	100%	65.9	100%	\$320,391,957	100%	438,710	32%	5.5	\$226.66	38.6
2017	Yes	2,273	37%	15.9	32%	\$60,828,435	34%	916,003	68%	6.4	\$241.22	53.4
2017	No	3,873	63%	34.1	68%	\$119,659,976	66%	1,354,713	100%	6.1	\$236.50	48.6
2017	Total	6,146	100%	50.0	100%	\$180,488,411	100%	435,595	32%	5.2	\$139.64	36.4
2018	Yes	3,737	45%	20.7	37%	\$79,123,980	36%	926,160	68%	4.2	\$129.20	36.9
2018	No	4,651	55%	35.7	63%	\$142,627,123	64%	1,361,755	100%	4.5	\$132.54	36.7
2018	Total	8,388	100%	56.4	100%	\$221,751,103	100%	430,098	31%	8.7	\$183.97	48.1
2019	Yes	4,280	46%	19.8	31%	\$106,082,135	39%	937,276	69%	5.0	\$152.17	38.1
2019	No	4,971	54%	44.5	69%	\$165,849,346	61%	1,367,374	100%	6.1	\$162.17	41.2
2019	Total	9,251	100%	64.3	100%	\$271,931,481	100%	421,653	31%	10.2	\$251.59	47.0
2020	Yes	2,907	34%	18.4	25%	\$72,929,372	26%	949,093	69%	5.2	\$174.75	46.9
2020	No	5,673	66%	55.5	75%	\$202,335,381	74%	1,370,746	100%	6.7	\$198.38	46.9
2020	Total	8,580	100%	74.0	100%	\$275,264,753	100%	427,553	31%	6.8	\$170.57	43.1
2021	Yes	1,936	29%	12.9	20%	\$57,147,346	22%	957,884	69%	5.9	\$211.23	58.0
2021	No	4,727	71%	53.2	80%	\$204,770,371	78%	1,385,437	100%	6.2	\$198.68	53.4
2021	Total	6,663	100%	66.1	100%	\$261,917,717	100%	375,703	27%	5.2	\$152.11	34.4
2022	Yes	649	23%	4.7	22%	\$25,696,803	24%	1,009,734	73%	4.7	\$202.80	52.6
2022	No	2,122	77%	17.0	78%	\$81,250,430	76%	1,385,437	100%	4.8	\$189.05	47.7
2022	Total	2,771	100%	21.8	100%	\$106,947,233	100%	375,703	27%	1.7	\$68.40	12.6

Fiscal Year	Distres sed	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Households	% Total Household Distribution	Project Units / 1,000 Total Households	Total Investment / Total Household	Watts / Total Household
Total	Yes	20,257	33%	142.2	28%	\$692,874,669	32%	1,009,734	73%	2.1	\$80.47	16.9
Total	No	40,574	67%	367.2	72%	\$1,494,558,682	68%	1,385,437	100%	2.0	\$77.19	15.7
Total	Total	60,831	100%	509.4	100%	\$2,187,433,351	100%	375,703	27%	53.9	\$1,844.21	378.4

#### TABLE 51. GREEN BANK COMMERCIAL AND RESIDENTIAL<sup>100</sup> ACTIVITY IN DISTRESSED AND NOT DISTRESSED COMMUNITIES BY FY CLOSED<sup>101</sup>

		# Prc	oject Units	. <u> </u>	1	N	/W			Total Inves	tment	Total Investment			
Fiscal		Not		%		Not		%	, i i i i i i i i i i i i i i i i i i i	Not		%			
Year	Total	Distressed	Distressed	Distressed	Total	Distressed	Distressed	Distressed	Total	Distressed	Distressed	Distressed			
2012	288	253	35	12%	1.9	1.7	0.2	10%	\$9,901,511	\$8,904,382	\$997,129	10%			
2013	1,114	995	119	11%	23.5	7.9	15.5	66%	\$111,141,216	\$36,003,137	\$75,138,078	68%			
2014	2,567	2,178	389	15%	23.4	19.5	3.9	17%	\$107,110,514	\$85,639,853	\$21,470,661	20%			
2015	6,749	5,251	1,498	22%	62.2	49.1	13.1	21%	\$320,587,455	\$226,564,948	\$94,022,507	29%			
2016	8,314	5,880	2,434	29%	65.9	48.9	16.9	26%	\$320,391,957	\$220,953,735	\$99,438,223	31%			
2017	6,146	3,873	2,273	37%	50.0	34.1	15.9	32%	\$180,488,411	\$119,659,976	\$60,828,435	34%			
2018	8,388	4,651	3,737	45%	56.4	35.7	20.7	37%	\$221,751,103	\$142,627,123	\$79,123,980	36%			
2019	9,251	4,971	4,280	46%	64.3	44.5	19.8	31%	\$271,931,481	\$165,849,346	\$106,082,135	39%			
2020	8,580	5,673	2,907	34%	74.0	55.5	18.4	25%	\$275,264,753	\$202,335,381	\$72,929,372	26%			
2021	6,663	4,727	1,936	29%	66.1	53.2	12.9	20%	\$261,917,717	\$204,770,371	\$57,147,346	22%			
2022	2,771	2,122	649	23%	21.8	17.0	4.7	22%	\$106,947,233	\$81,250,430	\$25,696,803	24%			
Total	60,831	40,574	20,257	33%	509.4	367.2	142.2	28%	\$2,187,433,351	\$1,494,558,682	\$692,874,669	32%			

<sup>&</sup>lt;sup>100</sup> Residential Owner-occupied properties of 1-4 units and multifamily housing greater than 4 units.

<sup>&</sup>lt;sup>101</sup> Excludes projects in unknown communities.

# TABLE 52. GREEN BANK COMMERCIAL AND RESIDENTIAL<sup>102</sup> PERFORMANCE INDICATORS BY PARTICIPATION IN DISTRESSED AND NOT DISTRESSED COMMUNITIES BY FY CLOSED<sup>103</sup>

	1	KW per Projec 1000*MW/tota		Tota	al Investment (\$000s)	per MW	Investment per Project Unit (\$)			
Fiscal Year	Total	Not Distressed	Distressed	Total	Not Distressed	Distressed	Total	Not Distressed	Distressed	
2012	6.7	6.9	5.7	\$5,103	\$5,119	\$4,965	\$34,380	\$35,195	\$28,489	
2013	21.1	8.0	130.4	\$4,739	\$4,534	\$4,843	\$99,768	\$36,184	\$631,412	
2014	9.1	8.9	10.1	\$4,577	\$4,400	\$5,449	\$41,726	\$39,320	\$55,195	
2015	9.2	9.4	8.7	\$5,153	\$4,612	\$7,189	\$47,501	\$43,147	\$62,765	
2016	7.9	8.3	7.0	\$4,865	\$4,516	\$5,875	\$38,536	\$37,577	\$40,854	
2017	8.1	8.8	7.0	\$3,609	\$3,505	\$3,833	\$29,367	\$30,896	\$26,761	
2018	6.7	7.7	5.5	\$3,934	\$3,999	\$3,823	\$26,437	\$30,666	\$21,173	
2019	7.0	9.0	4.6	\$4,228	\$3,727	\$5,351	\$29,395	\$33,363	\$24,786	
2020	8.6	9.8	6.3	\$3,722	\$3,644	\$3,954	\$32,082	\$35,666	\$25,088	
2021	9.9	11.2	6.7	\$3,963	\$3,852	\$4,418	\$39,309	\$43,319	\$29,518	
2022	7.9	8.0	7.3	\$4,909	\$4,768	\$5,415	\$38,595	\$38,290	\$39,594	
Total	8.4	9.1	7.0	\$4,294	\$4,070	\$4,873	\$35,959	\$36,835	\$34,204	

# TABLE 53. GREEN BANK COMMERCIAL AND RESIDENTIAL<sup>104</sup> RELATIONSHIP OF PERFORMANCE INDICATORS BETWEEN DISTRESSED AND NOT DISTRESSED COMMUNITIES BY FY CLOSED<sup>105</sup>

	KW per Project Unit	Total Investment per MW (\$000s)	Investment per Project Unit (\$)
Fiscal Year	Ratio of Not Distressed to Distressed	Ratio of Not Distressed to Distressed	Ratio of Not Distressed to Distressed
2012	1.20	1.03	1.24
2013	0.06	0.94	0.06
2014	0.88	0.81	0.71
2015	1.07	0.64	0.69
2016	1.20	0.77	0.92
2017	1.26	0.91	1.15
2018	1.38	1.05	1.45
2019	1.93	0.70	1.35
2020	1.54	0.92	1.42
2021	1.68	0.87	1.47
2022	1.10	0.88	0.97
Total	1.29	0.84	1.08

<sup>&</sup>lt;sup>102</sup> Residential Owner-occupied properties of 1-4 units and multifamily housing greater than 4 units.

<sup>&</sup>lt;sup>103</sup> Excludes projects in unknown bands.

<sup>&</sup>lt;sup>104</sup> Residential Owner-occupied properties of 1-4 units and multifamily housing greater than 4 units.

<sup>&</sup>lt;sup>105</sup> Excludes projects in unknown bands.

## Projects in Areas Designated as Environmental Justice Block Groups

These are United States census block groups, as determined in accordance with the most recent United States census, for which thirty per cent or more of the population consists of low-income persons who are not institutionalized and have an income below two hundred per cent of the federal poverty level or where the Connecticut Department of Energy and Environmental Protection has designated the block to be an Environmental Justice (EJ) Community. These block groups are specifically part of the State of Connecticut's definition of Vulnerable Communities.

		# Pr	oject Units				MW			Total Investr	nent	
Fiscal Year	Total	Not EJ Block Group		al Block EJ Block Block		al Block EJ Block Block Total EJ Block Block Block		Total	Not EJ Block Group	EJ Block Group	% EJ Block Group	
2012	288	279	9	3%	1.9	1.9	0.1	3%	\$9,901,511	\$9,554,351	\$347,160	4%
2013	1,114	1,082	32	3%	23.5	23.3	0.2	1%	\$111,141,216	\$110,162,989	\$978,226	1%
2014	2,567	2,481	86	3%	23.4	22.9	0.5	2%	\$107,110,514	\$104,742,298	\$2,368,216	2%
2015	6,749	6,516	233	3%	62.2	60.5	1.7	3%	\$320,587,455	\$312,634,184	\$7,953,271	2%
2016	8,314	7,902	412	5%	65.9	63.2	2.7	4%	\$320,391,957	\$308,648,048	\$11,743,909	4%
2017	6,146	5,470	676	11%	50.0	45.4	4.6	9%	\$180,488,411	\$164,614,057	\$15,874,354	9%
2018	8,388	7,988	400	5%	56.4	52.2	4.1	7%	\$221,751,103	\$208,660,656	\$13,090,447	6%
2019	13,590	13,127	463	3%	64.3	61.9	2.5	4%	\$319,612,686	\$310,204,956	\$9,407,730	3%
2020	9,197	8,451	746	8%	74.0	71.3	2.6	4%	\$286,177,632	\$276,370,669	\$9,806,963	3%
2021	7,102	6,795	307	4%	66.1	63.6	2.5	4%	\$270,723,458	\$245,821,653	\$24,901,804	9%
2022	3,435	3,274	161	5%	22.2	21.3	0.9	4%	\$120,112,932	\$115,708,617	\$4,404,315	4%
Total	66,890	63,365	3,525	5%	509.8	487.3	22.4	4%	\$2,267,998,874	\$2,167,122,478	\$100,876,396	4%

TABLE 54. GREEN BANK COMMERCIAL AND RESIDENTIAL<sup>106</sup> ACTIVITY IN ENVIRONMENTAL JUSTICE BLOCK GROUPS BY FY CLOSED<sup>107</sup>

<sup>&</sup>lt;sup>106</sup> Residential Owner-occupied properties of 1-4 units and multifamily housing greater than 4 units.

<sup>&</sup>lt;sup>107</sup> Excludes projects in unknown bands.

# TABLE 55. GREEN BANK COMMERCIAL AND RESIDENTIAL<sup>108</sup> PERFORMANCE INDICATORS BY PARTICIPATION IN ENVIRONMENTAL JUSTICE POVERTY AREAS BY FY CLOSED<sup>109</sup>

	KW per Project Unit (1000*MW/total units)			Total Inv	vestment per (\$000s)	Investment per Project Unit (\$)			
Fiscal Year	Total	Not EJ Block Group	EJ Block Group	Total	Not EJ Block Group	EJ Block Group	Total	Not EJ Block Group	EJ Block Group
2012	6.7	6.7	7.1	\$5,103	\$5,091	\$5,458	\$34,380	\$34,245	\$38,573
2013	21.1	21.5	6.2	\$4,739	\$4,737	\$4,967	\$99,768	\$101,814	\$30,570
2014	9.1	9.2	6.0	\$4,577	\$4,576	\$4,618	\$41,726	\$42,218	\$27,537
2015	9.2	9.3	7.4	\$5,153	\$5,170	\$4,590	\$47,501	\$47,979	\$34,134
2016	7.9	8.0	6.6	\$4,865	\$4,887	\$4,346	\$38,536	\$39,059	\$28,505
2017	8.1	8.3	6.8	\$3,609	\$3,626	\$3,447	\$29,367	\$30,094	\$23,483
2018	6.7	6.5	10.3	\$3,934	\$3,994	\$3,170	\$26,437	\$26,122	\$32,726
2019	4.7	4.7	5.3	\$4,969	\$5,015	\$3,816	\$23,518	\$23,631	\$20,319
2020	8.0	8.4	3.5	\$3,869	\$3,875	\$3,719	\$31,116	\$32,703	\$13,146
2021	9.3	9.4	8.1	\$4,096	\$3,866	\$9,954	\$38,119	\$36,177	\$81,113
2022	6.4	6.5	5.4	\$5,421	\$5,438	\$5,021	\$34,967	\$35,342	\$27,356
Total	7.6	7.7	6.4	\$4,449	\$4,447	\$4,499	\$33,906	\$34,201	\$28,617

TABLE 56. GREEN BANK COMMERCIAL AND RESIDENTIAL<sup>110</sup> RELATIONSHIP OF PERFORMANCE INDICATORS BETWEENENVIRONMENTAL JUSTICE POVERTY AREAS AND NOT DISTRESSED NOT ENVIRONMENTAL JUSTICE POVERTY AREAS BY FY CLOSED111

	KW per Project Unit	Total Investment per MW (\$000s)	Investment per Project Unit (\$)
Fiscal Year	Ratio of Not EJ Block Group to EJ Block Group	Ratio of Not EJ Block Group to EJ Block Group	Ratio of Not EJ Block Group to EJ Block Group
2012	0.95	0.93	0.89
2013	3.49	0.95	3.33
2014	1.55	0.99	1.53
2015	1.25	1.13	1.41
2016	1.22	1.12	1.37
2017	1.22	1.05	1.28
2018	0.63	1.26	0.80
2019	0.89	1.31	1.16
2020	2.39	1.04	2.49
2021	1.15	0.39	0.45
2022	1.19	1.08	1.29

<sup>&</sup>lt;sup>108</sup> Residential Owner-occupied properties of 1-4 units and multifamily housing greater than 4 units.

<sup>&</sup>lt;sup>109</sup> Excludes projects in unknown bands.

<sup>&</sup>lt;sup>110</sup> Residential Owner-occupied properties of 1-4 units and multifamily housing greater than 4 units.

<sup>&</sup>lt;sup>111</sup> Excludes projects in unknown bands.

Total	1.21	0.99	1.20

## Ethnicity

Ensuring that the benefits of the Green Economy reach all communities is core to the mission of the Green Bank. The Green Bank has sought to make sure that our programs are reaching not just those in in distressed municipalities and income bands, but that the programs are penetrating into those communities across race and ethnicity. The Green Bank categorizes each census tract in Connecticut as "Majority Hispanic", "Majority Black," "Majority White," or "Majority Asian" based on designations published by CT Data Collaborative<sup>112</sup>.

Table 61 and Table 62 groups the Green Bank's residential projects by the average area median income (AMI) of their census average state median income (AMI) of their census tract from the American Community Survey (ACS) 5-Year Estimate data by Ethnicity.

TABLE 57. OVERVIEW OF CONNECTICUT POPULATION AND HOUSEHOLDS BY ETHNICITY CATEGORY<sup>113</sup> <sup>114</sup>

Ethnicity Category	Total Population	% Total Population Distribution	Total Households	% Total Household Distribution	Total Owner Occupied 1-4 Unit Households	% Owner Occupied 1- 4 Unit Household Distribution	Total Owner/Rental Occupied 5+ Unit Households	% Owner/Rental Occupied 5+ Unit Household Distribution
Majority Black	164,759	5%	60,343	4%	25,577	3%	16,058	7%
Majority Hispanic	519,607	15%	193,968	14%	62,372	7%	59,377	25%
Majority White	2,881,783	81%	1,129,133	82%	788,350	90%	164,757	68%
Majority Asian	4,400	0%	1,993	0%	88	0%	1,766	1%
Total	3,570,549	100%	1,385,437	100%	876,387	100%	241,958	100%

#### TABLE 58. OVERVIEW OF CONNECTICUT POPULATION BY ETHNICITY CATEGORY BY METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS AND INCOME<sup>115 116</sup>

	Majorit	y Black	Majority	Hispanic	Majorit	y White	Majorit	y Asian
	Total Population	% Population						
<60%	91,708	56%	357,959	69%	156,219	5%	0	0%
60%-80%	35,912	22%	149,568	29%	355,386	12%	0	0%
80%-100%	19,404	12%	12,080	2%	630,521	22%	0	0%
100%-120%	15,208	9%	0	0%	672,540	23%	4,400	100%

112 https://www.ctdata.org/blog/most-common-raceethnicity-by-census-tract

<sup>&</sup>lt;sup>113</sup> 2020 American Community Survey (ACS).

<sup>&</sup>lt;sup>114</sup> The suite of products offered by the Connecticut Green Bank do not currently address rental properties of 1-4 units.

<sup>&</sup>lt;sup>115</sup> 2020 American Community Survey (ACS).

<sup>&</sup>lt;sup>116</sup> The suite of products offered by the Connecticut Green Bank do not currently address rental properties of 1-4 units.

	Majorit	y Black	Majority	Hispanic	Majorit	y White	Majorit	y Asian
	Total Population	% Population						
>120%	0	0%	0	0%	1,051,590	36%	0	0%
Grand Total	164,759	100%	519,607	100%	2,881,783	100%	4,400	100%

TABLE 59. OVERVIEW OF CONNECTICUT OWNER OCCUPIED HOUSEHOLDS (OOH) BY ETHNICITY CATEGORY BY METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS AND INCOME<sup>117</sup>

	Majorit	y Black	Majority	Hispanic	Majorit	y White	Majorit	y Asian
	Total Owner	% Owner						
	Occupied 1-4 Unit	Occupied 1-4 Unit Household						
	Households	Distribution	Households	Distribution	Households	Distribution	Households	Distribution
<60%	9,549	37%	36,027	58%	23,086	3%	0	0%
60%-80%	7,132	28%	23,995	38%	73,963	9%	0	0%
80%-100%	4,568	18%	2,350	4%	159,134	20%	0	0%
100%-120%	4,328	17%	0	0%	205,187	26%	88	100%
>120%	0	0%	0	0%	326,890	41%	0	0%
Grand Total	25,577	100%	62,372	100%	788,350	100%	88	100%

TABLE 60. OVERVIEW OF CONNECTICUT OWNER AND RENTAL OCCUPIED HOUSEHOLDS (ORH) BY ETHNICITY CATEGORY BY METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS AND INCOME<sup>118</sup>

	Majorit	y Black	Majority	Hispanic	Majorit	y White	Majori	ty Asian
	Total Owner/Rental Occupied 5+ Unit Households	% Owner/Rental Occupied 5+ Unit Household Distribution						
<60%	11,714	73%	44,840	76%	21,657	13%	0	0%
60%-80%	2,302	14%	14,212	24%	36,544	22%	0	0%
80%-100%	1,307	8%	325	1%	55,043	33%	0	0%
100%-120%	735	5%	0	0%	29,562	18%	1,766	100%
>120%	0	0%	0	0%	21,904	13%	0	0%
Grand Total	16,058	100%	59,377	100%	164,757	100%	1,766	100%

<sup>&</sup>lt;sup>117</sup> 2020 American Community Survey (ACS).

<sup>&</sup>lt;sup>118</sup> 2020 American Community Survey (ACS).

TABLE 61. GREEN BANK COMMERCIAL AND RESIDENTIAL <sup>119</sup> ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS BY ETHNICITY CATEGORY BY FY	
CLOSED <sup>120</sup>	

			Majority	Black			Majority H	lispanic			Majorit	ty White			Major	ity Asian	
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	Total Populat ion	% Popul ation	# Project Units	% Project Units	Total Popula tion	% Popul ation	# Project Units	% Project Units	Total Populatio n	% Populat ion	# Projec t Units	% Project Units	Total Populati on	% Populati on
2012	<60%	1	14.3%	130,338	21.4%	2	28.6%	267,578	43.9%	4	57.1%	211,447	34.7%	0	0.0%	0	0.0%
2012	60%-80%	0	0.0%	50,463	9.6%	1	12.5%	46,451	8.8%	7	87.5%	430,303	81.6%	0	0.0%	0	0.0%
2012	80%-100%	0	0.0%	12,967	2.2%	0	0.0%	0	0.0%	33	100.0%	576,473	97.8%	0	0.0%	0	0.0%
2012	100%-120%	0	0.0%	13,518	1.9%	0	0.0%	0	0.0%	83	100.0%	709,146	98.1%	0	0.0%	0	0.0%
2012	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	157	100.0%	1,116,395	100.0%	0	0.0%	0	0.0%
2012	Total	1	0.3%	208,256	5.8%	3	1.0%	315,320	8.8%	284	98.6%	3,048,637	85.3%	0	0.0%	0	0.0%
2013	<60%	2	8.3%	105,728	17.5%	8	33.3%	291,958	48.4%	14	58.3%	205,340	34.1%	0	0.0%	0	0.0%
2013	60%-80%	4	6.3%	62,973	11.1%	3	4.8%	58,042	10.2%	56	88.9%	446,346	78.7%	0	0.0%	0	0.0%
2013	80%-100%	0	0.0%	6,811	1.2%	0	0.0%	0	0.0%	128	100.0%	580,729	98.8%	0	0.0%	0	0.0%
2013	100%-120%	3	1.4%	13,050	1.9%	0	0.0%	0	0.0%	219	98.6%	674,211	98.1%	0	0.0%	0	0.0%
2013	>120%	0	0.0%	6,473	0.6%	0	0.0%	0	0.0%	677	100.0%	1,124,298	99.4%	0	0.0%	0	0.0%
2013	Total	9	0.8%	196,363	5.5%	11	1.0%	351,246	9.8%	1,094	98.2%	3,035,952	84.7%	0	0.0%	0	0.0%
2014	<60%	14	15.1%	121,933	19.9%	13	14.0%	257,389	41.9%	66	71.0%	234,813	38.2%	0	0.0%	0	0.0%
2014	60%-80%	23	13.3%	48,498	8.9%	12	6.9%	70,300	12.9%	138	79.8%	427,334	78.2%	0	0.0%	0	0.0%
2014	80%-100%	0	0.0%	7,211	1.2%	3	0.6%	8,171	1.4%	532	99.4%	561,679	97.3%	0	0.0%	0	0.0%
2014	100%-120%	5	0.8%	12,878	1.8%	0	0.0%	1,119	0.2%	608	99.2%	706,859	98.1%	0	0.0%	0	0.0%
2014	>120%	7	0.6%	14,031	1.2%	0	0.0%	0	0.0%	1,146	99.4%	1,111,879	98.8%	0	0.0%	0	0.0%
2014	Total	49	1.9%	206,238	5.7%	28	1.1%	338,179	9.4%	2,490	97.0%	3,047,636	84.8%	0	0.0%	0	0.0%
2015	<60%	69	22.9%	110,813	16.7%	108	35.9%	338,370	51.1%	124	41.2%	213,436	32.2%	0	0.0%	0	0.0%
2015	60%-80%	49	7.4%	42,986	8.8%	92	13.9%	46,866	9.6%	520	78.7%	399,974	81.7%	0	0.0%	0	0.0%
2015	80%-100%	30	2.4%	21,223	3.3%	5	0.4%	3,107	0.5%	1,196	96.9%	618,838	95.2%	3	0.2%	6,995	1.1%

<sup>119</sup> Residential Owner-occupied properties of 1-4 units and multifamily housing greater than 4 units.

<sup>120</sup> Excludes projects in unknown bands.

			Majority	Black			Majority H	lispanic			Majori	ty White			Majori	ty Asian	
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	Total Populat ion	% Popul ation	# Project Units	% Project Units	Total Popula tion	% Popul ation	# Project Units	% Project Units	Total Populatio n	% Populat ion	# Projec t Units	% Project Units	Total Populati on	% Populati on
2015	100%-120%	19	1.2%	3,415	0.5%	0	0.0%	1,058	0.2%	1,597	98.8%	627,268	99.3%	0	0.0%	0	0.0%
2015	>120%	15	0.5%	6,641	0.6%	0	0.0%	0	0.0%	2,922	99.5%	1,144,333	99.4%	0	0.0%	0	0.0%
2015	Total	182	2.7%	187,128	5.2%	205	3.0%	389,401	10.8%	6,359	94.2%	3,009,698	83.8%	3	0.0%	6,995	0.2%
2016	<60%	233	26.4%	109,692	16.9%	406	46.0%	338,922	52.2%	244	27.6%	201,003	30.9%	0	0.0%	0	0.0%
2016	60%-80%	100	9.1%	41,838	8.2%	109	9.9%	53,161	10.4%	894	81.1%	414,089	81.3%	0	0.0%	0	0.0%
2016	80%-100%	82	4.5%	17,988	2.8%	3	0.2%	5,164	0.8%	1,729	95.2%	617,932	96.4%	2	0.1%	0	0.0%
2016	100%-120%	13	0.7%	0	0.0%	0	0.0%	0	0.0%	1,962	99.1%	645,907	98.9%	5	0.3%	7,402	1.1%
2016	>120%	52	2.1%	11,169	1.0%	0	0.0%	0	0.0%	2,477	97.9%	1,115,374	99.0%	0	0.0%	0	0.0%
2016	Total	480	5.8%	182,789	5.1%	518	6.2%	399,390	11.1%	7,306	87.9%	2,998,989	83.6%	7	0.1%	7,402	0.2%
2017	<60%	133	11.5%	113,965	17.2%	832	71.8%	346,455	52.2%	194	16.7%	202,761	30.6%	0	0.0%	0	0.0%
2017	60%-80%	80	7.1%	24,281	5.0%	129	11.5%	79,948	16.4%	917	81.4%	384,167	78.7%	0	0.0%	0	0.0%
2017	80%-100%	54	4.2%	15,657	2.6%	16	1.3%	10,830	1.8%	1,207	94.5%	585,556	95.7%	0	0.0%	0	0.0%
2017	100%-120%	5	0.5%	4,214	0.6%	0	0.0%	0	0.0%	1,062	99.2%	710,852	98.3%	4	0.4%	7,737	1.1%
2017	>120%	44	2.9%	14,631	1.3%	0	0.0%	0	0.0%	1,469	97.1%	1,084,646	98.7%	0	0.0%	0	0.0%
2017	Total	316	5.1%	175,792	4.9%	977	15.9%	437,233	12.2%	4,849	78.9%	2,973,716	82.7%	4	0.1%	7,737	0.2%
2018	<60%	454	18.9%	103,879	16.3%	1,641	68.5%	330,170	51.8%	302	12.6%	202,746	31.8%	0	0.0%	0	0.0%
2018	60%-80%	97	9.6%	36,569	6.6%	138	13.6%	80,567	14.6%	780	76.8%	435,871	78.8%	0	0.0%	0	0.0%
2018	80%-100%	71	5.3%	19,669	3.5%	44	3.3%	17,924	3.1%	1,229	91.4%	531,520	93.4%	0	0.0%	0	0.0%
2018	100%-120%	29	1.9%	8,805	1.2%	0	0.0%	0	0.0%	1,464	97.5%	694,040	97.6%	8	0.5%	7,957	1.1%
2018	>120%	62	2.9%	9,517	0.9%	0	0.0%	0	0.0%	2,064	97.1%	1,093,967	99.1%	0	0.0%	0	0.0%
2018	Total	713	8.5%	182,170	5.1%	1,823	21.7%	428,661	12.0%	5,839	69.7%	2,962,716	82.7%	8	0.1%	7,957	0.2%
2019	<60%	335	16.9%	106,329	16.8%	1,376	69.6%	341,405	54.1%	267	13.5%	183,874	29.1%	0	0.0%	0	0.0%
2019	60%-80%	165	12.9%	32,049	6.1%	144	11.2%	71,728	13.6%	975	75.9%	422,251	80.3%	0	0.0%	0	0.0%
2019	80%-100%	88	4.6%	21,054	3.4%	53	2.8%	7,832	1.3%	1,772	92.6%	584,126	95.3%	0	0.0%	0	0.0%
2019	100%-120%	62	3.4%	12,627	1.8%	5	0.3%	2,620	0.4%	1,751	95.8%	686,767	96.7%	10	0.5%	7,953	1.1%
2019	>120%	23	1.0%	6,394	0.6%	0	0.0%	0	0.0%	2,224	99.0%	1,080,098	99.4%	0	0.0%	0	0.0%
2019	Total	673	7.3%	180,323	5.0%	1,578	17.1%	423,585	11.8%	6,989	75.6%	2,963,213	82.9%	10	0.1%	7,953	0.2%
2020	<60%	356	29.1%	91,708	15.1%	619	50.5%	357,959	59.1%	250	20.4%	156,219	25.8%	0	0.0%	0	0.0%
2020	60%-80%	97	8.0%	35,912	6.6%	170	14.1%	149,568	27.7%	939	77.9%	355,386	65.7%	0	0.0%	0	0.0%

			Majority	Black			Majority H	lispanic			Majori	ty White			Majori	ity Asian	
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	Total Populat ion	% Popul ation	# Project Units	% Project Units	Total Popula tion	% Popul ation	# Project Units	% Project Units	Total Populatio n	% Populat ion	# Projec t Units	% Project Units	Total Populati on	% Populati on
2020	80%-100%	83	5.4%	19,404	2.9%	55	3.6%	12,080	1.8%	1,396	91.0%	630,521	95.2%	0	0.0%	0	0.0%
2020	100%-120%	59	2.6%	15,208	2.2%	3	0.1%	0	0.0%	2,162	97.1%	672,540	97.2%	3	0.1%	4,400	0.6%
2020	>120%	11	0.5%	0	0.0%	0	0.0%	0	0.0%	2,369	99.5%	1,051,590	100.0%	0	0.0%	0	0.0%
2020	Total	606	7.1%	164,759	4.6%	847	9.9%	519,607	14.6%	7,116	83.0%	2,881,783	80.7%	3	0.0%	4,400	0.1%
2021	<60%	252	33.2%	91,708	15.1%	306	40.3%	357,959	59.1%	202	26.6%	156,219	25.8%	0	0.0%	0	0.0%
2021	60%-80%	84	9.2%	35,912	6.6%	210	23.1%	149,568	27.7%	616	67.7%	355,386	65.7%	0	0.0%	0	0.0%
2021	80%-100%	49	3.9%	19,404	2.9%	46	3.6%	12,080	1.8%	1,174	92.5%	630,521	95.2%	0	0.0%	0	0.0%
2021	100%-120%	45	2.9%	15,208	2.2%	0	0.0%	0	0.0%	1,481	97.0%	672,540	97.2%	1	0.1%	4,400	0.6%
2021	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2,183	100.0%	1,051,590	100.0%	0	0.0%	0	0.0%
2021	Total	430	6.5%	164,759	4.6%	562	8.5%	519,607	14.6%	5,656	85.1%	2,881,783	80.7%	1	0.0%	4,400	0.1%
2022	<60%	63	22.6%	91,708	15.1%	126	45.2%	357,959	59.1%	90	32.3%	156,219	25.8%	0	0.0%	0	0.0%
2022	60%-80%	25	7.2%	35,912	6.6%	74	21.2%	149,568	27.7%	250	71.6%	355,386	65.7%	0	0.0%	0	0.0%
2022	80%-100%	17	3.4%	19,404	2.9%	16	3.2%	12,080	1.8%	474	93.5%	630,521	95.2%	0	0.0%	0	0.0%
2022	100%-120%	19	2.9%	15,208	2.2%	0	0.0%	0	0.0%	627	96.5%	672,540	97.2%	4	0.6%	4,400	0.6%
2022	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	987	100.0%	1,051,590	100.0%	0	0.0%	0	0.0%
2022	Total	124	4.5%	164,759	4.6%	216	7.8%	519,607	14.6%	2,428	87.6%	2,881,783	80.7%	4	0.1%	4,400	0.1%
Total	<60%	1,912	21.0%	91,708	15.1%	5,437	59.7%	357,959	59.1%	1,757	19.3%	156,219	25.8%	0	0.0%	0	0.0%
Total	60%-80%	724	9.2%	35,912	6.6%	1,082	13.7%	149,568	27.7%	6,092	77.1%	355,386	65.7%	0	0.0%	0	0.0%
Total	80%-100%	474	4.1%	19,404	2.9%	241	2.1%	12,080	1.8%	10,870	93.8%	630,521	95.2%	5	0.0%	0	0.0%
Total	100%-120%	259	1.9%	15,208	2.2%	8	0.1%	0	0.0%	13,016	97.7%	672,540	97.2%	35	0.3%	4,400	0.6%
Total	>120%	214	1.1%	0	0.0%	0	0.0%	0	0.0%	18,675	98.9%	1,051,590	100.0%	0	0.0%	0	0.0%
Total	Total	3,583	5.9%	164,759	4.6%	6,768	11.1%	519,607	14.6%	50,410	82.9%	2,881,783	80.7%	40	0.1%	4,400	0.1%

			Majority	Black			Majority H	lispanic			Majority	/ White			Majority	Asian	
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1-4 Units	% OOH	# Project Units	% Project Units	OOH 1-4 Units	% ООН
2012	<60%	1	14.3%	13,052	20.8%	2	28.6%	21,021	33.5%	4	57.1%	28,616	45.6%	0	0.0%	0	0.0%
2012	60%-80%	0	0.0%	8,714	8.5%	1	12.5%	7,447	7.3%	7	87.5%	86,017	84.2%	0	0.0%	0	0.0%
2012	80%-100%	0	0.0%	3,490	2.3%	0	0.0%	0	0.0%	33	100.0%	147,195	97.7%	0	0.0%	0	0.0%
2012	100%-120%	0	0.0%	3,488	1.6%	0	0.0%	0	0.0%	83	100.0%	212,996	98.4%	0	0.0%	0	0.0%
2012	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	157	100.0%	349,212	100.0%	0	0.0%	0	0.0%
2012	Total	1	0.3%	28,744	3.3%	3	1.0%	28,468	3.2%	284	98.6%	824,036	93.5%	0	0.0%	0	0.0%
2013	<60%	2	9.1%	10,766	17.6%	6	27.3%	21,781	35.7%	14	63.6%	28,457	46.6%	0	0.0%	0	0.0%
2013	60%-80%	4	6.3%	10,827	9.8%	3	4.8%	9,574	8.7%	56	88.9%	89,566	81.4%	0	0.0%	0	0.0%
2013	80%-100%	0	0.0%	1,926	1.3%	0	0.0%	0	0.0%	126	100.0%	147,750	98.7%	0	0.0%	0	0.0%
2013	100%-120%	3	1.4%	3,177	1.6%	0	0.0%	0	0.0%	217	98.6%	199,650	98.4%	0	0.0%	0	0.0%
2013	>120%	0	0.0%	1,808	0.5%	0	0.0%	0	0.0%	676	100.0%	348,900	99.5%	0	0.0%	0	0.0%
2013	Total	9	0.8%	28,504	3.3%	9	0.8%	31,355	3.6%	1,089	98.4%	814,323	93.2%	0	0.0%	0	0.0%
2014	<60%	12	14.0%	12,067	20.4%	9	10.5%	17,945	30.3%	65	75.6%	29,282	49.4%	0	0.0%	0	0.0%
2014	60%-80%	23	13.5%	8,576	8.2%	12	7.1%	10,507	10.1%	135	79.4%	85,445	81.7%	0	0.0%	0	0.0%
2014	80%-100%	0	0.0%	1,868	1.3%	2	0.4%	1,491	1.0%	526	99.6%	145,487	97.7%	0	0.0%	0	0.0%
2014	100%-120%	5	0.8%	3,280	1.6%	0	0.0%	0	0.0%	605	99.2%	205,632	98.4%	0	0.0%	0	0.0%
2014	>120%	7	0.6%	3,745	1.1%	0	0.0%	0	0.0%	1,139	99.4%	344,034	98.9%	0	0.0%	0	0.0%
2014	Total	47	1.9%	29,536	3.4%	23	0.9%	29,943	3.4%	2,470	97.2%	809,880	93.2%	0	0.0%	0	0.0%
2015	<60%	66	23.3%	12,243	18.4%	99	35.0%	27,292	41.0%	118	41.7%	27,097	40.7%	0	0.0%	0	0.0%
2015	60%-80%	49	7.5%	7,491	7.8%	92	14.0%	7,075	7.4%	515	78.5%	81,493	84.8%	0	0.0%	0	0.0%
2015	80%-100%	30	2.4%	5,767	3.5%	5	0.4%	513	0.3%	1,189	97.0%	158,372	95.9%	2	0.2%	553	0.3%
2015	100%-120%	19	1.2%	863	0.5%	0	0.0%	0	0.0%	1,584	98.8%	182,766	99.5%	0	0.0%	0	0.0%
2015	>120%	15	0.5%	1,877	0.5%	0	0.0%	0	0.0%	2,904	99.5%	350,176	99.5%	0	0.0%	0	0.0%
2015	Total	179	2.7%	28,241	3.3%	196	2.9%	34,880	4.0%	6,310	94.4%	799,904	92.6%	2	0.0%	553	0.1%

#### TABLE 62. GREEN BANK RESIDENTIAL<sup>121</sup> ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS BY ETHNICITY CATEGORY BY FY CLOSED<sup>122</sup>

<sup>121</sup> Residential Owner-occupied properties of 1-4 units.

<sup>122</sup> Excludes projects in unknown bands.

			Majority	Black			Majority H	lispanic			Majority	/ White			Majority	Asian	
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1-4 Units	% OOH	# Project Units	% Project Units	OOH 1-4 Units	% ООН
2016	<60%	232	26.5%	11,333	18.0%	400	45.8%	26,620	42.2%	242	27.7%	25,103	39.8%	0	0.0%	0	0.0%
2016	60%-80%	100	9.1%	7,872	7.9%	108	9.9%	8,551	8.6%	888	81.0%	82,650	83.4%	0	0.0%	0	0.0%
2016	80%-100%	82	4.6%	4,736	2.9%	3	0.2%	937	0.6%	1,715	95.2%	159,339	96.6%	1	0.1%	0	0.0%
2016	100%-120%	12	0.6%	0	0.0%	0	0.0%	0	0.0%	1,949	99.2%	186,570	99.7%	3	0.2%	559	0.3%
2016	>120%	52	2.1%	3,063	0.9%	0	0.0%	0	0.0%	2,456	97.9%	341,514	99.1%	0	0.0%	0	0.0%
2016	Total	478	5.8%	27,004	3.1%	511	6.2%	36,108	4.2%	7,250	88.0%	795,176	92.6%	4	0.0%	559	0.1%
2017	<60%	132	11.5%	11,916	18.4%	828	72.1%	28,817	44.5%	188	16.4%	24,022	37.1%	0	0.0%	0	0.0%
2017	60%-80%	78	7.0%	5,276	5.4%	128	11.5%	12,600	12.9%	911	81.6%	79,579	81.7%	0	0.0%	0	0.0%
2017	80%-100%	54	4.3%	4,323	2.8%	16	1.3%	2,062	1.3%	1,196	94.5%	149,029	95.9%	0	0.0%	0	0.0%
2017	100%-120%	5	0.5%	1,101	0.5%	0	0.0%	0	0.0%	1,044	99.1%	207,746	99.2%	4	0.4%	637	0.3%
2017	>120%	44	2.9%	4,014	1.2%	0	0.0%	0	0.0%	1,457	97.1%	335,348	98.8%	0	0.0%	0	0.0%
2017	Total	313	5.1%	26,630	3.1%	972	16.0%	43,479	5.0%	4,796	78.8%	795,724	91.8%	4	0.1%	637	0.1%
2018	<60%	453	19.0%	10,135	16.3%	1,634	68.5%	28,053	45.1%	300	12.6%	24,059	38.7%	0	0.0%	0	0.0%
2018	60%-80%	97	9.7%	7,948	7.3%	136	13.6%	11,560	10.6%	768	76.7%	89,634	82.1%	0	0.0%	0	0.0%
2018	80%-100%	71	5.3%	4,704	3.2%	44	3.3%	3,271	2.2%	1,219	91.4%	138,013	94.5%	0	0.0%	0	0.0%
2018	100%-120%	28	1.9%	2,274	1.1%	0	0.0%	0	0.0%	1,452	97.6%	201,977	98.6%	8	0.5%	629	0.3%
2018	>120%	62	3.0%	2,828	0.8%	0	0.0%	0	0.0%	2,031	97.0%	341,161	99.2%	0	0.0%	0	0.0%
2018	Total	711	8.6%	27,889	3.2%	1,814	21.8%	42,884	5.0%	5,770	69.5%	794,844	91.8%	8	0.1%	629	0.1%
2019	<60%	330	16.8%	10,903	17.0%	1,371	69.7%	29,840	46.5%	265	13.5%	23,497	36.6%	0	0.0%	0	0.0%
2019	60%-80%	163	12.8%	6,102	6.0%	142	11.2%	10,367	10.3%	966	76.0%	84,519	83.7%	0	0.0%	0	0.0%
2019	80%-100%	88	4.6%	5,119	3.3%	53	2.8%	1,488	1.0%	1,766	92.6%	148,956	95.8%	0	0.0%	0	0.0%
2019	100%-120%	62	3.4%	3,330	1.6%	5	0.3%	627	0.3%	1,743	95.8%	202,850	97.8%	10	0.5%	648	0.3%
2019	>120%	23	1.0%	2,074	0.6%	0	0.0%	0	0.0%	2,214	99.0%	335,436	99.4%	0	0.0%	0	0.0%
2019	Total	666	7.2%	27,528	3.2%	1,571	17.1%	42,322	4.9%	6,954	75.6%	795,258	91.9%	10	0.1%	648	0.1%
2020	<60%	355	29.2%	9,549	13.9%	611	50.3%	36,027	52.5%	248	20.4%	23,086	33.6%	0	0.0%	0	0.0%
2020	60%-80%	95	8.0%	7,132	6.8%	166	13.9%	23,995	22.8%	933	78.1%	73,963	70.4%	0	0.0%	0	0.0%
2020	80%-100%	83	5.4%	4,568	2.8%	55	3.6%	2,350	1.4%	1,388	91.0%	159,134	95.8%	0	0.0%	0	0.0%
2020	100%-120%	59	2.7%	4,328	2.1%	3	0.1%	0	0.0%	2,151	97.1%	205,187	97.9%	3	0.1%	88	0.0%
2020	>120%	11	0.5%	0	0.0%	0	0.0%	0	0.0%	2,345	99.5%	326,890	100.0%	0	0.0%	0	0.0%

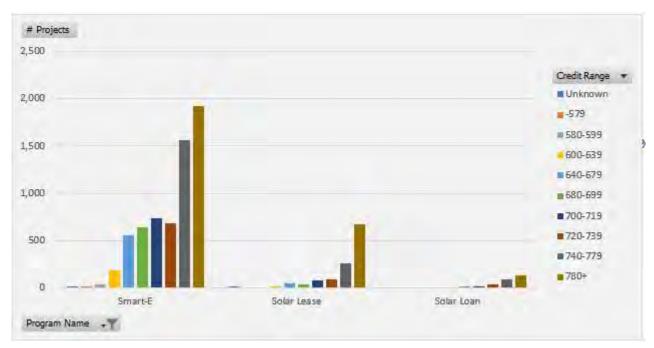
			Majority	Black			Majority H	lispanic			Majority	/ White			Majority	Asian	I
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1-4 Units	% OOH	# Project Units	% Project Units	OOH 1-4 Units	% ООН
2020	Total	603	7.1%	25,577	2.9%	835	9.8%	62,372	7.1%	7,065	83.1%	788,350	90.0%	3	0.0%	88	0.0%
2021	<60%	250	33.2%	9,549	13.9%	302	40.2%	36,027	52.5%	200	26.6%	23,086	33.6%	0	0.0%	0	0.0%
2021	60%-80%	84	9.3%	7,132	6.8%	210	23.2%	23,995	22.8%	610	67.5%	73,963	70.4%	0	0.0%	0	0.0%
2021	80%-100%	48	3.8%	4,568	2.8%	46	3.7%	2,350	1.4%	1,163	92.5%	159,134	95.8%	0	0.0%	0	0.0%
2021	100%-120%	45	3.0%	4,328	2.1%	0	0.0%	0	0.0%	1,468	97.0%	205,187	97.9%	1	0.1%	88	0.0%
2021	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2,157	100.0%	326,890	100.0%	0	0.0%	0	0.0%
2021	Total	427	6.5%	25,577	2.9%	558	8.5%	62,372	7.1%	5,598	85.0%	788,350	90.0%	1	0.0%	88	0.0%
2022	<60%	61	22.3%	9,549	13.9%	124	45.4%	36,027	52.5%	88	32.2%	23,086	33.6%	0	0.0%	0	0.0%
2022	60%-80%	25	7.2%	7,132	6.8%	73	21.0%	23,995	22.8%	250	71.8%	73,963	70.4%	0	0.0%	0	0.0%
2022	80%-100%	16	3.2%	4,568	2.8%	15	3.0%	2,350	1.4%	466	93.8%	159,134	95.8%	0	0.0%	0	0.0%
2022	100%-120%	19	2.9%	4,328	2.1%	0	0.0%	0	0.0%	623	96.4%	205,187	97.9%	4	0.6%	88	0.0%
2022	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	978	100.0%	326,890	100.0%	0	0.0%	0	0.0%
2022	Total	121	4.4%	25,577	2.9%	212	7.7%	62,372	7.1%	2,405	87.7%	788,350	90.0%	4	0.1%	88	0.0%
Total	<60%	1,894	21.0%	9,549	13.9%	5,386	59.8%	36,027	52.5%	1,732	19.2%	23,086	33.6%	0	0.0%	0	0.0%
Total	60%-80%	718	9.2%	7,132	6.8%	1,071	13.7%	23,995	22.8%	6,039	77.1%	73,963	70.4%	0	0.0%	0	0.0%
Total	80%-100%	472	4.1%	4,568	2.8%	239	2.1%	2,350	1.4%	10,787	93.8%	159,134	95.8%	3	0.0%	0	0.0%
Total	100%-120%	257	1.9%	4,328	2.1%	8	0.1%	0	0.0%	12,919	97.7%	205,187	97.9%	33	0.2%	88	0.0%
Total	>120%	214	1.1%	0	0.0%	0	0.0%	0	0.0%	18,514	98.9%	326,890	100.0%	0	0.0%	0	0.0%
Total	Total	3,555	5.9%	25,577	2.9%	6,704	11.1%	62,372	7.1%	49,991	82.9%	788,350	90.0%	36	0.1%	88	0.0%

### Credit Quality of Homeowners

The credit quality of borrowers in Green Bank residential financing programs that do FICO-based underwriting reflects the relatively high FICO scores in the state; 90% of single-family households that are Green Bank borrowers in these programs have a FICO of 680 or higher. The Green Bank has begun to focus on ensuring that credit-challenged customers also have access to energy financing products. Initiatives such as the partnership with PosiGen, which uses an alternative underwriting approach, and a new version of the Smart-E program which broadens credit eligibility to serve credit-challenged households are examples of this. The Smart-E program now has six lenders with experience serving this market including Capital 4 Change - a Community Development Financial Institution, and all the participating credit unions.

Program Name	Unknown	-579	580-599	600-639	640-679	680-699	700-719	720-739	740-779	780+	Grand Total
Smart-E	2	1	34	188	556	636	731	688	1,560	1,920	6,316
Solar Lease	4			1	45	39	78	85	264	673	1,189
Solar Loan						11	15	34	90	129	279
Grand Total	6	1	34	189	601	686	824	807	1,914	2,722	7,784
	0%	0%	0%	2%	8%	9%	11%	10%	25%	35%	100%

#### TABLE 63. CREDIT SCORE RANGES OF HOUSEHOLD BORROWERS USING RESIDENTIAL FINANCING PROGRAMS FY 2012-FY 2022



#### FIGURE 3. CREDIT SCORE RANGES OF HOUSEHOLD BORROWERS USING RESIDENTIAL FINANCING PROGRAMS

## **Customer Types and Market Segments**

The Connecticut Green Bank targets end users of energy in Connecticut both at work and at home. A breakdown of projects by year by sector is shown in Table 64.

Fiscal Year	# Projects	# Project Units	Total Investment	Installed Capacity (MW)	Expected Annual Generation (MWh)	Annual Saved / Produced (MMBtu)
	1		Commercial and			()
2012	0	0	\$0	0.0	0	0
2013	7	7	\$75,751,144	15.6	122,597	432,931
2014	27	27	\$29,371,586	6.7	32,134	182,330
2015	62	62	\$96,975,007	14.7	154,415	513,096
2016	71	71	\$54,887,158	10.2	25,614	72,689
2017	61	61	\$44,933,667	14.7	26,321	361,017
2018	85	85	\$39,908,681	14.1	18,437	59,627
2019	4,389	4,389	\$80,401,947	8.8	139,741	36,952
2020	686	686	\$62,304,398	14.9	87,659	63,091
2021	503	503	\$74,585,080	16.4	32,275	69,811
2022	687	687	\$39,582,388	5.0	26,785	14,191
Total	6,578	6,578	\$598,701,055	120.9	665,976	1,805,735
			Multifamily			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
2012	0	0	\$0	0.0	0	0
2013	0	0	\$0	0.0	0	0
2014	1	120	\$420,000	0.0	18	61
2015	3	294	\$1,051,296	0.0	56	212
2016	19	1,097	\$31,239,253	0.5	1,091	3,778
2017	15	1,288	\$7,702,985	1.0	1,125	11,128
2018	18	1,768	\$9,335,247	0.1	1,409	5,221
2019	15	1,918	\$31,479,010	0.0	0	756
2020	10	886	\$5,250,111	0.4	3,469	724
2021	3	113	\$3,861,233	0.0	0	0
2022	1	18	\$61,000	0.0	0	0
Total	85	7,502	\$90,400,135	2.0	7,168	21,879
			Residential			
2012	288	288	\$9,901,511	1.9	2,210	7,539
2013	1,107	1,107	\$35,390,072	7.9	8,965	30,593
2014	2,420	2,420	\$77,318,929	16.7	19,441	65,433
2015	6,393	6,393	\$222,561,152	47.6	55,069	183,957
2016	7,146	7,146	\$234,265,546	55.1	64,972	219,355
2017	4,797	4,797	\$127,851,759	34.4	44,127	151,021
2018	6,535	6,535	\$172,507,175	42.2	57,891	194,095
2019	7,283	7,283	\$207,731,728	55.5	69,585	236,396
2020	7,625	7,625	\$218,623,123	58.6	72,176	247,140
2021	6,486	6,486	\$192,277,145	49.7	64,054	218,018
2022	2,730	2,730	\$80,469,544	17.2	24,165	82,497
Total	52,810	52,810	\$1,578,897,684	386.8	482,653	1,636,043
Grand Total	59,473	66,890	\$2,267,998,874	509.8	1,155,796	3,463,657

## 5. Green Bonds

The Green Bank views Green Bond issuance as a key tool for expanding the organization's reach and impact. While the organization had previously issued privately placed Clean Renewable Energy Bonds (CREB's), FY2019 marked the Green Bank's first publicly offered debt issuance, the SHREC ABS Note Series A & Series B Climate Bond. The success of this offering and the potential to use debt capital markets as a tool for accessing capital and engaging investors, led us to build a larger multi-year strategy. The "Green Bonds Us" strategy seeks to raise additional lower cost capital from individual investors through bonds, including smaller denomination bonds, to support the clean economy and accelerate deployment of clean energy.

## **Green Bond Framework**

The Green Bank has always valued transparency as a management principle and a cornerstone of leadership. The organization believes that clear and publicly available data, allows for transactions to be replicated with ease, thus expediting the transformation of a market. With bonds, we believe the same is true and that impact investors require assurance that their investments are going to the intended purpose. Ergo, the Green Bank obtained certification from the Climate Bonds Initiative (CBI) for our SHREC ABS 2019-1 Class A and Class B bonds, and worked with Kestrel Verifiers who provided an independent external review of the Certified Climate Bonds. CBI has built a thorough certification regime using established standards for specific technologies for which the proceeds are used and incorporating transparency and robust reporting practices.

With bond issuance at the heart of our strategy, the Green Bank needed an efficient way to operationalize the certification process. In FY 2020, the Green Bank adopted a Green Bond Framework that holds the organization to high standards of transparency and reporting on all future bond issuances. The Framework commits the organization to certify its bonds as Climate Bonds per CBI, where applicable. If no CBI Standard applies, the Green Bank will issue the bonds as Green Bonds. The Framework also commits the Green Bank to engage in regular impact reporting, which is presented in the next part of this Non-Financial Statistics section.

Working with Kestrel Verifiers and CBI, the Green Bank received programmatic certification in April 2020, thus reducing the cost, effort, and time needed to issue Certified Climate Bonds in the future. The framework and Kestrel Verifiers' Second Party Opinion on the framework are publicly available on the Green Bank's <u>website</u>.

**Bond Issuances** 



#### SHREC ABS 2019-1 Class A and Class B notes

In April 2019, the Connecticut Green Bank sold \$38.6 million in investment-grade rated assetbacked securities. This first-of-its-kind issuance monetized the solar home renewable energy

#### CONNECTICUT GREEN BANK 5. GREEN BOND IMPACT

credits (SHRECs) generated through the Residential Solar Investment Program (RSIP). The sale was comprised of two tranches of SHRECs produced by more than 105 megawatts of 14,000 residential solar photovoltaic (PV) systems. The SHRECs were aggregated by the Green Bank and sold in annual tranches to Connecticut's two investor-owned utilities, Eversource Energy and United Illuminating Company, at a fixed, predetermined price over 15 years. The funds raised through this sale will recover the costs of administering and managing the RSIP, including the incentives offered to residential participants in the program. RSIP is discussed in further detail in the section below, Case 3 – Residential Solar Investment Program. The 2019 bonds won Environmental Finance's annual award for Innovation in 2020, highlighting the creative bond-structuring approach for leveraging additional environmental benefits. The bonds received Post-Issuance Certification from the Climate Bonds Initiative in May 2020.

#### SHREC Green Liberty Bonds, Series 2020 (Series Maturity 2035)

In June 2019, the Connecticut Green Bank sold \$16.8 million of investment-grade rated municipal securities, the inaugural offering of Green Liberty Bonds. Modeled after the World War II Series-E bonds, which were purchased by more than 80 million Americans, Green Liberty Bonds are an opportunity for investors to take on the shared challenge of climate change and green infrastructure investment through the purchase of bonds. Green Liberty Bonds are lower-dollar denomination bonds (offered in \$1,000 increments), making it easier for individual investors to consider an investment. This issuance was backed by the third tranche of SHRECs, which total just over 39 megawatts across 4,800 residential solar systems. As with the ABS monetization, proceeds from the sale went to recover the costs of administering and managing the RSIP.

The Series 2020 Bonds were the first transaction to be certified as Climate Bonds under the Green Bank's programmatic framework. The transaction won The Bond Buyer Award in Innovative Financing.

#### SHREC Green Liberty Bonds, Series 2021 (Series Maturity 2036)

Following the initial sale of Green Liberty Bonds, in May, the Green Bank sold its second offering of Green Liberty Bonds, back by revenues from tranche 4 (59.4 megawatts across nearly 7,000 solar systems) in May 2021. As with the first Green Liberty Bond issuance, this \$24.8 offering was well received by a wide array of retail and institutional investors. The issuance was the second transaction to be certified as a Climate Bond using the Green Bank's Programmatic Framework.

#### **Green Liberty Notes**

Based on the success of the Green Liberty Bonds in providing Connecticut Residents a way to invest in the Green Economy, the Connecticut Green Bank introduced our Green Liberty Notes in April 2022. Through a partnership with the green economy focused crowd-funding platform Raise Green, the Green Liberty Notes are offered in lower denominations (\$100) making investing in the Green Economy more accessible to people of varying means. The Green Liberty Notes are backed by the interest payments coming from the energy efficiency loans made through the Small Business Energy Advantage program and purchased by the Green Bank. These notes have been verified by Kestrel Verifiers as adhering to the International Capital Markets Association's Green Bonds Principles. All Proceeds have been fully allocated.

## Use of Proceeds

One Climate Bond was issued by the Green Bank in FY20. All proceeds from the 2019-1 Class A and Class B Notes have been allocated to the SHREC Program and none are outstanding.

Two Climate Bonds were issued in FY 2021. All proceeds from these bonds have been allocated to the SHREC Program and none are outstanding.

The Green Bank will annually report on the use of proceeds from each bond issued and the associated impact<sup>123</sup>. This information will continue to be included in the Non-Financial Statistics portion of the Annual Comprehensive Financial Report.

The use of proceeds from the Green Bonds issued by the Green Bank are illustrated in Table 65 below.

Issuance	Gross Proceeds	Underwriting Fees & Out of Pocket Expenses	Net Bond Proceeds after Underwriting Fees & Out of Pocket Expenses	Proceeds Used	Use
SHREC Series 2019-1 Class A and Class B	\$38,527,549.54	\$1,018,746.00	\$37,508,803.54	\$37,508,803.54	The proceeds from this offering were used to reimburse the Green Bank for incentives and program administration costs of the RSIP.
SHREC Green Liberty Bonds, Series 2020	\$16,795,000.00	\$594,056.97	\$16,200,943.03	\$16,200,943.03	The proceeds from this offering were used to reimburse the Green Bank for incentives and program administration costs of the RSIP.
SHREC Green Liberty Bonds, Series 2021	\$24,834,000.00	\$625,004.00	\$24,208,996.00	\$24,208,996.00	The proceeds from this offering were used to reimburse the Green Bank for incentives and program administration costs of the RSIP.
Green Liberty Notes 1 (April 2022)	\$190,400	\$3,856	\$186,544	\$186,544	The proceeds from this offering were used to reimburse the Green Bank for purchasing small business energy efficiency loans from Eversource.
Green Liberty Notes 2 (June 2022)	\$114,435	\$2,716	\$111,719	\$111,719	The proceeds from this offering were used to reimburse the Green Bank for purchasing small business energy efficiency loans from Eversource.

#### TABLE 65. GREEN BOND ISSUANCES

<sup>&</sup>lt;sup>123</sup> https://www.ctgreenbank.com/wp-content/uploads/2022/02/2021-Post-Bond-Issuance-Verification-Report.pdf

#### CONNECTICUT GREEN BANK 5. GREEN BOND IMPACT

## **Key Performance Indicators**

In alignment with the Green Bank's targets for issuing Green Bonds, the issuance of the 2019 bonds and two issuances of Green Liberty Bonds as well as the Green Liberty Notes have directly supported the organization's goal to increase annual clean energy investment on a per capita basis by a factor of ten. The Key Performance Indicators for the Green Bonds closed activity are reflected in Table 66 through Table 68.

Issuance	# RE Projects	Total Investment	Green Bank Investment <sup>124</sup>	Private Investment	Leverage Ratio
SHREC Series 2019-1 Class A and Class B	14,054	\$424,480,644	\$39,729,311	\$384,751,333	10.7
SHREC Green Liberty Bonds, Series 2020	4,818	\$138,657,232	\$11,903,880	\$126,753,352	11.6
SHREC Green Liberty Bonds, Series 2021	6,957	\$217,737,291	\$17,754,852	\$199,982,439	12.3
Total	25,829	\$780,875,168	\$69,388,044	\$711,487,124	11.3

#### TABLE 66. GREEN BONDS PROJECT TYPES AND INVESTMENT BY FY CLOSED

#### TABLE 67. GREEN BONDS PROJECT CAPACITY, GENERATION AND SAVINGS BY FY CLOSED

Issuance	Installed Capacity (kW)	Expected Annual Generation (kWh)	Expected Lifetime Savings or Generation (MWh)	Annual Saved / Produced (MMBtu)	Lifetime Saved / Produced (MMBtu)
SHREC Series					
2019-1 Class A and	109,048.0	124,183,805	3,104,595	423,715	10,592,879
Class B					
SHREC Green					
Liberty Bonds,	39,296.3	44,750,626	1,118,766	152,689	3,817,228
Series 2020					
SHREC Green					
Liberty Bonds,	59,359.8	67,598,929	1,689,973	230,648	5,766,189
Series 2021					
Total	207,704.0	236,533,361	5,913,334	807,052	20,176,296

#### TABLE 68. GREEN BONDS PROJECT AVERAGES BY FY CLOSED

<sup>&</sup>lt;sup>124</sup> Includes incentives, interest rate buydowns and loan loss reserves.

#### CONNECTICUT GREEN BANK 5. GREEN BOND IMPACT

Issuance	Average Total Investment	Average Incentive Amount	Average Installed Capacity (kW)	Average Expected Annual Generation (kWh)	Average Annual Saved / Produced (MMBtu)
SHREC Series 2019-1 Class A and Class B	\$30,204	\$2,827	7.8	8,836	30
SHREC Green Liberty Bonds, Series 2020	\$28,779	\$2,471	8.2	9,288	32
SHREC Green Liberty Bonds, Series 2021	\$31,298	\$2,552	8.5	9,717	33
Average	\$30,232	\$2,686	8.0	9,158	31

## **Societal Impacts**

Ratepayers in Connecticut enjoy of the societal benefits, also referred to as social benefits, of Green Bonds. Since issuance, these bonds have supported creation of 9,066 job years, avoided the lifetime emission of 3,292,158 tons of carbon dioxide, 3,324,684 pounds of nitrous oxide, 2,763,734 pounds of sulfur oxide, and 283,937 pounds of particulate matter as illustrated by Table 69 and Table 71. These projects are estimated to have generated \$24.6 million in tax revenue in their construction for the state of CT as shown in Table 70. The lifetime economic value of the public health impacts is estimated between \$108.9 and \$246.1 million as illustrated in Table 72. See Calculations and Assumptions in the appendix for the metrics included in the following tables.

#### TABLE 69. GREEN BONDS JOB YEARS SUPPORTED BY FY CLOSED

Issuance	Direct Jobs	Indirect and Induced Jobs	Total Jobs
SHREC Series 2019-1 Class A and Class B	2,244	3,426	5,670
SHREC Green Liberty Bonds, Series 2020	549	722	1,271
SHREC Green Liberty Bonds, Series 2021	902	1,222	2,125
Total	3,695	5,371	9,066

#### TABLE 70. GREEN BONDS TAX REVENUES GENERATED BY FY CLOSED

Issuance	Individual Income Tax Revenue Generated	Corporate Tax Revenue Generated	Sales Tax Revenue Generated	Total Tax Revenue Generated
SHREC Series 2019-1 Class A and Class B	\$10,672,490	\$3,428,360	\$0	\$14,100,850
SHREC Green Liberty Bonds, Series 2020	\$2,918,589	\$1,119,879	\$0	\$4,038,468
SHREC Green Liberty Bonds, Series 2021	\$4,708,771	\$1,758,575	\$0	\$6,467,347
Total	\$18,299,850	\$6,306,814	\$0	\$24,606,664

		nissions d (tons)		missions d (pounds)		missions I (pounds)	PM 2.	5 (pounds)
Issuance	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime
SHREC Series 2019-1 Class A and Class B	69,507	1,737,668	72,218	1,805,459	58,284	1,457,101	6,053	151,314
SHREC Green Liberty Bonds, Series 2020	24,700	617,503	23,783	594,577	20,148	503,700	2,105	52,627
SHREC Green Liberty Bonds, Series 2021	37,479	936,987	36,986	924,649	32,117	802,932	3,200	79,996
Total	131,686	3,292,158	132,987	3,324,684	110,549	2,763,734	11,357	283,937

#### TABLE 71. GREEN BONDS AVOIDED EMISSIONS BY FY CLOSED

#### TABLE 72. GREEN BONDS PUBLIC HEALTH IMPACT BY FY CLOSED

	Anr	nual	Lifetime		
Issuance	Low	High	Low	High	
SHREC Series 2019-1 Class A and Class B	\$2,409,166	\$5,439,251	\$60,229,146	\$135,981,267	
SHREC Green Liberty Bonds, Series 2020	\$865,521	\$1,954,194	\$21,638,013	\$48,854,844	
SHREC Green Liberty Bonds, Series 2021	\$1,082,474	\$2,450,903	\$27,061,861	\$61,272,586	
Total	\$4,357,161	\$9,844,348	\$108,929,020	\$246,108,697	

At present we are working on how we attribute impact with regard to the projects supported by the Green Liberty Notes and will have impact numbers in next year's ACFR.

## 6. Programs

## Program Logic Model and the Financing Market Transformation Strategy

The Connecticut Green Bank has prepared an Evaluation Framework<sup>125</sup> and developed a Program Logic Model (PLM) that presents the green bank model of attracting and deploying private capital through financing – see Figure 4. In addition to representing graphically how a program is structured, this PLM serves as a foundation for evaluating clean energy deployment through subsidy and financing programs of the Connecticut Green Bank.

FIGURE 4. CONNECTICUT GREEN BANK PROGRAM LOGIC MODEL – INCLUDING SUBSIDIES AND FINANCING



The above figure is a generalized market transformation and impact logic model. It has been adapted to individual Green Bank programs to incorporate the unique circumstances of each of those programs, enabling a clearer definition of program objectives and of metrics for reporting and future evaluation. Additionally, with the continued maturation of the organization's programs, more data are becoming available to quantify and present the societal impacts associated with those programs.

As the Green Bank's available capital expands to support more clean energy deployment, greater coordination with utilities is sought. As such, various other key participants have been included in this overall logic model. Beginning by identifying the multitude of interactions that occur across their respective programs, the Green Bank and the utilities will be better prepared to accommodate the funding

<sup>&</sup>lt;sup>125</sup> Evaluation Framework – Assessing, Monitoring, and Reporting of Program Impacts and Processes by Opinion Dynamics and Dunsky Energy Consulting for the Connecticut Green Bank (July 2016)

demands of clean energy projects over the short, medium, and long term. In addition, the model facilitates the identification and capture of known interventions in the clean energy environment, which may impact the trajectory of the Green Bank's financing efforts over time.

The PLM includes three (3) components – Energize CT Market Environment (including Other Ongoing Market Activities), Green Bank Financing Market Transformation Process, and Societal Impacts.

## Energize CT Market Environment

Energize CT is an initiative of the Green Bank, the Connecticut Energy Efficiency Fund, the State, and the local electric and gas utilities. It provides Connecticut consumers, businesses, and communities the resources and information they need to make it simple to save energy and build a clean energy future for everyone in the state. Under this umbrella, the electric and gas investor-owned utilities (IOUs) provide information, marketing, and deliver the energy efficiency programs that have been approved by the State and supported by the Connecticut Energy Efficiency Fund. Operating under a statutory mandate that all cost-effective energy efficiency be acquired, with guidance from the Connecticut Energy Efficiency Board and its consultants, the utilities offer a variety of programs and encouragements for residential, commercial, and industrial customers to make decisions to participate in these cost-reducing opportunities. A range of methods is used to encourage customers to participate in the programs, among them targeted information, low cost/no cost measures, financial incentives, discounted retail products, and product and project financing. Informed by aggregate consumer and demographic data, the Green Bank promotes its programs and market offerings with direct incentives and financing opportunities in addition to a host of marketing, communication, and outreach tools.<sup>126</sup>

The impetus behind increased coordination among the utility administered energy efficiency programs and the Green Bank's programs is threefold: 1) more energy savings, and resulting emissions reductions, are expected to be acquired more economically both to the programs and to the project participants, 2) delivery efficiencies and greater savings could be found in coordinating financing that each entity offers to common customer segments within the sphere of program activities that they offer, and 3) coordination through a Joint Committee of the Energy Efficiency Board and the Connecticut Green Bank is required by statute.<sup>127</sup> It is important to note that a number of other ongoing market activities are occurring through Energize CT or outside of the Green Bank's market transformation process. From introducing new products, reducing purchasing barriers, education, and awareness programs to workforce development, and improving building practices – there are a variety of activities that help move the market toward more clean energy deployment.

## **Finance Market Transformation Process**

The efforts of the Green Bank are exemplified through the financing market transformation process which focuses on accelerating the deployment of clean energy – more customers and "deeper" more comprehensive measures being undertaken – by securing increasingly affordable and attractive private

<sup>&</sup>lt;sup>126</sup> Per Public Act 15-194 "An Act Concerning the Encouragement of Local Economic Development and Access to Residential Renewable Energy," the Connecticut Green Bank administers a rebate and performance-based incentive program to support solar PV.

<sup>&</sup>lt;sup>127</sup> Pursuant to Section 15-245m(d)(2) of Connecticut General Statutes, the Joint Committee shall examine opportunities to coordinate the programs and activities contained in the plan developed under Section 16-245n(c) of the General Statutes [Comprehensive Plan of the Connecticut Green Bank] with the programs and activities contained in the plan developed under section 16-245m(d)(1) of the General Statutes [Energy 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) of the General Statutes so as to reduce the long-term cost, environmental impacts, and security risks of energy in the state.

#### CONNECTICUT GREEN BANK 6. PROGRAMS – PROGRAM LOGIC MODEL

capital. The Green Bank can enter the process at several points (i.e., from numbers 2 through 4 in the above PLM figure), such as supplying capital through financing offers, marketing clean energy financing, or offsetting clean energy financing risk by backstopping loans, or sharing loan performance data.

Below is a breakdown of each component of the financing market transformation process of the Green Bank:

- <u>Supply of Capital</u> financing programs aim to increase the supply of affordable and attractive capital available to support energy savings and clean energy production in the marketplace. This is done at the Green Bank does this by:
  - a. Providing financing (loans or leases) to customers using Green Bank capital; and/or
  - b. Establishing structures, programs, and public-private partnerships that connect third-party capital with energy savings projects.

Beyond ensuring that financing is available for clean energy projects, the Green Bank's Supply of Capital interventions can lead to, but are not limited to benefits such as:

- a. Reduced interest rates, which lower the cost of capital for clean energy projects;
- b. More loan term options to better match savings cash flows (e.g., longer terms for longer payback projects, early repayment, or deferred first year payments);
- c. Less restrictive underwriting criteria, resulting in increased eligibility and access to financing; and
- d. Increased marketing efforts by lenders to leverage clean energy investment opportunities.

Each of these features is intended to increase uptake of clean energy projects, in order to increase energy savings, clean energy production, and other positive societal impacts. The long-term goal of the efforts is to achieve these attractive features in the market and reduce the need for Green Bank intervention (e.g., program graduation), through the provision of performance data that convinces private capital providers to offer such features on their own.

- Consumer Demand in combination with a comprehensive set of clean energy programs under the Energize CT initiative, offered by the utilities, the Green Bank drives consumer demand for clean energy by marketing financing programs and increasing awareness of the potential benefits stemming from clean energy projects through the range of programs it offers. It should also be noted that through channel marketing strategies (e.g., contractor channels to the customer) success will be determined by an increase in demand for financing. The results of the increased demand are expected to, but are not limited to:
  - a. Increase in the number of clean energy projects; and
  - b. Increase in the associated average savings and/or clean energy production per project.

Increasing affordable and attractive financing offerings in the marketplace is an important component of unlocking consumer demand and driving greater energy savings and clean energy production and is central to the Green Bank's market transformation efforts.

#### CONNECTICUT GREEN BANK 6. PROGRAMS – PROGRAM LOGIC MODEL

Financing Performance Data – Green Bank gathers and communicates the performance of clean energy financing either through its own programs or for other financing options in the marketplace.<sup>128</sup> This increases access to valuable information that can help lenders and customers identify promising clean energy investments. Enabling access to this information (i.e., data transparency) is important to encouraging market competition.

Ultimately, data on the performance of Green Bank sponsored financial products is expected to continue to play a pivotal role in attracting of private capital to achieve more affordable and accessible financing offerings. As the Green Bank increases the access to affordable and attractive capital, and more customers use this financing for their clean energy projects, data demonstrating strong and reliable project performance of these projects is also expected to enable lower interest rates due to a better-informed assumption of risk.<sup>129</sup>

Financing Risk Profile – Green Bank can help reduce clean energy financing risk profiles in many ways. For example, it can absorb a portion or all of the credit risk by providing loan loss reserve (LLR) funds and guarantees or taking the first-loss position on investments (i.e., subordinated debt). It can also channel or attract rebates and incentives to finance energy saving projects thus improving their economic performance and lowering the associated performance risk. In the long run, by making clean energy financing performance data available to the market, Green Bank programs increase lenders' and borrowers' understanding of clean energy investment risk profiles, which is expected to enable them to (1) design more affordable and attractive financing products and (2) select projects for financing to reduce risks.

This element of the PLM is key linking role in the Market Transformation feedback loop, leading to longer term impacts, as the market (1) recognizes the expected advantageous risk/return profile associated with clean energy investments and (2) takes further steps to increase the supply of affordable and attractive capital with less Green Bank credit enhancement needed to spark demand for clean energy investments.

Ensuring that financing performance and risk profile data are available to the market is important from various perspectives. For a deeper examination and presentation, please see the report by the State Energy Efficiency Action Network.<sup>130</sup>

## Societal Impact – Economy, Environment, Energy, and Equity

The efforts to accelerate and scale-up investment in clean energy deployment by the Green Bank, lead to a myriad of societal impacts and benefits, including economy (e.g., jobs, tax revenues), environment (e.g., avoidance of emissions, improvement of public health), energy (e.g., reduction of energy burden), and equity (e.g., increase in investment in vulnerable communities).

Laboratory. Click here (<u>http://www4.eere.energy.gov/seeaction/publication/energy-efficiency-finance-programs-use-case-analysis-define-data-needs-and-guidelines</u>)

<sup>&</sup>lt;sup>128</sup> "Performance of Solar Leasing for Low- and Middle-Income Customers in Connecticut" by LBNL (May 2021)

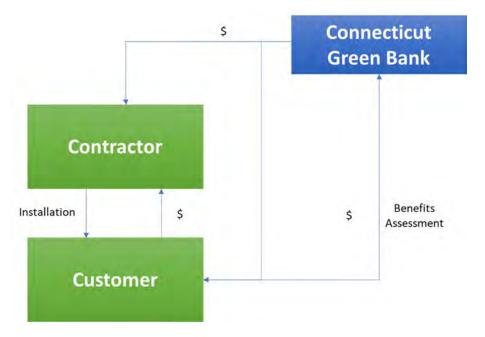
 <sup>&</sup>lt;sup>129</sup> "Long-Term Performance of Energy Efficiency Loan Portfolios" by SEEAction Network (November 2021 – forthcoming)
 <sup>130</sup> State and Local Energy Efficiency Action Network. (2014). Energy Efficiency Finance Programs: Use Case Analysis to Define Data Needs and Guidelines. Prepared by: Peter Thompson, Peter Larsen, Chris Kramer, and Charles Goldman of Lawrence Berkeley National
 Laboratory Click borg (http://www.f.acro.opegrum.gov/conaction/publication/publ

All the elements of the PLM ultimately aim to contribute to Green Bank program impacts and benefits. The impacts may also include consideration of secondary or indirect benefits such as GDP growth and energy savings supported by lenders who have leveraged Green Bank data or marketing efforts.

## Case 1 – Commercial Property Assessed Clean Energy (C-PACE)

## Description

Commercial Property Assessed Clean Energy (C-PACE) creates an opportunity for building owners to pay for clean energy improvements or clean energy production projects over time through a voluntary benefit assessment on their property tax bills. This process makes it easier for building owners to secure low-interest, long-term capital to fund energy improvements and is structured so that energy savings more than offset the benefit assessment.



#### FIGURE 5. LEGAL STRUCTURE AND FLOWS OF CAPITAL FOR C-PACE

For a municipality to participate in the C-PACE program, its legislative body must pass a resolution enabling it to enter into an agreement with the Connecticut Green Bank to assess and assign benefit assessments against C-PACE borrowers' liabilities. As of June 30, 2022, there are 139 cities and towns signed up for C-PACE (82% of municipalities) representing 96% of commercial and industrial building space in Connecticut<sup>131</sup>. Additionally, as of June 30, 2022, nearly \$245 million in C-PACE benefit assessment advances have been closed that are expected to save over \$312 million in avoided energy costs over the life of the projects.

## **Key Performance Indicators**

The Key Performance Indicators for C-PACE closed activity are reflected in Table 73 through Table 76. These illustrate the volume of projects by year, investment, generation capacity installed, and the amount

<sup>&</sup>lt;sup>131</sup> Based on a commercial and industrial sector analysis of the real estate market in CT performed by HR&A Advisors in 2013.

of energy saved and/or produced. It also breaks down the volume of projects by energy efficiency, renewable generation, or both.

Fiscal					#	Total	Green Bank	Private	Leverage
Year	EE	RE	RE/EE	Other	Projects	Investment <sup>132</sup>	Investment <sup>133</sup>	Investment	Ratio
2012	0	0	0	0	0	\$0	\$0	\$0	0
2013	2	0	1	0	3	\$1,512,144	\$210,302	\$1,301,842	7.2
2014	6	14	3	0	23	\$21,785,167	\$9,550,120	\$12,235,046	2.3
2015	10	30	9	0	49	\$33,220,821	\$15,285,856	\$17,934,965	2.2
2016	10	35	8	0	53	\$36,035,979	\$7,680,696	\$28,355,283	4.7
2017	5	27	6	0	38	\$15,284,163	\$4,624,486	\$10,659,677	3.3
2018	10	46	9	1	66	\$25,638,374	\$5,858,293	\$19,780,081	4.4
2019	2	32	3	0	37	\$20,313,381	\$5,499,415	\$14,813,966	3.7
2020	3	37	4	0	44	\$25,684,244	\$3,854,615	\$21,829,629	6.7
2021	9	19	4	1	33	\$42,349,608	\$2,389,891	\$39,959,717	17.7
2022	3	16	2	2	23	\$24,162,207	\$5,004,220	\$19,157,987	4.8
Total	60	256	49	4	369	\$245,986,089	\$59,957,895	\$186,028,195	4.1

#### TABLE 73. C-PACE PROJECT TYPES AND INVESTMENT BY FY CLOSED

#### TABLE 74. C-PACE PROJECT CAPACITY, GENERATION AND SAVINGS BY FY CLOSED

Fiscal	Installed Capacity (kW)	Expected Annual Generation	Expected Lifetime Savings or	Annual Saved / Produced	Lifetime Saved / Produced	Annual Cost	Lifetime Cost
Year		(kWh)	Generation (MWh)	(MMBtu)	(MMBtu)	Savings	Savings
2012	0.0	0	0	0	0	\$0	\$0
2013	101.0	513,495	7,657	2,275	39,195	\$151,607	\$2,538,186
2014	3,631.0	8,409,814	154,673	39,140	764,533	\$2,026,632	\$40,635,908
2015	7,284.5	14,311,634	308,791	34,567	664,723	\$2,487,099	\$58,534,753
2016	6,367.7	15,315,444	278,056	16,753	374,001	\$1,118,380	\$82,458,936
2017	3,916.4	6,142,726	131,693	9,108	150,506	\$372,403	\$15,172,649
2018	7,284.8	10,700,244	236,250	33,231	724,214	\$1,234,927	\$25,889,113
2019	5,154.3	10,686,545	209,423	22,736	477,226	\$873,902	\$20,682,469
2020	5,241.4	7,671,548	169,655	25,556	563,474	\$1,199,730	\$32,577,317
2021	2,532.7	4,242,529	88,405	16,095	342,118	\$805,651	\$18,344,150
2022	3,237.5	6,524,353	163,109	7,438	164,175	\$945,358	\$15,808,381
Total	44,751.3	84,518,333	1,747,711	206,899	4,264,165	\$11,215,690	\$312,641,861

#### TABLE 75. C-PACE PROJECT AVERAGES BY FY CLOSED

Fiscal Year	Average Total Investment	Average Amount Financed	Average Installed Capacity (kW)	Average Annual Saved / Produced (MMBtu)	Average Finance Term (years)	Average Finance Rate
2012	\$0	\$0	0.0	0	0	0.00
2013	\$504,048	\$350,503	33.7	758	17	5.00
2014	\$947,181	\$883,582	157.9	1,702	18	5.57
2015	\$677,976	\$668,048	148.7	864	18	5.60

<sup>&</sup>lt;sup>132</sup> Includes closing costs and capitalized interest.

<sup>&</sup>lt;sup>133</sup> Includes incentives, interest rate buydowns and loan loss reserves.

Fiscal Year	Average Total Investment	Average Amount Financed	Average Installed Capacity (kW)	Average Annual Saved / Produced (MMBtu)	Average Finance Term (years)	Average Finance Rate
2016	\$679,924	\$629,843	130.0	698	18	5.66
2017	\$402,215	\$388,473	103.1	651	16	5.58
2018	\$388,460	\$357,538	113.8	604	16	5.71
2019	\$549,010	\$460,496	139.3	784	19	6.11
2020	\$583,733	\$545,428	121.9	673	17	6.08
2021	\$1,283,321	\$1,207,182	115.1	644	17	5.34
2022	\$1,050,531	\$1,044,662	215.8	1,488	18	5.21
Average	\$666,629	\$625,341	130.5	808	17	5.67

#### TABLE 76. C-PACE PROJECT APPLICATION YIELD<sup>134</sup> BY FY RECEIVED<sup>135</sup>

Fiscal	Applications	Projects in	Projects	Projects	Applications	Approved	Denied
Year	Received	Review/On Hold	Approved	Withdrawn	Denied	Rate	Rate
2012	0	0	0	0	0	0%	0%
2013	55	0	25	12	18	67%	33%
2014	145	0	44	49	52	64%	36%
2015	144	0	51	39	54	63%	38%
2016	111	1	44	17	49	55%	45%
2017	98	1	47	21	29	70%	30%
2018	80	2	57	10	11	86%	14%
2019	63	0	42	14	7	89%	11%
2020	72	2	50	11	9	87%	13%
2021	50	7	26	7	10	77%	23%
2022	29	9	15	1	4	80%	20%
Total	847	22	401	181	243	71%	29%

C-PACE has been used as a financing tool across a wide variety of end-use customers in Connecticut in its 10 years of existence as illustrated by Table 77.

TABLE 77. TYPES OF END-USE CUSTOMERS PARTICIPATING IN	C-PACE
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Property Type	# of Properties	Square Footage	Average Square Footage per Property
Agricultural	3	337,026	112,342
Athletic/Recreational Facility	4	143,388	35,847
Education	9	555,210	61,690
Hotel	5	312,375	62,475

<sup>134</sup> Applications received are complete initial applications that have been received for C-PACE financing. Applications denied are any initial applications received for C-PACE financing that do not meet programmatic requirements. Projects in review are projects that are being reviewed, either technically or financially, prior to being approved. Projects approved are projects that have gone through technical and financial underwriting and have met all the necessary programmatic requirements. These include projects that have been approved and are waiting to close, projects that have closed, and projects that have completed construction and are in repayment. Projects withdrawn are projects that have been approved at the application stage but have since fallen out of our pipeline for numerous reasons and are no longer active. Projects in this category could have fallen out of our pipeline in the in review or the approved stage.

<sup>135</sup> This table represents projects whose initial applications have been approved and are proceeding through the C-PACE financing pipeline prior to loan closure.

Property Type	# of Properties	Square Footage	Average Square Footage per Property
House of Worship	13	311,014	28,274
Industrial	90	4,095,897	47,079
Multifamily/apartment (> 5 units)	24	1,394,440	63,384
Non-profit	29	1,279,606	45,700
Nursing Home/Rehab Facility	1	175,680	175,680
Office	91	5,929,707	67,383
Public assembly	4	200,224	50,056
Retail	73	2,092,715	28,667
Special Purpose	5	224,215	44,843
Warehouse & storage	18	867,945	48,219
Grand Total	369	17,919,442	50,054

To date, 139 municipalities have opted into the C-PACE program resulting in 369 closed projects – see Table 78.

#### TABLE 78. MUNICIPALITIES PARTICIPATING IN C-PACE

Municipality	Opt in Date	# Closed Projects
Ansonia	9/27/2013	1
Avon	4/9/2013	2
Barkhamsted	7/21/2014	0
Beacon Falls	4/11/2013	0
Berlin	10/30/2013	3
Bethany	9/2/2016	1
Bethel	1/24/2014	2
Bloomfield	6/21/2013	5
Bolton	4/9/2020	1
Branford	9/9/2013	2
Bridgeport	12/7/2012	20
Bristol	11/19/2014	11
Brookfield	8/5/2013	5
Burlington	1/12/2016	0
Canaan	8/8/2013	1
Canterbury	11/5/2014	0
Canton	7/9/2013	1
Cheshire	10/27/2014	3
Chester	7/25/2013	0
Clinton	5/29/2013	4
Colchester	3/31/2021	0
Columbia	10/21/2014	0
Coventry	6/24/2013	0
Cromwell	4/9/2014	1

Municipality	Opt in Date	# Closed Projects
Danbury	10/8/2013	4
Darien	2/28/2014	8
Deep River	7/22/2014	1
Durham	4/2/2013	1
East Granby	6/27/2013	0
East Haddam	8/1/2013	2
East Hampton	7/10/2013	0
East Hartford	4/11/2013	5
East Haven	2/28/2017	3
East Lyme	9/11/2014	3
East Windsor	11/27/2013	8
Eastford	11/10/2014	0
Easton	5/14/2015	0
Ellington	8/27/2014	1
Enfield	1/3/2014	2
Essex	7/17/2014	2
Fairfield	4/30/2014	9
Farmington	12/17/2013	7
Franklin	10/6/2015	0
Glastonbury	6/14/2013	5
Granby	11/28/2013	0
Greenwich	9/23/2013	1
Griswold	3/15/2016	1
Groton	10/21/2013	3
Guilford	3/21/2016	1
Haddam	9/18/2015	0
Hamden	3/3/2014	2
Hartford	2/5/2013	28
Hebron	12/20/2016	0
Kent	9/17/2014	1
Killingly	12/9/2014	0
Killingworth	5/31/2013	3
Lebanon	5/13/2015	0
Ledyard	1/14/2016	1
Litchfield	4/5/2021	0
Madison	9/5/2014	3
Manchester	8/1/2013	7
Mansfield	8/27/2013	0
Meriden	5/24/2013	4
Middlefield	7/21/2015	0
Middletown	3/25/2013	9
Milford	8/2/2013	4
Monroe	3/8/2017	0

Municipality	Opt in Date	# Closed Projects
Montville	12/4/2013	1
Morris	5/25/2022	0
Naugatuck	6/30/2014	2
New Britain	7/17/2013	14
New Canaan	10/24/2014	0
New Fairfield	4/4/2019	0
New Hartford	2/6/2018	0
New Haven	12/6/2013	4
New London	6/18/2013	11
New Milford	6/10/2013	3
Newington	10/29/2014	2
Newtown	8/8/2013	5
Norfolk	5/13/2014	0
North Branford	5/24/2013	0
North Canaan	12/19/2013	2
North Haven	7/24/2014	3
North Stonington	2/23/2015	2
Norwalk	12/3/2012	5
Norwich	10/7/2013	2
Old Lyme	1/25/2016	0
Old Saybrook	2/20/2013	1
Orange	5/17/2016	0
Oxford	3/21/2016	2
Plainfield	6/14/2016	1
Plainville	6/28/2013	3
Plymouth	2/28/2019	0
Pomfret	10/16/2019	0
Portland	6/9/2016	1
Preston	1/8/2015	0
Putnam	3/5/2013	4
Redding	10/20/2015	0
Ridgefield	5/2/2018	4
Rocky Hill	10/8/2013	3
Salisbury	8/31/2016	0
Seymour	1/27/2014	0
Sharon	2/21/2014	0
Shelton	9/30/2014	2
Simsbury	12/11/2014	1
Somers	5/23/2014	2
South Windsor	8/29/2014	6
Southbury	4/11/2013	0
Southington	5/15/2013	5
Sprague	12/30/2013	0

Municipality	Opt in Date	# Closed Projects
Stafford	9/26/2013	0
Stamford	4/23/2013	17
Stonington	1/27/2014	5
Stratford	2/26/2013	6
Suffield	5/24/2013	0
Thomaston	2/23/2016	1
Tolland	4/11/2013	0
Torrington	5/8/2013	2
Trumbull	7/31/2013	2
Vernon	7/22/2013	4
Washington	5/20/2019	1
Waterbury	5/10/2013	8
Waterford	8/23/2013	1
Watertown	4/11/2014	7
West Hartford	1/3/2013	5
West Haven	5/6/2014	4
Westbrook	5/21/2013	0
Weston	9/8/2014	1
Westport	2/7/2013	5
Wethersfield	5/28/2013	1
Willington	7/2/2014	1
Wilton	2/27/2013	2
Winchester	1/19/2022	0
Windham	5/1/2013	1
Windsor	5/16/2013	4
Windsor Locks	7/30/2015	2
Woodbridge	5/30/2014	5
Woodbury	3/18/2015	1
Woodstock	4/15/2016	0
Total	139	369

## **Vulnerable Communities Penetration**

C-PACE has been used to finance projects in Vulnerable Communities throughout Connecticut. As reflected in Table 79, the majority of C-PACE funds have been invested in these communities.

		# Project Units				MW				Total Investment			
Fiscal Year	Total	Not Vulnerable	Vulnerable	% Vulnerable	Total	Not Vulnerable	Vulnerable	% Vulnerable	Total	Not Vulnerable	Vulnerable	% Vulnerable	
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%	
2013	3	0	3	100%	0.1	0.0	0.1	100%	\$1,512,144	\$0	\$1,512,144	100%	
2014	23	8	15	65%	3.6	0.9	2.8	76%	\$21,785,167	\$8,528,712	\$13,256,454	61%	
2015	49	16	33	67%	7.3	2.5	4.8	65%	\$33,220,821	\$11,336,424	\$21,884,398	66%	
2016	53	23	30	57%	6.4	2.8	3.6	57%	\$36,035,979	\$12,978,140	\$23,057,839	64%	
2017	38	13	25	66%	3.9	0.9	3.0	76%	\$15,284,163	\$4,319,499	\$10,964,665	72%	
2018	66	34	32	48%	7.3	3.4	3.9	54%	\$25,638,374	\$10,793,393	\$14,844,981	58%	
2019	37	9	28	76%	5.2	1.6	3.5	69%	\$20,313,381	\$5,336,770	\$14,976,612	74%	
2020	44	16	28	64%	5.2	2.0	3.3	62%	\$25,684,244	\$6,967,821	\$18,716,423	73%	
2021	33	13	20	61%	2.5	1.5	1.1	42%	\$42,349,608	\$7,895,621	\$34,453,987	81%	
2022	23	10	13	57%	3.2	1.5	1.7	52%	\$24,162,207	\$4,221,557	\$19,940,650	83%	
Total	369	142	227	62%	44.8	17.1	27.7	62%	\$245,986,089	\$72,377,936	\$173,608,153	71%	

TABLE 79. C-PACE ACTIVITY IN VULNERABLE AND NOT VULNERABLE COMMUNITIES BY FY CLOSED<sup>136</sup>

## Area Median Income Band Penetration

C-PACE has been used to fund projects in economically diverse locations across the state as reflected by Table 80 for Metropolitan Statistical Area (MSA) Area Median Income (AMI). It should be noted that C-PACE is not an income targeted program.

#### TABLE 80. C-PACE ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS BY FY CLOSED<sup>137</sup>

Fiscal Year	MSA AMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Population	% Population Distribution	Project Units / 1,000 People	Total Investment / Population	Watts / Population
2012	<60%	0	0%	0.0	0%	\$0	0%	609,363	17%	0.0	\$0.00	0.0
2012	60%-80%	0	0%	0.0	0%	\$0	0%	527,217	15%	0.0	\$0.00	0.0

<sup>137</sup> Excludes projects in unknown bands.

<sup>&</sup>lt;sup>136</sup> Excludes projects in unknown communities.

Fiscal Year	MSA AMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Population	% Population Distribution	Project Units / 1,000 People	Total Investment / Population	Watts / Population
2012	80%-100%	0	0%	0.0	0%	\$0	0%	589,440	17%	0.0	\$0.00	0.0
2012	100%-120%	0	0%	0.0	0%	\$0	0%	722,664	20%	0.0	\$0.00	0.0
2012	>120%	0	0%	0.0	0%	\$0	0%	1,116,395	31%	0.0	\$0.00	0.0
2012	Total	0	0%	0.0	0%	\$0	0%	3,572,213	100%	0.0	\$0.00	0.0
2013	<60%	1	33%	0.0	0%	\$150,877	10%	603,026	17%	0.0	\$0.25	0.0
2013	60%-80%	0	0%	0.0	0%	\$0	0%	567,361	16%	0.0	\$0.00	0.0
2013	80%-100%	1	33%	0.1	100%	\$711,251	47%	587,540	16%	0.0	\$1.21	0.2
2013	100%-120%	1	33%	0.0	0%	\$650,016	43%	687,261	19%	0.0	\$0.95	0.0
2013	>120%	0	0%	0.0	0%	\$0	0%	1,130,771	32%	0.0	\$0.00	0.0
2013	Total	3	100%	0.1	100%	\$1,512,144	100%	3,583,561	100%	0.0	\$0.42	0.0
2014	<60%	7	30%	0.5	14%	\$6,432,379	30%	614,135	17%	0.0	\$10.47	0.8
2014	60%-80%	1	4%	0.1	2%	\$243,296	1%	546,132	15%	0.0	\$0.45	0.1
2014	80%-100%	6	26%	2.1	59%	\$6,435,779	30%	577,061	16%	0.0	\$11.15	3.7
2014	100%-120%	3	13%	0.3	7%	\$800,605	4%	720,856	20%	0.0	\$1.11	0.4
2014	>120%	6	26%	0.7	18%	\$7,873,108	36%	1,125,910	31%	0.0	\$6.99	0.6
2014	Total	23	100%	3.6	100%	\$21,785,167	100%	3,592,053	100%	0.0	\$6.06	1.0
2015	<60%	16	33%	1.7	23%	\$7,067,391	21%	662,619	18%	0.0	\$10.67	2.6
2015	60%-80%	5	10%	0.8	10%	\$3,373,609	10%	489,826	14%	0.0	\$6.89	1.6
2015	80%-100%	5	10%	0.5	7%	\$3,706,915	11%	650,163	18%	0.0	\$5.70	0.8
2015	100%-120%	10	20%	1.2	16%	\$4,832,634	15%	631,741	18%	0.0	\$7.65	1.9
2015	>120%	13	27%	3.1	43%	\$14,240,271	43%	1,150,974	32%	0.0	\$12.37	2.7
2015	Total	49	100%	7.3	100%	\$33,220,821	100%	3,593,222	100%	0.0	\$9.25	2.0
2016	<60%	9	18%	0.7	12%	\$3,685,924	11%	649,617	18%	0.0	\$5.67	1.1
2016	60%-80%	6	12%	0.8	13%	\$2,836,167	8%	509,088	14%	0.0	\$5.57	1.5
2016	80%-100%	10	20%	1.5	25%	\$14,497,984	42%	641,084	18%	0.0	\$22.61	2.4
2016	100%-120%	10	20%	1.9	32%	\$7,613,263	22%	653,309	18%	0.0	\$11.65	2.9
2016	>120%	15	30%	1.1	18%	\$6,189,587	18%	1,126,543	31%	0.0	\$5.49	1.0
2016	Total	50	100%	6.1	100%	\$34,822,925	100%	3,588,570	100%	0.0	\$9.70	1.7
2017	<60%	8	21%	1.7	42%	\$5,582,105	37%	663,181	18%	0.0	\$8.42	2.5
2017	60%-80%	4	11%	0.4	10%	\$1,273,519	8%	488,396	14%	0.0	\$2.61	0.8
2017	80%-100%	7	18%	0.4	9%	\$1,487,162	10%	612,043	17%	0.0	\$2.43	0.6

Fiscal Year	MSA AMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Population	% Population Distribution	Project Units / 1,000 People	Total Investment / Population	Watts / Population
2017	100%-120%	12	32%	0.8	21%	\$3,937,789	26%	722,803	20%	0.0	\$5.45	1.1
2017	>120%	7	18%	0.7	17%	\$3,003,588	20%	1,099,277	31%	0.0	\$2.73	0.6
2017	Total	38	100%	3.9	100%	\$15,284,163	100%	3,594,478	100%	0.0	\$4.25	1.1
2018	<60%	7	11%	0.9	15%	\$3,737,638	17%	636,795	18%	0.0	\$5.87	1.5
2018	60%-80%	13	21%	1.5	24%	\$4,566,439	21%	553,007	15%	0.0	\$8.26	2.7
2018	80%-100%	7	11%	0.4	6%	\$3,130,891	14%	569,113	16%	0.0	\$5.50	0.7
2018	100%-120%	10	16%	1.2	20%	\$3,719,576	17%	710,802	20%	0.0	\$5.23	1.7
2018	>120%	24	39%	2.1	34%	\$7,073,817	32%	1,103,484	31%	0.0	\$6.41	1.9
2018	Total	61	100%	6.2	100%	\$22,228,360	100%	3,581,504	100%	0.0	\$6.21	1.7
2019	<60%	10	28%	1.0	20%	\$3,436,732	18%	636,795	18%	0.0	\$5.40	1.6
2019	60%-80%	11	31%	1.2	24%	\$6,843,705	35%	553,007	15%	0.0	\$12.38	2.1
2019	80%-100%	5	14%	0.9	18%	\$2,306,180	12%	569,113	16%	0.0	\$4.05	1.5
2019	100%-120%	7	19%	1.5	31%	\$5,981,738	31%	710,802	20%	0.0	\$8.42	2.1
2019	>120%	3	8%	0.4	8%	\$1,010,486	5%	1,103,484	31%	0.0	\$0.92	0.3
2019	Total	36	100%	4.9	100%	\$19,578,841	100%	3,575,074	100%	0.0	\$5.48	1.4
2020	<60%	11	26%	0.6	12%	\$8,746,679	35%	605,886	17%	0.0	\$14.44	1.0
2020	60%-80%	8	19%	1.3	26%	\$6,289,326	25%	540,866	15%	0.0	\$11.63	2.4
2020	80%-100%	7	17%	1.1	22%	\$2,860,441	11%	662,005	19%	0.0	\$4.32	1.7
2020	100%-120%	1	2%	0.1	3%	\$280,852	1%	692,148	19%	0.0	\$0.41	0.2
2020	>120%	15	36%	1.9	37%	\$6,770,758	27%	1,051,590	29%	0.0	\$6.44	1.8
2020	Total	42	100%	5.0	100%	\$24,948,056	100%	3,570,549	100%	0.0	\$6.99	1.4
2021	<60%	8	24%	0.3	14%	\$13,330,706	31%	605,886	17%	0.0	\$22.00	0.6
2021	60%-80%	3	9%	0.3	12%	\$1,514,827	4%	540,866	15%	0.0	\$2.80	0.6
2021	80%-100%	7	21%	0.3	13%	\$19,341,709	46%	662,005	19%	0.0	\$29.22	0.5
2021	100%-120%	4	12%	0.1	6%	\$959,535	2%	692,148	19%	0.0	\$1.39	0.2
2021	>120%	11	33%	1.4	55%	\$7,202,831	17%	1,051,590	29%	0.0	\$6.85	1.3
2021	Total	33	100%	2.5	100%	\$42,349,608	100%	3,570,549	100%	0.0	\$11.86	0.7
2022	<60%	4	21%	0.0	1%	\$5,555,360	24%	605,886	17%	0.0	\$9.17	0.1
2022	60%-80%	1	5%	0.2	8%	\$882,092	4%	540,866	15%	0.0	\$1.63	0.4
2022	80%-100%	6	32%	0.5	17%	\$9,506,198	41%	662,005	19%	0.0	\$14.36	0.8
2022	100%-120%	3	16%	1.4	46%	\$5,312,213	23%	692,148	19%	0.0	\$7.67	2.0

Fiscal Year	MSA AMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Population	% Population Distribution	Project Units / 1,000 People	Total Investment / Population	Watts / Population
2022	>120%	5	26%	0.9	29%	\$2,077,060	9%	1,051,590	29%	0.0	\$1.98	0.8
2022	Total	19	100%	3.1	100%	\$23,332,923	100%	3,570,549	100%	0.0	\$6.53	0.9
Total	<60%	81	23%	7.5	18%	\$57,725,792	24%	605,886	17%	0.1	\$95.28	12.4
Total	60%-80%	52	15%	6.5	15%	\$27,822,981	12%	540,866	15%	0.1	\$51.44	12.1
Total	80%-100%	61	17%	7.9	19%	\$63,984,510	27%	662,005	19%	0.1	\$96.65	11.9
Total	100%-120%	61	17%	8.6	20%	\$34,088,220	14%	692,148	19%	0.1	\$49.25	12.4
Total	>120%	99	28%	12.2	29%	\$55,441,507	23%	1,051,590	29%	0.1	\$52.72	11.6
Total	Total	354	100%	42.7	100%	\$239,063,010	100%	3,570,549	100%	0.1	\$66.95	12.0

#### TABLE 81. C-PACE ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS ABOVE OR BELOW 100% BY FY CLOSED<sup>138</sup>

	# Project Units           Over 100%         100% or Below           Total         AMI         AMI           0         0         0           3         1         2           23         9         14           49         23         26           50         25         25           38         19         19           61         34         27						MW			Total Invest	ment	
Fiscal Year	Total	100%	Below	% at 100% or Below	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2013	3	1	2	67%	0.1	0.0	0.1	100%	\$1,512,144	\$650,016	\$862,128	57%
2014	23	9	14	61%	3.6	0.9	2.7	75%	\$21,785,167	\$8,673,712	\$13,111,454	60%
2015	49	23	26	53%	7.3	4.3	3.0	41%	\$33,220,821	\$19,072,905	\$14,147,916	43%
2016	50	25	25	50%	6.1	3.0	3.0	50%	\$34,822,925	\$13,802,850	\$21,020,076	60%
2017	38	19	19	50%	3.9	1.5	2.4	62%	\$15,284,163	\$6,941,377	\$8,342,786	55%
2018	61	34	27	44%	6.2	3.4	2.8	46%	\$22,228,360	\$10,793,393	\$11,434,968	51%
2019	36	10	26	72%	4.9	1.9	3.0	62%	\$19,578,841	\$6,992,223	\$12,586,618	64%
2020	42	16	26	62%	5.0	2.0	3.0	60%	\$24,948,056	\$7,051,610	\$17,896,446	72%
2021	33	15	18	55%	2.5	1.5	1.0	39%	\$42,349,608	\$8,162,366	\$34,187,242	81%
2022	19	8	11	58%	3.1	2.3	0.8	26%	\$23,332,923	\$7,389,273	\$15,943,650	68%
Total	354	160	194	55%	42.7	20.8	21.9	51%	\$239,063,010	\$89,529,726	\$149,533,283	63%

<sup>138</sup> Excludes projects in unknown bands.

		# Pr	oject Units				MW			Total Invest	ment	
Fiscal		Over 80%	80% or Below	% at 80% or		Over 80%	80% or Below	% at 80% or		Over 80%	800% or	% at 80% or
Year	Total	AMI	AMI	Below	Total	AMI	AMI	Below	Total	AMI	Below AMI	Below
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2013	3	2	1	33%	0.1	0.1	0.0	0%	\$1,512,144	\$1,361,267	\$150,877	10%
2014	23	15	8	35%	3.6	3.1	0.6	16%	\$21,785,167	\$15,109,492	\$6,675,675	31%
2015	49	28	21	43%	7.3	4.8	2.5	34%	\$33,220,821	\$22,779,821	\$10,441,001	31%
2016	50	35	15	30%	6.1	4.5	1.5	25%	\$34,822,925	\$28,300,834	\$6,522,091	19%
2017	38	26	12	32%	3.9	1.8	2.1	53%	\$15,284,163	\$8,428,540	\$6,855,624	45%
2018	61	41	20	33%	6.2	3.8	2.4	39%	\$22,228,360	\$13,924,284	\$8,304,077	37%
2019	36	15	21	58%	4.9	2.8	2.2	44%	\$19,578,841	\$9,298,404	\$10,280,438	53%
2020	42	23	19	45%	5.0	3.1	1.9	38%	\$24,948,056	\$9,912,051	\$15,036,005	60%
2021	33	22	11	33%	2.5	1.9	0.6	25%	\$42,349,608	\$27,504,075	\$14,845,534	35%
2022	19	14	5	26%	3.1	2.8	0.3	9%	\$23,332,923	\$16,895,471	\$6,437,452	28%
Total	354	221	133	38%	42.7	28.7	14.0	33%	\$239,063,010	\$153,514,237	\$85,548,773	36%

#### TABLE 82. C-PACE ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS ABOVE OR BELOW 80% BY FY CLOSED<sup>139</sup>

### **Distressed Community Penetration**

For a breakdown of C-PACE project volume and investment by census tracts categorized by Distressed Communities – see Table 83. It should be noted that C-PACE is not an income targeted program.

#### TABLE 83. C-PACE ACTIVITY IN DISTRESSED COMMUNITIES BY FY CLOSED

Fiscal Year	Distres sed	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Population	% Population Distribution	Project Units / 1,000 People	Total Investment / Population	Watts / Population
2012	Yes	0	0%	0.0	0%	\$0	0%	1,171,385	33%	0.0	\$0.00	0.0
2012	No	0	0%	0.0	0%	\$0	0%	2,400,828	67%	0.0	\$0.00	0.0
2012	Total	0	0%	0.0	0%	\$0	0%	3,572,213	100%	0.0	\$0.00	0.0
2013	Yes	2	67%	0.0	0%	\$800,893	53%	1,124,923	31%	0.0	\$0.71	0.0
2013	No	1	33%	0.1	100%	\$711,251	47%	2,458,638	69%	0.0	\$0.29	0.0

<sup>139</sup> Excludes projects in unknown bands.

Fiscal Year	Distres sed	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Population	% Population Distribution	Project Units / 1,000 People	Total Investment / Population	Watts / Population
2013	Total	3	100%	0.1	100%	\$1,512,144	100%	3,583,561	100%	0.0	\$0.42	0.0
2014	Yes	7	30%	1.4	40%	\$9,047,808	42%	1,106,027	31%	0.0	\$8.18	1.3
2014	No	16	70%	2.2	60%	\$12,737,358	58%	2,486,026	69%	0.0	\$5.12	0.9
2014	Total	23	100%	3.6	100%	\$21,785,167	100%	3,592,053	100%	0.0	\$6.06	1.0
2015	Yes	24	49%	4.0	54%	\$17,076,960	51%	1,122,550	31%	0.0	\$15.21	3.5
2015	No	25	51%	3.3	46%	\$16,143,862	49%	2,470,672	69%	0.0	\$6.53	1.3
2015	Total	49	100%	7.3	100%	\$33,220,821	100%	3,593,222	100%	0.0	\$9.25	2.0
2016	Yes	15	28%	1.5	23%	\$15,195,507	42%	1,162,653	32%	0.0	\$13.07	1.3
2016	No	38	72%	4.9	77%	\$20,840,472	58%	2,425,917	68%	0.0	\$8.59	2.0
2016	Total	53	100%	6.4	100%	\$36,035,979	100%	3,588,570	100%	0.0	\$10.04	1.8
2017	Yes	10	26%	2.0	51%	\$6,525,193	43%	1,150,554	32%	0.0	\$5.67	1.7
2017	No	28	74%	1.9	49%	\$8,758,970	57%	2,443,924	68%	0.0	\$3.58	0.8
2017	Total	38	100%	3.9	100%	\$15,284,163	100%	3,594,478	100%	0.0	\$4.25	1.1
2018	Yes	18	27%	2.4	32%	\$9,966,950	39%	1,130,773	32%	0.0	\$8.81	2.1
2018	No	48	73%	4.9	68%	\$15,671,425	61%	2,450,731	68%	0.0	\$6.39	2.0
2018	Total	66	100%	7.3	100%	\$25,638,374	100%	3,581,504	100%	0.0	\$7.16	2.0
2019	Yes	18	49%	2.1	40%	\$10,102,595	50%	1,098,707	31%	0.0	\$9.19	1.9
2019	No	19	51%	3.1	60%	\$10,210,786	50%	2,476,367	69%	0.0	\$4.12	1.2
2019	Total	37	100%	5.2	100%	\$20,313,381	100%	3,575,074	100%	0.0	\$5.68	1.4
2020	Yes	17	39%	1.5	29%	\$5,444,051	21%	1,102,319	31%	0.0	\$4.94	1.4
2020	No	27	61%	3.7	71%	\$20,240,193	79%	2,468,230	69%	0.0	\$8.20	1.5
2020	Total	44	100%	5.2	100%	\$25,684,244	100%	3,570,549	100%	0.0	\$7.19	1.5
2021	Yes	9	27%	0.7	27%	\$6,023,312	14%	964,777	27%	0.0	\$6.24	0.7
2021	No	24	73%	1.9	73%	\$36,326,296	86%	2,605,772	73%	0.0	\$13.94	0.7
2021	Total	33	100%	2.5	100%	\$42,349,608	100%	3,570,549	100%	0.0	\$11.86	0.7
2022	Yes	7	37%	1.1	35%	\$9,494,297	41%	964,777	27%	0.0	\$9.84	1.1
2022	No	12	63%	2.0	65%	\$13,838,626	59%	2,605,772	73%	0.0	\$5.31	0.8
2022	Total	19	100%	3.1	100%	\$23,332,923	100%	3,570,549	100%	0.0	\$6.53	0.9
Total	Yes	127	35%	16.6	37%	\$89,677,567	37%	964,777	27%	0.1	\$92.95	17.2

Fiscal Year	Distres sed	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Population	% Population Distribution	Project Units / 1,000 People	Total Investment / Population	Watts / Population
Total	No	238	65%	28.0	63%	\$155,479,239	63%	2,605,772	73%	0.1	\$59.67	10.7
Total	Total	365	100%	44.6	100%	\$245,156,805	100%	3,570,549	100%	0.1	\$68.66	12.5

#### TABLE 84. C-PACE ACTIVITY IN DISTRESSED AND NOT DISTRESSED COMMUNITIES BY FY CLOSED<sup>140</sup>

		# Pr	oject Units			Μ	W			Total Inve	stment	
Fiscal		Not		%		Not		%		Not		%
Year	Total	Distressed	Distressed	Distressed	Total	Distressed	Distressed	Distressed	Total	Distressed	Distressed	Distressed
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2013	3	1	2	67%	0.1	0.1	0.0	0%	\$1,512,144	\$711,251	\$800,893	53%
2014	23	16	7	30%	3.6	2.2	1.4	40%	\$21,785,167	\$12,737,358	\$9,047,808	42%
2015	49	25	24	49%	7.3	3.3	4.0	54%	\$33,220,821	\$16,143,862	\$17,076,960	51%
2016	53	38	15	28%	6.4	4.9	1.5	23%	\$36,035,979	\$20,840,472	\$15,195,507	42%
2017	38	28	10	26%	3.9	1.9	2.0	51%	\$15,284,163	\$8,758,970	\$6,525,193	43%
2018	66	48	18	27%	7.3	4.9	2.4	32%	\$25,638,374	\$15,671,425	\$9,966,950	39%
2019	37	19	18	49%	5.2	3.1	2.1	40%	\$20,313,381	\$10,210,786	\$10,102,595	50%
2020	44	27	17	39%	5.2	3.7	1.5	29%	\$25,684,244	\$20,240,193	\$5,444,051	21%
2021	33	24	9	27%	2.5	1.9	0.7	27%	\$42,349,608	\$36,326,296	\$6,023,312	14%
2022	19	12	7	37%	3.1	2.0	1.1	35%	\$23,332,923	\$13,838,626	\$9,494,297	41%
Total	365	238	127	35%	44.6	28.0	16.6	37%	\$245,156,805	\$155,479,239	\$89,677,567	37%

### **Environmental Justice Poverty Level Penetration**

The progress made by CPACE in reaching environmental justice communities is displayed in the following table.

TABLE 85. C-PACE ACTIVITY IN ENVIRONMENTAL JUSTICE POVERTY AREAS BY FY CLOSED<sup>141</sup>

<sup>&</sup>lt;sup>140</sup> Excludes projects in unknown communities.

<sup>&</sup>lt;sup>141</sup> Excludes projects in unknown bands.

		# Pr	oject Units				MW			Total Investr	nent	
Fiscal Year	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2013	3	3	0	0%	0.1	0.1	0.0	0%	\$1,512,144	\$1,512,144	\$0	0%
2014	23	22	1	4%	3.6	3.6	0.0	0%	\$21,785,167	\$21,683,610	\$101,557	0%
2015	49	46	3	6%	7.3	7.1	0.2	2%	\$33,220,821	\$32,564,817	\$656,004	2%
2016	53	49	4	8%	6.4	5.9	0.5	8%	\$36,035,979	\$34,106,912	\$1,929,067	5%
2017	38	32	6	16%	3.9	3.5	0.4	11%	\$15,284,163	\$12,818,723	\$2,465,440	16%
2018	66	62	4	6%	7.3	6.9	0.4	6%	\$25,638,374	\$24,120,685	\$1,517,689	6%
2019	37	37	0	0%	5.2	5.2	0.0	0%	\$20,313,381	\$20,313,381	\$0	0%
2020	44	41	3	7%	5.2	4.9	0.4	7%	\$25,684,244	\$24,433,764	\$1,250,480	5%
2021	33	30	3	9%	2.5	2.5	0.0	2%	\$42,349,608	\$26,153,617	\$16,195,991	38%
2022	23	22	1	4%	3.2	3.2	0.0	0%	\$24,162,207	\$24,001,170	\$161,036	1%
Total	369	344	25	7%	44.8	42.8	1.9	4%	\$245,986,089	\$221,708,824	\$24,277,265	10%

# Ethnicity

The progress made by CPACE in reaching diverse communities is displayed in the following table.

TABLE 86. C-PACE ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS BY ETHNICITY CATEGORY BY FY CLOSED<sup>142</sup>

			Majority	Black			Majority H	lispanic	-		Majorit	y White	-		Majori	ty Asian	
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	Total Populat ion	% Popul ation	# Project Units	% Project Units	Total Popula tion	% Popul ation	# Project Units	% Project Units	Total Populatio n	% Populat ion	# Projec t Units	% Project Units	Total Populati on	% Populati on
2012	<60%	0	0.0%	13,052	20.8%	0	0.0%	21,021	33.5%	0	0.0%	28,616	45.6%	0	0.0%	0	0.0%
2012	60%-80%	0	0.0%	8,714	8.5%	0	0.0%	7,447	7.3%	0	0.0%	86,017	84.2%	0	0.0%	0	0.0%
2012	80%-100%	0	0.0%	3,490	2.3%	0	0.0%	0	0.0%	0	0.0%	147,195	97.7%	0	0.0%	0	0.0%
2012	100%-120%	0	0.0%	3,488	1.6%	0	0.0%	0	0.0%	0	0.0%	212,996	98.4%	0	0.0%	0	0.0%
2012	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	349,212	100.0%	0	0.0%	0	0.0%
2012	Total	0	0.0%	28,744	3.3%	0	0.0%	28,468	3.2%	0	0.0%	824,036	93.5%	0	0.0%	0	0.0%

<sup>142</sup> Excludes projects in unknown bands.

			Majority	Black			Majority H	lispanic			Majori	ty White			Majori	ty Asian	
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	Total Populat ion	% Popul ation	# Project Units	% Project Units	Total Popula tion	% Popul ation	# Project Units	% Project Units	Total Populatio n	% Populat ion	# Projec t Units	% Project Units	Total Populati on	% Populati on
2013	<60%	0	0.0%	10,766	17.6%	1	100.0%	21,781	35.7%	0	0.0%	28,457	46.6%	0	0.0%	0	0.0%
2013	60%-80%	0	0.0%	10,827	9.8%	0	0.0%	9,574	8.7%	0	0.0%	89,566	81.4%	0	0.0%	0	0.0%
2013	80%-100%	0	0.0%	1,926	1.3%	0	0.0%	0	0.0%	1	100.0%	147,750	98.7%	0	0.0%	0	0.0%
2013	100%-120%	0	0.0%	3,177	1.6%	0	0.0%	0	0.0%	1	100.0%	199,650	98.4%	0	0.0%	0	0.0%
2013	>120%	0	0.0%	1,808	0.5%	0	0.0%	0	0.0%	0	0.0%	348,900	99.5%	0	0.0%	0	0.0%
2013	Total	0	0.0%	28,504	3.3%	1	33.3%	31,355	3.6%	2	66.7%	814,323	93.2%	0	0.0%	0	0.0%
2014	<60%	2	28.6%	12,067	20.4%	4	57.1%	17,945	30.3%	1	14.3%	29,282	49.4%	0	0.0%	0	0.0%
2014	60%-80%	0	0.0%	8,576	8.2%	0	0.0%	10,507	10.1%	1	100.0%	85,445	81.7%	0	0.0%	0	0.0%
2014	80%-100%	0	0.0%	1,868	1.3%	1	16.7%	1,491	1.0%	5	83.3%	145,487	97.7%	0	0.0%	0	0.0%
2014	100%-120%	0	0.0%	3,280	1.6%	0	0.0%	0	0.0%	3	100.0%	205,632	98.4%	0	0.0%	0	0.0%
2014	>120%	0	0.0%	3,745	1.1%	0	0.0%	0	0.0%	6	100.0%	344,034	98.9%	0	0.0%	0	0.0%
2014	Total	2	8.7%	29,536	3.4%	5	21.7%	29,943	3.4%	16	69.6%	809,880	93.2%	0	0.0%	0	0.0%
2015	<60%	3	18.8%	12,243	18.4%	7	43.8%	27,292	41.0%	6	37.5%	27,097	40.7%	0	0.0%	0	0.0%
2015	60%-80%	0	0.0%	7,491	7.8%	0	0.0%	7,075	7.4%	5	100.0%	81,493	84.8%	0	0.0%	0	0.0%
2015	80%-100%	0	0.0%	5,767	3.5%	0	0.0%	513	0.3%	4	80.0%	158,372	95.9%	1	20.0%	553	0.3%
2015	100%-120%	0	0.0%	863	0.5%	0	0.0%	0	0.0%	10	100.0%	182,766	99.5%	0	0.0%	0	0.0%
2015	>120%	0	0.0%	1,877	0.5%	0	0.0%	0	0.0%	13	100.0%	350,176	99.5%	0	0.0%	0	0.0%
2015	Total	3	6.1%	28,241	3.3%	7	14.3%	34,880	4.0%	38	77.6%	799,904	92.6%	1	2.0%	553	0.1%
2016	<60%	1	11.1%	11,333	18.0%	6	66.7%	26,620	42.2%	2	22.2%	25,103	39.8%	0	0.0%	0	0.0%
2016	60%-80%	0	0.0%	7,872	7.9%	1	16.7%	8,551	8.6%	5	83.3%	82,650	83.4%	0	0.0%	0	0.0%
2016	80%-100%	0	0.0%	4,736	2.9%	0	0.0%	937	0.6%	9	90.0%	159,339	96.6%	1	10.0%	0	0.0%
2016	100%-120%	1	10.0%	0	0.0%	0	0.0%	0	0.0%	7	70.0%	186,570	99.7%	2	20.0%	559	0.3%
2016	>120%	0	0.0%	3,063	0.9%	0	0.0%	0	0.0%	15	100.0%	341,514	99.1%	0	0.0%	0	0.0%
2016	Total	2	4.0%	27,004	3.1%	7	14.0%	36,108	4.2%	38	76.0%	795,176	92.6%	3	6.0%	559	0.1%
2017	<60%	1	12.5%	11,916	18.4%	3	37.5%	28,817	44.5%	4	50.0%	24,022	37.1%	0	0.0%	0	0.0%
2017	60%-80%	0	0.0%	5,276	5.4%	0	0.0%	12,600	12.9%	4	100.0%	79,579	81.7%	0	0.0%	0	0.0%
2017	80%-100%	0	0.0%	4,323	2.8%	0	0.0%	2,062	1.3%	7	100.0%	149,029	95.9%	0	0.0%	0	0.0%
2017	100%-120%	0	0.0%	1,101	0.5%	0	0.0%	0	0.0%	12	100.0%	207,746	99.2%	0	0.0%	637	0.3%
2017	>120%	0	0.0%	4,014	1.2%	0	0.0%	0	0.0%	7	100.0%	335,348	98.8%	0	0.0%	0	0.0%

			Majority	Black			Majority H	lispanic			Majori	ty White			Majori	ty Asian	
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	Total Populat ion	% Popul ation	# Project Units	% Project Units	Total Popula tion	% Popul ation	# Project Units	% Project Units	Total Populatio n	% Populat ion	# Projec t Units	% Project Units	Total Populati on	% Populati on
2017	Total	1	2.6%	26,630	3.1%	3	7.9%	43,479	5.0%	34	89.5%	795,724	91.8%	0	0.0%	637	0.1%
2018	<60%	1	14.3%	10,135	16.3%	4	57.1%	28,053	45.1%	2	28.6%	24,059	38.7%	0	0.0%	0	0.0%
2018	60%-80%	0	0.0%	7,948	7.3%	1	7.7%	11,560	10.6%	12	92.3%	89,634	82.1%	0	0.0%	0	0.0%
2018	80%-100%	0	0.0%	4,704	3.2%	0	0.0%	3,271	2.2%	7	100.0%	138,013	94.5%	0	0.0%	0	0.0%
2018	100%-120%	1	10.0%	2,274	1.1%	0	0.0%	0	0.0%	9	90.0%	201,977	98.6%	0	0.0%	629	0.3%
2018	>120%	0	0.0%	2,828	0.8%	0	0.0%	0	0.0%	24	100.0%	341,161	99.2%	0	0.0%	0	0.0%
2018	Total	2	3.3%	27,889	3.2%	5	8.2%	42,884	5.0%	54	88.5%	794,844	91.8%	0	0.0%	629	0.1%
2019	<60%	3	30.0%	10,903	17.0%	5	50.0%	29,840	46.5%	2	20.0%	23,497	36.6%	0	0.0%	0	0.0%
2019	60%-80%	1	9.1%	6,102	6.0%	2	18.2%	10,367	10.3%	8	72.7%	84,519	83.7%	0	0.0%	0	0.0%
2019	80%-100%	0	0.0%	5,119	3.3%	0	0.0%	1,488	1.0%	5	100.0%	148,956	95.8%	0	0.0%	0	0.0%
2019	100%-120%	0	0.0%	3,330	1.6%	0	0.0%	627	0.3%	7	100.0%	202,850	97.8%	0	0.0%	648	0.3%
2019	>120%	0	0.0%	2,074	0.6%	0	0.0%	0	0.0%	3	100.0%	335,436	99.4%	0	0.0%	0	0.0%
2019	Total	4	11.1%	27,528	3.2%	7	19.4%	42,322	4.9%	25	69.4%	795,258	91.9%	0	0.0%	648	0.1%
2020	<60%	1	9.1%	9,549	13.9%	8	72.7%	36,027	52.5%	2	18.2%	23,086	33.6%	0	0.0%	0	0.0%
2020	60%-80%	2	25.0%	7,132	6.8%	3	37.5%	23,995	22.8%	3	37.5%	73,963	70.4%	0	0.0%	0	0.0%
2020	80%-100%	0	0.0%	4,568	2.8%	0	0.0%	2,350	1.4%	7	100.0%	159,134	95.8%	0	0.0%	0	0.0%
2020	100%-120%	0	0.0%	4,328	2.1%	0	0.0%	0	0.0%	1	100.0%	205,187	97.9%	0	0.0%	0	0.0%
2020	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	15	100.0%	326,890	100.0%	0	0.0%	0	0.0%
2020	Total	3	7.1%	25,577	2.9%	11	26.2%	62,372	7.1%	28	66.7%	788,350	90.0%	0	0.0%	0	0.0%
2021	<60%	2	25.0%	9,549	13.9%	4	50.0%	36,027	52.5%	2	25.0%	23,086	33.6%	0	0.0%	0	0.0%
2021	60%-80%	0	0.0%	7,132	6.8%	0	0.0%	23,995	22.8%	3	100.0%	73,963	70.4%	0	0.0%	0	0.0%
2021	80%-100%	1	14.3%	4,568	2.8%	0	0.0%	2,350	1.4%	6	85.7%	159,134	95.8%	0	0.0%	0	0.0%
2021	100%-120%	0	0.0%	4,328	2.1%	0	0.0%	0	0.0%	4	100.0%	205,187	97.9%	0	0.0%	0	0.0%
2021	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	11	100.0%	326,890	100.0%	0	0.0%	0	0.0%
2021	Total	3	9.1%	25,577	2.9%	4	12.1%	62,372	7.1%	26	78.8%	788,350	90.0%	0	0.0%	0	0.0%
2022	<60%	2	50.0%	9,549	13.9%	1	25.0%	36,027	52.5%	1	25.0%	23,086	33.6%	0	0.0%	0	0.0%
2022	60%-80%	0	0.0%	7,132	6.8%	1	100.0%	23,995	22.8%	0	0.0%	73,963	70.4%	0	0.0%	0	0.0%
2022	80%-100%	1	16.7%	4,568	2.8%	1	16.7%	2,350	1.4%	4	66.7%	159,134	95.8%	0	0.0%	0	0.0%
2022	100%-120%	0	0.0%	4,328	2.1%	0	0.0%	0	0.0%	3	100.0%	205,187	97.9%	0	0.0%	0	0.0%

		Majority Black				Majority Hispanic Majo			Majori	ty White			Majori	ity Asian			
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	Total Populat ion	% Popul ation	# Project Units	% Project Units	Total Popula tion	% Popul ation	# Project Units	% Project Units	Total Populatio n	% Populat ion	# Projec t Units	% Project Units	Total Populati on	% Populati on
2022	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	5	100.0%	326,890	100.0%	0	0.0%	0	0.0%
2022	Total	3	15.8%	25,577	2.9%	3	15.8%	62,372	7.1%	13	68.4%	788,350	90.0%	0	0.0%	0	0.0%
Total	<60%	16	19.8%	9,549	13.9%	43	53.1%	36,027	52.5%	22	27.2%	23,086	33.6%	0	0.0%	0	0.0%
Total	60%-80%	3	5.8%	7,132	6.8%	8	15.4%	23,995	22.8%	41	78.8%	73,963	70.4%	0	0.0%	0	0.0%
Total	80%-100%	2	3.3%	4,568	2.8%	2	3.3%	2,350	1.4%	55	90.2%	159,134	95.8%	2	3.3%	0	0.0%
Total	100%-120%	2	3.3%	4,328	2.1%	0	0.0%	0	0.0%	57	93.4%	205,187	97.9%	2	3.3%	0	0.0%
Total	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	99	100.0%	326,890	100.0%	0	0.0%	0	0.0%
Total	Total	23	6.5%	25,577	2.9%	53	15.0%	62,372	7.1%	274	77.4%	788,350	90.0%	4	1.1%	0	0.0%

# Societal Benefits

Ratepayers in Connecticut continue to enjoy the societal benefits of C-PACE. In its 9 years of existence, the program has supported the creation of 2,563 job years, avoided the lifetime emission of 919,122 tons of carbon dioxide, 928,909 pounds of nitrous oxide, 830,637 pounds of sulfur oxide, and 69,628 pounds of particulate matter as illustrated by Table 87 and Table 89.

CPACE is estimated to have generated \$18.5 million in tax revenue for the State of Connecticut since its inception as shown in Table 88. The lifetime economic value of the public health impacts of CPACE are estimated between \$26.9 and \$60.2 million as illustrated in Table 90.

Fiscal Year	Direct Jobs	Indirect and Induced Jobs	Total Jobs
2012	0	0	0
2013	9	15	24
2014	109	174	282
2015	142	227	369
2016	178	285	463
2017	54	73	128
2018	85	111	197
2019	70	91	161
2020	85	111	196
2021	199	256	456
2022	124	165	288
Total	1,056	1,508	2,563

#### TABLE 87. C-PACE JOB YEARS SUPPORTED BY FY CLOSED

#### TABLE 88. C-PACE TAX REVENUES GENERATED BY FY CLOSED

Fiscal Year	Individual Income Tax Revenue Generated	Corporate Tax Revenue Generated	Sales Tax Revenue Generated	Total Tax Revenue Generated
2012	\$0	\$0	\$0	\$0
2013	\$42,924	\$45,544	\$46,694	\$135,162
2014	\$489,858	\$773,000	\$366,235	\$1,629,093
2015	\$703,863	\$1,065,722	\$727,217	\$2,496,802
2016	\$842,312	\$1,081,158	\$682,137	\$2,605,607
2017	\$279,811	\$431,322	\$108,236	\$819,370
2018	\$443,118	\$927,492	\$162,881	\$1,533,492
2019	\$356,435	\$710,712	\$277,137	\$1,344,285
2020	\$498,434	\$890,085	\$428,230	\$1,816,749
2021	\$1,057,796	\$1,064,436	\$1,750,961	\$3,873,192
2022	\$628,452	\$593,747	\$1,078,374	\$2,300,573
Total	\$5,343,004	\$7,583,217	\$5,628,104	\$18,554,325

	CO2 Emission	s Avoided (tons)		nissions (pounds)		nissions (pounds)	PM 2.5 (pounds)		
Fiscal Year	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	
2012	0	0	0	0	0	0	0	0	
2013	283	4,224	386	5,811	477	7,148	24	360	
2014	4,700	86,427	6,077	113,223	6,872	128,033	400	7,497	
2015	7,350	161,935	7,848	171,247	7,487	161,458	454	9,626	
2016	8,626	156,267	9,181	163,676	8,099	136,665	716	13,207	
2017	3,345	71,784	3,000	64,793	2,203	46,446	282	6,108	
2018	5,858	129,664	5,398	121,162	4,446	100,178	491	10,956	
2019	3,493	79,579	3,316	76,213	2,864	65,724	294	6,734	
2020	4,222	93,557	3,987	89,322	3,447	77,070	354	7,902	
2021	2,331	48,692	2,177	46,168	1,886	39,883	194	4,096	
2022	3,480	86,993	3,092	77,295	2,721	68,033	126	3,142	
Total	43,688	919,122	44,461	928,909	40,502	830,637	3,336	69,628	

#### TABLE 89. C-PACE AVOIDED EMISSIONS BY FY CLOSED

#### TABLE 90. C-PACE ECONOMIC VALUE OF PUBLIC HEALTH BY FY CLOSED

Fiscal	Anr	nual	Life	time
Year	Low	High	Low	High
2012	\$0	\$0	\$0	\$0
2013	\$8,806	\$19,901	\$134,682	\$304,304
2014	\$150,753	\$340,563	\$2,851,883	\$6,441,221
2015	\$199,974	\$451,698	\$4,366,477	\$9,861,765
2016	\$272,210	\$615,006	\$5,075,552	\$11,464,986
2017	\$108,806	\$245,823	\$2,403,559	\$5,429,445
2018	\$187,290	\$423,368	\$4,167,303	\$9,420,126
2019	\$98,485	\$223,004	\$2,255,109	\$5,106,830
2020	\$112,179	\$254,192	\$2,510,089	\$5,688,581
2021	\$61,329	\$138,948	\$1,298,363	\$2,942,195
2022	\$64,272	\$145,483	\$1,606,810	\$3,637,068
Total	\$1,264,104	\$2,857,988	\$26,669,829	\$60,296,521

# **Financing Program**

Commercial Property Assessed Clean Energy (C-PACE) is a structure through which commercial property owners can finance clean energy improvements through a voluntary benefit assessment on their property, repaid through their municipality along with real property taxes. A lien, or voluntary benefit assessment, is placed on the improved property as security for the financing, and the Connecticut Green Bank requires lender consent from existing mortgage holders prior to approving a C-PACE project. As of June 30, 2022, 99 banks and specialized lending institutions have provided lender consent for 347 projects – demonstrating that existing mortgage holders see that C-PACE adds adding value to properties and increases net income to the business occupying the building as a result of lower energy prices.

The Connecticut Green Bank administers the C-PACE program as an "open" platform. Private lenders work directly with building owners to finance projects. The lenders and owners then work with the

Connecticut Green to approve the project and place the benefit assessment on the property. In addition, the Connecticut Green Bank maintains a warehouse of capital from which it finances C-PACE transactions. Through the warehouse, funds are advanced to either the customer or the contractor during construction based on the project meeting certain deliverables. Once the project is completed, the construction advances convert to long term financing whereby the property owner pays a benefit assessment over time to the municipality at the same time real property taxes are paid on the property. As the benefit assessment payments are made by the property owners, they are then remitted from the associated municipalities to the Connecticut Green Bank, or its designated servicer, to repay the capital providers for the energy improvements financed through C-PACE.

# **Financial Performance**

To date there have been no foreclosures and as of June 30, 2022, there are eight (8) delinquencies with a principal balance outstanding of 8,207,027.23 or 3.75% of the portfolio.

# Marketing

To accelerate the adoption of C-PACE to finance clean energy and energy efficiency projects, the Connecticut Green Bank has implemented marketing efforts that target specific industry verticals. The Green Bank used a group purchase model, in which it aggregated several C-PACE projects at auto retailers and offered interest rate reductions on the portfolio of projects. Connecticut Green Bank continues to work with the State of Connecticut's Department of Economic and Community Development (DECD) to target manufacturing facilities through its Manufacturing Innovation Fund (MIF). Promoted via its multi touch "Energy on the Line" marketing campaign, the Green Bank was able to access \$800,000 through MIF to provide manufacturers an incentive in the form of a grant equal to a 1% interest rate reduction, applied to the total project amount of a closed C-PACE project.

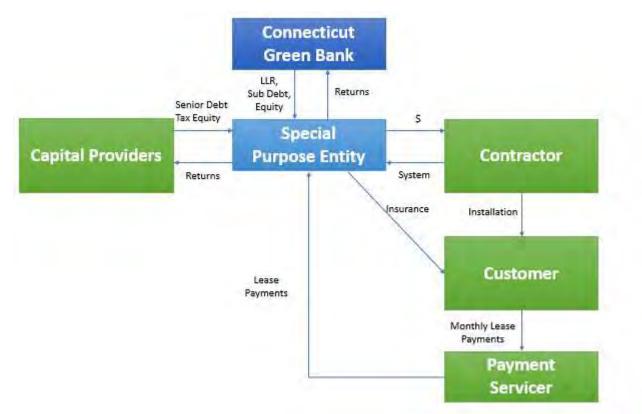
Connecticut Green Bank has also established relationships with contractors and provided them with materials and resources to support their use of C-PACE. Green Bank provides sales materials, serving as both a means of originating projects for the Green Bank and a way of creating more skilled and active C-PACE contractors. The Green Bank is focusing on its contractor network through a broader, organization-wide effort to increase contractor participation. This engagement is intended to foster stronger relationships and improve communication to the contractor base.

# Case 2 – CT Green Bank PPA and Commercial Solar Lease

# Description

The Green Bank has used third-party ownership structures to deploy distributed solar generation in Connecticut in both the Residential and Commercial sectors. These funds are a unique combination of a tax equity investor and a syndicate of debt providers and the Green Bank to support solar PV installations (i.e., rooftop residential lease financing for solar PV and commercial leases and PPAs for rooftop, carport, and ground mount solar PV).

Residential leases were one of the first products to graduate from Green Bank funding, but the organization still actively pursues new projects in the Commercial, Industrial, and Institutional sector for development and sale, and performs asset management functions for its entire owned portfolio of Residential and Commercial operational projects.



#### FIGURE 6. LEGAL STRUCTURE AND FLOWS OF CAPITAL FOR THE CT GREEN BANK PPA<sup>143</sup>

The CT Solar Lease 2 fund was the second "solar PV fund" established using a combination of ratepayer funds and private capital. In developing this fund, which was fully utilized in 2017, the Green Bank sought to innovate both in the types of credits that would be underwritten and via broadening the sources of capital in the fund. Before these innovations by the Green Bank, a fund had not been established that would underwrite residential solar PV installations as well as installations on a "commercial scale" such

<sup>&</sup>lt;sup>143</sup> It should be noted that the Special Purpose Entity structure includes several entities – CT Solar Lease II, LLC and CEFIA Holdings, LLC that provide different functions.

as for municipal and school buildings, community oriented not-for-profit structures (all of which can't take advantage of Federal tax incentives due to their tax-exempt status) as well as a vast array of for-profit enterprises. These commercial-scale projects were historically the most difficult to finance: too small to attract investment funds, and similarly if aggregated to a size worthy of investment, comprised of offtakers that for the most part are non-investment grade or "unrated" credits that are difficult to underwrite in a manner that would permit deploying solar PV at scale. By prudently assessing these risks and operational issues, the Green Bank was able to obtain the support of the tax equity investor and lenders from Main Street – not Wall Street – in the fund. CT Solar Lease 2 was the first fund to secure solar leases and power purchase agreements using a PACE lien - an innovation that has prompted California to introduce legislation to enable the same security arrangement for its businesses and not for profit organizations. The Green Bank's leadership and innovation was recognized by the Clean Energy States Alliance "State Leadership in Clean Energy" award in 2016, and the Green Bank has continued its work on this front - solely with respect to commercial-scale projects - via a CT Solar Lease 3 fund, as well as through sourcing arrangements to deliver a number of these projects to Onyx Renewables (a Blackstone portfolio company), Inclusive Prosperity Capital, and other regional solar asset owners, so as to accelerate market adoption of financing strategies for this sector.

# **Key Performance Indicators**

The Key Performance Indicators for PPA and Solar Lease closed activity are reflected in Table 91 through Table 93. These illustrate the volume of projects by year, investment, generation capacity installed, and the amount of energy saved and/or produced.

				#	Total	Green Bank	Private	Leverage
Fiscal Year	EE	RE	RE/EE	Projects	Investment	Investment <sup>144</sup>	Investment	Ratio
2012	0	0	0	0	\$0	\$0	\$0	0
2013	0	0	0	0	\$0	\$0	\$0	0
2014	0	0	0	0	\$0	\$0	\$0	0
2015	0	16	0	16	\$10,387,036	\$2,700,629	\$7,686,407	3.8
2016	0	27	0	27	\$15,093,478	\$3,924,304	\$11,169,174	3.8
2017	0	28	2	30	\$25,088,167	\$6,157,306	\$18,930,861	4.1
2018	0	28	1	29	\$17,101,331	\$3,885,874	\$13,215,457	4.4
2019	0	19	0	19	\$8,135,503	\$2,849,490	\$5,286,013	2.9
2020	0	26	0	26	\$5,874,254	\$3,311,570	\$2,562,684	1.8
2021	0	33	0	33	\$25,141,990	\$14,146,718	\$10,995,271	1.8
2022	0	15	0	15	\$5,182,599	\$2,259,023	\$2,923,576	2.3
Total	0	192	3	195	\$112,004,358	\$39,234,915	\$72,769,443	2.9

#### TABLE 91. CT GREEN BANK PPA AND COMMERCIAL SOLAR LEASE PROJECT TYPES AND INVESTMENT BY FY CLOSED

TABLE 92. CT GREEN BANK PPA AND COMMERCIAL SOLAR LEASE PROJECT CAPACITY, GENERATION AND SAVINGS<sup>145</sup> BY FY CLOSED

<sup>&</sup>lt;sup>144</sup> Includes incentives, interest rate buydowns and loan loss reserves.

<sup>&</sup>lt;sup>145</sup> The Green Bank currently estimates annual savings and is in the process or reviewing and updating this methodology to include actual savings where possible.

	Installed		Expected Lifetime	Annual Saved /	Lifetime Saved /
Fiscal	Capacity	Expected Annual	Savings or	Produced	Produced
Year	(kW)	Generation (kWh)	Generation (MWh)	(MMBtu)	(MMBtu)
2012	0.0	0	0	0	0
2013	0.0	0	0	0	0
2014	0.0	0	0	0	0
2015	3,490.4	3,974,856	99,371	8,680	216,999
2016	5,463.0	6,221,207	155,530	10,987	274,673
2017	11,650.6	13,267,749	331,694	38,007	950,178
2018	8,063.6	9,182,862	229,572	26,920	673,004
2019	3,618.3	4,120,463	103,012	10,340	258,494
2020	2,379.6	2,709,843	67,746	7,616	190,388
2021	13,824.3	15,743,056	393,576	53,715	1,342,883
2022	2,505.2	2,850,644	71,266	7,436	185,901
Total	50,994.9	58,070,680	1,451,767	163,701	4,092,520

#### TABLE 93. CT GREEN BANK PPA AND COMMERCIAL SOLAR LEASE PROJECT AVERAGES BY FY CLOSED

	Average	Average	Average	Average Annual	Average	
Fiscal	Total	Amount	Installed	Saved / Produced	Finance Term	Average PPA
Year	Investment	Financed	Capacity (kW)	(MMBtu)	(years)	Lease Price
2012	\$0	\$0	0.0	0	0	\$0.00
2013	\$0	\$0	0.0	0	0	\$0.00
2014	\$0	\$0	0.0	0	0	\$0.00
2015	\$649,190	\$649,190	218.1	964	21	\$0.10
2016	\$559,018	\$559,018	202.3	646	20	\$0.10
2017	\$836,272	\$836,272	388.4	1,900	20	\$0.09
2018	\$589,701	\$589,701	278.1	1,346	20	\$0.08
2019	\$428,184	\$428,184	190.4	862	20	\$0.08
2020	\$225,933	\$225,933	91.5	331	20	\$0.10
2021	\$761,878	\$761,878	432.0	1,679	20	\$0.08
2022	\$345,507	\$345,507	167.0	572	20	\$0.08
Average	\$574,381	\$574,381	262.9	1,121	20	\$0.09

The types of Commercial end-use customers participating in the PPA and Solar Lease program are shown in Table 94.

TABLE 94. TYPES OF END-USE CUSTOMERS PARTICIPATING IN CT GREEN BANK PPA AND COMMERCIAL SOLAR LEASE

Property Type	# of Properties
Agricultural	4
Athletic/Recreational Facility	7
Education	77
House of Worship	10
Industrial	2
Multifamily/apartment (> 5 units)	15
Municipal building	24
Non-profit	13
Nursing Home/Rehab Facility	4
Office	20
Public assembly	2

Property Type	# of Properties
Retail	1
Special Purpose	14
Warehouse & storage	2
Grand Total	195

# **Customer Savings**

The difference between the cost of electricity for a customer using a Green Bank supported solar PV system and the cost of that electricity had it been purchased from the customer's utility is how we estimate customer savings. For commercial customers, savings is strictly the difference between the utility rate and a customer's contractual PPA rate all multiplied by the Solar PV Generation.

TABLE 95. CT GREEN BANK PPA AND COMMERCIAL SOLAR LEASE ANNUAL SAVINGS<sup>146</sup>

Fiscal	Annual Covinga	Cumulative # of Meters	Generation kWh <sup>147</sup>	kW Installed
Year	Annual Savings	Cumulative # of Meters	Generation Kwn***	
2012	\$0	0	0	0
2013	\$0	0	0	0
2014	\$0	0	0	0
2015	\$4,626	14	232,944	1,711
2016	\$61,845	52	3,311,532	5,942
2017	\$112,902	99	8,145,045	11,556
2018	\$368,347	122	13,190,003	14,568
2019	\$686,417	131	16,013,706	18,495
2020	\$716,264	143	20,989,049	19,681
2021	\$646,140	143	20,523,979	19,681
2022	\$650,122	143	20,073,738	19,681
Total	\$3,246,663	143	102,479,996	19,681

<sup>&</sup>lt;sup>146</sup> All data points required to calculate annual savings for each meter may not be available yet as we wait on data ingestion.

<sup>&</sup>lt;sup>147</sup> Generation is the production we see in our meters as of today: Any increase to generation is due to data backfilling or due to getting access to previously inaccessible meters; any decrease in generation from last year's report is data that is temporarily missing due to a meter replacement. Annual Savings is a function of generation so there might be an increase or decrease in savings.

# **Vulnerable Communities Penetration**

PPA and Commercial Solar Lease projects have been developed and financed in Vulnerable Communities throughout Connecticut since the products' inception, as reflected in Table 96.

TABLE 96. CT GREEN BANK PPA AND COMMERCIAL SOLAR LEASE ACTIVITY IN VULNERABLE AND NOT VULNERABLE COMMUNITIES BY FY CLOSED <sup>148</sup>
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		# Proj	ect Units				MW			Total Inv	estment	
Fiscal Year	Total	Not Vulnerable	Vulnerable	% Vulnerable	Total	Not Vulnerable	Vulnerable	% Vulnerable	Total	Not Vulnerable	Vulnerable	% Vulnerable
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2013	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2014	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2015	16	10	6	38%	3.5	2.6	0.9	25%	\$10,387,036	\$7,854,184	\$2,532,852	24%
2016	27	20	7	26%	5.5	3.9	1.5	28%	\$15,093,478	\$11,040,003	\$4,053,476	27%
2017	30	15	15	50%	11.7	3.9	7.7	66%	\$25,088,167	\$8,418,561	\$16,669,606	66%
2018	29	16	13	45%	8.1	2.7	5.4	67%	\$17,101,331	\$5,692,947	\$11,408,384	67%
2019	19	10	9	47%	3.6	1.4	2.2	61%	\$8,135,503	\$3,368,262	\$4,767,241	59%
2020	26	20	6	23%	2.4	1.7	0.7	29%	\$5,874,254	\$4,192,376	\$1,681,878	29%
2021	33	23	10	30%	13.8	11.4	2.5	18%	\$25,141,990	\$19,394,766	\$5,747,224	23%
2022	15	9	6	40%	2.5	1.8	0.7	29%	\$5,182,599	\$3,629,474	\$1,553,125	30%
Total	195	123	72	37%	51.0	29.4	21.6	42%	\$112,004,358	\$63,590,573	\$48,413,785	43%

### Area Median Income Band Penetration

The PPA and Commercial Solar Lease program has been used to fund projects in economically diverse locations across the state as reflected by Table 97 and Table 98 for Metropolitan Statistical Area (MSA) Area Median Income (AMI). It should be noted that these PPA and Commercial Solar Lease funds are not part of an income targeted program.

TABLE 97. CT GREEN BANK PPA AND COMMERCIAL SOLAR LEASE ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS BY FY CLOSED<sup>149</sup>

<sup>&</sup>lt;sup>148</sup> Excludes projects in unknown communities.

<sup>&</sup>lt;sup>149</sup> Excludes projects in unknown bands.

Fiscal Year	MSA AMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Population	% Population Distribution	Project Units / 1,000 People	Total Investment / Population	Watts / Population
2012	<60%	0	0%	0.0	0%	\$0	0%	609,363	17%	0.0	\$0.00	0.0
2012	60%-80%	0	0%	0.0	0%	\$0	0%	527,217	15%	0.0	\$0.00	0.0
2012	80%-100%	0	0%	0.0	0%	\$0	0%	589,440	17%	0.0	\$0.00	0.0
2012	100%-120%	0	0%	0.0	0%	\$0	0%	722,664	20%	0.0	\$0.00	0.0
2012	>120%	0	0%	0.0	0%	\$0	0%	1,116,395	31%	0.0	\$0.00	0.0
2012	Total	0	0%	0.0	0%	\$0	0%	3,572,213	100%	0.0	\$0.00	0.0
2013	<60%	0	0%	0.0	0%	\$0	0%	603,026	17%	0.0	\$0.00	0.0
2013	60%-80%	0	0%	0.0	0%	\$0	0%	567,361	16%	0.0	\$0.00	0.0
2013	80%-100%	0	0%	0.0	0%	\$0	0%	587,540	16%	0.0	\$0.00	0.0
2013	100%-120%	0	0%	0.0	0%	\$0	0%	687,261	19%	0.0	\$0.00	0.0
2013	>120%	0	0%	0.0	0%	\$0	0%	1,130,771	32%	0.0	\$0.00	0.0
2013	Total	0	0%	0.0	0%	\$0	0%	3,583,561	100%	0.0	\$0.00	0.0
2014	<60%	0	0%	0.0	0%	\$0	0%	614,135	17%	0.0	\$0.00	0.0
2014	60%-80%	0	0%	0.0	0%	\$0	0%	546,132	15%	0.0	\$0.00	0.0
2014	80%-100%	0	0%	0.0	0%	\$0	0%	577,061	16%	0.0	\$0.00	0.0
2014	100%-120%	0	0%	0.0	0%	\$0	0%	720,856	20%	0.0	\$0.00	0.0
2014	>120%	0	0%	0.0	0%	\$0	0%	1,125,910	31%	0.0	\$0.00	0.0
2014	Total	0	0%	0.0	0%	\$0	0%	3,592,053	100%	0.0	\$0.00	0.0
2015	<60%	1	6%	0.0	1%	\$92,004	1%	662,619	18%	0.0	\$0.14	0.0
2015	60%-80%	1	6%	0.1	2%	\$265,000	3%	489,826	14%	0.0	\$0.54	0.2
2015	80%-100%	3	19%	0.8	22%	\$2,093,948	20%	650,163	18%	0.0	\$3.22	1.2
2015	100%-120%	3	19%	0.4	11%	\$1,139,382	11%	631,741	18%	0.0	\$1.80	0.6
2015	>120%	8	50%	2.3	65%	\$6,796,702	65%	1,150,974	32%	0.0	\$5.91	2.0
2015	Total	16	100%	3.5	100%	\$10,387,036	100%	3,593,222	100%	0.0	\$2.89	1.0
2016	<60%	0	0%	0.0	0%	\$0	0%	649,617	18%	0.0	\$0.00	0.0
2016	60%-80%	1	4%	0.1	3%	\$493,254	3%	509,088	14%	0.0	\$0.97	0.3
2016	80%-100%	6	22%	1.4	25%	\$3,560,222	24%	641,084	18%	0.0	\$5.55	2.1
2016	100%-120%	10	37%	2.1	38%	\$5,784,206	38%	653,309	18%	0.0	\$8.85	3.2
2016	>120%	10	37%	1.9	34%	\$5,255,797	35%	1,126,543	31%	0.0	\$4.67	1.7
2016	Total	27	100%	5.5	100%	\$15,093,478	100%	3,588,570	100%	0.0	\$4.21	1.5

Fiscal Year	MSA AMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Population	% Population Distribution	Project Units / 1,000 People	Total Investment / Population	Watts / Population
2017	<60%	4	13%	1.4	12%	\$3,476,531	14%	663,181	18%	0.0	\$5.24	2.2
2017	60%-80%	5	17%	2.3	20%	\$5,200,276	21%	488,396	14%	0.0	\$10.65	4.8
2017	80%-100%	4	13%	1.3	11%	\$3,419,591	14%	612,043	17%	0.0	\$5.59	2.1
2017	100%-120%	9	30%	3.7	32%	\$6,839,183	27%	722,803	20%	0.0	\$9.46	5.1
2017	>120%	8	27%	2.9	25%	\$6,152,586	25%	1,099,277	31%	0.0	\$5.60	2.7
2017	Total	30	100%	11.7	100%	\$25,088,167	100%	3,594,478	100%	0.0	\$6.98	3.2
2018	<60%	4	14%	1.4	17%	\$3,023,342	18%	636,795	18%	0.0	\$4.75	2.1
2018	60%-80%	4	14%	0.7	9%	\$1,492,598	9%	553,007	15%	0.0	\$2.70	1.3
2018	80%-100%	3	10%	1.9	24%	\$4,164,416	24%	569,113	16%	0.0	\$7.32	3.3
2018	100%-120%	4	14%	0.6	7%	\$1,079,828	6%	710,802	20%	0.0	\$1.52	0.8
2018	>120%	14	48%	3.5	43%	\$7,341,147	43%	1,103,484	31%	0.0	\$6.65	3.2
2018	Total	29	100%	8.1	100%	\$17,101,331	100%	3,581,504	100%	0.0	\$4.77	2.3
2019	<60%	4	21%	0.4	10%	\$843,434	10%	636,795	18%	0.0	\$1.32	0.6
2019	60%-80%	5	26%	1.8	51%	\$3,923,807	48%	553,007	15%	0.0	\$7.10	3.3
2019	80%-100%	0	0%	0.0	0%	\$0	0%	569,113	16%	0.0	\$0.00	0.0
2019	100%-120%	2	11%	0.2	6%	\$494,343	6%	710,802	20%	0.0	\$0.70	0.3
2019	>120%	8	42%	1.2	33%	\$2,873,919	35%	1,103,484	31%	0.0	\$2.60	1.1
2019	Total	19	100%	3.6	100%	\$8,135,503	100%	3,575,074	100%	0.0	\$2.28	1.0
2020	<60%	0	0%	0.0	0%	\$0	0%	605,886	17%	0.0	\$0.00	0.0
2020	60%-80%	4	15%	0.5	19%	\$1,173,968	20%	540,866	15%	0.0	\$2.17	0.8
2020	80%-100%	2	8%	0.2	10%	\$507,910	9%	662,005	19%	0.0	\$0.77	0.3
2020	100%-120%	9	35%	0.4	18%	\$1,205,363	21%	692,148	19%	0.0	\$1.74	0.6
2020	>120%	11	42%	1.3	53%	\$2,987,014	51%	1,051,590	29%	0.0	\$2.84	1.2
2020	Total	26	100%	2.4	100%	\$5,874,254	100%	3,570,549	100%	0.0	\$1.65	0.7
2021	<60%	1	3%	0.0	0%	\$1,684,519	7%	605,886	17%	0.0	\$2.78	0.0
2021	60%-80%	3	9%	0.6	4%	\$972,366	4%	540,866	15%	0.0	\$1.80	1.0
2021	80%-100%	5	15%	1.8	13%	\$2,782,967	11%	662,005	19%	0.0	\$4.20	2.7
2021	100%-120%	9	27%	2.1	16%	\$3,805,693	15%	692,148	19%	0.0	\$5.50	3.1
2021	>120%	15	45%	9.3	68%	\$15,896,445	63%	1,051,590	29%	0.0	\$15.12	8.9
2021	Total	33	100%	13.8	100%	\$25,141,990	100%	3,570,549	100%	0.0	\$7.04	3.9

Fiscal Year	MSA AMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Population	% Population Distribution	Project Units / 1,000 People	Total Investment / Population	Watts / Population
2022	<60%	2	14%	0.2	7%	\$462,428	9%	605,886	17%	0.0	\$0.76	0.3
2022	60%-80%	0	0%	0.0	0%	\$0	0%	540,866	15%	0.0	\$0.00	0.0
2022	80%-100%	4	29%	0.6	22%	\$1,090,697	21%	662,005	19%	0.0	\$1.65	0.8
2022	100%-120%	1	7%	0.4	14%	\$635,507	12%	692,148	19%	0.0	\$0.92	0.5
2022	>120%	7	50%	1.4	56%	\$2,928,178	57%	1,051,590	29%	0.0	\$2.78	1.3
2022	Total	14	100%	2.5	100%	\$5,116,809	100%	3,570,549	100%	0.0	\$1.43	0.7
Total	<60%	16	8%	3.4	7%	\$9,582,258	9%	605,886	17%	0.0	\$15.82	5.6
Total	60%-80%	23	12%	6.1	12%	\$13,521,268	12%	540,866	15%	0.0	\$25.00	11.3
Total	80%-100%	27	14%	7.9	15%	\$17,619,751	16%	662,005	19%	0.0	\$26.62	11.9
Total	100%-120%	47	24%	9.9	19%	\$20,983,504	19%	692,148	19%	0.1	\$30.32	14.3
Total	>120%	81	42%	23.7	47%	\$50,231,788	45%	1,051,590	29%	0.1	\$47.77	22.6
Total	Total	194	100%	51.0	100%	\$111,938,568	100%	3,570,549	100%	0.1	\$31.35	14.3

TABLE 98. CT GREEN BANK PPA AND COMMERCIAL SOLAR LEASE ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS ABOVE OR BELOW 100% BY FY CLOSED<sup>150</sup>

		# Pr	oject Units				MW			Total Invest	ment	
Fiscal Year	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2013	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2014	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2015	16	11	5	31%	3.5	2.6	0.9	24%	\$10,387,036	\$7,936,084	\$2,450,952	24%
2016	27	20	7	26%	5.5	3.9	1.5	28%	\$15,093,478	\$11,040,003	\$4,053,476	27%
2017	30	17	13	43%	11.7	6.6	5.1	43%	\$25,088,167	\$12,991,769	\$12,096,398	48%
2018	29	18	11	38%	8.1	4.1	4.0	49%	\$17,101,331	\$8,420,975	\$8,680,356	51%
2019	19	10	9	47%	3.6	1.4	2.2	61%	\$8,135,503	\$3,368,262	\$4,767,241	59%
2020	26	20	6	23%	2.4	1.7	0.7	29%	\$5,874,254	\$4,192,376	\$1,681,878	29%

<sup>150</sup> Excludes projects in unknown bands.

		# Pr	oject Units				MW			Over 100% 100% or of AMI Below AMI Belo		
Fiscal Year	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below	Total			% at 100% or Below
2021	33	24	9	27%	13.8	11.5	2.3	17%	\$25,141,990	\$19,702,138	\$5,439,852	22%
2022	14	8	6	43%	2.5	1.7	0.7	30%	\$5,116,809	\$3,563,684	\$1,553,125	30%
Total	194	128	66	34%	51.0	33.6	17.4	34%	\$111,938,568	\$71,215,291	\$40,723,277	36%

TABLE 99. CT GREEN BANK PPA AND COMMERCIAL SOLAR LEASE ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS ABOVE OR BELOW 80% BY FY CLOSED<sup>151</sup>

		# Pr	oject Units				MW			Total Invest	ment	
Fiscal		Over 80%	80% or Below	% at 80% or		Over 80%	80% or Below	% at 80% or		Over 80%	80% or	% at 80% or
Year	Total	AMI	AMI	Below	Total	AMI	AMI	Below	Total	AMI	Below AMI	Below
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2013	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2014	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2015	16	14	2	13%	3.5	3.4	0.1	3%	\$10,387,036	\$10,030,032	\$357,004	3%
2016	27	26	1	4%	5.5	5.3	0.1	3%	\$15,093,478	\$14,600,224	\$493,254	3%
2017	30	21	9	30%	11.7	7.9	3.8	32%	\$25,088,167	\$16,411,360	\$8,676,807	35%
2018	29	21	8	28%	8.1	6.0	2.1	26%	\$17,101,331	\$12,585,392	\$4,515,940	26%
2019	19	10	9	47%	3.6	1.4	2.2	61%	\$8,135,503	\$3,368,262	\$4,767,241	59%
2020	26	22	4	15%	2.4	1.9	0.5	19%	\$5,874,254	\$4,700,287	\$1,173,968	20%
2021	33	29	4	12%	13.8	13.3	0.6	4%	\$25,141,990	\$22,485,105	\$2,656,885	11%
2022	14	12	2	14%	2.5	2.3	0.2	7%	\$5,116,809	\$4,654,381	\$462,428	9%
Total	194	155	39	20%	51.0	41.5	9.5	19%	\$111,938,568	\$88,835,042	\$23,103,526	21%

### **Distressed Community Penetration**

For a breakdown of PPA and Commercial Solar Lease project volume and investment by census tracts categorized by Distressed Communities – see Table 100. It should be noted that the PPA and Commercial Solar Lease is not an income targeted program.

<sup>&</sup>lt;sup>151</sup> Excludes projects in unknown bands.

#### TABLE 100. CT GREEN BANK PPA AND COMMERCIAL SOLAR LEASE ACTIVITY IN DISTRESSED COMMUNITIES BY FY CLOSED

Fiscal Year	Distres sed	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Population	% Population Distribution	Project Units / 1,000 People	Total Investment / Population	Watts / Population
2012	Yes	0	0%	0.0	0%	\$0	0%	1,171,385	33%	0.0	\$0.00	0.0
2012	No	0	0%	0.0	0%	\$0	0%	2,400,828	67%	0.0	\$0.00	0.0
2012	Total	0	0%	0.0	0%	\$0	0%	3,572,213	100%	0.0	\$0.00	0.0
2013	Yes	0	0%	0.0	0%	\$0	0%	1,124,923	31%	0.0	\$0.00	0.0
2013	No	0	0%	0.0	0%	\$0	0%	2,458,638	69%	0.0	\$0.00	0.0
2013	Total	0	0%	0.0	0%	\$0	0%	3,583,561	100%	0.0	\$0.00	0.0
2014	Yes	0	0%	0.0	0%	\$0	0%	1,106,027	31%	0.0	\$0.00	0.0
2014	No	0	0%	0.0	0%	\$0	0%	2,486,026	69%	0.0	\$0.00	0.0
2014	Total	0	0%	0.0	0%	\$0	0%	3,592,053	100%	0.0	\$0.00	0.0
2015	Yes	2	13%	0.1	4%	\$371,867	4%	1,122,550	31%	0.0	\$0.33	0.1
2015	No	14	88%	3.4	96%	\$10,015,169	96%	2,470,672	69%	0.0	\$4.05	1.4
2015	Total	16	100%	3.5	100%	\$10,387,036	100%	3,593,222	100%	0.0	\$2.89	1.0
2016	Yes	1	4%	0.1	3%	\$493,254	3%	1,162,653	32%	0.0	\$0.42	0.1
2016	No	26	96%	5.3	97%	\$14,600,224	97%	2,425,917	68%	0.0	\$6.02	2.2
2016	Total	27	100%	5.5	100%	\$15,093,478	100%	3,588,570	100%	0.0	\$4.21	1.5
2017	Yes	3	10%	2.5	22%	\$5,745,903	23%	1,150,554	32%	0.0	\$4.99	2.2
2017	No	27	90%	9.1	78%	\$19,342,264	77%	2,443,924	68%	0.0	\$7.91	3.7
2017	Total	30	100%	11.7	100%	\$25,088,167	100%	3,594,478	100%	0.0	\$6.98	3.2
2018	Yes	11	38%	5.0	62%	\$10,513,316	61%	1,130,773	32%	0.0	\$9.30	4.4
2018	No	18	62%	3.1	38%	\$6,588,015	39%	2,450,731	68%	0.0	\$2.69	1.3
2018	Total	29	100%	8.1	100%	\$17,101,331	100%	3,581,504	100%	0.0	\$4.77	2.3
2019	Yes	5	26%	0.5	14%	\$1,121,548	14%	1,098,707	31%	0.0	\$1.02	0.4
2019	No	14	74%	3.1	86%	\$7,013,955	86%	2,476,367	69%	0.0	\$2.83	1.3
2019	Total	19	100%	3.6	100%	\$8,135,503	100%	3,575,074	100%	0.0	\$2.28	1.0
2020	Yes	1	4%	0.1	4%	\$224,311	4%	1,102,319	31%	0.0	\$0.20	0.1
2020	No	25	96%	2.3	96%	\$5,649,943	96%	2,468,230	69%	0.0	\$2.29	0.9
2020	Total	26	100%	2.4	100%	\$5,874,254	100%	3,570,549	100%	0.0	\$1.65	0.7
2021	Yes	3	9%	0.2	2%	\$2,239,141	9%	964,777	27%	0.0	\$2.32	0.3

Fiscal Year	Distres sed	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Population	% Population Distribution	Project Units / 1,000 People	Total Investment / Population	Watts / Population
2021	No	30	91%	13.6	98%	\$22,902,849	91%	2,605,772	73%	0.0	\$8.79	5.2
2021	Total	33	100%	13.8	100%	\$25,141,990	100%	3,570,549	100%	0.0	\$7.04	3.9
2022	Yes	2	14%	0.2	8%	\$462,428	9%	964,777	27%	0.0	\$0.48	0.2
2022	No	12	86%	2.1	92%	\$4,407,925	91%	2,605,772	73%	0.0	\$1.69	0.8
2022	Total	14	100%	2.3	100%	\$4,870,353	100%	3,570,549	100%	0.0	\$1.36	0.6
Total	Yes	28	14%	8.8	17%	\$21,171,768	19%	964,777	27%	0.0	\$21.94	9.1
Total	No	166	86%	42.0	83%	\$90,520,344	81%	2,605,772	73%	0.1	\$34.74	16.1
Total	Total	194	100%	50.8	100%	\$111,692,112	100%	3,570,549	100%	0.1	\$31.28	14.2

#### TABLE 101. CT GREEN BANK PPA AND COMMERCIAL SOLAR LEASE ACTIVITY IN DISTRESSED AND NOT DISTRESSED COMMUNITIES BY FY CLOSED<sup>152</sup>

		# Pro	oject Units			N	IW			Total Inve	estment	
Fiscal		Not		%		Not		%		Not		%
Year	Total	Distressed	Distressed	Distressed	Total	Distressed	Distressed	Distressed	Total	Distressed	Distressed	Distressed
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2013	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2014	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2015	16	14	2	13%	3.5	3.4	0.1	4%	\$10,387,036	\$10,015,169	\$371,867	4%
2016	27	26	1	4%	5.5	5.3	0.1	3%	\$15,093,478	\$14,600,224	\$493,254	3%
2017	30	27	3	10%	11.7	9.1	2.5	22%	\$25,088,167	\$19,342,264	\$5,745,903	23%
2018	29	18	11	38%	8.1	3.1	5.0	62%	\$17,101,331	\$6,588,015	\$10,513,316	61%
2019	19	14	5	26%	3.6	3.1	0.5	14%	\$8,135,503	\$7,013,955	\$1,121,548	14%
2020	26	25	1	4%	2.4	2.3	0.1	4%	\$5,874,254	\$5,649,943	\$224,311	4%
2021	33	30	3	9%	13.8	13.6	0.2	2%	\$25,141,990	\$22,902,849	\$2,239,141	9%
2022	14	12	2	14%	2.3	2.1	0.2	8%	\$4,870,353	\$4,407,925	\$462,428	9%
Total	194	166	28	14%	50.8	42.0	8.8	17%	\$111,692,112	\$90,520,344	\$21,171,768	19%

<sup>&</sup>lt;sup>152</sup> Excludes projects in unknown communities.

# **Environmental Justice Poverty Level Penetration**

Table 102 shows that the PPA and Commercial Solar Lease program has not achieved significant environmental justice poverty level penetration in some years since inception.

		# Pr	oject Units				MW			Total Investr	nent	
Fiscal Year	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2013	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2014	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2015	16	15	1	6%	3.5	3.5	0.0	1%	\$10,387,036	\$10,305,136	\$81,900	1%
2016	27	27	0	0%	5.5	5.5	0.0	0%	\$15,093,478	\$15,093,478	\$0	0%
2017	30	28	2	7%	11.7	9.0	2.7	23%	\$25,088,167	\$20,514,959	\$4,573,208	18%
2018	29	26	3	10%	8.1	6.2	1.9	24%	\$17,101,331	\$12,936,915	\$4,164,416	24%
2019	19	19	0	0%	3.6	3.6	0.0	0%	\$8,135,503	\$8,135,503	\$0	0%
2020	26	26	0	0%	2.4	2.4	0.0	0%	\$5,874,254	\$5,874,254	\$0	0%
2021	33	32	1	3%	13.8	13.5	0.3	2%	\$25,141,990	\$24,619,379	\$522,611	2%
2022	15	15	0	0%	2.5	2.5	0.0	0%	\$5,182,599	\$5,182,599	\$0	0%
Total	195	188	7	4%	51.0	46.1	4.9	10%	\$112,004,358	\$102,662,223	\$9,342,135	8%

#### TABLE 102. CT GREEN BANK PPA AND COMMERCIAL SOLAR LEASE ACTIVITY IN ENVIRONMENTAL JUSTICE POVERTY AREAS BY FY CLOSED<sup>153</sup>

# Ethnicity

The PPA and Commercial Solar Lease product deployment activity has been primarily in majority white areas since program inception.

<sup>&</sup>lt;sup>153</sup> Excludes projects in unknown bands.

TABLE 103. CT GREEN BANK PPA AND COMMERCIAL SOLAR LEASE ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS BY ETHNICITY CATEGORY BY FY CLOSED<sup>154</sup>

	·		Majority	/ Black	·		Majority H	lispanic			Majori	ty White			Major	Majority Asian			
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	Total Populat ion	% Popul ation	# Project Units	% Project Units	Total Popula tion	% Popul ation	# Project Units	% Project Units	Total Populatio n	% Populati on	# Proje ct Units	% Project Units	Total Populati on	% Populati on		
2012	<60%	0	0.0%	13,052	20.8%	0	0.0%	21,021	33.5%	0	0.0%	28,616	45.6%	0	0.0%	0	0.0%		
2012	60%-80%	0	0.0%	8,714	8.5%	0	0.0%	7,447	7.3%	0	0.0%	86,017	84.2%	0	0.0%	0	0.0%		
2012	80%-100%	0	0.0%	3,490	2.3%	0	0.0%	0	0.0%	0	0.0%	147,195	97.7%	0	0.0%	0	0.0%		
2012	100%-120%	0	0.0%	3,488	1.6%	0	0.0%	0	0.0%	0	0.0%	212,996	98.4%	0	0.0%	0	0.0%		
2012	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	349,212	100.0%	0	0.0%	0	0.0%		
2012	Total	0	0.0%	28,744	3.3%	0	0.0%	28,468	3.2%	0	0.0%	824,036	93.5%	0	0.0%	0	0.0%		
2013	<60%	0	0.0%	10,766	17.6%	0	0.0%	21,781	35.7%	0	0.0%	28,457	46.6%	0	0.0%	0	0.0%		
2013	60%-80%	0	0.0%	10,827	9.8%	0	0.0%	9,574	8.7%	0	0.0%	89,566	81.4%	0	0.0%	0	0.0%		
2013	80%-100%	0	0.0%	1,926	1.3%	0	0.0%	0	0.0%	0	0.0%	147,750	98.7%	0	0.0%	0	0.0%		
2013	100%-120%	0	0.0%	3,177	1.6%	0	0.0%	0	0.0%	0	0.0%	199,650	98.4%	0	0.0%	0	0.0%		
2013	>120%	0	0.0%	1,808	0.5%	0	0.0%	0	0.0%	0	0.0%	348,900	99.5%	0	0.0%	0	0.0%		
2013	Total	0	0.0%	28,504	3.3%	0	0.0%	31,355	3.6%	0	0.0%	814,323	93.2%	0	0.0%	0	0.0%		
2014	<60%	0	0.0%	12,067	20.4%	0	0.0%	17,945	30.3%	0	0.0%	29,282	49.4%	0	0.0%	0	0.0%		
2014	60%-80%	0	0.0%	8,576	8.2%	0	0.0%	10,507	10.1%	0	0.0%	85,445	81.7%	0	0.0%	0	0.0%		
2014	80%-100%	0	0.0%	1,868	1.3%	0	0.0%	1,491	1.0%	0	0.0%	145,487	97.7%	0	0.0%	0	0.0%		
2014	100%-120%	0	0.0%	3,280	1.6%	0	0.0%	0	0.0%	0	0.0%	205,632	98.4%	0	0.0%	0	0.0%		
2014	>120%	0	0.0%	3,745	1.1%	0	0.0%	0	0.0%	0	0.0%	344,034	98.9%	0	0.0%	0	0.0%		
2014	Total	0	0.0%	29,536	3.4%	0	0.0%	29,943	3.4%	0	0.0%	809,880	93.2%	0	0.0%	0	0.0%		
2015	<60%	0	0.0%	12,243	18.4%	1	100.0%	27,292	41.0%	0	0.0%	27,097	40.7%	0	0.0%	0	0.0%		
2015	60%-80%	0	0.0%	7,491	7.8%	0	0.0%	7,075	7.4%	1	100.0%	81,493	84.8%	0	0.0%	0	0.0%		
2015	80%-100%	0	0.0%	5,767	3.5%	0	0.0%	513	0.3%	3	100.0%	158,372	95.9%	0	0.0%	553	0.3%		
2015	100%-120%	0	0.0%	863	0.5%	0	0.0%	0	0.0%	3	100.0%	182,766	99.5%	0	0.0%	0	0.0%		
2015	>120%	0	0.0%	1,877	0.5%	0	0.0%	0	0.0%	8	100.0%	350,176	99.5%	0	0.0%	0	0.0%		
2015	Total	0	0.0%	28,241	3.3%	1	6.3%	34,880	4.0%	15	93.8%	799,904	92.6%	0	0.0%	553	0.1%		

<sup>154</sup> Excludes projects in unknown bands.

			Majority	Black			Majority H	lispanic			Maiori	ty White		Majority Asian			
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	Total Populat ion	% Popul ation	# Project Units	% Project Units	Total Popula tion	% Popul ation	# Project Units	% Project Units	Total Populatio n	% Populati on	# Proje ct Units	% Project Units	Total Populati on	% Populati on
2016	<60%	0	0.0%	11,333	18.0%	0	0.0%	26,620	42.2%	0	0.0%	25,103	39.8%	0	0.0%	0	0.0%
2016	60%-80%	0	0.0%	7,872	7.9%	0	0.0%	8,551	8.6%	1	100.0%	82,650	83.4%	0	0.0%	0	0.0%
2016	80%-100%	0	0.0%	4,736	2.9%	0	0.0%	937	0.6%	5	83.3%	159,339	96.6%	1	16.7%	0	0.0%
2016	100%-120%	1	10.0%	0	0.0%	0	0.0%	0	0.0%	8	80.0%	186,570	99.7%	1	10.0%	559	0.3%
2016	>120%	0	0.0%	3,063	0.9%	0	0.0%	0	0.0%	10	100.0%	341,514	99.1%	0	0.0%	0	0.0%
2016	Total	1	3.7%	27,004	3.1%	0	0.0%	36,108	4.2%	24	88.9%	795,176	92.6%	2	7.4%	559	0.1%
2017	<60%	0	0.0%	11,916	18.4%	1	25.0%	28,817	44.5%	3	75.0%	24,022	37.1%	0	0.0%	0	0.0%
2017	60%-80%	2	40.0%	5,276	5.4%	0	0.0%	12,600	12.9%	3	60.0%	79,579	81.7%	0	0.0%	0	0.0%
2017	80%-100%	0	0.0%	4,323	2.8%	0	0.0%	2,062	1.3%	4	100.0%	149,029	95.9%	0	0.0%	0	0.0%
2017	100%-120%	0	0.0%	1,101	0.5%	0	0.0%	0	0.0%	9	100.0%	207,746	99.2%	0	0.0%	637	0.3%
2017	>120%	0	0.0%	4,014	1.2%	0	0.0%	0	0.0%	8	100.0%	335,348	98.8%	0	0.0%	0	0.0%
2017	Total	2	6.7%	26,630	3.1%	1	3.3%	43,479	5.0%	27	90.0%	795,724	91.8%	0	0.0%	637	0.1%
2018	<60%	0	0.0%	10,135	16.3%	4	100.0%	28,053	45.1%	0	0.0%	24,059	38.7%	0	0.0%	0	0.0%
2018	60%-80%	0	0.0%	7,948	7.3%	1	25.0%	11,560	10.6%	3	75.0%	89,634	82.1%	0	0.0%	0	0.0%
2018	80%-100%	0	0.0%	4,704	3.2%	0	0.0%	3,271	2.2%	3	100.0%	138,013	94.5%	0	0.0%	0	0.0%
2018	100%-120%	0	0.0%	2,274	1.1%	0	0.0%	0	0.0%	4	100.0%	201,977	98.6%	0	0.0%	629	0.3%
2018	>120%	0	0.0%	2,828	0.8%	0	0.0%	0	0.0%	14	100.0%	341,161	99.2%	0	0.0%	0	0.0%
2018	Total	0	0.0%	27,889	3.2%	5	17.2%	42,884	5.0%	24	82.8%	794,844	91.8%	0	0.0%	629	0.1%
2019	<60%	2	50.0%	10,903	17.0%	2	50.0%	29,840	46.5%	0	0.0%	23,497	36.6%	0	0.0%	0	0.0%
2019	60%-80%	1	20.0%	6,102	6.0%	0	0.0%	10,367	10.3%	4	80.0%	84,519	83.7%	0	0.0%	0	0.0%
2019	80%-100%	0	0.0%	5,119	3.3%	0	0.0%	1,488	1.0%	0	0.0%	148,956	95.8%	0	0.0%	0	0.0%
2019	100%-120%	0	0.0%	3,330	1.6%	0	0.0%	627	0.3%	2	100.0%	202,850	97.8%	0	0.0%	648	0.3%
2019	>120%	0	0.0%	2,074	0.6%	0	0.0%	0	0.0%	8	100.0%	335,436	99.4%	0	0.0%	0	0.0%
2019	Total	3	15.8%	27,528	3.2%	2	10.5%	42,322	4.9%	14	73.7%	795,258	91.9%	0	0.0%	648	0.1%
2020	<60%	0	0.0%	9,549	13.9%	0	0.0%	36,027	52.5%	0	0.0%	23,086	33.6%	0	0.0%	0	0.0%
2020	60%-80%	0	0.0%	7,132	6.8%	1	25.0%	23,995	22.8%	3	75.0%	73,963	70.4%	0	0.0%	0	0.0%
2020	80%-100%	0	0.0%	4,568	2.8%	0	0.0%	2,350	1.4%	2	100.0%	159,134	95.8%	0	0.0%	0	0.0%
2020	100%-120%	0	0.0%	4,328	2.1%	0	0.0%	0	0.0%	9	100.0%	205,187	97.9%	0	0.0%	0	0.0%
2020	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	11	100.0%	326,890	100.0%	0	0.0%	0	0.0%

	ī		Majority	/ Black	·		Majority H	lispanic			Majori	ity White			Мајо	rity Asian	Majority Asian			
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	Total Populat ion	% Popul ation	# Project Units	% Project Units	Total Popula tion	% Popul ation	# Project Units	% Project Units	Total Populatio n	% Populati on	# Proje ct Units	% Project Units	Total Populati on	% Populati on			
2020	Total	0	0.0%	25,577	2.9%	1	3.8%	62,372	7.1%	25	96.2%	788,350	90.0%	0	0.0%	0	0.0%			
2021	<60%	0	0.0%	9,549	13.9%	1	100.0%	36,027	52.5%	0	0.0%	23,086	33.6%	0	0.0%	0	0.0%			
2021	60%-80%	0	0.0%	7,132	6.8%	0	0.0%	23,995	22.8%	3	100.0%	73,963	70.4%	0	0.0%	0	0.0%			
2021	80%-100%	0	0.0%	4,568	2.8%	0	0.0%	2,350	1.4%	5	100.0%	159,134	95.8%	0	0.0%	0	0.0%			
2021	100%-120%	0	0.0%	4,328	2.1%	0	0.0%	0	0.0%	9	100.0%	205,187	97.9%	0	0.0%	0	0.0%			
2021	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	15	100.0%	326,890	100.0%	0	0.0%	0	0.0%			
2021	Total	0	0.0%	25,577	2.9%	1	3.0%	62,372	7.1%	32	97.0%	788,350	90.0%	0	0.0%	0	0.0%			
2022	<60%	0	0.0%	9,549	13.9%	1	50.0%	36,027	52.5%	1	50.0%	23,086	33.6%	0	0.0%	0	0.0%			
2022	60%-80%	0	0.0%	7,132	6.8%	0	0.0%	23,995	22.8%	0	0.0%	73,963	70.4%	0	0.0%	0	0.0%			
2022	80%-100%	0	0.0%	4,568	2.8%	0	0.0%	2,350	1.4%	4	100.0%	159,134	95.8%	0	0.0%	0	0.0%			
2022	100%-120%	0	0.0%	4,328	2.1%	0	0.0%	0	0.0%	1	100.0%	205,187	97.9%	0	0.0%	0	0.0%			
2022	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	7	100.0%	326,890	100.0%	0	0.0%	0	0.0%			
2022	Total	0	0.0%	25,577	2.9%	1	7.1%	62,372	7.1%	13	92.9%	788,350	90.0%	0	0.0%	0	0.0%			
Total	<60%	2	12.5%	9,549	13.9%	10	62.5%	36,027	52.5%	4	25.0%	23,086	33.6%	0	0.0%	0	0.0%			
Total	60%-80%	3	13.0%	7,132	6.8%	2	8.7%	23,995	22.8%	18	78.3%	73,963	70.4%	0	0.0%	0	0.0%			
Total	80%-100%	0	0.0%	4,568	2.8%	0	0.0%	2,350	1.4%	26	96.3%	159,134	95.8%	1	3.7%	0	0.0%			
Total	100%-120%	1	2.1%	4,328	2.1%	0	0.0%	0	0.0%	45	95.7%	205,187	97.9%	1	2.1%	0	0.0%			
Total	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	81	100.0%	326,890	100.0%	0	0.0%	0	0.0%			
Total	Total	6	3.1%	25,577	2.9%	12	6.2%	62,372	7.1%	174	89.7%	788,350	90.0%	2	1.0%	0	0.0%			

# Societal Benefits

Ratepayers in Connecticut receive the societal benefits of the PPA and CT Solar Lease. Over the course of its existence, the program has supported the creation of 854 job years and avoided the lifetime emission of 804,681 tons of carbon dioxide, 794,221 pounds of nitrous oxide, 672,135 pounds of sulfur oxide, and 68,950 pounds of particulate matter as illustrated by Table 104 and Table 106.

The PPA's and leases have generated more than \$3.4 million in tax revenue for the State of Connecticut since inception as demonstrated in Table 105. The value of the lifetime public health impacts of the program is estimated to be between \$23.5 and \$53.2 million as seen in Table 107.

TABLE 104. CT GREEN BANK PPA AND COMMERCIAL SOLAR LEASE JOB YEARS SUPPORTED BY FY CLOSED

Fiscal Year	Direct Jobs	Indirect and Induced Jobs	Total Jobs
2012	0	0	0
2013	0	0	0
2014	0	0	0
2015	35	56	90
2016	55	87	142
2017	83	109	191
2018	53	68	121
2019	25	33	58
2020	19	26	44
2021	78	101	179
2022	12	16	28
Total	360	494	854

#### TABLE 105. CT GREEN BANK PPA AND COMMERCIAL SOLAR LEASE TAX REVENUES GENERATED BY FY CLOSED

Fiscal Year	Individual Income Tax Revenue Generated	Corporate Tax Revenue Generated	Sales Tax Revenue Generated	Total Tax Revenue Generated
2012	\$0	\$0	\$0	\$0
2013	\$0	\$0	\$0	\$0
2014	\$0	\$0	\$0	\$0
2015	\$160,324	\$175,714	\$0	\$336,038
2016	\$232,968	\$255,331	\$0	\$488,299
2017	\$450,855	\$273,267	\$0	\$724,122
2018	\$324,324	\$142,312	\$0	\$466,637
2019	\$127,249	\$137,625	\$0	\$264,875
2020	\$91,881	\$99,373	\$0	\$191,253
2021	\$393,252	\$425,318	\$0	\$818,570
2022	\$74,868	\$101,079	\$0	\$175,947
Total	\$1,855,720	\$1,610,020	\$0	\$3,465,740

		ions Avoided ons)		nissions (pounds)	••••	nissions (pounds)	PM 2.5 (pounds)		
Fiscal Year	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	
2012	0	0	0	0	0	0	0	0	
2013	0	0	0	0	0	0	0	0	
2014	0	0	0	0	0	0	0	0	
2015	2,266	56,651	2,755	68,886	2,760	69,005	199	4,977	
2016	3,498	87,439	3,584	89,595	2,565	64,124	307	7,681	
2017	7,291	182,277	6,871	171,778	5,579	139,482	622	15,549	
2018	5,075	126,873	4,905	122,613	4,218	105,440	432	10,799	
2019	2,277	56,937	2,202	55,060	1,896	47,404	194	4,846	
2020	1,501	37,525	1,505	37,624	1,321	33,019	129	3,217	
2021	8,702	217,541	8,415	210,367	7,245	181,116	741	18,516	
2022	1,578	39,438	1,532	38,297	1,302	32,547	135	3,364	
Total	32,187	804,681	31,769	794,221	26,885	672,135	2,758	68,950	

#### TABLE 106. CT GREEN BANK PPA AND COMMERCIAL SOLAR LEASE AVOIDED EMISSIONS BY FY CLOSED

#### TABLE 107. CT GREEN BANK PPA AND COMMERCIAL SOLAR LEASE VALUE OF PUBLIC HEALTH BY FY CLOSED

Fiscal	An	nual	Life	time
Year	Low	High	Low	High
2012	\$0	\$0	\$0	\$0
2013	\$0	\$0	\$0	\$0
2014	\$0	\$0	\$0	\$0
2015	\$77,112	\$174,099	\$1,927,805	\$4,352,467
2016	\$120,691	\$272,489	\$3,017,286	\$6,812,222
2017	\$214,777	\$486,208	\$5,369,436	\$12,155,200
2018	\$142,004	\$321,708	\$3,550,100	\$8,042,696
2019	\$64,195	\$145,414	\$1,604,874	\$3,635,362
2020	\$43,240	\$97,909	\$1,081,001	\$2,447,716
2021	\$236,146	\$535,264	\$5,903,646	\$13,381,598
2022	\$42,317	\$95,883	\$1,057,915	\$2,397,069
Total	\$940,482	\$2,128,973	\$23,512,062	\$53,224,331

# **Financing Program**

The CT Solar Lease 2 fund was a financing structure developed in partnership with a tax equity investor (i.e., US Bank) and a syndicate of local lenders (i.e. Key Bank and Webster Bank) that used a credit enhancement (i.e., \$3,500,000 loan loss reserve),<sup>155</sup> in combination with \$2.3 million in subordinated debt and \$11.5 million in sponsor equity from the Connecticut Green Bank as the "member manager" to provide approximately \$80 million in lease financing for residential and commercial solar PV projects. Through the product, the Connecticut Green Bank lowered the barriers to Connecticut residential and

<sup>&</sup>lt;sup>155</sup> From repurposed American Recovery and Reinvestment Act funds.

commercial customers seeking to install solar PV with no up-front investment, thus increasing demand, while at the same time reducing the market's reliance on subsidies through the RSIP or being more competitive in a reverse auction through the Zero Emission Renewable Energy Credit (ZREC) program. As a lease (or PPA for certain commercial customers), capital provided to consumers through the CT Solar Lease is now being returned to the Connecticut Green Bank, the tax equity investor, and the lenders – it is not a subsidy. The financial structure of the CT Solar Lease product, both historically and on an ongoing basis through the CT Solar Lease 3 fund, includes origination by contractors, servicing of lease and PPA payments, insurance and "one call" system performance and insurance resolution, and financing features in combination with the support of the Connecticut Green Bank, whereas under the partnerships with entities such as Onyx Renewables, Inclusive Prosperity Capital and other regional solar asset owners, the Connecticut Green Bank originates projects together with local contractors, but the partner entities then hold the ongoing ownership and asset management responsibilities. In some cases, the Connecticut Green provides construction and / or term loan financing to the partner entities.

### **Financial Performance**

To date there are no defaults and as of June 30, 2022 there are 8 delinquencies totaling \$24,169, or 1.8% of the annual income in the Commercial Solar Lease and CT Green Bank PPA portfolio.

### Marketing

To increase the deployment of solar through the PPA, the Green Bank has used a few channels. In 2020, the Green Bank introduced the Solar Municipal Assistance Program (MAP), to make it easier for municipalities to access renewable energy and achieve energy savings at their buildings. Solar MAP provides technical assistance through every step of the process so towns and cities can realize all the cost-saving benefits of going solar with fewer challenges and roadblocks. Through the PPA, the municipality purchases the electricity generated by the solar array, and locks in low electricity cost so the cash flow is positive in year one. The first round of municipalities included Manchester, Mansfield, Portland, and Woodbridge, with second and third rounds in the works.

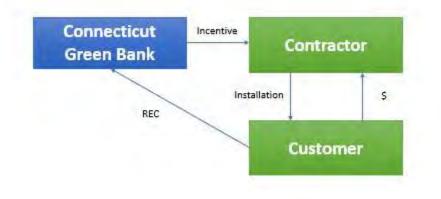
The Green Bank also promotes the PPA through its network of contractors and is focusing on its contractor network through a broader, organization-wide effort to increase contractor participation. This engagement is intended to foster stronger relationships and improve communication to the contractor base.

# Case 3 – Residential Solar Investment Program

# Description

The RSIP is a subsidy program that provides incentives to reduce the cost for homeowners to own solar photovoltaic (PV) systems or for third party owners (TPOs) to provide clean electricity from solar PV systems through leases or power purchase agreements (PPAs) with homeowners. Incentives are provided either upfront (i.e., through an expected performance-based buy-down or EPBB) for homeowner-owned systems or are paid out over time<sup>156</sup> based on system production (i.e., through a performance-based incentive or PBI and a low to moderate income performance-based incentive or LMI-PBI) for third-party owned projects. With either incentive type, the Connecticut Green Bank retains ownership of the Renewable Energy Credits (RECs) and other environmental attributes.

FIGURE 7. LEGAL STRUCTURE AND FLOWS OF CAPITAL FOR THE RSIP<sup>157</sup>



The subsidy under the RSIP has decreased over time – see Table 108, supporting the goal of reducing market reliance on incentives while moving it towards innovative low-cost financing and sustained orderly development.

In September 23, 2020, as RSIP was reaching its statutory target of 350 MW, the Board of Directors approved the RSIP Extension (RSIP-E), consisting of additional 32 MW of capacity over the RSIP statutory target, including up to 10 MW in Step 16 to ensure RSIP could achieve the 350 MW deployment goal of the public policy, and an additional 22 MW in Step 17 to support the residential solar PV industry toward achieving the sustained, orderly development in the context of COVID-19 impacts.

December 31, 2021 marked the official end of RSIP, and the transition to a tariff-based compensation for residential solar PV systems in the state.

TABLE 108. RSIP AND RSIP-E SUBSIDY BY STEP AND INCENTIVE TYPE

<sup>&</sup>lt;sup>156</sup> The PBI is paid out quarterly over a period of six years.

<sup>&</sup>lt;sup>157</sup> The Green Bank incentive is issued to the Contractor on behalf of the Customer. In the case of Third-Party Owned systems, RECs flow from the Contractor to the Connecticut Green Bank.

#### CONNECTICUT GREEN BANK 6. PROGRAMS – RESIDENTIAL SOLAR INVESTMENT PROGRAM

RSIP			EPBB (\$/W)			PBI kWh)		MI Wh)
Subsidy by Step	Start Date	≤5 kW	5 to 10 kW	>10 kW, ≤ 20 kW	≤10 kW	>10 kW, ≤ 20 kW	≤10 kW	>10 kW, ≤ 20 kW
					-	-	-	-
Step 1	3/2/2012	\$2.450	\$1.250	\$0.000	\$0.300	\$0.000	N/A	N/A
Step 2	5/8/2012	\$2.275	\$1.075	\$0.000	\$0.300	\$0.000	N/A	N/A
Step 3	1/4/2013 EPBB, 4/1/2013 PBI	\$1.750	\$0.550	\$0.000	\$0.225	\$0.000	N/A	N/A
Step 4	1/6/2014	\$1.250	\$0.750	\$0.000	\$0.180	\$0.000	N/A	N/A
Step 5	9/1/2014	\$0.8	800	\$0.400	\$0.125	\$0.060	N/A	N/A
Step 6	1/1/2015	\$0.0	675	\$0.400	\$0.080	\$0.060	N/A	N/A
Step 7	4/11/2015	\$0.	540	\$0.400	\$0.064	\$0.060	N/A	N/A
Step 8	8/8/2015	\$0.	540	\$0.400	\$0	0.054	\$0.110	\$0.055
Step 9	2/1/2016	\$0.	513	\$0.400	\$0	).046	\$0.110	\$0.055
Step 10	9/1/2016	\$0.4	487	\$0.400	\$0	).039	\$0.110	\$0.055
Step 11	8/1/2017	\$0.4	487	\$0.400	\$0	).039	\$0.110	\$0.055
Step 12	1/15/2018	\$0.4	463	\$0.400	\$0	).035	\$0.110	\$0.055
Step 13	6/1/2018	\$0.4	463	\$0.400	\$0	).035	\$0.090	\$0.045
Step 14	9/24/2018	\$0.4	463	\$0.400	\$0	0.035	\$0.090	\$0.045
Step 15	1/15/2020	\$0.4	426	\$0.328	\$0.030		\$0.081	\$0.041
Step 16	10/28/2020	\$0.4	426	\$0.328	\$0.030		\$0.081	\$0.041
Step 17	1/30/2021	\$0.3	358	\$0.207	\$0.030		\$0.073	\$0.036

# **Key Performance Indicators**

The Key Performance Indicators for RSIP closed activity are reflected in Table 109 through Table 114. These illustrate the volume of projects by year, investment, generation capacity installed, and the amount of energy saved and/or produced. They also present the volume of projects by energy efficiency, renewable generation, or both. It should be noted that as part of the requirements for receiving an RSIP incentive, an energy efficiency assessment must be conducted through the utility-administered Home Energy Solutions (HES) program, the DOE Home Energy Score, or RSIP-approved alternatives such as audits performed by BPI-certified professionals.<sup>158</sup> Consequently, each RSIP project from solar PV (e.g. RE project) also includes Energy Efficiency (EE). The benefits from the EE measures (e.g., investment, savings, etc.) have not been calculated, as approximately 90% of energy efficiency assessments are conducted through the HES program for which benefits are tracked by the Connecticut Energy Efficiency Fund.<sup>159</sup> The Key Performance Indicators for RSIP only include the investment and impact of the renewable energy installation and not those associated with the energy audits.

TABLE 109. RSIP AND RSIP-E PROJECT TYPES AND INVESTMEN	t by <b>FY C</b> losed
--	------------------------

Fiscal Year	# Projects	Total Investment	Green Bank Investment <sup>160</sup>	Private Investment	Leverage Ratio
2012	288	\$9,901,511	\$3,401,642	\$6,499,869	2.9
2013	1,109	\$35,426,043	\$11,915,456	\$23,510,587	3.0

<sup>&</sup>lt;sup>158</sup> Non-HES audits were performed by Building Performance Institute (BPI) certified auditors, Home Energy Rating System (HERS) raters, other certified energy managers or were exempt due to being new construction or having a health and safety exemption.
<sup>159</sup> RSIP-wide, an estimated 90% of audits performed were either HES audits or DOE Home Energy Scores (HES). In FY20, 95% of audits were either HES or DOE HES.

<sup>&</sup>lt;sup>160</sup> Includes incentives, interest rate buydowns and loan loss reserves.

#### CONNECTICUT GREEN BANK 6. PROGRAMS – RESIDENTIAL SOLAR INVESTMENT PROGRAM

Fiscal	#	Total	Green Bank	Private	Leverage
Year	Projects	Investment	Investment <sup>160</sup>	Investment	Ratio
2014	2,384	\$73,933,113	\$20,068,612	\$53,864,501	3.7
2015	6,381	\$214,056,259	\$33,112,683	\$180,943,575	6.5
2016	6,785	\$217,530,669	\$18,774,485	\$198,756,185	11.6
2017	4,445	\$120,218,237	\$11,553,673	\$108,664,564	10.4
2018	5,150	\$147,111,739	\$12,557,709	\$134,554,031	11.7
2019	6,468	\$195,767,752	\$15,155,093	\$180,612,659	12.9
2020	6,849	\$205,174,273	\$14,701,787	\$190,472,486	14.0
2021	5,206	\$166,366,312	\$12,174,888	\$154,191,425	13.7
2022	1,592	\$57,985,080	\$3,764,231	\$54,220,850	15.4
Total	46,657	\$1,443,470,988	\$157,180,257	\$1,286,290,731	9.2

#### TABLE 110. RSIP AND RSIP-E PROJECT CAPACITY, GENERATION AND SAVINGS BY FY CLOSED

	Installed		Expected Lifetime Savings or	Annual Saved /	Lifetime Saved /		
Fiscal	Capacity	Expected Annual	Generation	Produced	Produced	Annual Cost	Lifetime Cost
Year	(kW)	Generation (kWh)	(MWh)	(MMBtu)	(MMBtu)	Savings	Savings
2012	1,940.2	2,209,534	55,238	7,539	188,473	\$345,254	\$8,631,360
2013	7,890.4	8,985,553	224,639	30,659	766,468	\$1,329,469	\$33,236,730
2014	17,144.1	19,523,747	488,094	66,615	1,665,376	\$2,857,939	\$71,448,480
2015	48,629.0	55,378,728	1,384,468	188,952	4,723,805	\$7,649,543	\$191,238,570
2016	53,196.0	60,579,639	1,514,491	206,698	5,167,443	\$8,133,858	\$203,346,450
2017	34,628.6	39,435,061	985,877	134,552	3,363,811	\$5,328,666	\$133,216,650
2018	41,785.9	47,585,772	1,189,644	162,363	4,059,066	\$6,173,820	\$154,345,500
2019	54,983.2	62,614,914	1,565,373	213,642	5,341,052	\$7,753,838	\$193,845,960
2020	57,696.4	65,704,672	1,642,617	224,184	5,604,608	\$8,210,581	\$205,264,530
2021	47,087.5	53,623,279	1,340,582	182,963	4,574,066	\$6,240,953	\$156,023,820
2022	15,459.2	17,604,937	440,123	60,068	1,501,701	\$1,908,490	\$47,712,240
Total	380,440.7	433,245,835	10,831,146	1,478,235	36,955,870	\$55,932,412	\$1,398,310,290

#### TABLE 111. RSIP AND RSIP-E PROJECT AVERAGES BY FY CLOSED

Fiscal Year	Average Installed Capacity (kW)	Average Annual Saved / Produced (MMBtu)	Average Incentive Amount	Average Total Investment	Average Incentive (\$/W)	Average Installed Cost (\$/W) <sup>161</sup>	Incentive % of Cost	Net Cost to Customer after RSIP Incentive
2012	6.7	26	\$11,811	\$34,380	\$1.75	\$5.13	34%	\$22,569
2013	7.1	28	\$10,744	\$31,944	\$1.51	\$4.31	34%	\$21,200
2014	7.2	28	\$8,418	\$31,012	\$1.17	\$4.07	27%	\$22,594
2015	7.6	30	\$5,189	\$33,546	\$0.68	\$3.91	15%	\$28,357
2016	7.8	30	\$2,767	\$32,061	\$0.35	\$3.41	9%	\$29,293
2017	7.8	30	\$2,599	\$27,046	\$0.33	\$3.33	10%	\$24,446

<sup>&</sup>lt;sup>161</sup> Average Installed Cost per Watt figures include reported installed costs without including those projects where financing costs for some third-party ownership installers are included as part of the installed cost and projects that include battery storage costs. Average Total Investment, Incentive % of Cost and Net Cost to Customer are calculated based on Average Installed Cost.

#### CONNECTICUT GREEN BANK 6. PROGRAMS – RESIDENTIAL SOLAR INVESTMENT PROGRAM

Fiscal Year	Average Installed Capacity (kW)	Average Annual Saved / Produced (MMBtu)	Average Incentive Amount	Average Total Investment	Average Incentive (\$/W)	Average Installed Cost (\$/W) <sup>161</sup>	Incentive % of Cost	Net Cost to Customer after RSIP Incentive
2018	8.1	32	\$2,438	\$28,565	\$0.30	\$3.41	9%	\$26,127
2019	8.5	33	\$2,343	\$30,267	\$0.28	\$3.45	8%	\$27,924
2020	8.4	33	\$2,147	\$29,957	\$0.25	\$3.48	7%	\$27,810
2021	9.0	35	\$2,339	\$31,957	\$0.26	\$3.42	7%	\$29,618
2022	9.7	38	\$2,364	\$36,423	\$0.24	\$3.63	6%	\$34,058
Average	8.2	32	\$3,369	\$30,938	\$0.41	\$3.53	11%	\$27,569

#### TABLE 112. RSIP AND RSIP-E PROJECT APPLICATION YIELD<sup>162</sup> BY FY RECEIVED

Fiscal Year	Applications Received	Applications in Review	Applications Approved	Applications Withdrawn	Applications Denied	Applications Cancelled	Approved Rate	Denied Rate
2012	0	0	291	0	39	52	76%	10.2%
2013	0	0	1,137	0	17	125	89%	1.3%
2014	0	0	2,518	0	15	256	90%	0.5%
2015	0	0	6,402	0	20	1,448	81%	0.3%
2016	0	0	6,723	0	30	1,958	77%	0.3%
2017	0	0	4,405	0	35	869	83%	0.7%
2018	0	0	5,076	0	38	1,498	77%	0.6%
2019	0	0	6,540	0	12	2,457	73%	0.1%
2020	0	0	6,793	0	4	2,306	75%	0.0%
2021	0	0	5,222	0	16	2,606	67%	0.2%
2022	0	0	1,548	0	15	510	75%	0.7%
Total	0	0	46,655	0	241	14,085	77%	0.4%

<sup>&</sup>lt;sup>162</sup> Applications Received are applications for incentives submitted to RSIP for review. Applications in Review are submitted applications yet to be reviewed, approved, or rejected. Applications Withdrawn are those that have been withdrawn by the submitter due to the need for corrections. Applications Denied are those that are not approved for an incentive because the project does not meet RSIP requirements. Applications Cancelled include projects that: (1) were rejected due to need for corrections and not resubmitted and successfully approved, (2) expired before the project was installed, or (3) did not move forward (e.g., customer cancellation) and the contractor cancelled the project. The Approved Rate reflects the number of Applications Approved relative to the number of Applications Received.

RSIP Subsidy	Installed Capacity	Incentive	Total	Average Incentive	Average Installed Cost	Incentive	Net Cost to	ZREC Equivale nt Incentive
by Step	(kW)	Amount	Investment	(\$/W)	(\$/W) <sup>163</sup>	% of Cost	Customer	(\$/MWh)
Step 1	1,380.8	\$2,470,307	\$7,222,670	\$1.79	\$5.27	34%	\$4,752,363	\$139
Step 2	5,999.0	\$9,767,901	\$27,018,842	\$1.63	\$4.34	36%	\$17,250,941	\$121
Step 3	13,052.9	\$16,041,875	\$55,696,798	\$1.23	\$4.11	29%	\$39,654,923	\$94
Step 4	19,081.6	\$19,713,594	\$83,929,539	\$1.03	\$4.05	23%	\$64,215,945	\$77
Step 5	13,015.5	\$9,725,583	\$58,034,525	\$0.75	\$3.94	17%	\$48,308,942	\$58
Step 6	11,628.4	\$5,953,158	\$51,242,975	\$0.51	\$3.86	12%	\$45,289,817	\$42
Step 7	18,862.7	\$7,533,597	\$81,921,357	\$0.40	\$3.64	9%	\$74,387,760	\$32
Step 8	26,897.5	\$9,569,521	\$110,978,884	\$0.36	\$3.40	9%	\$101,409,363	\$28
Step 9	25,938.7	\$8,598,147	\$98,346,216	\$0.33	\$3.35	9%	\$89,748,069	\$25
Step 10	29,805.9	\$9,676,036	\$102,556,232	\$0.32	\$3.29	9%	\$92,880,195	\$22
Step 11	18,056.5	\$5,825,890	\$63,430,435	\$0.32	\$3.41	9%	\$57,604,546	\$23
Step 12	15,896.0	\$4,453,628	\$56,410,297	\$0.28	\$3.44	8%	\$51,956,669	\$20
Step 13	17,530.5	\$4,823,309	\$61,695,566	\$0.28	\$3.40	8%	\$56,872,257	\$20
Step 14	75,947.2	\$20,677,573	\$269,526,622	\$0.27	\$3.46	8%	\$248,849,048	\$20
Step 15	56,926.9	\$13,877,631	\$195,708,971	\$0.24	\$3.40	7%	\$181,831,340	\$18
Step 16	9,858.3	\$3,044,643	\$36,946,503	\$0.31	\$3.33	8%	\$33,901,860	\$23
Step 17	20,562.5	\$5,427,863	\$82,804,556	\$0.26	\$3.92	7%	\$77,376,693	\$21
Total	380,440.7	\$157,180,257	\$1,443,470,988	\$0.41	\$3.53	11%	\$1,286,290,731	\$30

#### TABLE 113. RSIP AND RSIP-E SYSTEMS CLOSED THROUGH THE SUBSIDY BY STEP

#### TABLE 114. RSIP AND RSIP-E THIRD PARTY OWNED (PBI) VS HOMEOWNER-OWNED SYSTEMS (EPBB)

	# of PBI	% PBI	# of EPBB	% EPBB	Total
Fiscal Year	Projects	Projects	Projects	Projects	
2012	58	20%	230	80%	288
2013	346	31%	763	69%	1,109
2014	1,170	49%	1,214	51%	2,384
2015	4,624	72%	1,757	28%	6,381
2016	5,832	86%	953	14%	6,785
2017	3,377	76%	1,068	24%	4,445
2018	3,864	75%	1,286	25%	5,150
2019	5,075	78%	1,393	22%	6,468
2020	5,522	81%	1,327	19%	6,849
2021	2,967	57%	2,239	43%	5,206
2022	598	38%	994	62%	1,592
Total	33,433	72%	13,224	28%	46,657

<sup>&</sup>lt;sup>163</sup> Average Installed Cost per Watt figures include reported installed costs without including those projects where financing costs for some third-party ownership installers are included as part of the installed cost and projects that include battery storage costs. Incentive % of Cost is calculated based on Average Installed Cost.

# **Vulnerable Communities Penetration**

The RSIP and RSIP-E have been very effective in reaching vulnerable communities, including low-and-moderate income households. Over the 11 years of RSIP, 50% of projects have been deployed in vulnerable communities. Despite the fact that projects in vulnerable communities tend to be smaller in terms of MW and investment, RSIP has performed very well, deploying 46% of capacity (in MW) and 46% of total investments.

		# Proj	ect Units				MW			Total Inv	estment	
Fiscal Year	Total	Not Vulnerable	Vulnerable	% Vulnerable	Total	Not Vulnerable	Vulnerable	% Vulnerable	Total	Not Vulnerable	Vulnerable	% Vulnerable
2012	288	215	73	25%	1.9	1.5	0.5	23%	\$9,901,511	\$7,675,503	\$2,226,008	22%
2013	1,109	845	264	24%	7.9	6.2	1.7	22%	\$35,426,043	\$27,476,228	\$7,949,815	22%
2014	2,384	1,599	785	33%	17.1	12.0	5.1	30%	\$73,933,113	\$51,310,266	\$22,622,847	31%
2015	6,381	3,924	2,457	39%	48.6	31.5	17.2	35%	\$214,056,259	\$137,661,597	\$76,394,662	36%
2016	6,785	3,397	3,388	50%	53.2	28.6	24.6	46%	\$217,530,669	\$117,332,849	\$100,197,820	46%
2017	4,445	1,818	2,627	59%	34.6	15.7	18.9	55%	\$120,218,237	\$53,586,346	\$66,631,891	55%
2018	5,150	2,102	3,048	59%	41.8	19.2	22.6	54%	\$147,111,739	\$66,447,090	\$80,664,649	55%
2019	6,468	2,791	3,677	57%	55.0	26.7	28.3	51%	\$195,767,752	\$93,445,330	\$102,322,422	52%
2020	6,849	3,150	3,699	54%	57.7	29.8	27.9	48%	\$205,174,273	\$104,533,045	\$100,641,228	49%
2021	5,206	2,491	2,715	52%	47.1	25.6	21.5	46%	\$166,366,312	\$89,470,811	\$76,895,501	46%
2022	1,592	856	736	46%	15.5	9.2	6.2	40%	\$57,985,080	\$34,251,569	\$23,733,512	41%
Total	46,657	23,188	23,469	50%	380.4	206.0	174.5	46%	\$1,443,470,988	\$783,190,633	\$660,280,354	46%

TABLE 115. RSIP ACTIVITY IN VULNERABLE AND NOT VULNERABLE COMMUNITIES BY FY CLOSED<sup>164</sup>

# Area Median Income Band Penetration

For a breakdown of RSIP project volume and investment by census tracts categorized by Area Median Income (AMI) bands – see Table 116. It should be noted that RSIP is not an income targeted program. However, following the UCONN study<sup>165</sup> in December of 2014, the Green Bank Board of Directors approved the Income-Targeted incentive to better penetrate these tracts and to create inclusive prosperity. This special incentive is one of the methods through which the Green Bank has expanded its reach of previously underserved communities.

<sup>&</sup>lt;sup>164</sup> Excludes projects in unknown communities.

<sup>&</sup>lt;sup>165</sup>The memo, titled 7cii\_Role of a Green Bank\_Market Analysis\_Low Income Solar and Housing\_Memo\_121214, can be found amongst board meeting materials here: <u>https://www.ctgreenbank.com/wp-content/uploads/2017/07/CGB\_BOD\_Online-Meeting-Materials\_121914\_redacted.pdf</u>

Table 117 shows that starting in fiscal year 2016, the percent distribution of solar PV projects in the low to moderate income bands, i.e., < 60%, 60-80%, and 80-100% AMI, exceeded the percent distribution of those income bands among owner-occupied 1–4-unit households, and this holds for RSIP overall as illustrated by the totals.

### TABLE 116. RSIP AND RSIP-E ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS BY FY CLOSED<sup>166</sup>

Fiscal Year	MSA AMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Owner Occupied 1- 4 Unit Households	% Owner Occupied 1-4 Unit Household Distribution	Project Units / 1,000 Owner Occupied 1-4 Unit Households	Total Investment / Owner Occupied 1-4 Unit Household	Watts / Owner Occupied 1-4 Unit Household
2012	<60%	7	2%	0.0	2%	\$183,647	2%	62,689	7%	0.1	\$2.93	0.6
2012	60%-80%	8	3%	0.0	2%	\$202,949	2%	102,178	12%	0.1	\$1.99	0.5
2012	80%-100%	33	11%	0.2	10%	\$970,970	10%	150,685	17%	0.2	\$6.44	1.3
2012	100%-120%	83	29%	0.5	28%	\$2,820,118	28%	216,484	25%	0.4	\$13.03	2.5
2012	>120%	157	55%	1.1	57%	\$5,723,828	58%	349,212	40%	0.4	\$16.39	3.2
2012	Total	288	100%	1.9	100%	\$9,901,511	100%	881,248	100%	0.3	\$11.24	2.2
2013	<60%	22	2%	0.1	1%	\$482,131	1%	61,004	7%	0.4	\$7.90	1.7
2013	60%-80%	63	6%	0.4	5%	\$1,868,703	5%	109,967	13%	0.6	\$16.99	3.7
2013	80%-100%	126	11%	0.8	11%	\$3,933,886	11%	149,676	17%	0.8	\$26.28	5.6
2013	100%-120%	221	20%	1.5	19%	\$6,736,134	19%	202,827	23%	1.1	\$33.21	7.2
2013	>120%	677	61%	5.1	64%	\$22,405,188	63%	350,708	40%	1.9	\$63.89	14.5
2013	Total	1,109	100%	7.9	100%	\$35,426,043	100%	874,182	100%	1.3	\$40.52	9.0
2014	<60%	77	3%	0.4	3%	\$1,952,045	3%	59,294	7%	1.3	\$32.92	7.5
2014	60%-80%	163	7%	1.0	6%	\$4,501,278	6%	104,528	12%	1.6	\$43.06	9.6
2014	80%-100%	394	17%	2.6	15%	\$11,452,751	15%	148,846	17%	2.6	\$76.94	17.5
2014	100%-120%	604	25%	4.4	26%	\$19,294,835	26%	208,912	24%	2.9	\$92.36	21.2
2014	>120%	1,146	48%	8.7	50%	\$36,732,204	50%	347,779	40%	3.3	\$105.62	24.9
2014	Total	2,384	100%	17.1	100%	\$73,933,113	100%	869,359	100%	2.7	\$85.04	19.7
2015	<60%	264	4%	1.5	3%	\$6,678,296	3%	66,632	8%	4.0	\$100.23	23.0
2015	60%-80%	590	9%	3.9	8%	\$17,245,663	8%	96,059	11%	6.1	\$179.53	41.0

<sup>166</sup> Excludes projects in unknown bands.

Fiscal Year	MSA AMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Owner Occupied 1- 4 Unit Households	% Owner Occupied 1-4 Unit Household Distribution	Project Units / 1,000 Owner Occupied 1-4 Unit Households	Total Investment / Owner Occupied 1-4 Unit Household	Watts / Owner Occupied 1-4 Unit Household
2015	80%-100%	1,107	17%	8.1	17%	\$36,389,376	17%	165,205	19%	6.7	\$220.27	48.8
2015	100%-120%	1,639	26%	12.5	26%	\$56,130,035	26%	183,629	21%	8.9	\$305.67	68.2
2015	>120%	2,781	44%	22.6	46%	\$97,612,888	46%	352,053	41%	7.9	\$277.27	64.1
2015	Total	6,381	100%	48.6	100%	\$214,056,259	100%	863,578	100%	7.4	\$247.87	56.3
2016	<60%	565	8%	3.5	7%	\$14,472,891	7%	63,056	7%	9.0	\$229.52	56.0
2016	60%-80%	904	13%	6.4	12%	\$25,146,806	12%	99,073	12%	9.1	\$253.82	64.4
2016	80%-100%	1,324	20%	10.2	19%	\$41,993,837	19%	165,012	19%	8.0	\$254.49	61.8
2016	100%-120%	1,635	24%	12.8	24%	\$52,363,625	24%	187,129	22%	8.7	\$279.83	68.2
2016	>120%	2,357	35%	20.3	38%	\$83,553,510	38%	344,577	40%	6.8	\$242.48	59.0
2016	Total	6,785	100%	53.2	100%	\$217,530,669	100%	858,847	100%	7.9	\$253.28	61.9
2017	<60%	565	13%	3.6	10%	\$13,866,646	12%	64,755	7%	8.7	\$214.14	56.0
2017	60%-80%	769	17%	5.3	15%	\$18,315,848	15%	97,455	11%	7.9	\$187.94	54.1
2017	80%-100%	872	20%	6.8	20%	\$23,772,081	20%	155,414	18%	5.6	\$152.96	43.7
2017	100%-120%	916	21%	7.4	21%	\$25,071,653	21%	209,484	24%	4.4	\$119.68	35.5
2017	>120%	1,323	30%	11.5	33%	\$39,192,009	33%	339,362	39%	3.9	\$115.49	33.9
2017	Total	4,445	100%	34.6	100%	\$120,218,237	100%	866,470	100%	5.1	\$138.74	40.0
2018	<60%	600	12%	3.9	9%	\$15,019,194	10%	62,247	7%	9.6	\$241.28	63.3
2018	60%-80%	824	16%	5.9	14%	\$20,945,506	14%	109,142	13%	7.5	\$191.91	53.8
2018	80%-100%	1,058	21%	8.2	20%	\$28,741,474	20%	145,988	17%	7.2	\$196.88	56.2
2018	100%-120%	1,129	22%	9.8	24%	\$33,866,797	23%	204,880	24%	5.5	\$165.30	48.0
2018	>120%	1,539	30%	13.9	33%	\$48,538,768	33%	343,989	40%	4.5	\$141.11	40.5
2018	Total	5,150	100%	41.8	100%	\$147,111,739	100%	866,246	100%	5.9	\$169.83	48.2
2019	<60%	692	11%	4.7	9%	\$17,859,286	9%	62,247	7%	11.1	\$286.91	75.3
2019	60%-80%	1,050	16%	7.7	14%	\$27,763,516	14%	109,142	13%	9.6	\$254.38	70.2
2019	80%-100%	1,229	19%	10.0	18%	\$35,576,447	18%	145,988	17%	8.4	\$243.69	68.7
2019	100%-120%	1,573	24%	14.0	25%	\$49,278,719	25%	204,880	24%	7.7	\$240.52	68.3
2019	>120%	1,924	30%	18.6	34%	\$65,289,784	33%	343,989	40%	5.6	\$189.80	54.1
2019	Total	6,468	100%	55.0	100%	\$195,767,752	100%	865,756	100%	7.5	\$226.12	63.5

Fiscal Year	MSA AMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Owner Occupied 1- 4 Unit Households	% Owner Occupied 1-4 Unit Household Distribution	Project Units / 1,000 Owner Occupied 1-4 Unit Households	Total Investment / Owner Occupied 1-4 Unit Household	Watts / Owner Occupied 1-4 Unit Household
2020	<60%	755	11%	4.8	8%	\$17,977,015	9%	68,662	8%	11.0	\$261.82	69.3
2020	60%-80%	1,022	15%	7.6	13%	\$27,463,900	13%	105,090	12%	9.7	\$261.34	72.4
2020	80%-100%	1,331	19%	10.7	19%	\$38,149,094	19%	166,052	19%	8.0	\$229.74	64.6
2020	100%-120%	1,628	24%	14.1	24%	\$49,755,965	24%	209,603	24%	7.8	\$237.38	67.4
2020	>120%	2,108	31%	20.4	35%	\$71,687,312	35%	326,890	37%	6.4	\$219.30	62.5
2020	Total	6,844	100%	57.7	100%	\$205,033,286	100%	876,387	100%	7.8	\$233.95	65.8
2021	<60%	540	10%	3.5	8%	\$12,915,743	8%	68,662	8%	7.9	\$188.11	51.4
2021	60%-80%	732	14%	5.6	12%	\$20,156,629	12%	105,090	12%	7.0	\$191.80	53.6
2021	80%-100%	1,029	20%	8.8	19%	\$31,347,282	19%	166,052	19%	6.2	\$188.78	53.3
2021	100%-120%	1,194	23%	11.1	24%	\$39,536,942	24%	209,603	24%	5.7	\$188.63	53.1
2021	>120%	1,704	33%	17.9	38%	\$62,113,466	37%	326,890	37%	5.2	\$190.01	54.7
2021	Total	5,199	100%	47.0	100%	\$166,070,062	100%	876,387	100%	5.9	\$189.49	53.6
2022	<60%	149	9%	1.0	7%	\$4,195,520	7%	68,662	8%	2.2	\$61.10	14.7
2022	60%-80%	212	13%	1.7	11%	\$6,263,942	11%	105,090	12%	2.0	\$59.61	16.4
2022	80%-100%	278	17%	2.7	17%	\$10,226,187	18%	166,052	19%	1.7	\$61.58	16.1
2022	100%-120%	380	24%	3.8	24%	\$13,930,376	24%	209,603	24%	1.8	\$66.46	17.9
2022	>120%	573	36%	6.3	41%	\$23,369,056	40%	326,890	37%	1.8	\$71.49	19.3
2022	Total	1,592	100%	15.5	100%	\$57,985,080	100%	876,387	100%	1.8	\$66.16	17.6
Total	<60%	4,236	9%	27.2	7%	\$105,602,413	7%	68,662	8%	61.7	\$1,538.00	396.2
Total	60%-80%	6,337	14%	45.5	12%	\$169,874,741	12%	105,090	12%	60.3	\$1,616.47	433.4
Total	80%-100%	8,781	19%	69.2	18%	\$262,553,385	18%	166,052	19%	52.9	\$1,581.15	416.5
Total	100%-120%	11,002	24%	92.0	24%	\$348,785,198	24%	209,603	24%	52.5	\$1,664.03	438.9
Total	>120%	16,289	35%	146.4	38%	\$556,218,013	39%	326,890	37%	49.8	\$1,701.54	447.9
Total	Total	46,645	100%	380.3	100%	\$1,443,033,750	100%	876,387	100%	53.2	\$1,646.57	434.0

		# Pro	ject Units				WW			Total Investr	nent	
Fiscal Year	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below
2012	288	240	48	17%	1.9	1.7	0.3	15%	\$9,901,511	\$8,543,945	\$1,357,565	14%
2013	1,109	898	211	19%	7.9	6.5	1.4	17%	\$35,426,043	\$29,141,322	\$6,284,721	18%
2014	2,384	1,750	634	27%	17.1	13.1	4.1	24%	\$73,933,113	\$56,027,039	\$17,906,074	24%
2015	6,381	4,420	1,961	31%	48.6	35.1	13.5	28%	\$214,056,259	\$153,742,923	\$60,313,336	28%
2016	6,785	3,992	2,793	41%	53.2	33.1	20.1	38%	\$217,530,669	\$135,917,135	\$81,613,534	38%
2017	4,445	2,239	2,206	50%	34.6	18.9	15.7	45%	\$120,218,237	\$64,263,662	\$55,954,575	47%
2018	5,150	2,668	2,482	48%	41.8	23.8	18.0	43%	\$147,111,739	\$82,405,565	\$64,706,174	44%
2019	6,468	3,497	2,971	46%	55.0	32.6	22.4	41%	\$195,767,752	\$114,568,503	\$81,199,248	41%
2020	6,844	3,736	3,108	45%	57.7	34.6	23.1	40%	\$205,033,286	\$121,443,277	\$83,590,009	41%
2021	5,199	2,898	2,301	44%	47.0	29.0	18.0	38%	\$166,070,062	\$101,650,408	\$64,419,654	39%
2022	1,592	953	639	40%	15.5	10.1	5.4	35%	\$57,985,080	\$37,299,432	\$20,685,649	36%
Total	46,645	27,291	19,354	41%	380.3	238.4	141.9	37%	\$1,443,033,750	\$905,003,211	\$538,030,539	37%

#### TABLE 117. RSIP AND RSIP-E ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS ABOVE OR BELOW 100% BY FY CLOSED<sup>167</sup>

### TABLE 118. RSIP AND RSIP-E ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS ABOVE OR BELOW 80% BY FY CLOSED<sup>168</sup>

		# Pro	ject Units				MW			Total Investr	nent	
Fiscal Year	Total	Over 80% AMI	80% or Below AMI	% at 80% or Below	Total	Over 80% AMI	80% or Below AMI	% at 80% or Below	Total	Over 80% AMI	80% or Below AMI	% at 80% or Below
2012	288	273	15	5%	1.9	2	0	4%	\$9,901,511	\$9,514,915	\$386,596	4%
2013	1,109	1,024	85	8%	7.9	7	1	7%	\$35,426,043	\$33,075,208	\$2,350,834	7%
2014	2,384	2,144	240	10%	17.1	16	1	8%	\$73,933,113	\$67,479,790	\$6,453,323	9%
2015	6,381	5,527	854	13%	48.6	43	5	11%	\$214,056,259	\$190,132,299	\$23,923,959	11%
2016	6,785	5,316	1,469	22%	53.2	43	10	19%	\$217,530,669	\$177,910,972	\$39,619,697	18%
2017	4,445	3,111	1,334	30%	34.6	26	9	26%	\$120,218,237	\$88,035,743	\$32,182,494	27%
2018	5,150	3,726	1,424	28%	41.8	32	10	23%	\$147,111,739	\$111,147,040	\$35,964,699	24%

<sup>167</sup> Excludes projects in unknown bands.

<sup>168</sup> Excludes projects in unknown bands.

		# Pro	ject Units				MW			Total Investr	nent	
Fiscal Year	Total	Over 80% AMI	80% or Below AMI	% at 80% or Below	Total	Over 80% AMI	80% or Below AMI	% at 80% or Below	Total	Over 80% AMI	80% or Below AMI	% at 80% or Below
2019	6,468	4,726	1,742	27%	55.0	43	12	22%	\$195,767,752	\$150,144,950	\$45,622,802	23%
2020	6,844	5,067	1,777	26%	57.7	45	12	21%	\$205,033,286	\$159,592,371	\$45,440,915	22%
2021	5,199	3,927	1,272	24%	47.0	38	9	19%	\$166,070,062	\$132,997,690	\$33,072,372	20%
2022	1,592	1,231	361	23%	15.5	13	3	18%	\$57,985,080	\$47,525,619	\$10,459,462	18%
Total	46,645	36,072	10,573	23%	380.3	308	73	19%	\$1,443,033,750	\$1,167,556,597	\$275,477,154	19%

# **Distressed Community Penetration**

For a breakdown of RSIP project volume and investment by census tracts categorized by Distressed Communities – see Table 119. It should be noted that RSIP is not an income targeted program.

# TABLE 119. RSIP AND RSIP-E ACTIVITY IN DISTRESSED COMMUNITIES BY FY CLOSED

Fiscal Year	Distres sed	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Households	% Total Household Distribution	Project Units / 1,000 Total Households	Total Investment / Total Household	Watts / Total Household
2012	Yes	35	12%	0.2	10%	\$997,129	10%	447,962	33%	0.1	\$2.23	0.4
2012	No	253	88%	1.7	90%	\$8,904,382	90%	912,222	67%	0.3	\$9.76	1.9
2012	Total	288	100%	1.9	100%	\$9,901,511	100%	1,360,184	100%	0.2	\$7.28	1.4
2013	Yes	114	10%	0.7	9%	\$3,223,649	9%	426,564	31%	0.3	\$7.56	1.7
2013	No	995	90%	7.2	91%	\$32,202,394	91%	929,285	69%	1.1	\$34.65	7.7
2013	Total	1,109	100%	7.9	100%	\$35,426,043	100%	1,355,849	100%	0.8	\$26.13	5.8
2014	Yes	379	16%	2.5	15%	\$11,085,042	15%	416,415	31%	0.9	\$26.62	6.0
2014	No	2,005	84%	14.6	85%	\$62,848,071	85%	939,791	69%	2.1	\$66.87	15.6
2014	Total	2,384	100%	17.1	100%	\$73,933,113	100%	1,356,206	100%	1.8	\$54.51	12.6
2015	Yes	1,366	21%	9.3	19%	\$41,293,226	19%	423,559	31%	3.2	\$97.49	22.0
2015	No	5,015	79%	39.3	81%	\$172,763,032	81%	929,024	69%	5.4	\$185.96	42.3
2015	Total	6,381	100%	48.6	100%	\$214,056,259	100%	1,352,583	100%	4.7	\$158.26	36.0
2016	Yes	2,020	30%	14.4	27%	\$58,910,345	27%	438,710	32%	4.6	\$134.28	32.9
2016	No	4,765	70%	38.8	73%	\$158,620,324	73%	916,003	68%	5.2	\$173.17	42.3
2016	Total	6,785	100%	53.2	100%	\$217,530,669	100%	1,354,713	100%	5.0	\$160.57	39.3

Fiscal Year	Distres sed	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Households	% Total Household Distribution	Project Units / 1,000 Total Households	Total Investment / Total Household	Watts / Total Household
2017	Yes	1,621	36%	11.3	33%	\$39,720,647	33%	435,595	32%	3.7	\$91.19	26.0
2017	No	2,824	64%	23.3	67%	\$80,497,590	67%	926,160	68%	3.0	\$86.92	25.2
2017	Total	4,445	100%	34.6	100%	\$120,218,237	100%	1,361,755	100%	3.3	\$88.28	25.4
2018	Yes	1,891	37%	13.7	33%	\$49,410,307	34%	430,098	31%	4.4	\$114.88	31.9
2018	No	3,259	63%	28.1	67%	\$97,701,432	66%	937,276	69%	3.5	\$104.24	29.9
2018	Total	5,150	100%	41.8	100%	\$147,111,739	100%	1,367,374	100%	3.8	\$107.59	30.6
2019	Yes	2,304	36%	17.4	32%	\$63,497,159	32%	421,653	31%	5.5	\$150.59	41.2
2019	No	4,164	64%	37.6	68%	\$132,270,593	68%	949,093	69%	4.4	\$139.37	39.6
2019	Total	6,468	100%	55.0	100%	\$195,767,752	100%	1,370,746	100%	4.7	\$142.82	40.1
2020	Yes	2,200	32%	15.8	27%	\$57,639,954	28%	427,553	31%	5.1	\$134.81	36.9
2020	No	4,649	68%	41.9	73%	\$147,534,319	72%	957,884	69%	4.9	\$154.02	43.8
2020	Total	6,849	100%	57.7	100%	\$205,174,273	100%	1,385,437	100%	4.9	\$148.09	41.6
2021	Yes	1,505	29%	11.0	23%	\$39,944,835	24%	375,703	27%	4.0	\$106.32	29.3
2021	No	3,701	71%	36.1	77%	\$126,421,477	76%	1,009,734	73%	3.7	\$125.20	35.7
2021	Total	5,206	100%	47.1	100%	\$166,366,312	100%	1,385,437	100%	3.8	\$120.08	34.0
2022	Yes	363	23%	2.8	18%	\$10,837,873	19%	375,703	27%	1.0	\$28.85	7.4
2022	No	1,228	77%	12.7	82%	\$47,099,608	81%	1,009,734	73%	1.2	\$46.65	12.5
2022	Total	1,591	100%	15.4	100%	\$57,937,480	100%	1,385,437	100%	1.1	\$41.82	11.1
Total	Yes	13,798	30%	99.1	26%	\$376,560,167	26%	375,703	27%	36.7	\$1,002.28	263.9
Total	No	32,858	70%	281.3	74%	\$1,066,863,221	74%	1,009,734	73%	32.5	\$1,056.58	278.6
Total	Total	46,656	100%	380.4	100%	\$1,443,423,388	100%	1,385,437	100%	33.7	\$1,041.85	274.6

		# Prc	oject Units	. <u> </u>	1	N	/W			Total Inves	tment	
Fiscal		Not		%		Not		%		Not		%
Year	Total	Distressed	Distressed	Distressed	Total	Distressed	Distressed	Distressed	Total	Distressed	Distressed	Distressed
2012	288	253	35	12%	1.9	1.7	0.2	10%	\$9,901,511	\$8,904,382	\$997,129	10%
2013	1,109	995	114	10%	7.9	7.2	0.7	9%	\$35,426,043	\$32,202,394	\$3,223,649	9%
2014	2,384	2,005	379	16%	17.1	14.6	2.5	15%	\$73,933,113	\$62,848,071	\$11,085,042	15%
2015	6,381	5,015	1,366	21%	48.6	39.3	9.3	19%	\$214,056,259	\$172,763,032	\$41,293,226	19%
2016	6,785	4,765	2,020	30%	53.2	38.8	14.4	27%	\$217,530,669	\$158,620,324	\$58,910,345	27%
2017	4,445	2,824	1,621	36%	34.6	23.3	11.3	33%	\$120,218,237	\$80,497,590	\$39,720,647	33%
2018	5,150	3,259	1,891	37%	41.8	28.1	13.7	33%	\$147,111,739	\$97,701,432	\$49,410,307	34%
2019	6,468	4,164	2,304	36%	55.0	37.6	17.4	32%	\$195,767,752	\$132,270,593	\$63,497,159	32%
2020	6,849	4,649	2,200	32%	57.7	41.9	15.8	27%	\$205,174,273	\$147,534,319	\$57,639,954	28%
2021	5,206	3,701	1,505	29%	47.1	36.1	11.0	23%	\$166,366,312	\$126,421,477	\$39,944,835	24%
2022	1,591	1,228	363	23%	15.4	12.7	2.8	18%	\$57,937,480	\$47,099,608	\$10,837,873	19%
Total	46,656	32,858	13,798	30%	380.4	281.3	99.1	26%	\$1,443,423,388	\$1,066,863,221	\$376,560,167	26%

### TABLE 120. RSIP AND RSIP-E ACTIVITY IN DISTRESSED AND NOT DISTRESSED COMMUNITIES BY FY CLOSED<sup>169</sup>

# **Environmental Justice Poverty Level Penetration**

For a breakdown of RSIP penetration in Environmental Justice Poverty Level – see Table 121.

# TABLE 121. RSIP AND RSIP-E ACTIVITY IN ENVIRONMENTAL JUSTICE POVERTY AREAS BY FY CLOSED<sup>170</sup>

	# Project Units						MW		Total Investment					
Fiscal Year	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group		
2012	288	279	9	3%	1.9	1.9	0.1	3%	\$9,901,511	\$9,554,351	\$347,160	4%		
2013	1,109	1,077	32	3%	7.9	7.7	0.2	2%	\$35,426,043	\$34,447,816	\$978,226	3%		
2014	2,384	2,302	82	3%	17.1	16.6	0.5	3%	\$73,933,113	\$71,694,153	\$2,238,960	3%		
2015	6,381	6,150	231	4%	48.6	47.1	1.6	3%	\$214,056,259	\$207,039,770	\$7,016,489	3%		
2016	6,785	6,489	296	4%	53.2	51.0	2.2	4%	\$217,530,669	\$208,877,254	\$8,653,416	4%		

<sup>169</sup> Excludes projects in unknown communities.

<sup>170</sup> Excludes projects in unknown bands.

		# Pr	oject Units				MW		Total Investment				
Fiscal Year	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group	
2017	4,445	4,251	194	4%	34.6	33.2	1.4	4%	\$120,218,237	\$115,451,614	\$4,766,623	4%	
2018	5,150	4,907	243	5%	41.8	40.0	1.7	4%	\$147,111,739	\$141,080,490	\$6,031,249	4%	
2019	6,468	6,150	318	5%	55.0	52.5	2.4	4%	\$195,767,752	\$187,134,407	\$8,633,344	4%	
2020	6,849	6,568	281	4%	57.7	55.5	2.2	4%	\$205,174,273	\$197,424,504	\$7,749,769	4%	
2021	5,206	4,949	257	5%	47.1	45.0	2.1	4%	\$166,366,312	\$159,134,778	\$7,231,534	4%	
2022	1,592	1,496	96	6%	15.5	14.6	0.8	5%	\$57,985,080	\$54,934,121	\$3,050,960	5%	
Total	46,657	44,618	2,039	4%	380.4	365.2	15.2	4%	\$1,443,470,988	\$1,386,773,258	\$56,697,730	4%	

# Ethnicity

While the RSIP has been effective in reaching Low to Moderate Income (LMI) households, Green Bank has also investigated whether the RSIP has been successful in reaching communities of color (i.e., Black, and Hispanic households). When examining solar deployment by the racial and ethnic makeup of the census tract, Table 122 demonstrates that RSIP has been very successful in reaching communities of color.

			Majority	Black			Majority H	lispanic		Majority White				Majority Asian			
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1-4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН
2012	<60%	1	14.3%	13,052	20.8%	2	28.6%	21,021	33.5%	4	57.1%	28,616	45.6%	0	0.0%	0	0.0%
2012	60%-80%	0	0.0%	8,714	8.5%	1	12.5%	7,447	7.3%	7	87.5%	86,017	84.2%	0	0.0%	0	0.0%
2012	80%-100%	0	0.0%	3,490	2.3%	0	0.0%	0	0.0%	33	100.0%	147,195	97.7%	0	0.0%	0	0.0%
2012	100%-120%	0	0.0%	3,488	1.6%	0	0.0%	0	0.0%	83	100.0%	212,996	98.4%	0	0.0%	0	0.0%
2012	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	157	100.0%	349,212	100.0	0	0.0%	0	0.0%
2012	Total	1	0.3%	28,744	3.3%	3	1.0%	28,468	3.2%	284	98.6%	824,036	93.5%	0	0.0%	0	0.0%
2013	<60%	2	9.1%	10,766	17.6%	6	27.3%	21,781	35.7%	14	63.6%	28,457	46.6%	0	0.0%	0	0.0%
2013	60%-80%	4	6.3%	10,827	9.8%	3	4.8%	9,574	8.7%	56	88.9%	89,566	81.4%	0	0.0%	0	0.0%

<sup>171</sup> Excludes projects in unknown bands.

			Majority	Black			Majority H	lispanic			Majority	White			Majority	Asian	
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1-4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН
2013	80%-100%	0	0.0%	1,926	1.3%	0	0.0%	0	0.0%	126	100.0%	147,750	98.7%	0	0.0%	0	0.0%
2013	100%-120%	3	1.4%	3,177	1.6%	0	0.0%	0	0.0%	218	98.6%	199,650	98.4%	0	0.0%	0	0.0%
2013	>120%	0	0.0%	1,808	0.5%	0	0.0%	0	0.0%	677	100.0%	348,900	99.5%	0	0.0%	0	0.0%
2013	Total	9	0.8%	28,504	3.3%	9	0.8%	31,355	3.6%	1,091	98.4%	814,323	93.2%	0	0.0%	0	0.0%
2014	<60%	12	15.6%	12,067	20.4%	9	11.7%	17,945	30.3%	56	72.7%	29,282	49.4%	0	0.0%	0	0.0%
2014	60%-80%	22	13.5%	8,576	8.2%	11	6.7%	10,507	10.1%	130	79.8%	85,445	81.7%	0	0.0%	0	0.0%
2014	80%-100%	0	0.0%	1,868	1.3%	2	0.5%	1,491	1.0%	392	99.5%	145,487	97.7%	0	0.0%	0	0.0%
2014	100%-120%	4	0.7%	3,280	1.6%	0	0.0%	0	0.0%	600	99.3%	205,632	98.4%	0	0.0%	0	0.0%
2014	>120%	6	0.5%	3,745	1.1%	0	0.0%	0	0.0%	1,140	99.5%	344,034	98.9%	0	0.0%	0	0.0%
2014	Total	44	1.8%	29,536	3.4%	22	0.9%	29,943	3.4%	2,318	97.2%	809,880	93.2%	0	0.0%	0	0.0%
2015	<60%	64	24.2%	12,243	18.4%	99	37.5%	27,292	41.0%	101	38.3%	27,097	40.7%	0	0.0%	0	0.0%
2015	60%-80%	46	7.8%	7,491	7.8%	51	8.6%	7,075	7.4%	493	83.6%	81,493	84.8%	0	0.0%	0	0.0%
2015	80%-100%	31	2.8%	5,767	3.5%	5	0.5%	513	0.3%	1,069	96.6%	158,372	95.9%	2	0.2%	553	0.3%
2015	100%-120%	19	1.2%	863	0.5%	0	0.0%	0	0.0%	1,620	98.8%	182,766	99.5%	0	0.0%	0	0.0%
2015	>120%	14	0.5%	1,877	0.5%	0	0.0%	0	0.0%	2,767	99.5%	350,176	99.5%	0	0.0%	0	0.0%
2015	Total	174	2.7%	28,241	3.3%	155	2.4%	34,880	4.0%	6,050	94.8%	799,904	92.6%	2	0.0%	553	0.1%
2016	<60%	174	30.8%	11,333	18.0%	216	38.2%	26,620	42.2%	175	31.0%	25,103	39.8%	0	0.0%	0	0.0%
2016	60%-80%	99	11.0%	7,872	7.9%	105	11.6%	8,551	8.6%	700	77.4%	82,650	83.4%	0	0.0%	0	0.0%
2016	80%-100%	81	6.1%	4,736	2.9%	3	0.2%	937	0.6%	1,239	93.6%	159,339	96.6%	1	0.1%	0	0.0%
2016	100%-120%	10	0.6%	0	0.0%	0	0.0%	0	0.0%	1,622	99.2%	186,570	99.7%	3	0.2%	559	0.3%
2016	>120%	53	2.2%	3,063	0.9%	0	0.0%	0	0.0%	2,304	97.8%	341,514	99.1%	0	0.0%	0	0.0%
2016	Total	417	6.1%	27,004	3.1%	324	4.8%	36,108	4.2%	6,040	89.0%	795,176	92.6%	4	0.1%	559	0.1%
2017	<60%	133	23.5%	11,916	18.4%	256	45.3%	28,817	44.5%	176	31.2%	24,022	37.1%	0	0.0%	0	0.0%
2017	60%-80%	75	9.8%	5,276	5.4%	124	16.1%	12,600	12.9%	570	74.1%	79,579	81.7%	0	0.0%	0	0.0%
2017	80%-100%	48	5.5%	4,323	2.8%	16	1.8%	2,062	1.3%	808	92.7%	149,029	95.9%	0	0.0%	0	0.0%
2017	100%-120%	5	0.5%	1,101	0.5%	0	0.0%	0	0.0%	908	99.1%	207,746	99.2%	3	0.3%	637	0.3%
2017	>120%	44	3.3%	4,014	1.2%	0	0.0%	0	0.0%	1,279	96.7%	335,348	98.8%	0	0.0%	0	0.0%
2017	Total	305	6.9%	26,630	3.1%	396	8.9%	43,479	5.0%	3,741	84.2%	795,724	91.8%	3	0.1%	637	0.1%
2018	<60%	168	28.0%	10,135	16.3%	263	43.8%	28,053	45.1%	169	28.2%	24,059	38.7%	0	0.0%	0	0.0%

			Majority	Black			Majority H	lispanic			Majority	White			Majority	Asian	
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1-4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН
2018	60%-80%	89	10.8%	7,948	7.3%	118	14.3%	11,560	10.6%	617	74.9%	89,634	82.1%	0	0.0%	0	0.0%
2018	80%-100%	64	6.0%	4,704	3.2%	40	3.8%	3,271	2.2%	954	90.2%	138,013	94.5%	0	0.0%	0	0.0%
2018	100%-120%	27	2.4%	2,274	1.1%	0	0.0%	0	0.0%	1,098	97.3%	201,977	98.6%	4	0.4%	629	0.3%
2018	>120%	54	3.5%	2,828	0.8%	0	0.0%	0	0.0%	1,485	96.5%	341,161	99.2%	0	0.0%	0	0.0%
2018	Total	402	7.8%	27,889	3.2%	421	8.2%	42,884	5.0%	4,323	83.9%	794,844	91.8%	4	0.1%	629	0.1%
2019	<60%	154	22.3%	10,903	17.0%	316	45.7%	29,840	46.5%	222	32.1%	23,497	36.6%	0	0.0%	0	0.0%
2019	60%-80%	151	14.4%	6,102	6.0%	125	11.9%	10,367	10.3%	774	73.7%	84,519	83.7%	0	0.0%	0	0.0%
2019	80%-100%	82	6.7%	5,119	3.3%	45	3.7%	1,488	1.0%	1,102	89.7%	148,956	95.8%	0	0.0%	0	0.0%
2019	100%-120%	60	3.8%	3,330	1.6%	5	0.3%	627	0.3%	1,500	95.4%	202,850	97.8%	8	0.5%	648	0.3%
2019	>120%	18	0.9%	2,074	0.6%	0	0.0%	0	0.0%	1,906	99.1%	335,436	99.4%	0	0.0%	0	0.0%
2019	Total	465	7.2%	27,528	3.2%	491	7.6%	42,322	4.9%	5,504	85.1%	795,258	91.9%	8	0.1%	648	0.1%
2020	<60%	175	23.2%	12,029	17.5%	355	47.0%	27,793	40.5%	225	29.8%	28,840	42.0%	0	0.0%	0	0.0%
2020	60%-80%	86	8.4%	6,275	6.0%	151	14.8%	20,490	19.5%	785	76.8%	78,311	74.5%	0	0.0%	14	0.0%
2020	80%-100%	74	5.6%	4,243	2.6%	52	3.9%	5,388	3.2%	1,205	90.5%	156,421	94.2%	0	0.0%	0	0.0%
2020	100%-120%	50	3.1%	4,328	2.1%	2	0.1%	0	0.0%	1,573	96.6%	204,447	97.5%	3	0.2%	828	0.4%
2020	>120%	12	0.6%	0	0.0%	0	0.0%	0	0.0%	2,096	99.4%	326,890	100.0	0	0.0%	0	0.0%
2020	Total	397	5.8%	26,875	3.1%	560	8.2%	53,671	6.1%	5,884	86.0%	794,999	90.7%	3	0.0%	842	0.1%
2021	<60%	131	24.3%	12,029	17.5%	243	45.0%	27,793	40.5%	166	30.7%	28,840	42.0%	0	0.0%	0	0.0%
2021	60%-80%	70	9.6%	6,275	6.0%	178	24.3%	20,490	19.5%	484	66.1%	78,311	74.5%	0	0.0%	14	0.0%
2021	80%-100%	35	3.4%	4,243	2.6%	42	4.1%	5,388	3.2%	952	92.5%	156,421	94.2%	0	0.0%	0	0.0%
2021	100%-120%	35	2.9%	4,328	2.1%	0	0.0%	0	0.0%	1,158	97.0%	204,447	97.5%	1	0.1%	828	0.4%
2021	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1,704	100.0%	326,890	100.0	0	0.0%	0	0.0%
2021	Total	271	5.2%	26,875	3.1%	463	8.9%	53,671	6.1%	4,464	85.9%	794,999	90.7%	1	0.0%	842	0.1%
2022	<60%	34	22.8%	12,029	17.5%	69	46.3%	27,793	40.5%	46	30.9%	28,840	42.0%	0	0.0%	0	0.0%
2022	60%-80%	20	9.4%	6,275	6.0%	42	19.8%	20,490	19.5%	150	70.8%	78,311	74.5%	0	0.0%	14	0.0%
2022	80%-100%	8	2.9%	4,243	2.6%	8	2.9%	5,388	3.2%	262	94.2%	156,421	94.2%	0	0.0%	0	0.0%
2022	100%-120%	10	2.6%	4,328	2.1%	0	0.0%	0	0.0%	368	96.8%	204,447	97.5%	2	0.5%	828	0.4%
2022	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	573	100.0%	326,890	100.0	0	0.0%	0	0.0%
2022	Total	72	4.5%	26,875	3.1%	119	7.5%	53,671	6.1%	1,399	87.9%	794,999	90.7%	2	0.1%	842	0.1%

			Majority	Black			Majority H	lispanic			Majority	White		-	Majority	Asian	
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1-4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН
Total	<60%	1,048	24.7%	12,029	17.5%	1,834	43.3%	27,793	40.5%	1,354	32.0%	28,840	42.0%	0	0.0%	0	0.0%
Total	60%-80%	662	10.4%	6,275	6.0%	909	14.3%	20,490	19.5%	4,766	75.2%	78,311	74.5%	0	0.0%	14	0.0%
Total	80%-100%	423	4.8%	4,243	2.6%	213	2.4%	5,388	3.2%	8,142	92.7%	156,421	94.2%	3	0.0%	0	0.0%
Total	100%-120%	223	2.0%	4,328	2.1%	7	0.1%	0	0.0%	10,748	97.7%	204,447	97.5%	24	0.2%	828	0.4%
Total	>120%	201	1.2%	0	0.0%	0	0.0%	0	0.0%	16,088	98.8%	326,890	100.0	0	0.0%	0	0.0%
Total	Total	2,557	5.5%	26,875	3.1%	2,963	6.4%	53,671	6.1%	41,098	88.1%	794,999	90.7%	27	0.1%	842	0.1%

# Societal Benefits

RSIP is a driver of job creation and cleaner air in the state of Connecticut. Over the course of its existence, the program has supported the creation of 16,457 job years and avoided the lifetime emission of 6,031,211 tons of carbon dioxide, 6,225,526 pounds of nitrous oxide, 5,484,954 pounds of sulfur oxide, and 519,718 pounds of particulate matter as illustrated by Table 123 and Table 125.

The RSIP has generated more than \$45.1 million in tax revenue for the State of Connecticut since inception as demonstrated in Table 124. The value of the lifetime public health impacts of the RSIP is estimated to be between \$189.2 and \$427.8 million as seen in Table 126.

TABLE 123. RSIP AND RSIP-E JOB YEARS SUPPORTED BY FY CLOSED

Fiscal Year	Direct Jobs	Indirect and Induced Jobs	Total Jobs
2012	58	93	151
2013	209	333	542
2014	436	695	1,131
2015	1,263	2,012	3,275
2016	1,284	2,044	3,328
2017	470	612	1,082
2018	574	749	1,322
2019	764	997	1,761
2020	800	1,046	1,846
2021	649	848	1,497
2022	226	296	522
Total	6,733	9,724	16,457

#### TABLE 124. RSIP AND RSIP-E TAX REVENUES GENERATED BY FY CLOSED

Fiscal Year	Individual Income Tax Revenue Generated	Corporate Tax Revenue Generated	Sales Tax Revenue Generated	Total Tax Revenue Generated
2012	\$267,742	\$79,970	\$0	\$347,712
2013	\$957,938	\$286,122	\$0	\$1,244,060
2014	\$1,999,188	\$597,128	\$0	\$2,596,316
2015	\$5,788,189	\$1,728,847	\$0	\$7,517,037
2016	\$5,882,139	\$1,756,908	\$0	\$7,639,047
2017	\$2,509,941	\$970,954	\$0	\$3,480,896
2018	\$3,071,430	\$1,188,162	\$0	\$4,259,593
2019	\$4,087,280	\$1,581,136	\$0	\$5,668,416
2020	\$4,283,670	\$1,657,109	\$0	\$5,940,779
2021	\$3,473,430	\$1,343,673	\$0	\$4,817,103
2022	\$1,210,625	\$468,322	\$0	\$1,678,947
Total	\$33,531,572	\$11,658,332	\$0	\$45,189,904

	CO2 Emission	ns Avoided (tons)		nissions (pounds)		nissions (pounds)	PM 2.5 (pounds)		
Fiscal Year	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	
2012	1,242	31,041	1,638	40,938	2,116	52,907	111	2,772	
2013	5,108	127,702	7,476	186,909	9,478	236,962	451	11,273	
2014	10,969	274,237	14,494	362,340	16,125	403,133	979	24,473	
2015	31,704	792,607	37,706	942,638	36,619	915,487	2,773	69,322	
2016	34,227	855,680	36,659	916,484	29,341	733,515	3,001	75,014	
2017	21,518	537,939	19,562	489,042	13,326	333,155	1,856	46,392	
2018	26,184	654,607	24,828	620,711	20,564	514,103	2,231	55,777	
2019	34,609	865,227	33,468	836,694	28,814	720,352	2,946	73,643	
2020	36,317	907,922	35,119	877,981	30,236	755,898	3,091	77,277	
2021	29,639	740,979	28,662	716,543	24,676	616,908	2,523	63,068	
2022	9,731	243,269	9,410	235,247	8,101	202,536	828	20,706	
Total	241,248	6,031,211	249,021	6,225,526	219,398	5,484,954	20,789	519,718	

#### TABLE 125. RSIP AND RSIP-E AVOIDED EMISSIONS BY FY CLOSED

#### TABLE 126. RSIP AND RSIP-E PUBLIC HEALTH IMPACT BY FY CLOSED

Fiscal	An	nual	Life	time
Year	Low	High	Low	High
2012	\$42,865	\$96,778	\$1,071,624	\$2,419,440
2013	\$174,320	\$393,567	\$4,357,993	\$9,839,181
2014	\$378,761	\$855,140	\$9,469,017	\$21,378,503
2015	\$1,073,770	\$2,424,286	\$26,844,248	\$60,607,155
2016	\$1,175,245	\$2,653,388	\$29,381,125	\$66,334,705
2017	\$764,555	\$1,726,175	\$19,113,874	\$43,154,373
2018	\$914,233	\$2,064,366	\$22,855,833	\$51,609,145
2019	\$992,032	\$2,246,525	\$24,800,798	\$56,163,135
2020	\$985,570	\$2,233,959	\$24,639,252	\$55,848,971
2021	\$804,338	\$1,823,166	\$20,108,452	\$45,579,158
2022	\$264,052	\$598,517	\$6,601,288	\$14,962,919
Total	\$7,569,740	\$17,115,867	\$189,243,504	\$427,896,683

# Marketing

Considering that FY22 was the final year in RSIP and RSIP-E, Project volume was significantly lower than previous years. Despite the anticipated end of RSIP in December 2020, the approval by the Board of Directors of the RSIP-E allowed the deployment of 47.1 MW of capacity in FY 2021 and 15.5 MW in FY 2022.

There are 33,433 PBI systems (owned by a third party) representing 72% of closed RSIP projects, and 13,224 EPBB or homeowner-owned projects, representing 28% of closed RSIP volume. See Figure 8 for details on TPO market share and Figure 9 for details on homeowner-owned projects.

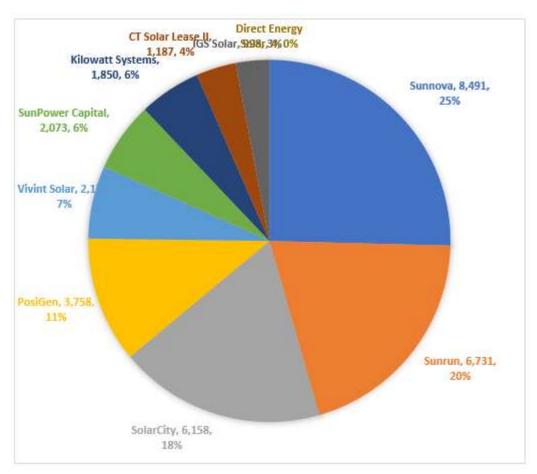
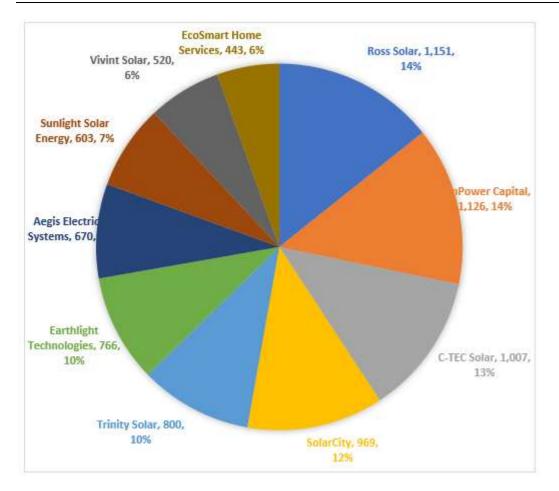


FIGURE 8. RSIP TOP 10 TPO MARKET SHARE BY PROJECT VOLUME

#### FIGURE 9. RSIP TOP 10 CONTRACTOR MARKET SHARE BY HOMEOWNER-OWNED PROJECT VOLUME



The RSIP continued to be successful in reaching low to moderate income households. Adoption has largely been driven by the Green Bank's Solar for All partnership with PosiGen and complemented by efforts supported by a U.S. Department of Energy grant, "State Strategies for Solar Adoption in Low-and-Moderate Income Communities."

On January 1, 2022, a production based (per kWh) tariff compensation became available to all solar PV customers, based on the requirements stipulated by Section 7 in PA 18-50, amended by PA 19-35, and as developed and determined by PURA and stakeholders through continued docket processes. The program is called Residential Renewable Energy Solutions (RRES) Program and is being administered by the EDCs.

TABLE 127. RSIP VOLUME, CAPACITY AND COST DATA BY FY CLOSED AND SOLARIZE PARTICIPATION<sup>172</sup>

<sup>&</sup>lt;sup>172</sup> Public supported Solarize ended in 2015. Projects are attributed to years based on the year their application was approved. Solarize projects assigned to years later than 2017 are the result of solarize efforts supported by the Green Bank in 2015 or before. Privately supported Solarize is associated with years 2016-2019. Note that the difference in average installed costs across RSIP for Solarize vs non-Solarize projects also reflects a larger prevalence of homeowner-owned (i.e., EPBB) projects participating in Solarize vs third-party owned (i.e., PBI) projects. Because the average installed cost for EPBB projects is higher than for PBI projects, some years show a higher Solarize than non-Solarize price at least in part because more of the Solarize projects are EPBB projects.

							Average		
	CGB		Installed	Green Bank		Average	Installed		
Fiscal	Solarize	#	Capacity	Incentive	Total	Incentive	Cost	Incentive	Net Cost to
Year	Туре	Projects	(kW)	Amount	Investment	(\$/W) <sup>173</sup>	(\$/W) <sup>174</sup>	% of Cost	Customer
2012	No	288	1,940.2	\$3,401,642	\$9,901,511	\$1.75	\$5.13	34%	\$6,499,869
2012 Total		288	1,940.2	\$3,401,642	\$9,901,511	\$1.75	\$5.13	34%	\$6,499,869
2013	No	785	5,466.2	\$8,398,948	\$26,127,846	\$1.54	\$4.64	32%	\$17,728,898
	Yes	324	2,424.1	\$3,516,508	\$9,298,197	\$1.45	\$3.84	38%	\$5,781,689
2013 Total		1,109	7,890.4	\$11,915,456	\$35,426,043	\$1.51	\$4.31	34%	\$23,510,587
2014	No	1,675	12,112.9	\$14,269,794	\$54,799,394	\$1.18	\$4.26	26%	\$40,529,600
	Yes	709	5,031.2	\$5,798,818	\$19,133,719	\$1.15	\$3.80	30%	\$13,334,901
2014 Total		2,384	17,144.1	\$20,068,612	\$73,933,113	\$1.17	\$4.07	27%	\$53,864,501
2015	No	5,481	41,116.3	\$27,531,116	\$184,803,348	\$0.67	\$3.92	15%	\$157,272,233
	Yes	900	7,512.7	\$5,581,568	\$29,252,910	\$0.74	\$3.89	19%	\$23,671,343
2015 Total		6,381	48,629.0	\$33,112,683	\$214,056,259	\$0.68	\$3.91	15%	\$180,943,575
2016	No	6,691	52,370.0	\$18,429,956	\$214,362,753	\$0.35	\$3.40	9%	\$195,932,797
	Yes	94	826.0	\$344,529	\$3,167,916	\$0.42	\$3.84	11%	\$2,823,387
2016 Total		6,785	53,196.0	\$18,774,485	\$217,530,669	\$0.35	\$3.41	9%	\$198,756,185
2017	No	4,403	34,268.9	\$11,406,104	\$118,965,384	\$0.33	\$3.33	10%	\$107,559,280
	Yes	42	359.7	\$147,569	\$1,252,853	\$0.41	\$3.48	12%	\$1,105,284
2017 Total		4,445	34,628.6	\$11,553,673	\$120,218,237	\$0.33	\$3.33	10%	\$108,664,564
2018	No	5,143	41,735.3	\$12,537,936	\$146,932,839	\$0.30	\$3.41	9%	\$134,394,903
	Yes	7	50.6	\$19,773	\$178,900	\$0.39	\$3.53	11%	\$159,127
2018 Total		5,150	41,785.9	\$12,557,709	\$147,111,739	\$0.30	\$3.41	9%	\$134,554,031
2019	No	6,468	54,983.2	\$15,155,093	\$195,767,752	\$0.28	\$3.45	8%	\$180,612,659
2019 Total		6,468	54,983.2	\$15,155,093	\$195,767,752	\$0.28	\$3.45	8%	\$180,612,659
2020	No	6,849	57,696.4	\$14,701,787	\$205,174,273	\$0.25	\$3.48	7%	\$190,472,486
2020 Total		6,849	57,696.4	\$14,701,787	\$205,174,273	\$0.25	\$3.48	7%	\$190,472,486
2021	No	5,206	47,087.5	\$12,174,888	\$166,366,312	\$0.26	\$3.42	7%	\$154,191,425
2021 Total		5,206	47,087.5	\$12,174,888	\$166,366,312	\$0.26	\$3.42	7%	\$154,191,425
2022	No	1,592	15,459.2	\$3,764,231	\$57,985,080	\$0.24	\$3.63	6%	\$54,220,850
2022 Total	ĺ	1,592	15,459.2	\$3,764,231	\$57,985,080	\$0.24	\$3.63	6%	\$54,220,850
Total		46,657	380,440.7	\$157,180,257	\$1,443,470,988	\$0.41	\$3.53	11%	\$1,286,290,731

# SHREC Program

Legislation enacted by the General Assembly enables the Connecticut Green Bank to recover the costs of the RSIP by aggregating and monetizing the Solar Home Renewable Energy Credits (SHRECs) earned for solar energy generated by systems whose owners received RSIP incentives.<sup>175</sup> The SHRECs are sold through long-term contracts to the state's two investor-owned utilities, as mandated by the law. Through the SHREC Master Purchase Agreement, the Green Bank has thus far sold its Tranche 1 through Tranche 6 SHRECs to the utilities – for a total of just over 301 MW of residential solar PV projects supported through the RSIP. Tranches 1 and 2, totaling 109 MW, were included in the Green Bank's first

<sup>&</sup>lt;sup>173</sup> Average Incentive, Average Installed Cost, and Incentive % of Cost represent the averages by fiscal year and are not differentiated for Solarize versus non-Solarize.

<sup>&</sup>lt;sup>174</sup> Average Installed Cost per Watt figures include reported installed costs without including those projects where financing costs for some third-party ownership installers are included as part of the installed cost and projects that include battery storage costs. Incentive % of Cost is calculated based on Average Installed Cost.

<sup>&</sup>lt;sup>175</sup> RSIP projects with an incentive approved on or after January 1, 2015 can provide SHRECs. Approximately 56 MW of RSIP projects approved prior to 2015 can provide non-SHREC RECs.

securitization of SHREC revenues, closing in March 2019, for \$38.6 million. Tranche 3, which was just over 39 MW, was included in the Green Bank's second securitization of SHREC revenues, in the form of Green Liberty Bonds, which sold out on July 15, 2020 for over \$16 million. Tranche 4, which was over 59 MW, was the Green Bank's May 2021 Green Liberty Bond offering and sold for over \$24.8 million.

Tranches 5 and 6, totaling over 93 MW of generation capacity have not been securitized yet.

# **Market Transformation**

The Connecticut Green Bank contracted with Cadmus Group, Inc., to conduct a cost-effectiveness analysis<sup>176</sup> of its Residential Solar Investment Program (RSIP), completed in March 2016.<sup>177</sup> The findings of the study were: (1) RSIP is cost-effective from the perspective of program participants, the Connecticut Green Bank (as program administrator), from a total resource perspective, and for society as a whole. (2) RSIP has increasingly made efficient use of program funds by reducing incentives while supporting market growth through financing, marketing, outreach, and education. (3) RSIP benefits sufficiently outweigh costs to allow for bundling of residential solar PV with emerging technologies such as energy storage, while maintaining cost-effectiveness. The study included data from RSIP steps 1 through 7, for which cost-effectiveness was found to increase with progressive steps as incentives were reduced. Cadmus noted that incentives represented the large majority of program costs. Therefore, the general pattern of increasing cost-effectiveness would be expected to continue as incentives were reduced further.

Residential battery storage paired with solar PV is an emerging market in Connecticut with an estimated 450 battery storage systems came through RSIP, associated with solar PV projects approved for incentives through FY 2021, 97% of these 450 installations occurred in the past three fiscal years. The solar PV was incentivized through RSIP, but no incentive was provided for the battery storage. The projects were purchased by customers primarily for the purpose of backup power though it is possible that some customers are participating in a pilot demand response program, Connected Solutions,<sup>178</sup> that has been implemented by Eversource, modeled on their Massachusetts program.

On June 16, 2021, Governor Lamont signed PA 21-53 into law<sup>179</sup>. Section 1 of PA 21-53 established an energy storage goal of one thousand (1,000) megawatts (MW) by December 31, 2030, along with interim goals of three hundred (300) MW by December 31, 2024, and six hundred fifty (650) MW by December 31, 2027. Section 2 of PA 21-53 directs the Public Utility Regulatory Authority (PURA) to "develop and implement one or more programs, and associated funding mechanisms, for electric storage resources connected to the electric distribution system."

On July 28, 2021, PURA issued its Final Decision in Docket No. 17-12-03RE03, PURA Investigation into Distribution System Planning of the Electric Distribution Companies – Electric Storage (Storage

<sup>&</sup>lt;sup>176</sup> The cost-effectiveness tests include the Utility Cost Test/Program Administrator Cost Test (UCT/PACT), Participant Cost Test (PCT), Societal Cost Test (SCT), Total Resource Cost Test (TRC), and Ratepayer Impact Measure (RIM). <u>https://www.nationalenergyscreeningproject.org/national-standard-practice-manual</u>

<sup>&</sup>lt;sup>177</sup> https://ctgreenbank.com/about-us/studies-and-reports/

<sup>&</sup>lt;sup>178</sup> <u>https://www.eversource.com/content/ct-c/residential/save-money-energy/manage-energy-costs-usage/demand-response/battery-storage-demand-response</u>

<sup>&</sup>lt;sup>179</sup> See, Public Act 21-53, <u>https://www.cga.ct.gov/2021/ACT/PA/PDF/2021PA-00053-R00SB-00952-PA.PDF.</u>

Decision) establishing the Electric Storage Program pursuant to Public Act 21-53 (PA 21-53) and §§ 16-11, 16-19, 16-19e, and 16-244i of the General Statutes of Connecticut (Conn. Gen. Stat.), and in accordance with the Interim Decision dated October 2, 2019 in Docket No. 17-12-03, PURA Investigation into Distribution System Planning of the Electric Distribution Companies (Equitable Modern Grid Decision).

The key program elements include a declining-block upfront incentive and a performance-based incentive structure, which together comprise a nine-year Program available to all customers of the state's EDCs with an end goal of deploying 580 MW of electric storage by 2030. The Program is to be administered jointly by the CGB and the EDCs ("Program Administrators"); the CGB shall administer the upfront incentive portion and shall be responsible for the communication and promotion of the Program, while the EDCs shall administer the performance incentive portion of the Program. The CGB and the EDCs shall jointly be responsible for Evaluation, Measurement, and Verification (EM&V).

PURA's adopted the following seven (7) Program Objectives to guide the Program Administrators in the development and implementation of the Program:

1) Provide positive net present value to all ratepayers, or a subset of ratepayers paying for the benefits that accrue to that subset of ratepayers;

2) Provide multiple types of benefits to the electric grid, including, but not limited to, customer, local, or community resilience, ancillary services, peak shaving, and avoiding or deferring distribution system upgrades or supporting the deployment of other distributed energy resources;

3) Foster the sustained, orderly development of a state-based electric energy storage industry;

4) Prioritize delivering increased resilience to: (1) low-to-moderate income (LMI) customers, customers in environmental justice or economically distressed communities, customers coded medical hardship, and public housing authorities as defined in Conn. Gen. Stat. § 8-39(b); (2) customers on the grid-edge who consistently experience more and/or longer than average outages during major storms; and (3) critical facilities as defined in Conn. Gen. Stat § 16-243y(a)(2).

5) Lower the barriers to entry, financial or otherwise, for electric storage deployment in Connecticut;

6) Maximize the long-term environmental benefits of electric storage by reducing emissions associated with fossil-based peaking generation; and

7) Maximize the benefits to ratepayers derived from the wholesale capacity market.

During the first half of FY 2022, CGB worked with the EDCs designing key aspects of the program, including: customers, contractors and manufacturers enrollment processes; customers, sites, projects and technology eligibility requirements; application submission, review and approvals processes; operational requirements including the design of active and passive dispatch modes; incentive levels, contracts, and the infrastructure required to administer and support the program.

On January 1, 2022, CGB and Program Administrators successfully launched the much-anticipated battery storage program, called Energy Storage Solutions (ESS) Programs.

By June 30, 2022, 23 projects had been approved (21 residential projects and two C&I projects) totaling over 5,636 kWh of energy capacity. An additional 109 projects have applied to the program (76 residential, 33 C&I), totaling 172,011 kWh of energy capacity.

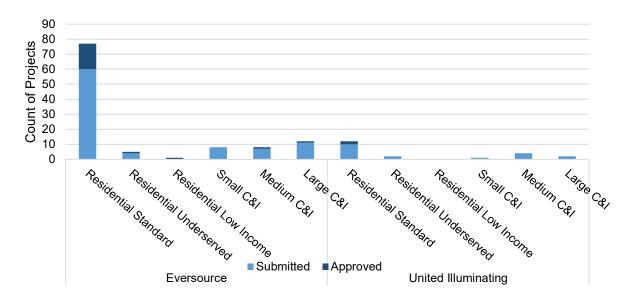


FIGURE 10. COUNT OF PROJECTS BY APPLICATION STATUS, CUSTOMER TYPE, AND UTILITY

Table 128 below shows ESS progress towards the program capacity goals by sector.

Customer Type	Application Submitted (kW)	Application Approved (kW)	Application Complete (kW)	Total (kW)	Program Goals (2022-2024) (kW)	Percent of Approved Capacity Relative to Goal as of June 30, 2022
Residential	768	185	0	953	50,000	0.37%
C&I	60,111	2,626	0	62,737	50,000	5.3%

# Case 4 – Smart-E Loan

# Description

The Smart-E residential loan program is a financing program developed in partnership with Energize CT and local lenders that uses a credit enhancement (i.e., \$1,923,522 loan loss reserve).<sup>180</sup> to stimulate the market for residential energy efficiency, solar, storage, and health and safety loans in Connecticut. Through the product, the Connecticut Green Bank lowers the cost of capital for Connecticut residential customers seeking to install solar PV, high efficiency heating and cooling equipment, insulation or other home energy upgrades and reduces the loan performance risks to lenders. The \$1.7 million loan loss reserve is used to encourage lenders to offer below market interest rates and longer terms for unsecured loans, mitigates their losses, and encourages customers to undertake measures that would prove uneconomical at higher interest rates. In Fiscal year 2019, Inclusive Prosperity Capital (IPC) began managing the day-to-day operations of the Smart-E Loan program. With support from the Hewlett Foundation, and in partnership with Michigan Saves, IPC developed a new online platform for contractors and lenders. In doing so, IPC is soliciting other Green Banks and similar organizations around the country, to use the new platform to bring overall costs down for all programs.

The Smart-E Loan was designed to make it easy and affordable for homeowners to make energy efficiency and clean energy improvements to their homes with no out-of-pocket cash and at interest rates low enough and repayment terms long enough to make the improvements "cash flow positive." At the same time, the Green Bank was intentional in opening conversations with local lenders to demonstrate the value of loans that would help their existing customers with burdensome energy costs and serve as an effective marketing tool to attract new relationships. In return for a "second loss" reserve which would be available beyond an agreed "normal" level of loan losses, lenders agreed to lengthen their terms and lower their rates. The end result is a successful loan product that has enabled thousands of homeowners throughout the state to lower energy costs and make their homes more comfortable in the summer heat or the depths of winter.

The financial structure of the Smart-E Loan product includes origination,<sup>181</sup> servicing,<sup>182</sup> and financing features in combination with the support of the Connecticut Green Bank.

<sup>&</sup>lt;sup>180</sup> During FY2017, the Green Bank, in an effort to optimize its resources, now holds the Loan Loss Reserve on its balance sheet. The total calculated loan loss reserve as of 6/30/22 is \$4,419,995, of which the Green Bank holds \$1,923,522 on its balance sheet.

<sup>&</sup>lt;sup>181</sup> Network of participating community banks and credit unions with local contractors.

<sup>&</sup>lt;sup>182</sup> Network of participating community banks and credit unions.

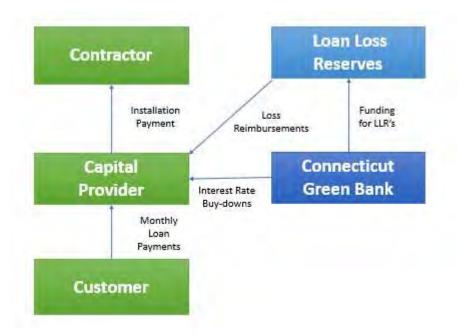


FIGURE 11. LEGAL STRUCTURE AND FLOWS OF CAPITAL FOR THE SMART-E LOAN

# **Key Performance Indicators**

The Key Performance Indicators for Smart-E closed activity are reflected in Table 129 through Table 132. These illustrate the volume of projects by year, investment, generation capacity installed, and the amount of energy saved and/or produced. It also breaks down the volume of projects by energy efficiency, renewable generation, or both.

								Green		
Fiscal Year	EE	RE	RE/E E	Other	# Projects	Amount Financed	Total Investment	Bank Investment <sup>183</sup>	Private Investment	Leverage Ratio
2012	0	0	0	0	0	\$0	\$0	\$0	\$0	0
2013	1	2	0	0	3	\$55,400	\$71,924	\$1,584	\$70,340	45.4
2014	94	39	4	0	137	\$1,714,779	\$2,420,079	\$45,524	\$2,374,555	53.2
2015	121	80	68	0	269	\$5,106,112	\$7,427,583	\$428,955	\$6,998,628	17.3
2016	103	52	65	1	221	\$4,479,173	\$6,121,602	\$360,765	\$5,760,837	17.0
2017	371	68	79	5	523	\$8,611,955	\$10,779,285	\$1,063,665	\$9,715,620	10.1
2018	1,332	258	147	10	1,747	\$27,365,624	\$34,158,262	\$4,265,079	\$29,893,183	8.0
2019	718	97	9	4	828	\$10,686,364	\$11,307,273	\$3,205	\$11,304,068	100
2020	612	98	7	4	721	\$9,805,247	\$11,308,492	\$0	\$11,308,492	100
2021	852	83	15	8	958	\$14,535,791	\$16,249,542	\$0	\$16,249,542	100
2022	853	39	7	10	909	\$14,797,947	\$16,488,177	\$0	\$16,488,177	100
Total	5,057	816	401	42	6,316	\$97,158,392	\$116,332,219	\$6,168,777	\$110,163,443	18.9

<sup>&</sup>lt;sup>183</sup> Includes incentives and interest rate buydowns. It does not include the loan loss reserves for Smart-E of \$1,923,522 and \$1,173,242 in interest rate buydowns that were paid out to nine Smart-E Loan lenders in FY 2022 related to 497 closed loans.

Fiscal Year	Installed Capacity (kW)	Expected Annual Generation (kWh)	Expected Lifetime Savings or Generation (MWh)	Annual Saved / Produced (MMBtu)	Lifetime Saved / Produced (MMBtu)	Annual Cost Savings	Lifetime Cost Savings
2012	0.0	0	0	0	0	\$0	\$0
2013	16.8	23,077	557	68	1,633	\$2,748	\$66,955
2014	336.4	789,994	17,873	2,558	57,548	\$88,566	\$2,035,333
2015	1,302.2	2,379,199	56,515	7,041	165,908	\$263,241	\$6,233,604
2016	955.5	2,009,039	47,599	6,026	141,695	\$228,126	\$5,317,658
2017	1,290.4	3,892,570	89,154	12,078	274,097	\$398,052	\$9,003,622
2018	3,889.0	11,424,640	257,219	34,702	770,637	\$1,113,668	\$24,925,204
2019	917.5	3,694,607	80,249	11,651	249,912	\$373,720	\$8,030,304
2020	932.5	3,144,786	68,278	9,622	205,258	\$331,789	\$7,088,180
2021	834.9	4,099,702	86,480	12,936	268,745	\$462,993	\$9,504,918
2022	247.5	3,421,184	68,979	11,441	229,538	\$408,335	\$8,024,036
Total	10,722.6	34,878,799	772,901	108,124	2,364,972	\$3,671,237	\$80,229,815

#### TABLE 130. SMART-E LOAN PROJECT CAPACITY, GENERATION AND SAVINGS BY FY CLOSED

#### TABLE 131. SMART-E LOAN PROJECT AVERAGES BY FY CLOSED

Fiscal Year	Average Total Investment	Average Amount Financed	Average Installed Capacity (kW)	Average Number of Measures	Average Annual Saved / Produced (MMBtu)	Average Finance Term at Origination (months)	Average Finance Rate	Average DTI	Average FICO Score
2012	\$0	\$0	0.0	0	0	0	0.00	0	0
2013	\$23,975	\$18,467	5.6	1	23	100	5.49	52	748
2014	\$17,665	\$12,517	2.5	1	19	90	5.21	31	750
2015	\$27,612	\$18,982	4.8	2	26	100	4.20	31	756
2016	\$27,700	\$20,268	4.3	2	27	100	4.10	32	756
2017	\$20,610	\$16,466	2.5	2	23	102	2.73	20	749
2018	\$19,553	\$15,664	2.2	2	20	102	2.00	16	751
2019	\$13,656	\$12,906	1.1	2	14	89	4.79	15	733
2020	\$15,684	\$13,600	1.3	1	13	87	4.83	15	737
2021	\$16,962	\$15,173	0.9	1	14	97	3.30	17	743
2022	\$18,139	\$16,279	0.3	1	13	93	4.69	16	736
Average	\$18,419	\$15,383	1.7	2	17	96	3.57	18	744

### TABLE 132. SMART-E LOAN PROJECT APPLICATION YIELD<sup>184</sup> BY FY RECEIVED

Fiscal Year	Applications	Applications	Applications	Applications	Applications	Approved	Denied
	Received	in Review	Approved	Withdrawn	Denied	Rate	Rate
2012	0	0	0	0	0	0%	0%

<sup>&</sup>lt;sup>184</sup> Applications received are applications submitted by the homeowner to a participating lending institution for credit approval. Applications in review are submitted applications yet to be reviewed, approved, or rejected. Applications withdrawn are applications that have been cancelled by the submitter due to the project not moving forward. Applications denied are applications that are not approved because the customer does not meet underwriting requirements.

	Applications	Applications	Applications	Applications	Applications	Approved	Denied
Fiscal Year	Received	in Review	Approved	Withdrawn	Denied	Rate	Rate
2013	21	0	15	1	5	76%	24%
2014	285	0	170	45	70	75%	25%
2015	540	0	292	103	145	73%	27%
2016	408	0	212	66	130	68%	32%
2017	1,102	0	661	198	243	78%	22%
2018	2,960	1	1,668	576	715	76%	24%
2019	1,808	31	834	359	584	67%	33%
2020	1,625	31	746	289	559	65%	35%
2021	2,186	65	1,214	362	545	74%	26%
2022	1,767	54	1,096	193	424	75%	25%
Total	12,702	182	6,908	2,192	3,420	73%	27%

# **Vulnerable Communities Penetration**

For a breakdown of Smart-E project volume and investment by census tracts categorized by Vulnerable Community Penetration – see Table 133. It should be noted that Smart-E is available statewide. Targeted outreach to homeowners in vulnerable communities is a key goal for FY22.

		# Proj	ect Units				MW			Total Invo	estment	
Fiscal Year	Total	Not Vulnerable	Vulnerable	% Vulnerable	Total	Not Vulnerable	Vulnerable	% Vulnerable	Total	Not Vulnerable	Vulnerable	% Vulnerable
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2013	3	1	2	67%	0.0	0.0	0.0	36%	\$71,924	\$28,937	\$42,987	60%
2014	137	72	65	47%	0.3	0.2	0.1	37%	\$2,420,079	\$1,391,498	\$1,028,581	43%
2015	269	170	99	37%	1.3	1.1	0.2	18%	\$7,427,583	\$5,581,252	\$1,846,331	25%
2016	221	128	93	42%	1.0	0.7	0.3	28%	\$6,121,602	\$4,052,379	\$2,069,224	34%
2017	523	316	207	40%	1.3	0.8	0.5	36%	\$10,779,285	\$7,051,027	\$3,728,258	35%
2018	1,747	1,008	739	42%	3.9	2.9	1.0	26%	\$34,158,262	\$21,933,493	\$12,224,768	36%
2019	828	455	373	45%	0.9	0.7	0.2	22%	\$11,307,273	\$6,811,747	\$4,495,525	40%
2020	721	420	301	42%	0.9	0.6	0.3	34%	\$11,308,492	\$7,204,908	\$4,103,584	36%
2021	958	590	368	38%	0.8	0.6	0.2	24%	\$16,249,542	\$10,813,328	\$5,436,214	30%
2022	909	529	380	42%	0.2	0.2	0.0	10%	\$16,488,177	\$10,187,931	\$6,300,246	38%
Total	6,316	3,689	2,627	42%	10.7	7.8	2.9	27%	\$116,332,219	\$75,056,502	\$41,275,717	34%

TABLE 133. SMART-E LOAN ACTIVITY IN VULNERABLE AND NOT VULNERABLE COMMUNITIES BY FY CLOSED<sup>185</sup>

# Area Median Income Band Penetration

For a breakdown of Smart-E loan volume and investment by census tracts categorized by Area Median Income (AMI) bands – see Table 134. It should be noted that Smart-E is not an income targeted program and only in the second half of FY17 began offering the expanded credit-challenged version of the program, opening new opportunities to partner with mission-oriented lenders focused on reaching consumers in underserved lower income markets.

TABLE 134. SMART-E LOAN ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS BY FY CLOSED<sup>186</sup>

<sup>&</sup>lt;sup>185</sup> Excludes projects in unknown communities.

<sup>&</sup>lt;sup>186</sup> Excludes projects in unknown bands.

Fiscal Year	MSA AMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Owner Occupied 1- 4 Unit Households	% Owner Occupied 1- 4 Unit Household Distribution	Project Units / 1,000 Owner Occupied 1-4 Unit Households	Total Investment / Owner Occupied 1-4 Unit Household	Watts / Owner Occupied 1-4 Unit Household
2012	<60%	0	0%	0.0	0%	\$0	0%	62,689	7%	0.0	\$0.00	0.0
2012	60%-80%	0	0%	0.0	0%	\$0	0%	102,178	12%	0.0	\$0.00	0.0
2012	80%-100%	0	0%	0.0	0%	\$0	0%	150,685	17%	0.0	\$0.00	0.0
2012	100%-120%	0	0%	0.0	0%	\$0	0%	216,484	25%	0.0	\$0.00	0.0
2012	>120%	0	0%	0.0	0%	\$0	0%	349,212	40%	0.0	\$0.00	0.0
2012	Total	0	0%	0.0	0%	\$0	0%	881,248	100%	0.0	\$0.00	0.0
2013	<60%	0	0%	0.0	0%	\$0	0%	61,004	7%	0.0	\$0.00	0.0
2013	60%-80%	0	0%	0.0	0%	\$0	0%	109,967	13%	0.0	\$0.00	0.0
2013	80%-100%	1	33%	0.0	0%	\$8,598	12%	149,676	17%	0.0	\$0.06	0.0
2013	100%-120%	1	33%	0.0	36%	\$34,389	48%	202,827	23%	0.0	\$0.17	0.0
2013	>120%	1	33%	0.0	64%	\$28,937	40%	350,708	40%	0.0	\$0.08	0.0
2013	Total	3	100%	0.0	100%	\$71,924	100%	874,182	100%	0.0	\$0.08	0.0
2014	<60%	12	9%	0.0	5%	\$161,135	7%	59,294	7%	0.2	\$2.72	0.3
2014	60%-80%	15	11%	0.0	6%	\$209,132	9%	104,528	12%	0.1	\$2.00	0.2
2014	80%-100%	31	23%	0.1	24%	\$565,009	23%	148,846	17%	0.2	\$3.80	0.5
2014	100%-120%	26	19%	0.1	16%	\$480,629	20%	208,912	24%	0.1	\$2.30	0.3
2014	>120%	53	39%	0.2	48%	\$1,004,174	41%	347,779	40%	0.2	\$2.89	0.5
2014	Total	137	100%	0.3	100%	\$2,420,079	100%	869,359	100%	0.2	\$2.78	0.4
2015	<60%	12	4%	0.0	0%	\$128,175	2%	66,632	8%	0.2	\$1.92	0.0
2015	60%-80%	23	9%	0.0	2%	\$305,741	4%	96,059	11%	0.2	\$3.18	0.3
2015	80%-100%	53	20%	0.2	12%	\$1,154,183	16%	165,205	19%	0.3	\$6.99	1.0
2015	100%-120%	54	20%	0.3	25%	\$1,633,600	22%	183,629	21%	0.3	\$8.90	1.8
2015	>120%	127	47%	0.8	60%	\$4,205,884	57%	352,053	41%	0.4	\$11.95	2.2
2015	Total	269	100%	1.3	100%	\$7,427,583	100%	863,578	100%	0.3	\$8.60	1.5
2016	<60%	11	5%	0.0	1%	\$162,874	3%	63,056	7%	0.2	\$2.58	0.1
2016	60%-80%	22	10%	0.0	1%	\$309,972	5%	99,073	12%	0.2	\$3.13	0.1
2016	80%-100%	36	16%	0.2	16%	\$948,786	15%	165,012	19%	0.2	\$5.75	0.9
2016	100%-120%	48	22%	0.2	23%	\$1,335,356	22%	187,129	22%	0.3	\$7.14	1.2
2016	>120%	104	47%	0.6	60%	\$3,364,614	55%	344,577	40%	0.3	\$9.76	1.7

Fiscal Year	MSA AMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Owner Occupied 1- 4 Unit Households	% Owner Occupied 1- 4 Unit Household Distribution	Project Units / 1,000 Owner Occupied 1-4 Unit Households	Total Investment / Owner Occupied 1-4 Unit Household	Watts / Owner Occupied 1-4 Unit Household
2016	Total	221	100%	1.0	100%	\$6,121,602	100%	858,847	100%	0.3	\$7.13	1.1
2017	<60%	37	7%	0.1	7%	\$711,963	7%	64,755	7%	0.6	\$10.99	1.4
2017	60%-80%	59	11%	0.1	6%	\$901,645	8%	97,455	11%	0.6	\$9.25	0.9
2017	80%-100%	80	15%	0.2	18%	\$1,590,468	15%	155,414	18%	0.5	\$10.23	1.5
2017	100%-120%	128	24%	0.3	24%	\$2,624,415	24%	209,484	24%	0.6	\$12.53	1.5
2017	>120%	219	42%	0.6	45%	\$4,950,793	46%	339,362	39%	0.6	\$14.59	1.7
2017	Total	523	100%	1.3	100%	\$10,779,285	100%	866,470	100%	0.6	\$12.44	1.5
2018	<60%	119	7%	0.1	2%	\$1,710,344	5%	62,247	7%	1.9	\$27.48	1.2
2018	60%-80%	196	11%	0.2	6%	\$3,184,433	9%	109,142	13%	1.8	\$29.18	2.3
2018	80%-100%	286	16%	0.5	12%	\$4,896,713	14%	145,988	17%	2.0	\$33.54	3.2
2018	100%-120%	419	24%	1.1	27%	\$8,415,263	25%	204,880	24%	2.0	\$41.07	5.2
2018	>120%	727	42%	2.0	52%	\$15,951,509	47%	343,989	40%	2.1	\$46.37	5.9
2018	Total	1,747	100%	3.9	100%	\$34,158,262	100%	866,246	100%	2.0	\$39.43	4.5
2019	<60%	57	7%	0.0	2%	\$711,547	6%	62,247	7%	0.9	\$11.43	0.3
2019	60%-80%	104	13%	0.0	5%	\$1,150,921	10%	109,142	13%	1.0	\$10.55	0.5
2019	80%-100%	151	18%	0.1	11%	\$1,891,095	17%	145,988	17%	1.0	\$12.95	0.7
2019	100%-120%	194	23%	0.2	25%	\$2,554,504	23%	204,880	24%	0.9	\$12.47	1.1
2019	>120%	322	39%	0.5	56%	\$4,999,205	44%	343,989	40%	0.9	\$14.53	1.5
2019	Total	828	100%	0.9	100%	\$11,307,273	100%	865,756	100%	1.0	\$13.06	1.1
2020	<60%	47	7%	0.0	2%	\$609,616	5%	68,662	8%	0.7	\$8.88	0.3
2020	60%-80%	70	10%	0.0	4%	\$948,380	8%	105,090	12%	0.7	\$9.02	0.3
2020	80%-100%	129	18%	0.2	18%	\$1,716,156	15%	166,052	19%	0.8	\$10.34	1.0
2020	100%-120%	208	29%	0.3	34%	\$3,391,768	30%	209,603	24%	1.0	\$16.18	1.5
2020	>120%	266	37%	0.4	42%	\$4,621,722	41%	326,890	37%	0.8	\$14.14	1.2
2020	Total	720	100%	0.9	100%	\$11,287,642	100%	876,387	100%	0.8	\$12.88	1.1
2021	<60%	45	5%	0.0	0%	\$645,780	4%	68,662	8%	0.7	\$9.41	0.0
2021	60%-80%	93	10%	0.1	10%	\$1,313,849	8%	105,090	12%	0.9	\$12.50	0.8
2021	80%-100%	170	18%	0.1	10%	\$2,577,567	16%	166,052	19%	1.0	\$15.52	0.5
2021	100%-120%	243	25%	0.2	23%	\$3,911,227	24%	209,603	24%	1.2	\$18.66	0.9

Fiscal Year	MSA AMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Owner Occupied 1- 4 Unit Households	% Owner Occupied 1- 4 Unit Household Distribution	Project Units / 1,000 Owner Occupied 1-4 Unit Households	Total Investment / Owner Occupied 1-4 Unit Household	Watts / Owner Occupied 1-4 Unit Household
2021	>120%	407	42%	0.5	57%	\$7,801,118	48%	326,890	37%	1.2	\$23.86	1.5
2021	Total	958	100%	0.8	100%	\$16,249,542	100%	876,387	100%	1.1	\$18.54	1.0
2022	<60%	50	6%	0.0	0%	\$772,450	5%	68,662	8%	0.7	\$11.25	0.0
2022	60%-80%	107	12%	0.0	0%	\$1,959,182	12%	105,090	12%	1.0	\$18.64	0.0
2022	80%-100%	178	20%	0.0	10%	\$2,882,548	18%	166,052	19%	1.1	\$17.36	0.2
2022	100%-120%	207	23%	0.0	18%	\$3,960,654	24%	209,603	24%	1.0	\$18.90	0.2
2022	>120%	361	40%	0.2	72%	\$6,815,766	42%	326,890	37%	1.1	\$20.85	0.5
2022	Total	903	100%	0.2	100%	\$16,390,600	100%	876,387	100%	1.0	\$18.70	0.3
Total	<60%	390	6%	0.2	2%	\$5,613,885	5%	68,662	8%	5.7	\$81.76	3.3
Total	60%-80%	689	11%	0.6	5%	\$10,283,256	9%	105,090	12%	6.6	\$97.85	5.3
Total	80%-100%	1,115	18%	1.5	14%	\$18,231,123	16%	166,052	19%	6.7	\$109.79	8.9
Total	100%-120%	1,528	24%	2.8	26%	\$28,341,804	24%	209,603	24%	7.3	\$135.22	13.2
Total	>120%	2,587	41%	5.7	53%	\$53,743,723	46%	326,890	37%	7.9	\$164.41	17.4
Total	Total	6,309	100%	10.7	100%	\$116,213,791	100%	876,387	100%	7.2	\$132.61	12.2

# TABLE 135. SMART-E LOAN ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS ABOVE OR BELOW 100% BY FY CLOSED<sup>187</sup>

		# Pr	oject Units			ľ	WN			Total Invest	tment	
Fiscal Year	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2013	3	2	1	33%	0.0	0.0	0.0	0%	\$71,924	\$63,326	\$8,598	12%
2014	137	79	58	42%	0.3	0.2	0.1	35%	\$2,420,079	\$1,484,803	\$935,276	39%
2015	269	181	88	33%	1.3	1.1	0.2	15%	\$7,427,583	\$5,839,483	\$1,588,100	21%
2016	221	152	69	31%	1.0	0.8	0.2	17%	\$6,121,602	\$4,699,970	\$1,421,632	23%

<sup>187</sup> Excludes projects in unknown bands.

		# Pr	oject Units			I	WN			Total Invest	tment	
Fiscal		Over 100%	100% or Below	% at 100% or		Over 100%	100% or Below	% at 100% or		Over 100%	100% or	% at 100% or
Year	Total	AMI	AMI	Below	Total	AMI	AMI	Below	Total	AMI	Below AMI	Below
2017	523	347	176	34%	1.3	0.9	0.4	31%	\$10,779,285	\$7,575,208	\$3,204,076	30%
2018	1,747	1,146	601	34%	3.9	3.1	0.8	20%	\$34,158,262	\$24,366,772	\$9,791,490	29%
2019	828	516	312	38%	0.9	0.7	0.2	19%	\$11,307,273	\$7,553,710	\$3,753,563	33%
2020	720	474	246	34%	0.9	0.7	0.2	24%	\$11,287,642	\$8,013,490	\$3,274,152	29%
2021	958	650	308	32%	0.8	0.7	0.2	20%	\$16,249,542	\$11,712,345	\$4,537,197	28%
2022	903	568	335	37%	0.2	0.2	0.0	10%	\$16,390,600	\$10,776,420	\$5,614,180	34%
Total	6,309	4,115	2,194	35%	10.7	8.5	2.2	21%	\$116,213,791	\$82,085,527	\$34,128,264	29%

#### TABLE 136. SMART-E LOAN ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS ABOVE OR BELOW 80% BY FY CLOSED<sup>188</sup>

		# Pr	oject Units			I	WW			Total Invest	tment	
		Over	80% or			Over	80% or	% at 80%				% at 80%
Fiscal		80%	Below	% at 80%		80%	Below	or		Over 80%	80% or	or
Year	Total	AMI	AMI	or Below	Total	AMI	AMI	Below	Total	AMI	Below AMI	Below
2012	0	0	0	0%	0.0	0	0	0%	\$0	\$0	\$0	0%
2013	3	3	0	0%	0.0	0	0	0%	\$71,924	\$71,924	\$0	0%
2014	137	110	27	20%	0.3	0	0	11%	\$2,420,079	\$2,049,812	\$370,267	15%
2015	269	234	35	13%	1.3	1	0	2%	\$7,427,583	\$6,993,666	\$433,917	6%
2016	221	188	33	15%	1.0	1	0	2%	\$6,121,602	\$5,648,756	\$472,847	8%
2017	523	427	96	18%	1.3	1	0	14%	\$10,779,285	\$9,165,677	\$1,613,608	15%
2018	1,747	1,432	315	18%	3.9	4	0	8%	\$34,158,262	\$29,263,485	\$4,894,777	14%
2019	828	667	161	19%	0.9	1	0	7%	\$11,307,273	\$9,444,805	\$1,862,468	16%
2020	720	603	117	16%	0.9	1	0	6%	\$11,287,642	\$9,729,646	\$1,557,996	14%
2021	958	820	138	14%	0.8	1	0	10%	\$16,249,542	\$14,289,913	\$1,959,629	12%
2022	903	746	157	17%	0.2	0	0	0%	\$16,390,600	\$13,658,968	\$2,731,632	17%
Total	6,309	5,230	1,079	17%	10.7	10	1	7%	\$116,213,791	\$100,316,650	\$15,897,141	14%

<sup>188</sup> Excludes projects in unknown bands.

# **Distressed Community Penetration**

For a breakdown of Smart-E project volume and investment by census tracts categorized by Distressed Communities – see Table 137. It should be noted that Smart-E is not an income targeted program.

Fiscal Year	Distres sed	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Households	% Total Household Distribution	Project Units / 1,000 Total Households	Total Investment / Total Household	Watts / Total Household
2012	Yes	0	0%	0	0%	0.0	0%	447,962	33%	0.0	\$0.00	0.0
2012	No	0	0%	0	0%	0.0	0%	912,222	67%	0.0	\$0.00	0.0
2012	Total	0	0%	0	0%	0.0	0%	1,360,184	100%	0.0	\$0.00	0.0
2013	Yes	1	33%	1	33%	0.0	36%	426,564	31%	0.0	\$0.08	0.0
2013	No	2	67%	2	67%	0.0	64%	929,285	69%	0.0	\$0.04	0.0
2013	Total	3	100%	3	100%	0.0	100%	1,355,849	100%	0.0	\$0.05	0.0
2014	Yes	23	17%	23	17%	0.1	25%	416,415	31%	0.1	\$1.23	0.2
2014	No	114	83%	114	83%	0.3	75%	939,791	69%	0.1	\$2.03	0.3
2014	Total	137	100%	137	100%	0.3	100%	1,356,206	100%	0.1	\$1.78	0.2
2015	Yes	33	12%	33	12%	0.1	6%	423,559	31%	0.1	\$1.49	0.2
2015	No	236	88%	236	88%	1.2	94%	929,024	69%	0.3	\$7.32	1.3
2015	Total	269	100%	269	100%	1.3	100%	1,352,583	100%	0.2	\$5.49	1.0
2016	Yes	66	30%	66	30%	0.1	15%	438,710	32%	0.2	\$3.19	0.3
2016	No	155	70%	155	70%	0.8	85%	916,003	68%	0.2	\$5.15	0.9
2016	Total	221	100%	221	100%	1.0	100%	1,354,713	100%	0.2	\$4.52	0.7
2017	Yes	117	22%	117	22%	0.2	19%	435,595	32%	0.3	\$4.45	0.6
2017	No	406	78%	406	78%	1.0	81%	926,160	68%	0.4	\$9.55	1.1
2017	Total	523	100%	523	100%	1.3	100%	1,361,755	100%	0.4	\$7.92	0.9
2018	Yes	376	22%	376	22%	0.4	12%	430,098	31%	0.9	\$13.52	1.0
2018	No	1,371	78%	1,371	78%	3.4	88%	937,276	69%	1.5	\$30.24	3.7
2018	Total	1,747	100%	1,747	100%	3.9	100%	1,367,374	100%	1.3	\$24.98	2.8
2019	Yes	184	22%	184	22%	0.1	11%	421,653	31%	0.4	\$5.19	0.2
2019	No	644	78%	644	78%	0.8	89%	949,093	69%	0.7	\$9.61	0.9
2019	Total	828	100%	828	100%	0.9	100%	1,370,746	100%	0.6	\$8.25	0.7

# TABLE 137. SMART-E LOAN ACTIVITY IN DISTRESSED COMMUNITIES BY FY CLOSED

Fiscal Year	Distres sed	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Households	% Total Household Distribution	Project Units / 1,000 Total Households	Total Investment / Total Household	Watts / Total Household
2020	Yes	153	21%	153	21%	0.2	20%	427,553	31%	0.4	\$4.81	0.4
2020	No	568	79%	568	79%	0.7	80%	957,884	69%	0.6	\$9.66	0.8
2020	Total	721	100%	721	100%	0.9	100%	1,385,437	100%	0.5	\$8.16	0.7
2021	Yes	156	16%	156	16%	0.1	8%	375,703	27%	0.4	\$5.58	0.2
2021	No	802	84%	802	84%	0.8	92%	1,009,734	73%	0.8	\$14.02	0.8
2021	Total	958	100%	958	100%	0.8	100%	1,385,437	100%	0.7	\$11.73	0.6
2022	Yes	152	17%	152	17%	0.0	0%	375,703	27%	0.4	\$6.02	0.0
2022	No	751	83%	751	83%	0.2	100%	1,009,734	73%	0.7	\$14.01	0.2
2022	Total	903	100%	903	100%	0.2	100%	1,385,437	100%	0.7	\$11.84	0.2
Total	Yes	1,261	20%	1,261	20%	1.4	13%	375,703	27%	3.4	\$50.39	3.6
Total	No	5,049	80%	5,049	80%	9.4	87%	1,009,734	73%	5.0	\$96.38	9.3
Total	Total	6,310	100%	6,310	100%	10.7	100%	1,385,437	100%	4.6	\$83.91	7.7

#### TABLE 138. SMART-E LOAN ACTIVITY IN DISTRESSED AND NOT DISTRESSED COMMUNITIES BY FY CLOSED<sup>189</sup>

		# Pro	oject Units			Μ	W			Total Inve	estment	
Fiscal		Not		%		Not		%		Not		%
Year	Total	Distressed	Distressed	Distressed	Total	Distressed	Distressed	Distressed	Total	Distressed	Distressed	Distressed
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2013	3	2	1	33%	0.0	0.0	0.0	36%	\$71,924	\$37,535	\$34,389	48%
2014	137	114	23	17%	0.3	0.3	0.1	25%	\$2,420,079	\$1,908,919	\$511,160	21%
2015	269	236	33	12%	1.3	1.2	0.1	6%	\$7,427,583	\$6,795,909	\$631,674	9%
2016	221	155	66	30%	1.0	0.8	0.1	15%	\$6,121,602	\$4,720,950	\$1,400,652	23%
2017	523	406	117	22%	1.3	1.0	0.2	19%	\$10,779,285	\$8,840,853	\$1,938,432	18%
2018	1,747	1,371	376	22%	3.9	3.4	0.4	12%	\$34,158,262	\$28,342,968	\$5,815,294	17%
2019	828	644	184	22%	0.9	0.8	0.1	11%	\$11,307,273	\$9,120,640	\$2,186,632	19%
2020	721	568	153	21%	0.9	0.7	0.2	20%	\$11,308,492	\$9,253,622	\$2,054,870	18%
2021	958	802	156	16%	0.8	0.8	0.1	8%	\$16,249,542	\$14,151,833	\$2,097,709	13%
2022	903	751	152	17%	0.2	0.2	0.0	0%	\$16,404,514	\$14,143,765	\$2,260,748	14%

<sup>189</sup> Excludes projects in unknown communities.

		# Pro	oject Units			м	W			Total Inve	estment	
Fiscal		Not		%		Not		%		Not		%
Year	Total	Distressed	Distressed	Distressed	Total	Distressed	Distressed	Distressed	Total	Distressed	Distressed	Distressed
Total	6,310	5,049	1,261	20%	10.7	9.4	1.4	13%	\$116,248,555	\$97,316,994	\$18,931,561	16%

# Environmental Justice Poverty Level Penetration

The activity of the Smart-e Loan in Environmental Justice Communities is recorded in Table 139.

# TABLE 139. SMART-E LOAN ACTIVITY IN ENVIRONMENTAL JUSTICE POVERTY AREAS BY FY CLOSED<sup>190</sup>

		# Pr	oject Units				MW			Total Investm	nent	
Fiscal Year	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2013	3	3	0	0%	0.0	0.0	0.0	0%	\$71,924	\$71,924	\$0	0%
2014	137	133	4	3%	0.3	0.3	0.0	0%	\$2,420,079	\$2,390,490	\$29,589	1%
2015	269	265	4	1%	1.3	1.3	0.0	2%	\$7,427,583	\$7,319,069	\$108,515	1%
2016	221	215	6	3%	1.0	0.9	0.0	3%	\$6,121,602	\$5,978,294	\$143,308	2%
2017	523	506	17	3%	1.3	1.2	0.0	3%	\$10,779,285	\$10,449,522	\$329,763	3%
2018	1,747	1,665	82	5%	3.9	3.7	0.1	4%	\$34,158,262	\$32,653,701	\$1,504,561	4%
2019	828	790	38	5%	0.9	0.9	0.0	2%	\$11,307,273	\$10,865,974	\$441,298	4%
2020	721	691	30	4%	0.9	0.9	0.0	1%	\$11,308,492	\$10,936,552	\$371,940	3%
2021	958	922	36	4%	0.8	0.8	0.0	4%	\$16,249,542	\$15,622,072	\$627,470	4%
2022	909	853	56	6%	0.2	0.2	0.0	0%	\$16,488,177	\$15,476,294	\$1,011,883	6%
Total	6,316	6,043	273	4%	10.7	10.4	0.3	3%	\$116,332,219	\$111,763,892	\$4,568,327	4%

# Ethnicity

The activity of the Smart-E Loan in terms of ethnicity is recorded in Table 140.

<sup>&</sup>lt;sup>190</sup> Excludes projects in unknown bands.

# TABLE 140. SMART-E LOAN ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS BY ETHNICITY CATEGORY BY FY CLOSED<sup>191</sup>

			Majority	Black			Majority H	lispanic			Majority	White			Majority	Asian	
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1-4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН
2012	<60%	0	0.0%	13,052	20.8%	0	0.0%	21,021	33.5%	0	0.0%	28,616	45.6%	0	0.0%	0	0.0%
2012	60%-80%	0	0.0%	8,714	8.5%	0	0.0%	7,447	7.3%	0	0.0%	86,017	84.2%	0	0.0%	0	0.0%
2012	80%-100%	0	0.0%	3,490	2.3%	0	0.0%	0	0.0%	0	0.0%	147,195	97.7%	0	0.0%	0	0.0%
2012	100%-120%	0	0.0%	3,488	1.6%	0	0.0%	0	0.0%	0	0.0%	212,996	98.4%	0	0.0%	0	0.0%
2012	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	349,212	100.0%	0	0.0%	0	0.0%
2012	Total	0	0.0%	28,744	3.3%	0	0.0%	28,468	3.2%	0	0.0%	824,036	93.5%	0	0.0%	0	0.0%
2013	<60%	0	0.0%	10,766	17.6%	0	0.0%	21,781	35.7%	0	0.0%	28,457	46.6%	0	0.0%	0	0.0%
2013	60%-80%	0	0.0%	10,827	9.8%	0	0.0%	9,574	8.7%	0	0.0%	89,566	81.4%	0	0.0%	0	0.0%
2013	80%-100%	0	0.0%	1,926	1.3%	0	0.0%	0	0.0%	1	100.0%	147,750	98.7%	0	0.0%	0	0.0%
2013	100%-120%	0	0.0%	3,177	1.6%	0	0.0%	0	0.0%	1	100.0%	199,650	98.4%	0	0.0%	0	0.0%
2013	>120%	0	0.0%	1,808	0.5%	0	0.0%	0	0.0%	1	100.0%	348,900	99.5%	0	0.0%	0	0.0%
2013	Total	0	0.0%	28,504	3.3%	0	0.0%	31,355	3.6%	3	100.0%	814,323	93.2%	0	0.0%	0	0.0%
2014	<60%	1	8.3%	12,067	20.4%	1	8.3%	17,945	30.3%	10	83.3%	29,282	49.4%	0	0.0%	0	0.0%
2014	60%-80%	3	20.0%	8,576	8.2%	2	13.3%	10,507	10.1%	10	66.7%	85,445	81.7%	0	0.0%	0	0.0%
2014	80%-100%	0	0.0%	1,868	1.3%	0	0.0%	1,491	1.0%	31	100.0%	145,487	97.7%	0	0.0%	0	0.0%
2014	100%-120%	2	7.7%	3,280	1.6%	0	0.0%	0	0.0%	24	92.3%	205,632	98.4%	0	0.0%	0	0.0%
2014	>120%	1	1.9%	3,745	1.1%	0	0.0%	0	0.0%	52	98.1%	344,034	98.9%	0	0.0%	0	0.0%
2014	Total	7	5.1%	29,536	3.4%	3	2.2%	29,943	3.4%	127	92.7%	809,880	93.2%	0	0.0%	0	0.0%
2015	<60%	0	0.0%	12,243	18.4%	0	0.0%	27,292	41.0%	12	100.0%	27,097	40.7%	0	0.0%	0	0.0%
2015	60%-80%	1	4.3%	7,491	7.8%	0	0.0%	7,075	7.4%	22	95.7%	81,493	84.8%	0	0.0%	0	0.0%
2015	80%-100%	0	0.0%	5,767	3.5%	0	0.0%	513	0.3%	53	100.0%	158,372	95.9%	0	0.0%	553	0.3%
2015	100%-120%	0	0.0%	863	0.5%	0	0.0%	0	0.0%	54	100.0%	182,766	99.5%	0	0.0%	0	0.0%
2015	>120%	0	0.0%	1,877	0.5%	0	0.0%	0	0.0%	127	100.0%	350,176	99.5%	0	0.0%	0	0.0%
2015	Total	1	0.4%	28,241	3.3%	0	0.0%	34,880	4.0%	268	99.6%	799,904	92.6%	0	0.0%	553	0.1%
2016	<60%	1	9.1%	11,333	18.0%	2	18.2%	26,620	42.2%	8	72.7%	25,103	39.8%	0	0.0%	0	0.0%

<sup>191</sup> Excludes projects in unknown bands.

			Majority	Black			Majority H	lispanic			Majority	White			Majority	Asian	
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1-4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН
2016	60%-80%	0	0.0%	7,872	7.9%	0	0.0%	8,551	8.6%	22	100.0%	82,650	83.4%	0	0.0%	0	0.0%
2016	80%-100%	1	2.8%	4,736	2.9%	0	0.0%	937	0.6%	35	97.2%	159,339	96.6%	0	0.0%	0	0.0%
2016	100%-120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	48	100.0%	186,570	99.7%	0	0.0%	559	0.3%
2016	>120%	0	0.0%	3,063	0.9%	0	0.0%	0	0.0%	104	100.0%	341,514	99.1%	0	0.0%	0	0.0%
2016	Total	2	0.9%	27,004	3.1%	2	0.9%	36,108	4.2%	217	98.2%	795,176	92.6%	0	0.0%	559	0.1%
2017	<60%	5	13.5%	11,916	18.4%	11	29.7%	28,817	44.5%	21	56.8%	24,022	37.1%	0	0.0%	0	0.0%
2017	60%-80%	1	1.7%	5,276	5.4%	5	8.5%	12,600	12.9%	53	89.8%	79,579	81.7%	0	0.0%	0	0.0%
2017	80%-100%	3	3.8%	4,323	2.8%	0	0.0%	2,062	1.3%	77	96.3%	149,029	95.9%	0	0.0%	0	0.0%
2017	100%-120%	0	0.0%	1,101	0.5%	0	0.0%	0	0.0%	128	100.0%	207,746	99.2%	0	0.0%	637	0.3%
2017	>120%	1	0.5%	4,014	1.2%	0	0.0%	0	0.0%	218	99.5%	335,348	98.8%	0	0.0%	0	0.0%
2017	Total	10	1.9%	26,630	3.1%	16	3.1%	43,479	5.0%	497	95.0%	795,724	91.8%	0	0.0%	637	0.1%
2018	<60%	10	8.4%	10,135	16.3%	49	41.2%	28,053	45.1%	60	50.4%	24,059	38.7%	0	0.0%	0	0.0%
2018	60%-80%	8	4.1%	7,948	7.3%	24	12.2%	11,560	10.6%	164	83.7%	89,634	82.1%	0	0.0%	0	0.0%
2018	80%-100%	12	4.2%	4,704	3.2%	4	1.4%	3,271	2.2%	270	94.4%	138,013	94.5%	0	0.0%	0	0.0%
2018	100%-120%	1	0.2%	2,274	1.1%	0	0.0%	0	0.0%	414	98.8%	201,977	98.6%	4	1.0%	629	0.3%
2018	>120%	10	1.4%	2,828	0.8%	0	0.0%	0	0.0%	717	98.6%	341,161	99.2%	0	0.0%	0	0.0%
2018	Total	41	2.3%	27,889	3.2%	77	4.4%	42,884	5.0%	1,625	93.0%	794,844	91.8%	4	0.2%	629	0.1%
2019	<60%	7	12.3%	10,903	17.0%	25	43.9%	29,840	46.5%	25	43.9%	23,497	36.6%	0	0.0%	0	0.0%
2019	60%-80%	9	8.7%	6,102	6.0%	12	11.5%	10,367	10.3%	83	79.8%	84,519	83.7%	0	0.0%	0	0.0%
2019	80%-100%	3	2.0%	5,119	3.3%	6	4.0%	1,488	1.0%	142	94.0%	148,956	95.8%	0	0.0%	0	0.0%
2019	100%-120%	5	2.6%	3,330	1.6%	0	0.0%	627	0.3%	187	96.4%	202,850	97.8%	2	1.0%	648	0.3%
2019	>120%	5	1.6%	2,074	0.6%	0	0.0%	0	0.0%	317	98.4%	335,436	99.4%	0	0.0%	0	0.0%
2019	Total	29	3.5%	27,528	3.2%	43	5.2%	42,322	4.9%	754	91.1%	795,258	91.9%	2	0.2%	648	0.1%
2020	<60%	9	19.1%	12,029	17.5%	19	40.4%	27,793	40.5%	19	40.4%	28,840	42.0%	0	0.0%	0	0.0%
2020	60%-80%	5	7.1%	6,275	6.0%	11	15.7%	20,490	19.5%	54	77.1%	78,311	74.5%	0	0.0%	14	0.0%
2020	80%-100%	1	0.8%	4,243	2.6%	1	0.8%	5,388	3.2%	127	98.4%	156,421	94.2%	0	0.0%	0	0.0%
2020	100%-120%	7	3.4%	4,328	2.1%	1	0.5%	0	0.0%	200	96.2%	204,447	97.5%	0	0.0%	828	0.4%
2020	>120%	1	0.4%	0	0.0%	0	0.0%	0	0.0%	265	99.6%	326,890	100.0%	0	0.0%	0	0.0%
2020	Total	23	3.2%	26,875	3.1%	32	4.4%	53,671	6.1%	665	92.4%	794,999	90.7%	0	0.0%	842	0.1%

			Majority	Black			Majority H	lispanic			Majority	White			Majority	Asian	
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1-4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН
2021	<60%	10	22.2%	12,029	17.5%	17	37.8%	27,793	40.5%	18	40.0%	28,840	42.0%	0	0.0%	0	0.0%
2021	60%-80%	6	6.5%	6,275	6.0%	17	18.3%	20,490	19.5%	70	75.3%	78,311	74.5%	0	0.0%	14	0.0%
2021	80%-100%	9	5.3%	4,243	2.6%	1	0.6%	5,388	3.2%	160	94.1%	156,421	94.2%	0	0.0%	0	0.0%
2021	100%-120%	8	3.3%	4,328	2.1%	0	0.0%	0	0.0%	235	96.7%	204,447	97.5%	0	0.0%	828	0.4%
2021	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	407	100.0%	326,890	100.0%	0	0.0%	0	0.0%
2021	Total	33	3.4%	26,875	3.1%	35	3.7%	53,671	6.1%	890	92.9%	794,999	90.7%	0	0.0%	842	0.1%
2022	<60%	7	14.0%	12,029	17.5%	15	30.0%	27,793	40.5%	28	56.0%	28,840	42.0%	0	0.0%	0	0.0%
2022	60%-80%	6	5.6%	6,275	6.0%	22	20.6%	20,490	19.5%	79	73.8%	78,311	74.5%	0	0.0%	14	0.0%
2022	80%-100%	9	5.1%	4,243	2.6%	5	2.8%	5,388	3.2%	164	92.1%	156,421	94.2%	0	0.0%	0	0.0%
2022	100%-120%	9	4.3%	4,328	2.1%	0	0.0%	0	0.0%	196	94.7%	204,447	97.5%	2	1.0%	828	0.4%
2022	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	361	100.0%	326,890	100.0%	0	0.0%	0	0.0%
2022	Total	31	3.4%	26,875	3.1%	42	4.7%	53,671	6.1%	828	91.7%	794,999	90.7%	2	0.2%	842	0.1%
Total	<60%	50	12.8%	12,029	17.5%	139	35.6%	27,793	40.5%	201	51.5%	28,840	42.0%	0	0.0%	0	0.0%
Total	60%-80%	39	5.7%	6,275	6.0%	93	13.5%	20,490	19.5%	557	80.8%	78,311	74.5%	0	0.0%	14	0.0%
Total	80%-100%	38	3.4%	4,243	2.6%	17	1.5%	5,388	3.2%	1,060	95.1%	156,421	94.2%	0	0.0%	0	0.0%
Total	100%-120%	32	2.1%	4,328	2.1%	1	0.1%	0	0.0%	1,487	97.3%	204,447	97.5%	8	0.5%	828	0.4%
Total	>120%	18	0.7%	0	0.0%	0	0.0%	0	0.0%	2,569	99.3%	326,890	100.0%	0	0.0%	0	0.0%
Total	Total	177	2.8%	26,875	3.1%	250	4.0%	53,671	6.1%	5,874	93.1%	794,999	90.7%	8	0.1%	842	0.1%

## Societal Benefits

Ratepayers in Connecticut enjoy the societal benefits of the Smart-E Loan. Over the course of its existence, the program has supported the creation of 1,458 job years, avoided the lifetime emission of 378,762 tons of carbon dioxide, 344,253 pounds of nitrous oxide, 288,142 pounds of sulfur oxide, and 31,010 pounds of particulate matter as illustrated by Table 141 and Table 143.

Since Inception, Smart-E has generated \$7.2 million in tax revenues for the State of Connecticut as shown in Table 142. The lifetime economic value of the public health impacts of the Smart-E program is estimated to be between \$12.6 and \$28.6 million as seen in Table 144.

TABLE 141. SMART-E LOAN JOB YEARS SUPPORTED BY FY CLOSED

Fiscal Year	Direct Jobs	Indirect and Induced Jobs	Total Jobs
2012	0	0	0
2013	0	1	1
2014	18	28	46
2015	56	89	145
2016	45	72	117
2017	49	66	115
2018	148	193	342
2019	58	75	132
2020	59	76	135
2021	90	117	206
2022	95	124	219
Total	618	840	1,458

#### TABLE 142. SMART-E LOAN TAX REVENUES GENERATED BY FY CLOSED

Fiscal Year	Individual Income Tax Revenue Generated	Corporate Tax Revenue Generated	Sales Tax Revenue Generated	Total Tax Revenue Generated
2012	\$0	\$0	\$0	\$0
2013	\$2,242	\$518	\$258	\$3,018
2014	\$106,455	\$31,710	\$31,445	\$169,610
2015	\$248,715	\$63,998	\$44,120	\$356,833
2016	\$224,345	\$66,923	\$50,103	\$341,371
2017	\$248,183	\$147,327	\$156,374	\$551,883
2018	\$770,644	\$475,646	\$543,352	\$1,789,642
2019	\$309,062	\$216,139	\$260,123	\$785,324
2020	\$310,609	\$214,533	\$240,973	\$766,115
2021	\$457,614	\$331,590	\$381,804	\$1,171,008
2022	\$479,666	\$369,631	\$439,414	\$1,288,711
Total	\$3,157,536	\$1,918,014	\$2,147,965	\$7,223,516

	CO2 Emissions Avoided (tons)		NOx Emissions Avoided (pounds)		SOx Emissions Avoided (pounds)		PM 2.5 (pounds)	
Fiscal Year	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime
2012	0	0	0	0	0	0	0	0
2013	13	307	12	292	10	252	1	26
2014	422	9,604	401	9,195	362	8,319	35	795
2015	1,276	30,671	1,368	33,027	1,305	31,508	107	2,585
2016	1,060	25,490	1,096	26,432	922	22,227	88	2,130
2017	1,902	44,434	1,584	37,173	1,075	25,239	155	3,638
2018	5,715	130,925	4,991	115,006	4,035	93,144	467	10,730
2019	1,841	40,658	1,650	36,630	1,441	31,961	149	3,307
2020	1,531	33,955	1,381	30,801	1,204	26,816	124	2,768
2021	1,821	39,705	1,622	35,544	1,417	31,019	146	3,204
2022	1,087	23,013	950	20,151	832	17,657	86	1,827
Total	16,667	378,762	15,056	344,253	12,603	288,142	1,360	31,010

#### TABLE 143. SMART-E LOAN AVOIDED EMISSIONS BY FY CLOSED

#### TABLE 144. SMART-E LOAN PUBLIC HEALTH IMPACT BY FY CLOSED

Fiscal	An	nual	Life	time
Year	Low	High	Low	High
2012	\$0	\$0	\$0	\$0
2013	\$436	\$985	\$10,572	\$23,873
2014	\$14,071	\$31,789	\$321,205	\$725,591
2015	\$44,275	\$99,992	\$1,056,609	\$2,386,200
2016	\$36,675	\$82,831	\$873,435	\$1,972,587
2017	\$68,740	\$155,291	\$1,584,369	\$3,579,112
2018	\$201,774	\$455,868	\$4,576,126	\$10,338,282
2019	\$55,638	\$125,880	\$1,213,036	\$2,744,576
2020	\$43,400	\$98,276	\$948,700	\$2,148,423
2021	\$55,736	\$126,186	\$1,182,485	\$2,677,344
2022	\$45,060	\$101,987	\$910,021	\$2,059,777
Total	\$565,806	\$1,279,085	\$12,676,558	\$28,655,765

## Financial Performance

As of 6/30/22, there have been 137 defaults, 120 of which have been charged off by the lenders, with original principal balances totaling \$1,920,693 or 1.98% of the portfolio, and 126 delinquencies with original principal balances totaling \$1,794,303 or 1.85% of the portfolio. Based on the total principal outstanding, as of 6/30/22, there were charged off defaults of \$1,340,560 or 2.79% and delinquencies of \$1,230,690 or 2.56%. To date the secondary loan loss reserve has been used to reimburse two participating lenders for nine defaulted loans totaling \$73,542 or 0.08% of the portfolio or 0.15% of the outstanding principal.

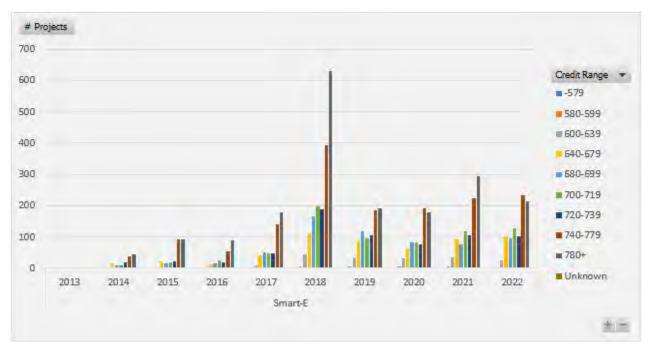
The household customers that accessed the Smart-E Loan since its launch in 2013 had varying credit scores – see Table 145.

#### CONNECTICUT GREEN BANK 6. PROGRAMS – SMART-E LOAN

Fiscal Year	-579	580-599	600-639	640-679	680-699	700-719	720-739	740-779	780+	Unknown	Grand Total
2012											
2013					1			1	1		3
2014				15	9	11	18	38	46		137
2015			1	24	15	19	22	94	94		269
2016			3	13	15	27	19	55	89		221
2017		4	10	41	51	49	49	140	179		523
2018		5	46	113	168	199	190	395	631		1,747
2019		6	34	90	120	95	105	186	192		828
2020		8	31	64	84	84	77	192	179	2	721
2021		8	36	94	77	118	105	224	296		958
2022	1	3	27	102	96	129	103	235	213		909
Total	1	34	188	556	636	731	688	1,560	1,920	2	6,316
	0%	1%	3%	9%	10%	12%	11%	25%	30%	0%	100%

#### TABLE 145. CREDIT SCORE RANGES OF HOUSEHOLD CUSTOMERS USING THE SMART-E LOAN BY FY CLOSED

#### FIGURE 12. CREDIT SCORE RANGES OF HOUSEHOLD CUSTOMERS USING THE SMART-E LOAN BY FY CLOSED



Of the Smart-E Loans approved and closed with household customers, Table 146 presents the lenders offering the financing products in this program with accompanying data.

#### TABLE 146. SMART-E LOAN LENDERS

Lender	# of Loans	Total Amount Financed	% of Loans	Min Loan Amount	Max Loan Amount	Average Loan Amount	Average Interest Rate	Average Term (months)	Decline Rate
Capital For Change	3,278	\$46,423,515	51.9%	\$954	\$45,000	\$14,162	3.70	97	28%
CorePlus Federal Credit Union	501	\$6,920,516	7.9%	\$1,993	\$45,107	\$13,813	4.16	82	11%
Eastern Connecticut Savings Bank	407	\$9,069,158	6.4%	\$1,800	\$50,000	\$22,283	3.42	106	34%
First National Bank of Suffield	71	\$1,341,987	1.1%	\$3,778	\$45,000	\$18,901	2.48	109	7%
Ion Bank	174	\$2,140,056	2.8%	\$2,720	\$25,000	\$12,299	4.04	92	29%
Liberty Bank	23	\$307,434	0.4%	\$4,550	\$25,000	\$13,367	5.10	85	26%
Mutual Security Credit Union	580	\$11,286,114	9.2%	\$0	\$45,000	\$19,459	2.95	102	17%
Nutmeg State Financial Credit Union	1,037	\$16,215,642	16.4%	\$1,802	\$40,000	\$15,637	3.23	94	31%
Patriot Bank	77	\$1,106,890	1.2%	\$5,000	\$25,000	\$14,375	3.52	88	29%
Quinnipiac Bank & Trust	7	\$84,056	0.1%	\$8,550	\$16,556	\$12,008	4.85	98	20%
Thomaston Savings Bank	66	\$791,065	1.0%	\$2,925	\$25,000	\$11,986	3.93	92	19%
Union Savings Bank	78	\$1,152,501	1.2%	\$4,100	\$25,000	\$14,776	3.69	94	39%
Workers Federal Credit Union	17	\$319,459	0.3%	\$7,000	\$40,000	\$18,792	3.08	88	0%
Grand Total	6,316	\$97,158,392	100.0%	\$0	\$50,000	\$15,383	3.57	96	27%

## Marketing

To accelerate the deployment of natural gas conversions in the state, the Smart-E program was launched in 2014 with an Energize Norwich campaign in partnership with Norwich Public Utilities and 2 local lenders. Building on that success, and to accelerate the deployment of residential solar PV through the RSIP and the uptake of the Smart-E Loan financing product, the Connecticut Green Bank implemented "Solarize Connecticut" through the end of 2015. Green Bank Solarize Connecticut programs were town based and designed to use a combination of group purchasing, time-limited offers, and grassroots outreach. The Green Bank deployed ARRA dollars into interest rate buydown programs to support market transformation efforts for key technologies that support the state's climate change mitigation goals. A 0.99% promotion in FY18 resulted in significant volume for measures such as heat pumps and solar + energy efficiency bundles. The Green Bank's own digital marketing and earned media initiatives constitute a key driver of volume in FY20 along with ongoing, in person and webinar trainings and support, for contractors. In FY2021, special offers were introduced to encourage clean energy deployment and support the broad network of participating contractors whose businesses were impacted by the pandemic.

In FY22, the Green Bank ran a digital marketing campaign from November through June to support Home Solutions and Smart-E. This campaign included display advertising, Facebook ads (specific to Smart-E

improvement measures), and search engine marketing (SEM). In total, these ads received more than 9 million impressions across their respective platforms, helping increase awareness of the program.

Additionally, in late FY22, the Green Bank team began outreach to Smart-E contractors as part of a broader, organization-wide effort to increase contractor participation. This engagement is intended to foster stronger relationships and improve communication to the contractor base, which is a key channel for this program.

#### Channel Installed Capacity (MW) **# Projects Total Investment** EV \$9,719 0.0 3 6 \$82.570 0.0 Health and Safety 654 \$9,962,275 Home Performance 0.0 HVAC 4,519 \$67,550,273 0.0 Solar 1,116 \$38,454,985 10.7 272,397 Unknown 18 0 **Grand Total** 6,316 \$116,332,219 10.7

#### TABLE 147. SMART-E LOAN PROJECT CHANNELS

#### TABLE 148. SMART-E LOAN MEASURES

# of Measures	# Projects
Unknown	17
1	3,861
2	1,671
3	510
4	142
5	72
6	27
7	10
8	3
9	2
10	1
Total	6,316

In FY 2018, building on the success of the traditional Smart-E Loan program, the Green Bank gained experience in the automotive lending market by initiating a pilot program to extend the Smart-E Loan brand to cover new and used electric vehicles. Working with three regional credit union lenders, the Green Bank used an interest rate buydown to 0.99% and then 1.99% to save customers an average of \$900 on used EVs and \$2000 on new EVs. This allowed the Green Bank to test the effectiveness of a vehicle financing offer with an IRB and inform the design of future scalable programs, with an aim of also keeping more pre-owned EVs in operation in the state. The pilot concluded with 121 loans. Following the conclusion of the pilot, one Smart-E lender created an EV-specific auto loan.<sup>192</sup>

In FY20, in response to requests from contractors and utility partners to address barriers to completing home energy assessments that lead to deeper energy efficiency projects, health and safety measures (i.e., asbestos and mold remediation) were reclassified as standalone Smart-E measures that can be

<sup>&</sup>lt;sup>192</sup> For reference: <u>https://www.mscu.net/borrow/green-loans</u>

financed in full, up to \$25,000. Health and safety measures had previously been limited to 25% of the total loan amount.

# Case 5 – Low Income Solar Lease and Energy-Efficiency Energy Savings Agreement (ESA)

## Description

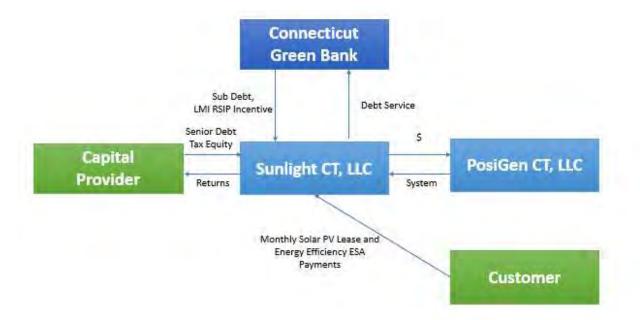
Through the solar developer PosiGen, a respondent to the Connecticut Green Bank's 2015 RFP soliciting solar financing solutions to address underserved markets, the Green Bank supports solar and energy efficiency deployment targeted at the state's low- to moderate-income (LMI) population. In Connecticut, PosiGen develops and originates these solar projects as project sponsor, utilizing tax equity from multiple investors, senior debt capital from private lenders, and subordinated debt from the Green Bank. Initially the Green Bank supplied a debt advance of \$5,000,000 (followed by another \$3.5 million), which was subordinated to an additional \$8,500,000 advanced by private lenders Enhanced Capital and Stonehenge Capital to leverage over \$46 million in value for solar projects targeting LMI homeowners. The RSIP program's tiered LMI performance-based incentive (PBI) provides PosiGen a higher incentive for customers demonstrating these income requirements. In FY2019, The Green Bank partnered with Inclusive Prosperity Capital to help manage the Green Bank's investment and engagement with PosiGen.

To continue to expand the program, in FY'22 the Green Bank and Forbright Bank closed on a \$140 million credit facility designed to allow PosiGen to continue to provide affordable solar system and energy efficiency leases to residential customers nationally, including low-to-moderate income homeowners in Connecticut. The Green Bank allocated up to \$20 million for its own funding, 40% of which was participated out to other lenders.

Through the partnership with PosiGen, the Connecticut Green Bank lowers the financial barriers to Connecticut LMI residential customers seeking to install solar PV with no up-front investment and energy efficiency measures. PosiGen's model also includes an alternative underwriting approach that does not rely on credit scores and a community-based marketing approach – two key ingredients for targeting this underserved market segment. Capital provided to PosiGen to be able to offer consumers a solar PV lease and energy efficiency upgrades is repaid to the Connecticut Green Bank, the tax equity investor, and the lenders through consumer lease repayments. This contrasts with traditional energy program subsidies targeted to LMI homeowners, which are typically in the form of grants only.

The financial structure of the Low-Income Solar Lease product includes origination, servicing, and financing features<sup>193</sup> in combination with the support of the Connecticut Green Bank.

<sup>&</sup>lt;sup>193</sup> Origination, servicing, and financing managed by PosiGen.



#### FIGURE 13. LEGAL STRUCTURE AND FLOWS OF CAPITAL FOR THE LOW-INCOME SOLAR LEASE

Connecticut represented the first expansion for PosiGen outside of its initial market in Louisiana, where starting in 2011, it paired solar leasing and energy efficiency services to maximize savings for LMI customers. Given the strategic emphasis the Green Bank has placed on driving investment for lower income homeowners, the organization developed a flexible funding structure to rapidly bring PosiGen to market. The concept started with the Green Bank providing "anchor capital" for PosiGen in the form of low-cost debt, together with PosiGen's own resources and tax equity from U.S. Bank (U.S. Bank was already an investor in the Connecticut market through the Green Bank's CT Solar Lease). Documentation was structured to facilitate funding by a senior lender, providing for the subordination of the Green Bank's loans once this senior lender could be secured. With initial capital requirements underwritten by the Green Bank, PosiGen had the financial backing and capital flexibility it needed to confidently secure its base of operation in Bridgeport, hire management and local staff, pursue local partnerships with existing energy efficiency and solar PV contractors, and resolve supply chain issues. By using its balance sheet as an initial source of low-cost debt capital, the Green Bank made it possible for a developer that had proven its business model in another market to bring its innovative approach to Connecticut to build investment in solar and energy efficiency for homeowners of more modest means. The investment had the intended impact: PosiGen could establish operations and get a market started. and its rapid success in Connecticut enabled the Green Bank and PosiGen to secure senior lenders and new sources of tax equity to enable operations to expand to several cities throughout Connecticut.

## **Key Performance Indicators**

The Key Performance Indicators for the Low-Income Solar Lease's closed projects are reflected in Table 149 through Table 151. These illustrate the volume of projects by year, investment, generation capacity installed, and the amount of energy saved and/or produced.

Fiscal				#	Total	Green Bank	Private	Leverage
Year	EE	RE	<b>RE/EE</b> <sup>195</sup>	Projects	Investment	Investment <sup>196</sup>	Investment	Ratio
2012	0	0	0	0	\$0	\$0	\$0	0
2013	0	0	0	0	\$0	\$0	\$0	0
2014	0	0	0	0	\$0	\$0	\$0	0
2015	0	4	0	4	\$109,380	\$20,000	\$89,380	5.5
2016	0	174	159	333	\$9,572,692	\$1,665,000	\$7,907,692	5.7
2017	0	244	417	661	\$18,121,147	\$3,305,000	\$14,816,147	5.5
2018	0	269	373	642	\$17,905,647	\$3,210,000	\$14,695,647	5.6
2019	0	202	645	847	\$24,876,234	\$4,235,000	\$20,641,234	5.9
2020	0	52	707	759	\$20,076,595	\$3,795,000	\$16,281,595	5.3
2021	0	98	872	970	\$28,099,263	\$4,850,000	\$23,249,263	5.8
2022	0	19	311	330	\$9,379,672	\$1,650,000	\$7,729,672	5.7
Total	0	1,062	3,484	4,546	\$128,140,629	\$22,730,000	\$105,410,629	5.6

TABLE 149. LOW INCOME SOLAR LEASE PROJECT TYPES AND INVESTMENT BY FY CLOSED<sup>194</sup>

#### TABLE 150. LOW INCOME SOLAR LEASE PROJECT CAPACITY, GENERATION AND SAVINGS BY FY CLOSED

Fiscal Year	Installed Capacity (kW)	Expected Annual Generation (kWh)	Expected Lifetime Savings or Generation (MWh)	Annual Saved / Produced (MMBtu) <sup>197</sup>	Lifetime Saved / Produced (MMBtu)	Annual Cost Savings	Lifetime Cost Savings
2012	0.0	0	0	0	0	\$0	\$0
2013	0.0	0	0	0	0	\$0	\$0
2014	0.0	0	0	0	0	\$0	\$0
2015	25.0	44,093	1,102	162	2,720	\$4,795	\$119,880
2016	2,179.3	3,782,369	94,559	13,496	226,440	\$399,200	\$9,980,010
2017	4,199.4	7,363,959	184,099	26,790	449,480	\$792,407	\$19,810,170
2018	4,275.8	7,690,856	192,271	27,092	436,560	\$769,630	\$19,240,740
2019	5,948.5	10,496,672	262,417	35,743	575,960	\$1,015,384	\$25,384,590
2020	4,803.5	8,806,035	220,151	32,030	516,120	\$909,889	\$22,747,230
2021	6,658.0	11,845,242	296,131	40,934	659,600	\$1,162,836	\$29,070,900
2022	2,239.2	4,000,293	100,007	13,926	224,400	\$395,604	\$9,890,100
Total	30,328.7	54,029,519	1,350,738	190,175	3,091,280	\$5,449,745	\$136,243,620

<sup>&</sup>lt;sup>194</sup> Note that this investment is exclusive of Green Bank investments into PosiGen's lease funds and represents just the incentives paid for the systems participating in the lease.

<sup>&</sup>lt;sup>195</sup> All projects that receive an RSIP incentive are required to do an energy audit/assessment.

<sup>&</sup>lt;sup>196</sup> Includes incentives, interest rate buydowns and loan loss reserves.

<sup>&</sup>lt;sup>197</sup> Includes only the MMBtus for the HES audit. MMTBtus for other ECMs are not included.

Fiscal Year	Average Total Investment	Average Amount Financed	Average Installed Capacity (kW)	Average Annual Saved / Produced (MMBtu)	Average Finance Term (months)	Average Lease Price per Month	Average ESA Price per month <sup>198</sup>
2012	\$0	\$0	0.0	0	0	\$0	-
2013	\$0	\$0	0.0	0	0	\$0	-
2014	\$0	\$0	0.0	0	0	\$0	-
2015	\$27,345	\$27,345	6.3	41	240	\$79	\$10
2016	\$28,747	\$28,747	6.5	41	240	\$81	\$10
2017	\$27,415	\$27,415	6.4	41	240	\$80	\$10
2018	\$27,890	\$27,890	6.7	42	240	\$86	\$10
2019	\$29,370	\$29,370	7.0	42	240	\$91	\$0
2020	\$26,451	\$26,451	6.3	42	240	\$83	\$0
2021	\$28,968	\$28,968	6.9	42	240	\$86	\$0
2022	\$28,423	\$28,423	6.8	42	240	\$82	\$0
Average	\$28,188	\$28,188	6.7	42	240	\$85	\$10

#### TABLE 151. LOW INCOME SOLAR LEASE PROJECT AVERAGES BY FY CLOSED

In fiscal year 2019 PosiGen changed their lease structure so that all customers now receive in depth energy efficiency services that were previously part of an optional, \$10 a month energy savings agreement. This change helps ensure PosiGen customers are maximizing the benefits of their PV system to reduce total energy burden.

## **Customer Savings**

Financial savings is an important motivator for many to go solar. It is especially so for the customers in the Solar for All initiative. Savings is calculated as the difference between the customers' lease payment for their solar PV system and the cost of that electricity had it been purchased from the customer's utility is how we estimate customer savings. This directly reduces their energy burden.

Fiscal Year	Annual Savings	Cumulative # of Meters <sup>200</sup>	Generation kWh <sup>201</sup>	KW Installed
2012	\$0	0	0	0
2013	\$0	0	0	0
2014	\$0	0	0	0
2015	(\$35)	4	3,607	28

#### TABLE 152. LOW INCOME SOLAR LEASE ANNUAL SAVINGS<sup>199</sup>

<sup>198</sup> PosiGen's ESA provides energy efficiency measures valued at over \$2000 to lessees.

<sup>199</sup> All data points required to calculate annual savings for each meter may not be available yet as we wait on data ingestion. <sup>200</sup> The changes in Cumulative # of meters are due to more data points flowing into our calculator due to new data ingestion and now we are now using energize date instead of approval date to organize projects by FY, this will make it difficult to compare last year's table to this year's table.

<sup>201</sup> Generation is the production we see in our meters as of today: Any increase to generation is due to data backfilling or due to getting access to previously inaccessible meters; any decrease in generation from last year's report is data that is temporarily missing due to a meter replacement. Annual Savings is a function of generation so there might be an increase or decrease in savings.

Fiscal	Annual Savings	Cumulative #	Generation	KW
Year		of Meters <sup>200</sup>	kWh <sup>201</sup>	Installed
2016	\$32,916	178	120,883	1,746
2017	\$83,190	552	1,807,597	4,062
2018	\$304,225	1416	4,738,755	9,811
2019	\$1,043,116	2,198	10,030,632	15,274
2020	\$1,128,994	2,777	14,494,192	18,961
2021	\$1,440,658	3,282	18,168,029	22,469
2022	\$1,581,062	3,583	20,665,962	24,664
Total	\$5,614,126	3,583	70,029,657	24,664

## **Vulnerable Communities Penetration**

The Low-Income Solar Lease has been directly targeted to reach those in vulnerable communities. The activity of the product towards this goal is displayed in the following table.

		# Proj	ect Units				MW			Total Invo	estment	
Fiscal Year	Total	Not Vulnerable	Vulnerable	% Vulnerable	Total	Not Vulnerable	Vulnerable	% Vulnerable	Total	Not Vulnerable	Vulnerable	% Vulnerable
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2013	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2014	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2015	4	0	4	100%	0.0	0.0	0.0	100%	\$109,380	\$0	\$109,380	100%
2016	333	0	333	100%	2.2	0.0	2.2	100%	\$9,572,692	\$0	\$9,572,692	100%
2017	661	0	661	100%	4.2	0.0	4.2	100%	\$18,121,147	\$0	\$18,121,147	100%
2018	642	0	642	100%	4.3	0.0	4.3	100%	\$17,905,647	\$0	\$17,905,647	100%
2019	847	0	847	100%	5.9	0.0	5.9	100%	\$24,876,234	\$0	\$24,876,234	100%
2020	759	0	759	100%	4.8	0.0	4.8	100%	\$20,076,595	\$0	\$20,076,595	100%
2021	970	1	969	100%	6.7	0.0	6.7	100%	\$28,099,263	\$27,740	\$28,071,523	100%
2022	330	0	330	100%	2.2	0.0	2.2	100%	\$9,379,672	\$0	\$9,379,672	100%
Total	4,546	1	4,545	100%	30.3	0.0	30.3	100%	\$128,140,629	\$27,740	\$128,112,889	100%

TABLE 153. LOW INCOME SOLAR LEASE ACTIVITY IN VULNERABLE AND NOT VULNERABLE COMMUNITIES BY FY CLOSED<sup>202</sup>

## Area Median Income Band Penetration

For a breakdown of PosiGen Solar for All volume and investment by census tracts categorized by Area Median Income bands – see Table 154. As an income-targeted program, this table illustrates the degree to which the goal of serving consumers in lower income communities is being met.

TABLE 154. LOW INCOME SOLAR LEASE ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS BY FY CLOSED<sup>203</sup>

<sup>&</sup>lt;sup>202</sup> Excludes projects in unknown communities.

<sup>&</sup>lt;sup>203</sup> Excludes projects in unknown bands.

Fiscal Year	MSA AMI Band	# Project Units	% Project Distributio n	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distributio n	Total Owner Occupied 1-4 Unit Households	% Owner Occupied 1-4 Unit Household Distribution	Project Units / 1,000 Owner Occupied 1-4 Unit Households	Total Investment / Owner Occupied 1-4 Unit Household	Watts / Owner Occupied 1-4 Unit Household
2012	<60%	0	0%	0.0	0%	\$0	0%	62,689	7%	0.0	\$0.00	0.0
2012	60%-80%	0	0%	0.0	0%	\$0	0%	102,178	12%	0.0	\$0.00	0.0
2012	80%-100%	0	0%	0.0	0%	\$0	0%	150,685	17%	0.0	\$0.00	0.0
2012	100%-120%	0	0%	0.0	0%	\$0	0%	216,484	25%	0.0	\$0.00	0.0
2012	>120%	0	0%	0.0	0%	\$0	0%	349,212	40%	0.0	\$0.00	0.0
2012	Total	0	0%	0.0	0%	\$0	0%	881,248	100%	0.0	\$0.00	0.0
2013	<60%	0	0%	0.0	0%	\$0	0%	61,004	7%	0.0	\$0.00	0.0
2013	60%-80%	0	0%	0.0	0%	\$0	0%	109,967	13%	0.0	\$0.00	0.0
2013	80%-100%	0	0%	0.0	0%	\$0	0%	149,676	17%	0.0	\$0.00	0.0
2013	100%-120%	0	0%	0.0	0%	\$0	0%	202,827	23%	0.0	\$0.00	0.0
2013	>120%	0	0%	0.0	0%	\$0	0%	350,708	40%	0.0	\$0.00	0.0
2013	Total	0	0%	0.0	0%	\$0	0%	874,182	100%	0.0	\$0.00	0.0
2014	<60%	0	0%	0.0	0%	\$0	0%	59,294	7%	0.0	\$0.00	0.0
2014	60%-80%	0	0%	0.0	0%	\$0	0%	104,528	12%	0.0	\$0.00	0.0
2014	80%-100%	0	0%	0.0	0%	\$0	0%	148,846	17%	0.0	\$0.00	0.0
2014	100%-120%	0	0%	0.0	0%	\$0	0%	208,912	24%	0.0	\$0.00	0.0
2014	>120%	0	0%	0.0	0%	\$0	0%	347,779	40%	0.0	\$0.00	0.0
2014	Total	0	0%	0.0	0%	\$0	0%	869,359	100%	0.0	\$0.00	0.0
2015	<60%	3	75%	0.0	76%	\$82,380	75%	66,632	8%	0.0	\$1.24	0.3
2015	60%-80%	0	0%	0.0	0%	\$0	0%	96,059	11%	0.0	\$0.00	0.0
2015	80%-100%	0	0%	0.0	0%	\$0	0%	165,205	19%	0.0	\$0.00	0.0
2015	100%-120%	0	0%	0.0	0%	\$0	0%	183,629	21%	0.0	\$0.00	0.0
2015	>120%	1	25%	0.0	24%	\$27,000	25%	352,053	41%	0.0	\$0.08	0.0
2015	Total	4	100%	0.0	100%	\$109,380	100%	863,578	100%	0.0	\$0.13	0.0
2016	<60%	126	38%	0.8	37%	\$3,538,390	37%	63,056	7%	2.0	\$56.12	12.7
2016	60%-80%	74	22%	0.5	22%	\$2,152,697	22%	99,073	12%	0.7	\$21.73	4.9
2016	80%-100%	55	17%	0.4	17%	\$1,635,976	17%	165,012	19%	0.3	\$9.91	2.3
2016	100%-120%	37	11%	0.2	11%	\$1,034,383	11%	187,129	22%	0.2	\$5.53	1.3

Fiscal Year	MSA AMI Band	# Project Units	% Project Distributio n	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distributio n	Total Owner Occupied 1-4 Unit Households	% Owner Occupied 1-4 Unit Household Distribution	Project Units / 1,000 Owner Occupied 1-4 Unit Households	Total Investment / Owner Occupied 1-4 Unit Household	Watts / Owner Occupied 1-4 Unit Household
2016	>120%	41	12%	0.3	13%	\$1,211,246	13%	344,577	40%	0.1	\$3.52	0.8
2016	Total	333	100%	2.2	100%	\$9,572,692	100%	858,847	100%	0.4	\$11.15	2.5
2017	<60%	249	38%	1.5	35%	\$6,522,678	36%	64,755	7%	3.8	\$100.73	22.9
2017	60%-80%	144	22%	0.9	21%	\$3,883,348	21%	97,455	11%	1.5	\$39.85	9.2
2017	80%-100%	127	19%	0.8	20%	\$3,550,114	20%	155,414	18%	0.8	\$22.84	5.3
2017	100%-120%	61	9%	0.4	10%	\$1,824,184	10%	209,484	24%	0.3	\$8.71	2.0
2017	>120%	80	12%	0.6	13%	\$2,340,824	13%	339,362	39%	0.2	\$6.90	1.7
2017	Total	661	100%	4.2	100%	\$18,121,147	100%	866,470	100%	0.8	\$20.91	4.8
2018	<60%	217	34%	1.4	32%	\$5,834,990	33%	62,247	7%	3.5	\$93.74	22.2
2018	60%-80%	154	24%	1.0	23%	\$4,162,008	23%	109,142	13%	1.4	\$38.13	9.1
2018	80%-100%	122	19%	0.8	19%	\$3,445,604	19%	145,988	17%	0.8	\$23.60	5.7
2018	100%-120%	75	12%	0.5	13%	\$2,217,953	12%	204,880	24%	0.4	\$10.83	2.6
2018	>120%	74	12%	0.5	13%	\$2,245,093	13%	343,989	40%	0.2	\$6.53	1.6
2018	Total	642	100%	4.3	100%	\$17,905,647	100%	866,246	100%	0.7	\$20.67	4.9
2019	<60%	240	28%	1.6	26%	\$6,535,550	26%	62,247	7%	3.9	\$104.99	25.1
2019	60%-80%	211	25%	1.4	24%	\$5,946,613	24%	109,142	13%	1.9	\$54.49	13.1
2019	80%-100%	138	16%	1.0	16%	\$4,063,501	16%	145,988	17%	0.9	\$27.83	6.7
2019	100%-120%	137	16%	1.0	17%	\$4,254,558	17%	204,880	24%	0.7	\$20.77	4.9
2019	>120%	121	14%	1.0	16%	\$4,076,011	16%	343,989	40%	0.4	\$11.85	2.8
2019	Total	847	100%	5.9	100%	\$24,876,234	100%	865,756	100%	1.0	\$28.73	6.9
2020	<60%	203	27%	1.1	24%	\$4,745,166	24%	68,662	8%	3.0	\$69.11	16.6
2020	60%-80%	160	21%	1.0	20%	\$4,121,099	21%	105,090	12%	1.5	\$39.21	9.3
2020	80%-100%	156	21%	1.0	21%	\$4,174,006	21%	166,052	19%	0.9	\$25.14	6.0
2020	100%-120%	121	16%	0.8	17%	\$3,445,163	17%	209,603	24%	0.6	\$16.44	3.9
2020	>120%	119	16%	0.9	18%	\$3,591,161	18%	326,890	37%	0.4	\$10.99	2.6
2020	Total	759	100%	4.8	100%	\$20,076,595	100%	876,387	100%	0.9	\$22.91	5.5
2021	<60%	231	24%	1.4	21%	\$5,910,787	21%	68,662	8%	3.4	\$86.09	20.3
2021	60%-80%	171	18%	1.1	16%	\$4,630,452	16%	105,090	12%	1.6	\$44.06	10.3

Fiscal Year	MSA AMI Band	# Project Units	% Project Distributio n	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distributio n	Total Owner Occupied 1-4 Unit Households	% Owner Occupied 1-4 Unit Household Distribution	Project Units / 1,000 Owner Occupied 1-4 Unit Households	Total Investment / Owner Occupied 1-4 Unit Household	Watts / Owner Occupied 1-4 Unit Household
2021	80%-100%	183	19%	1.3	20%	\$5,488,439	20%	166,052	19%	1.1	\$33.05	7.8
2021	100%-120%	195	20%	1.4	21%	\$5,827,750	21%	209,603	24%	0.9	\$27.80	6.6
2021	>120%	189	20%	1.5	22%	\$6,214,095	22%	326,890	37%	0.6	\$19.01	4.5
2021	Total	969	100%	6.7	100%	\$28,071,523	100%	876,387	100%	1.1	\$32.03	7.6
2022	<60%	80	24%	0.5	22%	\$2,102,008	22%	68,662	8%	1.2	\$30.61	7.3
2022	60%-80%	52	16%	0.3	14%	\$1,326,718	14%	105,090	12%	0.5	\$12.62	3.0
2022	80%-100%	60	18%	0.4	18%	\$1,654,514	18%	166,052	19%	0.4	\$9.96	2.4
2022	100%-120%	75	23%	0.6	25%	\$2,336,901	25%	209,603	24%	0.4	\$11.15	2.7
2022	>120%	63	19%	0.5	21%	\$1,959,532	21%	326,890	37%	0.2	\$5.99	1.4
2022	Total	330	100%	2.2	100%	\$9,379,672	100%	876,387	100%	0.4	\$10.70	2.6
Total	<60%	1,349	30%	8.3	27%	\$35,271,948	28%	68,662	8%	19.6	\$513.70	120.7
Total	60%-80%	966	21%	6.2	20%	\$26,222,934	20%	105,090	12%	9.2	\$249.53	58.8
Total	80%-100%	841	19%	5.7	19%	\$24,012,154	19%	166,052	19%	5.1	\$144.61	34.3
Total	100%-120%	701	15%	5.0	16%	\$20,940,891	16%	209,603	24%	3.3	\$99.91	23.8
Total	>120%	688	15%	5.2	17%	\$21,664,962	17%	326,890	37%	2.1	\$66.28	15.8
Total	Total	4,545	100%	30.3	100%	\$128,112,889	100%	876,387	100%	5.2	\$146.18	34.6

TABLE 155. LOW INCOME SOLAR LEASE ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS ABOVE OR BELOW 100% BY FY CLOSED<sup>204</sup>

		# Pr	roject Units				MW			Total Inves	stment	
Fiscal Year	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2013	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2014	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%

<sup>204</sup> Excludes projects in unknown bands.

		# Pı	roject Units				MW			Total Inves	stment	
Fiscal	Tatal	Over 100%	100% or Below	% at 100% or	Tatal	Over 100%	100% or Below	% at 100% or	Tadal	Over 100%	100% or	% at 100% or
Year	Total	AMI	AMI	Below	Total	AMI	AMI	Below	Total	AMI	Below AMI	Below
2015	4	1	3	75%	0.0	0.0	0.0	76%	\$109,380	\$27,000	\$82,380	75%
2016	333	78	255	77%	2.2	0.5	1.7	76%	\$9,572,692	\$2,245,629	\$7,327,062	77%
2017	661	141	520	79%	4.2	1.0	3.2	76%	\$18,121,147	\$4,165,008	\$13,956,140	77%
2018	642	149	493	77%	4.3	1.1	3.2	75%	\$17,905,647	\$4,463,045	\$13,442,602	75%
2019	847	258	589	70%	5.9	2.0	4.0	67%	\$24,876,234	\$8,330,569	\$16,545,665	67%
2020	759	240	519	68%	4.8	1.7	3.1	65%	\$20,076,595	\$7,036,325	\$13,040,270	65%
2021	969	384	585	60%	6.7	2.9	3.8	57%	\$28,071,523	\$12,041,845	\$16,029,678	57%
2022	330	138	192	58%	2.2	1.0	1.2	54%	\$9,379,672	\$4,296,433	\$5,083,239	54%
Total	4,545	1,389	3,156	69%	30.3	10.2	20.2	67%	\$128,112,889	\$42,605,854	\$85,507,035	67%

#### TABLE 156. LOW INCOME SOLAR LEASE ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS ABOVE OR BELOW 80% BY FY CLOSED<sup>205</sup>

		# Pi	roject Units				MW			Total Inve	stment	
Fiscal Year	Total	Over 80% AMI	80% or Below AMI	% at 80% or Below	Total	Over 80% AMI	80% or Below AMI	% at 80% or Below	Total	Over 80% AMI	80% or Below AMI	% at 80% or Below
2012	0	0	0	0%	0.0	0	0	0%	\$0	\$0	\$0	0%
2013	0	0	0	0%	0.0	0	0	0%	\$0	\$0	\$0	0%
2014	0	0	0	0%	0.0	0	0	0%	\$0	\$0	\$0	0%
2015	4	0	4	100%	0.0	0	0	100%	\$109,380	\$0	\$109,380	100%
2016	333	0	333	100%	2.2	0	2	100%	\$9,572,692	\$0	\$9,572,692	100%
2017	661	0	661	100%	4.2	0	4	100%	\$18,121,147	\$0	\$18,121,147	100%
2018	642	0	642	100%	4.3	0	4	100%	\$17,905,647	\$0	\$17,905,647	100%
2019	847	0	847	100%	5.9	0	6	100%	\$24,876,234	\$0	\$24,876,234	100%
2020	759	0	759	100%	4.8	0	5	100%	\$20,076,595	\$0	\$20,076,595	100%
2021	969	0	969	100%	6.7	0	7	100%	\$28,071,523	\$0	\$28,071,523	100%
2022	330	0	330	100%	2.2	0	2	100%	\$9,379,672	\$0	\$9,379,672	100%
Total	4,545	0	4,545	100%	30.3	0	30	100%	\$128,112,889	\$0	\$128,112,889	100%

<sup>205</sup> Excludes projects in unknown bands.

The Green Bank has made great progress in its penetration of underserved markets and the low-income lease and ESA through PosiGen has been key to reaching these markets.

## **Distressed Community Penetration**

For a breakdown of Low-Income Solar Lease project volume and investment by census tracts categorized by Distressed Communities – see Table 157. As an income-targeted program, this table illustrates the degree to which the goal of serving consumers in lower income communities is being met.

Fiscal Year	Distres sed	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Households	% Total Household Distribution	Project Units / 1,000 Total Households	Total Investment / Total Household	Watts / Total Household
2012	Yes	0	0%	0.0	0%	\$0	0%	447,962	33%	0.0	\$0.00	0.0
2012	No	0	0%	0.0	0%	\$0	0%	912,222	67%	0.0	\$0.00	0.0
2012	Total	0	0%	0.0	0%	\$0	0%	1,360,184	100%	0.0	\$0.00	0.0
2013	Yes	0	0%	0.0	0%	\$0	0%	426,564	31%	0.0	\$0.00	0.0
2013	No	0	0%	0.0	0%	\$0	0%	929,285	69%	0.0	\$0.00	0.0
2013	Total	0	0%	0.0	0%	\$0	0%	1,355,849	100%	0.0	\$0.00	0.0
2014	Yes	0	0%	0.0	0%	\$0	0%	416,415	31%	0.0	\$0.00	0.0
2014	No	0	0%	0.0	0%	\$0	0%	939,791	69%	0.0	\$0.00	0.0
2014	Total	0	0%	0.0	0%	\$0	0%	1,356,206	100%	0.0	\$0.00	0.0
2015	Yes	2	50%	0.0	44%	\$49,500	45%	423,559	31%	0.0	\$0.12	0.0
2015	No	2	50%	0.0	56%	\$59,880	55%	929,024	69%	0.0	\$0.06	0.0
2015	Total	4	100%	0.0	100%	\$109,380	100%	1,352,583	100%	0.0	\$0.08	0.0
2016	Yes	195	59%	1.3	58%	\$5,572,292	58%	438,710	32%	0.4	\$12.70	2.9
2016	No	138	41%	0.9	42%	\$4,000,400	42%	916,003	68%	0.2	\$4.37	1.0
2016	Total	333	100%	2.2	100%	\$9,572,692	100%	1,354,713	100%	0.2	\$7.07	1.6
2017	Yes	406	61%	2.5	60%	\$10,882,517	60%	435,595	32%	0.9	\$24.98	5.8
2017	No	255	39%	1.7	40%	\$7,238,630	40%	926,160	68%	0.3	\$7.82	1.8
2017	Total	661	100%	4.2	100%	\$18,121,147	100%	1,361,755	100%	0.5	\$13.31	3.1
2018	Yes	405	63%	2.7	62%	\$11,140,960	62%	430,098	31%	0.9	\$25.90	6.2

#### TABLE 157. LOW INCOME SOLAR LEASE ACTIVITY IN DISTRESSED COMMUNITIES BY FY CLOSED

Fiscal Year	Distres sed	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Households	% Total Household Distribution	Project Units / 1,000 Total Households	Total Investment / Total Household	Watts / Total Household
2018	No	237	37%	1.6	38%	\$6,764,687	38%	937,276	69%	0.3	\$7.22	1.7
2018	Total	642	100%	4.3	100%	\$17,905,647	100%	1,367,374	100%	0.5	\$13.09	3.1
2019	Yes	473	56%	3.2	54%	\$13,443,547	54%	421,653	31%	1.1	\$31.88	7.6
2019	No	374	44%	2.7	46%	\$11,432,687	46%	949,093	69%	0.4	\$12.05	2.9
2019	Total	847	100%	5.9	100%	\$24,876,234	100%	1,370,746	100%	0.6	\$18.15	4.3
2020	Yes	445	59%	2.7	55%	\$11,075,760	55%	427,553	31%	1.0	\$25.90	6.2
2020	No	314	41%	2.2	45%	\$9,000,835	45%	957,884	69%	0.3	\$9.40	2.2
2020	Total	759	100%	4.8	100%	\$20,076,595	100%	1,385,437	100%	0.5	\$14.49	3.5
2021	Yes	445	46%	2.8	43%	\$12,071,784	43%	375,703	27%	1.2	\$32.13	7.6
2021	No	524	54%	3.8	57%	\$15,999,739	57%	1,009,734	73%	0.5	\$15.85	3.8
2021	Total	969	100%	6.7	100%	\$28,071,523	100%	1,385,437	100%	0.7	\$20.26	4.8
2022	Yes	146	44%	0.9	42%	\$3,921,164	42%	375,703	27%	0.4	\$10.44	2.5
2022	No	184	56%	1.3	58%	\$5,458,508	58%	1,009,734	73%	0.2	\$5.41	1.3
2022	Total	330	100%	2.2	100%	\$9,379,672	100%	1,385,437	100%	0.2	\$6.77	1.6
Total	Yes	2,517	55%	16.1	53%	\$68,157,523	53%	375,703	27%	6.7	\$181.41	42.9
Total	No	2,028	45%	14.2	47%	\$59,955,365	47%	1,009,734	73%	2.0	\$59.38	14.1
Total	Total	4,545	100%	30.3	100%	\$128,112,889	100%	1,385,437	100%	3.3	\$92.47	21.9

#### TABLE 158. LOW INCOME SOLAR LEASE ACTIVITY IN DISTRESSED AND NOT DISTRESSED COMMUNITIES BY FY CLOSED<sup>206</sup>

		# Pro	oject Units			M	W			Total Inve	estment	
Fiscal		Not		%		Not		%		Not		%
Year	Total	Distressed	Distressed	Distressed	Total	Distressed	Distressed	Distressed	Total	Distressed	Distressed	Distressed
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2013	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2014	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%

<sup>&</sup>lt;sup>206</sup> Excludes projects in unknown communities.

		# Pro	oject Units			Μ	W			Total Inve	estment	
Fiscal		Not		%		Not		%		Not		%
Year	Total	Distressed	Distressed	Distressed	Total	Distressed	Distressed	Distressed	Total	Distressed	Distressed	Distressed
2015	4	2	2	50%	0.0	0.0	0.0	44%	\$109,380	\$59,880	\$49,500	45%
2016	333	138	195	59%	2.2	0.9	1.3	58%	\$9,572,692	\$4,000,400	\$5,572,292	58%
2017	661	255	406	61%	4.2	1.7	2.5	60%	\$18,121,147	\$7,238,630	\$10,882,517	60%
2018	642	237	405	63%	4.3	1.6	2.7	62%	\$17,905,647	\$6,764,687	\$11,140,960	62%
2019	847	374	473	56%	5.9	2.7	3.2	54%	\$24,876,234	\$11,432,687	\$13,443,547	54%
2020	759	314	445	59%	4.8	2.2	2.7	55%	\$20,076,595	\$9,000,835	\$11,075,760	55%
2021	969	524	445	46%	6.7	3.8	2.8	43%	\$28,071,523	\$15,999,739	\$12,071,784	43%
2022	330	184	146	44%	2.2	1.3	0.9	42%	\$9,379,672	\$5,458,508	\$3,921,164	42%
Total	4,545	2,028	2,517	55%	30.3	14.2	16.1	53%	\$128,112,889	\$59,955,365	\$68,157,523	53%

## Environmental Justice Poverty Level Penetration

The progress made by the Low-Income Solar Lease in reaching Environmental Justice Communities is displayed in the following table.

TABLE 159. LOW INCOME SOLAR LEASE ACTIVITY IN ENVIRONMENTAL JUSTICE POVERTY AREAS BY FY CLOSED<sup>207</sup>

		# Pr	oject Units				MW			Total Investr	nent	
Fiscal Year	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2013	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2014	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2015	4	4	0	0%	0.0	0.0	0.0	0%	\$109,380	\$109,380	\$0	0%
2016	333	325	8	2%	2.2	2.1	0.1	2%	\$9,572,692	\$9,345,041	\$227,651	2%
2017	661	641	20	3%	4.2	4.1	0.1	3%	\$18,121,147	\$17,612,305	\$508,842	3%
2018	642	613	29	5%	4.3	4.1	0.2	5%	\$17,905,647	\$17,084,363	\$821,285	5%
2019	847	801	46	5%	5.9	5.6	0.3	5%	\$24,876,234	\$23,552,811	\$1,323,423	5%
2020	759	725	34	4%	4.8	4.6	0.2	5%	\$20,076,595	\$19,160,881	\$915,713	5%

<sup>207</sup> Excludes projects in unknown bands.

		# Pr	oject Units		MW				Total Investment				
Fiscal Year	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group	
2021	970	914	56	6%	6.7	6.3	0.4	5%	\$28,099,263	\$26,543,302	\$1,555,961	6%	
2022	330	315	15	5%	2.2	2.1	0.1	4%	\$9,379,672	\$8,964,036	\$415,635	4%	
Total	4,546	4,338	208	5%	30.3	29.0	1.4	5%	\$128,140,629	\$122,372,120	\$5,768,509	5%	

## Ethnicity

The progress made by the low-income solar lease in reaching diverse communities is displayed in the following table.

TABLE 160. LOW INCOME SOLAR LEASE ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS BY ETHNICITY CATEGORY BY FY CLOSED<sup>208</sup>

			Majority	Black			Majority H	lispanic		Majority White				Majority Asian			
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1-4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН
2012	<60%	0	0.0%	13,052	20.8%	0	0.0%	21,021	33.5%	0	0.0%	28,616	45.6%	0	0.0%	0	0.0%
2012	60%-80%	0	0.0%	8,714	8.5%	0	0.0%	7,447	7.3%	0	0.0%	86,017	84.2%	0	0.0%	0	0.0%
2012	80%-100%	0	0.0%	3,490	2.3%	0	0.0%	0	0.0%	0	0.0%	147,195	97.7%	0	0.0%	0	0.0%
2012	100%-120%	0	0.0%	3,488	1.6%	0	0.0%	0	0.0%	0	0.0%	212,996	98.4%	0	0.0%	0	0.0%
2012	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	349,212	100.0	0	0.0%	0	0.0%
2012	Total	0	0.0%	28,744	3.3%	0	0.0%	28,468	3.2%	0	0.0%	824,036	93.5%	0	0.0%	0	0.0%
2013	<60%	0	0.0%	10,766	17.6%	0	0.0%	21,781	35.7%	0	0.0%	28,457	46.6%	0	0.0%	0	0.0%
2013	60%-80%	0	0.0%	10,827	9.8%	0	0.0%	9,574	8.7%	0	0.0%	89,566	81.4%	0	0.0%	0	0.0%
2013	80%-100%	0	0.0%	1,926	1.3%	0	0.0%	0	0.0%	0	0.0%	147,750	98.7%	0	0.0%	0	0.0%
2013	100%-120%	0	0.0%	3,177	1.6%	0	0.0%	0	0.0%	0	0.0%	199,650	98.4%	0	0.0%	0	0.0%
2013	>120%	0	0.0%	1,808	0.5%	0	0.0%	0	0.0%	0	0.0%	348,900	99.5%	0	0.0%	0	0.0%
2013	Total	0	0.0%	28,504	3.3%	0	0.0%	31,355	3.6%	0	0.0%	814,323	93.2%	0	0.0%	0	0.0%

<sup>208</sup> Excludes projects in unknown bands.

			Majority	Black			Majority H	lispanic			Majority	White		Majority Asian			
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1-4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН
2014	<60%	0	0.0%	12,067	20.4%	0	0.0%	17,945	30.3%	0	0.0%	29,282	49.4%	0	0.0%	0	0.0%
2014	60%-80%	0	0.0%	8,576	8.2%	0	0.0%	10,507	10.1%	0	0.0%	85,445	81.7%	0	0.0%	0	0.0%
2014	80%-100%	0	0.0%	1,868	1.3%	0	0.0%	1,491	1.0%	0	0.0%	145,487	97.7%	0	0.0%	0	0.0%
2014	100%-120%	0	0.0%	3,280	1.6%	0	0.0%	0	0.0%	0	0.0%	205,632	98.4%	0	0.0%	0	0.0%
2014	>120%	0	0.0%	3,745	1.1%	0	0.0%	0	0.0%	0	0.0%	344,034	98.9%	0	0.0%	0	0.0%
2014	Total	0	0.0%	29,536	3.4%	0	0.0%	29,943	3.4%	0	0.0%	809,880	93.2%	0	0.0%	0	0.0%
2015	<60%	2	66.7%	12,243	18.4%	0	0.0%	27,292	41.0%	1	33.3%	27,097	40.7%	0	0.0%	0	0.0%
2015	60%-80%	0	0.0%	7,491	7.8%	0	0.0%	7,075	7.4%	0	0.0%	81,493	84.8%	0	0.0%	0	0.0%
2015	80%-100%	0	0.0%	5,767	3.5%	0	0.0%	513	0.3%	0	0.0%	158,372	95.9%	0	0.0%	553	0.3%
2015	100%-120%	0	0.0%	863	0.5%	0	0.0%	0	0.0%	0	0.0%	182,766	99.5%	0	0.0%	0	0.0%
2015	>120%	0	0.0%	1,877	0.5%	0	0.0%	0	0.0%	1	100.0%	350,176	99.5%	0	0.0%	0	0.0%
2015	Total	2	50.0%	28,241	3.3%	0	0.0%	34,880	4.0%	2	50.0%	799,904	92.6%	0	0.0%	553	0.1%
2016	<60%	60	47.6%	11,333	18.0%	40	31.7%	26,620	42.2%	26	20.6%	25,103	39.8%	0	0.0%	0	0.0%
2016	60%-80%	7	9.5%	7,872	7.9%	12	16.2%	8,551	8.6%	55	74.3%	82,650	83.4%	0	0.0%	0	0.0%
2016	80%-100%	6	10.9%	4,736	2.9%	0	0.0%	937	0.6%	49	89.1%	159,339	96.6%	0	0.0%	0	0.0%
2016	100%-120%	1	2.7%	0	0.0%	0	0.0%	0	0.0%	36	97.3%	186,570	99.7%	0	0.0%	559	0.3%
2016	>120%	2	4.9%	3,063	0.9%	0	0.0%	0	0.0%	39	95.1%	341,514	99.1%	0	0.0%	0	0.0%
2016	Total	76	22.8%	27,004	3.1%	52	15.6%	36,108	4.2%	205	61.6%	795,176	92.6%	0	0.0%	559	0.1%
2017	<60%	73	29.3%	11,916	18.4%	129	51.8%	28,817	44.5%	47	18.9%	24,022	37.1%	0	0.0%	0	0.0%
2017	60%-80%	20	13.9%	5,276	5.4%	24	16.7%	12,600	12.9%	100	69.4%	79,579	81.7%	0	0.0%	0	0.0%
2017	80%-100%	8	6.3%	4,323	2.8%	7	5.5%	2,062	1.3%	112	88.2%	149,029	95.9%	0	0.0%	0	0.0%
2017	100%-120%	1	1.6%	1,101	0.5%	0	0.0%	0	0.0%	59	96.7%	207,746	99.2%	1	1.6%	637	0.3%
2017	>120%	5	6.3%	4,014	1.2%	0	0.0%	0	0.0%	75	93.8%	335,348	98.8%	0	0.0%	0	0.0%
2017	Total	107	16.2%	26,630	3.1%	160	24.2%	43,479	5.0%	393	59.5%	795,724	91.8%	1	0.2%	637	0.1%
2018	<60%	98	45.2%	10,135	16.3%	90	41.5%	28,053	45.1%	29	13.4%	24,059	38.7%	0	0.0%	0	0.0%
2018	60%-80%	40	26.0%	7,948	7.3%	33	21.4%	11,560	10.6%	81	52.6%	89,634	82.1%	0	0.0%	0	0.0%
2018	80%-100%	14	11.5%	4,704	3.2%	17	13.9%	3,271	2.2%	91	74.6%	138,013	94.5%	0	0.0%	0	0.0%
2018	100%-120%	6	8.0%	2,274	1.1%	0	0.0%	0	0.0%	69	92.0%	201,977	98.6%	0	0.0%	629	0.3%

			Majority	Black			Majority H	lispanic			Majority	White		Majority Asian			
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1-4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН
2018	>120%	10	13.5%	2,828	0.8%	0	0.0%	0	0.0%	64	86.5%	341,161	99.2%	0	0.0%	0	0.0%
2018	Total	168	26.2%	27,889	3.2%	140	21.8%	42,884	5.0%	334	52.0%	794,844	91.8%	0	0.0%	629	0.1%
2019	<60%	91	37.9%	10,903	17.0%	99	41.3%	29,840	46.5%	50	20.8%	23,497	36.6%	0	0.0%	0	0.0%
2019	60%-80%	49	23.2%	6,102	6.0%	27	12.8%	10,367	10.3%	135	64.0%	84,519	83.7%	0	0.0%	0	0.0%
2019	80%-100%	22	15.9%	5,119	3.3%	10	7.2%	1,488	1.0%	106	76.8%	148,956	95.8%	0	0.0%	0	0.0%
2019	100%-120%	13	9.5%	3,330	1.6%	0	0.0%	627	0.3%	122	89.1%	202,850	97.8%	2	1.5%	648	0.3%
2019	>120%	3	2.5%	2,074	0.6%	0	0.0%	0	0.0%	118	97.5%	335,436	99.4%	0	0.0%	0	0.0%
2019	Total	178	21.0%	27,528	3.2%	136	16.1%	42,322	4.9%	531	62.7%	795,258	91.9%	2	0.2%	648	0.1%
2020	<60%	63	31.0%	12,029	17.5%	96	47.3%	27,793	40.5%	44	21.7%	28,840	42.0%	0	0.0%	0	0.0%
2020	60%-80%	19	11.9%	6,275	6.0%	30	18.8%	20,490	19.5%	111	69.4%	78,311	74.5%	0	0.0%	14	0.0%
2020	80%-100%	18	11.5%	4,243	2.6%	13	8.3%	5,388	3.2%	125	80.1%	156,421	94.2%	0	0.0%	0	0.0%
2020	100%-120%	7	5.8%	4,328	2.1%	1	0.8%	0	0.0%	112	92.6%	204,447	97.5%	1	0.8%	828	0.4%
2020	>120%	1	0.8%	0	0.0%	0	0.0%	0	0.0%	118	99.2%	326,890	100.0	0	0.0%	0	0.0%
2020	Total	108	14.2%	26,875	3.1%	140	18.4%	53,671	6.1%	510	67.2%	794,999	90.7%	1	0.1%	842	0.1%
2021	<60%	71	30.7%	12,029	17.5%	115	49.8%	27,793	40.5%	45	19.5%	28,840	42.0%	0	0.0%	0	0.0%
2021	60%-80%	29	17.0%	6,275	6.0%	43	25.1%	20,490	19.5%	99	57.9%	78,311	74.5%	0	0.0%	14	0.0%
2021	80%-100%	14	7.7%	4,243	2.6%	9	4.9%	5,388	3.2%	160	87.4%	156,421	94.2%	0	0.0%	0	0.0%
2021	100%-120%	11	5.6%	4,328	2.1%	0	0.0%	0	0.0%	184	94.4%	204,447	97.5%	0	0.0%	828	0.4%
2021	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	189	100.0%	326,890	100.0	0	0.0%	0	0.0%
2021	Total	125	12.9%	26,875	3.1%	167	17.2%	53,671	6.1%	677	69.9%	794,999	90.7%	0	0.0%	842	0.1%
2022	<60%	29	36.3%	12,029	17.5%	31	38.8%	27,793	40.5%	20	25.0%	28,840	42.0%	0	0.0%	0	0.0%
2022	60%-80%	5	9.6%	6,275	6.0%	13	25.0%	20,490	19.5%	34	65.4%	78,311	74.5%	0	0.0%	14	0.0%
2022	80%-100%	2	3.3%	4,243	2.6%	3	5.0%	5,388	3.2%	55	91.7%	156,421	94.2%	0	0.0%	0	0.0%
2022	100%-120%	1	1.3%	4,328	2.1%	0	0.0%	0	0.0%	74	98.7%	204,447	97.5%	0	0.0%	828	0.4%
2022	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	63	100.0%	326,890	100.0	0	0.0%	0	0.0%
2022	Total	37	11.2%	26,875	3.1%	47	14.2%	53,671	6.1%	246	74.5%	794,999	90.7%	0	0.0%	842	0.1%
Total	<60%	487	36.1%	12,029	17.5%	600	44.5%	27,793	40.5%	262	19.4%	28,840	42.0%	0	0.0%	0	0.0%
Total	60%-80%	169	17.5%	6,275	6.0%	182	18.8%	20,490	19.5%	615	63.7%	78,311	74.5%	0	0.0%	14	0.0%

		Majority Black				Majority Hispanic				Majority White				Majority Asian			
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1-4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН
Total	80%-100%	84	10.0%	4,243	2.6%	59	7.0%	5,388	3.2%	698	83.0%	156,421	94.2%	0	0.0%	0	0.0%
Total	100%-120%	40	5.7%	4,328	2.1%	1	0.1%	0	0.0%	656	93.6%	204,447	97.5%	4	0.6%	828	0.4%
Total	>120%	21	3.1%	0	0.0%	0	0.0%	0	0.0%	667	96.9%	326,890	100.0	0	0.0%	0	0.0%
Total	Total	801	17.6%	26,875	3.1%	842	18.5%	53,671	6.1%	2,898	63.8%	794,999	90.7%	4	0.1%	842	0.1%

## Societal Benefits

Over the course of its existence, the program has supported the creation of 1,213 job years, avoided the lifetime emission of 745,258 tons of carbon dioxide, 714,549 pounds of nitrous oxide, 593,147 pounds of sulfur oxide, and 63,611 pounds of particulate matter as illustrated by Table 161 and Table 163.

The Low-Income Solar Lease has generated \$3.1 million in tax revenues for the State of Connecticut since its inception as shown in Table 162. The lifetime economic value of the public health impacts from the Green Bank's partnership with PosiGen programs is estimated to be between \$22.2 and \$50.2 as seen in Table 164.

TABLE 161. LOW INCOME SO	NAD LEASE LOD VEADS	SUBBORTED BY EV CLOSED
TABLE 101. LOW INCOME SU	JLAK LEASE JUD TEAKS	SUPPORIED BY FY CLUSED

Fiscal Year	Direct Jobs	Indirect and Induced Jobs	Total Jobs
2012	0	0	0
2013	0	0	0
2014	0	0	0
2015	1	1	2
2016	57	90	147
2017	71	93	163
2018	70	90	161
2019	97	127	223
2020	77	103	180
2021	110	144	253
2022	36	48	84
Total	518	695	1,213

#### TABLE 162. LOW INCOME SOLAR LEASE TAX REVENUES GENERATED BY FY CLOSED

Fiscal Year	Individual Income Tax Revenue Generated	Corporate Tax Revenue Generated	Sales Tax Revenue Generated	Total Tax Revenue Generated
2012	\$0	\$0	\$0	\$0
2013	\$0	\$0	\$0	\$0
2014	\$0	\$0	\$0	\$0
2015	\$2,958	\$369	\$0	\$3,327
2016	\$258,850	\$32,295	\$0	\$291,146
2017	\$378,337	\$61,136	\$0	\$439,473
2018	\$373,838	\$60,409	\$0	\$434,248
2019	\$518,879	\$83,847	\$0	\$602,725
2020	\$419,047	\$67,714	\$0	\$486,760
2021	\$585,281	\$94,578	\$0	\$679,858
2022	\$195,183	\$31,539	\$0	\$226,722
Total	\$2,732,372	\$431,888	\$0	\$3,164,259

	CO2 Emission	ns Avoided (tons)		nissions (pounds)		nissions (pounds)	PM 2.5 (pounds)		
Fiscal Year	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	
2012	0	0	0	0	0	0	0	0	
2013	0	0	0	0	0	0	0	0	
2014	0	0	0	0	0	0	0	0	
2015	25	620	25	634	18	453	2	54	
2016	2,102	52,553	2,062	51,553	1,471	36,763	183	4,579	
2017	4,010	100,249	3,621	90,529	2,616	65,390	344	8,589	
2018	4,250	106,253	4,107	102,664	3,519	87,973	362	9,048	
2019	5,800	145,012	5,603	140,081	4,808	120,191	494	12,345	
2020	4,867	121,670	4,704	117,609	4,040	101,005	414	10,358	
2021	6,545	163,630	6,322	158,057	5,418	135,453	557	13,933	
2022	2,211	55,271	2,137	53,423	1,837	45,919	188	4,705	
Total	29,810	745,258	28,582	714,549	23,726	593,147	2,544	63,611	

#### TABLE 163. LOW INCOME SOLAR LEASE AVOIDED EMISSIONS BY FY CLOSED

#### TABLE 164. LOW INCOME SOLAR LEASE PUBLIC HEALTH IMPACT BY FY CLOSED

Fiscal	An	nual	Lifetime				
Year	Low	High	Low	High			
2012	\$0	\$0	\$0	\$0			
2013	\$0	\$0	\$0	\$0			
2014	\$0	\$0	\$0	\$0			
2015	\$855	\$1,931	\$21,385	\$48,281			
2016	\$72,851	\$164,495	\$1,821,281	\$4,112,366			
2017	\$140,915	\$318,207	\$3,522,870	\$7,955,179			
2018	\$140,558	\$317,605	\$3,513,948	\$7,940,135			
2019	\$159,544	\$361,550	\$3,988,593	\$9,038,749			
2020	\$133,349	\$302,208	\$3,333,723	\$7,555,189			
2021	\$180,136	\$408,205	\$4,503,407	\$10,205,115			
2022	\$60,135	\$136,300	\$1,503,372	\$3,407,501			
Total	\$888,343	\$2,010,501	\$22,208,580	\$50,262,515			

## **Financial Performance**

To date there have been forty-six defaults with an original principal balance of \$839,535 or 1.2% of the portfolio, of which one charge-off with original principal balance of \$16,798 or 0.03% of the portfolio. As of 6/30/2022<sup>209</sup> there are 177 delinquencies totaling \$3,612,074 of original principal

<sup>&</sup>lt;sup>209</sup> July 2022 loan servicing report

balance<sup>210</sup> or 4.62% of the portfolio. This performance is consistent with expectations for a low-to-moderate income targeted product using an alternative underwriting approach.

## Marketing

To build the pipeline of projects for the lease, Connecticut Green Bank supports PosiGen's community-based marketing campaigns, leveraging the institution's market analysis and local experience and connections. The Green Bank also co-brands the program so partnering community organizations and consumers know there is governmental involvement, especially critical given the targeting of underserved communities and homeowners. This includes assisting with PosiGen's outreach efforts through its Solar for All campaigns which are modeled after Green Bank Solarize campaigns.

<sup>&</sup>lt;sup>210</sup> Based on average lease price in PosiGen Pipeline Reporting July 2022

## Case 6 – Multifamily Programs

## Description

The Green Bank provides a suite of financing options that support property owners in assessing, designing, funding, and monitoring high impact energy efficiency and renewable energy upgrades for multifamily properties, defined as buildings with 5 or more units. The Green Bank contracted with Inclusive Prosperity Capital (IPC), to manage and administer these programs on behalf of CGB.

The Green Bank encourages owners to take a holistic approach to their buildings by implementing energy upgrades that will deliver a high return on investment over the long term through energy and operating cost savings, increased property values, and improvement of resident health, safety and living environment. The organization partners with building owners to finance a project design approach that is both technology and fuel agnostic – whereby owners identify the combination of renewable energy and energy efficiency measures/technology approaches that will deliver the most benefits and highest impact. This holistic approach and focus on deeper efficiency measures is particularly important in Connecticut due to the need of the state's old and aging housing stock need for significant capital improvements and health and safety remediation. We are catalyzing holistic projects that reap the benefits of significant energy and operating cost savings, which can also be used to finance other capital improvements like full roof replacements and remediation of mold, asbestos, lead, etc. which have additional health and safety benefits.

The Green Bank Multifamily programs primarily target the low- and moderate-income market in Connecticut, for all ownership types, including private and non-profit owned apartments, condominiums, cooperatives, and state and federally funded affordable housing developments, including senior and assisted living facilities.

### Pre-development resources

In a sector that is traditionally difficult to address, multifamily projects present a significant need for pre-development financing, trusted technical support, and streamlined access to funding programs. In 2015, the Green Bank established pre-development energy loan programs to support property owners in identifying high-quality technical assistance providers, and fund the work needed to scope and secure financing for deeper, cost-effective energy upgrades. Eligible assessment and design services funded under the pre-development Navigator loan include those for energy and water efficiency, efficient fuel conversion, renewable energy systems, energy storage and EV charging stations, qualified health and safety measures, and performance benchmarking.

The Green Bank is working to change the model of pre-development and technical assistance from one that is primarily grant-funded in the low- and moderate-income housing space to one that is loan driven and financially sustainable.

This program is supported by a revolving loan fund which provides loans of 1.99% to 3.99% for up to two-year terms. The affordable multifamily version of this program is administered in partnership with the Housing Development Fund (HDF), a local CDFI, and funded by a portion of a \$5 million program-related investment from the MacArthur Foundation.

• **Navigator Pre-Development Energy Loan**<sup>211</sup> funds pre-development costs for building owners to assess, scope and design their project.

## **Term Financing Solutions**

The Green Bank offers the following term financing options for project implementation<sup>212</sup>.

- Loans Improving Multifamily Energy (LIME) Loan<sup>213</sup> typically funds energy improvement projects for low- and moderate-income properties (where at least 60% of units serve renters at 80% or lower of Area Median Income) and is geared towards mid-cycle energy improvements. LIME has recently been expanded to serve market rate properties in addition to properties that house low- and moderate-income residents. The LIME Loan program is delivered through a partnership with Capital for Change, a local CDFI. LIME typically provides alternatively secured loans (not secured by mortgages although mortgage security is also possible) that cover 100% of project costs, require no money down, and are repaid from energy cost savings for terms up to 20 years. Projected energy savings are used to cover the debt service of the loan. The Green Bank supports LIME with a \$625,000 loan loss reserve and provided \$3.5 million to capitalize the initial \$5 million loan fund. When it is necessary to lower the overall cost of capital to close a loan, funds from the \$5 million program-related investment from the MacArthur Foundation, housed at HDF, may be used to support the program.
- **CT Green Bank Power Purchase Agreements**<sup>214</sup> offer solar-only financing that allows owners to go solar and lock in lower long-term electricity rates with no upfront cost and without the risk or hassle of purchasing and maintaining a system. Solar financing is available for multifamily properties through the Green Bank's solar power purchase agreement facilities. See the Case 2 CT Green Bank PPA & Solar Lease for more information.
- Commercial Property Assessed Clean Energy<sup>215</sup> (C-PACE) funds 100% of project costs with no money down. C-PACE loans are for a term of up to 20 years and are secured by using a benefit assessment on the borrower's property tax bill. The program serves market rate as well as affordable multifamily properties; however, to-date, given difficulties acquiring lender consent, multifamily C-PACE financing continues to be limited. See Case 1 C-PACE for more information.
- EnergizeCT Health & Safety Revolving Loan Fund <sup>216</sup> funds health and safety improvements necessary to allow subsequent energy improvements in existing properties. The program is funded by \$1.5 million from DEEP and provides low-interest, 2.99% fixed rate loans made available on a rolling application basis.

<sup>&</sup>lt;sup>211</sup> Navigator Pre-Development Energy Loan: <u>https://www.ctgreenbank.com/programs/multifamily/navigator/</u>

<sup>&</sup>lt;sup>212</sup> Owners are also encouraged to seek other sources of capital if they can be secured under more favorable terms than those offered by the Green Bank.

<sup>&</sup>lt;sup>213</sup> Loans Improving Multifamily Energy (LIME) Loan: <u>https://ctgreenbank.com/programs/multifamily/lime/</u>

<sup>&</sup>lt;sup>214</sup> Solar Power Purchase Agreement: <u>https://ctgreenbank.com/programs/multifamily/solarppa/</u>

<sup>&</sup>lt;sup>215</sup> Commercial Property Assessed Clean Energy: <u>http://www.CPACE.com/</u>

<sup>&</sup>lt;sup>216</sup> https://ctgreenbank.com/programs/multifamily/energizect-health-safety-loan/

## **Key Performance Indicators**

The Key Performance Indicators for Multifamily programs closed activity are reflected in Table 165 through

Table 167. These illustrate the volume of projects by year, investment, generation capacity installed, and the amount of energy saved and/or produced. It also breaks down the volume of projects by energy efficiency, renewable generation, or both.

Fiscal			DE/EE	01	#	# Project	Amount	Total	Green Bank	Private	Leverage
Year	EE	RE	RE/EE	Other	Projects	Units	Financed	Investment <sup>217</sup>	Investment <sup>218</sup>	Investment	Ratio
2012	0	0	0	0	0	0	\$0	\$0	\$0	\$0	0
2013	0	0	0	0	0	0	\$0	\$0	\$0	\$0	0
2014	1	0	0	0	1	120	\$250,000	\$420,000	\$0	\$420,000	0
2015	3	4	0	0	7	408	\$5,550,204	\$6,282,061	\$4,921,542	\$1,360,520	1.3
2016	14	15	1	1	31	1,767	\$28,041,912	\$34,005,715	\$1,256,148	\$32,749,567	27.1
2017	8	8	1	2	19	1,535	\$9,778,782	\$10,895,117	\$2,150,058	\$8,745,059	5.1
2018	6	2	1	10	19	1,792	\$8,979,221	\$9,493,247	\$158,914	\$9,334,333	59.7
2019	2	7	1	12	22	2,289	\$33,757,412	\$36,792,937	\$1,345,149	\$35,447,788	27.4
2020	4	7	4	2	17	1,273	\$7,350,101	\$7,805,699	\$343,523	\$7,462,176	22.7
2021	2	1	0	2	5	227	\$4,180,385	\$4,195,139	\$213,691	\$3,981,449	19.6
2022	1	1	1	0	3	184	\$2,060,000	\$2,060,000	\$1,959,400	\$100,600	1.1
Total	41	45	9	29	124	9,595	\$99,948,016	\$111,949,915	\$12,348,424	\$99,601,491	9.1

#### TABLE 166. MULTIFAMILY PROJECT CAPACITY, GENERATION AND SAVINGS BY FY CLOSED

Fiscal Year	Installed Capacity (kW)	Expected Annual Generation (kWh)	Expected Lifetime Savings or Generation (MWh)	Annual Saved / Produced (MMBtu)	Lifetime Saved / Produced (MMBtu)	Annual Cost Savings	Lifetime Cost Savings
2012	0.0	0	0	0	0	\$0	\$0
2013	0.0	0	0	0	0	\$0	\$0
2014	0.0	17,873	214	61	733	\$69,534	\$834,408
2015	1,030.0	4,147,155	101,912	5,450	130,331	\$243,673	\$5,918,657
2016	1,286.7	2,209,496	45,563	7,100	144,480	\$531,098	\$10,320,114
2017	2,278.8	2,620,026	63,326	11,557	105,941	\$370,090	\$6,926,347
2018	135.2	1,475,091	19,703	5,412	72,259	\$269,666	\$3,389,711
2019	1,032.3	4,710,729	74,304	6,265	93,967	\$345,822	\$4,838,273
2020	1,095.1	4,214,999	53,341	2,966	61,203	\$54,910	\$822,143
2021	41.1	46,782	1,170	1,370	18,611	\$25,475	\$354,618
2022	939.6	3,908,256	97,706	4,609	115,225	\$189,870	\$4,746,758
Total	7,838.8	23,350,407	457,237	44,789	742,751	\$2,100,139	\$38,151,031

<sup>&</sup>lt;sup>217</sup> This number includes financing and investment for the entire project supported including clean energy, health and safety remediation, and project design.

<sup>&</sup>lt;sup>218</sup> Includes incentives, interest rate buydowns and loan loss reserves.

Fiscal Year	Average Total Investment	Average Amount Financed	Average Amount Financed per Unit	Average Installed Capacity (kW)	Average Annual Saved / Produced (MMBtu)	Average Finance Term (months)	Average Finance Rate
2012	\$0	\$0	\$0	0.0	0	0	0.00
2013	\$0	\$0	\$0	0.0	0	0	0.00
2014	\$420,000	\$250,000	\$2,083	0.0	61	9	6.00
2015	\$897,437	\$792,886	\$13,603	257.5	779	27	6.00
2016	\$1,096,959	\$904,578	\$17,172	80.4	229	13	4.29
2017	\$573,427	\$514,673	\$7,522	253.2	608	12	4.23
2018	\$499,645	\$472,591	\$16,847	45.1	285	11	2.73
2019	\$1,672,406	\$1,534,428	\$20,447	147.5	285	14	4.06
2020	\$459,159	\$432,359	\$9,176	136.9	174	17	6.00
2021	\$839,028	\$836,077	\$18,416	41.1	274	18	5.88
2022	\$686,667	\$686,667	\$11,196	469.8	1,536	10	5.00
Average	\$902,822	\$806,032	\$14,576	156.8	361	14	4.23

#### TABLE 167. MULTIFAMILY PROJECT AVERAGES BY FY CLOSED

As the Green Bank's Multifamily programs are predominantly income-targeted, Table 168 shows a breakdown of projects completed in a year by property type and reflects the number of units impacted.

	Affor	dable	Marke	t Rate	То	tal
Fiscal Year	# Projects	# Units	# Projects	# Units	# Projects	# Units
2014	1	120			1	120
2015	5	326	2	82	7	408
2016	26	1,442	1	191	27	1,633
2017	15	1,300			15	1,300
2018	12	533			12	533
2019	16	1,519	1	132	17	1,651
2020	11	698	2	103	13	801
2021	4	227	1	0	5	227
2022	2	102	1	82	3	184
Grand Total	92	6,267	8	590	100	6,857

## **Vulnerable Communities Penetration**

Due to the Multifamily focus on properties serving low-income residents, a majority of units served are in vulnerable communities.

		# Proj	ect Units				MW			Total Inv	estment	
Fiscal Year	Total	Not Vulnerable	Vulnerable	% Vulnerable	Total	Not Vulnerable	Vulnerable	% Vulnerable	Total	Not Vulnerable	Vulnerable	% Vulnerable
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2013	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2014	120	0	120	100%	0.0	0.0	0.0	0%	\$420,000	\$0	\$420,000	100%
2015	408	0	408	100%	1.0	0.1	0.9	89%	\$6,282,061	\$438,750	\$5,843,311	93%
2016	1,767	191	1,576	89%	1.3	0.1	1.2	92%	\$34,005,715	\$330,082	\$33,675,633	99%
2017	1,535	0	1,535	100%	2.3	0.0	2.3	100%	\$10,895,117	\$0	\$10,895,117	100%
2018	1,792	0	1,792	100%	0.1	0.0	0.1	100%	\$9,493,247	\$0	\$9,493,247	100%
2019	2,289	0	2,289	100%	1.0	0.0	1.0	100%	\$36,792,937	\$0	\$36,792,937	100%
2020	1,273	0	1,273	100%	1.1	0.0	1.1	100%	\$7,805,699	\$0	\$7,805,699	100%
2021	227	0	227	100%	0.0	0.0	0.0	0%	\$4,195,139	\$113,991	\$4,081,148	97%
2022	184	0	184	100%	0.9	0.0	0.9	100%	\$2,060,000	\$0	\$2,060,000	100%
Total	9,595	191	9,404	98%	7.8	0.3	7.6	97%	\$111,949,915	\$882,823	\$111,067,092	99%

#### TABLE 169. MULTIFAMILY ACTIVITY IN VULNERABLE AND NOT VULNERABLE COMMUNITIES BY FY CLOSED<sup>219</sup>

## Area Median Income Band Penetration

For a breakdown of Multifamily volume and investment by census tracts categorized by Area Median Income bands – see Table 170. As a program predominantly focused on properties that serve low-to-moderate income residents, this table doesn't reflect the degree to which the goal of serving lower income residents is being met. The program is equally focused on affordable housing properties located in more affluent communities and affordable housing properties in lower income census tracts.

TABLE 170. MULTIFAMILY ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS BY FY CLOSED<sup>220</sup>

<sup>&</sup>lt;sup>219</sup> Excludes projects in unknown communities.

<sup>&</sup>lt;sup>220</sup> Excludes projects in unknown bands.

Fiscal Year	MSA AMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Owner/Rental Occupied 5+ Unit Households	% Owner/Rental Occupied 5+ Unit Household Distribution	Project Units / 1,000 Owner/Rental Occupied 5+ Unit Households	Total Investment / Owner/Rental Occupied 5+ Unit Household	Watts / Owner/Rental Occupied 5+ Unit Household
2012	<60%	0	0%	0.0	0%	\$0	0%	82,921	36%	0.0	\$0.00	0.0
2012	60%-80%	0	0%	0.0	0%	\$0	0%	50,652	22%	0.0	\$0.00	0.0
2012	80%-100%	0	0%	0.0	0%	\$0	0%	44,767	19%	0.0	\$0.00	0.0
2012	100%-120%	0	0%	0.0	0%	\$0	0%	30,372	13%	0.0	\$0.00	0.0
2012	>120%	0	0%	0.0	0%	\$0	0%	21,402	9%	0.0	\$0.00	0.0
2012	Total	0	0%	0.0	0%	\$0	0%	230,119	100%	0.0	\$0.00	0.0
2013	<60%	0	0%	0.0	0%	\$0	0%	80,839	36%	0.0	\$0.00	0.0
2013	60%-80%	0	0%	0.0	0%	\$0	0%	52,190	23%	0.0	\$0.00	0.0
2013	80%-100%	0	0%	0.0	0%	\$0	0%	45,349	20%	0.0	\$0.00	0.0
2013	100%-120%	0	0%	0.0	0%	\$0	0%	27,681	12%	0.0	\$0.00	0.0
2013	>120%	0	0%	0.0	0%	\$0	0%	21,484	9%	0.0	\$0.00	0.0
2013	Total	0	0%	0.0	0%	\$0	0%	227,548	100%	0.0	\$0.00	0.0
2014	<60%	0	0%	0.0	0%	\$0	0%	81,615	35%	0.0	\$0.00	0.0
2014	60%-80%	0	0%	0.0	0%	\$0	0%	52,443	23%	0.0	\$0.00	0.0
2014	80%-100%	120	100%	0.0	0%	\$420,000	100%	41,554	18%	2.9	\$10.11	0.0
2014	100%-120%	0	0%	0.0	0%	\$0	0%	31,976	14%	0.0	\$0.00	0.0
2014	>120%	0	0%	0.0	0%	\$0	0%	22,534	10%	0.0	\$0.00	0.0
2014	Total	120	100%	0.0	0%	\$420,000	100%	230,127	100%	0.5	\$1.83	0.0
2015	<60%	16	4%	0.0	0%	\$33,234	1%	84,158	37%	0.2	\$0.39	0.0
2015	60%-80%	41	10%	0.0	0%	\$445,000	7%	44,668	19%	0.9	\$9.96	0.0
2015	80%-100%	113	28%	0.0	0%	\$540,000	9%	53,494	23%	2.1	\$10.09	0.0
2015	100%-120%	16	4%	0.0	1%	\$58,782	1%	24,388	11%	0.7	\$2.41	0.6
2015	>120%	222	54%	1.0	99%	\$5,205,046	83%	23,491	10%	9.5	\$221.58	43.3
2015	Total	408	100%	1.0	100%	\$6,282,061	100%	230,204	100%	1.8	\$27.29	4.5
2016	<60%	295	17%	0.1	6%	\$19,758,029	58%	86,225	37%	3.4	\$229.15	0.9
2016	60%-80%	193	11%	0.1	11%	\$1,815,713	5%	45,398	19%	4.3	\$40.00	3.2
2016	80%-100%	553	31%	0.5	38%	\$7,046,916	21%	49,125	21%	11.3	\$143.45	10.0
2016	100%-120%	672	38%	0.5	42%	\$5,290,361	16%	30,753	13%	21.9	\$172.03	17.7

Fiscal Year	MSA AMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Owner/Rental Occupied 5+ Unit Households	% Owner/Rental Occupied 5+ Unit Household Distribution	Project Units / 1,000 Owner/Rental Occupied 5+ Unit Households	Total Investment / Owner/Rental Occupied 5+ Unit Household	Watts / Owner/Rental Occupied 5+ Unit Household
2016	>120%	54	3%	0.0	2%	\$94,696	0%	22,618	10%	2.4	\$4.19	1.1
2016	Total	1,767	100%	1.3	100%	\$34,005,715	100%	234,119	100%	7.5	\$145.25	5.5
2017	<60%	653	43%	1.5	65%	\$4,410,412	40%	86,272	37%	7.6	\$51.12	17.2
2017	60%-80%	314	20%	0.3	14%	\$3,611,545	33%	43,920	19%	7.1	\$82.23	7.4
2017	80%-100%	455	30%	0.0	2%	\$1,558,600	14%	51,444	22%	8.8	\$30.30	0.8
2017	100%-120%	81	5%	0.3	11%	\$898,560	8%	32,673	14%	2.5	\$27.50	7.7
2017	>120%	32	2%	0.2	8%	\$416,000	4%	21,018	9%	1.5	\$19.79	8.3
2017	Total	1,535	100%	2.3	100%	\$10,895,117	100%	235,327	100%	6.5	\$46.30	9.7
2018	<60%	1,689	94%	0.0	27%	\$8,936,053	94%	83,249	35%	20.3	\$107.34	0.4
2018	60%-80%	6	0%	0.0	0%	\$50,000	1%	55,429	23%	0.1	\$0.90	0.0
2018	80%-100%	41	2%	0.0	0%	\$179,194	2%	45,080	19%	0.9	\$3.98	0.0
2018	100%-120%	32	2%	0.0	30%	\$170,000	2%	34,590	14%	0.9	\$4.91	1.2
2018	>120%	24	1%	0.1	43%	\$158,000	2%	21,753	9%	1.1	\$7.26	2.7
2018	Total	1,792	100%	0.1	100%	\$9,493,247	100%	240,101	100%	7.5	\$39.54	0.6
2019	<60%	1,295	57%	0.2	16%	\$27,735,377	75%	83,249	35%	15.6	\$333.16	1.9
2019	60%-80%	290	13%	0.4	43%	\$3,019,000	8%	55,429	23%	5.2	\$54.47	8.1
2019	80%-100%	523	23%	0.0	0%	\$741,057	2%	45,080	19%	11.6	\$16.44	0.0
2019	100%-120%	150	7%	0.3	34%	\$4,724,074	13%	34,590	14%	4.3	\$136.57	10.0
2019	>120%	31	1%	0.1	8%	\$573,430	2%	21,753	9%	1.4	\$26.36	3.6
2019	Total	2,289	100%	1.0	100%	\$36,792,937	100%	241,178	100%	9.5	\$152.56	4.3
2020	<60%	440	35%	0.6	58%	\$5,245,683	67%	78,211	32%	5.6	\$67.07	8.1
2020	60%-80%	241	19%	0.4	33%	\$1,754,119	22%	53,058	22%	4.5	\$33.06	6.8
2020	80%-100%	208	16%	0.1	9%	\$489,397	6%	56,675	23%	3.7	\$8.64	1.8
2020	100%-120%	384	30%	0.0	0%	\$316,500	4%	32,063	13%	12.0	\$9.87	0.0
2020	>120%	0	0%	0.0	0%	\$0	0%	21,904	9%	0.0	\$0.00	0.0
2020	Total	1,273	100%	1.1	100%	\$7,805,699	100%	241,958	100%	5.3	\$32.26	4.5
2021	<60%	88	40%	0.0	0%	\$645,400	21%	78,211	32%	1.1	\$8.25	0.0
2021	60%-80%	18	8%	0.0	0%	\$2,033,833	67%	53,058	22%	0.3	\$38.33	0.0

Fiscal Year	MSA AMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Owner/Rental Occupied 5+ Unit Households	% Owner/Rental Occupied 5+ Unit Household Distribution	Project Units / 1,000 Owner/Rental Occupied 5+ Unit Households	Total Investment / Owner/Rental Occupied 5+ Unit Household	Watts / Owner/Rental Occupied 5+ Unit Household
2021	80%-100%	114	52%	0.0	0%	\$219,915	7%	56,675	23%	2.0	\$3.88	0.0
2021	100%-120%	0	0%	0.0	100%	\$113,991	4%	32,063	13%	0.0	\$3.56	1.3
2021	>120%	0	0%	0.0	0%	\$0	0%	21,904	9%	0.0	\$0.00	0.0
2021	Total	220	100%	0.0	100%	\$3,013,139	100%	241,958	100%	0.9	\$12.45	0.2
2022	<60%	18	10%	0.0	0%	\$61,000	3%	78,211	32%	0.2	\$0.78	0.0
2022	60%-80%	0	0%	0.0	0%	\$0	0%	53,058	22%	0.0	\$0.00	0.0
2022	80%-100%	0	0%	0.0	0%	\$0	0%	56,675	23%	0.0	\$0.00	0.0
2022	100%-120%	82	45%	0.9	96%	\$1,900,000	92%	32,063	13%	2.6	\$59.26	28.1
2022	>120%	84	46%	0.0	4%	\$99,000	5%	21,904	9%	3.8	\$4.52	1.8
2022	Total	184	100%	0.9	100%	\$2,060,000	100%	241,958	100%	0.8	\$8.51	3.9
Total	<60%	4,494	47%	2.4	31%	\$66,825,188	60%	78,211	32%	57.5	\$854.42	30.7
Total	60%-80%	1,103	12%	1.3	16%	\$12,729,209	11%	53,058	22%	20.8	\$239.91	24.1
Total	80%-100%	2,127	22%	0.6	8%	\$11,195,078	10%	56,675	23%	37.5	\$197.53	11.2
Total	100%-120%	1,417	15%	2.1	27%	\$13,472,268	12%	32,063	13%	44.2	\$420.18	66.7
Total	>120%	447	5%	1.4	18%	\$6,546,172	6%	21,904	9%	20.4	\$298.86	63.5
Total	Total	9,588	100%	7.8	100%	\$110,767,915	100%	241,958	100%	39.6	\$457.80	32.4

		# Pr	oject Units				MW			Total Inves	stment	
Fiscal Year	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2013	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2014	120	0	120	100%	0.0	0.0	0.0	0%	\$420,000	\$0	\$420,000	100%
2015	408	238	170	42%	1.0	1.0	0.0	0%	\$6,282,061	\$5,263,827	\$1,018,234	16%
2016	1,767	726	1,041	59%	1.3	0.6	0.7	56%	\$34,005,715	\$5,385,057	\$28,620,658	84%
2017	1,535	113	1,422	93%	2.3	0.4	1.9	81%	\$10,895,117	\$1,314,560	\$9,580,556	88%
2018	1,792	56	1,736	97%	0.1	0.1	0.0	27%	\$9,493,247	\$328,000	\$9,165,247	97%
2019	2,289	181	2,108	92%	1.0	0.4	0.6	59%	\$36,792,937	\$5,297,504	\$31,495,433	86%
2020	1,273	384	889	70%	1.1	0.0	1.1	100%	\$7,805,699	\$316,500	\$7,489,199	96%
2021	220	0	220	100%	0.0	0.0	0.0	0%	\$3,013,139	\$113,991	\$2,899,148	96%
2022	184	166	18	10%	0.9	0.9	0.0	0%	\$2,060,000	\$1,999,000	\$61,000	3%
Total	9,588	1,864	7,724	81%	7.8	3.5	4.3	55%	\$110,767,915	\$20,018,439	\$90,749,475	82%

#### TABLE 171. MULTIFAMILY ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS ABOVE OR BELOW 100% BY FY CLOSED<sup>221</sup>

<sup>221</sup> Excludes projects in unknown bands.

		# Pr	oject Units				MW			Total Inve	stment	
Fiscal		Over 80%	80% or Below	% at 80% or		Over 80%	80% or Below	% at 80% or		Over 80%	80% or Below	% at 80% or
Year	Total	AMI	AMI	Below	Total	AMI	AMI	Below	Total	AMI	AMI	Below
2012	0	0	0	0%	0.0	0	0	0%	\$0	\$0	\$0	0%
2013	0	0	0	0%	0.0	0	0	0%	\$0	\$0	\$0	0%
2014	120	0	120	100%	0.0	0	0	0%	\$420,000	\$0	\$420,000	100%
2015	408	82	326	80%	1.0	1	0	1%	\$6,282,061	\$5,138,750	\$1,143,311	18%
2016	1,767	191	1,576	89%	1.3	0	1	92%	\$34,005,715	\$330,082	\$33,675,633	99%
2017	1,535	100	1,435	93%	2.3	0	2	100%	\$10,895,117	\$8,600	\$10,886,517	100%
2018	1,792	0	1,792	100%	0.1	0	0	100%	\$9,493,247	\$0	\$9,493,247	100%
2019	2,289	0	2,289	100%	1.0	0	1	100%	\$36,792,937	\$0	\$36,792,937	100%
2020	1,273	32	1,241	97%	1.1	0	1	100%	\$7,805,699	\$159,489	\$7,646,210	98%
2021	220	0	220	100%	0.0	0	0	0%	\$3,013,139	\$113,991	\$2,899,148	96%
2022	184	82	102	55%	0.9	1	0	4%	\$2,060,000	\$1,900,000	\$160,000	8%
Total	9,588	487	9,101	95%	7.8	2	6	74%	\$110,767,915	\$7,650,912	\$103,117,003	93%

TABLE 172. MULTIFAMILY ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS ABOVE OR BELOW 80% BY FY CLOSED<sup>222</sup>

## **Distressed Community Penetration**

For a breakdown of Multifamily project volume and investment by census tracts categorized by Distressed Communities – see Table 173. As a program predominantly focused on properties that serve low-to-moderate income residents, this table doesn't reflect the degree to which the goal of serving lower income residents is being met. The program is equally focused on affordable housing properties located in more affluent communities and affordable housing properties in lower income census tracts.

 TABLE 173. MULTIFAMILY ACTIVITY IN DISTRESSED COMMUNITIES BY FY CLOSED

Fiscal Year	Distres sed	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Households	% Total Household Distribution	Project Units / 1,000 Total Households	Total Investment / Total Household	Watts / Total Household
2012	Yes	0	0%	0.0	0%	\$0	0%	447,962	33%	0.0	\$0.00	0.0
2012	No	0	0%	0.0	0%	\$0	0%	912,222	67%	0.0	\$0.00	0.0

<sup>222</sup> Excludes projects in unknown bands.

Fiscal Year	Distres sed	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Households	% Total Household Distribution	Project Units / 1,000 Total Households	Total Investment / Total Household	Watts / Total Household
2012	Total	0	0%	0.0	0%	\$0	0%	1,360,184	100%	0.0	\$0.00	0.0
2013	Yes	0	0%	0.0	0%	\$0	0%	426,564	31%	0.0	\$0.00	0.0
2013	No	0	0%	0.0	0%	\$0	0%	929,285	69%	0.0	\$0.00	0.0
2013	Total	0	0%	0.0	0%	\$0	0%	1,355,849	100%	0.0	\$0.00	0.0
2014	Yes	0	0%	0.0	0%	\$0	0%	416,415	31%	0.0	\$0.00	0.0
2014	No	120	100%	0.0	0%	\$420,000	100%	939,791	69%	0.1	\$0.45	0.0
2014	Total	120	100%	0.0	0%	\$420,000	100%	1,356,206	100%	0.1	\$0.31	0.0
2015	Yes	211	52%	0.9	87%	\$5,273,234	84%	423,559	31%	0.5	\$12.45	2.1
2015	No	197	48%	0.1	13%	\$1,008,827	16%	929,024	69%	0.2	\$1.09	0.1
2015	Total	408	100%	1.0	100%	\$6,282,061	100%	1,352,583	100%	0.3	\$4.64	0.8
2016	Yes	341	19%	0.3	26%	\$20,319,907	60%	438,710	32%	0.8	\$46.32	0.8
2016	No	1,426	81%	1.0	74%	\$13,685,808	40%	916,003	68%	1.6	\$14.94	1.0
2016	Total	1,767	100%	1.3	100%	\$34,005,715	100%	1,354,713	100%	1.3	\$25.10	0.9
2017	Yes	596	39%	1.4	63%	\$4,252,412	39%	435,595	32%	1.4	\$9.76	3.3
2017	No	939	61%	0.8	37%	\$6,642,705	61%	926,160	68%	1.0	\$7.17	0.9
2017	Total	1,535	100%	2.3	100%	\$10,895,117	100%	1,361,755	100%	1.1	\$8.00	1.7
2018	Yes	1,507	84%	0.0	27%	\$4,889,924	52%	430,098	31%	3.5	\$11.37	0.1
2018	No	285	16%	0.1	73%	\$4,603,323	48%	937,276	69%	0.3	\$4.91	0.1
2018	Total	1,792	100%	0.1	100%	\$9,493,247	100%	1,367,374	100%	1.3	\$6.94	0.1
2019	Yes	1,955	85%	0.7	69%	\$32,786,561	89%	421,653	31%	4.6	\$77.76	1.7
2019	No	334	15%	0.3	31%	\$4,006,376	11%	949,093	69%	0.4	\$4.22	0.3
2019	Total	2,289	100%	1.0	100%	\$36,792,937	100%	1,370,746	100%	1.7	\$26.84	0.8
2020	Yes	777	61%	0.9	79%	\$6,888,274	88%	427,553	31%	1.8	\$16.11	2.0
2020	No	496	39%	0.2	21%	\$917,425	12%	957,884	69%	0.5	\$0.96	0.2
2020	Total	1,273	100%	1.1	100%	\$7,805,699	100%	1,385,437	100%	0.9	\$5.63	0.8
2021	Yes	113	50%	0.0	0%	\$3,861,233	92%	375,703	27%	0.3	\$10.28	0.0
2021	No	114	50%	0.0	100%	\$333,906	8%	1,009,734	73%	0.1	\$0.33	0.0
2021	Total	227	100%	0.0	100%	\$4,195,139	100%	1,385,437	100%	0.2	\$3.03	0.0

Fiscal Year	Distres sed	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Households	% Total Household Distribution	Project Units / 1,000 Total Households	Total Investment / Total Household	Watts / Total Household
2022	Yes	100	54%	0.9	96%	\$1,961,000	95%	375,703	27%	0.3	\$5.22	2.4
2022	No	84	46%	0.0	4%	\$99,000	5%	1,009,734	73%	0.1	\$0.10	0.0
2022	Total	184	100%	0.9	100%	\$2,060,000	100%	1,385,437	100%	0.1	\$1.49	0.7
Total	Yes	5,600	58%	5.2	66%	\$80,232,545	72%	375,703	27%	14.9	\$213.55	13.8
Total	No	3,995	42%	2.7	34%	\$31,717,370	28%	1,009,734	73%	4.0	\$31.41	2.6
Total	Total	9,595	100%	7.8	100%	\$111,949,915	100%	1,385,437	100%	6.9	\$80.80	5.7

TABLE 174. MULTIFAMILY ACTIVITY IN DISTRESSED AND NOT DISTRESSED COMMUNITIES BY FY CLOSED<sup>223</sup>

		# Pro	oject Units			Μ	W			Total Inve	estment	
Fiscal		Not		%		Not		%		Not		%
Year	Total	Distressed	Distressed	Distressed	Total	Distressed	Distressed	Distressed	Total	Distressed	Distressed	Distressed
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2013	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2014	120	120	0	0%	0.0	0.0	0.0	0%	\$420,000	\$420,000	\$0	0%
2015	408	197	211	52%	1.0	0.1	0.9	87%	\$6,282,061	\$1,008,827	\$5,273,234	84%
2016	1,767	1,426	341	19%	1.3	1.0	0.3	26%	\$34,005,715	\$13,685,808	\$20,319,907	60%
2017	1,535	939	596	39%	2.3	0.8	1.4	63%	\$10,895,117	\$6,642,705	\$4,252,412	39%
2018	1,792	285	1,507	84%	0.1	0.1	0.0	27%	\$9,493,247	\$4,603,323	\$4,889,924	52%
2019	2,289	334	1,955	85%	1.0	0.3	0.7	69%	\$36,792,937	\$4,006,376	\$32,786,561	89%
2020	1,273	496	777	61%	1.1	0.2	0.9	79%	\$7,805,699	\$917,425	\$6,888,274	88%
2021	227	114	113	50%	0.0	0.0	0.0	0%	\$4,195,139	\$333,906	\$3,861,233	92%
2022	184	84	100	54%	0.9	0.0	0.9	96%	\$2,060,000	\$99,000	\$1,961,000	95%
Total	9,595	3,995	5,600	58%	7.8	2.7	5.2	66%	\$111,949,915	\$31,717,370	\$80,232,545	72%

<sup>&</sup>lt;sup>223</sup> Excludes projects in unknown communities.

## **Environmental Justice Poverty Level Penetration**

The progress made by the Multifamily Products in reaching environmental justice communities is displayed in the following table.

		# Pr	oject Units				MW			Total Investr	nent	
Fiscal Year	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2013	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2014	120	120	0	0%	0.0	0.0	0.0	0%	\$420,000	\$420,000	\$0	0%
2015	408	408	0	0%	1.0	1.0	0.0	0%	\$6,282,061	\$6,282,061	\$0	0%
2016	1,767	1,665	102	6%	1.3	1.3	0.0	0%	\$34,005,715	\$33,306,319	\$699,396	2%
2017	1,535	1,072	463	30%	2.3	2.2	0.1	5%	\$10,895,117	\$7,011,517	\$3,883,600	36%
2018	1,792	1,709	83	5%	0.1	0.1	0.0	30%	\$9,493,247	\$9,317,697	\$175,550	2%
2019	2,289	2,185	104	5%	1.0	1.0	0.0	0%	\$36,792,937	\$36,603,187	\$189,750	1%
2020	1,273	848	425	33%	1.1	1.1	0.0	0%	\$7,805,699	\$7,632,199	\$173,500	2%
2021	227	227	0	0%	0.0	0.0	0.0	0%	\$4,195,139	\$4,195,139	\$0	0%
2022	184	184	0	0%	0.9	0.9	0.0	0%	\$2,060,000	\$2,060,000	\$0	0%
Total	9,595	8,418	1,177	12%	7.8	7.7	0.2	2%	\$111,949,915	\$106,828,118	\$5,121,796	5%

TABLE 175. MULTIFAMILY ACTIVITY IN ENVIRONMENTAL JUSTICE POVERTY AREAS BY FY CLOSED<sup>224</sup>

## Ethnicity

The progress made by the multifamily products in reaching diverse communities is displayed in the following table.

<sup>&</sup>lt;sup>224</sup> Excludes projects in unknown bands.

#### TABLE 176. MULTIFAMILY ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS BY ETHNICITY CATEGORY BY FY CLOSED<sup>225</sup>

			Majority	Black			Majority H	lispanic			Majority	/ White			Majority	Asian	
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	ORH 5+ Units <sup>226</sup>	% 5+ Units	# Project Units	% Project Units	ORH 5+ Units	% 5+ Units	# Project Units	% Project Units	ORH 5+ Units	% 5+ Units	# Project Units	% Project Units	ORH 5+ Units	% 5+ Units
2012	<60%	0	0.0%	13,052	20.8%	0	0.0%	21,021	33.5%	0	0.0%	28,616	45.6%	0	0.0%	0	0.0%
2012	60%-80%	0	0.0%	8,714	8.5%	0	0.0%	7,447	7.3%	0	0.0%	86,017	84.2%	0	0.0%	0	0.0%
2012	80%-100%	0	0.0%	3,490	2.3%	0	0.0%	0	0.0%	0	0.0%	147,195	97.7%	0	0.0%	0	0.0%
2012	100%-120%	0	0.0%	3,488	1.6%	0	0.0%	0	0.0%	0	0.0%	212,996	98.4%	0	0.0%	0	0.0%
2012	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	349,212	100.0%	0	0.0%	0	0.0%
2012	Total	0	0.0%	28,744	3.3%	0	0.0%	28,468	3.2%	0	0.0%	824,036	93.5%	0	0.0%	0	0.0%
2013	<60%	0	0.0%	10,766	17.6%	0	0.0%	21,781	35.7%	0	0.0%	28,457	46.6%	0	0.0%	0	0.0%
2013	60%-80%	0	0.0%	10,827	9.8%	0	0.0%	9,574	8.7%	0	0.0%	89,566	81.4%	0	0.0%	0	0.0%
2013	80%-100%	0	0.0%	1,926	1.3%	0	0.0%	0	0.0%	0	0.0%	147,750	98.7%	0	0.0%	0	0.0%
2013	100%-120%	0	0.0%	3,177	1.6%	0	0.0%	0	0.0%	0	0.0%	199,650	98.4%	0	0.0%	0	0.0%
2013	>120%	0	0.0%	1,808	0.5%	0	0.0%	0	0.0%	0	0.0%	348,900	99.5%	0	0.0%	0	0.0%
2013	Total	0	0.0%	28,504	3.3%	0	0.0%	31,355	3.6%	0	0.0%	814,323	93.2%	0	0.0%	0	0.0%
2014	<60%	0	0.0%	12,067	20.4%	0	0.0%	17,945	30.3%	0	0.0%	29,282	49.4%	0	0.0%	0	0.0%
2014	60%-80%	0	0.0%	8,576	8.2%	0	0.0%	10,507	10.1%	0	0.0%	85,445	81.7%	0	0.0%	0	0.0%
2014	80%-100%	0	0.0%	1,868	1.3%	0	0.0%	1,491	1.0%	120	100.0%	145,487	97.7%	0	0.0%	0	0.0%
2014	100%-120%	0	0.0%	3,280	1.6%	0	0.0%	0	0.0%	0	0.0%	205,632	98.4%	0	0.0%	0	0.0%
2014	>120%	0	0.0%	3,745	1.1%	0	0.0%	0	0.0%	0	0.0%	344,034	98.9%	0	0.0%	0	0.0%
2014	Total	0	0.0%	29,536	3.4%	0	0.0%	29,943	3.4%	120	100.0%	809,880	93.2%	0	0.0%	0	0.0%
2015	<60%	0	0.0%	12,243	18.4%	0	0.0%	27,292	41.0%	16	100.0%	27,097	40.7%	0	0.0%	0	0.0%
2015	60%-80%	0	0.0%	7,491	7.8%	41	100.0%	7,075	7.4%	0	0.0%	81,493	84.8%	0	0.0%	0	0.0%
2015	80%-100%	0	0.0%	5,767	3.5%	0	0.0%	513	0.3%	113	100.0%	158,372	95.9%	0	0.0%	553	0.3%
2015	100%-120%	0	0.0%	863	0.5%	0	0.0%	0	0.0%	16	100.0%	182,766	99.5%	0	0.0%	0	0.0%
2015	>120%	0	0.0%	1,877	0.5%	0	0.0%	0	0.0%	222	100.0%	350,176	99.5%	0	0.0%	0	0.0%

<sup>225</sup> Excludes projects in unknown bands.

<sup>226</sup> Total Owner and Rental Occupied 5+ Unit Households

			Majority	Black			Majority H	lispanic			Majority	/ White			Majority	Asian	
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	ORH 5+ Units <sup>226</sup>	% 5+ Units	# Project Units	% Project Units	ORH 5+ Units	% 5+ Units	# Project Units	% Project Units	ORH 5+ Units	% 5+ Units	# Project Units	% Project Units	ORH 5+ Units	% 5+ Units
2015	Total	0	0.0%	28,241	3.3%	41	10.0%	34,880	4.0%	367	90.0%	799,904	92.6%	0	0.0%	553	0.1%
2016	<60%	38	12.9%	11,333	18.0%	203	68.8%	26,620	42.2%	54	18.3%	25,103	39.8%	0	0.0%	0	0.0%
2016	60%-80%	0	0.0%	7,872	7.9%	0	0.0%	8,551	8.6%	193	100.0%	82,650	83.4%	0	0.0%	0	0.0%
2016	80%-100%	0	0.0%	4,736	2.9%	0	0.0%	937	0.6%	553	100.0%	159,339	96.6%	0	0.0%	0	0.0%
2016	100%-120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	481	71.6%	186,570	99.7%	191	28.4%	559	0.3%
2016	>120%	0	0.0%	3,063	0.9%	0	0.0%	0	0.0%	54	100.0%	341,514	99.1%	0	0.0%	0	0.0%
2016	Total	38	2.2%	27,004	3.1%	203	11.5%	36,108	4.2%	1,335	75.6%	795,176	92.6%	191	10.8%	559	0.1%
2017	<60%	0	0.0%	11,916	18.4%	596	91.3%	28,817	44.5%	57	8.7%	24,022	37.1%	0	0.0%	0	0.0%
2017	60%-80%	0	0.0%	5,276	5.4%	0	0.0%	12,600	12.9%	314	100.0%	79,579	81.7%	0	0.0%	0	0.0%
2017	80%-100%	0	0.0%	4,323	2.8%	0	0.0%	2,062	1.3%	455	100.0%	149,029	95.9%	0	0.0%	0	0.0%
2017	100%-120%	0	0.0%	1,101	0.5%	0	0.0%	0	0.0%	81	100.0%	207,746	99.2%	0	0.0%	637	0.3%
2017	>120%	0	0.0%	4,014	1.2%	0	0.0%	0	0.0%	32	100.0%	335,348	98.8%	0	0.0%	0	0.0%
2017	Total	0	0.0%	26,630	3.1%	596	38.8%	43,479	5.0%	939	61.2%	795,724	91.8%	0	0.0%	637	0.1%
2018	<60%	281	16.6%	10,135	16.3%	1,333	78.9%	28,053	45.1%	75	4.4%	24,059	38.7%	0	0.0%	0	0.0%
2018	60%-80%	0	0.0%	7,948	7.3%	0	0.0%	11,560	10.6%	6	100.0%	89,634	82.1%	0	0.0%	0	0.0%
2018	80%-100%	0	0.0%	4,704	3.2%	0	0.0%	3,271	2.2%	41	100.0%	138,013	94.5%	0	0.0%	0	0.0%
2018	100%-120%	0	0.0%	2,274	1.1%	0	0.0%	0	0.0%	32	100.0%	201,977	98.6%	0	0.0%	629	0.3%
2018	>120%	0	0.0%	2,828	0.8%	0	0.0%	0	0.0%	24	100.0%	341,161	99.2%	0	0.0%	0	0.0%
2018	Total	281	15.7%	27,889	3.2%	1,333	74.4%	42,884	5.0%	178	9.9%	794,844	91.8%	0	0.0%	629	0.1%
2019	<60%	264	20.4%	10,903	17.0%	1,024	79.1%	29,840	46.5%	7	0.5%	23,497	36.6%	0	0.0%	0	0.0%
2019	60%-80%	0	0.0%	6,102	6.0%	0	0.0%	10,367	10.3%	290	100.0%	84,519	83.7%	0	0.0%	0	0.0%
2019	80%-100%	0	0.0%	5,119	3.3%	0	0.0%	1,488	1.0%	523	100.0%	148,956	95.8%	0	0.0%	0	0.0%
2019	100%-120%	0	0.0%	3,330	1.6%	0	0.0%	627	0.3%	150	100.0%	202,850	97.8%	0	0.0%	648	0.3%
2019	>120%	0	0.0%	2,074	0.6%	0	0.0%	0	0.0%	31	100.0%	335,436	99.4%	0	0.0%	0	0.0%
2019	Total	264	11.5%	27,528	3.2%	1,024	44.7%	42,322	4.9%	1,001	43.7%	795,258	91.9%	0	0.0%	648	0.1%
2020	<60%	176	40.0%	12,029	17.5%	264	60.0%	27,793	40.5%	0	0.0%	28,840	42.0%	0	0.0%	0	0.0%
2020	60%-80%	0	0.0%	6,275	6.0%	159	66.0%	20,490	19.5%	82	34.0%	78,311	74.5%	0	0.0%	14	0.0%
2020	80%-100%	0	0.0%	4,243	2.6%	0	0.0%	5,388	3.2%	208	100.0%	156,421	94.2%	0	0.0%	0	0.0%

			Majority	Black			Majority H	lispanic			Majority	/ White			Majority	Asian	
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	ORH 5+ Units <sup>226</sup>	% 5+ Units	# Project Units	% Project Units	ORH 5+ Units	% 5+ Units	# Project Units	% Project Units	ORH 5+ Units	% 5+ Units	# Project Units	% Project Units	ORH 5+ Units	% 5+ Units
2020	100%-120%	0	0.0%	4,328	2.1%	0	0.0%	0	0.0%	384	100.0%	204,447	97.5%	0	0.0%	828	0.4%
2020	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	326,890	100.0%	0	0.0%	0	0.0%
2020	Total	176	13.8%	26,875	3.1%	423	33.2%	53,671	6.1%	674	52.9%	794,999	90.7%	0	0.0%	842	0.1%
2021	<60%	88	100.0%	12,029	17.5%	0	0.0%	27,793	40.5%	0	0.0%	28,840	42.0%	0	0.0%	0	0.0%
2021	60%-80%	0	0.0%	6,275	6.0%	0	0.0%	20,490	19.5%	18	100.0%	78,311	74.5%	0	0.0%	14	0.0%
2021	80%-100%	0	0.0%	4,243	2.6%	0	0.0%	5,388	3.2%	114	100.0%	156,421	94.2%	0	0.0%	0	0.0%
2021	100%-120%	0	0.0%	4,328	2.1%	0	0.0%	0	0.0%	0	0.0%	204,447	97.5%	0	0.0%	828	0.4%
2021	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	326,890	100.0%	0	0.0%	0	0.0%
2021	Total	88	40.0%	26,875	3.1%	0	0.0%	53,671	6.1%	132	60.0%	794,999	90.7%	0	0.0%	842	0.1%
2022	<60%	0	0.0%	12,029	17.5%	18	100.0%	27,793	40.5%	0	0.0%	28,840	42.0%	0	0.0%	0	0.0%
2022	60%-80%	0	0.0%	6,275	6.0%	0	0.0%	20,490	19.5%	0	0.0%	78,311	74.5%	0	0.0%	14	0.0%
2022	80%-100%	0	0.0%	4,243	2.6%	0	0.0%	5,388	3.2%	0	0.0%	156,421	94.2%	0	0.0%	0	0.0%
2022	100%-120%	0	0.0%	4,328	2.1%	0	0.0%	0	0.0%	82	100.0%	204,447	97.5%	0	0.0%	828	0.4%
2022	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	84	100.0%	326,890	100.0%	0	0.0%	0	0.0%
2022	Total	0	0.0%	26,875	3.1%	18	9.8%	53,671	6.1%	166	90.2%	794,999	90.7%	0	0.0%	842	0.1%
Total	<60%	847	18.8%	12,029	17.5%	3,438	76.5%	27,793	40.5%	209	4.7%	28,840	42.0%	0	0.0%	0	0.0%
Total	60%-80%	0	0.0%	6,275	6.0%	200	18.1%	20,490	19.5%	903	81.9%	78,311	74.5%	0	0.0%	14	0.0%
Total	80%-100%	0	0.0%	4,243	2.6%	0	0.0%	5,388	3.2%	2,127	100.0%	156,421	94.2%	0	0.0%	0	0.0%
Total	100%-120%	0	0.0%	4,328	2.1%	0	0.0%	0	0.0%	1,226	86.5%	204,447	97.5%	191	13.5%	828	0.4%
Total	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	447	100.0%	326,890	100.0%	0	0.0%	0	0.0%
Total	Total	847	8.8%	26,875	3.1%	3,638	37.9%	53,671	6.1%	4,912	51.2%	794,999	90.7%	191	2.0%	842	0.1%

## Societal Benefits

Over the course of its existence, the Green Bank's Multifamily Program has supported the creation of 2,627 job years, avoided the lifetime emission of 193,006 tons of carbon dioxide, 187,417 pounds of nitrous oxide, 158,478 pounds of sulfur oxide, and 7,652 pounds of particulate matter as illustrated by Table 177 and Table 179.

Multifamily programs are estimated to have generated \$14.5 million in tax revenues for the State of Connecticut since inception as shown in Table 178. The lifetime economic value of the public health impacts of these programs are estimated between \$3.7 and \$8.3 million as illustrated in Table 180.

Fiscal Year	Direct Jobs	Indirect and Induced Jobs	Total Jobs
2012	0	0	0
2013	0	0	0
2014	5	9	14
2015	28	45	73
2016	380	606	986
2017	207	314	521
2018	151	197	348
2019	233	314	547
2020	18	23	40
2021	22	29	51
2022	18	29	47
Total	1,063	1,565	2,627

#### TABLE 177. MULTIFAMILY JOB YEARS SUPPORTED BY FY CLOSED

#### TABLE 178. MULTIFAMILY TAX REVENUES GENERATED BY FY CLOSED

Fiscal Year	Individual Income Tax Revenue Generated	Corporate Tax Revenue Generated	Sales Tax Revenue Generated	Total Tax Revenue Generated
2012	\$0	\$0	\$0	\$0
2013	\$0	\$0	\$0	\$0
2014	\$28,346	\$8,258	\$24,487	\$61,092
2015	\$187,446	\$209,860	\$277,195	\$674,501
2016	\$1,965,119	\$703,277	\$1,533,106	\$4,201,501
2017	\$665,067	\$434,807	\$1,124,438	\$2,224,312
2018	\$777,572	\$530,210	\$1,557,411	\$2,865,193
2019	\$986,946	\$686,542	\$1,897,759	\$3,571,247
2020	\$93,903	\$74,384	\$107,396	\$275,682
2021	\$119,349	\$81,910	\$237,943	\$439,201
2022	\$65,322	\$76,854	\$102,811	\$244,987
Total	\$4,889,069	\$2,806,101	\$6,862,546	\$14,557,716

	CO2 Emissior	ns Avoided (tons)		nissions (pounds)		nissions (pounds)	PM 2.5 (pounds)		
Fiscal Year	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	
2012	0	0	0	0	0	0	0	0	
2013	0	0	0	0	0	0	0	0	
2014	10	116	8	100	7	88	1	9	
2015	2,166	53,182	1,851	45,168	1,708	41,482	13	258	
2016	1,229	25,375	1,214	25,196	1,005	20,288	104	2,164	
2017	1,427	34,484	1,287	31,150	967	23,270	121	2,941	
2018	801	10,723	701	9,477	614	8,289	64	865	
2019	201	5,034	195	4,868	168	4,191	17	428	
2020	647	12,650	2,272	28,701	1,700	22,146	35	877	
2021	26	646	25	625	22	538	2	55	
2022	2,032	50,796	1,685	42,132	1,527	38,185	2	53	
Total	8,538	193,006	9,238	187,417	7,718	158,478	360	7,652	

#### TABLE 179. MULTIFAMILY AVOIDED EMISSIONS BY FY CLOSED

#### TABLE 180. MULTIFAMILY ECONOMIC VALUE OF PUBLIC HEALTH IMPACT BY FY CLOSED

Fiscal	An	nual	Life	time
Year	Low	High	Low	High
2012	\$0	\$0	\$0	\$0
2013	\$0	\$0	\$0	\$0
2014	\$295	\$667	\$3,539	\$8,000
2015	\$5,115	\$11,555	\$98,720	\$222,960
2016	\$40,706	\$91,939	\$858,016	\$1,937,594
2017	\$50,343	\$113,670	\$1,222,697	\$2,760,618
2018	\$24,786	\$56,022	\$336,256	\$759,928
2019	\$10,238	\$23,127	\$255,951	\$578,166
2020	\$9,416	\$21,259	\$235,403	\$531,478
2021	\$908	\$2,049	\$22,689	\$51,226
2022	\$27,155	\$61,385	\$678,872	\$1,534,614
Total	\$168,962	\$381,671	\$3,712,144	\$8,384,583

## **Financial Performance**

To date there have been no defaults and as of 6/30/2022 there was 1 delinquency (for a predevelopment loan) representing \$58,288 of original principal, 0.05% of the portfolio.

## Marketing

The Green Bank's multifamily programs are built on partnerships with key housing organizations in Connecticut that support the Green Bank's multifamily programs with marketing, outreach, demonstration, and education programs to build awareness and demand from property owners. Our approach is to leverage and collaborate with these well-established organizations, building

on their initiatives and programs, as we work to scale and "mainstream" holistic clean energy improvements in the multifamily sector. Key partners include CDFI's Capital for Change and the Housing Development Fund, Department of Housing, Connecticut Housing Finance Authority, and the HUD Connecticut Field Office, as well as the utility companies. These organizations partner with us at conferences and in other public outreach and education activities.

In 2017, we established a Multifamily Peer-to-Peer network where advanced practitioners, including owners, developers, architects, professional service providers and funders, gather on a monthly basis to exchange information and discuss their projects – with the goal of building greater professional capacity in the sector and awareness of Green Bank programs. While the COVID-19 pandemic has brought the Peet-to-Peer network into the virtual world for its meetings, the Green Bank continues to sponsor and support the group. We have tapped the experts in the network on multiple occasions to ask for their input on policy and definitions that apply to this sector.

# Case 7 – Strategic Investments

## Description

The Green Bank's financial resources may be considered for part of the capital stack for projects that are outside any of the organization's existing programs and are aligned with its mission. Opportunities are evaluated as they arise, and projects are selected based on the opportunity to expand the Green Bank's experience with specific technologies, advance economic development in a specific locale, or drive adoption of clean energy that might not otherwise occur.

## Key Performance Indicators

The Key Performance Indicators for the Strategic Program closed activity are reflected in Table 181 through

Table 183.

Fiscal					#		Green Bank	Private	Leverage
Year	EE	RE	RE/EE	Other	Projects	Total Investment	Investment <sup>227</sup>	Investment	Ratio
2012	0	0	0	0	0	\$0	\$0	\$0	\$0
2013	0	1	0	0	1	\$70,800,000	\$5,800,000	\$65,000,000	12.2
2014	0	0	0	0	0	\$0	\$0	\$0	\$0
2015	1	1	0	1	2	\$56,500,000	\$3,227,000	\$53,273,000	17.5
2016	0	0	0	0	0	\$0	\$0	\$0	\$0
2017	0	1	0	0	1	\$4,538,212	\$3,900,000	\$638,212	1.2
2018	0	0	0	0	0	\$0	\$0	\$0	\$0
2019	0	1	0	0	1	\$6,503,800	\$1,200,000	\$5,303,800	5.4
2020	0	2	0	0	2	\$20,738,702	\$6,723,188	\$14,015,514	3.1
2021	0	0	0	0	0	\$0	\$0	\$0	\$0
2022	0	0	0	0	0	\$0	\$0	\$0	\$0
Total	1	6	0	0	7	\$159,080,714	\$20,850,188	\$138,230,526	7.6

#### TABLE 181. STRATEGIC PROJECT TYPES AND INVESTMENT BY FY CLOSED

TABLE 182. STRATEGIC PROJECT CAPACITY, GENERATION AND SAVINGS BY FY CLOSED

Fiscal Year	Installed Capacity (kW)	Expected Annual Generation (kWh)	Expected Lifetime Savings or Generation (MWh)	Annual Saved / Produced (MMBtu)	Lifetime Saved / Produced (MMBtu)
2012	0	0	0	0	0
2013	14,800.0	116,683,200	1,166,832	398,123	3,981,231
2014	0	0	0	0	0
2015	5,000.0	136,494,997	1,661,591	465,850	403,503
2016	0	0	0	0	0
2017	193.0	828,433	20,711	2,827	70,665
2018	0	0	0	0	0
2019	997.7	4,282,527	107,063	3,876	96,900
2020	7,700.0	60,444,000	614,952	29,919	305,015

<sup>&</sup>lt;sup>227</sup> Includes incentives, interest rate buydowns and loan loss reserves.

#### CONNECTICUT GREEN BANK 6. PROGRAMS – STRATEGIC INVESTMENTS

Fiscal Year	Installed Capacity (kW)	Expected Annual Generation (kWh)	Expected Lifetime Savings or Generation (MWh)	Annual Saved / Produced (MMBtu)	Lifetime Saved / Produced (MMBtu)
2021	0	0	0	0	0
2022	0	0	0	0	0
Total	28,690.7	318,733,060	3,571,149	900,594	10,124,702

#### TABLE 183. STRATEGIC PROJECT AVERAGES BY FY CLOSED

				Average Annual
	Average Total	Average Amount	Average Installed	Saved / Produced
Fiscal Year	Investment	Financed	Capacity (kW)	(MMBtu)
2012	\$0	\$0	0	0
2013	\$70,800,000	\$5,800,000	14,800.0	398,123
2014	\$0	\$0	0	0
2015	\$28,250,000	\$1,613,500	2,500.0	232,925
2016	\$0	\$0	0	0
2017	\$4,538,212	\$3,900,000	193.0	2,827
2018	\$0	\$0	0	0
2019	\$6,503,800	\$6,503,800	997.7	0
2020	\$10,369,351	\$10,369,351	3,850.0	0
2021	\$0	\$0	0	0
2022	\$0	\$0	0	0
Average	\$22,725,816	\$5,738,500	4,781.8	216,700

## **Societal Benefits**

Ratepayers in Connecticut enjoy of the societal benefits of Strategic Investments. Over the course of its existence, the program has supported the creation of 2,096 job years, avoided the lifetime emission of 1,089,248 tons of carbon dioxide, 1,798,303 pounds of nitrous oxide, 1,454,162 pounds of sulfur oxide, and 17,794 pounds of particulate matter as illustrated by Table 184 and Table 186.

These projects are estimated to have generated \$15 million in tax revenues for the State of Connecticut since inception as shown in Table 185. The lifetime economic value of the public health impacts of these projects are estimated between \$15 and \$34 million as illustrated in Table 187.

Fiscal Year	Direct Jobs	Indirect and Induced Jobs	Total Jobs
2012	0	0	0
2013	340	779	1,119
2014	0	0	0
2015	279	360	639
2016	0	0	0
2017	28	36	64
2018	0	0	0

TABLE 184. STRATEGIC JOB YEARS SUPPORTED BY FY CLOSED

#### CONNECTICUT GREEN BANK 6. PROGRAMS – STRATEGIC INVESTMENTS

Fiscal Year	Direct Jobs	Indirect and Induced Jobs	Total Jobs
2019	38	49	87
2020	75	111	187
2021	0	0	0
2022	0	0	0
Total	760	1,336	2,096

#### TABLE 185. STRATEGIC TAX REVENUES GENERATED BY FY CLOSED

Fiscal Year	Individual Income Tax Revenue Generated	Corporate Tax Revenue Generated	Sales Tax Revenue Generated	Total Tax Revenue Generated
2012	\$0	\$0	\$0	\$0
2013	\$1,782,886	\$503,246	\$3,907,840	\$6,193,972
2014	\$0	\$0	\$0	\$0
2015	\$2,001,357	\$1,253,139	\$3,036,598	\$6,291,094
2016	\$0	\$0	\$0	\$0
2017	\$148,127	\$176,704	\$237,072	\$561,903
2018	\$0	\$0	\$0	\$0
2019	\$212,284	\$253,238	\$339,752	\$805,275
2020	\$452,443	\$127,944	\$1,150,259	\$1,730,646
2021	\$0	\$0	\$0	\$0
2022	\$0	\$0	\$0	\$0
Total	\$4,597,097	\$2,078,414	\$8,792,602	\$15,468,113

#### TABLE 186. STRATEGIC AVOIDED EMISSIONS BY FY CLOSED

	CO2 Emissions Avoided (tons)		NOx Emissions Avoided (pounds)		SOx Emissions Avoided (pounds)		PM 2.5 (pounds)	
Fiscal Year	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime
2012	0	0	0	0	0	0	0	0
2013	7,876	78,761	63,009	630,089	45,623	456,231	0	0
2014	0	0	0	0	0	0	0	0
2015	74,261	904,728	65,253	798,227	58,574	719,983	5,897	71,794
2016	0	0	0	0	0	0	0	0
2017	430	10,759	356	8,906	323	8,077	0	0
2018	0	0	0	0	0	0	0	0
2019	2,225	55,619	1,841	46,037	1,670	41,755	0	0
2020	3,938	39,381	31,504	315,045	22,812	228,116	0	0
2021	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0
Total	88,730	1,089,248	161,964	1,798,303	129,002	1,454,162	5,897	71,794

#### CONNECTICUT GREEN BANK 6. PROGRAMS – STRATEGIC INVESTMENTS

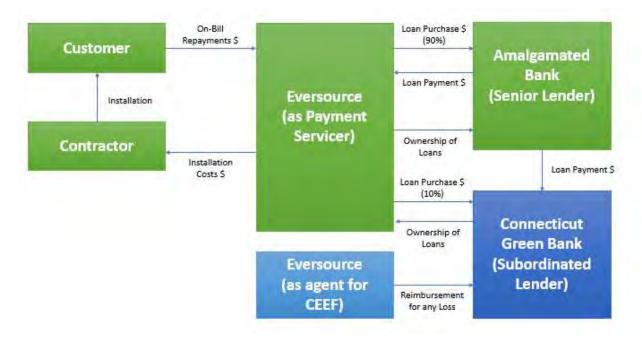
Fiscal	An	nual	Life	time
Year	Low	High	Low	High
2012	\$0	\$0	\$0	\$0
2013	\$839,171	\$1,896,841	\$8,391,713	\$18,968,414
2014	\$0	\$0	\$0	\$0
2015	\$1,835,092	\$4,151,858	\$22,394,808	\$50,664,313
2016	\$0	\$0	\$0	\$0
2017	\$5,678	\$12,835	\$141,954	\$320,869
2018	\$0	\$0	\$0	\$0
2019	\$29,353	\$66,348	\$733,821	\$1,658,711
2020	\$419,586	\$948,421	\$4,195,856	\$9,484,207
2021	\$0	\$0	\$0	\$0
2022	\$0	\$0	\$0	\$0
Total	\$3,128,880	\$7,076,304	\$35,858,151	\$81,096,515

#### TABLE 187. STRATEGIC PUBLIC HEALTH IMPACT BY FY CLOSED

# Case 8 – Small Business Energy Advantage (SBEA)

## Description

The Small Business Energy Advantage program was created in partnership by the United Illuminating and Eversource under the guidance of the Energy Efficiency Board. The program enables small businesses, with an average 12-month peak demand between 10 and 200 kw to reduce their energy costs through energy efficiency improvements in their office, shops, restaurants, and factories. Businesses can borrow up to \$100,000 to address these measures, at zero interest and repay their financing on their electric bills. Municipalities and Connecticut State Agencies can borrow up to \$1,000,000.



#### FIGURE 14. LEGAL STRUCTURE AND FLOWS OF CAPITAL FOR SBEA

## **Key Performance Indicators**

The Key Performance Indicators for SBEA closed activity are reflected in Table 188 and Table 189. These illustrate the volume of projects by year, investment, and generation capacity installed. They also break down the volume of projects by energy efficiency, renewable generation, or both.

Fiscal Year	EE	# Projects	Total Investment	Green Bank Investment	Private Investment	Leverage Ratio
2012	0	0	\$0	\$0	\$0	0
2013	0	0	\$0	\$0	\$0	0
2014	0	0	\$0	\$0	\$0	0
2015	0	0	\$0	\$0	\$0	0
2016	0	0	\$0	\$0	\$0	0
2017	0	0	\$0	\$0	\$0	0

#### TABLE 188. SBEA PROJECT TYPES AND INVESTMENT BY FY CLOSED

#### CONNECTICUT GREEN BANK 6. PROGRAMS – SBEA

Fiscal		#	Total	Green Bank	Private	Leverage
Year	EE	Projects	Investment	Investment	Investment	Ratio
2018	0	0	\$0	\$0	\$0	0
2019	4,339	4,339	\$47,681,205	\$4,486,648	\$43,194,557	10.6
2020	617	617	\$10,912,879	\$1,011,807	\$9,901,072	10.8
2021	438	438	\$8,778,001	\$839,926	\$7,938,075	10.5
2022	652	652	\$11,892,905	\$1,461,453	\$10,431,452	8.1
Total	6,046	6,046	\$79,264,990	\$7,799,834	\$71,465,156	10.2

#### TABLE 189. SBEA PROJECT CAPACITY, GENERATION AND SAVINGS BY FY CLOSED<sup>228</sup>

Fiscal Year	Installed Capacity (kW)	Expected Annual Generation (kWh)	Expected Lifetime Savings or Generation (MWh)	Annual Saved / Produced (MMBtu)	Lifetime Saved / Produced (MMBtu)	Annual Cost Savings	Lifetime Cost Savings
2012	0.0	0	0	0	0	\$0	\$0
2013	0.0	0	0	0	0	\$0	\$0
2014	0.0	0	0	0	0	\$0	\$0
2015	0.0	0	0	0	0	\$0	\$0
2016	0.0	0	0	0	0	\$0	\$0
2017	0.0	0	0	0	0	\$0	\$0
2018	0.0	0	0	0	0	\$0	\$0
2019	0.0	121,741,576	1,460,899	0	0	\$0	\$0
2020	0.0	17,311,456	207,737	0	0	\$0	\$0
2021	0.0	12,289,188	147,470	0	0	\$0	\$0
2022	0.0	18,293,583	219,523	0	0	\$0	\$0
Total	0.0	169,635,804	2,035,630	0	0	\$0	\$0

## **Societal Benefits**

Over the course of its existence, the program has supported the creation of 959 job years, avoided the lifetime emission of 1,103,619 tons of carbon dioxide, 952,646 pounds of nitrous oxide, 836,923 pounds of sulfur oxide, and 87,878 pounds of particulate matter as illustrated by Table 190 and Table 191.

SBEA has generated \$8.4 million in tax revenues for the State of Connecticut since its inception as shown in Table 192. The lifetime economic value of the public health impacts of these projects are estimated between \$27.0 and \$61.2 million as illustrated in Table 193.

TABLE 190. SBEA JOB YEARS SUPPORTED BY FY CLOSED<sup>229</sup>

<sup>&</sup>lt;sup>228</sup> Energy Savings numbers for SBEA are provided by to the Green Bank by Eversource using their established methodology. These savings numbers are not included in overall Green Bank impact numbers.

<sup>&</sup>lt;sup>229</sup> These jobs estimates were calculated using the established Green Bank methodology but are not included in overall Green Bank impact numbers.

#### CONNECTICUT GREEN BANK 6. PROGRAMS – SBEA

Fiscal Year	Direct Jobs	Indirect and Induced Jobs	Total Jobs
2012	0	0	0
2013	0	0	0
2014	0	0	0
2015	0	0	0
2016	0	0	0
2017	0	0	0
2018	0	0	0
2019	253	324	577
2020	58	74	132
2021	47	60	106
2022	63	81	144
Total	420	539	959

#### TABLE 191. SBEA AVOIDED EMISSIONS BY FY CLOSED<sup>230</sup>

	CO2 Emission	NOx Emission hissions Avoided (tons) Avoided (pound				nissions		n e · · n d e )
Fiscal Year	Annual	Lifetime	Avoided	Lifetime	Annual	(pounds)	PM 2.5 ( Annual	Lifetime
2012	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0
2019	66,002	792,028	56,973	683,679	50,052	600,630	5,256	63,067
2020	9,385	112,625	8,102	97,218	7,117	85,409	747	8,968
2021	6,663	79,951	5,751	69,014	5,053	60,630	531	6,366
2022	9,918	119,015	8,561	102,734	7,521	90,254	790	9,477
Total	91,968	1,103,619	79,387	952,645	69,744	836,923	7,323	87,878

#### TABLE 192. SBEA TAX REVENUES GENERATED BY FY CLOSED

Fiscal Year	Individual Income Tax Revenue Generated	Corporate Tax Revenue Generated	Sales Tax Revenue Generated	Total Tax Revenue Generated
2012	\$0	\$0	\$0	\$0
2013	\$0	\$0	\$0	\$0
2014	\$0	\$0	\$0	\$0
2015	\$0	\$0	\$0	\$0

<sup>&</sup>lt;sup>230</sup> These avoided emissions are based on averages provided by Eversource.

#### CONNECTICUT GREEN BANK 6. PROGRAMS – SBEA

Fiscal Year	Individual Income Tax Revenue Generated	Corporate Tax Revenue Generated	Sales Tax Revenue Generated	Total Tax Revenue Generated
2016	\$0	\$0	\$0	\$0
2017	\$0	\$0	\$0	\$0
2018	\$0	\$0	\$0	\$0
2019	\$1,373,552	\$937,508	\$2,779,957	\$5,091,018
2020	\$314,367	\$214,569	\$636,254	\$1,165,190
2021	\$252,868	\$172,593	\$511,784	\$937,245
2022	\$342,599	\$233,838	\$693,392	\$1,269,829
Total	\$2,283,387	\$1,558,508	\$4,621,387	\$8,463,282

#### TABLE 193. SBEA PUBLIC HEALTH IMPACT BY FY CLOSED

Fiscal	An	nual	Life	time
Year	Low	High	Low	High
2012	\$0	\$0	\$0	\$0
2013	\$0	\$0	\$0	\$0
2014	\$0	\$0	\$0	\$0
2015	\$0	\$0	\$0	\$0
2016	\$0	\$0	\$0	\$0
2017	\$0	\$0	\$0	\$0
2018	\$0	\$0	\$0	\$0
2019	\$1,619,163	\$3,664,421	\$19,429,956	\$43,973,057
2020	\$230,242	\$521,075	\$2,762,908	\$6,252,898
2021	\$163,446	\$369,905	\$1,961,354	\$4,438,855
2022	\$243,305	\$550,637	\$2,919,656	\$6,607,642
Total	\$2,256,156	\$5,106,038	\$27,073,874	\$61,272,453

## **Financing Program**

SBEA offer participants zero-interest, on-bill financing for up to 4 years. Businesses are eligible for up to \$100,000 per meter, with higher limits for municipalities and the state. The Connecticut Green Bank and Amalgamated Bank have partnered together to supply capital for Eversource's SBEA financing. The loans are originally funded by Eversource. Connecticut Green Bank and Amalgamated Bank purchase these loans on a quarterly basis at a rate discounted to bring their customer-facing rate to 0%. Connecticut Green Bank contributes 10% of the capital for these purchases and the remaining 90% comes from Amalgamated Bank. Loan losses are backed by the Connecticut Energy Efficiency Fund.

#### **Financial Performance**

As of June 30, 2022, there were 220 delinquent SBEA loans with a balance of \$\$2,092,169 or 10.5% of the outstanding balance. These delinquencies represent 2.6% of the original balance.

## Marketing

SBEA is marketed by the utilities through a network of authorized contractors. They offer a free energy assessment and incentives, in addition to the financing. At present, the Green Bank is not involved with efforts to market SBEA.

# Case 9 – Anaerobic Digestion and Combined Heat and Power Pilot Programs

## Description

These pilot programs were initiated in 2011 per Public Act 11-80 Section 103, the Green Bank is to develop a three-year pilot program for AD and CHP by setting aside \$2 million a year for each pilot for three years – for a total of \$12 million. Funds to support the pilot programs could be used as grants, power purchase agreements or loans. There were to be no more than five (5) AD projects, each no more than 3 MW in size, and no more than 50 MW of CHP projects each not to exceed 5 MW in size. Both pilot programs supported projects at no more than \$450 per kW on a grant basis; Seven projects were supported over the duration of these pilots (see Table 143 below). Due to the Connecticut General Assembly's reallocation of monies from the Clean Energy Fund to the General Fund in 2017, the Green Bank cancelled existing commitments for these pilots the following year.

## **Key Performance Indicators**

The Key Performance Indicators for the AD and CHP Pilot Programs closed activity are reflected in Table 194 through Table 196. These illustrate the volume of projects by year, investment, generation capacity installed, and the amount of energy saved and/or produced. They also break down the volume of projects by energy efficiency, renewable generation, or both.

Fiscal				#	Total	Green Bank	Private	Leverage
Year	EE	RE	RE/EE	Projects	Investment	Investment <sup>231</sup>	Investment	Ratio
2012	0	0	0	0	\$0	\$0	\$0	0
2013	0	2	0	2	\$3,189,000	\$304,500	\$2,884,500	10.5
2014	0	1	0	1	\$6,300,000	\$630,000	\$5,670,000	10.0
2015	0	2	0	2	\$642,578	\$60,750	\$581,828	10.6
2016	0	1	0	1	\$10,500,000	\$1,997,403	\$8,502,597	5.3
2017	0	1	0	1	\$3,401,392	\$502,860	\$2,898,532	6.8
2018	0	0	0	0	\$0	\$0	\$0	0
2019	0	0	0	0	\$0	\$0	\$0	0
2020	0	0	0	0	\$0	\$0	\$0	0
2021	0	0	0	0	\$0	\$0	\$0	0
2022	0	0	0	0	\$0	\$0	\$0	0
Total	0	7	0	7	\$24,032,970	\$3,495,513	\$20,537,457	6.9

#### TABLE 194. AD AND CHP PILOT PROJECT TYPES AND INVESTMENT BY FY CLOSED

<sup>&</sup>lt;sup>231</sup> Includes incentives, interest rate buydowns and loan loss reserves.

#### CONNECTICUT GREEN BANK 6. PROGRAMS – PILOT PROGRAMS

Fiscal Year	Installed Capacity (kW)	Expected Annual Generation (kWh)	Expected Lifetime Savings or Generation (MWh)	Annual Saved / Produced (MMBtu)	Lifetime Saved / Produced (MMBtu)	Annual Food/Organic Waste (tons/year)
2012	0	0	0	0	0	0
2013	685.0	5,400,540	81,008	32,533	488,002	0
2014	3,000.0	23,652,000	354,780	142,482	2,137,234	0
2015	135.0	1,064,340	15,965	4,000	60,001	0
2016	1,010.0	7,078,080	106,171	44,949	674,240	40,000
2017	795.0	6,267,780	94,017	304,445	4,566,675	0
2018	0	0	0	0	0	0
2019	0	0	0	0	0	0
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2022	0	0	0	0	0	0
Total	5,625.0	43,462,740	651,941	528,410	7,926,152	40,000

#### TABLE 195. AD AND CHP PILOT PROJECT CAPACITY, GENERATION AND SAVINGS BY FY CLOSED

#### TABLE 196. AD AND CHP PILOT PROJECT AVERAGES BY FY CLOSED

	Average Total	Average Amount	Average Installed	Average Annual Saved / Produced
Fiscal Year	Average Total Investment	Financed	Capacity (kW)	(MMBtu)
2012	\$0	\$0	0	0
2013	\$1,594,500	\$0	342.5	16,267
2014	\$6,300,000	\$0	3,000.0	142,482
2015	\$321,289	\$0	67.5	2,000
2016	\$10,500,000	\$1,997,403	1,010.0	44,949
2017	\$3,401,392	\$502,860	795.0	304,445
2018	\$0	\$0	0	0
2019	\$0	\$0	0	0
2020	\$0	\$0	0	0
2021	\$0	\$0	0	0
2022	\$0	\$0	0	0
Average	\$3,433,281	\$1,250,132	803.6	75,487

## **Societal Benefits**

Ratepayers in Connecticut continue to enjoy the societal benefits of the AD and CHP Programs despite the fact that the programs are now closed. Over the course of their existence, these programs have supported the creation of 188 job years as illustrated by Table 197, and generated over \$2 million in tax revenues for the State of Connecticut as shown in Table 198. We have not included environmental or public health impacts for these pilots as the Avert and CoBRA models are not compatible with the technologies of these pilots.

 TABLE 197. AD AND CHP PILOT JOB YEARS SUPPORTED BY FY CLOSED

#### CONNECTICUT GREEN BANK 6. PROGRAMS – PILOT PROGRAMS

Fiscal Year	Direct Jobs	Indirect and Induced Jobs	Total Jobs
2012	0	0	0
2013	12	20	32
2014	25	39	64
2015	3	4	6
2016	20	32	51
2017	13	21	34
2018	0	0	0
2019	0	0	0
2020	0	0	0
2021	0	0	0
2022	0	0	0
Total	73	115	188

#### TABLE 198. AD AND CHP TAX REVENUES GENERATED BY FY CLOSED

Fiscal Year	Individual Income Tax Revenue Generated	Corporate Tax Revenue Generated	Sales Tax Revenue Generated	Total Tax Revenue Generated
2012	\$0	\$0	\$0	\$0
2013	\$103,438	\$84,824	\$174,572	\$362,834
2014	\$204,347	\$167,574	\$344,873	\$716,794
2015	\$20,843	\$17,092	\$35,176	\$73,110
2016	\$101,777	\$0	\$600,933	\$702,709
2017	\$73,820	\$90,474	\$186,198	\$350,492
2018	\$0	\$0	\$0	\$0
2019	\$0	\$0	\$0	\$0
2020	\$0	\$0	\$0	\$0
2021	\$0	\$0	\$0	\$0
2022	\$0	\$0	\$0	\$0
Total	\$504,225	\$359,963	\$1,341,752	\$2,205,940

# Case 10 – CT Solar Loan (Graduated)

## Description

The Connecticut Solar Loan was a \$5 million pilot public-private partnership between the Green Bank and Sungage Financial, which resulted in the first crowd-funded solar loan program in the country. It was the first of the Green Bank's ventures to be retired and graduated from the Green Bank's funding to a \$100 million pool of capital from the Digital Federal Credit Union. The purpose of the program was to enable citizens to own solar PV systems installed on their homes. The Connecticut Solar Loan ended in FY 2015.

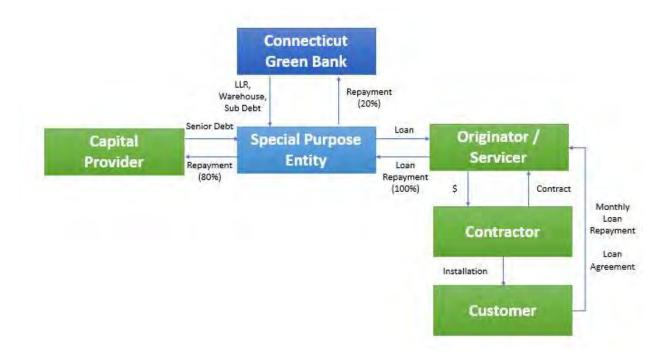


FIGURE 15. LEGAL STRUCTURE AND FLOWS OF CAPITAL FOR THE CT SOLAR LOAN

The CT Solar Loan yields a rate of return to the capital providers that is commensurate with the risks they are taking. The program provided 19 contractors with an important sales tool and gave nearly 300 customers the ability to own solar PV through low-interest and long-term financing along with access to federal tax credits and state incentives (i.e., the RSIP Expected Performance Based Buydown). Of the \$6.0 million invested by the Connecticut Green Bank into the CT Solar Loan, \$1.0 million has been sold to the crowd-funding platform Mosaic, \$2.6 million to a Community Development Financial Institution in The Reinvestment Fund, and the remaining is on the balance sheet of the Connecticut Green Bank.

In structuring the solar loan product, the Green Bank's objective was to enable homeowners of varying financial means to own their own solar PV systems. Prior creation of the CT Solar Loan, a homeowner would need to use their own savings or their own home equity (most often though a home equity line of credit) to pay for the system. At that time, a new system often required an investment exceeding \$25,000. The requirement for such a level of personal financial resources dramatically constrained the "ownership" market for solar PV. So, the Green Bank with its partner

Sungage Financial, developed the CT Solar Loan which made 15-year financing available at affordable interest rates without the need to have a lien on the home or limit the purchase to certain manufacturers. In developing the CT Solar Loan, the Green Bank had to overcome the risk of being unable to sell the loans to private investors which would have tied up capital resources of the Green Bank and limited its ability to deploy investment of additional clean energy. Ultimately, the Green Bank became confident that a sufficient rate of return could be offered to enable the investments to "clear" the market without a discount (or loss) to the Green Bank. The combination of crowdsourced funding and a structured private placement enabled the Green Bank to sell the investments with recourse limited to the underlying consumer loans.as the Green Bank also established a limited loan loss reserve using American Recovery and Reinvestment Act funds from the US Department of Energy.

The CT Solar Loan was the Connecticut Green Bank's first residential product graduation. It started off as the first crowd-funded residential solar PV transaction with Sungage Financial through Mosaic.<sup>232</sup> It graduated to a partnership between Sungage Financial and Digital Federal Credit Union – with no resources from the Connecticut Green Bank.<sup>233</sup> The Ioan offering from Sungage Financial now includes 5-, 10-, and 20-year maturity terms at affordable interest rates and is being offered in California, Florida, Massachusetts, New Jersey, New York, Texas and Connecticut.

## **Key Performance Indicators**

The Key Performance Indicators for the CT Solar Loan closed activity are reflected in Table 199 through Table 202. These illustrate the volume of projects by year, investment, generation capacity installed, and the amount of energy saved and/or produced. It also breaks down the volume of projects by energy efficiency, renewable generation, or both.

Fiscal				#	Total	Green Bank	Private	Leverage
Year	<b>EE</b> <sup>234</sup>	RE	RE/EE	Projects	Investment	Investment <sup>235</sup>	Investment	Ratio
2012	0	0	0	0	\$0	\$0	\$0	0
2013	0	3	0	3	\$91,924	\$5,025	\$86,899	18.3
2014	0	140	0	140	\$4,461,833	\$232,100	\$4,229,733	19.2
2015	0	136	0	136	\$4,505,386	\$222,549	\$4,282,838	20.2
Total	0	279	0	279	\$9,059,143	\$459,674	\$8,599,469	19.7

#### TABLE 199. CT SOLAR LOAN PROJECT TYPES AND INVESTMENT BY FY CLOSED

#### TABLE 200. CT SOLAR LOAN PROJECT CAPACITY, GENERATION AND SAVINGS BY FY CLOSED

	Installed		Expected				
Fiscal	Capacity	Expected	Lifetime	Annual	Lifetime	Annual Cost	Lifetime Cost
Year	(kW)	Annual	Savings or	Saved /	Saved /	Savings	Savings

<sup>&</sup>lt;sup>232</sup> <u>http://www.businesswire.com/news/home/20140206005031/en/Sungage-Financial-CEFIA-Mosaic-Announce-5-</u> <u>Million#.VgRTgVIXL4Y</u>

<sup>233</sup> <u>http://www.ctgreenbank.com/ct-solar-loan-partner-graduates-connecticut-green-bank/</u>

<sup>&</sup>lt;sup>234</sup> All projects that receive an RSIP incentive are required to do an energy audit/assessment.

<sup>&</sup>lt;sup>235</sup> Includes incentives, interest rate buydowns and loan loss reserves.

		Generation (kWh)	Generation (MWh)	Produced (MMBtu)	Produced (MMBtu)		
2012	0	0	0	0	0	\$0	\$0
2013	17.0	19,407	485	66	1,655	\$3,596	\$89,910
2014	1,107.9	1,261,626	31,541	4,305	107,617	\$167,832	\$4,195,800
2015	1,067.2	1,215,364	30,384	4,147	103,671	\$163,037	\$4,075,920
Total	2,192.1	2,496,398	62,410	8,518	212,943	\$334,465	\$8,361,630

#### TABLE 201. CT SOLAR LOAN PROJECT AVERAGES BY FY CLOSED

Fiscal Year	Average Total Investment	Average Amount Financed	Average Installed Capacity (kW)	Average Annual Saved / Produced (MMBtu)	Average Finance Term (months)	Average Finance Rate	Average DTI	Average FICO Score
2012	\$0	\$0	0	0	0	0	0	0
2013	\$30,641	\$19,658	5.7	22	180	5.58	0	758
2014	\$31,870	\$19,819	7.9	31	180	5.57	0	771
2015	\$33,128	\$22,942	7.8	30	180	3.34	0	771
Average	\$32,470	\$21,340	7.9	31	180	4.48	0	771

#### TABLE 202. CT SOLAR LOAN PROJECT APPLICATION YIELD<sup>236</sup> BY FY RECEIVED

Fiscal Year	Applications Received	Applications Approved	Applications Withdrawn	Applications Denied	Approved Rate	Denied Rate
2012	0	0	0	0	0	0
2013	14	7	5	2	86%	14%
2014	284	163	54	67	76%	24%
2015	164	109	37	18	89%	11%
Total	462	279	96	87	81%	19%

## **Customer Savings**

Financial Savings is often a significant motivator for going solar. For the Solar Loan, savings is estimated as the difference between a customer's loan payment for a Green Bank supported solar PV system and the hypothetical cost of purchasing the electricity generated that customer's system from a utility. For the Solar Loan customers, many are not realizing a savings in real dollar terms as their finance costs are higher than the retail electricity rate cost of the electricity they generate. This is in line with expectations and can be seen comparing the electricity costs vs the levelized cost of electricity (LCOE) which takes into account tax credits and future savings after

<sup>&</sup>lt;sup>236</sup> Applications received are applications submitted to Sungage Financial (servicer of the CT Solar Loan) for credit approval. Applications approved are applications that have met the credit requirements for the program and can move to loan closing, pending formal technical approval of the solar equipment by the Residential Solar Investment Program. Applications withdrawn are applications that have been cancelled by the submitter due to the project not moving forward. Applications denied are applications that are not approved because the customer does not meet underwriting requirements.

the loan is paid and spreads that across the life of the system. When that analysis is performed, we see that on the whole, customers are saving money as expected.

Fiscal	Savings	Savings using	Cumulative	Generation kWh <sup>239</sup>	kW Installed
Year		LCOE <sup>238</sup>	# of Meters		
2012	\$0	\$0	0	0	0
2013	\$0	\$0	0	0	0
2014	(\$2,684)	\$7,229	22	116,146	174
2015	(\$15,602)	\$116,300	205	1,373,881	1,590
2016	(\$53,970)	\$145,807	274	2,326,245	2,147
2017	(\$107,985)	\$123,867	274	2,097,321	2,147
2018	(\$112,686)	\$142,323	274	1,882,963	2,147
2019	(\$88,047)	\$178,722	274	1,770,902	2,147
2020	(\$80,965)	\$181,659	274	1,817,329	2,147
2021	(\$107,977)	\$176,586	274	1,618,683	2,147
2022	(\$114,428)	\$179,213	274	1,537,537	2,147
Total	(\$684,344)	\$1,251,706	274	14,541,007	2,147

#### TABLE 203. CT SOLAR LOAN ANNUAL SAVINGS<sup>237</sup>

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<sup>&</sup>lt;sup>237</sup> All data points required to calculate annual savings for each meter may not be available yet as we wait on data ingestion.
<sup>238</sup> Savings using LCOE: Savings is equal to the difference between the retail rate and LCOE times solar generation. LCOE is calculated using the post incentive install cost per kW, 20 years of fixed O&M cost/kW discounted at the average solar loan interest rate, and the estimated lifetime hours of operation. The interest rate used to discount the O&M cost is 6.5836% and the annual O&M cost is assumed to be 33.6 \$/kW/year. The total lifetime hours of operation is calculated based on the assumption that solar is producing electricity 13.5% of the year and reduces by 5% (5.695 hours) every year. The post incentive install cost/kW is calculated based on the customer's Gross system Cost, RSIP incentive and system size. Lastly, the tax credit solar loan customers receive is 30%.

<sup>&</sup>lt;sup>239</sup> Generation is the production we see in our meters as of today: Any increase to generation is due to data backfilling or due to getting access to previously inaccessible meters; any decrease in generation from last year's report is data that is temporarily missing due to a meter replacement. Annual Savings is a function of generation so there might be an increase or decrease in savings.

## **Vulnerable Communities Penetration**

The penetration of the CT Solar Loan in vulnerable communities is displayed in the table below.

		# Proj	ect Units				MW		Total Investment				
Fiscal Year	Total	Not Vulnerable	Vulnerable	% Vulnerable	Total	Not Vulnerable	Vulnerable	% Vulnerable	Total	Not Vulnerable	Vulnerable	% Vulnerable	
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%	
2013	3	1	2	67%	0.0	0.0	0.0	78%	\$91,924	\$19,900	\$72,024	78%	
2014	140	100	40	29%	1.1	0.8	0.3	25%	\$4,461,833	\$3,351,908	\$1,109,924	25%	
2015	136	96	40	29%	1.1	0.8	0.3	26%	\$4,505,386	\$3,323,876	\$1,181,511	26%	
Total	279	197	82	29%	2.2	1.6	0.6	26%	\$9,059,143	\$6,695,684	\$2,363,459	26%	

TABLE 204. CT SOLAR LOAN ACTIVITY IN VULNERABLE AND NOT VULNERABLE COMMUNITIES BY FY CLOSED<sup>240</sup>

## Area Median Income Band Penetration

For a breakdown of the CT Solar Loan volume and investment by census tracts categorized by Area Median Income bands – see Table 205. It should be noted that the CT Solar Loan is not an income-targeted program.

TABLE 205. CT SOLAR LOAN ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS BY FY CLOSED<sup>241</sup>

Fiscal Year	MSA AMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Owner Occupied 1- 4 Unit Households	% Owner Occupied 1- 4 Unit Household Distribution	Project Units / 1,000 Owner Occupied 1- 4 Unit Households	Total Investment / Owner Occupied 1-4 Unit Household	Watts / Owner Occupied 1-4 Unit Household
2012	<60%	0	0%	0.0	0%	\$0	0%	61,168	7%	0.0	\$0.00	0.0
2012	60%-80%	0	0%	0.0	0%	\$0	0%	101,640	12%	0.0	\$0.00	0.0
2012	80%-100%	0	0%	0.0	0%	\$0	0%	151,346	17%	0.0	\$0.00	0.0
2012	100%-120%	0	0%	0.0	0%	\$0	0%	216,988	25%	0.0	\$0.00	0.0
2012	>120%	0	0%	0.0	0%	\$0	0%	350,196	40%	0.0	\$0.00	0.0

<sup>240</sup> Excludes projects in unknown communities.

<sup>&</sup>lt;sup>241</sup> Excludes projects in unknown bands.

Fiscal Year	MSA AMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Owner Occupied 1- 4 Unit Households	% Owner Occupied 1- 4 Unit Household Distribution	Project Units / 1,000 Owner Occupied 1- 4 Unit Households	Total Investment / Owner Occupied 1-4 Unit Household	Watts / Owner Occupied 1-4 Unit Household
2012	Total	0	0%	0.0	0%	\$0	0%	881,338	100%	0.0	\$0.00	0.0
2013	<60%	0	0%	0.0	0%	\$0	0%	59,494	7%	0.0	\$0.00	0.0
2013	60%-80%	1	33%	0.0	31%	\$33,775	37%	109,189	12%	0.0	\$0.31	0.0
2013	80%-100%	0	0%	0.0	0%	\$0	0%	150,603	17%	0.0	\$0.00	0.0
2013	100%-120%	1	33%	0.0	47%	\$38,249	42%	203,157	23%	0.0	\$0.19	0.0
2013	>120%	1	33%	0.0	22%	\$19,900	22%	351,633	40%	0.0	\$0.06	0.0
2013	Total	3	100%	0.0	100%	\$91,924	100%	874,076	100%	0.0	\$0.11	0.0
2014	<60%	1	1%	0.0	0%	\$9,948	0%	57,673	7%	0.0	\$0.17	0.0
2014	60%-80%	3	2%	0.0	2%	\$89,796	2%	103,934	12%	0.0	\$0.86	0.2
2014	80%-100%	24	17%	0.2	14%	\$637,228	14%	149,038	17%	0.2	\$4.28	1.1
2014	100%-120%	49	35%	0.4	37%	\$1,624,516	36%	209,561	24%	0.2	\$7.75	2.0
2014	>120%	63	45%	0.5	47%	\$2,100,345	47%	348,270	40%	0.2	\$6.03	1.5
2014	Total	140	100%	1.1	100%	\$4,461,833	100%	868,476	100%	0.2	\$5.14	1.3
2015	<60%	1	1%	0.0	0%	\$22,510	0%	64,361	7%	0.0	\$0.35	0.1
2015	60%-80%	10	7%	0.1	6%	\$286,560	6%	96,305	11%	0.1	\$2.98	0.7
2015	80%-100%	18	13%	0.1	13%	\$603,685	13%	164,873	19%	0.1	\$3.66	0.8
2015	100%-120%	30	22%	0.2	23%	\$1,008,757	22%	184,613	21%	0.2	\$5.46	1.3
2015	>120%	77	57%	0.6	58%	\$2,583,874	57%	352,621	41%	0.2	\$7.33	1.7
2015	Total	136	100%	1.1	100%	\$4,505,386	100%	862,773	100%	0.2	\$5.22	1.2
Total	<60%	2	1%	0.0	0%	\$32,458	0%	60,769	7%	0.0	\$0.53	0.1
Total	60%-80%	14	5%	0.1	4%	\$410,131	5%	99,220	12%	0.1	\$4.13	0.9
Total	80%-100%	42	15%	0.3	14%	\$1,240,913	14%	165,331	19%	0.3	\$7.51	1.8
Total	100%-120%	80	29%	0.7	30%	\$2,671,522	29%	187,463	22%	0.4	\$14.25	3.5
Total	>120%	141	51%	1.1	52%	\$4,704,119	52%	345,311	40%	0.4	\$13.62	3.3
Total	Total	279	100%	2.2	100%	\$9,059,143	100%	858,094	100%	0.3	\$10.56	2.6

		# Pro	oject Units				MW		Total Investment				
Fiscal Year					Total	Over 100% AMI	100% or Below AMI	% at 100% or Below	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below	
	Total	AMI	AMI	Below	Total	AIVII			Total				
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%	
2013	3	2	1	33%	0.0	0.0	0.0	31%	\$91,924	\$58,149	\$33,775	37%	
2014	140	112	28	20%	1.1	0.9	0.2	16%	\$4,461,833	\$3,721,449	\$740,383	17%	
2015	136	107	29	21%	1.1	0.9	0.2	20%	\$4,505,386	\$3,588,731	\$916,655	20%	
Total	279	221	58	21%	2.2	1.8	0.4	18%	\$9,059,143	\$7,368,329	\$1,690,814	19%	

TABLE 206. CT SOLAR LOAN ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS ABOVE OR BELOW 100% BY FY CLOSED<sup>242</sup>

#### TABLE 207. CT SOLAR LOAN ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS ABOVE OR BELOW 80% BY FY CLOSED<sup>243</sup>

		# Pro	oject Units				MW		Total Investment				
Fiscal Year	Total	Over 80% AMI	80% or Below AMI	% at 80% or Below	Total	Over 80% AMI	80% or Below AMI	% at 80% or Below	Total	Over 80% AMI	80% or Below AMI	% at 80% or Below	
2012	0	0	0	0%	0.0	0	0	0%	\$0	\$0	\$0	0%	
2013	3	2	1	33%	0.0	0	0	31%	\$91,924	\$58,149	\$33,775	37%	
2014	140	136	4	3%	1.1	1	0	2%	\$4,461,833	\$4,358,677	\$103,155	2%	
2015	136	126	10	7%	1.1	1	0	6%	\$4,505,386	\$4,214,298	\$291,088	6%	
Total	279	264	15	5%	2.2	2	0	4%	\$9,059,143	\$8,631,124	\$428,019	5%	

### **Distressed Community Penetration**

For a breakdown of the CT Solar Loan project volume and investment by census tracts categorized by Distressed Communities – see Table 208. It should be noted that the CT Solar Loan is not an income-targeted program.

TABLE 208. CT SOLAR LOAN ACTIVITY IN DISTRESSED COMMUNITIES BY FY CLOSED

<sup>&</sup>lt;sup>242</sup> Excludes projects in unknown bands.

<sup>&</sup>lt;sup>243</sup> Excludes projects in unknown bands.

Fiscal Year	Distres sed	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Households	% Total Household Distribution	Project Units / 1,000 Total Households	Total Investment / Total Household	Watts / Total Household
2012	Yes	0	0%	0.0	0%	\$0	0%	447,962	33%	0.0	\$0.00	0.0
2012	No	0	0%	0.0	0%	\$0	0%	912,222	67%	0.0	\$0.00	0.0
2012	Total	0	0%	0.0	0%	\$0	0%	1,360,184	100%	0.0	\$0.00	0.0
2013	Yes	2	67%	0.0	78%	\$72,024	78%	426,564	31%	0.0	\$0.17	0.0
2013	No	1	33%	0.0	22%	\$19,900	22%	929,285	69%	0.0	\$0.02	0.0
2013	Total	3	100%	0.0	100%	\$91,924	100%	1,355,849	100%	0.0	\$0.07	0.0
2014	Yes	26	19%	0.2	18%	\$757,309	17%	416,415	31%	0.1	\$1.82	0.5
2014	No	114	81%	0.9	82%	\$3,704,523	83%	939,791	69%	0.1	\$3.94	1.0
2014	Total	140	100%	1.1	100%	\$4,461,833	100%	1,356,206	100%	0.1	\$3.29	0.8
2015	Yes	18	13%	0.1	11%	\$483,091	11%	423,559	31%	0.0	\$1.14	0.3
2015	No	118	87%	1.0	89%	\$4,022,296	89%	929,024	69%	0.1	\$4.33	1.0
2015	Total	136	100%	1.1	100%	\$4,505,386	100%	1,352,583	100%	0.1	\$3.33	0.8
Total	Yes	46	16%	0.3	15%	\$1,312,424	14%	435,595	32%	0.1	\$3.01	0.7
Total	No	233	84%	1.9	85%	\$7,746,719	86%	926,160	68%	0.3	\$8.36	2.0
Total	Total	279	100%	2.2	100%	\$9,059,143	100%	1,361,755	100%	0.2	\$6.65	1.6

#### TABLE 209. CT SOLAR LOAN ACTIVITY IN DISTRESSED AND NOT DISTRESSED COMMUNITIES BY FY CLOSED<sup>244</sup>

		# Pro	oject Units			Μ	IW		Total Investment				
Fiscal		Not %		%	Not			%		Not		%	
Year	Total	Distressed	Distressed	Distressed	Total	Distressed	Distressed	Distressed	Total	Distressed	Distressed	Distressed	
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%	
2013	3	1	2	67%	0.0	0.0	0.0	78%	\$91,924	\$19,900	\$72,024	78%	
2014	140	114	26	19%	1.1	0.9	0.2	18%	\$4,461,833	\$3,704,523	\$757,309	17%	
2015	136	118	18	13%	1.1	1.0	0.1	11%	\$4,505,386	\$4,022,296	\$483,091	11%	
Total	279	233	46	16%	2.2	1.9	0.3	15%	\$9,059,143	\$7,746,719	\$1,312,424	14%	

<sup>&</sup>lt;sup>244</sup> Excludes projects in unknown communities.

## **Environmental Justice Poverty Level Penetration**

The penetration of the CT Solar Loan in Environmental Justice Communities is displayed in the following table.

		# Pr	oject Units		MW				Total Investment				
Fiscal Year	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group	
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%	
2013	3	3	0	0%	0.0	0.0	0.0	0%	\$91,924	\$91,924	\$0	0%	
2014	140	137	3	2%	1.1	1.1	0.0	1%	\$4,461,833	\$4,397,968	\$63,865	1%	
2015	136	131	5	4%	1.1	1.0	0.0	2%	\$4,505,386	\$4,397,734	\$107,653	2%	
Total	279	271	8	3%	2.2	2.2	0.0	2%	\$9,059,143	\$8,887,626	\$171,517	2%	

## Ethnicity

The progress made by the CT Solar Loan in reaching diverse communities is displayed in the following table.

TABLE 211. CT SOLAR LOAN ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS BY ETHNICITY CATEGORY BY FY CLOSED<sup>246</sup>

			Majority Black			Majority Hispanic			Majority White				Majority Asian				
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1-4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН
2012	<60%	0	0.0%	5,176	8.3%	0	0.0%	10,882	17.4%	0	0.0%	16,828	26.8%	0	0.0%	29,803	47.5%
2012	60%-80%	0	0.0%	5,006	4.9%	0	0.0%	2,270	2.2%	0	0.0%	73,816	72.2%	0	0.0%	21,086	20.6%
2012	80%-100%	0	0.0%	1,855	1.2%	0	0.0%	0	0.0%	0	0.0%	140,062	93.0%	0	0.0%	8,768	5.8%
2012	100%-120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	211,803	97.8%	0	0.0%	4,681	2.2%

<sup>245</sup> Excludes projects in unknown bands.

<sup>246</sup> Excludes projects in unknown bands.

			Majority	Black			Majority H	lispanic			Majority	White		Majority Asian			
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1-4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН
2012	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	348,384	99.8%	0	0.0%	828	0.2%
2012	Total	0	0.0%	12,037	1.4%	0	0.0%	13,152	1.5%	0	0.0%	790,893	89.7%	0	0.0%	65,166	7.4%
2013	<60%	0	0.0%	3,382	5.5%	0	0.0%	11,821	19.4%	0	0.0%	14,269	23.4%	0	0.0%	31,532	51.7%
2013	60%-80%	0	0.0%	5,736	5.2%	0	0.0%	2,738	2.5%	1	100.0%	75,591	68.7%	0	0.0%	25,902	23.6%
2013	80%-100%	0	0.0%	1,926	1.3%	0	0.0%	0	0.0%	0	0.0%	139,931	93.5%	0	0.0%	7,819	5.2%
2013	100%-120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	198,438	97.8%	0	0.0%	4,389	2.2%
2013	>120%	0	0.0%	1,808	0.5%	0	0.0%	0	0.0%	1	100.0%	346,905	98.9%	0	0.0%	1,995	0.6%
2013	Total	0	0.0%	12,852	1.5%	0	0.0%	14,559	1.7%	3	100.0%	775,134	88.7%	0	0.0%	71,637	8.2%
2014	<60%	0	0.0%	4,160	7.0%	0	0.0%	12,689	21.4%	1	100.0%	14,635	24.7%	0	0.0%	27,810	46.9%
2014	60%-80%	0	0.0%	5,373	5.1%	0	0.0%	4,357	4.2%	3	100.0%	68,387	65.4%	0	0.0%	26,411	25.3%
2014	80%-100%	0	0.0%	1,868	1.3%	0	0.0%	0	0.0%	23	95.8%	140,090	94.1%	1	4.2%	6,888	4.6%
2014	100%-120%	0	0.0%	1,669	0.8%	0	0.0%	0	0.0%	49	100.0%	205,048	98.2%	0	0.0%	2,195	1.1%
2014	>120%	0	0.0%	1,813	0.5%	0	0.0%	0	0.0%	63	100.0%	344,034	98.9%	0	0.0%	1,932	0.6%
2014	Total	0	0.0%	14,883	1.7%	0	0.0%	17,046	2.0%	139	99.3%	772,194	88.8%	1	0.7%	65,236	7.5%
2015	<60%	0	0.0%	3,503	5.3%	0	0.0%	14,297	21.5%	1	100.0%	10,404	15.6%	0	0.0%	38,428	57.7%
2015	60%-80%	0	0.0%	4,605	4.8%	0	0.0%	2,578	2.7%	9	100.0%	68,171	71.0%	0	0.0%	20,705	21.6%
2015	80%-100%	0	0.0%	1,859	1.1%	0	0.0%	0	0.0%	19	100.0%	151,172	91.5%	0	0.0%	12,174	7.4%
2015	100%-120%	0	0.0%	863	0.5%	0	0.0%	0	0.0%	29	100.0%	181,464	98.8%	0	0.0%	1,302	0.7%
2015	>120%	0	0.0%	1,877	0.5%	0	0.0%	0	0.0%	78	100.0%	348,323	98.9%	0	0.0%	1,853	0.5%
2015	Total	0	0.0%	12,707	1.5%	0	0.0%	16,875	2.0%	136	100.0%	759,534	88.0%	0	0.0%	74,462	8.6%
Total	<60%	0	0.0%	6,086	9.5%	0	0.0%	15,991	24.9%	2	100.0%	13,853	21.6%	0	0.0%	28,310	44.1%
Total	60%-80%	0	0.0%	3,472	3.4%	0	0.0%	5,799	5.7%	13	100.0%	60,805	60.2%	0	0.0%	30,912	30.6%
Total	80%-100%	0	0.0%	3,957	2.5%	0	0.0%	691	0.4%	42	97.7%	142,115	91.4%	1	2.3%	8,800	5.7%
Total	100%-120%	0	0.0%	434	0.2%	0	0.0%	0	0.0%	79	100.0%	200,119	96.5%	0	0.0%	6,902	3.3%
Total	>120%	0	0.0%	2,074	0.6%	0	0.0%	0	0.0%	142	100.0%	334,664	99.2%	0	0.0%	772	0.2%
Total	Total	0	0.0%	16,023	1.9%	0	0.0%	22,481	2.6%	278	99.6%	751,556	86.8%	1	0.4%	75,696	8.7%

## Societal Benefits

Ratepayers in Connecticut continue to enjoy the societal benefits of the CT Solar Loan Program despite its closure. Over the course of its existence, the program has led to the creation of 132 job years, avoided the lifetime emission of 35,015 tons of carbon dioxide, 46,896 pounds of nitrous oxide, 53,064 pounds of sulfur oxide, and 3,131 pounds of particulate matter as illustrated by Table 212 and Table 214.

The Solar Loan Program is estimated to have generated \$463,746 million in tax revenue for the State of Connecticut as shown in Table 213. The lifetime economic value of the public health impacts of this program is estimated between \$1.2 and 2.7 million as illustrated in Table 215.

TABLE 212. CT SOLAR LOAN JOB YEARS SUPPORTED BY FY CLOSED

Fiscal Year	Direct Jobs	Indirect and Induced Jobs	Total Jobs
2012	0	0	0
2013	1	1	1
2014	25	40	65
2015	25	41	66
Total	51	82	132

#### TABLE 213. CT SOLAR LOAN TAX REVENUES GENERATED BY FY CLOSED

Fiscal Year	Individual Income Tax Revenue Generated	Corporate Tax Revenue Generated	Sales Tax Revenue Generated	Total Tax Revenue Generated
2012	\$0	\$0	\$0	\$0
2013	\$2,350	\$2,336	\$0	\$4,686
2014	\$114,374	\$113,724	\$0	\$228,098
2015	\$115,810	\$115,152	\$0	\$230,962
Total	\$232,534	\$231,212	\$0	\$463,746

#### TABLE 214. CT SOLAR LOAN AVOIDED EMISSIONS BY FY CLOSED

	CO2 Emissio	ns Avoided (tons)	NOx Em Avoided	nissions (pounds)		nissions (pounds)	PM 2.5 (pounds)	
Fiscal Year	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime
2012	0	0	0	0	0	0	0	0
2013	10	277	17	417	22	537	0	24
2014	706	17,541	980	24,519	1,163	29,008	51	1,583
2015	686	17,200	879	21,964	939	23,519	44	1,518
Total	1,402	35,018	1,876	46,900	2,124	53,064	95	3,125

#### TABLE 215. CT SOLAR LOAN PUBLIC HEALTH IMPACT BY FY CLOSED

Fiscal	An	nual	Lifetime		
Year	Low	High	Low	High	

2012	\$0	\$0	\$0	\$0
2013	\$377	\$850	\$9,413	\$21,251
2014	\$24,476	\$55,259	\$611,889	\$1,381,481
2015	\$23,578	\$53,233	\$589,451	\$1,330,823
Total	\$48,430	\$109,342	\$1,210,753	\$2,733,555

## Financing Program

Launched in March of 2013, the CT Solar Loan provided up to \$55,000 per loan, with 15-year maturity terms and affordable 6.49% interest rates (including 0.25% ACH payment benefit) to provide homeowners with the upfront capital they needed to finance residential solar PV projects. The program ended in FY2015.

The program involved a financing product developed in partnership with Sungage Financial<sup>247</sup> that utilized credit enhancements (i.e., \$300,000 loan loss reserve and \$168,000 interest rate buy-downs)<sup>248</sup> in combination with a \$5 million warehouse of funds and \$1 million of subordinated debt from the Connecticut Green Bank. Through this product, the Connecticut Green Bank lowered the barriers for Connecticut homeowners seeking to install solar PV installations thus increasing demand while at the same time reducing the market's reliance on subsidies being offered through the RSIP. The CT Solar Loan was the first dedicated residential solar loan product not secured by a lien on the home or tied to a particular PV equipment OEM supplier. As a loan, capital provided to consumers for the CT Solar Loan is returned to the Connecticut Green Bank – it is not a subsidy. In fact, approximately 80% of the loan value was sold to retail investors through a "crowd funding" platform or to institutional investors without recourse to the Connecticut Green Bank. The financial structure of the CT Solar Loan product includes origination,<sup>249</sup> servicing,<sup>250</sup> and financing features in combination with the support of the Connecticut Green Bank.

## **Financial Performance**

To date there has been 1 default with an original principal balance of \$26,698 or 0.44% of the portfolio, and as of 6/30/2022 there are no delinquencies.

The household customers that accessed the CT Solar Loan since its launch in 2013 had varying credit scores – see Table 216.

Fiscal Year	Unknown	580-599	600-639	640-679	680-699	700-719	720-739	740-779	780+	Grand Total
2012	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	1	1	1	3
2014	0	0	0	0	5	7	18	47	63	140
2015	0	0	0	0	6	8	15	42	65	136

TABLE 216. CREDIT SCORE RANGES OF HOUSEHOLD CUSTOMERS USING THE CT SOLAR LOAN BY FY CLOSED

<sup>&</sup>lt;sup>247</sup> Sungage Financial (<u>http://www.sungagefinancial.com/</u>) won a competitive RFP through the Connecticut Green Bank's Financial Innovation RFP to support a residential solar PV loan program

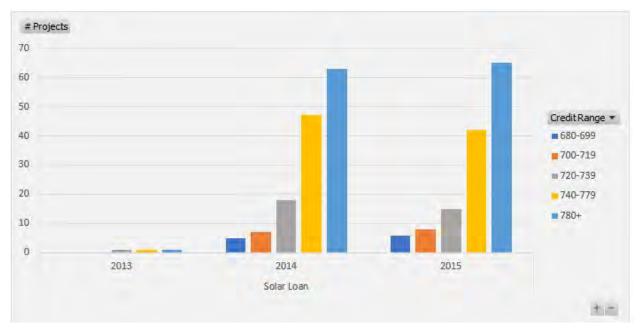
<sup>&</sup>lt;sup>248</sup> From repurposed American Recovery and Reinvestment Act funds

<sup>&</sup>lt;sup>249</sup> Sungage Financial in partnership with local contractors

<sup>&</sup>lt;sup>250</sup> Concord Servicing Corporation

Fiscal Year	Unknown	580-599	600-639	640-679	680-699	700-719	720-739	740-779	780+	Grand Total
Total	0	0	0	0	11	15	34	90	129	279
	0%	0%	0%	0%	4%	5%	12%	32%	46%	100%





## Marketing

To accelerate the deployment of residential solar PV through the RSIP and the uptake of the CT Solar Loan financing product, the Connecticut Green Bank implemented Solarize Connecticut. Green Bank Solarize programs are designed to use a combination of group purchasing, time-limited offers, and grassroots outreach, while local clean energy advocates volunteer and coordinate with their towns to help speed the process – see Table 217.

 TABLE 217. NUMBER OF PROJECTS, INVESTMENT, AND INSTALLED CAPACITY THROUGH GREEN BANK SOLARIZE CONNECTICUT FOR

 THE CT SOLAR LOAN FINANCING PRODUCT

	# Projects	Total Investment	Installed Capacity (MW)
Solarize	168	\$5,209,925	1.3
Not Solarize	111	\$3,849,218	0.9
Total	279	\$9,059,143	2.2
% Solarize	60%	58%	59%

The Green Bank Solarize Connecticut program provided a significant marketing channel to catalyze origination for the CT Solar Loan. Nearly 60 percent of the total projects, investment, and installed capacity came from Solarize Connecticut.

# Case 11 – CT Solar Lease (Graduated)

## Description

The Green Bank has used third-party ownership structures to deploy distributed solar generation in Connecticut in both the Residential and Commercial sectors. These funds are a unique combination of a tax equity investor and a syndicate of debt providers and the Green Bank to support solar PV installations (i.e., rooftop residential lease financing for solar PV and commercial leases and PPAs for rooftop, carport, and ground mount solar PV). The Residential Solar Lease ended in FY 2016.

Residential leases were one of the first products to graduate from Green Bank funding, but the organization still actively pursues new projects in the Commercial, Industrial, and Institutional sector for its funds. The Green Bank also performs asset management functions for the entire portfolio including the now closed Residential portion of the program.

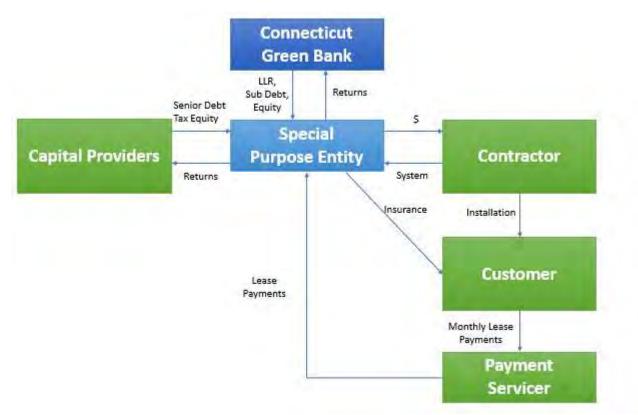


FIGURE 17. LEGAL STRUCTURE AND FLOWS OF CAPITAL FOR THE CT SOLAR LEASE<sup>251</sup>

The CT Solar Lease 2 fund was the second "solar PV fund" established using a combination of ratepayer funds and private capital. In developing this fund, which was fully utilized in 2017, the Green Bank sought to innovate both in the types of credits that would be underwritten and via broadening the sources of capital in the fund. Before these innovations by the Green Bank, a fund had not been established that would underwrite residential solar PV installations as well as installations on a "commercial scale" such

<sup>&</sup>lt;sup>251</sup> It should be noted that the Special Purpose Entity structure includes several entities – CT Solar Lease II, LLC and CEFIA Holdings, LLC that provide different functions.

as for municipal and school buildings, community oriented not-for-profit structures (all of which can't take advantage of Federal tax incentives due to their tax-exempt status) as well as a vast array of for-profit enterprises. These commercial-scale projects are discussed above in the Solar PPA and Commercial Lease section.

## **Key Performance Indicators**

The Key Performance Indicators for Solar Lease closed activity are reflected in Table 218 through Table 221. These illustrate the volume of projects by year, investment, generation capacity installed, and the amount of energy saved and/or produced.

				#	Total	Green Bank	Private	Leverage
Fiscal Year	<b>EE</b> <sup>252</sup>	RE	RE/EE	Projects	Investment <sup>253</sup>	Investment <sup>254</sup>	Investment	Ratio
2012	0	0	0	0	\$0	\$0	\$0	0
2013	0	0	0	0	\$0	\$0	\$0	0
2014	0	107	0	107	\$4,324,454	\$888,178	\$3,436,276	4.9
2015	0	610	0	610	\$23,672,593	\$4,861,996	\$18,810,597	4.9
2016	0	472	0	472	\$18,325,441	\$3,763,771	\$14,561,669	4.9
Total	0	1,189	0	1,189	\$46,322,488	\$9,513,946	\$36,808,543	4.9

#### TABLE 218. RESIDENTIAL SOLAR LEASE PROJECT INVESTMENT BY FY CLOSED

#### TABLE 219. RESIDENTIAL SOLAR LEASE PROJECT CAPACITY, GENERATION AND SAVINGS<sup>255</sup> BY FY CLOSED

Fiscal Year	Installed Capacity (kW)	Expected Annual Generation (kWh)	Expected Lifetime Savings or Generation (MWh)	Annual Saved / Produced (MMBtu)	Lifetime Saved / Produced (MMBtu)
2012	0	0	0	0	0
2013	0	0	0	0	0
2014	817.1	930,503	23,263	3,175	79,372
2015	4,894.7	5,574,098	139,352	19,019	475,471
2016	3,841.9	4,375,207	109,380	14,928	373,205
Total	9,553.7	10,879,808	271,995	37,122	928,048

#### TABLE 220. RESIDENTIAL SOLAR LEASE PROJECT AVERAGES BY FY CLOSED

Fiscal Year	Average Total Investment	Average Amount Financed	Average Installed Capacity (kW)	Average Annual Saved / Produced (MMBtu)	Average Finance Term (months)	Average DTI	Average FICO Score
2012	\$0	\$0	0.0	0	0	0	0
2013	\$0	\$0	0.0	0	0	0	0
2014	\$40,415	\$38,182	7.6	30	240	30	785
2015	\$38,808	\$36,663	8.0	31	240	31	777
2016	\$38,825	\$36,679	8.1	32	240	35	776
Average	\$38,959	\$36,806	8.0	31	240	33	777

<sup>&</sup>lt;sup>252</sup> All projects that receive an RSIP incentive are required to do an energy audit/assessment.

<sup>&</sup>lt;sup>253</sup> Includes closing costs and capitalized interest for C-PACE.

<sup>&</sup>lt;sup>254</sup> Includes incentives, interest rate buydowns and loan loss reserves.

<sup>&</sup>lt;sup>255</sup> The Green Bank currently estimates annual savings and is in the process or reviewing and updating this methodology to include actual savings where possible.

Fiscal Year	Applications Received	Applications Approved	Applications Withdrawn	Applications Denied	Approved Rate	Denied Rate
2012	0	0	0	0	0	0
2013	0	0	0	0	0	0
2014	669	196	256	217	68%	32%
2015	1,813	847	619	347	81%	19%
2016	351	146	154	51	85%	15%
Total	2,833	1,189	1,029	615	78%	22%

#### TABLE 221. RESIDENTIAL SOLAR LEASE PROJECT APPLICATION YIELD<sup>256</sup> BY FY RECEIVED

#### **Customer Savings**

Financial Savings is often a significant motivator for going solar. For the Solar Lease, savings is estimated as the difference between a customer's lease payment for a Green Bank supported solar PV system and the hypothetical cost of purchasing the electricity generated that customer's system from a utility. Savings is only positive if the hypothetical avoided utility cost of the solar PV generation is greater than the customer's Solar Lease Payment.

Fiscal	Annual Sovingo	Cumulative # of	Generation kWh <sup>259</sup>	kW Installed
Year	Annual Savings	Meters <sup>258</sup>		
2012	\$0	0	0	0
2013	\$0	0	0	0
2014	\$1,269	29	109,088	218
2015	\$68,715	331	1,662,914	2,587
2016	\$403,208	1,143	8,181,871	9,178
2017	\$416,815	1,164	9,868,875	9,364
2018	\$500,164	1,164	9,306,908	9,364
2019	\$692,990	1,164	9,076,612	9,364
2020	\$776,039	1,164	9,538,784	9,364
2021	\$771,364	1,164	9,081,947	9,364
2022	\$635,521	1,164	8,183,735	9,364
Total	\$4,266,085	1,164	65,010,734	9,364

#### TABLE 222. RESIDENTIAL SOLAR LEASE ANNUAL SAVINGS<sup>257</sup>

<sup>257</sup> All data points required to calculate annual savings for each meter may not be available yet as we wait on data ingestion.

<sup>258</sup> The number of customers has changed because we are now only including customers who are in repayment or fully prepaid.
<sup>259</sup> Generation is the production we see in our meters as of today: Any increase to generation is due to data backfilling or due to getting access to previously inaccessible meters; any decrease in generation from last year's report is data that is temporarily missing due to a meter replacement. Annual Savings is a function of generation so there might be an increase or decrease in savings.

<sup>&</sup>lt;sup>256</sup> Applications received are applications submitted to Renew Financial (servicer of the CT Solar Lease) for credit approval. Applications approved are applications that have met the credit requirements for the program and can move to lease signing, pending formal technical approval of the solar equipment by the Residential Solar Investment Program. Applications withdrawn are applications that have been cancelled by the submitter due to the project not moving forward. Applications denied are applications that are not approved because the customer does not meet underwriting requirements.

#### **Vulnerable Communities Penetration**

The activity of the solar lease in vulnerable communities is displayed in the table below.

		# Proj	ect Units				MW			Total Inv	estment	
Fiscal Year	Total	Not Vulnerable	Vulnerable	% Vulnerable	Total	Not Vulnerable	Vulnerable	% Vulnerable	Total	Not Vulnerable	Vulnerable	% Vulnerable
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2013	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2014	107	79	28	26%	0.8	0.6	0.2	24%	\$4,324,454	\$3,280,154	\$1,044,300	24%
2015	610	386	224	37%	4.9	3.2	1.7	34%	\$23,672,593	\$15,503,043	\$8,169,550	35%
2016	472	281	191	40%	3.8	2.4	1.4	38%	\$18,325,441	\$11,419,971	\$6,905,470	38%
Total	1,189	746	443	37%	9.6	6.2	3.3	35%	\$46,322,488	\$30,203,168	\$16,119,320	35%

#### TABLE 223. RESIDENTIAL SOLAR LEASE ACTIVITY IN VULNERABLE AND NOT VULNERABLE COMMUNITIES BY FY CLOSED<sup>260</sup>

#### Area Median Income Band Penetration

The CT Solar Lease program has been used to fund projects in economically diverse locations across the state as reflected by Table 224 for Metropolitan Statistical Area (MSA) Area Median Income (AMI). It should be noted that these Solar Lease funds are not part of an income targeted program.

TABLE 224. RESIDENTIAL SOLAR LEASE ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS BY FY CLOSED<sup>261</sup>

Fiscal Year	MSA AMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Owner Occupied 1- 4 Unit Households	% Owner Occupied 1-4 Unit Household Distribution	Project Units / 1,000 Owner Occupied 1-4 Unit Households	Total Investment / Owner Occupied 1-4 Unit Household	Watts / Owner Occupied 1-4 Unit Household
2012	<60%	0	0%	0.0	0%	\$0	0%	61,168	7%	0.0	\$0.00	0.0
2012	60%-80%	0	0%	0.0	0%	\$0	0%	101,640	12%	0.0	\$0.00	0.0
2012	80%-100%	0	0%	0.0	0%	\$0	0%	151,346	17%	0.0	\$0.00	0.0
2012	100%-120%	0	0%	0.0	0%	\$0	0%	216,988	25%	0.0	\$0.00	0.0
2012	>120%	0	0%	0.0	0%	\$0	0%	350,196	40%	0.0	\$0.00	0.0

<sup>&</sup>lt;sup>260</sup> Excludes projects in unknown communities.

<sup>&</sup>lt;sup>261</sup> Excludes projects in unknown bands.

#### CONNECTICUT GREEN BANK 6. PROGRAMS – CT SOLAR LEASE

Fiscal Year	MSA AMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Owner Occupied 1- 4 Unit Households	% Owner Occupied 1-4 Unit Household Distribution	Project Units / 1,000 Owner Occupied 1-4 Unit Households	Total Investment / Owner Occupied 1-4 Unit Household	Watts / Owner Occupied 1-4 Unit Household
2012	Total	0	0%	0.0	0%	\$0	0%	881,338	100%	0.0	\$0.00	0.0
2013	<60%	0	0%	0.0	0%	\$0	0%	59,494	7%	0.0	\$0.00	0.0
2013	60%-80%	0	0%	0.0	0%	\$0	0%	109,189	12%	0.0	\$0.00	0.0
2013	80%-100%	0	0%	0.0	0%	\$0	0%	150,603	17%	0.0	\$0.00	0.0
2013	100%-120%	0	0%	0.0	0%	\$0	0%	203,157	23%	0.0	\$0.00	0.0
2013	>120%	0	0%	0.0	0%	\$0	0%	351,633	40%	0.0	\$0.00	0.0
2013	Total	0	0%	0.0	0%	\$0	0%	874,076	100%	0.0	\$0.00	0.0
2014	<60%	0	0%	0.0	0%	\$0	0%	57,673	7%	0.0	\$0.00	0.0
2014	60%-80%	6	6%	0.0	5%	\$212,213	5%	103,934	12%	0.1	\$2.04	0.4
2014	80%-100%	13	12%	0.1	11%	\$483,999	11%	149,038	17%	0.1	\$3.25	0.6
2014	100%-120%	43	40%	0.3	42%	\$1,799,656	42%	209,561	24%	0.2	\$8.59	1.6
2014	>120%	45	42%	0.3	42%	\$1,828,585	42%	348,270	40%	0.1	\$5.25	1.0
2014	Total	107	100%	0.8	100%	\$4,324,454	100%	868,476	100%	0.1	\$4.98	0.9
2015	<60%	5	1%	0.0	1%	\$163,570	1%	64,361	7%	0.1	\$2.54	0.5
2015	60%-80%	43	7%	0.3	6%	\$1,430,822	6%	96,305	11%	0.4	\$14.86	3.0
2015	80%-100%	120	20%	0.9	19%	\$4,384,447	19%	164,873	19%	0.7	\$26.59	5.5
2015	100%-120%	165	27%	1.3	27%	\$6,309,374	27%	184,613	21%	0.9	\$34.18	7.1
2015	>120%	277	45%	2.4	48%	\$11,384,379	48%	352,621	41%	0.8	\$32.29	6.7
2015	Total	610	100%	4.9	100%	\$23,672,592	100%	862,773	100%	0.7	\$27.44	5.7
2016	<60%	20	4%	0.1	4%	\$655,757	4%	60,769	7%	0.3	\$10.79	2.3
2016	60%-80%	35	7%	0.2	6%	\$1,171,212	6%	99,220	12%	0.4	\$11.80	2.5
2016	80%-100%	84	18%	0.6	17%	\$3,079,698	17%	165,331	19%	0.5	\$18.63	3.9
2016	100%-120%	129	27%	1.0	27%	\$4,999,536	27%	187,463	22%	0.7	\$26.67	5.6
2016	>120%	204	43%	1.8	46%	\$8,419,238	46%	345,311	40%	0.6	\$24.38	5.1
2016	Total	472	100%	3.8	100%	\$18,325,440	100%	858,094	100%	0.6	\$21.36	4.5
Total	<60%	25	2%	0.2	2%	\$819,327	2%	60,769	7%	0.4	\$13.48	2.8
Total	60%-80%	84	7%	0.6	6%	\$2,814,247	6%	99,220	12%	0.8	\$28.36	5.8
Total	80%-100%	217	18%	1.6	17%	\$7,948,145	17%	165,331	19%	1.3	\$48.07	9.9
Total	100%-120%	337	28%	2.7	28%	\$13,108,566	28%	187,463	22%	1.8	\$69.93	14.4

#### CONNECTICUT GREEN BANK 6. PROGRAMS – CT SOLAR LEASE

Fiscal Year	MSA AMI Band	# Project Units	% Project Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution	Total Owner Occupied 1- 4 Unit Households	% Owner Occupied 1-4 Unit Household Distribution	Project Units / 1,000 Owner Occupied 1-4 Unit Households	Total Investment / Owner Occupied 1-4 Unit Household	Watts / Owner Occupied 1-4 Unit Household
Total	>120%	526	44%	4.5	47%	\$21,632,202	47%	345,311	40%	1.5	\$62.65	12.9
Total	Total	1,189	100%	9.6	100%	\$46,322,487	100%	858,094	100%	1.4	\$53.98	11.1

#### TABLE 225. RESIDENTIAL SOLAR LEASE ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS ABOVE OR BELOW 100% BY FY CLOSED<sup>262</sup>

		# Pı	oject Units				MW			Total Inves	tment	
Fiscal Year	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below	Total	Over 100% AMI	100% or Below AMI	% at 100% or Below
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2013	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2014	107	85	22	21%	0.8	0.7	0.1	18%	\$4,324,454	\$3,530,648	\$793,806	18%
2015	610	434	176	29%	4.9	3.6	1.3	27%	\$23,672,593	\$17,316,957	\$6,355,636	27%
2016	472	328	144	31%	3.8	2.8	1.0	27%	\$18,325,441	\$13,338,418	\$4,987,023	27%
Total	1,189	847	342	29%	9.6	7.0	2.5	26%	\$46,322,488	\$34,186,023	\$12,136,465	26%

#### TABLE 226. RESIDENTIAL SOLAR LEASE ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS ABOVE OR BELOW 80% BY FY CLOSED<sup>263</sup>

		# Pr	oject Units				MW			Total Inves	tment	
		Over	80% or			Over	80% or	% at				% at
Fiscal		80%	Below	% at 80%		80%	Below	80% or		Over 80%	80% or	80% or
Year	Total	AMI	AMI	or Below	Total	AMI	AMI Below		Total	AMI	Below AMI	Below
2012	0	0	0	0%	0.0	0	0	0%	\$0	\$0	\$0	0%
2013	0	0	0	0%	0.0	0	0	0%	\$0	\$0	\$0	0%
2014	107	99	8	7%	0.8	1	0	6%	\$4,324,454	\$4,047,725	\$276,729	6%
2015	610	548	62	10%	4.9	4	0	9%	\$23,672,593	\$21,532,476	\$2,140,118	9%
2016	472	414	58	12%	3.8	3	0	10%	\$18,325,441	\$16,425,166	\$1,900,275	10%
Total	1,189	1,061	128	11%	9.6	9	1	9%	\$46,322,488	\$42,005,367	\$4,317,122	9%

<sup>262</sup> Excludes projects in unknown bands.

<sup>263</sup> Excludes projects in unknown bands.

#### **Distressed Community Penetration**

For a breakdown of Solar Lease project volume and investment by census tracts categorized by Distressed Communities see Table 227. It should be noted that Solar Lease is not an income targeted program.

TABLE 227. RESIDENTIAL SOLAR LEASE ACTIVITY IN DISTRESSED COMMUNITIES BY FY CLOSED

Fiscal Year	Distres sed	# Project Units	% Project Distrib ution	Installed Capacity (MW)	% MW Distrib ution	Total Investment	% Invest ment Distrib ution	Total Population	% Population Distribution	Total Investment / Population	Watts / Popul ation	Total Households	% Total House hold Distrib ution	Total Investment / Total Household	Watts / Total Household
2012	Yes	0	0%	0.0	0%	\$0	0%	1,171,385	33%	\$0.00	0.0	447,962	33%	\$0.00	0.0
2012	No	0	0%	0.0	0%	\$0	0%	2,400,828	67%	\$0.00	0.0	912,222	67%	\$0.00	0.0
2012	Total	0	0%	0.0	0%	\$0	0%	3,572,213	100%	\$0.00	0.0	1,360,184	100%	\$0.00	0.0
2013	Yes	0	0%	0.0	0%	\$0	0%	1,124,923	31%	\$0.00	0.0	426,564	31%	\$0.00	0.0
2013	No	0	0%	0.0	0%	\$0	0%	2,458,638	69%	\$0.00	0.0	929,285	69%	\$0.00	0.0
2013	Total	0	0%	0.0	0%	\$0	0%	3,583,561	100%	\$0.00	0.0	1,355,849	100%	\$0.00	0.0
2014	Yes	15	14%	0.1	12%	\$533,309	12%	1,106,027	31%	\$0.48	0.1	416,415	31%	\$1.28	0.2
2014	No	92	86%	0.7	88%	\$3,791,145	88%	2,486,026	69%	\$1.52	0.3	939,791	69%	\$4.03	0.8
2014	Total	107	100%	0.8	100%	\$4,324,454	100%	3,592,053	100%	\$1.20	0.2	1,356,206	100%	\$3.19	0.6
2015	Yes	95	16%	0.7	15%	\$3,504,032	15%	1,122,550	31%	\$3.12	0.6	423,559	31%	\$8.27	1.7
2015	No	515	84%	4.2	85%	\$20,168,561	85%	2,470,672	69%	\$8.16	1.7	929,024	69%	\$21.71	4.5
2015	Total	610	100%	4.9	100%	\$23,672,592	100%	3,593,222	100%	\$6.59	1.4	1,352,583	100%	\$17.50	3.6
2016	Yes	97	21%	0.8	20%	\$3,601,098	20%	1,162,653	32%	\$3.10	0.6	438,710	32%	\$8.21	1.7
2016	No	375	79%	3.1	80%	\$14,724,342	80%	2,425,917	68%	\$6.07	1.3	916,003	68%	\$16.07	3.4
2016	Total	472	100%	3.8	100%	\$18,325,440	100%	3,588,570	100%	\$5.11	1.1	1,354,713	100%	\$13.53	2.8
Total	Yes	207	17%	1.6	16%	\$7,638,439	16%	1,162,653	32%	\$6.57	1.4	438,710	32%	\$17.41	3.6
Total	No	982	83%	8.0	84%	\$38,684,047	84%	2,425,917	68%	\$15.95	3.3	916,003	68%	\$42.23	8.7
Total	Total	1,189	100%	9.6	100%	\$46,322,487	100%	3,588,570	100%	\$12.91	2.7	1,354,713	100%	\$34.19	7.1

		# Pro	oject Units			M	W			Total Inve	estment	
Fiscal		Not		%		Not		%		Not		%
Year	Total	Distressed	Distressed	Distressed	Total	Distressed	Distressed	Distressed	Total	Distressed	Distressed	Distressed
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2013	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2014	107	92	15	14%	0.8	0.7	0.1	12%	\$4,324,454	\$3,791,145	\$533,309	12%
2015	610	515	95	16%	4.9	4.2	0.7	15%	\$23,672,593	\$20,168,561	\$3,504,032	15%
2016	472	375	97	21%	3.8	3.1	0.8	20%	\$18,325,441	\$14,724,343	\$3,601,098	20%
Total	1,189	982	207	17%	9.6	8.0	1.6	16%	\$46,322,488	\$38,684,049	\$7,638,440	16%

#### TABLE 228. RESIDENTIAL SOLAR LEASE ACTIVITY IN DISTRESSED AND NOT DISTRESSED COMMUNITIES BY FY CLOSED<sup>264</sup>

#### Environmental Justice Poverty Level Penetration

The activity of the solar lease in Environmental Justice communities is displayed in the table below.

TABLE 229. RESIDENTIAL SOLAR LEASE ACTIVITY IN ENVIRONMENTAL JUSTICE POVERTY AREAS BY FY CLOSED<sup>265</sup>

		# Pr	oject Units				MW			Total Investr	nent	
Fiscal Year	TotalNot EJ Block GroupEJ Block Block 		Total	Not EJ Block Group	EJ Block Group	% EJ Block Group	Total	Not EJ Block Group	EJ Block Group	% EJ Block Group		
2012	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2013	0	0	0	0%	0.0	0.0	0.0	0%	\$0	\$0	\$0	0%
2014	107	106	1	1%	0.8	0.8	0.0	1%	\$4,324,454	\$4,287,407	\$37,048	1%
2015	610	589	21	3%	4.9	4.7	0.2	3%	\$23,672,593	\$22,938,129	\$734,464	3%
2016	472	454	18	4%	3.8	3.7	0.1	3%	\$18,325,441	\$17,693,024	\$632,417	3%
Total	1,189	1,149	40	3%	9.6	9.3	0.3	3%	\$46,322,488	\$44,918,560	\$1,403,928	3%

#### Ethnicity

The progress made by the solar lease in terms of reaching diverse communities is displayed in the table below.

<sup>&</sup>lt;sup>264</sup> Excludes projects in unknown communities.

<sup>&</sup>lt;sup>265</sup> Excludes projects in unknown bands.

#### TABLE 230. RESIDENTIAL SOLAR LEASE ACTIVITY IN METROPOLITAN STATISTICAL AREA (MSA) AREA MEDIAN INCOME (AMI) BANDS BY ETHNICITY CATEGORY BY FY CLOSED<sup>266</sup>

			Majority	Black			Majority H	lispanic			Majority	White			Majority	Asian	
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1-4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН
2012	<60%	0	0.0%	5,176	8.3%	0	0.0%	10,882	17.4%	0	0.0%	16,828	26.8%	0	0.0%	29,803	47.5%
2012	60%-80%	0	0.0%	5,006	4.9%	0	0.0%	2,270	2.2%	0	0.0%	73,816	72.2%	0	0.0%	21,086	20.6%
2012	80%-100%	0	0.0%	1,855	1.2%	0	0.0%	0	0.0%	0	0.0%	140,062	93.0%	0	0.0%	8,768	5.8%
2012	100%-120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	211,803	97.8%	0	0.0%	4,681	2.2%
2012	>120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	348,384	99.8%	0	0.0%	828	0.2%
2012	Total	0	0.0%	12,037	1.4%	0	0.0%	13,152	1.5%	0	0.0%	790,893	89.7%	0	0.0%	65,166	7.4%
2013	<60%	0	0.0%	3,382	5.5%	0	0.0%	11,821	19.4%	0	0.0%	14,269	23.4%	0	0.0%	31,532	51.7%
2013	60%-80%	0	0.0%	5,736	5.2%	0	0.0%	2,738	2.5%	0	0.0%	75,591	68.7%	0	0.0%	25,902	23.6%
2013	80%-100%	0	0.0%	1,926	1.3%	0	0.0%	0	0.0%	0	0.0%	139,931	93.5%	0	0.0%	7,819	5.2%
2013	100%-120%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	198,438	97.8%	0	0.0%	4,389	2.2%
2013	>120%	0	0.0%	1,808	0.5%	0	0.0%	0	0.0%	0	0.0%	346,905	98.9%	0	0.0%	1,995	0.6%
2013	Total	0	0.0%	12,852	1.5%	0	0.0%	14,559	1.7%	0	0.0%	775,134	88.7%	0	0.0%	71,637	8.2%
2014	<60%	0	0.0%	4,160	7.0%	0	0.0%	12,689	21.4%	0	0.0%	14,635	24.7%	0	0.0%	27,810	46.9%
2014	60%-80%	0	0.0%	5,373	5.1%	0	0.0%	4,357	4.2%	5	62.5%	68,387	65.4%	3	37.5%	26,411	25.3%
2014	80%-100%	0	0.0%	1,868	1.3%	0	0.0%	0	0.0%	14	100.0%	140,090	94.1%	0	0.0%	6,888	4.6%
2014	100%-120%	0	0.0%	1,669	0.8%	0	0.0%	0	0.0%	43	100.0%	205,048	98.2%	0	0.0%	2,195	1.1%
2014	>120%	0	0.0%	1,813	0.5%	0	0.0%	0	0.0%	42	100.0%	344,034	98.9%	0	0.0%	1,932	0.6%
2014	Total	0	0.0%	14,883	1.7%	0	0.0%	17,046	2.0%	104	97.2%	772,194	88.8%	3	2.8%	65,236	7.5%
2015	<60%	0	0.0%	3,503	5.3%	1	10.0%	14,297	21.5%	4	40.0%	10,404	15.6%	5	50.0%	38,428	57.7%
2015	60%-80%	3	5.8%	4,605	4.8%	1	1.9%	2,578	2.7%	37	71.2%	68,171	71.0%	11	21.2%	20,705	21.6%
2015	80%-100%	3	2.6%	1,859	1.1%	0	0.0%	0	0.0%	106	93.0%	151,172	91.5%	5	4.4%	12,174	7.4%
2015	100%-120%	0	0.0%	863	0.5%	0	0.0%	0	0.0%	157	98.1%	181,464	98.8%	3	1.9%	1,302	0.7%
2015	>120%	2	0.7%	1,877	0.5%	0	0.0%	0	0.0%	272	99.3%	348,323	98.9%	0	0.0%	1,853	0.5%
2015	Total	8	1.3%	12,707	1.5%	2	0.3%	16,875	2.0%	576	94.4%	759,534	88.0%	24	3.9%	74,462	8.6%
2016	<60%	1	4.3%	4,215	6.7%	1	4.3%	13,369	21.2%	5	21.7%	12,849	20.4%	16	69.6%	32,623	51.7%

<sup>266</sup> Excludes projects in unknown bands.

#### CONNECTICUT GREEN BANK 6. PROGRAMS – CT SOLAR LEASE

		Majority Black				Majority H	lispanic		Majority White			Majority Asian					
Fiscal Year	MSA AMI Band	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН	# Project Units	% Project Units	OOH 1-4 Units	% ООН	# Project Units	% Project Units	OOH 1- 4 Units	% ООН
2016	60%-80%	1	2.9%	5,339	5.4%	2	5.7%	3,251	3.3%	27	77.1%	65,052	65.7%	5	14.3%	25,431	25.7%
2016	80%-100%	0	0.0%	4,736	2.9%	0	0.0%	0	0.0%	82	95.3%	154,059	93.4%	4	4.7%	6,217	3.8%
2016	100%-120%	1	0.9%	0	0.0%	0	0.0%	0	0.0%	113	99.1%	185,324	99.0%	0	0.0%	1,805	1.0%
2016	>120%	0	0.0%	1,980	0.6%	0	0.0%	0	0.0%	214	100.0%	340,833	98.9%	0	0.0%	1,764	0.5%
2016	Total	3	0.6%	16,270	1.9%	3	0.6%	16,620	1.9%	441	93.4%	758,117	88.3%	25	5.3%	67,840	7.9%
Total	<60%	1	3.0%	6,086	9.5%	2	6.1%	15,991	24.9%	9	27.3%	13,853	21.6%	21	63.6%	28,310	44.1%
Total	60%-80%	4	4.2%	3,472	3.4%	3	3.2%	5,799	5.7%	69	72.6%	60,805	60.2%	19	20.0%	30,912	30.6%
Total	80%-100%	3	1.4%	3,957	2.5%	0	0.0%	691	0.4%	202	94.4%	142,115	91.4%	9	4.2%	8,800	5.7%
Total	100%-120%	1	0.3%	434	0.2%	0	0.0%	0	0.0%	313	98.7%	200,119	96.5%	3	0.9%	6,902	3.3%
Total	>120%	2	0.4%	2,074	0.6%	0	0.0%	0	0.0%	528	99.6%	334,664	99.2%	0	0.0%	772	0.2%
Total	Total	11	0.9%	16,023	1.9%	5	0.4%	22,481	2.6%	1,121	94.3%	751,556	86.8%	52	4.4%	75,696	8.7%

#### Societal Benefits

Ratepayers in Connecticut receive the societal benefits of the CT Solar Lease. Over the course of its existence, the program has supported the creation of 577 job years and avoided the lifetime emission of 154,900 tons of carbon dioxide, 185,742 pounds of nitrous oxide, 182,109 pounds of sulfur oxide, and 13,613 pounds of particulate matter as illustrated by Table 231 and Table 233

The residential leases have generated more than \$2.3 million in tax revenue for the State of Connecticut since inception as demonstrated in Table 232. The value of the lifetime public health impacts of the Solar Lease programs is estimated to be between \$5.2 and \$11.9 million as seen in Table 234.

Fiscal Year	Direct Jobs	Indirect and Induced Jobs	Total Jobs
2012	0	0	0
2013	0	0	0
2014	19	31	50
2015	114	184	299
2016	87	141	228
Total	221	356	577

#### TABLE 232. RESIDENTIAL SOLAR LEASE TAX REVENUES GENERATED BY FY CLOSED

Fiscal Year	Individual Income Tax Revenue Generated	Corporate Tax Revenue Generated	Sales Tax Revenue Generated	Total Tax Revenue Generated
2012	\$0	\$0	\$0	\$0
2013	\$0	\$0	\$0	\$0
2014	\$110,473	\$109,845	\$0	\$220,317
2015	\$604,741	\$601,303	\$0	\$1,206,044
2016	\$468,143	\$465,480	\$0	\$933,623
Total	\$1,183,357	\$1,176,628	\$0	\$2,359,984

	CO2 Emissior	ns Avoided (tons)		nissions (pounds)		nissions (pounds)	PM 2.5 (pounds)		
Fiscal Year	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	
2012	0	0	0	0	0	0	0	0	
2013	0	0	0	0	0	0	0	0	
2014	518	12,863	728	18,205	876	21,779	38	1,169	
2015	3,198	79,765	3,906	97,201	3,931	97,913	255	6,983	
2016	2,478	62,272	2,828	70,336	2,508	62,417	203	5,461	
Total	6,194	154,900	7,462	185,742	7,315	182,109	496	13,613	

#### TABLE 233. RESIDENTIAL SOLAR LEASE AVOIDED EMISSIONS BY FY CLOSED

#### TABLE 234. RESIDENTIAL SOLAR LEASE VALUE OF PUBLIC HEALTH BY FY CLOSED

Fiscal	Ann	ual	Lifetime			
Year	Low	High	Low	High		
2012	\$0	\$0	\$0	\$0		
2013	\$0	\$0	\$0	\$0		
2014	\$18,052	\$40,756	\$451,294	\$1,018,901		
2015	\$108,138	\$244,145	\$2,703,438	\$6,103,637		
2016	\$84,879	\$191,634	\$2,121,975	\$4,790,852		
Total	\$211,068	\$476,536	\$5,276,707	\$11,913,390		

#### Financing Program

The CT Solar Lease 2 fund was a financing structure developed in partnership with a tax equity investor (i.e., US Bank) and a syndicate of local lenders (i.e. Key Bank and Webster Bank) that used a credit enhancement (i.e., \$3,500,000 loan loss reserve),<sup>267</sup> in combination with \$2.3 million in subordinated debt and \$11.5 million in sponsor equity from the Connecticut Green Bank as the "member manager" to provide approximately \$80 million in lease financing for residential and commercial solar PV projects. Through the product, the Connecticut Green Bank lowered the barriers to Connecticut residential and commercial customers seeking to install solar PV with no up-front investment, thus increasing demand, while at the same time reducing the market's reliance on subsidies through the RSIP or being more competitive in a reverse auction through the Zero Emission Renewable Energy Credit (ZREC) program. As a lease, capital provided to consumers through the CT Solar Lease is now being returned to the Connecticut Green Bank, the tax equity investor, and the lenders – it is not a subsidy. The financial structure of the CT Solar Lease product includes origination by contractors, servicing of lease and PPA payments, insurance and "one call" system performance and insurance resolution, and financing features in combination with the support of the Connecticut Green Bank.

#### **Financial Performance**

To date there are 9 defaults with an original principal balance of \$210,995 or 0.76% of the Residential Solar Lease portfolio and as of June 30, 2021 there are 10 delinquencies.

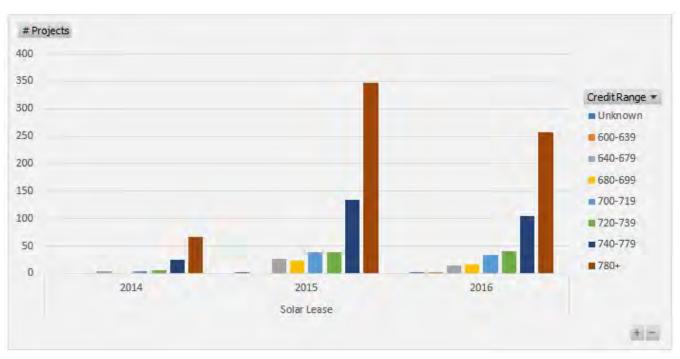
<sup>&</sup>lt;sup>267</sup> From repurposed American Recovery and Reinvestment Act funds

#### CONNECTICUT GREEN BANK 6. PROGRAMS – CT SOLAR LEASE

The household customers that accessed the CT Solar Lease since its launch in 2014 had varying credit scores – see Table 235.

Fiscal Year	Unknown	580-599	600-639	640-679	680-699	700-719	720-739	740-779	780+	Grand Total
2012	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	4	0	5	6	25	67	107
2015	2	0	0	26	23	39	38	134	348	610
2016	2	0	1	15	16	34	41	105	258	472
Total	4	0	1	45	39	78	85	264	673	1,189
	0%	0%	0%	4%	3%	7%	7%	22%	57%	100%

#### TABLE 235. CREDIT SCORE RANGES OF HOUSEHOLD CUSTOMERS USING THE CT SOLAR LEASE BY FY CLOSED



#### FIGURE 18. CREDIT SCORE RANGES OF HOUSEHOLD CUSTOMERS USING THE CT SOLAR LEASE BY FY CLOSED

#### Marketing

To accelerate deployment of residential solar PV through the RSIP and the uptake of the CT Residential Solar Lease financing product, the Connecticut Green Bank implemented the Solarize Connecticut program, which included group purchasing, time-limited offers, grassroots outreach, and support from local clean energy advocates who volunteered and coordinated with their towns to help speed the process – see Table 236.

The Green Bank also implemented channel marketing through residential and commercial solar installers who gained the ability to grow their businesses by providing the CT Residential Solar Lease product to their customers.

Solarize	# Projects	Total Investment	Installed Capacity (MW)
Solarize	325	\$12,418,840	2.5
Not Solarize	864	\$33,903,647	7.0
Total	1,189	\$46,322,487	9.6
% Solarize	27%	27%	27%

 TABLE 236. NUMBER OF RESIDENTIAL PROJECTS, INVESTMENT, AND INSTALLED CAPACITY THROUGH GREEN BANK SOLARIZE

 CONNECTICUT FOR THE CT SOLAR LEASE FINANCING PRODUCT

The Green Bank Solarize Connecticut program provided a marketing channel and origination catalyst for the CT Residential Solar Leases comprising 27 percent of the total projects, investment, and installed capacity.

#### 7. Appendix

#### Terms and Definitions

The following is meant to serve as guide to the reader of common terms used in this section and to illustrate how the Green Bank defines these terms:

**Applications Received -** This is the number of applications submitted to CGB seeking an incentive or financing during a specific period regardless of whether they were approved or rejected. The specific metric is calculated by subtracting the total number of applications received at the beginning of the time period from the total number of applications received at the end of the time period. This indicates interest in our program.

**Approved -** An approved project is one whose application has been reviewed by Green Bank staff and has been authorized to proceed to the funding stage, involving the project's requested CGB financing and/or incentives. The number of approvals in one period is an indicator of potential completed projects in subsequent periods.

**Closed** - A "Closed" project is one that has been approved by the CGB and for which CGB financing and/or incentives have been mobilized. For RSIP projects, once a project is approved, it is considered closed. This status also suggests that physical work is in progress or is imminent.

**Completed** – is a project that is generating or saving energy and has been deemed completed by the Green Bank and contractors based on program specific standards.

**Gross Investment** - This is the total system costs for all clean and renewable energy installations and/or the total costs of all energy efficiency projects during the specified time period, regardless of how much of the projects are being financed. Closing costs for CGB financing are not included in this total.

**Principal Amount Financed** - This is the total amount of money that is being borrowed regardless of whether it is wholly or partially from the CGB. For some programs, this amount will be greater than the gross investment, to include closing costs that are rolled into the loans. Principal Amount Financed equals Gross Investment plus closing costs that are financed, minus any part of the projects paid upfront by the borrowers:

*Principal Amount Financed = Gross Investment + Fees Financed - Owners' Contributions* 

This should also equal CGB investment plus third party investment:

#### Principal Amount Financed = CGB Investment + Third Party Financing

**CGB Investment** - Green Bank investment activity is broken down into two categories, presented below as separate metrics.

#### CGB Investment = CGB Incentives + CGB Financing

**CGB Incentives -** CGB incentives are funds that are not intended to be repaid by the recipient and are used to reduce the cost of a specific product or technology. At present, RSIP is the only active incentive program administered by CGB.

**CGB Financing -** CGB financing includes the total funds deployed by the Green Bank during the specified time period with the intention either that the funds will be repaid or to bolster the creditworthiness of borrowers. CGB Financing is the sum of the types of financing below, each of which is its own metric.

CGB Financing = CGB Loans and Leases + CGB Credit Enhancements

**CGB Loans and Leases -** Loans and leases are the types of CGB financing in which capital is directly lent to fund projects. It does not include third party lending.

**CGB Credit Enhancements -** Credit enhancements involve the deployment of CGB capital to bolster the credit of borrowers. This financing category is comprised of the three categories of funds below, each as its own metric.

CGB Credit Enhancements = Loan Loss Reserves + Guarantees + Interest Rate Buy-Downs

**Loan Loss Reserves -** Loan Loss Reserves are capital that the CGB has segregated as part of a program to ensure against losses incurred by participating lenders due to the failure of borrowers to repay loans.

**Guarantees** - Guarantees reflect a specified dollar commitment that CGB has made to external lenders for repayment of specific transactions in the event one or more borrowers fail to repay the lenders.

**Interest Rate Buy-Downs -** Interest rate buy-downs involve the deployment of CGB capital by paying a portion of the interest on borrowers' loans to decrease their cost of capital.

**Third Party Financing -** This metric captures the amount of project financing that is provided by parties other than the CGB and project owner. It is this type of financing that the CGB seek s to grow in relation to its own financing.

#### Leverage Ratio

This metric presents the relationship between private financing and CGB's direct financing.

Leverage Ratio = Gross Investment / CGB Investment

#### **Mobilization Ratio**

This metric presents the relationship between private financing and CGB's direct investment (both financing and incentives).

Mobilization Ratio = Third-Party Financing Amount / CGB Investment

#### **Community Activity Table**

See the Municipality Tables in here.<sup>268</sup>

<sup>&</sup>lt;sup>268</sup> <u>https://www.ctgreenbank.com/wp-content/uploads/2022/10/FY22-ACFR-NFS-Appendix.xlsx</u>

#### **Contractor Activity Table**

See the Contractor Tables in here.<sup>269</sup>

#### **Trained Contractor Table**

See the Trained Contractor table in here.<sup>270</sup>

#### **Calculations and Assumptions**

TABLE 237. CAPACITY FACTORS AND EXPECTED USEFUL LIFE (EUL) BY TECHNOLOGY

Technology	Capacity Factor	EUL
AD	0.80	15
CHP	0.90	15
EE	0.0	12
Fuel Cell	0.90	10
Geothermal	0.0	25
Hydro	0.49	25
PV	0.13	25
PV/Biomass	0.13	25
Solar Thermal	0.0	20
Wind	0.18	15

#### TABLE 238. JOB YEAR FACTORS BY YEAR APPROVED BY TECHNOLOGY

	2009 Factors - Approved prior to 6/30/2016				2016 Factors - Approved after 7/1/2016			2018 Factors - Approved after 7/1/2018		
	Direc t Job Years	Indirect and Induce d Jobs	Total Job Years per \$1M Invested	Direc t Job Years	Indirect and Induced Jobs	Total Job Years per \$1M Investe d	Direc t Job Years	Indirect and Induce d Jobs	Total Job Years per \$1M Investe d	
				Re	newable En	ergy				
Fuel Cell										
R&D/Engineering	2.9	4.6	7.5	2.9	3.8	6.7	2.8	3.7	6.5	
Fuel Cell										
Manufacturing	4.8	11.0	15.8	4.9	6.4	11.3	3.9	5.8	9.7	
Solar PV - Residential	5.9	9.4	15.3	3.9	5.1	9.0	3.9	5.1	9.0	
Solar PV - Non- Residential	3.4	5.4	8.8	3.1	4.0	7.1	3.1	4.0	7.1	
Ductless Split Heat Pump	6.7	10.7	17.4	6.7	8.7	15.4	6.5	8.5	15.0	
Geothermal	8.3	13.3	21.6	6.7	8.7	15.4	6.7	8.7	15.4	
Solar Thermal	7.6	12.2	19.8	5.6	7.3	12.9	5.6	7.3	12.9	
Wind Installation	6.2	9.9	16.1	6.2	8.0	14.2	5.8	7.6	13.4	

<sup>&</sup>lt;sup>269</sup> <u>https://www.ctgreenbank.com/wp-content/uploads/2022/10/FY22-ACFR-NFS-Appendix.xlsx</u>

<sup>&</sup>lt;sup>270</sup> https://www.ctgreenbank.com/wp-content/uploads/2022/10/FY22-ACFR-NFS-Appendix.xlsx

		Factors - A rior to 6/30			Factors - Ap after 7/1/20	•		actors - A after 7/1/20	
	Direc t Job Years	Indirect and Induce d Jobs	Total Job Years per \$1M Invested	Direc t Job Years	Indirect and Induced Jobs	Total Job Years per \$1M Investe d	Direc t Job Years	Indirect and Induce d Jobs	Total Job Years per \$1M Investe d
		1	L	Re	newable En	ergy	1		
Hydro Installation	6.2	9.9	16.1	6.2	8.0	14.2	5.8	7.6	13.4
EV Charging Stations -									
Installation	3.1	5.0	8.1	3.1	4.0	7.1	2.9	3.8	6.7
Storage Installation	2.2	3.5	5.7	2.2	2.9	5.1	2.2	2.9	5.1
Utility Scale Storage	2.1	3.4	5.5	2.1	2.7	4.9	2.1	2.7	4.9
AD	1.9	3.0	4.9	1.9	2.5	4.4	1.9	2.5	4.4
CHP	3.9	6.2	10.1	3.9	5.0	8.9	3.9	5.0	8.9
					ergy Efficie				
Residential	12.9	20.6	33.5	0.0	0.0	0.0	0.0	0.0	0.0
Residential Lighting <sup>1</sup>	0.0	0.0	0.0	7.7	10.0	17.7	7.5	9.7	17.2
Residential Home Energy Solutions (HES) - Audits <sup>1</sup>	7.7	12.3	20.0	7.8	10.2	18.0	7.7	10.0	17.7
Residential HES - Weatherization & HVAC	0.0	0.0	0.0	5.6	7.3	12.9	5.4	7.0	12.5
Residential Gas Conversion	0.0	0.0	0.0	5.6	7.3	12.9	5.4	7.0	12.5
Small Business Energy Advantage	9.1	14.6	23.7	6.2	8.0	14.2	5.8	7.5	13.3
Large Commercial and Industrial	7.6	12.2	19.8	5.6	7.3	12.9	5.3	6.8	12.1

#### TABLE 239. RESIDENTIAL SINGLE FAMILY ANNUAL AND LIFETIME MMBTUS AND COST SAVINGS<sup>271</sup>

Improvement Type	Average Annual Savings MMBTUs	Average Lifetime Savings MMBTUs	Average Annual \$ Savings	Average Lifetime \$ Savings	Average Expected Useful Life (EUL)
Air Source Heat Pump	10	190	\$419	\$8,374	20
Boiler	18	370	\$372	\$7,441	20
Central AC	3	58	\$142	\$2,552	18
Ductless Heat Pump	10	176	\$443	\$7,975	18
Furnace	15	295	\$357	\$7,136	20
Geothermal Heat Pump	5	104	\$1,593	\$31,860	20
Heat Pump Water Heater	6	78	\$215	\$2,584	12
Insulation	19	471	\$413	\$10,328	25
Other	7	138	\$154	\$3,075	20
Solar Hot Water Heater	6	157	\$150	\$3,740	25
Solar PV <sup>1</sup>	27	680	\$1,199	\$29,970	25
Water Heater	5	102	\$78	\$1,564	20
Windows	8	197	\$134	\$3,362	25

<sup>&</sup>lt;sup>271</sup> This chart was developed in in conjunction with utility staff as a guide for the Residential Sector based on utility program savings documents from 2016-17.

1. Used for other residential market programs.

				Year Compl	eted		
	2018 <sup>4</sup>	2017	2016	2015	2014	2013	<b>2012</b> ⁵
				CO2 tons	S		
AD	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CHP	0.000	0.000	0.000	0.000	0.000	0.000	0.000
EE Only <sup>1</sup>	0.542	0.530	0.543	0.570	0.549	0.555	0.536
Fuel Cell <sup>2</sup>	0.068	0.068	0.068	0.068	0.068	0.068	0.068
Geothermal <sup>2</sup>	0.400	0.400	0.400	0.400	0.400	0.400	0.400
Hydro <sup>2</sup>	0.520	0.520	0.520	0.520	0.520	0.520	0.520
Solar PV <sup>1</sup>	0.553	0.539	0.562	0.575	0.551	0.572	0.558
Solar Thermal <sup>2</sup>	0.547	0.547	0.547	0.547	0.547	0.547	0.547
Wind <sup>1</sup>	0.539	0.528	0.537	0.575	0.562	0.558	0.523
				NOX poun	ds		
AD	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CHP	0.000	0.000	0.000	0.000	0.000	0.000	0.000
EE Only <sup>1</sup>	0.468	0.400	0.480	0.648	0.739	0.741	0.548
Fuel Cell <sup>2</sup>	0.540	0.540	0.540	0.540	0.540	0.540	0.540
Geothermal <sup>2</sup>	0.335	0.335	0.335	0.335	0.335	0.335	0.335
Hydro <sup>2</sup>	0.430	0.430	0.430	0.430	0.430	0.430	0.430
Solar PV <sup>1</sup>	0.535	0.463	0.575	0.697	0.790	0.859	0.689
Solar Thermal <sup>2</sup>	0.453	0.453	0.453	0.453	0.453	0.453	0.453
Wind <sup>1</sup>	0.422	0.367	0.428	0.642	0.760	0.737	0.469
				SO2 poun	ds		
AD	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CHP	0.000	0.000	0.000	0.000	0.000	0.000	0.000
EE Only <sup>1</sup>	0.411	0.261	0.340	0.665	0.890	0.952	0.732
Fuel Cell <sup>2</sup>	0.391	0.391	0.391	0.391	0.391	0.391	0.391
Geothermal <sup>2</sup>	0.297	0.297	0.297	0.297	0.297	0.297	0.297
Hydro <sup>2</sup>	0.390	0.390	0.390	0.390	0.390	0.390	0.390
Solar PV <sup>1</sup>	0.460	0.303	0.411	0.698	0.956	1.107	0.911
Solar Thermal <sup>2</sup>	0.411	0.411	0.411	0.411	0.411	0.411	0.411
Wind <sup>1</sup>	0.405	0.267	0.333	0.723	1.012	1.000	0.643
				PM2.5 pour	nds³		
AD	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CHP	0.000	0.000	0.000	0.000	0.000	0.000	0.000
EE Only <sup>1</sup>	0.043	0.042	0.043	0.045	0.045	0.045	0.045
Fuel Cell <sup>2</sup>	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Geothermal <sup>2</sup>	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hydro <sup>2</sup>	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Solar PV <sup>1</sup>	0.047	0.046	0.049	0.050	0.050	0.050	0.050
Solar Thermal <sup>2</sup>	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Wind <sup>1</sup>	0.041	0.040	0.039	0.044	0.044	0.044	0.044

#### TABLE 240. AVERAGE EMISSION RATES BY YEAR COMPLETED BY TECHNOLOGY

1. Average Emission Rates from AVERT Model.

2. Average Emission Rates from 2007 New England Marginal Emission Rate Analysis.

3. PM 2.5 Rates for 2012 - 2014 are unavailable and use the 2015 rates.

4. 2018 rates are used for projects completed in 2019,2020 and those pending completion.

5. 2012 rates are used for projects completed prior to 2012.

#### TABLE 241. TAX GENERATION RATES PER \$1 MILLION DEPLOYED BY TECHNOLOGY AND PRODUCT STRUCTURE

		2010-2016		2017 and later		
Technology and Program	Personal Income Tax Factor	Corporate Tax Factor	Sales Tax Factor	Personal Income Tax Factor	Corporate Tax Factor	Sales Tax Factor
Anaerobic Digestion Pilot	\$9,693.00	-	\$57,231.69	\$10,823.00	-	\$57,231.69
Biomass - CPACE	\$9,693.00	-	\$57,231.69	\$10,823.00	-	\$57,231.69
CHP - Pilot/Strategic Investments	\$32,436.00	\$26,599.00	\$54,741.79	\$21,703.00	\$26,599.00	\$54,741.79
Energy Efficiency - CPACE	\$39,888.00	\$19,662.00	\$58,303.00	\$28,807.00	\$19,662.00	\$58,303.00
Energy Efficiency - Home Energy Solutions Audits (HES)	\$96,903.00	\$5,152.00	\$18,694.00	\$40,976.00	\$5,152.00	\$18,694.00
Energy Efficiency - Multifamily (non-CPACE)	\$67,491.00	\$19,662.00	\$58,303.00	\$28,807.00	\$19,662.00	\$58,303.00
Energy Efficiency (non HES) - Smart-E	\$67,491.00	\$22,910.00	\$30,773.00	\$28,908.00	\$22,910.00	\$30,773.00
Fuel Cell - Strategic Investments	\$25,182.00	\$7,108.00	\$55,195.48	\$23,489.00	\$7,108.00	\$55,195.48
Geothermal - CPACE	\$43,515.00	\$26,887.00	-	\$35,791.22	\$26,887.00	-
Geothermal - Smart-E	\$43,515.00	\$26,887.00	-	\$35,791.00	\$26,887.00	-
Hydro - CPACE	\$28,674.00	\$38,937.00	\$52,239.00	\$32,640.00	\$38,937.00	\$52,239.00
Other - CPACE	\$28,674.00	\$19,662.00	\$58,303.00	\$28,807.00	\$19,662.00	\$58,303.00
Solar PV - CEBS	\$15,435.00	\$41,893.01	-	\$15,641.23	\$41,893.01	-
Solar PV - Clean Energy Communities	\$15,435.00	\$41,893.01	-	\$15,641.23	\$41,893.01	-
Solar PV - CPACE	\$15,435.00	\$41,893.01	-	\$15,641.23	\$41,893.01	-
Solar PV - CPACE Onyx	\$15,435.00	\$16,916.65	-	\$15,641.23	\$16,916.65	-
Solar PV - CPACE SL2	\$15,435.00	\$16,916.65	-	\$15,641.23	\$16,916.65	-
Solar PV - CPACE SL3	\$27,040.50	\$3,373.73	-	\$20,878.21	\$3,373.73	-
Solar PV - Low Income - PosiGen	\$27,040.50	\$3,373.73	-	\$20,878.21	\$3,373.73	-
Solar PV - Multifamily (blank)	\$15,435.00	\$14,617.00	-	\$15,641.00	\$14,617.00	-
Solar PV - OSDG	\$15,435.00	\$41,893.01	-	\$15,641.23	\$41,893.01	-
Solar PV - RSIP	\$27,040.50	\$8,076.60	-	\$20,878.21	\$8,076.60	-
Solar PV - Smart-E	\$27,040.50	\$5,250.00	-	\$20,878.21	\$ 5,250.00	-
Solar PV - Solar Lease SL2	\$27,040.50	\$26,886.74	-	\$20,878.21	\$26,886.74	-

	2010-2016			2017 and later		
Technology and Program	Personal Income Tax Factor	Corporate Tax Factor	Sales Tax Factor	Personal Income Tax Factor	Corporate Tax Factor	Sales Tax Factor
Solar PV - Solar Loan	\$27,040.50	\$26,886.74	-	\$20,878.21	\$26,886.74	-
Solar PV - Solar PV - Lease Onyx	\$15,435.00	\$16,916.65	-	\$15,641.23	\$16,916.65	-
Solar PV - Solar PV - Lease SL2	\$15,435.00	\$16,916.65	-	\$15,641.23	\$16,916.65	-
Solar PV - Solar PV - Lease SL3	\$27,040.50	\$ 3,373.73	-	\$20,878.21	\$ 3,373.73	-
Solar Thermal - CPACE	\$39,888.00	\$26,887.00	-	\$29,826.00	\$26,887.00	-
Solar Thermal - Smart-E and Pilots	\$39,888.00	\$26,887.00	-	\$29,826.00	\$26,887.00	-
Waste Heat Recovery - CPACE	\$39,888.00	\$26,599.00	\$54,741.79	\$21,703.00	\$26,599.00	\$54,741.79
Wind - Strategic	\$28,674.00	\$15,501.00	\$52,239.00	\$32,640.00	\$15,501.00	\$52,239.00

#### TABLE 242. PUBLIC HEALTH SAVINGS RATES PER TON OF POLLUTANT AVOIDED

Ton avoided	PM <sub>2.5</sub> - Low	PM <sub>2.5</sub> - High	SO <sub>X</sub> - Low	SO <sub>x</sub> - High	NO <sub>x</sub> - Low	NO <sub>x</sub> - High
1	\$120,799	\$273,010	\$28,665	\$64,794	\$5,881	\$13,293

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



### Memo

To:	Connecticut Green Bank Board of Directors
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From: Eric Shrago, Vice President of Operations

Date: October 14, 2022

Re: Job Creation and Tax Revenue Contribution Estimate Measurement Methodology

Describing the contributions of the projects supported by the Connecticut Green Bank to the economy helps illustrate the how the continued deployment of clean energy and thus the Green Bank helps society. Estimation of the jobs created and tax revenue generated by the projects supported by the Green Bank is an existing part of the Societal Impact section of the Evaluation Framework.

Late last year, the Green Bank engaged Navigant Consulting to update a study and model for estimating the jobs created and taxes generated by Green Bank supported projects based on the evolutions in the state's clean energy economy. The study was an update of the 2019 jobs and tax study which built on studies from 2016 and 2008 that were commissioned by the Green Bank and the Connecticut Department of Economic and Community Development (DECD). The model estimates the number of direct indirect, and induced jobs created as well as the personal and corporate income taxes as well as sales and use taxes based on the jobs created and financial structures of projects. In the latest edition, we have included property tax estimates as well. The original study and the resulting tax calculator have been reviewed by the CT DECD and the CT Department of Revenue Services (DRS), who have found this to be an acceptable and reasonable tool for estimating this tax revenue. DECD also reviewed the most recent job calculations to ensure that we are using DECD inputs correctly.

The Audit Compliance and Governance Committee met on October 11, 2022, to review these methodologies and recommended that the Board of Directors approve of them.

#### **Resolution**

**WHEREAS**, the Audit, Compliance and Governance Committee has reviewed and recommended the approval of these updated methodologies;

**RESOLVED,** that the Connecticut Green Bank Board of Directors approves of the proposed Jobs Study and Tax Calculator for the Evaluation and Measurement of the jobs created and tax revenue generated by Green Bank supported projects.



# Clean Energy Jobs in Connecticut

**Final Report** 

January 21, 2021

### Disclaimer

This deliverable was prepared by Guidehouse Inc. for the sole use and benefit of, and pursuant to a client relationship exclusively with the Connecticut Green Bank ("Client"). The work presented in this deliverable represents Guidehouse's professional judgement based on the information available at the time this report was prepared. Guidehouse is not responsible for a third party's use of, or reliance upon, the deliverable, nor any decisions based on the report. Readers of the report are advised that they assume all liabilities incurred by them, or third parties, as a result of their reliance on the report, or the data, information, findings and opinions contained in the report.



### **Executive Summary**

#### 2020 Refresh of Connecticut Clean Energy Jobs Study



**\$1 million investment** in surveyed clean energy technologies generates between **4 and 13 direct, indirect, and induced job-years** by technology group



Technologies with **relatively lower average wages** and **higher cost allocation to labor** generate **more job-years**, with some **residential EE technologies**, **anaerobic digestion**, and **wind** generating the most of those surveyed

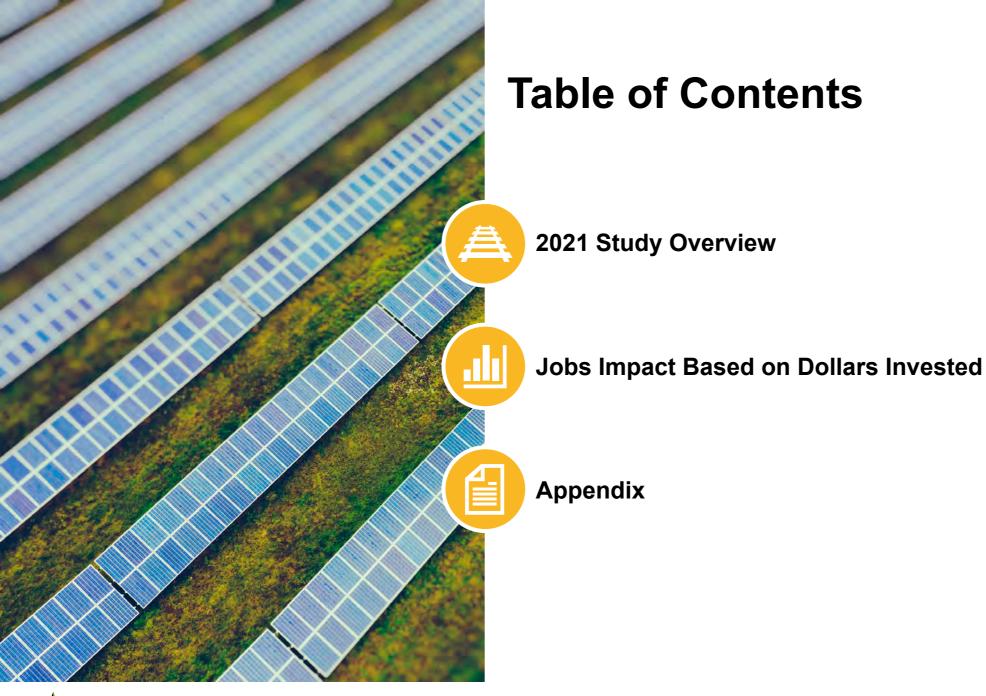


Numbers of job-years created are likely conservative, as not all segments of clean technology value chains are fully addressed in this study

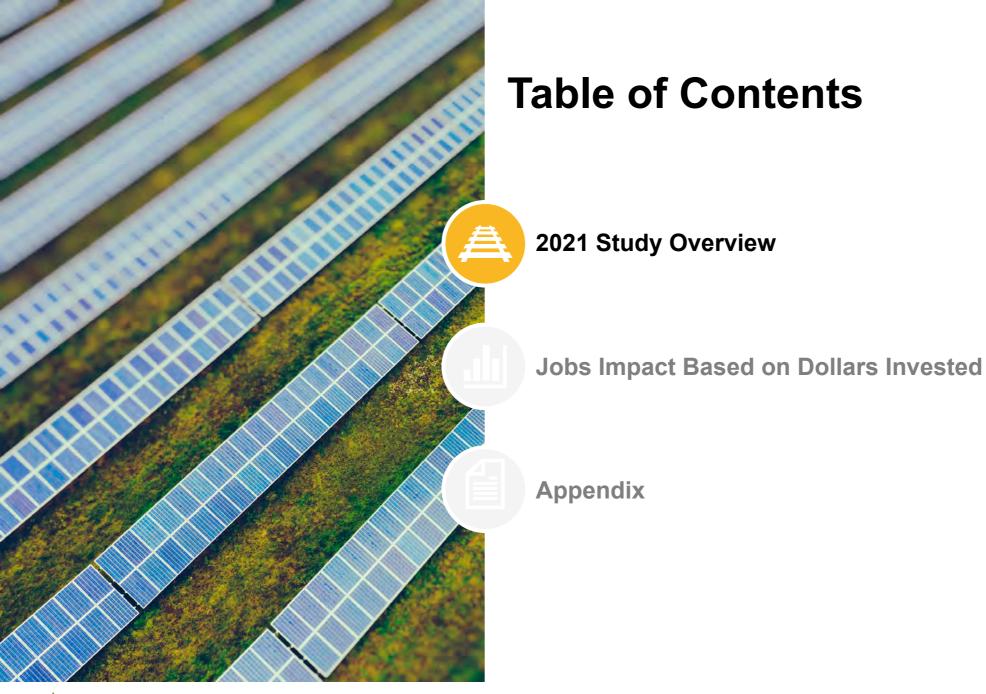
#### A \$1 million invested creates:











## As the industry evolves, the Green Bank has commissioned studies to understand clean energy job creation

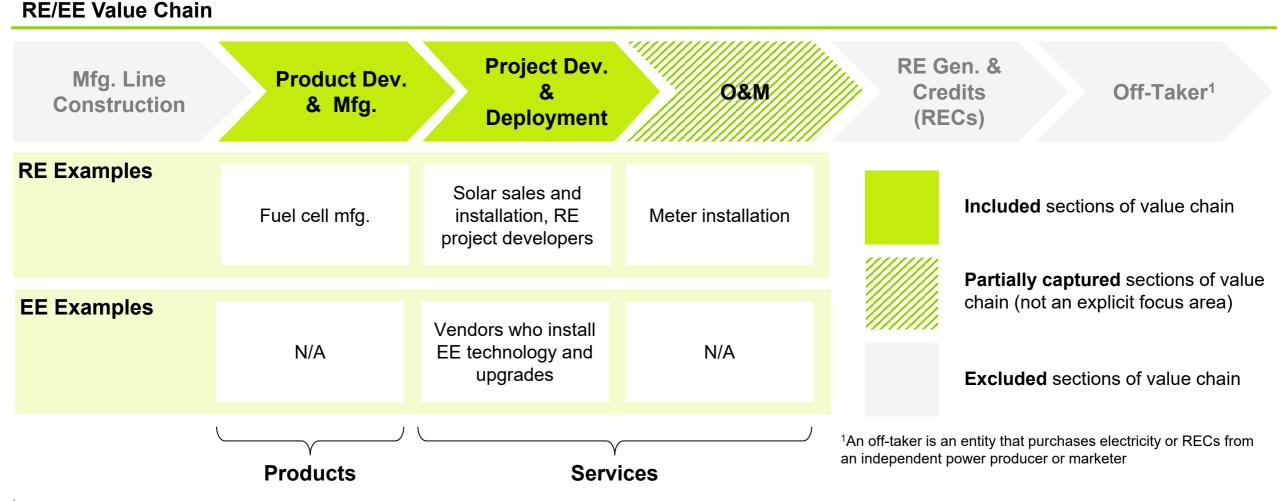
	2009-2010 Study	2015-2016 Refresh	2020 Refresh
Central Focus	To provide <b>detailed inventory</b> / <b>accounting</b> of RE and EE and wages, jobs impact based on dollars invested, clean energy value chain, and a summary of DECD work	To provide an <b>updated calculator</b> tool to estimate the economic development benefits (i.e., job-years created) from clean energy investments in Connecticut	To <b>refresh the calculator tool</b> to update job-years created from clean energy investments in Connecticut
Study Pool	74 companies interviewed, 95 researched	31 companies interviewed, 40 researched	54 technology interviews conducted <sup>1</sup> , 60 companies researched online
Data Focus	Job counts and industry insights	Technology-specific data inputs for calculator	Technology-specific data inputs for calculator
Tech	EE in general and RE, primarily solar PV and fuel cells	New distributed energy resources (DER) such as electric vehicle (EV) charging and energy storage	All previous technologies plus meter installation, anaerobic digestion, CHP, and additional sectors (e.g., res, storage)
	RE = Renewable Energy technology; EE = Energy Efficien <sup>1</sup> Fewer distinct interviews were conducted, as most interviews	ncy technology; DECD = CT Department of Economic Commu iews addressed more than one technology or sector	inity Development
Guidehouse		©2021 Guidehouse Inc. All Rights Reserved	6

## Technologies considered are largely the same as prior studies, with some additional sectors and infrastructure

	Renewable Energy	Energy Efficiency		
Technology	Sector	Technology	Sector	
Fuel Cell	Manufacturing, R&D/Engineering	Lighting	Residential	
Solar PV	Residential, Non-residential, Utility scale	Home Energy Solutions (HES) - Audits	Residential	
Meter Installation	Non-residential	HES - Weatherization & HVAC	Residential	
EV Charging Stations	Residential, Non-residential	Gas Conversion	Residential	
Storage	Residential, Non-residential, Utility scale	Small Business Energy Advantage	Non-residential	
Anaerobic Digestion	Non-residential	Large Commercial and Industrial	Non-residential	
СНР	Non-residential	Ductless & Air Source Heat Pump	Residential	
Offshore Wind	Utility scale	Ground Source Geothermal Heat Pump	Residential	
Onshore Wind	Utility scale	Solar Thermal	Residential	
Hydro	Utility Scale			

**Guidehouse** XX = new technology or sector in Jobs Model in 2020

## The jobs study focuses on the section of the value chain most closely associated with project installation





### In line with value chain focus, the "jobs types" considered include manufacturing, installer, electrician, & engineering/PM

Companies were asked about wages and personnel in four job categories:

General Job Type	Example Specific Occupation Types <sup>1</sup>
Manufacturing	Production occupations (e.g., assemblers, fabricators, equipment operators, and process workers)
Installers/Field Technicians	Installation and construction occupations (e.g., solar PV installers, heating, AC and refrigeration mechanics and installers, insulation workers, floor, ceiling and wall)
Electricians	Electricians, electro-mechanical technicians, electrical and electronics installers and repairers
Engineers/Project Managers	Engineers (e.g., mechanical, civil, and electrical engineers); management occupations (e.g., project, construction, and engineering managers)

All sales, marketing, accounting, etc. are considered part of company overhead



Salaries and job responsibilities can vary significantly in engineer/PM category

1. Specific Occupation titles from Bureau of Labor Statistics – May 2015 State Occupational Employment and Wage Estimates Connecticut http://www.bls.gov/oes/current/oes ct.htm



## Guidehouse interviewed private companies that employ people in CT – multiplier was used for indirect & induced jobs

#### **Direct Jobs**

**Indirect Jobs** 

For the purpose of this analysis, direct jobs are considered **existing jobs in the specified CT industries**.

In policy analysis, direct jobs are commonly defined as the initial change in final demand for the industry sector in question. Direct job impacts describe the changes in economic activity for sectors that first experience a change in demand because of a project, policy decision, or some other stimuli. Represents the **response as supplying industries increase output** in order to accommodate the initial change in final demand. These indirect beneficiaries will then spend money for supplies and services, which results in another round of indirect spending.

#### Induced Jobs

Jobs generated by the **spending of households who benefit from the additional wages and business income** they earn through direct and indirect activity. The increase in income, in effect, increases the purchasing power of households.

**Primary focus of study** 

Secondary scope (estimated via 1.2 multiplier from DECD August 11, 2021 email)



## Guidehouse used interviews from top employers in CT to extrapolate findings to whole CT market

54 Technology interviews conducted<sup>1</sup>

**50** Companies researched online

**118** Relevant companies identified

- Focus was on product development and manufacturing as well as project development and deployment jobs across various leading and emerging RE and EE technologies
- Interview data was largely used to estimate weighted average wages, project cost allocation, and state-wide industry size
- For data points not available from interviews, data from similar industries, the 2015-2016 study (applying inflation as appropriate), secondary research, and professional judgement were used to fill gaps
- In general, job-years presented in this study include direct, indirect, and induced jobs
- **Cross-checking** was conducted using resources from CGB, utility plans, publiclyavailable studies, and professional judgement

<sup>1</sup>Fewer distinct interviews were conducted, as most interviews addressed more than one technology or sector



## Focused interviews gathered results from top employers or other sources and extrapolated for all current jobs

#### **Guidehouse interview process**

**Build the initial company database.** Guidehouse developed a company and contact list using information from CGB, Guidehouse's 2016 study, trade organizations, utilities, other public sources, and companies known to the evaluation team.

**Research primary contact information.** Missing email addresses and telephone numbers were obtained from CGB and researched through online searches and phone calls.

**Create, test, and revise the interview questions.** The interview question set was refined to be concise while capturing information that was of greatest interest (see Appendix)

**Conduct interviews.** Guidehouse managed the interview process and conducted the interviews. The evaluation team conducted 54 formal interviews for RE and EE technologies. Most companies provided data for more than one technology or sector.

**Data collection and follow up.** Guidehouse documented all interview data and followed up with interview contacts for more information, as necessary.

**Review and clean the data set.** Guidehouse worked with CGB to extensively review the analysis and results for accuracy and completeness, especially with 2015-2016 data and secondary resources

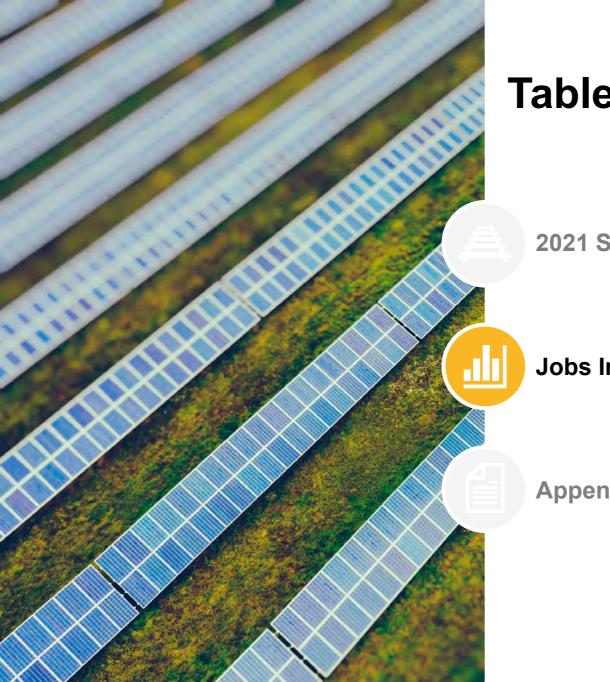
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### **Table of Contents**

2021 Study Overview

#### Jobs Impact Based on Dollars Invested

Appendix



## \$1 million invested in clean technology generates 4-13 job years, depending on technology

#### A \$1 million invested creates:

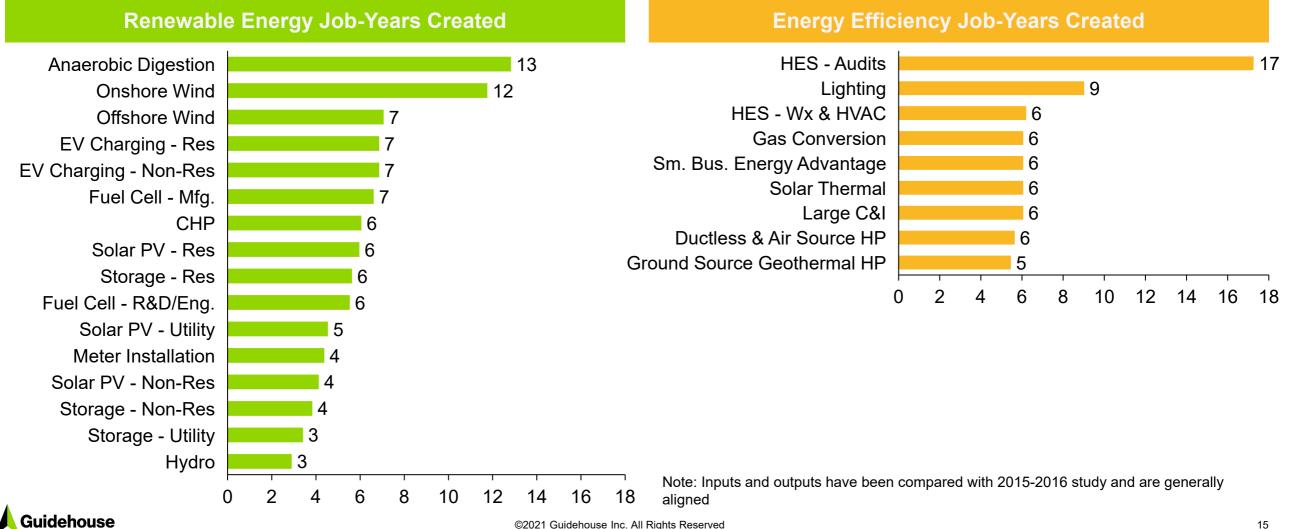
- 6 Fuel cell job-years
- 5 Solar PV job-years
- 4 **Meter installation** job-years
- 7 EV charging station job-years
- 4 Storage job-years
- 8 **Residential EE** job-years
- 6 Non-residential EE job-years
- **13** Anaerobic digestion job-years
- 6 **CHP** job-years
- 10 Wind job-years
- 3 Hydro job-years

#### Key findings:

- Technologies with relatively higher labor spend and relatively lower average wages generate more direct job-years
- Relatively low average wages and relatively high labor as percent of project cost contribute to anaerobic digestion generating highest job-years of technologies surveyed
- There is variation within technologies for job-years generated, as different types of projects have different labor and project allocation – for example, non-residential and utility-scale projects tend to have more higher wage jobs and thus fewer job-years generated
- As solar PV, storage, and solar meters are often deployed together in CT, similar project economics and average wages lead to similar job-years generated
- Variations between technologies for the same sectors are largely due to more skilled labor being paid higher wages, as larger projects generally have more engineers and PMs
- Job-years are conservative, as the study only addresses development, manufacturing, installation, and partially O&M parts of value chain



### A \$1 million investment in clean energy creates an average of 7 job-years across technologies and sectors



## Jobs calculator estimates the job-years created from \$1 million in investment

bs Study						
	Total Job-Years Created	from Capital Invest	by Technology			
20.0 — 18.0 —	Jobs Calculator				-	
Jop- Jop- Jup- Jop- Jop- Lass Jop-	Occupation	Туре	Capital Invested	Company Overhead (SG&A) and Margin (%)	Project Cost After Overhead (SG&A) and Margin	Labor (' Project (
<u> </u>	Fuel Cell - Manufacturing	RE	\$1,000,000	20%		
10.0	Fuel Cell - R&D/Engineering	RE	\$1,000,000	20%	\$800,000	
	Solar PV - Residential	RE	\$1,000,000	20%	0	
2.0 —	Solar PV - Non-Residential	RE	\$1,000,000	20%	\$800.000	
0.0	Solar PV - Utility Scale	RE	\$1,000,000	20%	\$800.000	
	Meter Installation	RE	\$1,000,000	20%	\$800,000	
	EV Charging Stations - Residential	RE	\$1,000,000	20%	\$800,000	
	EV Charging Stations - Non-Residential	RE	\$1,000,000	20%	\$800,000	
	Storage - Residential	RE	\$1,000,000	20%	\$800,000	
	Storage - Non-Residential	RE	\$1,000,000	20%	\$800,000	
:	Storage - Utility Scale	RE	\$1,000,000	20%	\$800,000	
	Lighting	EE - Res	\$1,000,000	20%	\$800,000	
	Home Energy Solutions (HES) - Audits	EE - Res	\$1,000,000	20%	\$800,000	
	HES - Weatherization & HVAC	EE - Res	\$1,000,000	20%	\$800,000	
	Gas Conversion	EE - Res	\$1,000,000	20%	\$800,000	
	Small Business Energy Advantage	EE - Comm	\$1,000,000	20%	\$800,000	
	Large Commerical and Industrial	EE - Comm	\$1,000,000	20%	\$800,000	
	Anaerobic Digestion	Other RE/EE	\$1,000,000	20%	\$800,000	
	CHP	Other RE/EE	\$1,000,000	20%	\$800,000	

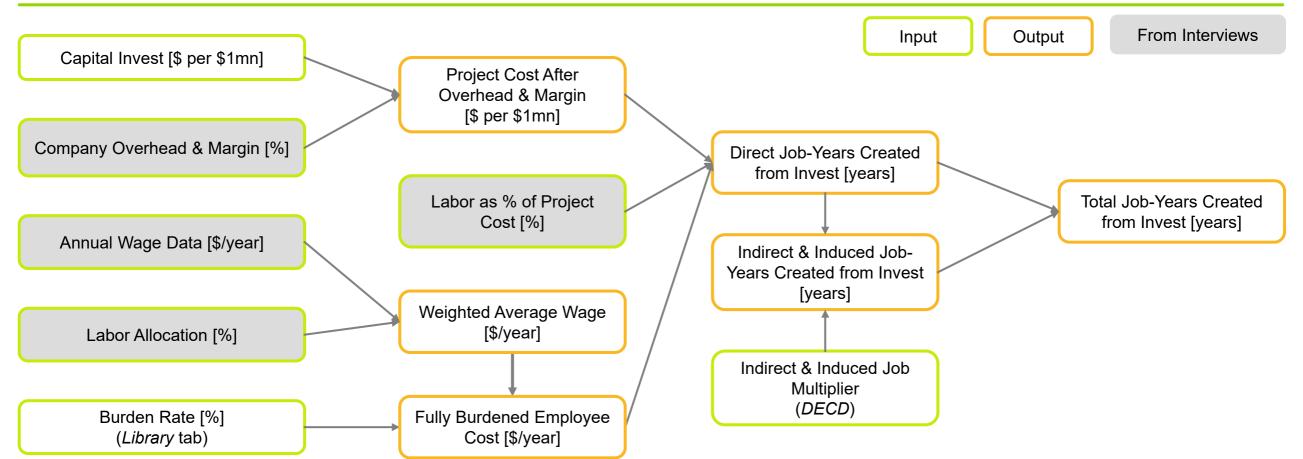
#### **Compared to Previous Study**

- Values are representative of the 2020
   market in Connecticut
- Additional technologies and sectors were analyzed
- Average wage calculation is based on interview data rather than Bureau of Labor Statistics average wages



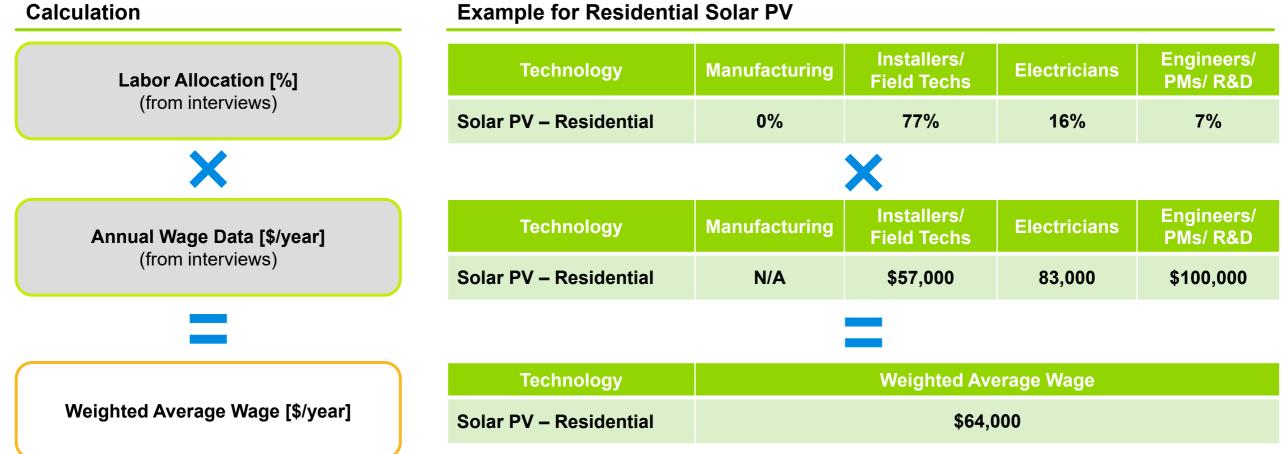
# Calculation is based on technology-specific average wage data and project cost allocation from interviews

### Overall model flow





### The weighted average wage is calculated by multiplying salary data by job type by labor allocation





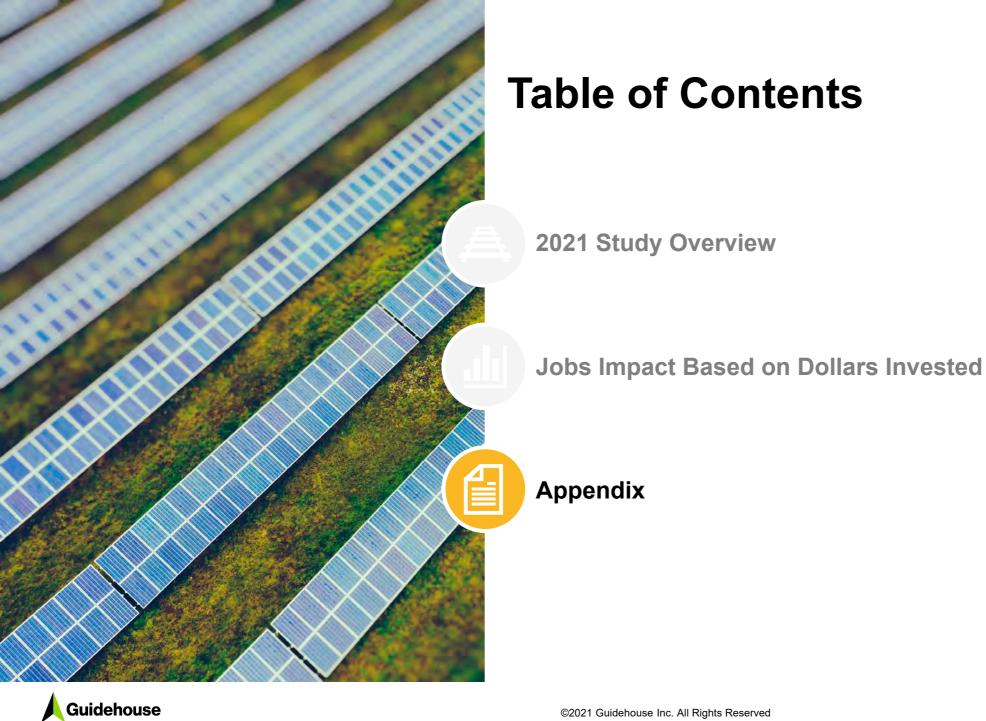
## Assumptions around direct job types and global factors are consistent across technologies

#### **Tech-agnostic assumptions**

- Distribution/supply work is considered indirect.
- Subcontracted work is considered indirect note these jobs may be more significant in some sectors (e.g., EV charging installation), less so in others
- Assumed 20% for company overhead (SG&A) costs (including jobs) and margin; validated with interview data
- Excluded from the weighted average wage but included in company overhead are administrative and executive, O&M, finance and accounting, and sales and marketing jobs
- Labor is the percentage of the project cost that is used to pay installers, electricians, project managers and engineers.
- Non-Labor is the percentage of the project cost that is used to cover all other project expenses, including materials and non-labor soft costs
- Total Indirect and Induced Job-Years is calculated from DECD inputs<sup>1</sup>
- The burden rate was provided by DECD and validated with interview data<sup>2</sup>
- If data was not available for a certain sector, data from 2015-2016 (inflated to 2020 \$ as necessary) or similar sectors were used

<sup>1</sup>CT DECD email 8/11/2021 | <sup>2</sup>CT DECD email 9/23/2021





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### **Interview Guide**

#### The interview guide was streamlined compared to the 2015-2016, with content largely the same

#### Your Company

- 1. Please tell us a little about yourself and your role in the company.
- 2. Describe your overall business.
- 3. Describe your [technology type and detail] business.
  - Do you offer primarily products, equipment installation, or services?
  - Note: Some companies may be involved in multiple technologies and the following questions will be technology type and detailspecific.
- 4. Which market(s) do you primarily serve within the [technology type and detail] business?
- 5. What is your market share (%) for [technology type(s)] in CT?
  - How does your market share vary by Market Segment?
- 6. How many FTE (full-time equivalent) employees did you have working on [Type & Technology Detail] jobs in CT at the end of 2020?
  - How many locations do you have in CT?
  - How many CT employees by job type (see table below)?
  - What is the average direct wage and the average fully burdened wages (i.e. direct wage plus benefits such as health insurance and retirement contributions) by job type for CT employees?

#### **Project Economics**

- 7. What are the attributes of your typical project?
  - What is average project cost?
- 8. Could you break out the project costs by cost category in the table below?
- 9. How is a typical project financed (i.e. bank loans, equity investors, tax credits, customer out of pocket)?
  - If there's more than one source of finance, what is the typical % share by source?
  - Which, if any, federal or CT tax credits do you receive for [technology type and detail]?

Job Type	# of CT employees	Direct Wage (\$/year)	Fully Burdened Wage (\$/year)
Manufacturing			
Installers/Field Technicians			
Electricians			
Engineers/Managers/R&D			
Sales/Marketing/Accounting/Office/etc.			

Cost Category	% of Project Costs
Fully burdened labor costs (internal staff and subcontracted)	
Material costs (technology and balance of system/plant)	
Fully burdened indirect labor costs (sales, marketing, accounting, management)	
Overhead and profit (property or vehicle rental and leasing costs, profit)	
Total	100%



### Weighted Average Wage by Technology

### **Renewable Energy**

Technology	Weighted Average Wage (\$/year)
Fuel Cell – Manufacturing	\$82,000
Fuel Cell – R&D/Engineering	\$98,000
Solar PV – Res	\$64,000
Solar PV – Non-Res	\$82,000
Solar PV – Utility Scale	\$82,000
Meter Installation	\$78,000
EV Charging Stations – Res	\$74,000
EV Charging Stations – Non-Res	\$74,000
Storage – Res	\$60,000
Storage – Non-Res	\$79,000
Storage – Utility Scale	\$79,000
Anaerobic Digestion	\$48,000
СНР	\$67,000
Offshore Wind	\$115,000
Onshore Wind	\$69,000
Hydro	\$81,000

#### **Energy Efficiency**

Technology	Weighted Average Wage (\$/year)
Lighting	\$75,000
HES – Audits	\$55,000
HES – Weatherization & HVAC	\$68,000
Gas Conversion	\$71,000
Small Business Energy Advantage	\$71,000
Large Commercial and Industrial	\$67,000
Ductless & Air Source HP	\$74,000
Ground Source Geothermal HP	\$87,000
Solar Thermal	\$71,000

Source: Guidehouse analysis of interview data



### Labor as % of Project Cost by Technology

### **Renewable Energy**

Technology	Labor as % of Project Cost
Fuel Cell – Manufacturing	40%
Fuel Cell – R&D/Engineering	40%
Solar PV – Res	28%
Solar PV – Non-Res	25%
Solar PV – Utility Scale	28%
Meter Installation	25%
EV Charging Stations – Res	38%
EV Charging Stations – Non-Res	38%
Storage – Res	25%
Storage – Non-Res	23%
Storage – Utility Scale	20%
Anaerobic Digestion	46%
СНР	30%
Offshore Wind	60%
Onshore Wind	60%
Hydro	18%

#### **Energy Efficiency**

Technology	Labor as % of Project Cost
Lighting	50%
HES – Audits	70%
HES – Weatherization & HVAC	31%
Gas Conversion	32%
Small Business Energy Advantage	32%
Large Commercial and Industrial	30%
Ductless & Air Source HP	31%
Ground Source Geothermal HP	35%
Solar Thermal	32%

Source: Guidehouse analysis of interview data



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## Clean Energy Tax Revenue in Connecticut

Final Report

December 24, 2021

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### **Executive Summary**

#### 2018 Refresh of Connecticut Clean Energy Tax Revenue Study



**\$1 million investment** in surveyed clean energy technologies generates between approximately **\$10,000 and \$155,000 in tax revenue** over the project lifetime



Individual income tax, corporate income tax, sales and use tax, and property tax all vary depending on technology, business model, and sector the project is deployed in



Property tax and sales and use tax exemptions play a deciding role in hierarchy of total tax generation; in technologies/sectors without exemptions, these tax categories can account for more than 50% of tax generated

Technology	Taxes as % of Invest
EV Charging Stations	8-15%
CHP	13%
Hydro	11%
Wind	8-11%
Meter Installation	8-11%
C&I Energy Efficiency	10%
Residential Energy Efficiency	5-10%
Storage	2-8%
Anaerobic Digestion	7%
Solar PV	1-7%
Fuel Cell	4-5%











# The Green Bank has commissioned studies to understand impacts of clean energy invest on tax revenue generation

### Our statement of purpose

**Refresh the 2018 tax revenue calculator** to determine the taxes generated in the State of Connecticut as a result of investment in renewable energy (RE) and energy efficiency (EE) projects. Specifically:

1 2 3

Refresh **individual income tax**, **corporate income tax**, and **sales tax** assumptions from the 2018 tax revenue calculator

Define property tax assumptions

Calculate total taxes generated per \$1 million invested in agreed-upon technologies and business models

The results of the tax revenue calculator will assist the CGB in quantifying benefits of clean energy investment to the state legislators and other parties





# Technologies are largely the same as in 2018, with some additional sectors, infrastructure, and business models

Renewable Energy		Energy Efficiency		
Technology	Sector	Technology	Sector	
Fuel Cell	Manufacturing, R&D/Engineering	Lighting	Residential	
Solar PV	Residential, Non-residential, Utility scale	Home Energy Solutions (HES) - Audits	Residential	
Meter Installation	Residential, Non-residential	HES - Weatherization & HVAC	Residential	
EV Charging Stations	Residential, Non-residential,	Ductless & Air Source Heat Pumps	Residential	
Storage	Residential, Non-residential, Utility scale	Geothermal Heat Pumps	Residential	
Anaerobic Digestion	Non-residential	Solar Thermal	Residential	
СНР	Non-residential	Gas Conversion	Residential	
Onshore Wind	Utility-scale	Small Business Energy Advantage	Non-residential	
Offshore Wind	Utility-scale	Large Commercial and Industrial	Non-residential	
Hydro	Utility-scale			



Note that many of these technologies are modeled across multiple common business models (e.g., majority financing via for-profit bank loan vs. lease/PPA agreement)

**Guidehouse** XX = new technology or sector in Tax Model in 2020

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## As modeled, increased taxes can be driven by five broad factors

#### **Potential drivers**

Higher wage jobs Engineering, Project Management, and Research & Development jobs generally pay higher wages than installer jobs, leading to higher individual income taxes

Higher job intensity Greater percentage of project cost associated with labor vs. materials leads to more jobs created and higher individual income taxes

#### **Profitable industry**

Industries that are not yet profitable such as anaerobic digestion, generate **lower** corporate income tax

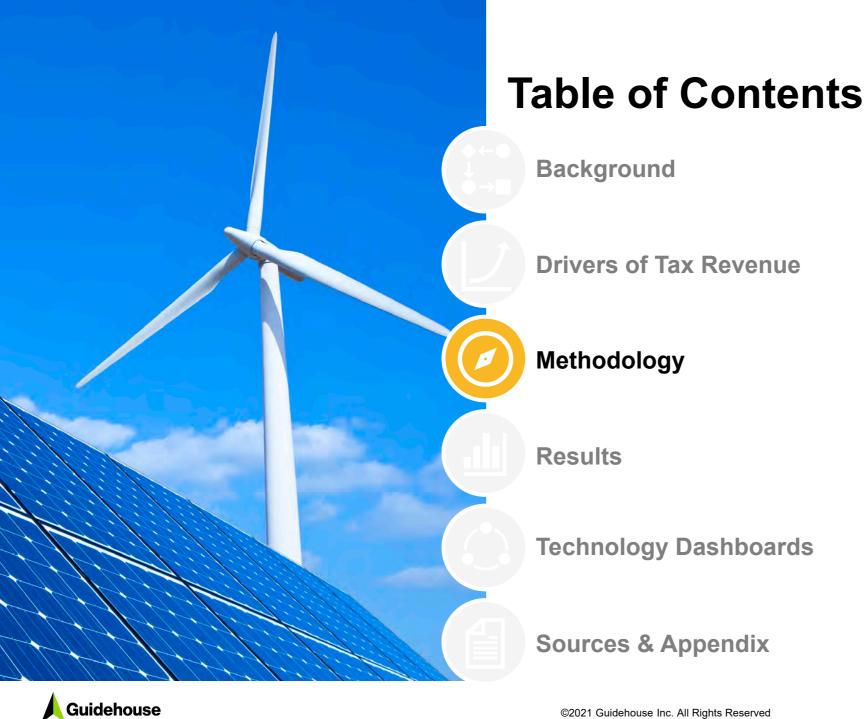
### More for-profit parties involved

Involvement of more parties in financing leads to more opportunities for taxable corporate income

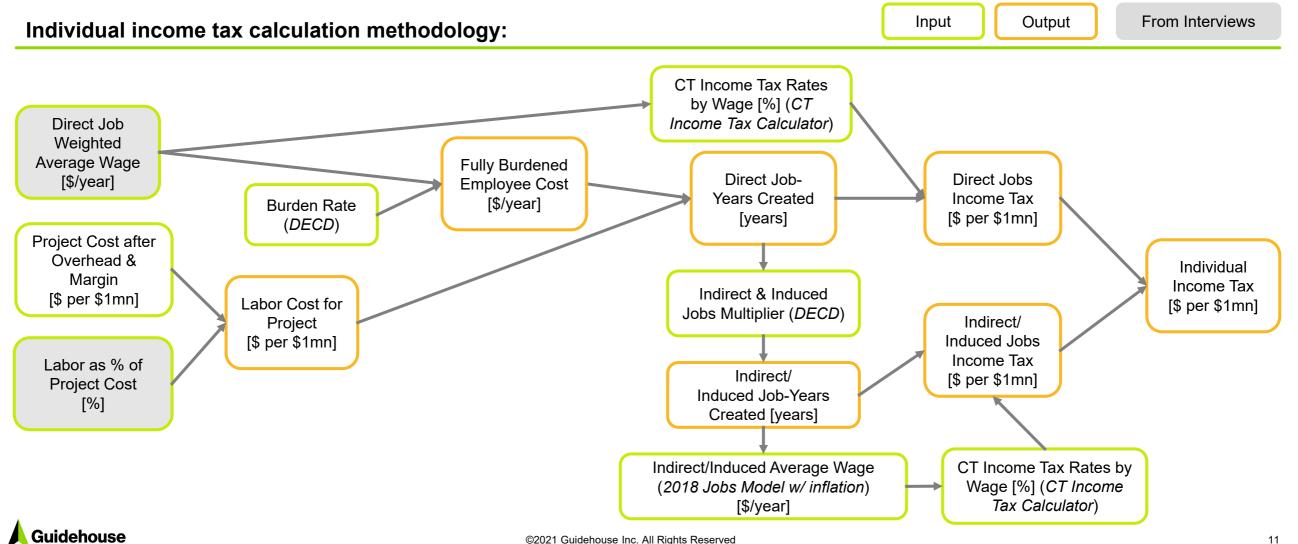
### Non-exempt tax status

Industries and business models that do not have exemptions for property and sales tax leads to **application** of these tax categories

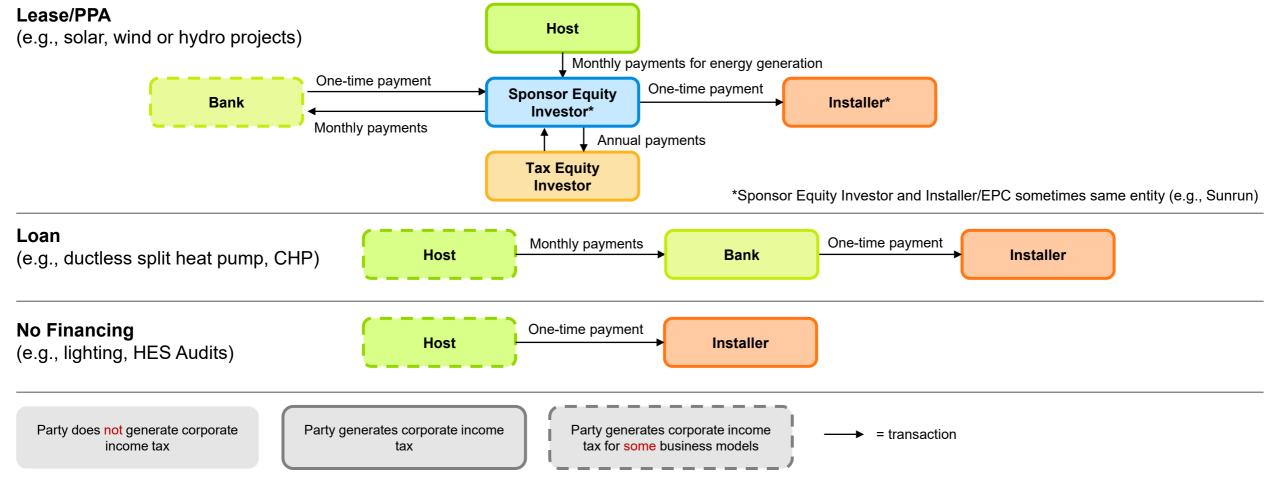




### Individual income tax is grounded in interview data for wages and project cost allocation



## Three broad business model relationships were used to approximate corporate income tax



Note: See Utility Meter Installation Technology Dashboard for explanation of business model



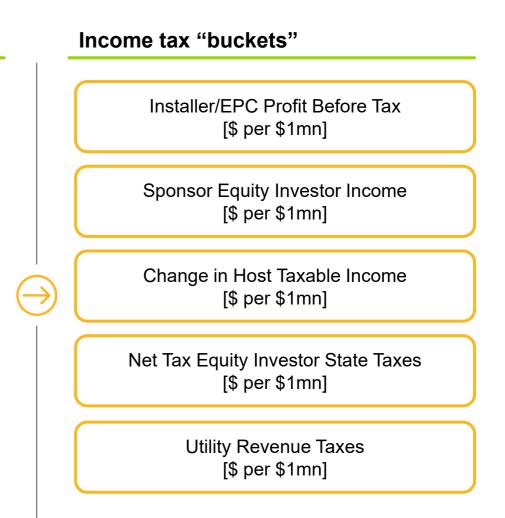
### These business models and involved parties lead to five "buckets" of corporate income tax

### Parties involved and income tax modeled

- **Installer** company that installs technology *Taxable income modeled as a percentage of project installed cost*
- **Sponsor Equity Investor** company that provides partial funding for project for equity *Taxable income modeled as percentage of project distributions over useful life*
- For-Profit Bank bank loan obtained to fund percentage of the project Taxable income modeled as loan proceeds over loan period
- **Host** property on which the project is sited Taxable income modeled as savings from buying power for cheaper than from utility
- Tax Equity Investor company that provides partial funding for the project for income tax benefits

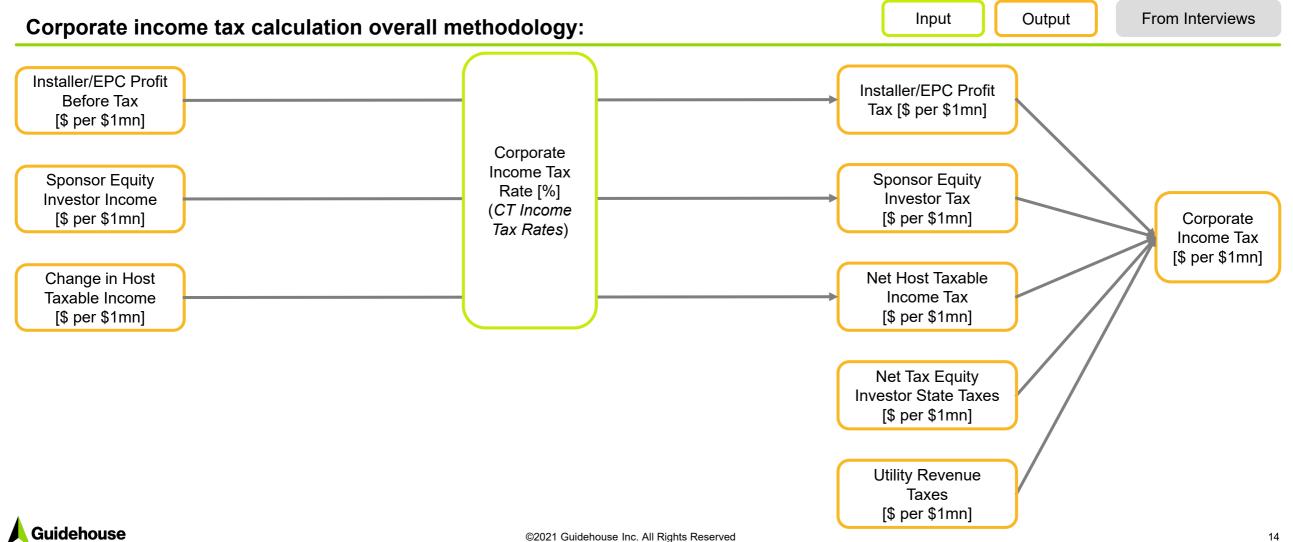
*Taxable income modeled as a portion of project distributions and tax benefits over investment life* 

• **Utility** – energy supplier that funds utility-based meter installation (not present on previous) *Taxable income modeled as revenue from utility rate of return* 

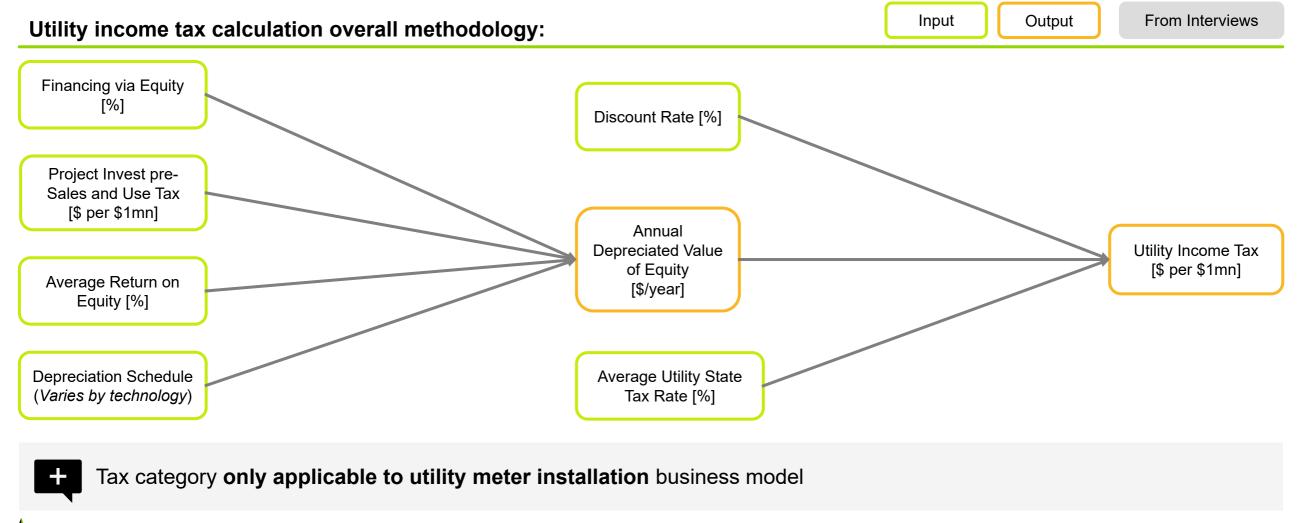




### Majority of corporate income tax modeled as party income times tax rate, with some nuance

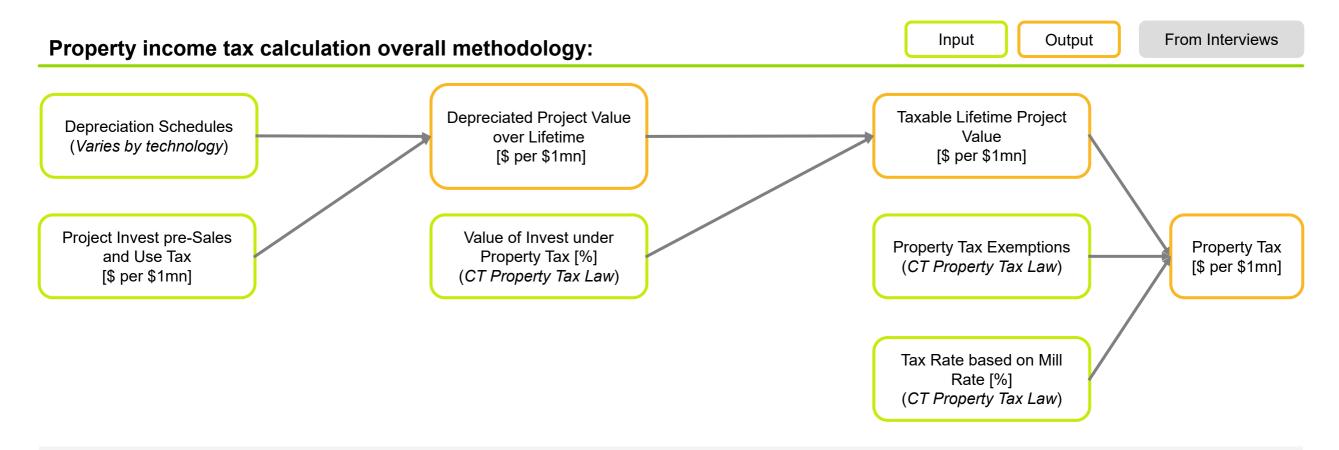


## Utility income tax estimates revenue from return on equity to determine taxable income



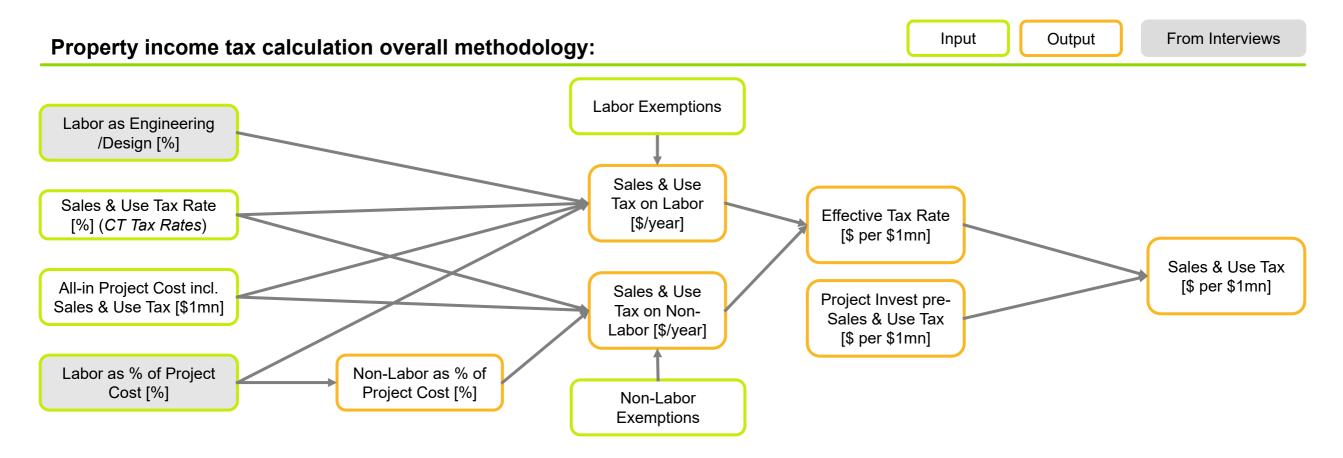
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### **Property tax uses depreciated value of project over lifetime and mill rates to estimate taxes paid**



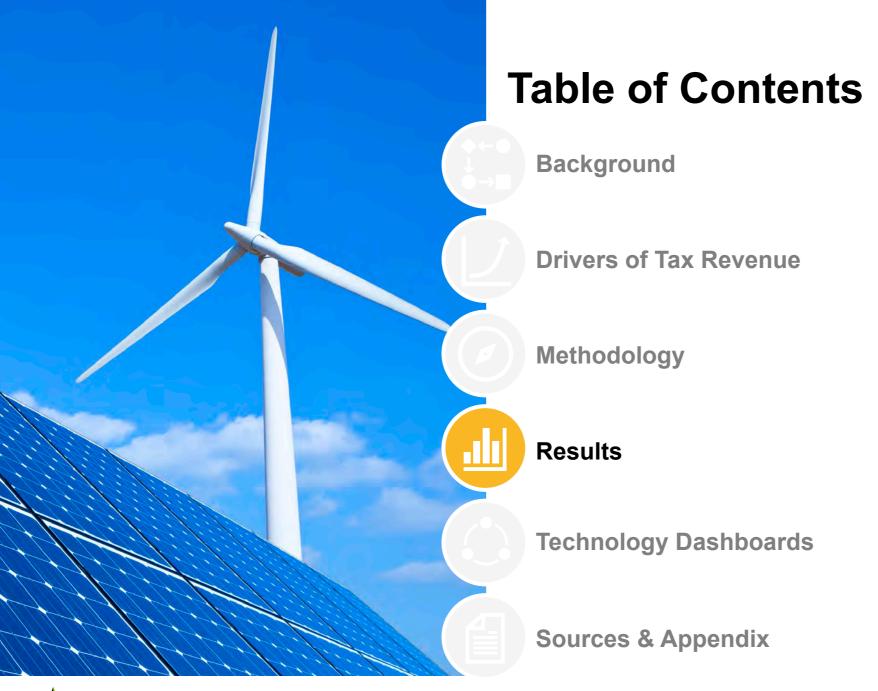
**Exemptions** play a large part in property tax, as many behind-the-meter electricity-generating technologies are exempt and is **considered not applicable** to **small** (<\$5,000 average project size) and **energy efficiency** investments

# Sales and use tax applies tax rate separately to labor and non-labor portions of projects from interview data



**Exemptions** play a large part in sales and use tax, as many electricity-generating technologies have exemptions for labor, non-labor, or both





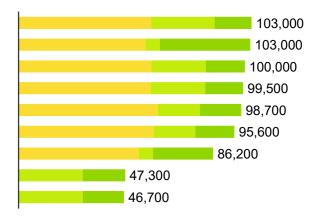
## Total tax varies significantly across technologies & business models, from \$10,000 to \$155,000 per \$1 million invest

155.000

EV Charging - Non-Res; Lease/PPA CHP; For-profit bank Small Hydro; Lease/PPA Onshore Wind: Lease/PPA Meter Inst.; Utility-procured Offshore Wind; Lease/PPA EV Charging - Res; No financing Meter Inst.; CGB-procured Storage - Utility; Lease/PPA Anaerobic Digestion; Not profitable Solar PV - Utility; Lease/PPA Storage - Res; Lease/PPA Storage - Non-Res; Lease/PPA Fuel Cell - Inst/Mfg.; Lease/PPA Solar PV - Res; For-profit bank Solar PV - Res: Lease/PPA Fuel Cell - R&D/Eng.; Not profitable Solar PV - Non-Res; Lease/PPA Storage - Res; For-profit bank Storage - Non-Res; For-profit bank Solar PV - Non-Res; For-profit bank Solar PV - Res; Not-for-profit bank Storage - Res; Not-for-profit bank Storage - Non-Res; Not-for-profit bank Solar PV - Non-Res; Not-for-profit bank

		130,000
		114,000
		110,000
		105,000
	79,500	,
	78,900	
	76,600	
	76,500	
	74,500	
	74,000	
48,600		
46,000		
45,400		
45,200		
38,400		
38,400		
37,300		
36,500		
34,300		
28,800		
23,600		
21,300		
19,100		
7,180		

Ductless & Air Source HP; For-profit bank HES - Audits; No financing Gas Conversion; For-profit bank HES - Wx & HVAC; For-profit bank Sm. Bus. Energy Adv.; For-profit bank Large C&I; For-profit bank Lighting; No financing GS Geothermal HP; For-profit bank Solar Thermal; For-profit bank



Property tax and sales tax exemptions play deciding factors in technologies with overall highest taxes paid; thus, behind-the-meter solar, storage, and heat pumps generate relatively lowest taxes per investment



Property Tax
 Corporate Income Tax
 Sales and Use Tax
 Individual Income Tax

Note: Negative corporate income tax for Solar PV - Non Res; Not-for-profit bank due to increased NPV of energy costs to host, leading to lower income tax paid

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## Individual income tax is highest for technologies generating most job years and relatively higher-paying jobs

28,500

27.800

Onshore Wind: Lease/PPA Offshore Wind: Lease/PPA Anaerobic Digestion; Not profitable Fuel Cell - Inst/Mfg.; Lease/PPA EV Charging - Res; No financing EV Charging - Non-Res; Lease/PPA Fuel Cell - R&D/Eng.; Not profitable Solar PV - Res; For-profit bank Solar PV - Res; Not-for-profit bank Solar PV - Res: Lease/PPA CHP; For-profit bank Solar PV - Utility; Lease/PPA Storage - Res; For-profit bank Storage - Res; Not-for-profit bank Storage - Res; Lease/PPA Solar PV - Non-Res; For-profit bank Solar PV - Non-Res; Not-for-profit bank Solar PV - Non-Res; Lease/PPA Meter Inst.; CGB-procured Meter Inst.; Utility-procured Storage - Non-Res; For-profit bank Storage - Non-Res; Not-for-profit bank Storage - Non-Res; Lease/PPA Storage - Utility; Lease/PPA Small Hydro; Lease/PPA

	21,200
	20,000
	20,000
	19,700
16,8	00
16,8	00
16,8	00
16,30	
15,100	•
14,600	
14,600	
14,600	
13,700	
13,700	
13,700	
13.100	
13,100	
12,400	
12,400	
12,400	
11,000	
9,110	

00 Lighting; No financing 26,600	
GS Geothermal HP; For-profit bank 18,900	
Solar Thermal; For-profit bank 18,300	
Sm. Bus. Energy Adv.; For-profit bank 18,300	
Large C&I For-profit bank 17,300	
Gas Conversion; For-profit bank 17,200	
HES - Wx & HVAC; For-profit bank 16,800	
Ductless & Air Source HP; For-profit bank	

Though both average salaries and number of jobs created influence individual income tax generated, number of jobs has a larger effect – investment in HES-Audits generates most jobyears of technologies surveyed, leading to relatively highest individual income tax



Individual Income Tax

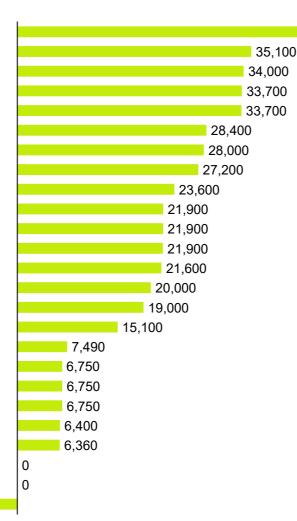


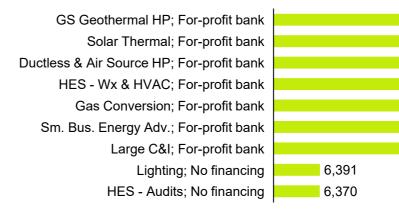
## **Corporate income tax** varies significantly based on industry profitability and business model

43.100

EV Charging - Non-Res; Lease/PPA Meter Inst.; Utility-procured Storage - Res; Lease/PPA Storage - Utility; Lease/PPA Storage - Non-Res; Lease/PPA Solar PV - Res; For-profit bank CHP; For-profit bank Solar PV - Utility; Lease/PPA Solar PV - Non-Res; Lease/PPA Storage - Res; For-profit bank Storage - Non-Res; For-profit bank Small Hydro; Lease/PPA Solar PV - Res: Lease/PPA Offshore Wind; Lease/PPA Onshore Wind: Lease/PPA Solar PV - Non-Res; For-profit bank Fuel Cell - Inst/Mfg.; Lease/PPA Solar PV - Res; Not-for-profit bank Storage - Res; Not-for-profit bank Storage - Non-Res; Not-for-profit bank EV Charging - Res; No financing Meter Inst.; CGB-procured Fuel Cell - R&D/Eng.; Not profitable Anaerobic Digestion; Not profitable Solar PV - Non-Res; Not-for-profit bank

-6,570





Corporate income tax is generally **highest for Lease/PPA models without a tax equity investor** (i.e., Non-res EV charging, Storage), **utility rate-based assets** (e.g., Utility-procured meter installation), and **for-profit bank loans** for **residential** or **non-electricity generating/saving** technologies



28,387

28.387

27,990

24.177

24,175

18.713

18.463

#### Corporate Income Tax

Note: Negative corporate income tax for Solar PV - Non Res; Not-for-profit bank due to increased NPV of energy costs to host, leading to lower income tax paid



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### Partial or full exemptions for sales & use tax create up to \$60,000 delta in taxes generated for \$1 million invest

53,100 52.600 52.600

46,700

28,100

18,700 16.700

	ı –
Meter Inst.; CGB-procured	
Meter Inst.; Utility-procured	
CHP; For-profit bank	
Small Hydro; Lease/PPA	
EV Charging - Res; No financing	
EV Charging - Non-Res; Lease/PPA	
Anaerobic Digestion; Not profitable	
Onshore Wind; Lease/PPA	
Fuel Cell - R&D/Eng.; Not profitable	
Fuel Cell - Inst/Mfg.; Lease/PPA	
Solar PV - Res; For-profit bank	0
Solar PV - Non-Res; For-profit bank	0
Solar PV - Res; Not-for-profit bank	0
Solar PV - Non-Res; Not-for-profit bank	0
Solar PV - Res; Lease/PPA	0
Solar PV - Non-Res; Lease/PPA	0
Solar PV - Utility; Lease/PPA	0
Offshore Wind; Lease/PPA	0
Storage - Res; For-profit bank	0
Storage - Res; Not-for-profit bank	0
Storage - Res; Lease/PPA	0
Storage - Non-Res; For-profit bank	0
Storage - Non-Res; Not-for-profit bank	0
Storage - Non-Res; Lease/PPA	0
Storage - Utility; Lease/PPA	0

57,100	Sm. Bus. Energy Adv.; For-profit bank	
57,100	Large C&I For-profit bank	
56,000	Ductless & Air Source HP; For-profit bank	
3,100	Gas Conversion; For-profit bank	
2,600	HES - Wx & HVAC; For-profit bank	
2,600	HES - Audits; No financing	
	Lighting; No financing	
		0
		0
	, I	I

rofit bank		61,700
rofit bank		59,800
rofit bank		58,800
rofit bank		58,800
rofit bank		58,500
financing	56	6,200
financing	53,2	.00
rofit bank	0	
<b>C</b> (1)		

Non-exempt technologies with relatively lower percentages of project cost as engineering and/or design labor pay most sales and use tax. Most renewable electricity generating technologies are either fully or partially exempt.

Explanation of exemptions are included in Appendix pg. 72



Sales and Use Tax



## Most tech surveyed are assumed not to pay property tax, due to exemptions or low likelihood of triggering re-appraisal

38,900

31,700

31,700

30,900

30,000

30,000

29,900

- Ductless & Air Source HP; For-profit bank 0
  - GS Geothermal HP; For-profit bank 0
    - Solar Thermal; For-profit bank 0
      - Lighting; No financing 0
      - HES Audits; No financing 0
  - HES Wx & HVAC; For-profit bank 0
    - Gas Conversion; For-profit bank 0
  - Sm. Bus. Energy Adv.; For-profit bank 0
    - Large C&I; For-profit bank 0

Behind-the-meter electricity generating technologies are largely exempt from property tax in CT. For the purposes of this study, it was assumed that technologies with overall low per-asset cost (e.g., meter installation) and EE technologies would not trigger a property tax re-appraisal, and thus generate no property tax

Explanation of exemptions are included in Appendix pg. 74



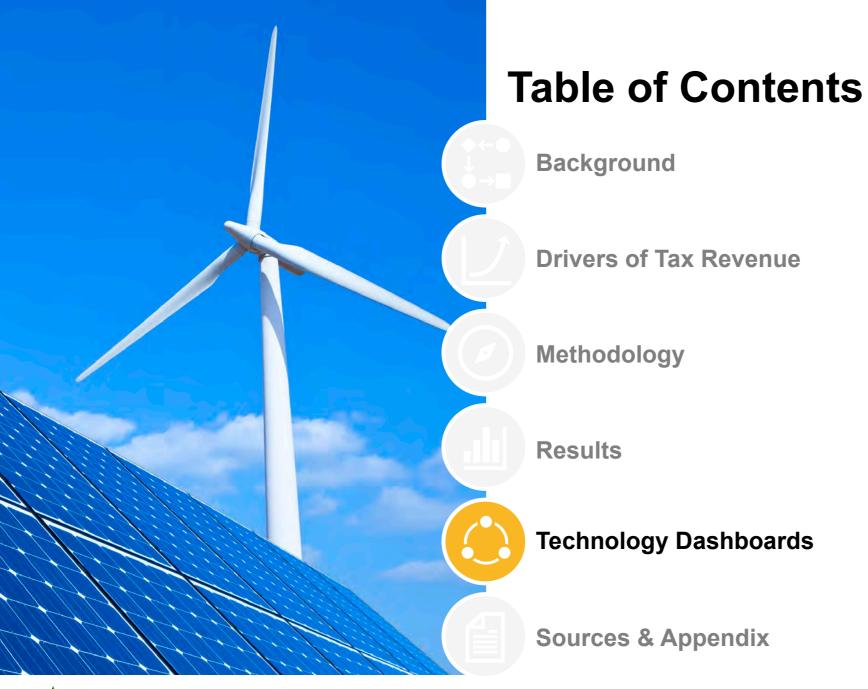
EV Charging - Non-Res; Lease/PPA	
Solar PV - Utility; Lease/PPA	
Storage - Utility; Lease/PPA	
Offshore Wind; Lease/PPA	
Onshore Wind; Lease/PPA	
Small Hydro; Lease/PPA	
CHP; For-profit bank	
Fuel Cell - R&D/Eng.; Not profitable	0
Fuel Cell - Inst/Mfg.; Lease/PPA	0
Solar PV - Res; For-profit bank	0
Solar PV - Non-Res; For-profit bank	0
Solar PV - Res; Not-for-profit bank	0
Solar PV - Non-Res; Not-for-profit bank	0
Solar PV - Res; Lease/PPA	0
Solar PV - Non-Res; Lease/PPA	0
Meter Inst.; CGB-procured	0
Meter Inst.; Utility-procured	0
EV Charging - Res; No financing	0
Storage - Res; For-profit bank	0
Storage - Res; Not-for-profit bank	0
Storage - Res; Lease/PPA	0
Storage - Non-Res; For-profit bank	0
Storage - Non-Res; Not-for-profit bank	0
Storage - Non-Res; Lease/PPA	0
Anaerobic Digestion; Not profitable	0



# Taxes generated vary due to differences in tax treatment and project finance over technology sectors and business models

Renewable Energy		Energy Efficiency	
Technology	Taxes as % of Invest	Technology	Taxes as % of Invest
EV Charging Stations	8-15%	Home Energy Solutions (HES) - Audits	10%
СНР	13%	HES - Weatherization & HVAC	10%
Onshore Wind	11%	Gas Conversion	10%
Hydro	11%	Small Business Energy Advantage	10%
Meter Installation	8-11%	Large Commercial and Industrial	10%
Offshore Wind	8%	Ductless & Air Source Heat Pump	10%
Storage	2-8%	Lighting	9%
Anaerobic Digestion	7%	Ground Source Geothermal Heat Pump	5%
Fuel Cell	4-5%	Solar Thermal	5%
Solar PV	1-7%	Note: Not all possible combinations of sectors and project finance were modeled; most common cases were modeled based on interview findings and CGB and Guidehouse experience	







## Technology Dashboards

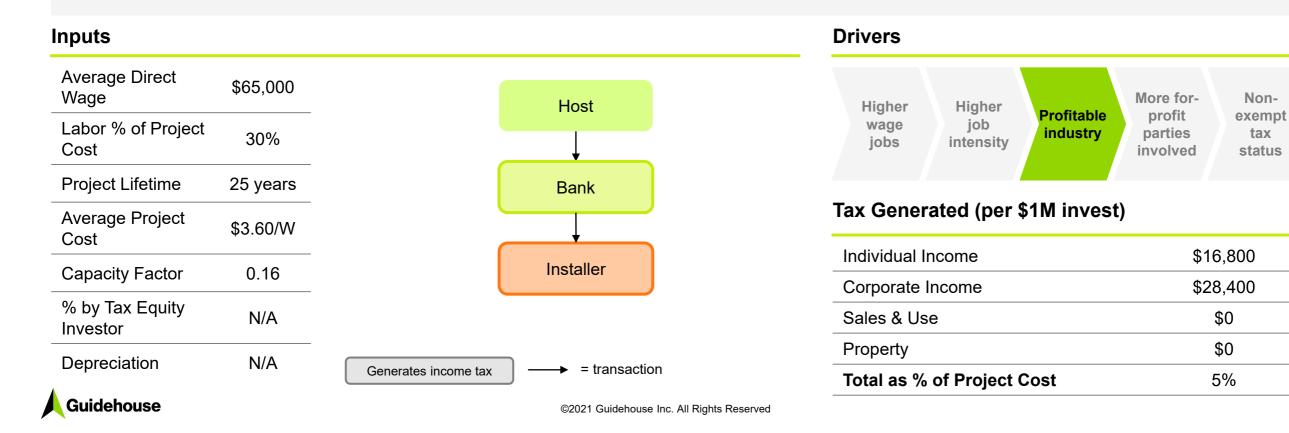
Solar PV



### **Residential Solar PV** For-Profit Bank Loan

#### Description

For projects where a residential host takes out a loan to install a solar PV project from a for-profit bank, the parties involved are the host, the bank, and the installer. The calculator assumes that the host takes out a loan for 100% of the project cost and the term is 15 years. The host benefits from not paying for power using their own panels, lowering their overall energy bills. Because the host doesn't pay corporate income tax, their taxes are not impacted as a result of lower energy bills. The cost per watt is based on interview data and is approximately 50% higher than for non-residential projects.



Solar PV

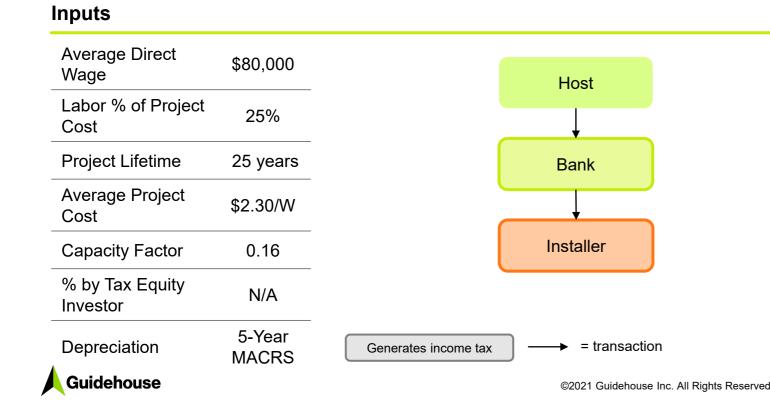
of 34 by total tax generated

24

### **Non-Residential Solar PV** For-Profit Bank Loan

#### Description

For projects where a non-residential host takes out a loan to install a solar PV project from a for-profit bank, the parties involved are the host, bank, and installer. The calculator assumes that the host takes out a loan for 100% of the project cost and the loan term is 15 years. The business benefits from lower overall energy bills, leading to lower operating costs and increasing their income. However, the host deducts the interest payments and depreciation of the panels from their increased income. Based on estimated non-residential electric rates, calculator models a net negative NPV of the decreased energy bills, interest payments, and depreciation for the host, lowering the host's net income taxes. Nonetheless, corporate income tax overall is positive due to tax paid by installer and on loan proceeds.





Higher wage jobs	Higher job intensity	Profitable industry	More for- profit parties involved	Non- exempt tax status
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30

### Tax Generated (per \$1M invest)

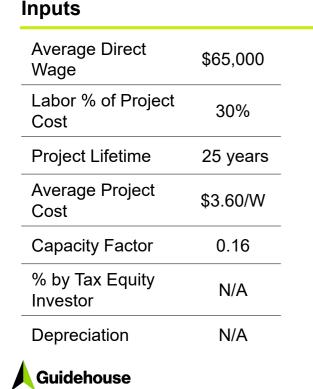
Individual Income	\$13,700
Corporate Income	\$15,100
Sales & Use	\$0
Property	\$0
Total as % of Project Cost	3%

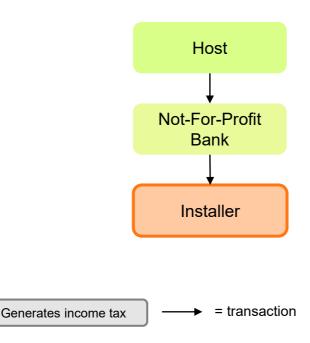
generated

### **Residential Solar PV** Not-For-Profit Bank Loan

### Description

For projects where a residential host takes out a loan to install a solar PV project from a non-profit bank, the parties involved are the host, bank, and installer. The calculator assumes that the host takes out a loan for 100% of the project cost and the term is 15 years. The bank does not generate profit on the loan, and thus does not pay taxes on this income. The host benefits from not paying for power using their own panels, lowering their overall energy bills. Because the host doesn't pay corporate income tax, their taxes are not impacted as a result of lower energy bills. The cost per watt is based on interview data and is approximately 50% higher than for non-residential projects.



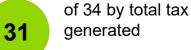




### Tax Generated (per \$1M invest)

Individual Income	\$16,800
Corporate Income	\$6,750
Sales & Use	\$0
Property	\$0
Total as % of Project Cost	2%



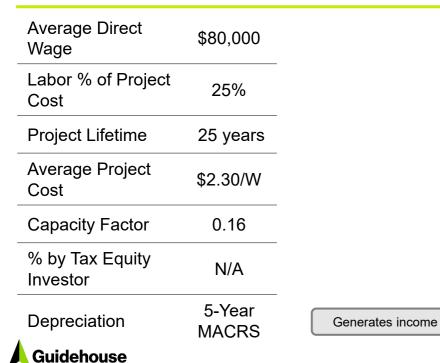


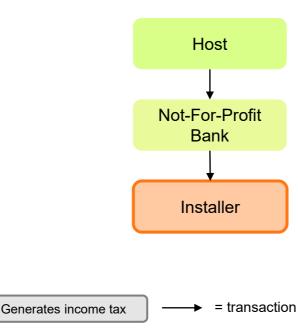
### Non-Residential Solar PV Not-For-Profit Bank Loan

### Description

Inputs

For projects where a non-residential host takes out a loan to install a solar PV project from a non-profit bank, the parties involved are the host, bank, and installer. The calculator assumes that the host takes out a loan for 100% of the project cost and the loan term is 15 years. The business benefits from lower overall energy bills, leading to lower operating costs and increasing their income. However, the host deducts the interest payments and depreciation of the panels from their increased income. Based on estimated non-residential electric rates, the calculator models a net negative NPV of the decreased energy bills, interest payments, and depreciation for the host, lowering the host's net income taxes. This leads to an overall decrease in total corporate income tax paid.









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### Tax Generated (per \$1M invest)

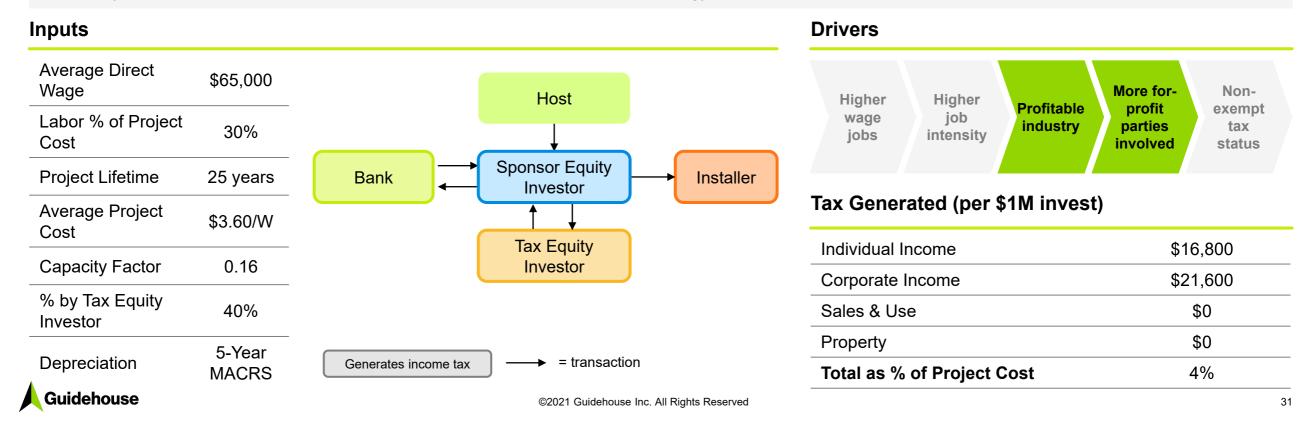
Individual Income	\$13,800
Corporate Income	-\$6,570
Sales & Use	\$0
Property	\$0
Total as % of Project Cost	1%

of 34 by total tax generated

### **Residential Solar PV** Lease/PPA Program

### Description

For a residential private lease/PPA solar PV project, the calculator assumes that there are five parties involved: an installer, sponsor equity investor, for-profit bank, tax equity investor, and host. The sponsor equity investor works with the installer to install the project and uses their own capital, tax equity and debt to finance the project. The sponsor equity investor sets PPA rates targeting an IRR of 10%. The tax equity investor is paid a 4% yearly return on the investment and is bought out at 10% of the investment in year 5. The residential host benefits from a lower energy price than if they purchased the power from the utility directly. However, since the host doesn't pay corporate income tax, their taxes are not impacted as a result of lower energy bills.



of 34 by total tax generated

### **Non-Residential Solar PV** Lease/PPA Program

### Description

For a non-residential private lease/PPA solar PV project, the calculator assumes that there are five parties involved: an installer, sponsor equity investor, for-profit bank, tax equity investor, and host. The sponsor equity investor works with the installer to install the project and uses their own capital, tax equity and debt to finance the project. The sponsor equity investor sets PPA rates targeting an IRR of 10%. The tax equity investor is paid a 4% yearly return on the investment and is bought out at 10% of the investment in year 5. Based on estimated non-residential electric rates, calculator models a small net negative NPV of the energy bills and interest payments, lowering the host's net income taxes; however, corporate income tax overall is positive.

Inputs				Drivers				
Average Direct Wage	\$80,000	н	ost	Higher	Higher		More for-	Non-
Labor % of Project Cost	25%			wage jobs	job intensity	Profitable industry	profit parties involved	exempt tax status
Project Lifetime	25 years	Bank	or Equity Installer					
Average Project Cost	\$2.30/W					\$1M invest		700
Capacity Factor	0.16		Equity estor	Individual li			· ·	3,700
				Corporate I	ncome		\$23	8,600
% by Tax Equity Investor	40%			Sales & Us	е		ç	\$0
	5-Year			Property				<b>50</b>
Depreciation	MACRS	Generates income tax	= transaction	Total as %	of Project	Cost	4	%
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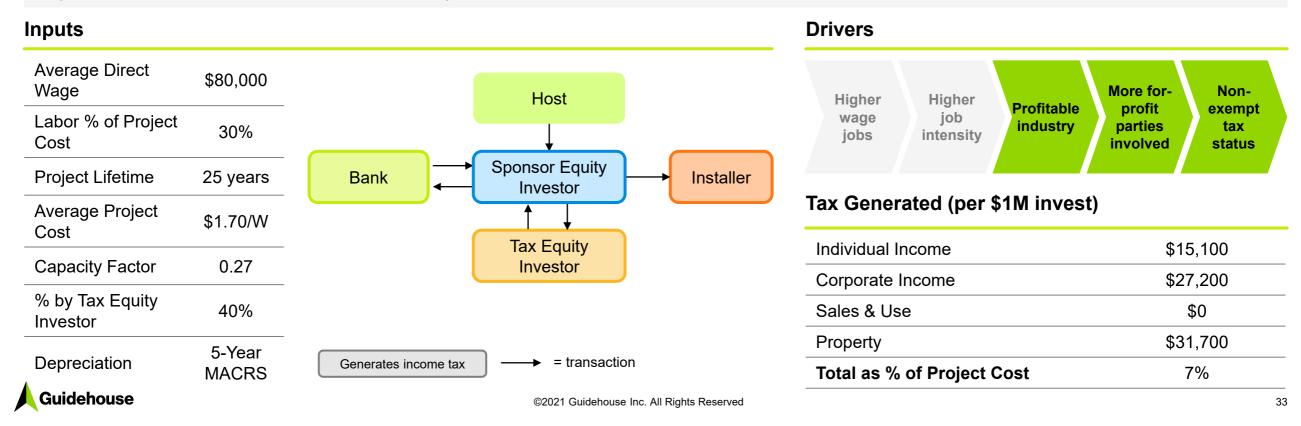
Solar PV

of 34 by total tax generated

### Utility-Scale Solar PV Lease/PPA Program

### Description

For a utility-scale solar project, the calculator assumes that there are five parties involved: an installer, sponsor equity investor, for-profit bank, tax equity investor, and utility host. The sponsor equity investor works with the installer to get the project installed and uses their own capital, tax equity and debt to finance the project. The sponsor equity investor sets PPA rates targeting an IRR of 10%, with a 1.5% annual increase. The tax equity investor is paid a 4% yearly return on the investment and is bought out at 10% of the investment in year 5. The solar power is sold to the utility host. The cost of the power is assumed to be a pass-through cost to the utility customer and does not increase profit for the utility host.



Solar PV

of 34 by total tax generated

# Technology Dashboards

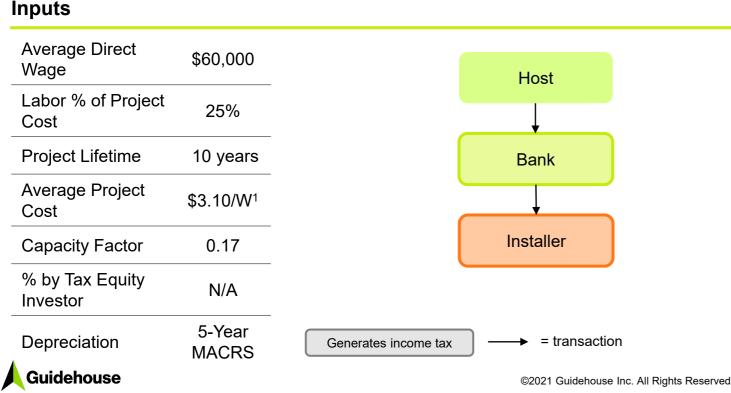
Battery Storage



### **Residential Storage Installation** For-Profit Bank Loan

#### Description

For projects where a residential host takes out a loan to install a storage project from a for-profit bank, the parties involved are the host, the bank, and the installer. The calculator assumes that the host takes out a loan for 100% of the project cost and the term is 10 years. Based on interview learnings, it is assumed that storage is deployed with solar, and thus exempt from property and sales and use tax. The cost per watt is based on interview data and is approximately 50% higher than for non-residential projects.





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### Tax Generated (per \$1M invest)

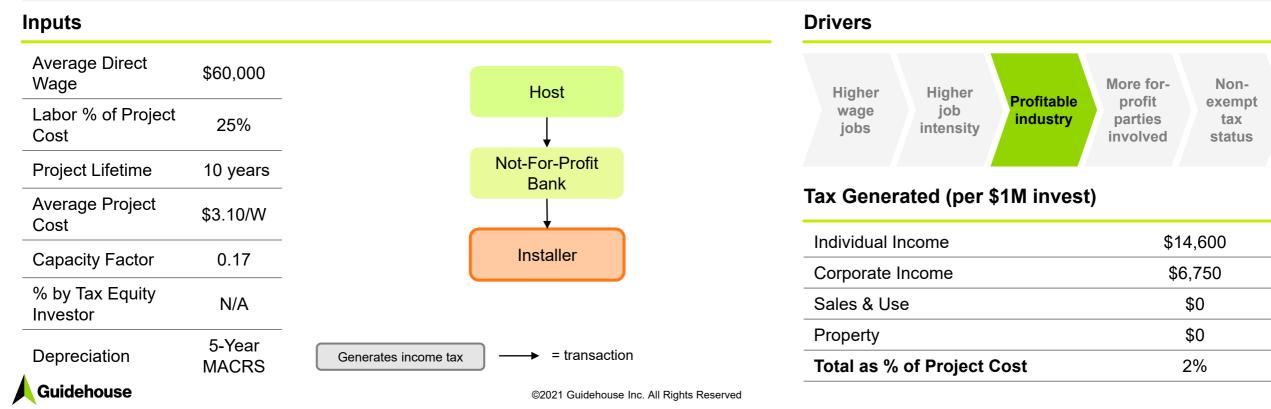
Individual Income	\$14,600
Corporate Income	\$22,000
Sales & Use	\$0
Property	\$0
Total as % of Project Cost	4%

generated

### **Residential Storage Installation** Not-For-Profit Bank Loan

### Description

For projects where a residential host takes out a loan to install a solar PV project from a non-profit bank, the parties involved are the host, bank, and installer. The calculator assumes that the host takes out a loan for 100% of the project cost and the term is 10 years. The bank does not generate profit on the loan, and thus does not pay taxes on this income. Based on interview learnings, it is assumed that storage is deployed with solar, and thus exempt from property and sales and use tax. The cost per watt is based on interview data and is approximately 50% higher than for non-residential projects.



**Battery Storage** 

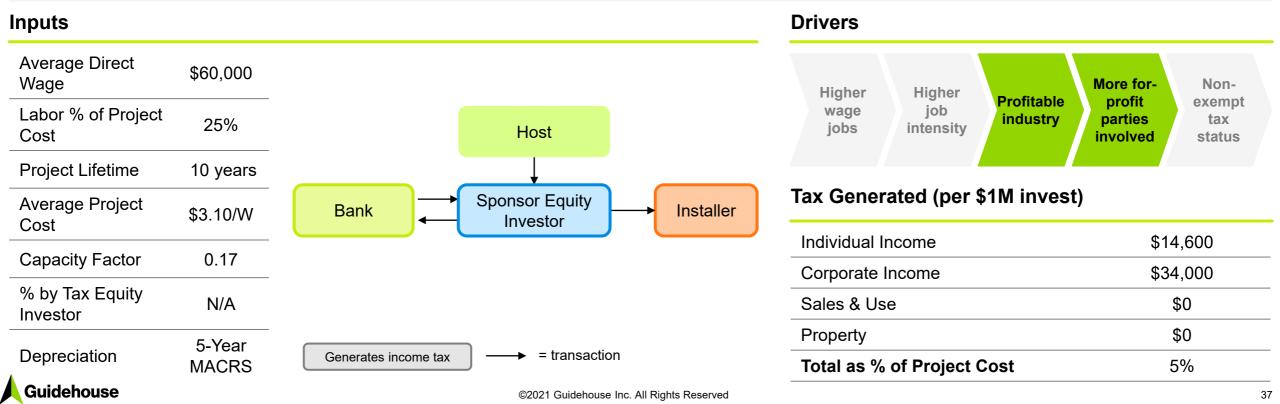
generated

32

### **Residential Storage Installation** Lease/PPA Program

### Description

For a residential private lease/PPA solar PV project, the calculator assumes that there are four parties involved: an installer, sponsor equity investor, for-profit bank, and host. The sponsor equity investor works with the installer to install the project and uses their own capital and some debt to finance the project. The sponsor equity investor sets PPA rates targeting an IRR of 10%. A tax equity investor is not assumed to be part of this business model, thus there is no state tax offset. Based on interview learnings, it is assumed that storage is deployed with solar, and thus exempt from property and sales and use tax.



**Battery Storage** 

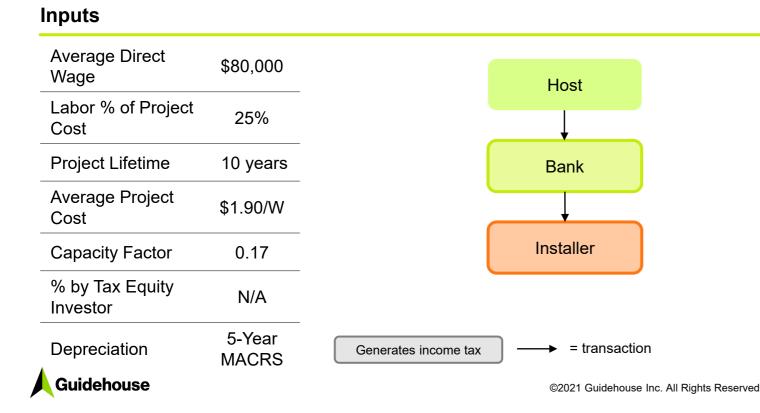
generated

19

### **Non-Residential Storage Installation** For-Profit Bank Loan

#### Description

For projects where a non-residential business takes out a loan to install a solar PV project from a for-profit bank, the parties involved are the host, bank, and installer. The calculator assumes that the host takes out a loan for 100% of the project cost and the loan term is 10 years. Based on interview learnings, it is assumed that storage is deployed with solar, and thus exempt from property and sales and use tax.





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**Battery Storage** 

generated

of 34 by total tax

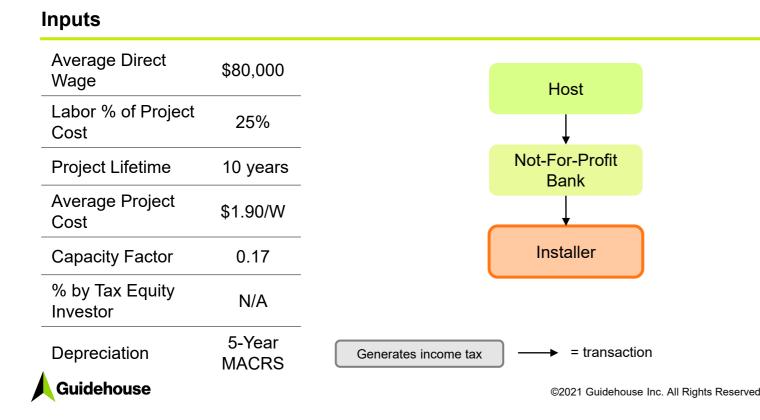
### Tax Generated (per \$1M invest)

Individual Income	\$12,400
Corporate Income	\$21,900
Sales & Use	\$0
Property	\$0
Total as % of Project Cost	3%

### Non-Residential Storage Installation Not-For-Profit Bank Loan

#### Description

For projects where a non-residential business takes out a loan to install a solar PV project from a non-profit bank, the parties involved are the host, bank, and installer. The calculator assumes that the host takes out a loan for 100% of the project cost and the loan term is 10 years. The bank does not generate profit on the loan, and thus does not pay taxes on this income. Based on interview learnings, it is assumed that storage is deployed with solar, and thus exempt from property and sales and use tax.





33

**Battery Storage** 

generated

of 34 by total tax

### Tax Generated (per \$1M invest)

Individual Income	\$12,400
Corporate Income	\$6,750
Sales & Use	\$0
Property	\$0
Total as % of Project Cost	2%

39

### **Non-Residential Storage Installation** Lease/PPA Program

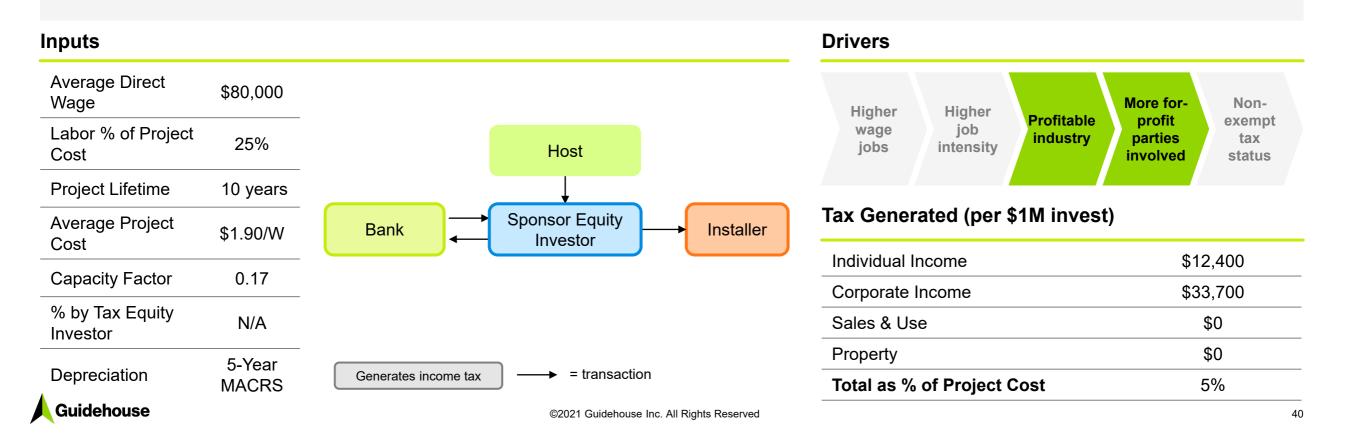
#### **Battery Storage**

of 34 by total tax generated

22

#### Description

For projects where a non-residential private lease/PPA solar PV project, the calculator assumes that there are four parties involved: an installer, sponsor equity investor, for-profit bank, and host. The sponsor equity investor works with the installer to install the project and uses their own capital and debt to finance the project. The sponsor equity investor sets PPA rates targeting an IRR of 10%. A tax equity investor is not assumed to be part of this business model, thus there is no state tax offset. Based on interview learnings, it is assumed that storage is deployed with solar, and thus exempt from property and sales and use tax.



### Utility-Scale Storage Installation Lease/PPA Program

### Description

For projects where a utility scale storage installation project, the tax calculator assumes that there are four parties involved: an installer, sponsor equity investor, forprofit bank, and utility host. The sponsor equity investor works with the installer to install the project and uses their own capital and debt to finance the project. The sponsor equity investor sets PPA rates targeting an IRR of 10%. A tax equity investor is not assumed to be part of this business model, thus there is no state tax offset. The battery power is sold to the utility host. Based on interview learnings, it is assumed that storage is deployed with solar, and thus exempt from sales and use tax. Property tax is still paid because the system is not behind-the-meter.

**Battery Storage** 

generated

16

Inputs			Drivers			
Average Direct Wage	\$80,000		Higher Higher Brottenio	More for- Non-		
Labor % of Project Cost	20%	Host	wage job jobs intensity			
Project Lifetime	10 years					
Average Project Cost	\$1.40/W	Bank Sponsor Equity Installer	Tax Generated (per \$1M invest)			
Capacity Factor	0.17		Individual Income	\$11,000		
	0.17		Corporate Income	\$33,700		
% by Tax Equity Investor	N/A		Sales & Use	\$0		
	5-Year		Property	\$31,700		
Depreciation	MACRS	Generates income tax = transaction	Total as % of Project Cost	8%		
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# Technology Dashboards

Fuel Cell



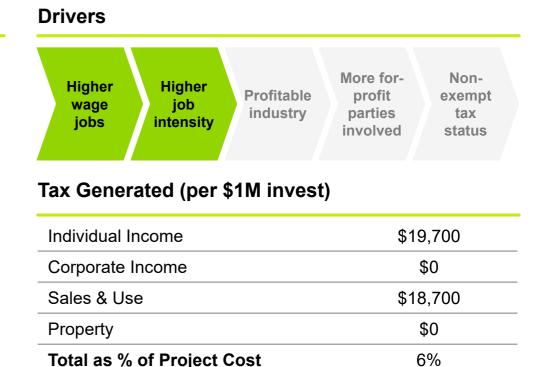
### **Fuel Cell R&D/Engineering** Not Profitable

#### Description

Inputs

The calculator assumes that firms focusing on research and development or engineering work on fuel cells in CT are not yet profitable and are relying on investors for funding. As the fuel cell industry matures, fuel cell engineering or R&D firms may become profitable companies. These firms have a relatively high direct wage compared to other projects due to allocation towards higher paying job types.

Average Direct Wage	\$100,000	
Labor % of Project Cost	40%	
Project Lifetime	N/A	
Average Project Cost	N/A	R&D/Engineering Firm
Capacity Factor	N/A	
% by Tax Equity Investor	N/A	
Depreciation	N/A	Generates income tax
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**Fuel Cell** 

generated

25

of 34 by total tax

### Guidehouse

### Fuel Cell Installation/Manufacturing Lease/PPA Program

#### Description

For fuel cell installation projects, the calculator assumes an installer, sponsor equity investor, for-profit bank, tax equity investor, and utility host. The sponsor equity investor works with the installer to install the project and uses their own capital, tax equity and debt to finance the project. The installer does not generate taxable income. The tax equity investor is paid 4% yearly return on the investment and is bought out at 10% in year 5. The sponsor equity investor sets PPA rates targeting an IRR of 10%. Power from the fuel cell is sold to the utility host. The cost of the power is a pass-through to the utility customer and does not increase profit for the utility host.

#### Drivers Inputs Average Direct \$80,000 Wage More for-Non-Host Higher Higher profit **Profitable** exempt job Labor % of Project wage industrv parties tax 40% iobs intensity Cost involved status Sponsor Equity **Project Lifetime** 10 years Bank Installer Investor Tax Generated (per \$1M invest) Average Project \$7.40/W Cost Tax Equity Individual Income \$22,200 **Capacity Factor** 0.90 Investor Corporate Income \$7,500 % by Tax Equity 40% \$16,700 Sales & Use Investor \$0 Property 5-Year Depreciation = transaction Generates income tax **Total as % of Project Cost** MACRS 7% Guidehouse 44 ©2021 Guidehouse Inc. All Rights Reserved

Fuel Cell

# Technology Dashboards

Meter Install



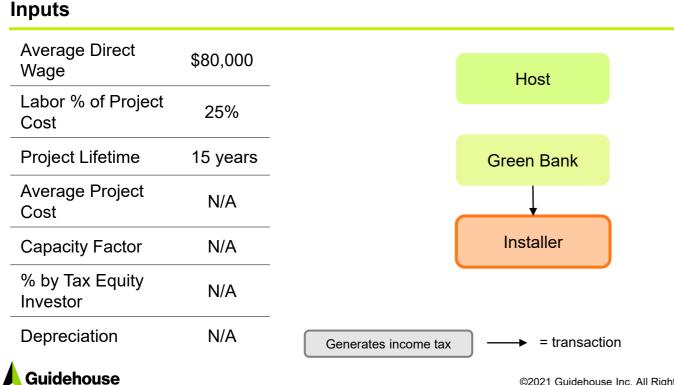
## Meter Installation – Green Bank-Procured No Financing

### Meter Install

of 34 by total tax generated

### Description

For Green Bank-procured solar meters, the calculator assumes that there are three parties involved: the installer, the host, and the Green Bank. The host does not pay the Green Bank interest on the meters, and the Green Bank does not generate profit. Thus, the only party generating profit in this scenario is the installer. Though meter installation is assumed not to trigger a property tax assessment due to small invest per project site, sales and use tax is paid on the meters.





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### Tax Generated (per \$1M invest)

Individual Income	\$13,100
Corporate Income	\$6,400
Sales & Use	\$57,100
Property	\$0
Total as % of Project Cost	8%

### Guidehouse

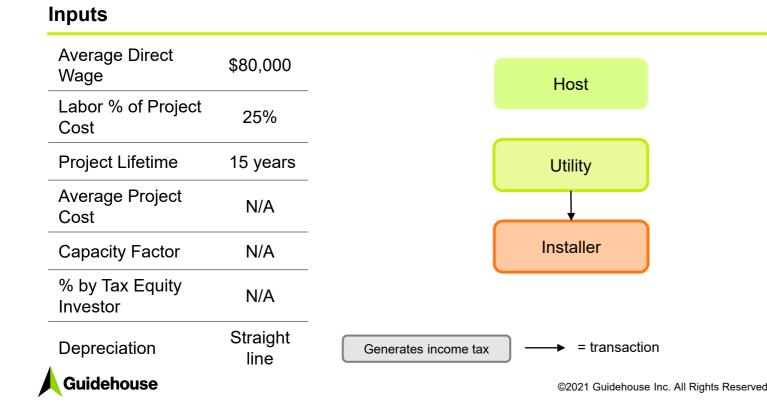
## Meter Installation – Utility-Procured No Financing

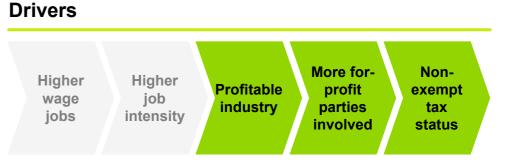
**Meter Install** 

of 34 by total tax generated

#### Description

For utility-procured smart meters, the calculator assumes that there are three parties involved: the installer, the host, and the utility. The utility is assumed to finance the project approximately 50% through debt and 50% through equity, on which they will earn a 9% rate of return. The utility pays taxes on this return based on the utility-specific income tax rate. Though meter installation is assumed not to trigger a property tax assessment due to small invest per project site, sales and use tax is paid on the meters.





5

### Tax Generated (per \$1M invest)

Individual Income	\$13,100
Corporate Income	\$35,100
Sales & Use	\$57,100
Property	\$0
Total as % of Project Cost	11%

# Technology Dashboards

EV Charging Stations

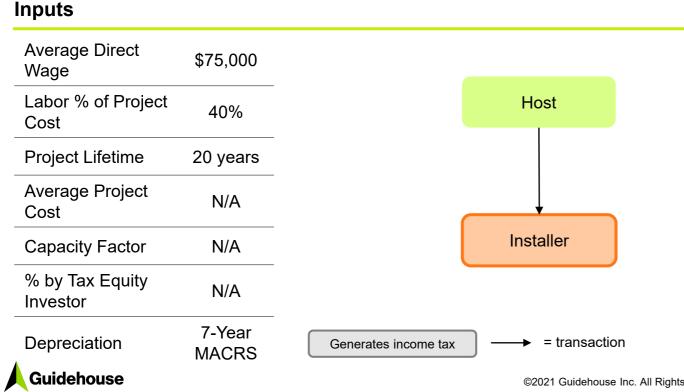


## **Residential EV Charging Station**

### No financing

### Description

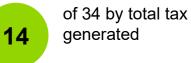
For a residential EV charging station installation project, the calculator assumes that the host will self-finance the project and there are only two parties involved: an installer and host that uses the charging station. Though residential charger installation is assumed not to trigger a property tax assessment due to small invest per project, sales and use tax is paid on the EV chargers.





Individual Income	\$20,000
Corporate Income	\$6,400
Sales & Use	\$52,600
Property	\$0
Total as % of Project Cost	8%

#### **EV Charging Stations**



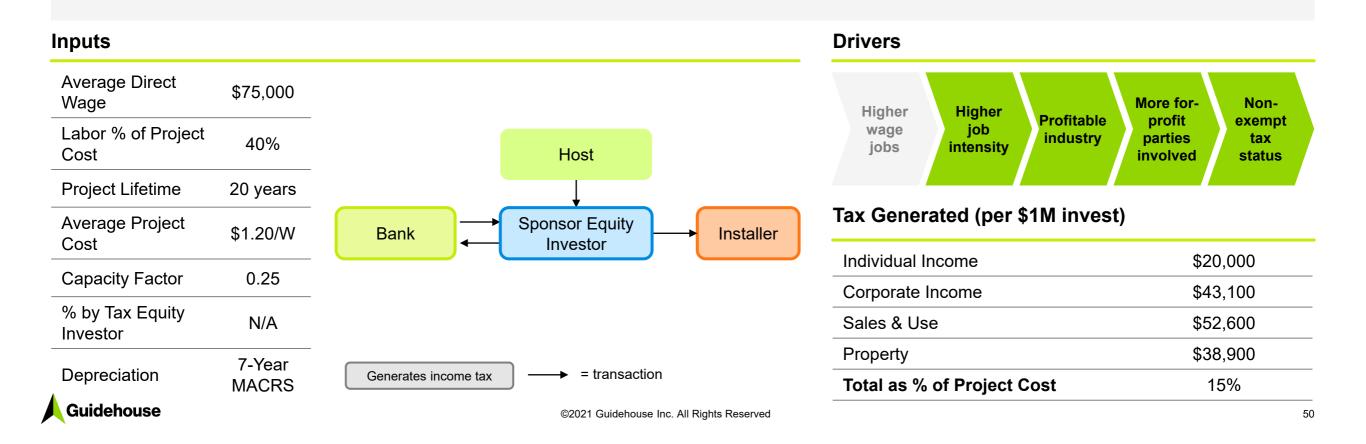
### Non-Residential EV Charging Station Lease/PPA Program

### EV Charging Stations

of 34 by total tax generated

#### Description

For a non-residential EV charging station installation project, the calculator assumes that there are four parties involved: the installer, the sponsor equity investor, the for-profit bank, and the host that uses the charging station. The sponsor equity investor sets PPA rates targeting an IRR of 10%. A tax equity investor is not assumed to be part of this business model, thus there is no state tax offset. Both sales and use tax and property tax are assumed to be paid on this technology.



# Technology Dashboards

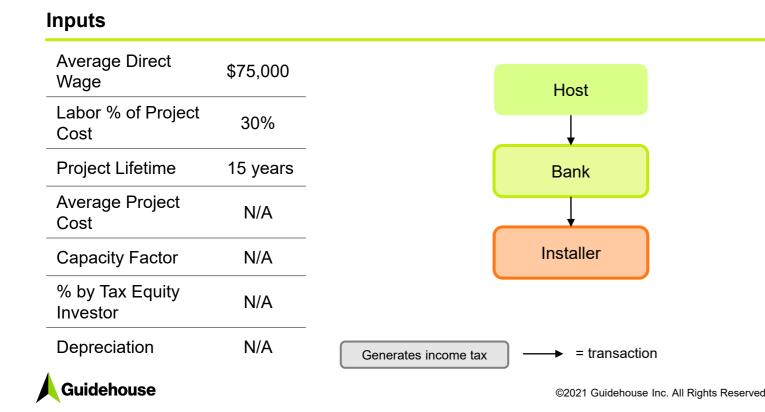
Renewable Thermal Tech



### **Ductless Split/Air-Source Heat Pump** For-Profit Bank Loan

#### Description

With the installation of a ductless or air source heat pump, only the host, installer, and for-profit bank are involved in the project. The calculator assumes that the host takes out a loan for 100% of the project and the loan term is 15 years. The host can be either a residential, nonprofit, or C&I host, as energy savings are not significant enough to lead to increased income taxes. However, for sales tax purposes, it is assumed these systems are installed for residential hosts. It is assumed that installation would not trigger property tax assessment.





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### Tax Generated (per \$1M invest)

Individual Income	\$16,400
Corporate Income	\$28,000
Sales & Use	\$58,800
Property	\$0
Total as % of Project Cost	10%

52

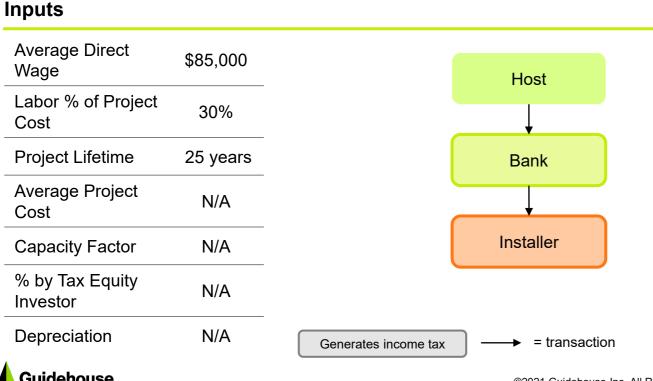
**Renew. Thermal Tech** 

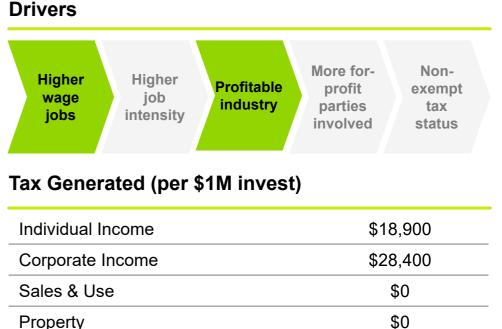
generated

### **Geothermal Installation** For-Profit Bank Loan

### Description

With the installation of a geothermal ground source heat pump, only the host, installer, and for-profit bank are involved in the project. The calculator assumes that the host takes out a loan for 100% of the project and the loan term is 15 years. The host can be either a residential, nonprofit, or C&I host, as energy savings are significant enough to lead to increased income taxes. Geothermal heat pumps are sales and use and property tax exempt.





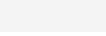
20

**Renew. Thermal Tech** 

generated

of 34 by total tax

\$0 **Total as % of Project Cost** 5%

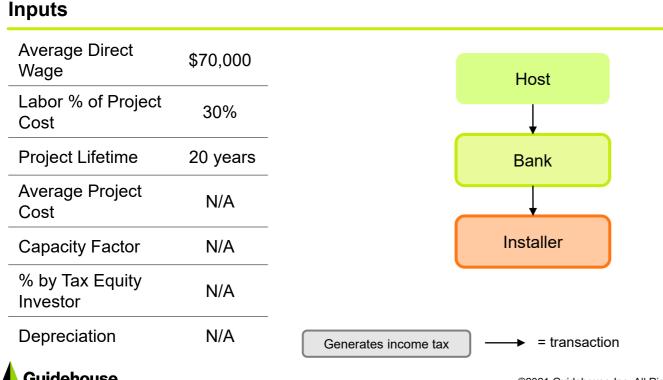




### Solar Thermal Installation For-Profit Bank Loan

#### Description

With the installation of a solar thermal system, only the host, installer, and for-profit bank are involved in the project. The calculator assumes that the host takes out a loan for 100% of the project and the loan term is 15 years. The host can be either a residential, nonprofit, or C&I host, as energy savings are significant enough to lead to increased income taxes. Solar thermal systems are sales and use and property tax exempt.





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**Renew. Thermal Tech** 

generated

of 34 by total tax

### Tax Generated (per \$1M invest)

Individual Income	\$18,300
Corporate Income	\$28,400
Sales & Use	\$0
Property	\$0
Total as % of Project Cost	5%



# Technology Dashboards

Renewable Electricity



### **Offshore Wind Installation** Lease/PPA Program

### Description

For a utility-scale offshore wind project, the calculator assumes that there are five parties involved: an installer, sponsor equity investor, for-profit bank, tax equity investor, and utility host. The sponsor equity investor works with the installer to get the project installed and uses their own capital, tax equity and some debt to finance the project. The sponsor equity investor sets PPA rates targeting an IRR of 10%. The tax equity investor is paid a 4% yearly return on the investment and is bought out at 10% of the investment in year 5. The wind power is sold to the utility host. The cost of the power is assumed to be a pass-through cost to the utility customer and does not increase profit for the utility host. Note that CT development is currently all offshore wind.

Inputs			Drivers	
Average Direct Wage	\$115,000	Host	Higher Higher Profitable	More for- Non-
Labor % of Project Cost	60%		wage job industry	profit exempt parties tax involved status
Project Lifetime	20 years			
Average Project Cost	\$6.40/W		Tax Generated (per \$1M invest)	
Capacity Factor	0.35	Tax Equity Investor	Individual Income	\$29,000
% by Tax Equity Investor	40%		Corporate Income Sales & Use	\$20,000 \$0
	5-Year		Property	\$30,900
Depreciation	MACRS	Generates income tax	Total as % of Project Cost	10%
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of 34 by total tax generated

### **Onshore Wind Installation** Lease/PPA Program

### Description

For a utility-scale onshore wind project, the calculator assumes that there are five parties involved: an installer, sponsor equity investor, for-profit bank, tax equity investor, and utility host. The sponsor equity investor works with the installer to get the project installed and uses their own capital, tax equity and some debt to finance the project. The sponsor equity investor sets PPA rates targeting an IRR of 10%. The tax equity investor is paid a 4% yearly return on the investment and is bought out at 10% of the investment in year 5. The wind power is sold to the utility host. The cost of the power is assumed to be a pass-through cost to the utility customer and does not increase profit for the utility host. Note that there has not been a CT onshore wind project since the last study.

Inputs			Drivers		
Average Direct Wage	\$70,000	Host	Higher Higher Profitable	More for- Non-	
Labor % of Project Cost	60%		wage job jobs intensity	profit exempt parties tax involved status	
Project Lifetime	20 years	Tax Equity Investor			
Average Project Cost	\$5.50/W		Tax Generated (per \$1M invest)		
Capacity Factor	0.18		Individual Income	\$32,800	
% by Tax Equity			Corporate Income	\$19,000	
% by Tax Equity Investor	40%		Sales & Use	\$28,100	
	5-Year		Property	\$30,000	
Depreciation	MACRS	Generates income tax	Total as % of Project Cost	11%	
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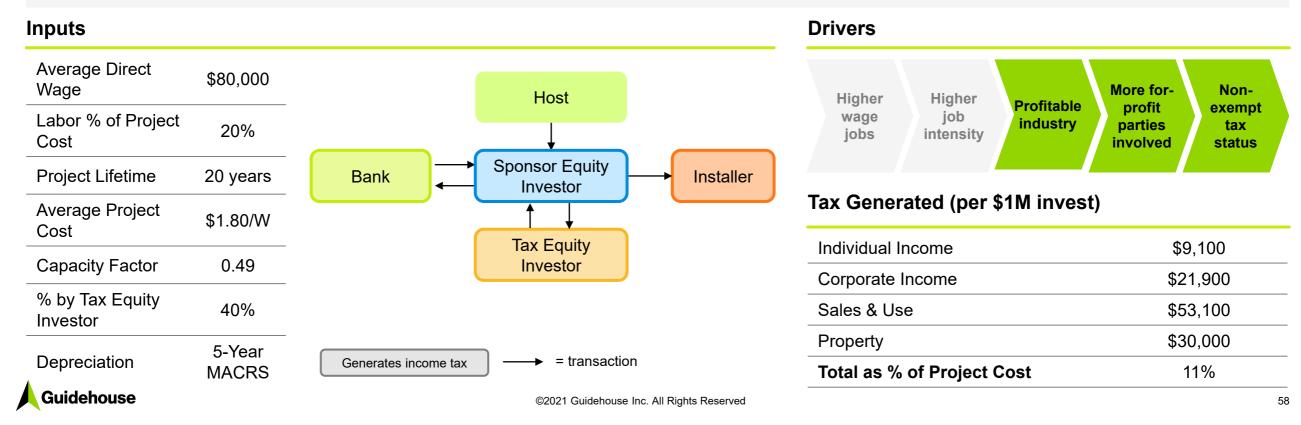
#### **Renewable Electricity**

of 34 by total tax generated

### Small Hydro Installation Lease/PPA Program

### Description

For a utility-scale hydro project, the calculator assumes that there are five parties involved: an installer, sponsor equity investor, for-profit bank, tax equity investor, and utility host. The sponsor equity investor works with the installer to get the project installed and uses their own capital, tax equity and some debt to finance the project. The sponsor equity investor sets PPA rates targeting an IRR of 10%. The tax equity investor is paid a 4% yearly return on the investment and is bought out at 10% of the investment in year 5. The hydropower is sold to the utility host. The cost of the power is assumed to be a pass-through cost to the utility customer and does not increase profit for the utility host.



Renewable Electricity

of 34 by total tax generated

### Anaerobic Digestion Not Profitable

### Description

The calculator assumes that for anaerobic digestion projects, the only key player is the non-residential host of the anaerobic digestion project. This technology is currently assumed not profitable; thus, no corporate income tax is generated. As the anaerobic digestion industry matures, anaerobic digestion projects may become profitable. As technology is behind-the-meter renewable energy generation, it is property tax exempt but still subject to sales and use tax.

**Rights Reserved** 

Inputs			
Average Direct Wage	\$50,000		
Labor % of Project Cost	45%		
Project Lifetime	20 years		
Average Project Cost	\$5.20/W		Host
Capacity Factor	0.80		
% by Tax Equity Investor	N/A		
Depreciation	N/A	Generates income tax	= transaction
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### Tax Generated (per \$1M invest)

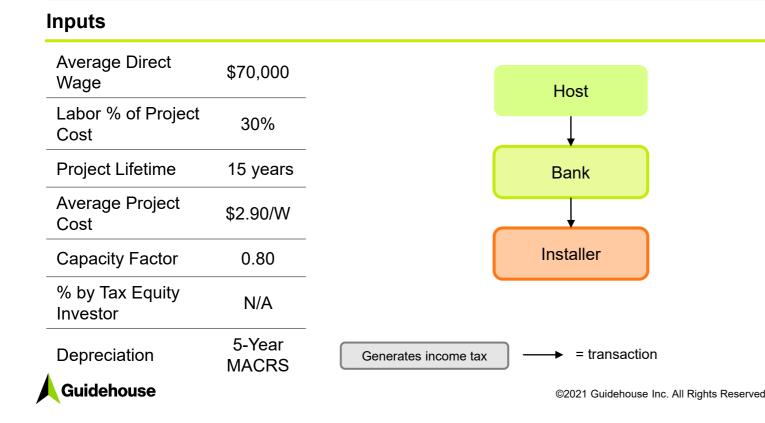
Individual Income	\$27,800
Corporate Income	\$0
Sales & Use	\$46,700
Property	\$0
Total as % of Project Cost	7%

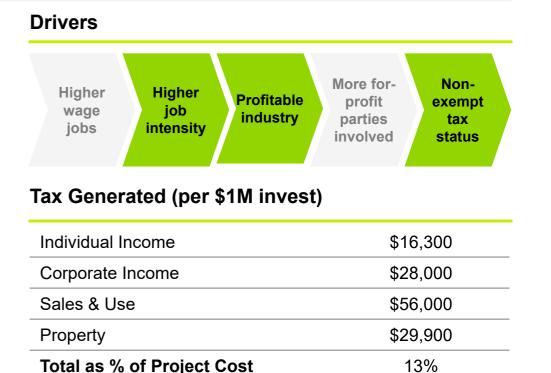
of 34 by total tax generated

### **Combined Heat and Power (CHP)** For-Profit Bank Loan

#### Description

The calculator assumes that the combined heat and power plant will be owned by a commercial entity or host and located on the host site. The other players are the for-profit bank and the installer. The calculator assumes that the host takes out a loan for 100% of the project and the loan term is 15 years. Energy savings are assumed to be not significant enough to increase or decrease the host's overall expenditures. This technology is subject to both property and sales and use tax.





2

**Renewable Electricity** 

generated

of 34 by total tax

# Technology Dashboards

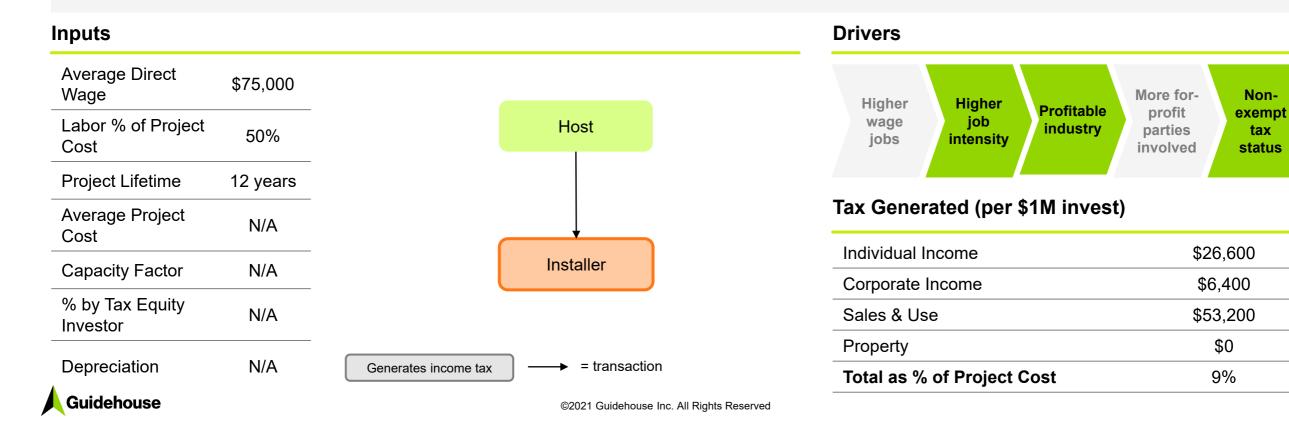
Energy Efficiency



### **Residential Lighting** No Financing

#### Description

The jobs and corporate income generated from a residential energy efficiency lighting upgrade are only when the lighting is installed by someone besides the homeowner. Lighting upgrades are usually low-cost, and the calculator assumes that the residential host does not take out a loan to finance the upgrade. For this reason, only the installer pays corporate income tax. The technology generates sales and use tax but is assumed not to trigger a property tax assessment.



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**Energy Efficiency** 

generated

12

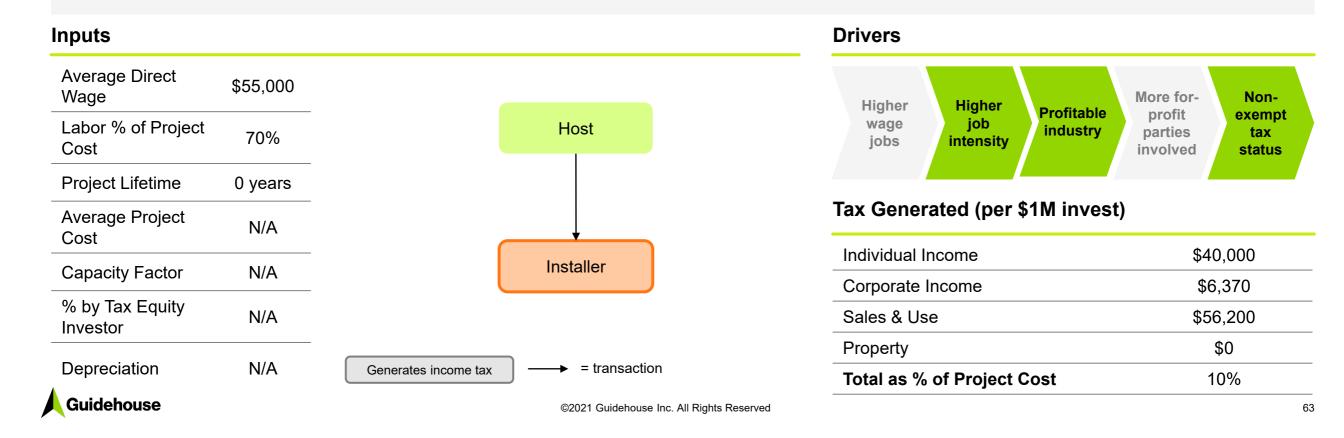
### Home Energy Solutions (HES) – Audits Self Funded

#### **Energy Efficiency**

of 34 by total tax generated

#### Description

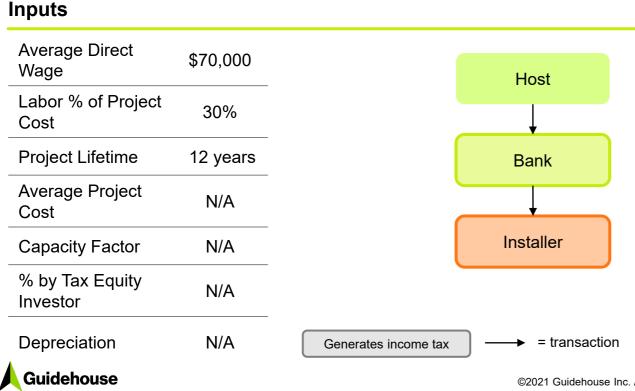
The jobs and corporate income generated from a residential energy efficiency audit are only when the audit is performed by someone besides the homeowner. Audits are usually low-cost, and it is assumed that the residential host does not take out a loan to finance the audit. For this reason, only the installer has increased taxes from these projects. The labor is not the full cost of the project due to the cost of the equipment needed to conduct the audit such as for a blower door test. The technology generates sales and use tax but is assumed not to trigger a property tax assessment.



## **Residential Weatherization & HVAC** For-Profit Bank Loan

### Description

The jobs and corporate income generated from residential energy efficiency weatherization and HVAC upgrades are only when the work is performed by someone besides the homeowner. HVAC and weatherization upgrades can be more expensive; thus, it is assumed that the residential host takes out a loan to finance 100% of the upgrade. The three parties involved in the upgrade are the residential host, for-profit bank, and installer. The technology generates sales and use tax but is assumed not to trigger a property tax assessment.





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### Tax Generated (per \$1M invest)

Individual Income	\$16,800
Corporate Income	\$24,200
Sales & Use	\$58,500
Property	\$0
Total as % of Project Cost	10%

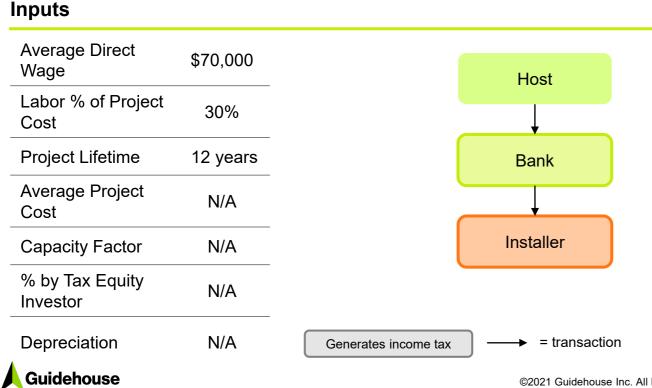
**Energy Efficiency** 

of 34 by total tax generated

## **Residential Gas Conversion** For-Profit Bank Loan

### Description

The jobs and corporate income generated from gas conversion from oil to gas are only when the work is performed by someone besides the homeowner. Fuel switching can be more expensive; thus, it is assumed that the residential host takes out a loan to finance 100% of the installation cost. The three parties involved in the upgrade are the residential host, for-profit bank, and installer. The technology generates sales and use tax but is assumed not to trigger a property tax assessment.





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### Tax Generated (per \$1M invest)

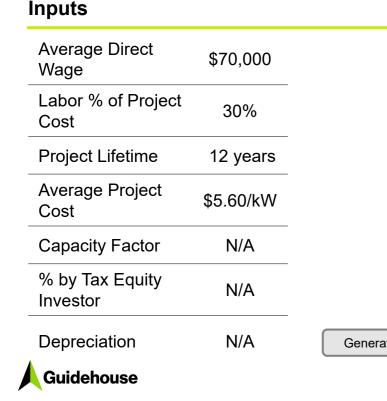
Individual Income	\$17,00
Corporate Income	\$24,200
Sales & Use	\$58,800
Property	\$0
Total as % of Project Cost	10%

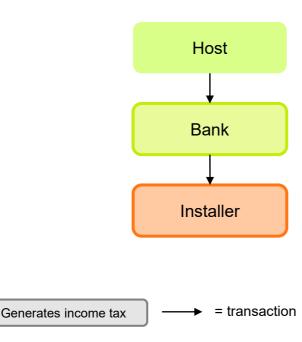
of 34 by total tax generated

## Small Business Energy Advantage For-Profit Bank Loan

### Description

For commercial energy efficiency projects at small businesses, the calculator assumes that there are three parties involved: the small business host, for-profit bank, and installer. It is assumed that the small business takes out a loan to finance 100% of the energy efficiency upgrades. The upgrades will reduce overall energy costs for the small business and increase profit. However, based on estimated non-residential electric rates and project costs calculator models net negative NPV, lowering the host's net income taxes. Corporate income tax overall is still positive. The technology generates sales and use tax but is assumed not to trigger a property tax assessment.







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### Tax Generated (per \$1M invest)

Individual Income	\$18,300
Corporate Income	\$18,700
Sales & Use	\$61,700
Property	\$0
Total as % of Project Cost	10%

#### **Energy Efficiency**

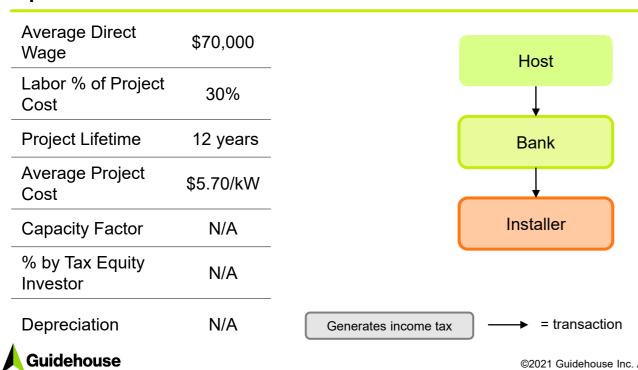
of 34 by total tax generated

## Large Commercial and Industrial EE For-Profit Bank Loan

### Description

Inputs

For commercial energy efficiency projects at large commercial and industrial sites, the calculator assumes that there are three parties involved: the large C&I host, the for-profit bank, and the installer. It is assumed that the C&I host takes out a loan to finance 100% of the energy efficiency upgrades. The energy efficiency upgrades will reduce overall energy costs for the C&I host and accordingly increase profit. However, based on estimated non-residential electric rates and project cost, calculator models net negative NPV, lowering the host's net income taxes. Corporate income tax overall is still positive. The technology generates sales and use tax but is assumed not to trigger a property tax assessment.





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### Tax Generated (per \$1M invest)

Individual Income	\$17,300
Corporate Income	\$18,500
Sales & Use	\$59,800
Property	\$0
Total as % of Project Cost	10%

#### Energy Efficiency

of 34 by total tax generated





## **Overall Tax Calculator Assumptions**

Numerical assumptions and sources are detailed in the tax calculator. Non-numerical assumptions are detailed in the following slides:

- Individual pg. 70
- Sales and Use pg. 71
- Property pg. 72-74
- Corporate pg. 75-76

### **Calculator-wide assumptions**

- Taxes are paid in CT for companies and employees operating in CT
- Based on this research, for the purposes of modeling corporate income tax, Guidehouse assumed that income before tax (or taxable income) was equal to 9% of revenue
- Indirect and induced job wages are assumed to be \$60,000 per year consistent with the 2018 Tax Study plus inflation, which are based on an average reported wage across CT from BLS
- Electricity rates are specific to residential and non-residential hosts, and are a weighted average rate for CT based on 2020 EIA-861 data
- Loan interest rates are 4.5% for both for-profit and non-profit banks
- Tax equity investors earn 4% yearly return, and are bought out in year 5 of the project at 10%
- NPV is calculated using a 5% discount rate



## Individual Income Tax – Non-Numerical Assumptions

## The following general assumptions guide individual income tax modeling:

- Individual income tax is applicable to all technologies
- All jobs generate income tax in Connecticut
- Tax rates are based on the individual income tax calculator on Connecticut Department of Revenue website; all tax rates were calculated for rounded annual wages for single filers
- Direct and indirect job have same average wage across technologies and business models based on overall Connecticut BLS data



For all assumptions and sources, see the Tax Calculator

## Sales & Use Tax – Non-Numerical Assumptions

## The following general assumptions guide sales and use tax modeling:

- All Engineering & Design work is sales & use tax exempt
- For non-Engineering & Design work, the following technology exemptions were considered:

Technology	Labor	Non-Labor	Source	Comment
Fuel Cell – R&D/Engineering	Exempt	50% exempt	CERT-108, CERT-109	Labor exemption based on Engineering & Design work exemption. 50% exemption based on R&D
Fuel Cell – Installation/Mfg.	Not exempt	Exempt	CGS 12-412 (13)	Some precedence for case-by-case exemptions
Solar PV	Exempt	Exempt	CERT-140	
Ground Source Geothermal HP	Exempt	Exempt	CERT-140	
Solar Thermal	Exempt	Exempt	CERT-140	
Wind	Not exempt	Exempt	CERT-142	"Clean Technologies" defined to include wind in CGS 12- 412(117) B
Storage	Exempt	Exempt	CERT-140	Assumed to be deployed with solar. Exemption for storage with solar in 2007 Special Notice Legislation

Sales and use tax is not dependent on sector or business model.



For all assumptions and sources, see the Tax Calculator

## **Property Tax – Non-Numerical Assumptions (1/2)**

## The following general assumptions guide property tax modeling:

- Property tax is generated if 1) an investment would trigger property tax, and 2) the technology is not otherwise exempt
- Total depreciated property value is approximation of "real market value", of which only 70% is taxed based on CT property tax assessment legislation
- Investments that **would not** trigger property tax appraisal are assumed to be:
  - Energy efficiency upgrades, including heat pump installation, for residential and non-residential customers
  - Meter installation due to small per-site invest
  - · Residential EV charger installation due to small per-site invest



For all assumptions and sources, see the Tax Calculator

## **Property Tax – Non-Numerical Assumptions (1/2)**

## The following technology and business model combinations are assumed property tax exempt under CT legislation:

Technology	Property Tax	Source	Comment
Fuel Cell – R&D/Engineering	Exempt	PA 13-61 (C), CGS 16-1 (20)	Class I Renewable, behind the meter C&I
Fuel Cell – Installation/Mfg.	Exempt	PA 13-61 (C), CGS 16-1 (20)	Class I Renewable, behind the meter C&I
Solar PV – Residential	Exempt	PA 13-61 (A), CGS 16-1 (20)	Class I Renewable, behind the meter residential
Solar PV – Non-Residential	Exempt	PA 13-61 (C), CGS 16-1 (20)	Class I Renewable, behind the meter C&I
Ground Source Geothermal HP	Exempt	PA 13-61 (A), CGS 16-1 (20)	Class I Renewable, behind the meter residential
Solar Thermal	Exempt	PA 13-61 (A), CGS 12-57 (20)	Class I Renewable, behind the meter residential
Storage – Residential	Exempt	Reg of State Agencies 16a-14-4, 16a-14-102	Assume deployed with solar
Storage – Non-Residential	Exempt	Reg of State Agencies 16a-14-4, 16a-14-102	Assume deployed with solar
Anaerobic Digestion	Exempt	PA 13-61 (C), CGS 16-1 (20)	Class I Renewable, behind the meter residential



## Do clean energy technologies increase property taxes?

### Literature review suggests that solar systems may increase home value...

Value	Source
Buyers in CA are willing to pay	Berkeley National Lab
<b>extra \$6/W</b> , decreasing	"Exploring California PV Home
\$2,500/year over system life	Premiums", 2013
Having solar panels <b>increases</b>	Zillow, "Homes with Solar
home value by average of 4.1%	Panels Sell for 4.1% More",
US-wide	2019
Homes in CA are capitalized at <b>3.5% premium</b> for solar	European Economic Review, Understanding the Solar Home price premium: Electricity generation and "Green" social status, 2012

...and that people are willing to pay for lower energy bills

Value	Source
In Austin, homes with LEED certification have 8% higher resale value	USGBC, Green Homes in Austin-Round Rock Add \$25,000 Resale Value, 2017
Homes are valued at <b>incremental</b> <b>\$10-\$25</b> for every <b>\$1 reduction in</b> <b>annual fuel bills</b>	The Appraisal Journal, Evidence of Rational Market Valuations for Energy Efficiency, 1998



However, the literature did not reveal Connecticut-specific studies, or a definite link between installation of clean energy technologies and property tax paid

## **Corporate Income Tax – Non-Numerical Assumptions (1/2)**

## The following general assumptions guide corporate income tax modeling:

- The corporate tax streams modeled were considered applicable to technologies and business models as follows:
  - Installer profit tax is applicable to any profitable business model
  - Sponsor equity investor income tax is applicable to any lease/PPA business model
    - Sponsor equity investors were assumed to target an IRR of 10%, and the PPA rate was set based on this assumption
    - Depreciation (and investment tax credit) is claimed by the sponsor equity investor if no tax equity investor is involved
  - For-profit loan income tax applies to any business model that involves a for-profit loan; non-profit banks are assumed not to pay this tax
  - <u>Change in host income tax</u> is applicable to any business model that involves a C&I loan or lease/PPA and generates electricity that is used by the C&I host
  - Change in tax equity state tax applies to any business model that involves a tax equity investor
  - <u>Tax on utility revenue</u> only applies to utility-procured meters
- All parties are taxed at the same corporate tax rate, with the exception of tax on utility revenue, which is subject to a different state tax rate



#### For all assumptions and sources, see the Tax Calculator

## Guidehouse

## **Corporate Income Tax – Non-Numerical Assumptions (2/2)**

### The following general assumptions guide corporate income tax modeling:

- Investors and banks are in Connecticut and pay Connecticut taxes
- Loan terms are consistent across all business models, including if the loan is from a for-profit or non-profit bank
- Tax equity investor terms are consistent for all business models
- Depreciation schedules were assumed as follows:
  - Solar (PV and thermal), fuel cells, storage, wind, hydropower, and CHP use a 5-year MACRS depreciation schedule up to 85% of the full system cost
  - EV charging stations and anaerobic digestion use a 7-year MACRS depreciation schedule up to 85% of the full system cost
  - Utility-procured meters use a straight-line depreciation schedule over 10 years
- The investment tax credit (ITC) was assumed to be business model-agnostic and applied as follows:
  - Solar (PV and thermal), fuel cells, storage (assumed charged 75% or more by solar), and wind applied an ITC of 26%
  - Ductless split & air source heat pumps, geothermal heat pumps, CHP, and weatherization & HVAC technologies applied an ITC of 10%
  - Hydro and EV chargers applied an ITC of 30%



# Contact

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## **Connecticut Municipal Electric Energy Cooperative (CMEEC)**

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

A Fuel Cell Debt Financing Strategic Selection Green Bank Term Loan Facility Extension Request October 14, 2022



**Document Purpose:** This document contains background information and due diligence on a proposed credit facility for the FuelCell Energy, Inc. ("FCE" and NASDAQ: FCEL) fuel cell project under a power purchase agreement between FCE and the Connecticut Municipal Electric Energy Cooperative ("CMEEC") and located at the US Naval Submarine Base – Groton, CT. The information herein is provided to the Connecticut Green Bank Board of Directors for the purposes of reviewing and approving recommendations made by the staff of the Connecticut Green Bank.

In some cases, this package may contain, among other things, trade secrets and commercial or financial information given to the Connecticut Green Bank in confidence and should be excluded under C.G.S. §1-210(b) and §16-245n(D) from any public disclosure under the Connecticut Freedom of Information Act. If such information is included in this package, it will be noted as confidential.

## **Strategic Selection Financing Extension Memo**

Connecticut Green Bank Board of Directors
Bert Hunter, EVP & CIO
Bryan Garcia, President & CEO; Brian Farnen, General Counsel & CLO; Sergio Carrillo, Director, Incentive Programs; Jane Murphy, EVP of Finance and Administration
October 14, 2022
FuelCell Energy / US Navy / CMEEC / Groton Fuel Cell Project
Term Loan Facility Update & Extension Request

At the June 2022 meeting of the Connecticut Green Bank ("Green Bank") Board of Directors (the "Board"), the Board approved an extension to complete the financing for a term Ioan facility to finance the 7.4 megawatt FuelCell Energy, Inc. ("FCE") fuel cell at the US Naval Submarine Base, Groton, CT (the "Navy Project") in partnership with and subordinated to Ioans (the "Senior Loans" and together with Green Bank's Ioan, the "Term Loans") from two bank lenders: Liberty Bank and Amalgamated Bank (the "Senior Lenders" and together with Green Bank, the "Lenders").

The senior lenders and FCE have previously entered into a commitment for the financing, subject to finalization of diligence and credit approval, both of which are in progress.

On September 8, FCE filed its quarterly report with the Securities and Exchange Commission, including an update regarding the progress with the Groton Project as follows:

The Groton Project. In July 2021, the Company achieved mechanical completion, executed the interconnect agreement, and commenced the process of commissioning the 7.4 MW platform at the U.S. Navy Submarine Base in Groton, CT (the "Groton Project"). On September 14, 2021, the Company disclosed that the process of commissioning the Groton Project was temporarily suspended due to a needed repair. Following the completion of that repair, the Company resumed commissioning of the Groton Project. During the resumed commissioning process, the Company observed operating parameter data from one of the two fuel cell platforms installed at the project site that indicated a mechanical component was not performing according to engineered specifications. The Company subsequently determined that component should be removed from the project site to facilitate the necessary repair and upgrade. On April 7, 2022, the Company announced that it had completed the necessary repairs and upgrades to the mechanical component, reinstalled the mechanical component at the project site, and restarted the process of commissioning. During the restarted commissioning process, the Company encountered performance anomalies primarily in the mixer eductor oxidizer ("MEO") which is a sophisticated piece of equipment specific to the Groton Project designed to optimize fuel and air flows. The Company is considering operating the project at a reduced output of 3 MW per platform at the start of commercial operations in order to optimize performance of each of the two MEO units. Over a period of approximately one year, the Company anticipates implementing upgrades to each of the two MEO units in order to bring the platform to its rated capacity of 7.4 MW. Under extensions previously received from the U.S. Navy, the deadline by which commercial operations are to

be achieved is September 30, 2022. We expect that the Groton Project could be commercially operational by September 30, 2022 at a reduced power output of approximately 6 MW. However, commencement of operations at a reduced output of approximately 6 MW requires approval by the Connecticut Municipal Electric Energy Cooperative ("CMEEC") and the U.S. Navy. Although the Company is in discussions with CMEEC and the U.S. Navy, no assurance can be given that CMEEC and the U.S. Navy will provide such approval.

This platform is expected to highlight the ability of FuelCell Energy's platforms to perform at high efficiencies and provide low CO2 to MWh output. Incorporation of the platform into a microgrid is expected to demonstrate the capacity of FuelCell Energy's platforms to increase grid stability and resilience while supporting the U.S. military's efforts to fortify base energy supply and demonstrate the U.S. Navy's commitment to clean, reliable power with microgrid capabilities.

The project financing is now expected to close by year end and legal meetings between the lenders are well underway – and the banks are refreshing their credit approvals which have "timed out" (neither lender has expressed any concerns about renewing credit approvals for the project). Accordingly, staff requests the original approval "execute by date" be extended to 743 days from its original approval date (to bring the extension to December 31, 2022). Staff is setting this extension to the end of December to avoid any issues with an unanticipated delay between now and the next meeting of the Board in December.

#### **Resolutions**

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

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

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

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

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

WHEREAS, Green Bank staff has further advised the Board that the closing for the Credit Facility is expected to close by December 31, 2022 and to accommodate the additional time that might be needed to execute the Credit Facility requests the permitted time to execute the credit facility be increased from not later than 682 days from the original date of authorization by the Board (i.e., not later than October 31, 2022) to not later than 743 days from the date of authorization by the Board (i.e., not later than December 31, 2022);

NOW, therefore be it:

**RESOLVED**, that the Green Bank Board hereby approves the extension of time for the execution of the Credit Facility to not later than 743 days from the original date of authorization by the Board (i.e., not later than December 31, 2022); and

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

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



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## PosiGen

## Working Capital Line and Term Loan Modification Request

## October 14, 2022





**Document Purpose:** This document contains background information and due diligence for the creation of a working capital line for the purchase of battery energy storage systems and associated term loan for PosiGen Inc. ("PosiGen") backed by the future incentive payments PosiGen will earn from the deployment and operation of these storage systems with low-income residents and residents of Distressed Communities in Connecticut. 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.



## **Investment Memo**

- To: Connecticut Green Bank Board of Directors
- **CC:** Bryan Garcia, President and CEO; Jane Murphy, Executive Vice President of Accounting and Financial Reporting; Brian Farnen, General Counsel and CLO; Eric Shrago, Managing Director of Operations; Sergio Carrillo, Director of Incentive Programs

From: Bert Hunter, EVP and CIO

Date: October 14, 2022

Re: PosiGen BESS Working Capital and Term Loan Facility Modification Request

#### Background

The Energy Storage Solutions Program, ordered by the Connecticut Public Utilities Regulatory Authority ("PURA") in July of 2021, is designed to expand the development of battery energy storage systems across the state. Amongst the goals for the initiative that PURA identified in its decision, the program must prioritize delivering resilience benefits to low-income customers and customers in distressed communities – with a focus of no less than 40 percent of installations being installed in such communities. PosiGen, Inc. and its subsidiaries (collectively, "PosiGen"), are currently launching an affordable storage offering targeting these traditionally underserved customers.

In April 2022, to support PosiGen in providing an affordable storage offering, staff recommended and the Board of Directors (the "Board") approved that the Connecticut Green Bank ("Green Bank") provide a working capital line and term loan to the company. That facility closed in two stages, with the working capital line closing on September 30 (with a draw of just less than the full \$2 million availability) and the term loan facility closing in October (no advances expected for a few months as customer leases are closed).

Prior to closing the two facilities, staff successfully negotiated with PosiGen to improve their lease offering for low-income customers such that the monthly rental would be, at most, \$10 (a significant savings of at least 50%). PosiGen will also use good faith efforts to reduce lease rates further by using all available tax credits they can apply under the newly passed Inflation Reduction Act (e.g., low-income, energy community adders).

In return, the Green Bank negotiated a lower concessional interest rate against this low-income portfolio of leases, reducing the interest rate on the term loan facility for these qualifying leases to 2% from the 4% original offer. The interest rate for non-qualifying leases remains unchanged at 5%.

A summary of the term loan terms follows below:

- \$6 million term loan facility that provides 100% advance against the present value (at 4.5%) of the Generac guaranteed payments and any customer payments
  - Generac is the credit counterparty, and the guaranteed payments limit PosiGen's exposure to performance risk
  - Customer payments are expected to be a nominal portion of the revenues if PosiGen decides to charge a lease fee at all. Most, if not all, of the revenues will come from Generac



- The loan at this size is anticipated to cover an estimated 1,000 installations over a targeted 2-year period
- Amortizes fully over 10 years, which is tied to the life of the underlying asset, with an option for an Interest Only period (to be approved by Green Bank in Green Bank's sole discretion, but in any event not to exceed 12 months from date of the corresponding conversion to term status)
- Fixed interest rate per annum as follows:
  - LMI / Distressed Communities Portion (up to \$6,000,000): 2% (previously 4%)
  - Non-LMI / Distressed Communities Portion (not to exceed lesser of (a) \$2,400,000 or (b) \$6,000,000 <u>less</u> LMI Portion advanced): 5%
- Projects to be owned by various PosiGen-managed tax equity funds, with this new structure running through the company's existing master back-leverage facility
  - The collateral approach will mirror the Green Bank's existing 1<sup>st</sup> lien credit facility against PBI cash flows where such PBI cash flows (in this case – the BESS cash flows) are "carved out" from the collateral pool which benefits the 1<sup>st</sup> and 2<sup>nd</sup> lien lenders. Using the PURA approved direct payment structure, the utilities make active dispatch incentive payments directly to PosiGen's solar fund structure (the owners of the BESS assets).

#### Recommendation

The Green Bank's ongoing partnership with PosiGen has brought the benefits of solar and energy efficiency to low-income customers and residents of Distressed Communities across the state. By providing a working capital line and a term loan to support PosiGen's new battery storage offering, the Green Bank can expand on this successful investment and bring resiliency benefits to these underserved communities, as well. Furthermore, the Green Bank's exposure to performance risk is limited through the direct payment arrangement by the utilities to PosiGen's solar fund structure, our secured collateral position, and PosiGen's guaranteed revenue agreement with Generac, a very substantial New York Stock Exchange-listed enterprise (ticker: GNRC) with nearly \$4 billion in annual sales and in excess of \$2 billion in stockholders' equity. PosiGen's willingness to substantially reduce its standard lease rates by at lease 50% is worthy of a concessional rate of 2% for Green Bank's term loan facility. For these reasons, staff recommends Board approval of the modification of the investment as outlined herein.

#### **Resolutions**

**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, PosiGen is planning to expand its offerings to LMI households in Connecticut to include an affordable battery energy storage system ("BESS") option that will provide the customer backup power during a power outage and will reduce peak demand on the electric distribution system, as more fully explained in a memorandum dated April 15, 2022 to the Green Bank Board of Directors (the "Board Memo");



**WHEREAS**, PosiGen and Green Bank have agreed to substantially reduced lease rates to apply to low income customers in return for a concessional interest rate as more fully explained in a memorandum dated October 14, 2022 to the Green Bank Board of Directors (the "Modification Memo");

NOW, therefore be it:

**RESOLVED**, that the Green Bank may permit a concessional interest rate for term loans as more fully explained in the Modification Memo to apply to advances up to \$6 million to PosiGen on terms substantially similar to those described in the Modification Memo; 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 effect the above-mentioned legal instruments.

Submitted by: Bert Hunter, EVP and CIO



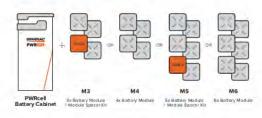
#### APPENDIX A Spec Sheet, p1



#### **PWRcell BATTERY CABINET DESIGN**

The PWRcell Battery Cabinet allows system owners the flexibility to scale from an economical 9kWh to a massive 18kWh by installing additional battery modules to the PWRcell Battery Cabinet. An existing PWRcell Battery Cabinet can be upgraded with additional modules. Use the graphic below and the chart on the back of this sheet to understand what components you need for your chosen PWRcell configuration.

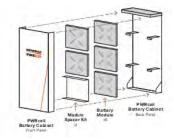
#### BATTERY CONFIGURATION GUIDE



#### **FEATURES & BENEFITS**

- Best-in-class battery backup power
   AC-couple to third party solar array
- Connect 2 PWRcell Battery Cabinets to a single
   PWRcell Inverter for up to 36kWh of usable storage
- Plug-and-play with all PWRcell products
- Time-of-use (TOU) and zero-export ready
- 3R cabinet for outdoor and indoor installations
- Floor standing or wall-mounted design

#### BATTERY CABINET ASSEMBLY





#### APPENDIX A Spec Sheet, p2

## **Specifications**

PWRcell BATTERY CONFIGURATIONS	M3	M4	M 5	MG
BATTERY MODULES:	3	4	5	6
USABLE ENERGY1:	9 kWh	12 kWh	15 kWh	18 kWh
NOMINAL CONT. AC POWER <sup>1,2</sup> :	3.4 kW	4.5 kW	5.6 kW	6.7 kW
MAX. AC POWER1.3:	4.5 kW	6 kW	7.5 kW	9 kW
NOMINAL CONT. DC (CHARGE/DISCHARGE) - A:	11.6	15.5	19.4	23.3
PEAK MOTOR STARTING CURRENT (2 SEC) - A, RMS:	25	33	42	50
COMPATIBLE BATTERY MODULES <sup>4</sup> :	Generac PWRcell EX	3.0 kWh, Generac PWRcell	DCB 3.0 kWh, Generac PWR	cell DCB 2.85 kWh
REbus <sup>™</sup> VOLTAGE - INPUT/OUTPUT:		360-42	0 VDC	
NOMINAL VOLTAGE:		380	VDC	
DC-DC ROUND-TRIP EFFICIENCY:		96.	5%	
MAXIMUM AMBIENT OPERATING TEMPERATURE:		14 TO 122 °F (	-10 TO 50 °C)	
OPTIMAL AMBIENT OPERATING TEMPERATURE:		41 to 104 °F	(5 to 40 °C)	
MAXIMUM INSTALLATION ALTITUDE - FT (M):		6560 (	2000)	
DIMENSIONS, L x W x H - IN (MM):		22" x 10" x 68" (5	59 x 254 x 1727)	
WEIGHT, ENCLOSURE - LB (KG):		115 (	52)	
WEIGHT, INSTALLED W/ DCB MODULES - LB (KG):	280 (127)	335 (152)	390 (177)	445 (202)
WEIGHT, INSTALLED W/ EX MODULES - LB (KG):	287 (130)	344 (156)	401 (182)	459 (208)
WEIGHT, ACCESSORY MOUNTING HARDWARE - LB (KG):		21 (	10)	
ENCLOSURE TYPE:		Туре	3R	
WARRANTY - LI-ION MODULES:	10 Years, (7.56MWh)			
WARRANTY - ELECTRONICS AND ENCLOSURE:	10 Years			
COMMUNICATION PROTOCOL:	REbus" DC Nanogrid"			
SEISMIC RATING:	IEEE 693-2018 (HIGH)			
COMPLIANCE:	UL 9540, UL 9540A <sup>5</sup> , UL 1973, UL 1642, CSA 22.2 #107.1			

<sup>1</sup>Assumes use of 3.0kWh battery module. 1<sup>3</sup>Average AC power over a complete discharge cycle. 1<sup>3</sup>Values provided for 40°C (104°F). 1<sup>4</sup>All PWRcell battery models used in a PWRcell Battery Cabinet must be the same model. Do NOT combine module SKUs in a single battery cabinet. 1<sup>3</sup>Meets residential indoor requirement as per UL9540A ed 4 in PWRcell OR M\* DCB configuration.

Note: Charge/discharge rate may be reduced at temperature extremes

#### **PWRcell ACCESSORIES**

Inside of the PWRcell Battery Cabinet, battery modules are stacked two deep on three levels, allowing for up to six modules to be connected in series. You can upgrade an existing PWRcell Battery Cabinet by adding Battery Modules and a Module Spacer (APKE00008). A Module Spacer is only required for battery configurations with an odd number of modules (i.e. 3 or 5).

Generac offers a convenient PWRcell Battery Upgrade Kit (APKE00009) to help replace lost or misplaced hardware.

Note: When adding modules, be sure all modules within a cabinet are the same model (i.e., EX or DCB). Instructions are provided in product manual.

#### PWRcell MODEL BUILDER

PRODUCT SERIES	> ENCLOSURE TYPE >	# OF MODULES	BATTERY SERIES
PWRcell	OR	M6	DCB
		4	
	IR (Indoor Rated)	3 Modules	DCB
	OR (Outdoor Rated)	4 Modules	EX
		5 Modules	
		6 Modules	

Sample Model Name: PWRcell OR M6 DCB

Generac Power Systems, Inc. S45 W29290 Hwy. 59, Waukesha, WI 53189

www.Generac.com | 888-GENERAC (436-3722)

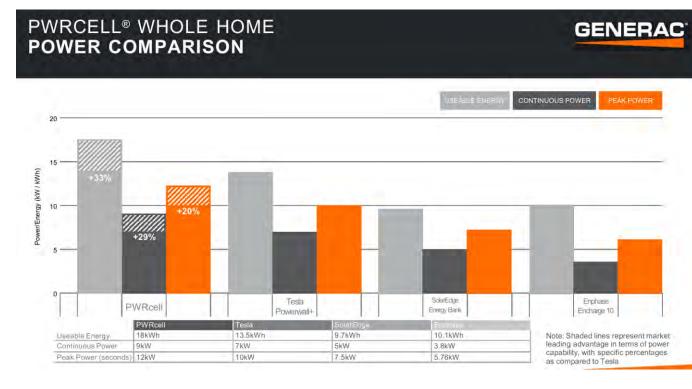
#### A0000949454 REV F

02021 Generac Power Systems. All rights reserved. Specifications are subject to change without notice.





#### APPENDIX A Spec Sheet, p2







GENERAC

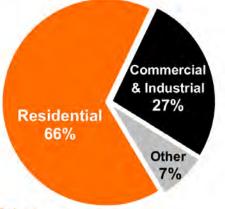


#### Residential



### 2021 Net Sales

Domestic 85% | International 15%



#### Other

Aftermarket Parts, Product Accessories, Extended Warranty, Grid Services, Remote Monitoring





DECARBONIZATION, DIGITALIZATION, DECENTRALIZATION



#### INDUSTRY LEADING HARDWARE SOLUTIONS



Several million grid edge assets

#### INDUSTRY-LEADING SOFTWARE TECHNOLOGY



Control millions of end points in real-time

#### INTEGRATED DELIVERY & CUSTOMER SERVICE



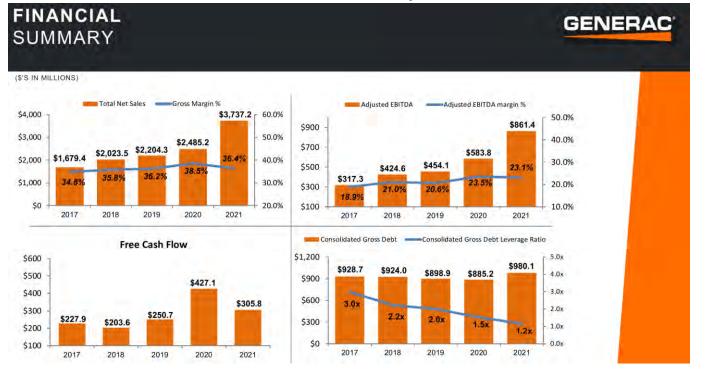
Over 10,000 Dealers & Distributors

#### INTEGRATED SERVICES & SUPPORT



24/7 Operations and Customer Care





#### Generac Holdings Inc. Consolidated Balance Sheets (U.S. Dollars in Thousands, Except Share and Per Share Data)

	December 31,			
		2021	1	2020
Assets				
Current assets:				
Cash and cash equivalents	\$	147,339	\$	655,128
Accounts receivable, less allowance for credit losses of \$12,025 and \$12,001 at December 31, 2021 and 2020, respectively		546,466		374,906
Inventories		1,089,705		603,317
Prepaid expenses and other assets		64,954		36,382
Total current assets	_	1,848,464		1,669,733
Property and equipment, net		440,852		343,936
Customer lists, net		238,722		49,205
Patents and technology, net		492,473		86,727
Other intangible assets, net		66,436		9,932
Tradenames, net		243,531		146,159
Goodwill		1,409,674		855,228
Deferred income taxes		15,740		1,497
Operating lease and other assets		121,888		73,006
Total assets	\$	4,877,780	\$	3,235,423



Liabilities and stockholders' equity			
Current liabilities:			
Short-term borrowings	\$ 72,035	\$	39,282
Accounts payable	674,208		330,247
Accrued wages and employee benefits	72,060		63,036
Other accrued liabilities	331,674		204,812
Current portion of long-term borrowings and finance lease obligations	5,930		4,147
Total current liabilities	1,155,907		641,524
Long-term borrowings and finance lease obligations	902,091		841,764
Deferred income taxes	205,964		115,769
Operating lease and other long-term liabilities	341,681		179,955
Total liabilities	2,605,643	-	1,779,012
Redeemable noncontrolling interest	58,050		66,207
Stockholders' equity:			
Common stock, par value \$0.01, 500,000,000 shares authorized, 72,386,017 and 72,024,329 shares issued at December 31,			
2021 and 2020, respectively	725		721
Additional paid-in capital	952,939		525,541
Treasury stock, at cost, 8,667,031 and 9,173,731 shares at December 31, 2021 and 2020, respectively	(448,976)		(332,164
Excess purchase price over predecessor basis	(202,116)		(202,116
Retained earnings	1,965,957		1,432,565
Accumulated other comprehensive loss	(54,755)		(34,254
Stockholders' equity attributable to Generac Holdings Inc.	 2,213,774		1,390,293
Noncontrolling interests	313	_	(89
Total stockholders' equity	2,214,087		1,390,204
Total liabilities and stockholders' equity	\$ 4,877,780	\$	3,235,423



75 Charter Oak Avenue, Suite 1 - 103, Hartford, CT 06106 T 860.563.0015 ctgreenbank.com

## Memo

- To: Connecticut Green Bank ("Green Bank") Board of Directors (the "Board")
- From: Bert Hunter, EVP & Chief Investment Officer
- CC: Bryan Garcia, President and CEO; Brian Farnen, General Counsel and CLO; Jane Murphy, EVP of Finance & Administration
- Date: October 18, 2022
- Re: Modification Request Capital 4 Change ("C4C") for \$4.5M Medium Term Revolving Loan (secured & subordinated) to CEEFCo (100%-owned subsidiary of C4C) for Funding CEEFCo's investment in Energy Efficiency Loans (including Smart-E Loans) in partnership with Amalgamated Bank

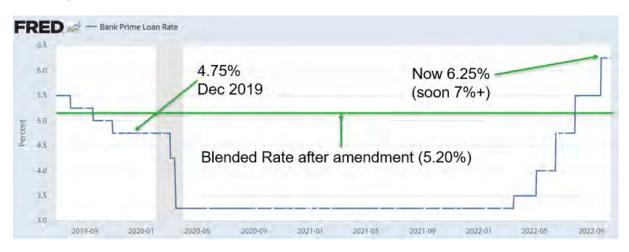
#### Background & Summary of Request for Approval

At the September 12, 2019 meeting of the Connecticut Green Bank (the "Green Bank") Board of Directors (the "Board"), the Board approved \$4.5M for a Medium Term Revolving Loan (secured & subordinated) to CEEFCo (a 100%-owned subsidiary of Capital for Change ("C4C")) for Funding CEEFCo's investment in Energy Efficiency Loans (including Smart-E Loans) in partnership with a private capital source. The private capital source, Amalgamated Bank (presently providing up to \$22.5 million in funding as explained later), and CEEFCo / C4C closed that transaction in December 2019 and the facility has functioned as intended – affording CEEFCo with a flexible facility to draw and repay funding associated with its energy efficiency loans. This was of particular importance during the initial months of COVID when the portfolio was contracting. This was followed by an expansionary phase as contractors resumed their work. As of September 30, Green Bank advances total approximately \$2.6 million (17% of the facility) and Amalgamated's advances total approximately \$13.2 million (83%). CEEFCo has maintained a flawless interest payment and principal repayment record.

As a refresher, Capital for Change (formerly, the Connecticut Housing Investment Fund) ("C4C"), in partnership with the Green Bank, provides loans to Connecticut single family property owners seeking to finance solar PV and other renewable energy systems and energy efficiency upgrades under Green Bank's Smart-E loan program.<sup>1</sup> C4C is Green Bank's largest and most active Smart-E lender with nearly 3,800 loans with an original originated amount of nearly \$47 million (remaining balance \$29 million).

<sup>&</sup>lt;sup>1</sup> Pursuant to the Green Bank Sustainability Plan passed by the Board in December 2017 and to a Professional Services Agreement, beginning August 3, 2018, certain aspects of the Smart-E Loan program are being managed by Inclusive Prosperity Capital, Inc. ("IPC")

When the parties closed the funding facility in December 2019, the rate base (the Prime Rate or "Prime") was stabilizing at 4.75%. This soon changed when the COVID pandemic caused the Federal Reserve (the "Fed") to drop the Federal Funds rate to 0% which lowered Prime to 3.25% where it remained for two years until March of this year when the Fed commenced its tightening process at the fastest rate in history. Today, Prime is 6.25% will most assuredly rise as further increases in interest rates have been promised by the Fed (0.75% expected at its next announcement on November 3, with a further increase expected for December 15 with an increase of between 0.50% and 0.75% being most likely). These increases in interest rates by the Fed are expected to push Prime to 7.50 – 7.75% by the end of 2022. These increases are captured on the chart below.



The impact of these interest rate increases on C4C has not been lost on the Green Bank and Amalgamated – as we have been in discussions since July about an approach to fix interest rates at a level that will enable C4C / CEEFCo to continue the superior deployment of Smart-E loan in the state. Smart-E loans are from 4.99% to 6.99% but most lending by CEEFCo is at the 5.99% level. Unlike other Smart-E lenders, CEEFCo / C4C does not have depository account relationships. Other lenders are still benefitting from core deposits on which they pay their depositors anywhere from 0% to 0.50% for regular checking balances and barely more than this level for savings balances. While roughly 50% of the CEEFCo portfolio is funded via equity, servicing costs erode this "zero cost" funding benefit over time – which is why Amalgamated, Green Bank and C4C have now reached a structure which for a three year period would stabilize CEEFCo's cost of funds at about 5.2%. This would be accomplished with the following adjustment in lending levels and interest rate charges by Amalgamated and Green Bank:

## Original Loan Facility Dec 2019

- Amalgamated Bank 83.3% \$22.5M
  - Prime Rate +0.0%
  - Full Revolver
- Green Bank 16.7% \$4.5M
  - Prime Rate +0.5%
  - Full Revolver

**Revised Facility** 

 60%
 \$15M

 Fixed 6%
 1 yr draw + 2 yr term loan

 40%
 \$10M

 Fixed 4%
 Full Revolver

The change is accomplished by Amalgamated agreeing to fix its interest rate on the facility at 6% for a three year period with the first year being the "draw period" and the last two years being an interest only period (or a repayment period if justified by lower portfolio / collateral levels). Amalgamated would also reduce its advance rate from 83.3% to a maximum of 60% - which would reduce its outstanding loans from about \$13.2 million to \$9.5 million. At the same time, Green Bank would agree to a concessional 4% rate for this period and would lend at least 40% of the portfolio value, up from 16.7% under the existing facility% - which would increase its outstanding loans from about \$2.6 million to \$6.4 million. If, during the last two years of the three year facility when Amalgamated is no longer making advances, Green Bank would make additional advances provided Green Bank's total advances didn't exceed \$10 million. These changes result in a blended cost of funds to CEEFCo of 5.2%.

#### C4C Financial Condition

C4C is in good financial health. Represented below is the parent-level company on a consolidated basis. CEEFCo loan quality is good with approximately 1.6% of loans outstanding in the >90 days past due category – roughly in line with energy efficiency loans more generally. These delinquencies are more than supported by the level of CEEFCo equity (approximately \$15 million).

#### CAPITAL FOR CHANGE, INC. AND AFFILIATES

Combined Statement of Financial Position March 31, 2022

Assets	
Current Assets:	
Cash	\$ 3,001,296
Accounts receivable, net	1,541,191
Interest receivable	462,592
Current portion of loans receivable	11,155,243
Other current assets	94,863
Total current assets	16,255,185
Other Assets:	
Restricted cash	13,332,088
Investments	1,151,275
Loans receivable, net	66,725,638
Total other assets	81,209,001
Property and Equipment	
Land	241,686
Building and improvements	3,297,153
Furniture and equipment	1,449,340
	4,988,179
Less - accumulated depreciation	1,453,602
Net property and equipment	3,534,577
Total assets	\$ 100,998,763

#### CAPITAL FOR CHANGE, INC. AND AFFILIATES

Combined Statement of Financial Position March 31, 2022

Liabilities and Net Assets	
Current Liabilities:	
Current portion of notes payable	\$ 19,932,741
Current portion of equity equivalent notes payable	2,300,000
Accounts payable and accrued expenses	763,223
Accrued interest payable	235,333
Total current liabilities	23,231,297
Long-Term Liabilities:	
Conditional advances	5,082,920
Loan escrows liability	3,303,972
Funds held for others	962,566
Deferred interest revenue	1,852,487
Notes payable, net	29,116,518
Equity equivalent notes payable, net	3,800,000
Total long-term liabilities	44,118,463
Total liabilities	67,349,760
Net Assets:	
Without donor restrictions:	
Operating	10,814,185
Equity in property and equipment	2,075,437
Board designated	1,077,563
Total without donor restrictions	13,967,185
With donor restrictions	19,681,818
Total net assets	33,649,003
Total liabilities and net assets	\$ 100,998,763

Loans receivable in each lending area were as follows as of March 31, 2022:

Loans Receivable	C4C	CEEFCo	Total
Residential Loans:			
Permanent	\$ 19,556,185	\$ -	\$ 19,556,185
Predevelopment/acquisition	1,764,394	-	1,764,394
Bridge	1,535,441		1,535,441
Construction	12,568,347	-	12,568,347
Consumer housing	376,303	-	376,303
Total residential loans	35,800,670		35,800,670
Commercial Loans:			
Commercial real estate	5,661,712	-	5,661,712
Commercial lines of credit	1,609,069		1,609,069
Total commercial loans	7,270,781		7,270,781
Energy Efficiency Loans:			
Commercial lending	9,766,096	5 10 DAG #5	9,766,096
Consumer lending		29,890,897	29,890,897
Total energy efficiency loans	9,766,096	29,890,897	39,656,993
Gross loans receivable	52,837,547	29,890,897	82,728,444
Less - allowance for loan losses	(4,259,846)	(587,717)	(4,847,563)
Sub-total	48,577,701	29,303,180	77,880,881
Less - current portion	(10,829,363)	(325,880)	(11,155,243)
	<u>\$ 37,748,338</u>	<u>\$ 28,977,300</u>	<u>\$ 66,725,638</u>

Revenues:	
Earned revenue:	
Financial revenue:	
Interest on loans	\$ 3,924,269
Investment return	(27,177)
Less - net loan loss provision	(1,068,188)
Less - interest expense	(1,750,576)
Net financial revenue	1,078,328
Loan servicing fees	1,417,508
Loan origination and other fees	1,005,996
Total earned revenue	3,501,832
Public support:	
Government grants and contracts	4,637,566
Grants and contributions	133,995
Net assets released from purpose restrictions	534,826
Total public support	5,306,387
Total revenues	8,808,219
Expenses:	
Program	5,059,197
General and administrative	895,602
Fundraising	251,722
Total expenses	6,206,521
Changes in net assets without donor restrictions	\$ 2,601,698

#### Request

Green Bank staff requests:

Approval for up to a \$10 million secured and subordinated medium term revolving loan to CEEFCo in partnership with Amalgamated Bank (with Green Bank funding not less than 40% of advances and Amalgamated funding not more than 60% of advances) which will satisfy C4C/CEEFCo's funding needs for energy efficiency and Smart-E loans booked by CEEFCo ("CEEFCo Revolving Loan"). The CEEFCo Revolving Loan will be a 3 year medium term revolving loan facility. As at present, the sole source of repayment for the CEEFCo Revolving Loan will be the proceeds from consumer loan payments of the CEEFCo loan portfolio and CEEFCo equity. Pricing is to be 4% as explained above. (see the draft proposal in Appendix 1).

#### Green Bank Financial Statements

How is the project investment accounted for on the balance sheet?

Green Bank's advances lead to a reduction in cash and cash equivalents on the asset side of the Green Bank's balance sheet and a concomitant increase in short-term loans.

#### **Resolutions**

**WHEREAS**, the Connecticut Green Bank ("Green Bank") entered into a Smart-E Loan program financing agreement with Capital for Change ("C4C");

WHEREAS, C4C is the largest Smart-E lender on the Green Bank Smart-E platform;

WHEREAS, C4C, Amalgamated Bank and Green Bank have substantially completed negotiations for modification to the medium term loan facility to fund C4C's Smart-E Loan and other residential energy efficiency loan portfolio growth on revised terms as explained in the memorandum dated October 18 to the Connecticut Green Bank ("Green Bank") Board of Directors (the "Board") (the "Modification Memo"); and

WHEREAS, Green Bank staff recommends approval by the Board for an amended secured and subordinated medium term revolving loan facility for CEEFCo (the "Amended CEEFCo Revolving Loan") in order to fund CEEFCo's residential energy efficiency and Smart-E Loan portfolio in partnership with Amalgamated Bank.

**NOW**, therefore be it:

**RESOLVED**, that the Board approves the Amended CEEFCo Revolving Loan in an amount of up to \$10 million in capital from the Green Bank balance sheet in support of energy efficiency and Smart-E Loans in partnership with Amalgamated Bank generally consistent with the Modification Memo;

**RESOLVED**, that the President of the Green Bank; and any other duly authorized officer of the Green Bank, is authorized to execute and deliver, any contract or other legal instrument necessary to effect the CEEFCo Revolving Loan on such terms and conditions as are materially consistent with the Modification Memo; and

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

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

### October 14, 2022

### PRELIMINARY TERM SHEET

### Indicative Summary of Terms and Conditions concerning a proposed Facility for Ct Energy Efficiency Finance company ("CEEFCo")

### For Discussion Purposes Only – Confidential – This is Not a Commitment

This Indicative Summary of Terms and Conditions or Preliminary Term Sheet describes certain of the principal terms and conditions of the proposed Loan described below, is for discussion purposes only and is not to be construed in any way as a commitment or undertaking of Amalgamated Bank, or any of its subsidiaries or affiliates, to provide the Loan or any other type of financing. This Preliminary Term Sheet supersedes any and all prior correspondence, written and oral, concerning a proposed loan with regard to the aforementioned real property. The actual terms and conditions under which Amalgamated Bank may be willing to provide the Loan to the Borrower shall be subject to, inter alia, satisfactory completion by Amalgamated Bank of its due diligence process, obtaining necessary internal credit approvals and the negotiation, execution and delivery of definitive documentation. The pricing and terms included in this Preliminary Term Sheet are based on market conditions on the date hereof and are subject to change.

Borrower	CEEFCo
Senior Lender	Amalgamated Bank
Subordinate Lender	Connecticut Green Bank
Facility	\$25,000,000 Credit Facility consisting of a 1) Senior \$15,000,000 Delayed
	Draw Term Loan ("Senior") with a one-year draw period and two-year (2)
	term loan and a 2) Subordinated \$10,000,000 Revolving three-year loan.
	For the Senior loan all proceeds must be drawn by the end of the one-year
	period ("Senior")
Security	Secured by all assets of the Borrower
Senior Loan Amount	\$15,000,000 reduced from \$22,500,000
Subordinate Loan	
Amount	\$10,000,000 increased from \$4,500,000
Senior Loan Interest	The Senior loan will bear interest at 6% (original rate - Prime Rate, with a
Rate	floor of 3.00%).
<b>Prepayment Penalty</b>	Borrower may prepay up-to 15% of the Term Loan per annum with no
	prepayment penalty with the ability to carryover any unpaid amount each
	year. This may be done quarterly. For any prepayment more than a
	cumulative payment of 15% of the Term Loan per annum, the Borrower
	shall pay a prepayment penalty equal to the following percentage of the
	amount of the prepayment more than 15%: Year $1 - 2\%$ ; Years $2 - 1\%$
Senior Loan	
Origination Fee	0.50% of the purchase price paid at the time of closing
Subordinate Interest	
Rate	The loan will bear interest at 4% (original rate - Prime Rate + 50 bps

Borrowing Base	Availability under the Senior loan and the Subordinate Line of Credit shall be subject to a borrowing base formula equal to ninety percent (90%) of Eligible Accounts (the "Borrowing Base"), of which the Senior Lender will advance a maximum of 60% down from 83.3% of the Borrowing Base and the Subordinate lender will advance a maximum of 40% up from 16.7% of the Borrowing Base. Collateral eligibility and final advance rates are subject to revision following completion of a due diligence audit by AB. "Eligible Accounts" shall include all SMART-E loans and HES loans which are outstanding not more than ninety (90) days from their original invoice date, excluding any account deemed ineligible by the Bank in its sole discretion. In the event the outstanding balance on the Line of Credit exceeds the Borrowing Base, Borrower will immediately pay the Line of Credit down to an amount at least equal to the Borrowing Base
Blocked Account	Payments for all Borrowing Base loans shall flow into a blocked account at AB, from which debt service payments will be deducted.
Interest Reserve	6-month interest reserve
Covenants	<ol> <li>Collateral portfolio must maintain a charge-off rate of less than 5%.</li> <li>DSCR, defined as Borrowing Base cash flows divided by senior loan debt service, must remain above 2.00x, tested quarterly and accompanied by a compliance certificate.</li> <li>Borrower must maintain minimum permanently restricted assets of no less than \$5mm, tested quarterly and accompanied by a compliance certificate.</li> </ol>
Underwriting Requirements	<ul> <li>All loans underwritten under this agreement must adhere to the following underwriting standards. The borrower:</li> <li>Must have a FICO score of at least 640 for loans over \$25m and 580 for loans under \$25m.</li> <li>The weighted average FICO score must remain above 675</li> <li>Loans must have a maximum original balance of \$50,000 and a maximum term of 12 years. This amount has been increased from</li> </ul>

	\$40,000 previously approved. Increase of maximum SmartE loan
	size to \$50,000 includes the creation of additional guidelines to go along with the increase including a full income review (no DTI waiver for higher scores), and a higher minimum credit score for the higher amount, etc. Good for full house upgrades (insulation, windows, HVAC, etc.) and solar/geothermal projects.
	Guidelines to be approved by Amalgamated Bank.
	<ul> <li>SmartE will be expanded to include health/safety projects (beyond energy efficiency) including</li> </ul>
	<ul> <li>1) Roofing</li> <li>2) Septic/Sewer</li> <li>3) Water/Plumbing</li> </ul>
	SmartE originations will substitute a pay stub instead of verification of employment (VOE).
Servicing Dequirements	The Servicer must:
Requirements	Invoice borrowers
	Send monthly loan statements that detail the amount due for that month as well as any past due amount
	Track all customer repayments, delinquencies, and prepayments through its own system
	Prepare a monthly aging report
	Contact any customer that is 30 days delinquent
	<ul> <li>If after 30 days from phone call, there is no payment made, send a delinquent letter, and initiate the collections process by engaging a third-party collection agency</li> </ul>
	On a monthly basis remit all loan funds received, minus any late fees, to the Lenders
Advances	Once per quarter the Borrower may draw upon the facility, subject to the Borrowing Base formula. Requests for advances must be accompanied by a completed borrowing base certificate executed by an authorized officer of the Borrower and a detailed listing of the collateral loans.
Eversource Grants	Once per quarter, Eversource will make available to the Borrower \$250,000 up to \$1,000,000 per year for a total of \$3,000,000 per year to be used for the purposes of paying debt service, and to offset other expenses of the portfolio.

Financial Reporting	<ol> <li>Annual audited financials for C4C, including CPA management letter, prepared by a CPA acceptable to Bank within one hundred twenty (120) days of fiscal year end.</li> </ol>
	<ol> <li>Quarterly and annual financial statements, internally prepared and attested to by chief financial officer of the CEEFCo, the Borrower, within forty-five (45) days of quarter end</li> </ol>
	3. Monthly servicing reports for the SMART-E portfolio
Portfolio Review	Upon Request of Amalgamated Bank
Conditions	Review by legal counsel of all loan documentation, including an intercreditor
Precedent to Closing	agreement between AB and CGB
	Receipt and review of a) updated borrowing base portfolio metrics as of 10/30/22; b) interim 9/30/22 financial results of C4C
Governing Law	New York



75 Charter Oak Avenue, Hartford. Connecticut 06106 T: 860.563.0015 www.ctgreenbank.com

## **Capital Solutions RFP**

A Working Capital Funding Facility for Budderfly, Inc. Subordinated Secured Term Loan Facility

In Partnership with Berkshire Bank

October 18, 2022



**Document Purpose:** This document contains background information and due diligence on a proposed \$5.0 million co-funding facility for Budderfly, Inc. created through the Connecticut Green Bank's Capital Solutions Open RFP program. 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.



75 Charter Oak Avenue, Suite 1 - 103, Hartford, CT 06106 T 860.563.0015 ctgreenbank.com

## Memo

- To: Connecticut Green Bank Board of Directors
- From: Bert Hunter, EVP and CIO; Desiree Miller, Senior Manager, Clean Energy Finance
- Cc: Bryan Garcia, President and CEO; Brian Farnen, General Counsel and CLO; Mackey Dykes, VP Financing Programs and Officer; Jane Murphy, EVP Finance & Administration

Date: October 18, 2022

Re: Budderfly, Inc. Capital Solutions RFP Proposal – \$5 million Working Capital Facility Participation - Co-funding Proposal with Berkshire Bank (\$20 million Working Capital Facility)

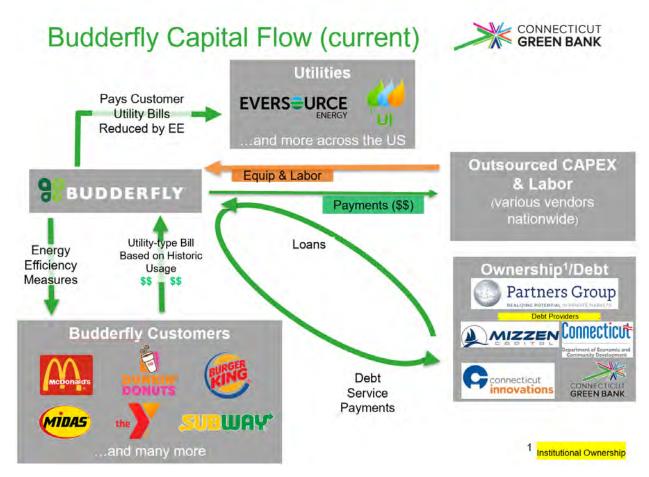
### Summary

At the April 22, 2022 meeting of the Connecticut Green Bank (the "Green Bank") Board of Directors (the "Board"), the Board approved \$5 million for a Medium Term Loan (secured & subordinated) to Budderfly, Inc., a Connecticut based company ("Budderfly"), which submitted a request for funding through the Green Bank's Capital Solutions Open RFP (approved by the Board in July 2021). That transaction successfully closed at the end of May and was fully funded in the amount of \$5 million at the closing. The funding was essential to Budderfly successfully sold a majority equity stake to Partners Group – a leading global private markets investment firm with \$131 billion in assets under management. Partners Group has committed further growth capital totaling more than USD 500 million. Its aim is to transform Budderfly into a multi-billion-dollar infrastructure platform by investing to expand its customer base and solutions offering. Budderfly's experienced management team has invested and partnered alongside Partners Group to capture this large market opportunity.

The investment by Green Bank and followed by the Partners Group acquisition is the financing roadmap sequence outlined to the Board in April. Budderfly's long term customer payments create a revenue stream that will repay the existing lenders (including Green Bank). With Budderfly's growth, Green Bank recommended a follow-on "two-stage" approach. First – a \$20 million working capital / aggregation facility to use more cost-efficient commercial bank funding (rather than private equity capital) to fund work in progress at their various customer sites. This facility is being brought forth by Berkshire Bank – in strategic partnership with the Green Bank. Second, Green Bank commenced over the summer discussions with a club of banks to provide a \$100 million master term funding facility (essentially a private securitization, similar in structure to the SBEA facility we arranged for Eversource). The master term funding facility would replenish the proposed Berkshire

working capital facility. The excellent collections experience of the portfolio combined with the highly efficient operational model and exceptional data analytics platform shown below makes the Budderfly business model a prime candidate for efficient securitization.

The funding and overall structure of the Budderfly business model is represented below:



### **Company Background**

As noted to the Board in April, Budderfly offers energy as a service ("EaaS") solutions for the measurement, reduction, and management of energy demand and consumption. This involves designing, integrating, installing, and fully funding a comprehensive portfolio of energy efficiency technology upgrades for customers, as well as managing and monitoring their energy usage. Budderfly's solutions include automated controls, proprietary software, metering, and a patented utility billing interface and billing system that currently supports over 400 utility companies in North America. Budderfly enters into long-term (10-year) contracts with customers and earns revenues through a share of the energy cost savings generated by efficiency upgrades and the management and monitoring of energy use and demand. With more than 2,750 customer sites across 49 states, Budderfly is a leading EaaS provider for customers operating multiple sites with repeatable footprints, such as restaurant chains, assisted living facilities, and retail franchises. Approximately 15% of Budderfly's business and 100% of its operations are in Shelton CT.

Budderfly has seen its revenues more than double each year for the last handful of years and Partners Group aims to accelerate the Company's future growth through a number of key transformational value creation initiatives, including expanding sales capacity and execution on

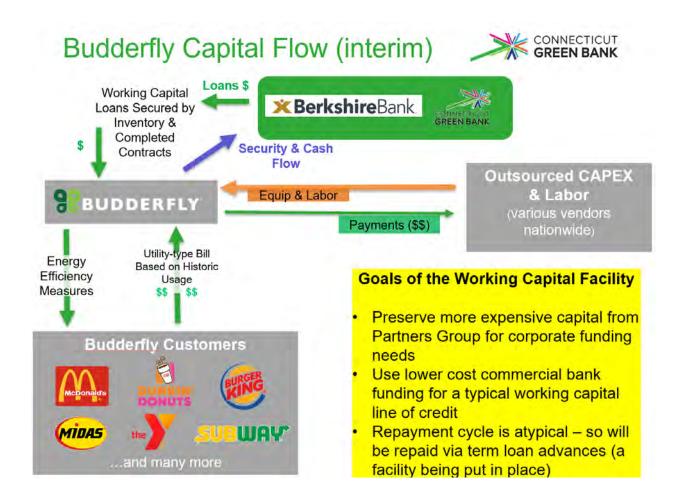
new site installations, broadening customer offerings, investing in software, analytics and network technologies, and making strategic acquisitions that deliver additional synergies. One Partners Group executive observed: "Budderfly is disrupting the energy efficiency market by providing a holistic solution to underserved commercial and industrial customers, and offering additional services such as component-level data monitoring, that are becoming increasingly important for sustainability reporting. Budderfly's business model has strong infrastructure characteristics, with a sizeable and growing customer base served under long-term contracts that provide recurring revenues. A key part of [Partners Group's] value creation plan will be expanding these service offerings and broadening Budderfly's customer base."

Budderfly, with its corporate headquarters and central operations in Shelton CT, was founded in September 2017 with the goal to revolutionize how the commercial and industrial sector acquires, implements and manages energy efficiency solutions, energy efficient lighting and other services to lower their consumption of energy, realize savings with no upfront investment, and manage their energy use through a user-friendly and proprietary cloud-based technology platform. Budderfly's Energy as a Service (EaaS) offering (meaning that Budderfly is the installer, owner, operator and manager of the labor and capital expenditures (CAPEX) required for the EaaS benefits) incorporates a variety of solutions including patented Budderfly devices to reduce energy use. The Internet of Things (IoT) devices include ultra-smart light switches and outlets which micrometer energy use, sub-panel meters and site power management equipment. Budderfly's Energy Management Systems (EMS) software provides comprehensive automation, visibility, management and control. Budderfly's technology-enabled platform leverages its patented and proprietary hardware and software to monitor and analyze energy use and provide solutions that enables its clients (the overwhelming majority of which are small franchise operators in the quick serve restaurant industry) to understand their energy usage, reduce their energy consumption, lower their operating and maintenance costs, and realize economic and environmental benefits. The company is growing rapidly, with more than 3,000 contracts in 49 states from Connecticut to California, and recurring revenue growth of 165% so far in 2022 with a 36% increase in new customer locations. Since the beginning of 2022, the company has onboarded nearly 900 new locations and significantly expanding brand partnerships with Burger King, Wendy's, McDonald's, KFC, IHOP, Dunkin' and Jersey Mike's to name a few. Prior to the acquisition by Partners Group, the company had benefitted from more than \$90 million in funding from such notable investors as Balance Point Capital (domiciled in Connecticut), Edison Ventures, Mizzen Capital (a CT-based woman-owned SBIC), CT Innovations, DECD and its own executive management (which remains invested in the company).

### **Summary Financing Proposal**

Berkshire Bank is considering a \$20 million line of credit ("LOC") where the Green Bank would participate with a \$5 million share of the facility. While Berkshire and Green Bank would be paripassu as far as the perfections of collateral, cash proceeds would first flow to Berkshire and secondly to Green Bank in the event of default or liquidation of collateral. The LOC would be available to fund CapEx for EaaS contracts. The facility would be secured by a first lien all business assets, including EaaS contracts, working assets and equipment. As Budderfly is currently not cash flow positive, the lenders will be relying on the liquidity from the equity sponsor (Partners Group). As such, the lenders would envision as part of any proposal Budderfly maintains its banking and deposit relationship with Berkshire and that would include a minimum liquidity threshold (defined as cash + short-term investments) until such time that cash flow is sufficient to repay debt. Once the larger master term loan facility is in place, the loans under the Berkshire LOC would be repaid with sales of EaaS contracts into the master facility structure on a periodic / guarterly basis. Pricing and fees are yet to be determined. The Green Bank would share in any

fees or interest on a pro-rata basis. Berkshire Bank is in the process of finalizing a screening memo and present the loan structure to Berkshire's senior management and credit teams for their feedback. Green Bank staff is requesting approval "in principle" to enable the overall process to move forward in a manner that would facilitate a closing of the facility prior to year end. The high level structure is represented by the following diagram:

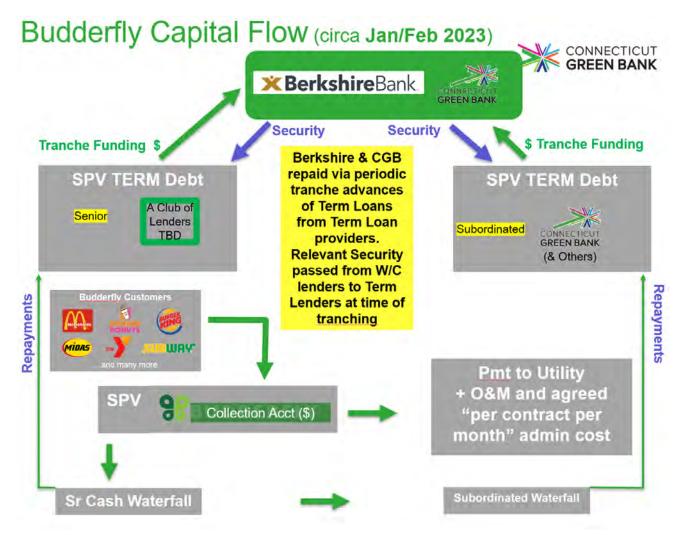


The summary terms of the working capital facility are below:

- Senior Debt Berkshire Bank (\$15 million)
- Subordinated Debt CT Green Bank (\$5 million)
  - o Pro Rata Advances
  - o Pro Rata & Pari Passu "non default"
  - o CGB subordinated in default and "term out" if required
  - o Term Loan Takeout Failure
  - o Lack of Cure by Budderfly / Partners Group
  - o Repayment via "term out
  - o Repayment via liquidation by collection
  - o Advances 75% / 25%
  - Advance Rate: TBD
  - o Interest Rates: TBD

- Facility Fee: TBD
- o Unutilized Fee: TBD
- o Budderfly pays legal costs
- Repayment via refinancing through Master Term Loan Facility
- OR Repayment via by Budderfly / Partners Group
- OR In default / term out Berkshire gets 100% of cash flow until repaid followed by Green Bank

Once the Master Loan Facility is in place, the overall capital flows would be as follows:



The Berkshire working capital facility would be structured around existing facilities below:

Name	Facility Type	Maximum	Outstanding 3/31
DECD	First Lien Senior	\$3.3 million	\$1.7 million
	Secured		
Mizzen Capital	Second Lien Secured	\$5.0 million	\$5.0 million plus
	Creditor		accrued interest
CT Innovations	Second Lien Secured	\$3.0 million	\$3.0 million plus
	Creditor		accrued interest

### **Financial Statement Review**

Budderfly, Inc.

Balance Sheet		
Period Ended July 31, 2022	Jul-22	Dec-21
Current Assets		
Cash	\$51,459,882	\$5,092,940
Accounts Receivable	1,991,173	399,314
Inventory	6,524,768	5,590,289
Prepaids	2,804,992	1,844,642
Total Current Assets	62,780,816	12,927,186
Fixed Assets		
Property and Equipment, net	575,291	565,695
Outsourced Equipment, net	30,320,610	21,808,574
Total Fixed Assets	30,895,901	22,374,269
Other Assets		
Promissory Note Receivable	394,702	433,850
Due from Related Party	593,777	593,777
TOTAL ASSETS	\$94,665,196	\$36,329,082
Current Liabilities		
Accounts Payable	\$5,446,604	\$5,389,810
Other Current Liabilities	3,229,897	1,444,539
Warrant Liabilities, net	-	8,963
Deferred Rent	170,929	209,620
Vendor Financing	833,753	793,148
Short term portion of Debt	350,864	385,780
Total Current Liabilities	10,032,047	8,231,859
Long Term Liabilities		
Vendor Debt	829,081	1,056,242
Note Payables	14,656,380	46,122,791
Total LIABILITIES	25,517,507	55,410,892
Common Stock	-	294
Preferred Stock	-	2,996
Additional Paid in Captial	143,616,164	34,588,473
Other Comprehensie Loss	(19,343)	(18,203)
Retained Earnings (Deficit)	(74,449,133)	(53,655,370)
Total Equity	69,147,689	(19,081,810)
TOTAL LIABILITIES & EQUITY	\$94,665,196	\$36,329,082

Budderfly's balance sheet has been strengthened significantly by the Partners Group investment. With approximately \$50 million in cash on hand, Budderfly could use its own resources to fund capex for its customers' installations. However, this would be an inefficient use of precious capital resources when a bank working capital facility and private securitization can take on this burden at a lower cost and with greater scale.

On the profit and loss statement, the net loss below reflects the corporate overhead required to build up the contract revenue streams. Gross and net revenue margins as well as EBITDA<sup>1</sup> margins have demonstrated steady improvement with the net revenue margin turning meaningfully positive in 2021. EBITDA is expected to reach breakeven in Q3 or Q4-2023 using projections which are consistent with the recent growth of the company, its penetration to date in the quick serve restaurant market, and a very robust pipeline of contracted and uncontracted opportunities, and expanding gross margins.

	2021	2020
Revenues:		
Energy managament outsourcing revenue	\$ 31,560,294	\$ 22,465,330
Incentives and other revenue	1,273,689	845,356
Total revenues, net	32,833,983	23,310,686
Cost of revenues	30,614,113	24,788,514
Gross gain or (loss)	2,219,870	(1,477,828)
Operating expenses:		
General and administrative	7,393,156	6,012,542
Research and development	3,041,494	2,302,306
Selling and marketing	3,821,631	2,105,391
Total operating expenses	14,256,281	10,420,239
Loss from operations	(12,036,411)	(11,898,067)
Other expense:		
PPP Loan forgiveness and other credits	(3,574,422)	
Interest expense	5,256,374	3,258,552
Total other expense	1,681,952	3,258,552
Loss before income taxes	(13,718,363)	(15,156,619)
Income taxes		
Net loss	\$ (13,718,363)	\$ (15,156,619)

### Conclusion

This proposal from Berkshire Bank offers a logical follow-on opportunity for the Green Bank to continue to dramatically increase our ability to scale energy efficiency in a sector in the state that, thus far, has proven elusive to market penetration efforts due to the idiosyncratic nature of small quick serve restaurant operations. This facility fits well with our overall proposals for Budderfly to enter into a master term loan facility to enable additional growth by reducing Budderfly's cost of capital – achieving market transformation and enabling Budderfly to expand and scale its model in CT as well as beyond CT's borders which would accrue to the benefit of job growth at the central operations center in Shelton, CT. While there is a degree of refinancing (if the master facility not come together as anticipated), Green Bank staff is encouraged by the robust cash position of Budderfly (\$50 million) and the robust support of the Partners Group private equity firm.

## Staff requests in principle approval for its participation in and support of the Berkshire Bank facility as explained herein.

<sup>&</sup>lt;sup>1</sup> EBITDA = Earnings Before Interest, Taxes, Depreciation and Amortization

### Resolutions

**RESOLVED**, that the Connecticut Green Bank ("Green Bank") is authorized in principle to enter into negotiations and documentation for co-investment in a \$20,000,000 working capital facility being considered by Berkshire Bank for Budderfly Inc. in a participation amount for Green Bank not to exceed \$5,000,000 as more fully explained in the memorandum to the Green Bank Board of Directors (the "Board") dated October 18, 2022; provided, however, that authorization to enter into definitive documentation is pending further diligence by staff and approval by the Board at a future meeting.

Submitted by: Bert Hunter, EVP and CIO & Desiree Miller, Senior Manager, Clean Energy Finance



75 Charter Oak Avenue, Suite 1 - 103, Hartford, CT 06106 T 860.563.0015 ctgreenbank.com

# Memo

To:	Connecticut Green Bank Board of Directors
From:	Mariana Trief, Consultant, Clean Energy Finance and Bert Hunter, EVP & CIO
CC:	Bryan Garcia, President and CEO; Brian Farnen, General Counsel and CLO; Jane Murphy, EVP Finance and Administration
Date:	October 14, 2022
Re:	Request for Approval to

### **Background and Project Description**

Connecticut Green Bank's ("Green Bank") Board of Directors ("Board") approved on October 26, 2018 a not-to-exceed \$1.2 million subordinate loan ("Loan") and \$500,000 limited guaranty from the Green Bank to finance through construction and operation a 1 MW hydroelectric facility located at the Upper Collinsville Dam ("Dam"), on the Farmington River, in Canton, Connecticut (the "Project"). The Loan closed on May 17, 2019 and was leveraged by a ~\$2.8 million term loan from Provident ("Provident Loan"), as well as an approximately \$1.9 million note supported by the US Small Business Administration ("SBA") 504 program ("SBA Loan") that a local community development lender will fund upon construction completion (jointly, the "Senior Loans"). There is also a \$650,000 bridge loan and \$300,000 in-kind contribution from equipment supplier and turnkey provider WWS Wasserkraft GmbH ("Wasserkraft"), along with \$675,000 in equity from Canton Hydro LLC, the project's developers (the "Developer").

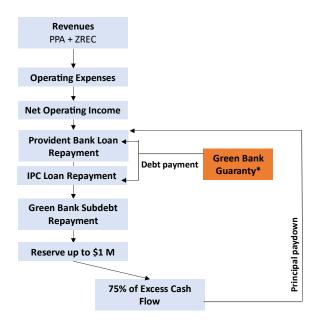
### **Project Update**

The Project successfully obtained approval to energize from Eversource on March 15, 2021 but required additional work to finalize construction before it could begin to continuously generate electricity. In mid-December 2021, the Project was substantially completed to the point of allowing water to flow through the turbine to generate electricity. Since then, the Project has generated approximately 2.2 MWhs and has received monetary compensation for energy generation, from both sale of electricity through the Virtual Net Metering program to State of Connecticut owned buildings through the Department of Energy and Environmental Protection ("DEEP") and renewable energy credits associated with the 15-year Zero Emission Renewable Energy Credits ("ZREC") Contract with Eversource. Th Project has also continued to make interest only payments to the lenders.

Crest gates were installed on July 25, 2022 during the low flow season; these allow the flow of the water to be directed in such a way that improves the efficiency and output of the turbine by 10-20%. The Project will be inspected for completion by the Green Bank and Senior Lender's engineer on October 24, 2022.

The Developers are disagreeing with the plant's strategy for operations and equity distribution (after debt payments) to Wasserkraft as a result of the additional cost incurred by them to complete the project. As such, one of the Developers is considering selling their equity participation. Inclusive Prosperity Capital ("IPC") has potential interest in the equity participation, either by directly acquiring it or facilitating a partner in doing so. The \$1.9M loan supported by the SBA program requires a personal guaranty of any majority equity participant, which IPC (given its structure) would be unable to provide. Therefore, for IPC (or a partner) to take out the equity participation of one of the Developers, the \$1.9M SBA loan would have to be repaid. Ahead of making an equity play, IPC is offering to repay/refinance the \$1.9M SBA loan to avoid the SBA eligibility issues to enable them (or a partner) to become a majority equity participant in the Project. The terms of IPC's \$1.9 M loan ("IPC Loan") are presented in the term sheet hereto as Exhibit A. The Project waterfall would remain unchanged from the original Green Bank Board approvals; IPC's loan would simply replace the SBA Loan. The Provident Loan would be in first position, IPC Loan second position and Green Bank's loan would remain subordinate to both (but not subordinate to any IPC or any other equity).

Green Bank's unfunded balance sheet Guaranty is currently approved so that it can be called upon in the event there is not enough cash flow or Reserves to pay debt service on the Senior Loans. The Guaranty obligation decreases as the Reserve is built up. Green Bank charges a fee for the Guaranty. If the Guaranty is ever called upon, it effectively becomes capitalized into the Green Bank loan. IPC has requested that the Green Bank provide the same Guaranty it had provided to Provident Bank and SBA. For further clarity, a schematic of the waterfall is presented below.



### Project's Waterfall

\* Guaranty called upon if there are insufficient reserves to make Senior Loan payments

The IPC Loan has a shorter term (20 years instead of 25 years) and slightly different interest rate (7% vs. 7.25% if SBA rate were locked in today). From a repayment perspective, the impact of the IPC

Loan to the updated Project model<sup>1</sup> do not negatively affect the Green Bank Loan. Based on the annual average expected production figures<sup>2</sup>, using the current interest rate for the Provident Ioan that has been locked in at 3.43% and an expected 6.5% interest rate in 2025, Provident Bank's debt would be repaid in year 10. Once Provident Bank's Ioan is repaid, unused funds in the Reserve account would be used to be pay back Green Bank, which we expect would retire the Loan by the end of year 11, with an average debt service coverage ratio ("DSCR") of 4.16x. The financial model has been stressed under worst case scenario (that is, using the worst series of water flow years) and debt service is met with the debt also repaid by year 11. This is consistent with the projections shared previously with the board. The original and revised cash flow projections, along with DSCR are provided in Exhibit B (being updated).

From a risk perspective, the transaction holds a lower risk as when it was originally approved (risks identified have been included in Exhibit C) as the Project's construction has been completed with only final sign off from the Bank's engineer and performance testing pending to be completed. The Bank's engineer is scheduled to complete his final site visit on October 24, 2022 and provide sign off shortly thereafter. Green Bank, along with stakeholders intend to have a ribbon cutting in Spring of 2023 when the fish passage associated with the Project is being used. Appropriate signage and media coverage to share and publicize the success of the Project will be an integral part of the event.

Given the foregoing, staff recommends approval by the Board to amend the current documentation to accommodate the IPC Loan, including extending the Project's Construction Completion date and providing the Guaranty previously approved to Senior Lenders.

<sup>&</sup>lt;sup>1</sup> Project model has been updated to reflect updated VNM rates and expected operating expenses. It assumes a \$35,000 PILOT payment to the Town, which is currently being negotiated.

<sup>&</sup>lt;sup>2</sup> Average annual, net (after turbine, generator, speed increaser, transformer efficiencies and 5 days downtime) electrical energy production is based on a power production analysis from a third-party independent engineer based on river flow data from 1997 to 2017.

### **Resolutions**

**WHEREAS**, Canton Hydro, LLC ("Developer") was awarded exclusivity by the Town of Canton to redevelop a 1 MW hydroelectric facility located at the Upper Collinsville Dam ("Dam"), on the Farmington River, in Canton, Connecticut (the "Project") and the Connecticut Green Bank ("Green Bank") Board approved approve subordinate debt financing in an amount to exceed \$1,200,000 (the "Loan") along with an unfunded guaranty, in an amount not to exceed \$500,000 to support the Project ("Guaranty");

**WHEREAS**, Green Bank's debt was leveraged by a term loan from Provident ("Provident Loan"), as well as loan supported by the US Small Business Administration ("SBA") 504 program ("SBA Loan").

WHEREAS, the Project Developers are seeking to replace the SBA Loan with a new loan from Inclusive Prosperity Capital ("IPC Loan") and are seeking Green Bank's approval to extend the Guaranty to the new IPC Loan, with such Guaranty to be on the same terms with IPC as lender as apply to the current SBA Loan.

**WHEREAS**, to complete the change in lenders the Developer is requesting to extend the Project's completion of construction date until December 31, 2022;

**NOW**, therefore be it:

**RESOLVED**, that the Green Bank Board of Directors hereby authorize staff to execute an amendment of the Loan agreement materially based on the terms and conditions set forth in this board memo dated October 14, 2022;

**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.

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

## Exhibit B – Original and Revised Cash Flow, Assumptions and Debt Service Coverage Ratio

Revised Cash Flow, Assumption and DSCR – October 2022

Assumptions												CGB Financing
	Original	Outstanding	Term	Amort.			CMLTD	Excess	Rate	adjusted	adjusted	Average DSCR
Lender	Loan Amt.	Balance	(years)	(years)	Int. Rate	Int Rate after amort period	(P&I)	Cash Flow Sweep	Adustment Date	Int rate	P&I	Minimum DSCR
1												Repayment Year
Provident	\$2,770,318	\$2,770,318	15	20	3.45%		\$194,042	75	% 8/1/2025	6.50%	\$251,424	
SBA/IPC	\$1,939,221	\$1,939,221	20	20	7.00%		\$183,049		N/A			
CT Green Bank Mezz Debt	\$704,827	\$704,827	15	15	8.00%	10.00%	\$82,345					
CGB Guaranty		\$500,000										
	Amount	Years										
ZREC	\$80	12.00										
VNMC	\$100	13.00										
*VNMC Assumptions based of	on current rates an	d expected incre	ases/step de	own per VNM	C Program							

Year	Year	Electricity Production in KWH		Total Operating Expenses	NOI	ТРВ		TPB Debt Service (I)		TPB Debt Service from excess cash flow	TPB Debt Service from Reserves	TPB Loan balance	SBA/IPC Debt Service (P&I)	SBA/IPC Debt Service (I)	SBA/IPC Debt Service (P)	SBA/IPC Loan balance	NOI post senior lender	Senior Lender DSCR	CGB Debt Service (P&I) Actual	CGB Debt Service (I)	Additional CGB Interest Payment	CGB Debt Service (P)		CGB Past Due P&I Payments	from	CGB Loan balance	Excess / (Shortfall) Cash flow
	0																										
	1 203	2 4,282,966	1,018,622	378,040	640,582		\$194,042	\$95,576	\$98,466		\$0	\$2,671,852	\$183,049	\$135,745	\$47,303	\$1,891,918	263,492	1.70	\$56,386	\$56,386		\$0	4.67		\$0	\$704,827	207,105
	2 202	3 4,282,966	973,295	207,831	765,464		\$194,042	\$92,179	\$101,863	\$0	\$0	\$2,569,989	\$183,049	\$132,434	\$50,615	\$1,841,303	388,373	2.03	\$82,345	\$56,386	\$0	\$25,958	4.72	-	\$0	\$678,869	 306,028
	3 202	4 4,282,966	931,032	200,656	730,376		\$194,042	\$88,665	\$105,377	\$0	\$0	\$2,464,612	\$183,049	\$128,891	\$54,158	\$1,787,146	353,286	1.94	\$82,345	\$54,309	\$0	\$28,035	4.29	-	\$0	\$650,833	 270,941
	4 20	5 4,282,966	936,060	217,626	718,434		\$194,042	\$85,029	\$109,013	\$0	\$0	\$2,355,600	\$183,049	\$125,100	\$57,949	\$1,729,197	341,344	1.91	\$82,345	\$52,067	\$0	\$30,278	4.15	-	\$0	\$620,555	258,999
	5 202	6 4,282,966	941,139	210,745	730,394		\$251,424	\$81,268	\$170,156	\$32,306	\$0	\$2,153,138	\$183,049	\$121,044	\$62,005	\$1,667,192	295,921	1.68	\$82,345	\$49,644	\$0	\$32,700	3.59	-	\$0	\$587,855	 213,577
	6 20	7 4,282,966	949,374	216,017	733,357		\$251,424	\$74,283	\$177,141	\$160,183	\$0	\$1,815,815	\$183,049	\$116,703	\$66,345	\$1,600,847	298,884	1.69	\$82,345	\$47,028	\$0	\$35,316	3.63	-	\$0	\$552,539	 216,539
	7 203	8 4,282,966	954,554	221,447	733,107		\$251,424	\$62,646	\$188,778	\$162,405	\$0	\$1,464,632	\$183,049	\$112,059	\$70,989	\$1,529,857	298,634	1.69	\$82,345	\$44,203	\$0	\$38,141	3.63	-	\$0	\$514,398	 216,289
	8 20	9 4,282,966	959,787	227,041	732,746		\$251,424	\$50,530	\$200,894	\$162,217	\$0	\$1,101,520	\$183,049	\$107,090	\$75,959	\$1,453,899	298,273	1.69	\$82,345	\$41,152	\$0	\$41,193	3.62	-	\$0	\$473,205	215,928
	9 203	0 4,282,966	968,270	232,802	735,468		\$251,424	\$38,002	\$213,422	\$161,946	\$0	\$726,153	\$183,049	\$101,773	\$81,276	\$1,372,623	300,995	1.69	\$82,345	\$37,856	\$0	\$44,488	3.66	-	\$0	\$428,717	 218,651
	10 20	1 4.282.966	973.608	238,736	734.871		\$251,424	\$25.052	\$226,372	\$163.988	\$335.793	\$0	\$183.049	\$96.084	\$86,965	\$1,285,658	300.399	1.69	\$82.345	\$34,297	\$0	\$48.047	3.65		\$0	\$380.669	 218.054
	11 203	2 4,282,966	978,998	244,848	734,150		\$0	\$0	\$0	\$0	\$0	\$0	\$183,049	\$89,996	\$93,053	\$1,192,605	551,101	4.01	\$82,345	\$30,454	\$0	\$51,891	6.69	-	\$328,778	\$0	 468,757
	12 203	3 4,282,966	987,738	251,144	736,594		\$0	\$0	\$0	\$0	\$0	\$0	\$183,049	\$83,482	\$99,566	\$1,093,039	553,546	4.02	\$0	\$0	\$0	\$0		-	\$0	\$0	 553,546
	13 20	4 4,282,966	668.546	257.628	410.918		\$0	S0	\$0	\$0	\$0	\$0	\$183.049	\$76.513	\$106.536	\$986.503	227.869	2.24	\$0	\$0	\$0	\$0			\$0	\$0	 227.869
	14 203	5 4,282,966	674,100	264,307	409,793		\$0	\$0	\$0	\$0	\$0	\$0	\$183,049	\$69,055	\$113,994	\$872,509	226,744	2.24	\$0	\$0	\$0	\$0		-	\$0	\$0	 226,744
	15 203	6 4,282,966	683,103	271,186	411,917		\$0	\$0	\$0	\$0	\$0	\$0	\$183,049	\$61,076	\$121,973	\$750,536	228,869	2.25	\$0	\$0	\$0	\$0		-	\$0	\$0	228,869
	16 20	7 4.282.966	688,769	278.272	410.498		\$0	S0	\$0	\$0	\$0	\$0	\$183.049	\$52.538	\$130.511	\$620.025	227,449	2.24	\$0	\$0	\$0	\$0			\$0	\$0	 227,449
	17 20	8 4.282.966	694,492	285.570	408.922		\$0	50	\$0	\$0	\$0	\$0	\$183.049	\$43,402	\$139.647	\$480.378	225.873	2.23	\$0	\$0	\$0	\$0			\$0	\$0	 225.873
	18 203	9 4,282,966	703,767	293,087	410,680		\$0	\$0	\$0	\$0	\$0	\$0	\$183,049	\$33,626	\$149,422	\$330,955	227,631	2.24	\$0	\$0	\$0	\$0		-	\$0	\$0	 227,631
	19 204	0 4,282,966	709,605	300,829	408,775		\$0	\$0	\$0	\$0	\$0	\$0	\$183,049	\$23,167	\$159,882	\$171,074	225,726	2.23	\$0	\$0	\$0	\$0		-	\$0	\$0	 225,726
	20 204	1 4.282.966	715.500	308.804	406.696		\$0	50	\$0	\$0	\$0	\$0	\$183.049	\$11.975	\$171,074	\$0	223.647	2.22	\$0	\$0	\$0	\$0		-	\$0	\$0	 223.647
	21 204	2 4,282,966	721,455	317,018	404,437		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	(\$0)	\$0	404,437	0.00	\$0	\$0	\$0	\$0		-	\$0	\$0	 404,437
	22 20	3 4,282,966	727,470	325,479	401,991		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	(\$0)	\$0	401,991	0.00	\$0	\$0	\$0	\$0		-	\$0	\$0	 401,991
	23 204	4 4,282,966	733,544	334,193	399.351		\$0	50	\$0	\$0	\$0	\$0	\$0	\$0	(\$0)	\$0	399.351	0.00	\$0	\$0	\$0	\$0		-	\$0	\$0	 399.351
	24 20		739.679		396.510		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	(\$0)	\$0	396,510	0.00	\$0	\$0	\$0	\$0		-	\$0 \$0	\$0	 396.510
	25 20			352 414			\$0	\$0	\$0	\$0	\$0	\$0	\$0 \$0	\$0	(\$0)	\$0	393 462	0.00	\$0	\$0	\$0	\$0			\$0	50	 393 462

4.16

3.59

### Revised Cash Flow, Assumption and DSCR – January 2022

		Assumptio	ns																											
			Pricing	Int Rate		Excess																								
		Amort	(Index	after amort	CMLTD	Cash flow		CGB Finan	cing	1	1																			
Lender	Loan Amt.	(years)	& Margin)	period	(P&I)	Sweep		Average DS	SCR	3.57	7																			
		())			()			Minimum D		2.38	2																			
Provident Term	\$2,770,318	25	N/A		\$182.050	75%		Repayment		13	1																			
Provident Time Note	\$1,939,221	25	N/A		\$127,435						-																			
CT Green Bank Mezz Debt	\$704,827	15		10.00%	\$82,345																									
CGB Guaranty	\$500,000	15			002,010																									
cob out any	\$5.00,000	15																												
	Amount	Years																												
ZREC	\$80	13.0																												
VNMC	100%	30.0																												
*VNMC Assumptions based on	current rates and e	xpected incre	ases/step dow	n per VNMC j	orogram																									
				Total																										
				(VNM.						TPB Debt												B Debt								
	Electricity			ZREC &			TPB Debt			Service fron	TPB Debt		SE	3A Debt S	BA Debt			NO	0I post	Senior		rvice			CGB Debt	CGB Past	CGB Loan			Excess /
	Production in	VNM	ZREC	Capacity			Service	TPB Debt	TPB Debt	excess cash	Service from	n TPB Loan			Service	SBA Debt	SBA Loan		enior	Lender			CGB Debt	Additional CGB	Service	Due P&I	from	CGB Loan	CGB	
Year	KWH	Revenue	Income	Payments)	Expenses	NOI	(P&I)	Service (I)	Service (P)	flow	Reserves	balance		(P&I)	(I)	Service (P)	balance	le	ender	DSCR	1	ctual	Service (I)	Interest Payment	(P)	Payments	Reserve	balance	DSCR	Cash flow
	0																													
	1 4,282,966	625,613	324,692	950,304	257,476	692,828	\$182,050	\$117,739	\$64,312		\$0	\$2,706,006	\$1	27,435	\$82,417	\$45,018	\$1,894,203	31	33,343	2.24	S	32,345	\$56,386		\$25,958	-	\$0	\$678,869	4.6	56 300,999
	2 4,282,966	572,812	324,692	897,504	271,448	626,056	\$182,050	\$115,005	\$67,045	\$0	\$0	\$2,638,962	\$1	27,435	\$80,504	\$46,931	\$1,847,272	3	16,571	2.02	S	32,345	\$54,309	\$0	\$28,035	-	\$0	\$650,833	3.8	34 234,226
	3 4,282,966	520,051	324,692	844,743	270,905	573,838	\$182,050	\$112,156	\$69,894	\$0	\$0	\$2,569,067	\$1	27,435	\$78,509	\$48,926	\$1,798,346	20	54,353	1.85	S	32,345	\$52,067	\$0	\$30,278	-	\$0	\$620,555	3.2	21 182,008
	4 4,282,966	524,112	324,692	848,803	260,517	588,286	\$182,050	\$109,185	\$72,865	\$0	\$0	\$2,496,203	\$1	27,435	\$76,430	\$51,005	\$1,747,340	2	78,801	1.90	S	32,345	\$49,644	\$0	\$32,700	-	\$0	\$587,855	3.3	196,456
	5 4,282,966	521,754	324,692	846,446	256,154	590,292	\$182,050	\$106,089	\$75,962	\$0	\$0	\$2,420,241	\$1	27,435	\$74,262	\$53,173	\$1,694,167	21	30,807	1.91	S	32,345	\$47,028	\$0	\$35,316	-	\$0	\$552,539	3.4	1 198,462
	6 4,282,966	529,263	324,692	853,955	256,890	597,065	\$182,050	\$102,860	\$79,190	\$84,113	\$0	\$2,256,938	\$1	27,435	\$72,002	\$55,433	\$1,638,734	21	37,580	1.93	\$	32,345	\$44,203	\$0	\$38,141	-	\$0	\$514,398	3.4	19 205,235
	7 4,282,966	533,376	324,692	858,067	262,700	595,367	\$182,050	\$95,920	\$86,130	\$153,926	\$0	\$2,016,881	\$1	27,435	\$69,646	\$57,789	\$1,580,946	21	35,882	1.92	\$	32,345	\$41,152	\$0	\$41,193	-	\$0	\$473,205	3.4	17 203,538
	8 4,282,966	537,529	324,692	862,221	259,462	602,759	\$182,050	\$85,717	\$96,333	\$152,653	\$0	\$1,767,895	\$1	27,435	\$67,190	\$60,245	\$1,520,701	25	93,274	1.95	\$	32,345	\$37,856	\$0	\$44,488	-	\$0	\$428,717	3.5	56 210,929
	9 4,282,966	545,265	324,692	869,956	261,257	608,699	\$182,050	\$75,136	\$106,915	\$158,197	\$0	\$1,502,784	\$1	27,435	\$64,630	\$62,805	\$1,457,896	25	99,214	1.97	\$	32,345	\$34,297	\$0	\$48,047	-	\$0	\$380,669	3.6	53 216,870
1	4,282,966	549,502	324,692	874,194	292,067	582,127	\$182,050	\$63,868	\$118,182	\$162,652	\$0	\$1,221,950	\$1	27,435	\$61,961	\$65,474	\$1,392,421	2	72,641	1.88	\$	32,345	\$30,454	\$0	\$51,891		\$0	\$328,778	3.3	1 190,297
1	4,282,966	553,781	324,692	878,473	373,271	505,202	\$182,050	\$51,933	\$130,117	\$142,723	\$0	\$949,110	\$1	27,435	\$59,178	\$68,257	\$1,324,164	19	95,717	1.63	\$	32,345	\$26,302	\$0	\$56,042	-	\$0	\$272,736	2.3	38 113,372
1	12 4,282,966	561,750	324,692	886,442	379,000	507,442	\$182,050	\$40,337	\$141,713	\$85,029	\$722,368	\$0	\$1	27,435	\$56,277	\$71,158	\$1,253,006	19	97,957	1.64	\$	32,345	\$21,819	\$0	\$60,526	-	\$0	\$212,210	2.4	115,612
1	13 4,282,966	566,116	324,692	890,807	298,044	592,763	\$0	\$0	\$0	\$0	\$0	\$0	\$1	27,435	\$53,253	\$74,182	\$1,178,824	44	55,328	4.65	\$	32,345	\$16,977	\$0	\$65,368	-	\$146,842	\$0	5.6	5 382,984
1	14 4,282,966	570,525	0	570,525	304,005	266,520	\$0	\$0	\$0	\$0	\$0	\$0	\$1	27,435	\$50,100	\$77,335	\$1,101,489	13	39,085	2.09		\$0	\$0	\$0	\$0	-	\$0	\$0		139,085
1	15 4,282,966	578,734	0	578,734	310,085	268,649	\$0	\$0	\$0	\$0	\$0	\$0	\$1	27,435	\$46,813	\$80,622	\$1,020,867	14	41,214	2.11		\$0	\$0	\$0	\$0		\$0	\$0		141,214
1	16 4,282,966	583,232	0	583,232	316,287	266,945	\$0	\$0	\$0	\$0	\$0	\$0	\$1	27,435	\$43,387	\$84,048	\$936,819	13	39,510	2.09		\$0	\$0	\$0	\$0	-	\$0	\$0		139,510
1	4,282,966	587,775	0	587,775	322,613	265,162	\$0	\$0	\$0	\$0	\$0	\$0	\$1	27,435	\$39,815	\$87,620	\$849,199	13	37,727	2.08		\$0	\$0	\$0	\$0	-	\$0	\$0		137,727
1	18 4,282,966	596,232	0	596,232	329,065	267,167	\$0	\$0	\$0	\$0	\$0	\$0	\$1	27,435	\$36,091	\$91,344	\$757,855	13	39,732	2.10		\$0	\$0	\$0	\$0	-	\$0	\$0		139,732
1	4,282,966	600,866	0	600,866	335,646	265,220	\$0	\$0	\$0	\$0	\$0	\$0	\$1	27,435	\$32,209	\$95,226	\$662,629	13	37,785	2.08		\$0	\$0	\$0	\$0	-	\$0	\$0		137,785
2	4,282,966	605,546	0	605,546	342,359	263,187	\$0	\$0	\$0	\$0	\$0	\$0	\$1	27,435	\$28,162	\$99,273	\$563,356	13	35,752	2.07		\$0	\$0	\$0	\$0	-	\$0	\$0		135,752
2	4,282,966	610,273	0	610,273	349,207	261,066	\$0	\$0	\$0	\$0	\$0	\$0	\$1	27,435	\$23,943	\$103,492	\$459,863	13	33,631	2.05		\$0	\$0	\$0	\$0	-	\$0	\$0		133,631
2	4,282,966	615,048	0	615,048	356,191	258,857	\$0	\$0	\$0	\$0	\$0	\$0	\$1	27,435	\$19,544	\$107,891	\$351,972	13	31,422	2.03		\$0	\$0	\$0	\$0	-	\$0	\$0		131,422
2	4,282,966	619,870	0	619,870	363,315	256,555	\$0	\$0	\$0	\$0	\$0	\$0	\$1	27,435	\$14,959	\$112,476	\$239,496	11	29,120	2.01		\$0	\$0	\$0	\$0	-	\$0	\$0		129,120
			0																											
2	4,282,966	624,741	0	624,741	370,581	254,160	\$0	\$0	\$0	\$0	\$0	\$0	\$1	27,435	\$10,179	\$117,256	\$122,240	13	26,725	1.99		\$0	\$0	\$0	\$0	-	\$0	\$0		126,725

### Revised Cash Flow, Assumption and DSCR – June 2020

Assumptions Lender	Loan Amt.	Amort. (years)	Pricing (Index & Margin)	Int. Rate	Int Rate after amort period	CMLTD (P&I)	Cash
Provident Term	\$2,770,318	25	N/A	4.25%		\$182,050	75%
Provident Time Note	\$1,939,221	25	N/A	4.25%		\$127,435	
CT Green Bank Mezz Debt	\$704,827	15		8.00%	10.00%	\$82,345	
CGB Guaranty	\$500,000	15					
	Amount	Years					
ZREC	\$80	13.0					
VNMC	100%	30.0					
*VNMC Assumptions based on	current rates and ex	pected incre	eases/step down	n per VNMC	program		

CGB Financing	
Average DSCR	3.57
Minimum DSCR	2.38
Repayment Year	13

		Total Revenue																									
		(VNM.						TPB Debt										0	GB Debt								
	Electricity	ZREC &			TPB Debt			Service from	TPB Debt		5	SBA Debt	SBA Debt			NOI post	Senior	5	Service			CGB Debt	CGB Past	CGB Loan			Excess /
	Production in	Capacity			Service	TPB Debt	TPB Debt	excess cash	Service from	TPB Loan			Service	SBA Debt	SBA Loan	senior	Lender		(P&I)	CGB Debt	Additional CGB	Service	Due P&I	from	CGB Loan		(Shortfall)
Year	KWH	Payments)	Expenses	NOI	(P&I)	Service (I)	Service (P)	flow	Reserves	balance		(P&I)	(1)	Service (P)	balance	lender	DSCR		Actual	Service (I)	Interest Payment	(P)	Payments	Reserve	balance	DSCR	Cash flow
0																											
1	4,282,966	950,304	257,476	692,828	\$182,050	\$117,739	\$64,312		\$0	\$2,706,006	:	\$127,435	\$82,417	\$45,018	\$1,894,203	383,343	2.24		\$82,345	\$56,386		\$25,958	-	\$0	\$678,869	4.66	5 300,999
2	4,282,966	897,504	271,448	626,056		\$115,005	\$67,045	\$0		\$2,638,962		/	\$80,504		\$1,847,272	316,571	2.02		\$82,345	\$54,309	\$0	\$28,035	-	\$0	\$650,833	3.84	234,226
3	4,282,966	844,743	270,905	573,838	\$182,050	\$112,156	\$69,894	\$0	\$0	\$2,569,067	:	\$127,435	\$78,509	\$48,926	\$1,798,346	264,353	1.85		\$82,345	\$52,067	\$0	\$30,278	-	\$0	\$620,555	3.21	182,008
4	4,282,966	848,803	260,517	588,286		\$109,185	\$72,865	\$0		\$2,496,203		\$127,435			\$1,747,340	278,801	1.90		\$82,345	\$49,644	\$0	\$32,700	-	\$0	\$587,855	3.39	190,100
5	4,282,966	846,446	256,154	590,292		\$106,089	\$75,962	\$0		\$2,420,241		\$127,435			\$1,694,167	280,807	1.91		\$82,345	\$47,028	\$0	\$35,316	-	\$0	\$552,539	3.41	
6	4,282,966	853,955	256,890	597,065		\$102,860	\$79,190	\$84,113		\$2,256,938		\$127,435			\$1,638,734	287,580	1.93		\$82,345	\$44,203	\$0	\$38,141	-	\$0	\$514,398	3.49	
7	4,282,966	858,067	262,700	595,367	\$182,050	\$95,920	\$86,130	\$153,926		\$2,016,881		\$127,435			\$1,580,946	285,882	1.92		\$82,345	\$41,152	\$0	\$41,193	-	\$0	\$473,205	3.47	
8	4,282,966	862,221	259,462	602,759	\$182,050	\$85,717	\$96,333	\$152,653	\$0	\$1,767,895	5	\$127,435	\$67,190	\$60,245	\$1,520,701	293,274	1.95		\$82,345	\$37,856	\$0	\$44,488	-	\$0	\$428,717	3.56	5 210,929
9	4,282,966	869,956	261,257	608,699	\$182,050	\$75,136	\$106,915	\$158,197		\$1,502,784		\$127,435			\$1,457,896	299,214	1.97		\$82,345	\$34,297	\$0	\$48,047	-	\$0	\$380,669	3.63	,
10	4,282,966	874,194	292,067	582,127	\$182,050	\$63,868	\$118,182	\$162,652	\$0	\$1,221,950	5	\$127,435	\$61,961	\$65,474	\$1,392,421	272,641	1.88		\$82,345	\$30,454	\$0	\$51,891	-	\$0	\$328,778	3.31	190,297
11	4,282,966	878,473	373,271	505,202	\$182,050	\$51,933	\$130,117	\$142,723	\$0	\$949,110		\$127,435	\$59,178	\$68,257	\$1,324,164	195,717	1.63		\$82,345	\$26,302	\$0	\$56,042	-	\$0	\$272,736	2.38	8 113,372
12	4,282,966	886,442	379,000	507,442	\$182,050	\$40,337	\$141,713	\$85,029	\$722,368	\$0		\$127,435	\$56,277	\$71,158	\$1,253,006	197,957	1.64		\$82,345	\$21,819	\$0	\$60,526	-	\$0	\$212,210	2.40	115,612
13	4,282,966	890,807	298,044	592,763	\$0	\$0	\$0	\$0	\$0	\$0		\$127,435	\$53,253	\$74,182	\$1,178,824	465,328	4.65		\$82,345	\$16,977	\$0	\$65,368	-	\$146,842	\$0	5.65	382,984
14	4,282,966	570,525	304,005	266,520	\$0	\$0	\$0	\$0	\$0	\$0	1	\$127,435	\$50,100	\$77,335	\$1,101,489	139,085	2.09		\$0	\$0	\$0	\$0	-	\$0	\$0		139,085
15	4,282,966	578,734	310,085	268,649	\$0	\$0	\$0	\$0	\$0	\$0	5	\$127,435	\$46,813	\$80,622	\$1,020,867	141,214	2.11		\$0	\$0	\$0	\$0	-	\$0	\$0		141,214
16	4,282,966	583,232	316,287	266,945	\$0	\$0	\$0	\$0	\$0	\$0		\$127,435	\$43,387	\$84,048	\$936,819	139,510	2.09		\$0	\$0	\$0	\$0	-	\$0	\$0		139,510
17	4,282,966	587,775	322,613	265,162	\$0	\$0	\$0	\$0	\$0	\$0		\$127,435	\$39,815	\$87,620	\$849,199	137,727	2.08		\$0	\$0	\$0	\$0	-	\$0	\$0		137,727
18	4,282,966	596,232	329,065	267,167	\$0	\$0	\$0	\$0	\$0	\$0			\$36,091	\$91,344	\$757,855	139,732	2.10		\$0	\$0	\$0	\$0	-	\$0	\$0		139,732
19	4,282,966	600,866	335,646	265,220	\$0	\$0	\$0	\$0	\$0	\$0		\$127,435	\$32,209	\$95,226	\$662,629	137,785	2.08		\$0	\$0	\$0	\$0	-	\$0	\$0		137,785
20	4,282,966	605,546	342,359	263,187	\$0	\$0	\$0	\$0	\$0	\$0		\$127,435		\$99,273	\$563,356	135,752	2.07		\$0	\$0	\$0	\$0	-	\$0	\$0		135,752
21	4,282,966	610,273	349,207	261,066	\$0	\$0	\$0	\$0	\$0	\$0		\$127,435	\$23,943	\$103,492	\$459,863	133,631	2.05		\$0	\$0	\$0	\$0	-	\$0	\$0		133,631
22	4,282,966	615,048	356,191	258,857	 \$0	\$0	\$0	\$0	\$0	\$0		\$127,435	\$19,544	\$107,891	\$351,972	131,422	2.03		\$0	\$0	\$0	\$0	-	\$0	\$0		131,422
23	4,282,966	619,870	363,315	256,555	\$0	\$0	\$0	\$0	\$0	\$0		\$127,435	\$14,959	\$112,476	\$239,496	129,120	2.01		\$0	\$0	\$0	\$0	-	\$0	\$0		129,120
24	4,282,966	624,741	370,581	254,160	 \$0	\$0	\$0	\$0	\$0	\$0		\$127,435	\$10,179	\$117,256	\$122,240	126,725	1.99		\$0	\$0	\$0	\$0	-	\$0	\$0		126,725
25	4,282,966	629,660	377,992	251,668	\$0	\$0	\$0	\$0	\$0	\$0		\$127,435	\$5,195	\$122,240	\$0	124,233	1.97		\$0	\$0	\$0	\$0	-	\$0	\$0		124,233

### Original Cash Flow, Assumption and DSCR (October 2018)

			Assumption	s				CGB Financia	0														
						Excess Cash		Average DSCI	2	2.63													
1	Lender	Loan Amt.	Term (Amort)	Int. Rate	Annual P&I	flow Sweep		Minimum DS0	CR	1.59													
1	Provident - Term	\$2,770,318	25	6.23%	\$221,472	75%		Repayment Ye	ar	15													
1	Provident Time Note	\$1,939,221	25	6.00%	\$151,699																		
	CT Green Bank Mezz Debt	\$800,000	15	8.00%	\$93,464																		
•	CGB Guaranty	\$500,000	15																				
		Amount	Years																				
	ZREC	\$80	15																				
	VNMC	100%	30																				
ŀ	VNMC assumptions based on cu	irrent credit rates	and expected inc	reases/step down	n per VNM Program																		
		Total						TPB Debt														, , , , , , , , , , , , , , , , , , ,	
		Revenue						Service from	TPB Debt							Senior	CGB Debt		Additional			1 1	1
	Electricity Production in KWH	(VNM, ZREC)	E	NOI	TPB Debt	TPB Debt	TPB Debt Service (P)	excess cash flow	Service from Reserves		SBA Debt Service (P&I)	SBA Debt	SBA Debt	SBA Loan balance	NOI post senior lender	Lender DSCR	Service (P&I) Actual	CGB Debt Service (I)	CGB Interest	CGB Debt	CGB Loan	CGB DSCR	Cumulative
Year	4,282,966	950.304	Expenses 257.476	\$692,828	Service (P&I) \$221.472	Service (I) \$172.591	\$48,881	now \$0	Reserves \$0	balance \$2,721,437	\$151.699	Service (I) \$116.353	Service (P) \$35,346	1.903.875	319.658	1.86	\$82,345	\$56,386	Payment	Service (P) \$25,958	678,869	3.88	Reserve 237,313
2	4,282,966	897,504	271,448	\$626,056	\$221,472	\$169,546	\$51,926	30 \$0	\$0	\$2,669,511	\$151,699	\$114,233	\$35,340	1,903,873	252.885	1.68	\$82,345	\$54,309	-	\$23,938	650,833	3.00	407.854
2	4,282,966	844,743	270,905	\$573,838	\$221,472	\$166,311	\$55,161	30 \$0	\$0	\$2,614,350	\$151,699	\$114,233	\$39,714	1,800,409	200.667	1.54	\$82,345	\$52,067	-	\$28,033	620,555	2.44	526,176
4	4,282,966	848,803	260,517	\$588,286	\$221,472	\$162,874	\$58,598	30 \$0		\$2,555,752	\$151,699	\$109,602	\$42.097	1,784,597	215,116	1.54	\$82,345	\$49,644	-	\$30,278	587,855		658,947
5	4,282,966	852,904	256,154	\$596,750	\$221,472	\$159,223	\$62,248	\$0	\$0		\$151,699	\$107,076	\$44,623	1,739,974	223,580	1.60	\$82.345	\$47.028		\$35,316	552,539	2.72	800,183
6	4,282,966	857.047	256,890	\$600,157	\$221,472	\$155,345	\$66,126	\$0	\$0	\$2,427,378	\$151,699	\$104,398	\$47,300	1,692,674	226,986	1.61	\$82.345	\$44,203	-	\$38,141	514,398	2.76	944.824
7	4,282,966	861,230	262,700	\$598,530	\$221,472	\$151,226	\$70,246	\$0	\$0	\$2,357,132	\$151,699	\$101,560	\$50,138	1,642,535	225,360	1.60	\$82,345	\$41,152	-	\$41,193	473,205	2.74	1.000.000
8	4,282,966	865,456	259,462	\$605,994	\$221,472	\$146,849	\$74,622	\$65,879		\$2,216,630	\$151,699	\$98,552	\$53,147	1,589,389	232,823	1.62	\$82,345	\$37,856	-	\$44,488	428,717	2.83	1,000,000
9	4,282,966	869,723	261,257	\$608,466	\$221,472	\$138,096	\$83,376	\$112,859		\$2,020,395	\$151,699	\$95,363	\$56,336	1,533,053	235,296	1.63	\$82,345	\$34,297	-	\$48,047	380,669	2.86	1,000,000
10	4,282,966	874,034	292,067	\$581,967	\$221,472	\$125,871	\$95,601	\$114,713	\$0	\$1,810,081	\$151,699	\$91,983	\$59,716	1,473,337	208,796	1.56	\$82,345	\$30,454	-	\$51,891	328,778	2.54	1,000,000
11	4,282,966	878,387	373,271	\$505,116	\$221,472	\$112,768	\$108,704	\$94,839	\$0	\$1,606,539	\$151,699	\$88,400	\$63,299	1,410,039	131,946	1.35	\$82,345	\$26,302	-	\$56,042	272,736	1.60	1,000,000
12	4,282,966	882,784	379,000	\$503,784	\$221,472	\$100,087	\$121,384	\$37,201	\$0	\$1,447,953	\$151,699	\$84,602	\$67,097	1,342,942	130,614	1.35	\$82,345	\$21,819	-	\$60,526	212,210	1.59	1,000,000
13	4,282,966	887,225	298,044	\$589,181	\$221,472	\$90,207	\$131,264	\$36,202	\$0	\$1,280,487	\$151,699	\$80,577	\$71,122	1,271,820	216,011	1.58	\$82,345	\$16,977	-	\$65,368	146,842	2.62	1,000,000
14	4,282,966	891,711	304,005	\$587,706	\$221,472	\$79,774	\$141,697	\$100,250	\$0	\$1,038,540	\$151,699	\$76,309	\$75,390	1,196,430	214,535	1.57	\$82,345	\$11,747	-	\$70,597	76,245	2.61	1,000,000
15	4,282,966	896,241	310,085	\$586,156	\$221,472	\$64,701	\$156,771	\$99,143	\$0	\$782,627	\$151,699	\$71,786	\$79,913	1,116,517	212,986	1.57	\$82,345	\$6,100	-	\$76,245	-	2.59	1,000,000
16	4,282,966	576,125	316,287	\$259,838	\$221,472	\$48,758	\$172,714	\$97,981	\$511,932	\$0	\$151,699	\$66,991	\$84,708	1,031,809	(113,332)	0.70	\$0	\$0	-	\$0		0.00	886,668
17	4,282,966	580,746	322,613	\$258,133	\$0	\$0	\$0	\$0	\$0	\$0	\$151,699	\$61,909	\$89,790	942,019	106,435	1.70	\$0	\$0	-	\$0	-	0.00	481,170
18	4,282,966	585,414	329,065	\$256,349	\$0	\$0	\$0	\$0	\$0	\$0	\$151,699	\$56,521	\$95,178	846,841	104,650	1.69	\$0	\$0	-	\$0	-	0.00	585,820
19	4,282,966	590,128	335,646	\$254,482	\$0	\$0	\$0	\$0	\$0	\$0	\$151,699	\$50,810	\$100,888	745,953	102,783	1.68	\$0	\$0	-	\$0	-	0.00	688,604
20	4,282,966	594,890	342,359	\$252,531	\$0	\$0	\$0	\$0	\$0	\$0	\$151,699	\$44,757	\$106,942	639,011	100,832	1.66	\$0	\$0	-	\$0	-	0.00	789,435
21	4,282,966	599,699	349,207	\$250,492	\$0	\$0	\$0	\$0	\$0	\$0	\$151,699	\$38,341	\$113,358	525,653	98,793	1.65	\$0	\$0	-	\$0	-	0.00	888,228
22	4,282,966	604,556	356,191	\$248,365	\$0	\$0	\$0	\$0	\$0	\$0	\$151,699	\$31,539	\$120,160	405,493	96,666	1.64	\$0	\$0	-	\$0	-	0.00	984,894
23	4,282,966	609,461	363,315	\$246,146	\$0	\$0	\$0	\$0	\$0	\$0	\$151,699	\$24,330	\$127,369	278,124	94,447	1.62	\$0	\$0	-	\$0	-	0.00	1,000,000
24	4,282,966	614,416	370,581	\$243,835	\$0	\$0	\$0	\$0	\$0	\$0	\$151,699	\$16,687	\$135,011	143,112	92,136	1.61	\$0	\$0	-	\$0	-	0.00	1,000,000

## Exhibit C – Risks and Mitigants

As presented in the October 26, 2018 memo approved by the Board

Risk	Risk Level	Mitigating Factor
Construction and Performance Risk	Medium	As described in greater detail in the "Project Partners" section, the parties involved in the Project include accomplished engineers, developers, project managers and owners of hydro facilities who, between them, have experience with hydro projects locally and internationally.
Operational Risk	Medium	The Developer will have a long-term operations and maintenance contract with Wasserkraft, which has already been negotiated. It includes daily remote inspection, weekly onsite supervision, trash rake cleaning and annual service. Green Bank will also require Developers to have appropriate property, commercial liability and umbrella insurance.
Generation Risk	Low	Generation estimates used in the financial model are based on 31 years of water flow data at the Farmington River. The financial model has been stressed under worst case scenario (that is, using the worst series of water flow years) and debt service coverage is still met. Under the ZREC and VNMCA contracts, the Developer does not have any obligations or penalties if there is a shortfall in the amount of electricity generated.
Offtaker risk	Low	The Project's off-taker is the State of Connecticut under the VNMCA and Eversource under the ZREC, both investment grade entities.
Change in VNM Regulations	Low	The VNMCA includes provisions so that if there were to be a change in VNM regulations, which staff believes a low risk, especially for existing projects, the parties will agree to use best efforts to restore the economic benefits of the VNMCA as originally intended.
Equipment Malfunction	Medium	Wasserkraft is providing a 5-year warranty on the equipment and a 2-year workmanship warranty. Spare parts for items that have most wear and tear will be stored locally in Collinsville near the plant.



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## Memo

To: Connecticut Green Bank Board of Directors

**From:** Mackey Dykes, VP of Financing Programs; Catherine Duncan, Financing Programs; Alex Kovtunenko, Associate General Counsel, Financing Programs

Date: October 14, 2022

**Re:** C-PACE Program Guidelines Update – EV Chargers

Conn. Gen. Stat. Section 16a-40g (the "Statute") authorizes what has come to be known as the Commercial Property Assessed Clean Energy Program ("C-PACE") and designates the Connecticut Green Bank ("Green Bank") as the state-wide administrator of the program. The Green Bank established program guidelines ("Program Guidelines") for the C-PACE program. The Statute was updated in the most recent legislative session (Public Act No. 22-6, effective October 1, 2022) to include zero-emission vehicle refueling infrastructure and resilience improvements on qualifying commercial real property as eligible measures under the program. Both newly eligible measures are exempted from the Savings-to-Investment Ratio ("SIR") calculation. "Zero-emission vehicle" is defined in statute as a battery electric vehicle, hybrid electric vehicle, range-extended electric vehicle and any vehicle that is certified by the executive officer of the California Air Resources Board to produce zero emissions of any criteria pollutant under all operational modes and conditions (Conn. Gen. Stat. Section 4a-67d). "Resilience" is defined in statute as the ability to prepare for and adapt to changing conditions and withstand and recover rapidly from deliberate attacks, accidents or naturally occurring threats or incidents, including, but not limited to, threats or incidents associated with the impacts of climate change (Conn. Gen. Stat. Section 16-244aa).

Green Bank staff provided the Board a draft of proposed edits to the Program Guidelines which address the inclusion of zero-emission vehicle refueling infrastructure at the July 22, 2022 meeting. Other non-substantive clean-ups were included as well. After receiving Board input, the Program Guidelines went through a public comment period. No public comments were received. Staff is therefore requesting approval of the updated Program Guidelines, attached to this memo, as previously presented in July.

Staff is still working on drafting edits to address the inclusion of resiliency and expects to come back to the Board with further updates early next year.

### **Resolution**

WHEREAS, Conn. Gen. Stat. Section 16a-40g (the "Authorizing Statute") authorizes the Commercial Property Assessed Clean Energy Program ("C-PACE") program and designates the Connecticut Green Bank ("Green Bank") as the state-wide administrator of the program responsible for, among other things, establishing program guidelines for

the C-PACE program; and

**WHEREAS**, the Green Bank staff have recently updated the C-PACE program guidelines (the "Program Guidelines"), which draft guidelines then went through a thirty-day public comment period in accordance with Conn. Gen. Stat. Section 1-120 et seq., during which time no comments were received.

NOW, therefore be it:

**RESOLVED,** the Green Bank Board of Directors (the "Board") approves the updated Program Guidelines, substantially in the form of attached to that certain memo to the Board dated October 14, 2022 and authorizes the Green Bank staff to implement the updated Program Guidelines.

**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 Program Guidelines.



## **C-PACE PROGRAM GUIDELINES**

Version Date: March 30July 19, 2022 Connecticut Green Bank 75 Charter Oak Ave, Suite 1 – 103 Hartford, CT 06106 Tel: (860) 563-0015 www.ctgreenbank.com

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### Article I. INTRODUCTION

Capitalized terms used below which are not otherwise defined shall have the meaning ascribed to them in Article<u>VI</u> <u>hereof.</u>

VI hereof.

### In 2012, the Connecticut legislature passed the

<u>The</u> C-PACE Legislation (defined below<del>), which</del>) authorized the commercial sustainable energy program more commonly known as the Commercial & Industrial Property Assessed Clean Energy Program ("C-PACE"). C-PACE is a financing program that allows Connecticut building owners to access cleaner, cheaper, and more reliable energy<sub>7</sub>, as well as financing for resiliency and zero-emission vehicle refueling infrastructure The C-PACE Legislation authorized Connecticut Green Bank, a Connecticut quasi-public agency ("Green Bank"), to administer C-PACE and establish program guidelines for the implementation of the program. NOTE: Guidelines specific to resiliency will be developed later this fiscal year.

C-PACE allows qualifying commercial real property owners to access financing to undertake qualifying energy efficiency and cleaneligible energy improvements on their buildings or build greener and more efficient new buildings and repay the investment through an additional charge/assessment, similar to theira real property tax, sewer, or water bill. Similar to a sewer assessment, projects financed through C-PACE are secured by a benefit assessment lien on the improved real property, which lien is repaid over time. Like other benefit assessments, C-PACE is a non-accelerating, senior lien secured by the property., and repaid over time. The repayment obligation transfers automatically to the next owner if the property is sold and in the event of default, only the payments in arrears come due. This arrangement spreads the cost of cleaneligible energy improvements – such as energy efficient boilers, upgraded insulation, new windows, or solar PV installations, or EV chargers – over the expected life of the measure. Because the payment is secured by a senior lien., C-PACE projects are seen as less risky than typical loans, and low interest capital can be raised from the private sector with little or no government financing required.

Benefit assessments are a familiar tool which<u>that</u> municipalities levy on real estate parcels to finance projects including street paving, water and sewer systems, and street lighting. C-PACE builds on a long history of using such benefit assessments and serves a public purpose through reducing energy costs, stimulating the economy, improving property valuation, reducing greenhouse gas emissions, and creating jobs. C-PACE is a proven and effective tool to attract private capital into the clean energy and energy efficiency market. The Connecticut Green Bank, as program administrator, bills and collects the scheduled payments for all benefit assessment liens in the manner of property taxes in the Participating Municipality.

This document sets forth the program guidelines established by Green Bank for the implementation of C-PACE \_(as may be updated, supplement, amended or otherwise modified by Green Bank, the "Program Guidelines"), which Program Guidelines govern all C-PACE participants.

All Appendixes attached hereto are supplemental program documents used by Green Bank in implementation of the Program Guidelines and may be modified or amended by Green Bank, in its sole discretion, from time to time. Current versions of all Appendixes may be found at www.cpace.com/guidelines.

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## Article II. OUTLINE OF C-PACE BENEFITS

PACE offers multiple benefits to a broad range of stakeholders, including but not limited to: building owners, municipalities, mortgage holders, lenders, and energy efficiency/renewable energy contractors.

### Section 1. ——For Building Owners:

C-PACE helps minimize the up-front investment, installation, and \_performance risk of energy upgrades, while helping owners lower their operating costs, improve the value and market competitiveness of their asset, and comply with energy mandates. C-PACE does this in several ways:

 Many owners lack capital to implement energy improvements. C-PACE provides up to 100% upfront,%, long-term financing to property owners for qualified energy upgrades. Audits, construction costs, commissioning and post-construction performance measurement and verification (M&V) can be wrapped into C-PACE financing.

wrapped into C-PACE financing.

- •—Owners often want to sell the building before an energy upgrade loan is repaid. The C-PACE assessment
- \_obligation is attached to the property and can transfer to the new owner. Payments do not accelerate in case of default.
- Many owners feel energy improvements do not yield an adequate return on investment. The C-PACE
- \_program requires that the estimated energy savings from <u>an efficiency retrofit or renewable energy</u> project exceed the up-front investment and financing costs, leading the expected cash flow to be positive over the useful life of the equipment. Moreover, C-PACE requires an independent third-party technical review of the project energy savings estimates, thereby ensuring confidence in the projected energy savings. Deeper energy upgrades and savings are possible because assessments match the useful life of equipment, which for certain improvements can extend up to 25 years.
- Other owners are uncertain that energy savings will perform as advertised. C-PACE helps building
- \_owners understand their future energy savings by requiring that an energy audit and/or feasibility study be conducted to estimate energy savings and commissioning to ensure that equipment is installed correctly. <u>Buildings owners are encouraged to develop an equateAn audit for a refueling installation</u> <u>assesses the impact of a charging station on a building's energy profile. Buildings owners should consider</u> <u>developing a</u> measurement & verification plan to track energy consumption or production over time.
- ----Owners need tenants to share in the costs of energy upgrades. As a benefit assessment, C-PACE
- \_payments as well as energy savings may, if permitted by the lease agreement, be passed along to tenants.

### Section 2. For Energy Auditors and Contractors:

The biggest barrier to converting leads to deals for energy

\_upgrades is the lack of access to acceptable finance terms from traditional lenders. C-PACE solves this. By allowing a property owner to access up to100% up-frontto 100% financing for up to 25 years, deeper energy efficiency and clean energy improvements are now affordable. The Green Bank also provides energy auditors and contractors access to training, support services, market research, and marketing materials.

### Section 3. For Municipalities:

C-PACE is an economic development tool for municipalities. Energy upgrades

\_create a more competitive environment for retaining and attracting new businesses by lowering energy costs. Energy upgrades also create jobs and reduce greenhouse gases and other pollutants. <u>The</u> Green Bank facilitates <u>municipal outreach and coordinationcoordinates</u> with municipalities, <u>and their legislative bodies</u>, interested in entering into the Participation Agreement (as defined below<del>].</del>) and facilitates municipal outreach to commercial property owners.

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#### Section 4. For Third Party Capital Providers:

#### C-PACE has created is a very secure, clean energy financing

\_product for Third-Party Capital Providers (TPCP). The security comes from its position similar to a tax lien on a property. The lien, like other public benefit assessments, sits in a senior position to other encumbrances on the property, including mortgage debt and liens other than municipal real property tax liens. Repayment is managed by the The Green Bank bills, collects, and remits funds in its role as program administrator. Finally, the

The C-PACE Legislation requires C-PACE approved projects, other than zero-emission vehicle refueling infrastructure upgrades, to have a "Savings to Investment Ratio" (SIR) greater than one, meaning that projected lifetime savings from the measures must exceed the total investment, inclusive of financing costs, over the lifetime of the measures. Connecticut streamlined the C-PACE program by establishing a single statewide C-PACE program administered by the Green Bank. Connecticut's C- PACE program maintains an open market approach, encouraging private capital to be the primary financier of these assessments and supporting building owners who wish to source their own C-PACE lender (see Article V below). Additionally, the Green Bank currently has dedicated capital to invest in C-PACE projects. At certain intervals through the year, the Green Bank may periodically "sell-down" its portfolio of C-PACE transactions to TPCP(s) (as defined herein) who desire to be the secondary financiers of these assessments. The sell-down process replenishes the Green Bank's capital, enabling a sustainable source of funding for C-PACE projects.

### Section 5. For Mortgage Holders:

#### The -structure -of -C-PACE -allows -participating -building owners -to pay

\_for improvements to their property out of the savings the project creates. Connecticut statutes require C-PACE approved projects to have an SIR greater than 1, meaning that projected lifetime savings from the energy measures must exceed the total investment, inclusive of financing costs, over the lifetime of the measures. The Green Bank has instituted technical underwriting standards for C-PACE that provides a robust framework for measuring the estimated SIR (Appendix D), which all <u>efficiency and renewable energy</u> C-PACE Projects must meet. Under the C-PACE financing structure, the building should experience increased net operating income, often an immediate return on investment, and therefore becomes more attractive to current and potential tenants and future buyers. Additionally, C-PACE Assessments do not accelerate. In the event of a foreclosure of the property for any reason, only the amount of the C-PACE assessment currently due and/or in arrears, a relatively small proportion of the entire C-PACE assessment, would come due. In the event of a property sale, C-PACE assessment. Finally, the C-PACE Legislation requires that property owners receive the written consent of their existing mortgage holder before being eligible for C-PACE financing (Appendix C). Mortgage lenders will be at the table helping to determine whether a property can undertake this voluntary assessment.

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## Article III. C-PACE STATUTORY AND PROGRAMMATIC REQUIREMENTS

This section outlines certain requirements set forth in the C-PACE Legislation as well as additional programmatic requirements established by the Green Bank.

### Section 1. Mortgage Lender Consent

A.

A. Pursuant to the C-PACE Legislation, Benefited Property Owners must:

- i.--Provide written notice to any existing mortgage holder of the Qualifying Property (as defined
  - a. \_below), at least thirty days before the recording of a benefit assessment lien on such property, of the property owner's intent to finance a project through C-PACE, and
- ii. Obtain the written consent to the C-PACE financing from any existing mortgage holder of the
  - b. \_Qualifying Property.
- B.—Green Bank's model mortgage holder notice and consent is attached as Appendix C. C-PACE participants may
  - B. \_elect to use a different agreement to evidencing mortgage holder notice and consent, however any other such agreement will be subject to review and approval by Green Bank in its sole discretion.
- C. In accordance with the U.S. Department of Housing and Urban Development ("HUD") Notice H2017-01
  - C. \_dated January 11, 2017, as may be modified, amended or superseded, in the event that the mortgage holder is HUD, the mortgage holder notice and consent as well as the Financing Agreement associated with such consent shall provide, in the event of a default on the associated Benefit Assessment Lien payment, for notice and a reasonable opportunity for the mortgage holder to cure any such non-payment.

### Section 2. Real Property Eligibility

To be considered a "Qualifying Property" eligible for C-PACE Financing, a Qualifying Commercial Real Property (as defined below) must meet the following requirements:

- A.
- A. Must be located within a Participating Municipality (as defined below), or multiple abutting Participating <u>Municipalities</u>. <u>Municipalities</u>.

B.—Must be owned by a Benefited Property Owner (as defined below), who is not a state, municipality, or

- B. \_any political subdivision thereof.
- C.--Must not be a Residential Dwelling (as defined bellow) of four units or less. Multifamily properties of
- C. \_five units or more are eligible. Mixed-use, not-for-profit, and agricultural properties may also be eligible. If the eligibility of a certain property is not clear, Green Bank may determine property eligibility in its reasonable discretion based on site specific considerations including, but not limited to, zoning designation and current/past/future land use. Multiple abutting parcels may be included in the legal description of one Benefit Assessment Lien (as defined below) if (1) each parcel, by itself, is a Qualifying Property (2) each parcel is owned by the same Benefited Property Owner, and (3) each parcel benefits from the same Qualifying Project.

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D. Must not be subject to any mortgage, deed of trust or other equivalent consensual security interest \_securing a loan primarily for personal, family or household use in a Residential Dwelling of four units or

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D. \_less or on land on which a person intends to construct a Residential Dwelling of four units or less.

# Section 3. Project Eligibility

To be considered a "Qualifying Project" eligible for C-PACE Financing, an <u>energy improvement Energy Improvement</u> project must meet

\_the following requirements:

A.

- A. Contain at least one Energy Improvement (as defined below).
- B.—All costs associated with the Energy Improvement and the financing thereof (e.g., closing/lender fees,
- B. \_consultant/development fees, soft costs, or other associated project costs, each being an "Associated Cost") may, subject to Green Bank approval, be included in the Financed Amount.
- C. C.—Obtain an energy audit or feasibility study for the proposed Energy Improvement(s).
- D.- The term of the Benefit Assessment associated with the Qualifying Project may not exceed the weighted
- D. \_average effective useful life ("EUL") of the Energy Improvement(s), except in the context of Restructuring, in which case the term of the Benefit Assessment may be extended beyond the weighted average EUL of the Energy Improvement(s). EUL is determined through the energy audit, based on industry best practice, and is subject to approval by (1) either the Technical Administrator or a Technical Reviewer, and (2) the Green Bank. Regardless of a Project's EUL, the term of the Benefit Assessment may not exceed 25 years unless approved by Green Bank, in its sole discretion.

E.For all Energy Improvements other than Zero-emission Vehicle Refueling Infrastructure, Projected Total Cost Savings must exceed the Projected Financing Cost. In other words, the savings-to-

- E. \_investment ratio ("SIR") of the project must be greater than one. To demonstrate that the SIR requirement has been satisfied the project must be either (1) reviewed and approved by the Technical Administrator, (2) reviewed and approved by a Technical Reviewer, (3) be certified as Investor Confidence Project "an Investor Ready Energy Efficiency"<sup>2</sup> project by the Investor Confidence Project (as defined by the Investor Confidence Project, see <a href="http://www.eeperformance.org">http://www.eeperformance.org</a>) or (4), for certain projects which include third party-owned renewable energy system(s), reviewed and approved by Green Bank, or certified by a Qualifiedan Approved Capital Provider, as applicable and more particularly described in Appendix L. For the avoidance of doubt, the SIR calculation for the project must meet the requirements set forth in Article IV below and shall not be applicable for Zero-emission Vehicle Refueling Infrastructure.
- F. F. All Projects require the written approval of the Green Bank, as the statewide administrator of the C-<u>PACE</u> <u>Program.</u>

#### PACE Program.

G. G.-All Benefited Property Owner(s) associated with the project must sign a Disclosure of Risk Form.

H.—If the Energy Improvement(s) are wholly owned by any party or parties which is/are not the Benefited

H. \_Property Owner(s), then such project must meet the requirements set forth in Appendix L.



## Section 4. Restrictions on completed Qualifying Projects and consolidated Qualifying Projects

Qualifying Project improvements which have already been made to a Qualifying Property may be eligible for financing if such Qualifying Project was -completed less than a calendar year prior to the complete submission of documents necessary for Green Bank approval (See Appendix F) of such Qualifying Project. Additionally, subsequent Energy Improvement(s) made to a Qualifying Property which has previously received C-PACE financing for a previous Qualifying Project, made within one calendar year from the close of C-PACE financing for the initial Qualifying Project, may be considered as one Qualifying Project for the purposes herein.

#### Section 5. Restrictions on Refinancing within the C-PACE Program

Qualifying Projects which closed on C-PACE financing mayare not be eligible for Refinancing through the

<u>C-PACE</u> Program. For the avoidance of doubt, nothing in the Program Guidelines is intended to prohibit Restructuring, at any time during the term of the applicable Benefit Assessment, through the <u>C-PACE Program</u>. <u>C-PACE Program</u>.

#### Section 6. Billing and Collection

Benefit Assessment Liens are billed in the same manner as real property taxes. As such, any payment schedule associated with any Benefit Assessment Liens will follow the billing cycle and due dates for real property taxes in the applicable Participating Municipality. Billing and collection of recorded Benefit Assessment Liens are conducted in accordance with the applicable Participation Agreement, as may be amended. In the event that <u>If</u> such Participation Agreement provides for Green Bank to conduct the billing and collection of Benefit Assessment Liens in such Participating Municipality then Green Bank will conduct such billing and collection in accordance with Appendix M.

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# Article IV. TECHNICAL STANDARDS OVERVIEW

# The Green Bank requires a third-party review of the proposed project to demonstrate that the SIR requirement has been met.

The following provides a summary of the technical review process. Please refer to the Technical Standards (Appendix D) for a full description of audit requirements, technical review methodology and standards, and eligible and ineligible measures. Technical review may be completed by the Green Bank's selected Technical Administrator or <u>an Approved</u> Technical Reviewer, in accordance with the Technical Standards. As an alternative to this process, the Green Bank will also accept Investor Confidence Project-certified Investor Ready Energy Efficiency Projects (as defined by the Investor Confidence Project, see <a href="http://www.eeperformance.org">http://www.eeperformance.org</a>) that demonstrate the SIR is greater than one. Additionally, Green Bank may, in its sole discretion, perform technical review for projects which include third party-owned renewable energy system(s), as more particularly described in Appendix L.

# Section 1. Defining a Scope of Work

Benefited Property Owners should work with a qualified energy auditor and/or contractor with demonstrated experience to define a scope of work for their proposed project. This scope can range from installation of a single Energy Improvement, such as a new high efficiency boiler or a renewable energy system, to a whole building energy upgrade involving multiple, interactive Energy Improvements. A general list of eligible Energy Improvements and their typical energy saving characteristics can be found in the Technical Standards. The scope of work for the proposed project-must be prepared and submitted by a Qualified Contractor or Registered Contractor. Projects require the applicant to conduct an energy audit or renewable energy feasibility study. For all projects involving the installation of Energy Improvements, depending on project type, size and complexity, the energy audit may range from a simple walkthrough of the building to an investment grade audit.<sup>31</sup> The Qualified Contractor or Registered Contractor will determine the minimum required energy audit level consistent with the Technical Standards (Appendix D). The audit should identify the building's representative baseline energy use<sub> $\tau$ </sub> (except for in the case of zero-emission vehicle refueling), identify and recommend Energy Improvements, estimate the useful life of each Energy Improvement, determine total project capital cost and the projected energy savings that can be confidently achieved, and evaluate key financial metrics, and provide an energy savings equipment commissioning plan. All projects involving a renewable energy system are required to complete a feasibility study<sub>7</sub>. Green Bank recommends that any feasible study follow the guidelines set forth in Technical Standards (Appendix D).

# Section 2. Standard SIR Technical Review

#### The

. For projects with an SIR requirement, the Technical Administrator and/or Technical Reviewer will conduct a technical review, the purpose of which is to validate the reasonableness of project costs and energy savings projections. The Technical Administrator and/or Technical Reviewer will also confirm the projected SIR of the project is greater than one.

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<sup>&</sup>lt;sup>1</sup> Connecticut utilities may provide what can be considered an ASHRAE Level I audit at no cost to applicants. The Green Bank can provide applicants referrals to qualified energy auditors to do higher level audits, the costs of which may be included in <u>C-PACE financing</u>.

<sup>3</sup> Connecticut utilities may provide what can be considered an ASHRAE Level I audit at no cost to applicants. The Green Bank can provide applicants referrals to qualified energy auditors to do higher level audits, the costs of which may be included in C-PACE financing.

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In addition, the methodology for tracking energy savings over an agreed upon term will be reviewed, thereby verifying for project stakeholders the extent to which projected energy savings are being achieved in an ongoing fashion.

Technical Review consists of three tasks:

- <u>A.</u> <u>A.</u> Verify that the building's baseline energy consumption is representative and reasonable, e.g., weather normalized <u>B.</u>.
- A.B. Validate the reasonableness of projected energy savings; and
- C. C. Confirm that an adequate commissioning plan exists.

The first two tasks are necessary to determine the SIR on the project and verify that it is greater than one. The third task ensures a property owner and the contractor have planned to confirm the correct installation and operational performance of the installed measures.

The Green Bank has developed a methodology for this technical review process, which relies upon two established industry protocols:

- A. **Baseline Energy Use:** ASTM E2797-15, Building Energy Performance Assessment (BEPA) Standard directed at data collection and baseline calculations for the energy audit:
- B. Energy Improvement & Energy Savings: ASHRAE Level I, Level II and Level III Energy Audit Guidelines

The Technical Administrator or a Technical Reviewer will qualify the proposed Energy Improvement(s) and validate \_the projected energy savings are consistent with these protocols and, in conjunction with the applicant, will confirm a baseline financing scenario that meets the SIR criteria.

#### Section 3. Commissioning; Measurement and Verification

#### In order to

<u>To</u> verify that the project was installed according to the evaluated scope, <u>all project applicationsprojects</u> are required to include a commissioning plan<u>and subsequent report.</u> A <u>report commissioning plan</u> by a Qualified Contractor, Registered Contractor, Technical Reviewer, or the Technical Administrator <u>that confirms can confirm</u> the measures were properly installed and that the project is operating as intended <u>must be submitted to the Green</u> Bank once project construction is complete.

Additionally, in order to (i) evaluate the energy savings effectiveness of the measures after they have been installed, and (ii) to collect energy consumption and/or clean energy production data, property owners are encouraged to -work with their contractor(s) to implement an adequate measurement and verification plan. The International Performance Measurement and Verification Protocol (IPMVP) provides guidance for measurement and verification of the energy savings, for additional information see the Technical Standards.

The Green Bank may elect to facilitate M&V for projects submitted to the Green Bank for financing, and may elect \_to offer the same services to TPCPthird-party financed projects, at Green Bank's discretion- and subject to additional costs/fees. M&V activities may be financed as an Associated Cost of any Qualifying Project.

## Section 4. Alternative to Standard SIR Technical Review Process

As an alternative to the Standard SIR Technical Review process (described in Section 2 and the Technical Standards), Green Bank will also consider projects which that meet one of the following requirements as having met the technical review requirement of this Article:

A. A.—Projects which<u>that</u> demonstrate a receipt of an Investor Ready Energy Efficiency certification from the Investor Confidence Project ("ICP") and provide a letter from the ICP Quality Assurance Provider stating that the <u>SIR for the project is greater than one; or</u> SIR for the project is greater than one; or

SIR for the project is greater than one; or

B.—Certain projects which include third party-owned renewable energy system(s), reviewed, and approved by

B. \_Green Bank, as more particularly described in Appendix L.

## Section 5. — New Construction, Repositioning, and Gut Rehabilitation

Given the lack of a pre-improvement energy baseline against which to measure energy savings and the difficulty of isolating and assigning portions of new construction, repositioning, and gut rehabilitation project costs to <u>particularspecific</u> Energy Improvements, the Standard SIR Technical Review process (described in Section 2 and the Technical Standards) is not applicable. For new construction, repositioning or gut rehabilitation Qualifying <u>Projects, anAn</u> alternate methodology will apply for determining. For these Qualifying Projects, the amount of allowable C-PACE financing is based uponon the design level of energy performance, above exceeding the applicable building energy code, the Qualifying Property is designed to reach, as set forth in. See Appendix N attached hereto.

The Green Bank's Technical Administrator will evaluate the base line and design levels of energy modeling submitted by Qualified Projects and determine the percentage by which the design exceeds the base line. The Green Bank will determine the Total Eligible Construction Costs (TECC) and identify the total C-PACE funding available. See Appendix F for costs and details.

#### Section 6. Technical Review Auditing

Green Bank may select and retain a Technical Review Auditor or Technical Review Auditors to conduct periodic reviews of the technical review work performed by any Technical Reviewer, the Technical Administrator, or the Green Bank to evaluate compliance with the Program Guidelines and Technical Standards.

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#### Article V. C-PACE OPEN MARKET AND ELIGIBILITY CRITERIA FOR C-PACE CAPITAL

# **PROVIDERS**

### Section 1. Concept of 'Open Market'

Connecticut maintains an "open market" approach to its C-PACE program, encouraging capital providers to be the primary <u>financierfinanciers</u> of Qualifying Projects and supporting Benefited Property Owners who wish to source theirown capital provider. For capital providers wishing to directly offer C-PACE financing, thereby becoming an "Approved <u>Third-Party</u> Capital Provider" or "<u>ATPCPACP</u>", the Green Bank has created terms and conditions–, attached hereto as Appendix F (the "Third-Party Capital Provider Terms and Conditions"), which outline the requirements and process for <u>Third-PartyApproved</u> Capital Provider to directly offer C-PACE financing to Benefited Property Owners and interact with Green Bank, as the program administrator.

Additionally, the Green Bank currently maintains dedicated capital to finance C-PACE projects. Benefited Property Owners looking to finance any Qualifying Project with Green Bank sourced capital may apply directly to Green Bank and follow the process outlined in Appendix F. From time to time and through the RFP process, the Green Bank may "sell-down" portfolios of its C-PACE transactions to Qualifying Capital Providers (s) or partner with Qualifying Capital Providers for the purpose of originating transactions, which Qualifying Capital Providers desire to be the secondary or co-financiers of these assessments. The "sell down" process replenishes or leverages the Green Bank's capital, enabling a sustainable source of funding for C-PACE projects.

The 'open market' program offers multiple financing options to Benefited Property Owners, enabling the Green Bank to achieve its mission of making financing accessible and affordable.

#### Section 2. Qualified Capital Provider

Any capital provider or other entity interested in purchasing C-PACE transactions from the Green Bank or offering C-PACE financing directly to borrowers must become a qualified Capital Provider through the C-PACE Program. The process for becoming a "Qualified Capital Provider" is as follows:

- 1. The interested capital provider must respond to the open <u>CGB Request for Qualifications from</u> Interested Capital Providers.
- 2. Green Bank shall review the submission and may approve the capital provider. Upon approval, the capital provider will be considered a "Qualified Capital Provider". Qualified Capital Providers are listed on Green Bank's C-PACE website and receive information from the Green Bank regarding financing opportunities as well as pertinent information about C-PACE. Qualified Capital Providers wishing to directly offer C-PACE financing must acknowledge and agree to the Third-Party Capital Provider Terms and Conditions.

Section 3. C-PACE Approved Third-Party Capital Providers
ONLY Qualified

<u>A</u> Capital Providers which anticipate directly offeringProvider must be approved by the C-PACE Program to offer financing to Benefited Property Ownersdirectly to building owners in Connecticut need to acknowledge and agree to the Third Party Capital Provider Terms and Conditions. A Request for Qualifications (RFQ) can be found at <a href="https://www.cpace.com/Capital-Provider/Get-Started">https://www.cpace.com/Capital-Provider/Get-Started</a>. The Third-Party Capital Provider Terms and Conditions outline the requirements and process for Third-Party Capital

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Provider to directly offer C-PACE financing to Benefited Property Owners and interact with the Green Bank, as the program administrator. In summary, the process for project origination, funding, and administration is as follows: Please review Appendix F, Third-Party Capital Provider Term Sheet for further details.

- <del>A.</del>
- The ATPCPACP or Benefited Property Owners may submit a completed C-PACE application and all associated
- A. \_documents necessary to demonstrate any project's compliance with the Program Guidelines and any other applicable requirements set forth in the Third-Party Capital Provider Terms and Conditions.
- B.—Green Bank shall review such documents for compliance with the Program Guidelines and Third-Party
- B. \_Capital Provider Terms and Conditions, and, in its sole discretion, provide its approval of the Qualifying Project (thereby becoming an "Approved Project").
- C. The ATPCPACP may then enter into a Financing Agreement with Benefited Property Owner for such
- C. \_Approved Project (thereby becoming a "Closed Project").
- D. Concurrently or shortly thereafter, the ATPCPACP shall enter into an Administration Agreement with the
- D. \_Green Bank for such Closed Project.
- E.—Green Bank will facilitate the filing and assignment to the ATPCPACP of a Benefit Assessment Lien, pursuant
- E. \_to the Administration Agreement.
- F.—Green Bank will work with the ATPCPACP to collect any payments received
- pursuant the Benefit Assessment Lien and remit such payments to the ATPCPACP, pursuant to the
- F. Administration Agreement.

The ATPCPACP shall maintain its own financial underwriting criteria and financing terms and conditions for a C-PACE transaction, subject to the requirements set forth in the Program Guidelines.



# Article VI. DEFINED TERMS

"Approved Third-Party Capital Provider" or "ATPCPACP" shall mean a Third-party Capital Provider, which that (1) has been approved by Green Bank as a Qualifying Capital Provider, (2) has acknowledged (and agreed to Third-Party Capital Provider Terms and Conditions, and (3(2)) is in good standing with the Green Bank.

"Associated Cost" shall have the meaning ascribed to it in Article III Section 3(B).

**"Benefit Assessment"** shall mean an assessment authorized by the C-PACE Legislation. In an event of a conflict between this definition and that which is ascribed in the C-PACE Legislation, the C-PACE Legislation shall govern.

**"Benefit Assessment Lien"** shall mean a lien which evidences a Benefit Assessment and is recorded by a Participating Municipality on the land records against a Qualifying Property at Green Bank's direction pursuant to the Participation Agreement. The form of such Benefit Assessment Lien is attached hereto as Appendix K, as may be modified or amended from time to time by Green Bank, in its sole discretion.

**"Benefited Property Owner"** shall mean an owner of Qualifying Commercial Real Property who desires to install Energy Improvements and provides free and willing consent to the Benefit Assessment against the Qualifying Commercial Real Property. In an event of a conflict between this definition and that which is ascribed in the C-PACE Legislation, the C-PACE Legislation shall govern.

"C-PACE" shall have the meaning ascribed to it in Article I.

**"C-PACE Legislation"** shall mean Section 16a-40g of the Connecticut General Statutes, as may be amended, attached hereto as Appendix A.

"Commercial or Industrial Property" shall mean any real property other than a Residential Dwelling containing less than five dwelling units. In an event of a conflict between this definition and that which is set forth in the C-PACE Legislation, the C-PACE Legislation shall govern.

**"Disclosure of Risk Form"** shall mean the disclosure of risk form associated with C-PACE, attached hereto as Appendix H, as may be modified or amended from time to time by Green Bank, in its sole discretion.

"District Heating and Cooling System" shall mean a local system consisting of a pipeline or network providing hot water, chilled water or steam from one or more sources to multiple buildings. In an event of a conflict between this definition and that which is ascribed in the C-PACE Legislation, the C-PACE Legislation shall govern.

**"Energy Engineer"** shall mean a professional or entity who/which meets one of the following: (1) holds a Certified Energy Manager or Certified Energy Auditor accreditation, (2) is a Professional Engineer with demonstrated relevant energy experience, or (3) a contractor with relevant demonstrated experience as determined by the Technical Administrator.

**"Energy Improvement"** shall mean (A) participation in a District Heating and Cooling System by Qualifying Commercial Real Property, (B) participation in a microgrid, as defined in Section 16-243y of the Connecticut

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\_General Statutes, including any related infrastructure for such microgrid, by Qualifying Commercial Real Property, provided such microgrid and any related infrastructure incorporate clean energy, as defined in Section

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\_16-245n of the Connecticut General Statutes, (C) any improvement, renovation or retrofitting of Qualifying Commercial Real Property to reduce energy consumption or improve energy efficiency, (D) installation of a renewable energy system to service qualifying commercial real property, or (E) installation of a solar thermal or geothermal system to service qualifying commercial real property, or (F) installation of refueling infrastructure for zero-emission vehicles to a Qualifying Commercial Real Property, or (G) installation of resilience improvements to a Qualifying Commercial Real Property, provided such renovation, retrofit or installation described in subparagraph (C), (D) or (E) to (G), inclusive, is permanently fixed to such Qualifying Commercial Real Property. In an event of a conflict between this definition and that which is ascribed in the C-PACE Legislation, the C-PACE Legislation shall govern.

"EUL" shall have the meaning ascribed to it in Article III Section 3(E).

**"Financed Amount"** means the combined costs of the Energy Improvement(s) and Associated Cost(s) which has been or will be financed though C-PACE for any Qualifying Project.

**"Financing Agreement"** shall mean a written agreement between a Benefited Property Owner and either a <u>Third-Partyan Approved</u> Capital Provider or the Green Bank, or any of its subsidiaries, for the financing, leasing, or purchasing power from <u>/of Energy Improvement(s).</u>, a <u>Qualifying Project</u>. Such financing agreement shall contain, among other things, a provision which allows the Benefited Property Owner to rescind the agreement not later than three business days from the date of such agreement.

"Green Bank" shall have the meaning ascribed to it in Article I.

**"Participating Municipality**" shall mean a municipality, as defined in Section 7-369 of the Connecticut General Statutes, that has entered into a Participation Agreement. In an event of a conflict between this definition and that which is ascribed in the C-PACE Legislation, the C-PACE Legislation shall govern.

**"Participation Agreement"** shall mean a written agreement between Green Bank and a Participating Municipality, as approved by its legislative body, pursuant to which the municipality has agreed to assess and assign, Benefit Assessments to Green Bank in return for Energy Improvements for Benefited Property Owners within such municipality and costs reasonably incurred in performing such duties. The template participation agreement is attached hereto as Appendix B, as may be modified or amended from time to time by Green Bank, in its sole discretion.

"Professional Engineer" shall mean an individual, or company which employees such individual, who is licensed as a professional engineer and in good standing with the relevant licensing authorities in the State of Connecticut.

"Program Guidelines" shall have the meaning ascribed to it in Article I.

"Projected Associated Savings" shall mean non-energy savings which<u>that</u> have a close nexus to the Energy Improvement(s) which<u>that</u> are part of a Project. Examples include, but are not limited to, federal tax credits, depreciation, and revenues from the sale of environmental attributes. Green Bank, in its sole discretion, may determine which types of savings may be considered to fall under this definition.

"Projected Energy Savings" shall mean the estimated energy savings, calculated in accordance with the Technical Standards, from any Energy Improvement(s) over the EUL of such improvements.



\_"Projected Financing Cost" shall mean the total projected debt service associated with the Financed Amount for a Qualifying Project including, but not limited to, all principal, interest, and any fees over the term of the financing. This does not include any potential <u>capitalized interest during constructions</u>, late fees or penalties.

"Projected Total Cost Savings" shall mean the combined value of the Projected Energy Savings and the Projected Associated Savings for any Qualifying Project.

**"Qualified Contractor"** shall mean an individual -or entity who/<u>whichthat</u> meets one of the following: (1) holds a Certified Energy Manager or Certified Energy Auditor accreditation, (2) is a Professional Engineer with demonstrated relevant energy experience, or (3) a contractor with relevant demonstrated experience. **"Qualifying Capital Provider" or "QCP"** shall have the meaning ascribed to it in Article V Section 2.

"Qualifying Commercial Real Property" shall mean any Commercial or Industrial Property, regardless of ownership, that meets the qualifications established for the C-PACE program. In an event of a conflict between this definition and that which is provided in the C-PACE Legislation shall govern.

"Qualifying Project" shall mean an energy improvement project which meets all the requirements set forth in Article III Section 3.

"Qualifying Property" shall mean a Qualifying Commercial Real Property which meets all the requirements set forth in Article III Section 2.

**"Refinancing"** means, in the context of any existing Financing Agreement, -a Benefited Property Owner entering into a new Financing Agreement with any C-PACE <u>capital providerACP</u> other than the capital provider (or its successors or assigns) who is a party to the applicable existing Financing Agreement for the purpose of repaying or refinancing the existing Financing Agreement and Benefit Assessment, including but not limited to, filing of a new Benefit Assessment associated with the same Qualifying Project.

"Registered Contractor" shall mean a contractor who has registered with Green Bank, via the contractor registration process (<u>https://www.cpace.com/Contractor/Get-Started/Contractor-Sign-Up</u>), and remains in good standing with Green Bank.

"Residential Dwelling" shall mean a structure used or occupied, or intended to be used or occupied, in whole or in part, as the home or residence of one or more persons. Residential dwelling shall not include any structure which is:

- A. 1.- A home or residence which is part of public or private institution, if such residence is incidental to provision of medical, geriatric, educational, counseling, religious, or similar services;
- B. 2.-A campground, hotel, motel, extended stay facility, vacation residential facility, boardinghouse, fraternal or social organization, or similar lodgings; and
- C. 3. Primarily used for business, commercial, charitable, not-for-profit, or agricultural purposes.

"Restructuring" means, in the context of any existing Financing Agreement, a Benefited Property Owner

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entering into a new Financing Agreement or any modification of the existing Financing Agreement with the C-PACE <u>capital providerACP</u> (or its successors or assigns) who is a party to the applicable existing Financing Agreement for the purpose of restructuring, amending, restating, or otherwise modifying the existing Financing Agreement and Benefit Assessment, including but not limited to, releasing the existing Benefit Assessment and entering into a new Financing Agreement and filing of a new Benefit Assessment associated with the same Qualifying Project, subject to all other applicable program requirements. **"SIR"** shall have the meaning ascribed to it in Article III Section 3(G).

**"Technical Administrator"** shall mean the entity, selected by Green Bank pursuant to an RFP process, which may conduct technical review as well as provide Green Bank with guidance and consultation in the development and implementation of the Technical Standards and Program Guidelines. The Technical Administrator may also work with contractors to help them develop a building's baseline energy consumption and energy savings estimates for projects.

**"Technical Reviewer"** shall mean an entity which has been approved by and in good standing with Green Bank in accordance with the standard set forth in Appendix J. Technical reviewers may be proposed to Green Bank for approval by Third-Party Capital Providers.<u>ACP.</u> For a list of Technical Reviewers which<u>that</u> are currently approved and in good standing with Green Bank, please visit www.cpace.com/technicalreviewers.www.cpace.com/technicalreviewers.

**"Technical Review Auditor"** shall mean an entity or entities, selected by Green Bank pursuant to an RFP process, which may conduct periodic reviews of the technical review work performed by any Technical Reviewer, the

\_Technical Administrator or the Green Bank to evaluate compliance with the Program Guidelines and Technical Standards.

**"Technical Standards"** shall mean the complete description of energy audit requirements, technical review methodology and standards, and eligible and ineligible measures for C-PACE, attached hereto as Appendix D, as may be amended or modified from time to time by Green Bank in its sole discretion. **"Third Party** 

"<u>Approved</u> Capital Provider" means an entity, other than the Green Bank or any of its subsidiaries, that enters into one or more Financing Agreement(s). In an event of a conflict between this definition and that which is ascribed in the C-PACE Legislation, the C-PACE Legislation shall govern.

-15- "Zero-emission Vehicle Refueling Infrastructure" means infrastructure used to refuel Zero-emission Vehicles.

**"Zero-emission Vehicle"** shall mean a battery electric vehicle, hybrid electric vehicle, range-extended electric vehicle and any vehicle that is certified by the executive officer of the California Air Resources Board to produce zero emissions of any criteria pollutant under all operational modes and conditions. In an event of a conflict between this definition and that which is ascribed in the C-PACE Legislation, the C-PACE Legislation shall govern.

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#### KBRA Removes Watch Developing Status and Affirms Ratings on SHREC ABS 1 LLC, Series 2019-1

NEW YORK (September 21, 2022) – KBRA affirms the ratings on the Class A Notes and Class B Notes for SHREC ABS 1 LLC, Series 2019-1, a solar renewable energy credit (SREC) ABS securitization. On the September 15, 2022, payment date the issuer made a \$10.2 million voluntary prepayment on the note which has resulted in additional credit enhancement for the Class A and Class B Notes. KBRA analysis, taking into consideration the application of this prepayment, indicated that existing credit enhancement for the notes is sufficient to support the affirmed ratings. The notes are current on interest and scheduled principal payments.

The transaction is backed by the proceeds from the sale of solar renewable energy credits, generated under Connecticut Green Bank's Solar Home Renewable Energy Credit ("SHREC") program. Connecticut Green Bank aggregates these SHRECs into annual tranches and sells the tranches to the Utilities at a fixed, predetermined price over a 15-year period.

Click here to view the report. To access ratings and relevant documents, click here.

#### Related Publications

- ABS: SHREC ABS 1 LLC, Series 2019-1 Surveillance Report July 2022
- ABS: SHREC ABS 1 LLC, Series 2019-1 Surveillance Report April 2022
- ABS: SHREC ABS 1 LLC, Series 2019-1 New Issue Report
- ABS: General Rating Methodology for Asset-Backed Securities
- Global Structured Finance Counterparty Methodology

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Disclosures

Further information on key credit considerations, sensitivity analyses that consider what factors can affect these credit ratings and how they could lead to an upgrade or a downgrade, and <u>ESG factors</u> (where they are a key driver behind the change to the credit rating or rating outlook) can be found in the full rating report referenced above.

A description of all substantially material sources that were used to prepare the credit rating and information on the methodology(ies) (inclusive of any material models and sensitivity analyses of the relevant key rating assumptions, as applicable) used in determining the credit rating is available in the Information Disclosure Form(s) located <u>here</u>.

Information on the meaning of each rating category can be located here.

Further disclosures relating to this rating action are available in the Information Disclosure Form(s) referenced above. Additional information regarding KBRA policies, methodologies, rating scales and disclosures are available at <u>www.kbra.com</u>.

#### About KBRA

Kroll Bond Rating Agency, LLC (KBRA) is a full-service credit rating agency registered with the U.S. Securities and Exchange Commission as an NRSRO. Kroll Bond Rating Agency Europe Limited is registered as a CRA with the European Securities and Markets Authority. Kroll Bond Rating Agency UK Limited is registered as a CRA with the UK Financial Conduct Authority pursuant to the Temporary Registration Regime. In addition, KBRA is designated as a designated rating organization by the Ontario Securities Commission for issuers of asset-backed securities to file a short form prospectus or shelf prospectus. KBRA is also recognized by the National Association of Insurance Commissioners as a Credit Rating Provider.



# SHREC ABS 1 LLC, Series 2019-1

Transaction	
Issuer	SHREC ABS 1 LLC
Closing	April 2, 2019
Latest Action Review	July 13, 2022
Payment Frequency	Quarterly
Months Seasoned	53

Transaction Parties Manager / Parent

Trustee

Connecticut Green Bank The Bank of New York Mellon Trust Company, N.A.

# Rating Action Summary

Kroll Bond Rating Agency (KBRA) affirms the ratings on the Class A Notes and Class B Notes for SHREC ABS 1 LLC, Series 2019-1, a solar renewable energy credit (SREC) ABS securitization. On the September 15, 2022, payment date the issuer made a \$10.2 million voluntary prepayment on the note which has resulted in additional credit enhancement for the Class A and Class B Notes. KBRA analysis, taking into consideration the application of this prepayment, indicated that existing credit enhancement for the notes is sufficient to support the affirmed ratings. The data used for this review is as of the September 2022 payment date. As of the date of this report, the notes are current on interest and scheduled principal payments.

The table below displays the current capital structure for the SHREC ABS 1 LLC, Series 2019-1 transaction. This review used information obtained from the transaction parties through the September 2022 distribution period.

	Balance ('000s)		Note	Advance Rate*		KBRA Ratings				
Class	At Closing	Current	Factor	Coupon	At Closing	Current	At Closing	From	То	Action
A	\$36,800	\$20,358	55.3%	5.09%	60.2%	41.9%	A- (sf)	A- (sf) / Watch Developing	A- (sf)	Affirmed
В	\$1,800	\$998	55.4%	7.04%	63.1%	43.9%	BBB- (sf)	BBB- (sf) / Watch Developing	BBB- (sf)	Affirmed
Total	\$38,600	\$21,356								

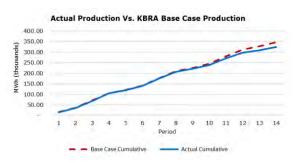
\* the advance rate is calculated using the SREC projected revenues using a P90 production factor

# Transaction Summary and Update

The transaction is backed by the proceeds from the sale of SRECs, generated under Connecticut Green Bank's Solar Home Renewable Energy Credit ("SHREC") program, by the Parent to Connecticut's two investor-owned utility companies (Utilities), The Connecticut Light and Power Company, d/b/a Eversource Energy and United Illuminating Company, under two Master Purchase Agreements ("MPA"), statutorily required by Connecticut General Statutes § 16-245gg. The SRECs are generated from solar photovoltaic systems ("PV Systems") participating in the Parent's residential solar investment program. The Parent aggregates these SRECs into annual tranches (each a "Tranche") and sells the tranches to the Utilities at a fixed, predetermined price over a 15-year period.

The SHRECs in this transaction are generated from 6,788 PV Systems in Tranche 1 and 7,250 PV Systems in Tranche 2. Under the two MPAs, Eversource is required to purchase 80% of the SHRECs created within each tranche and United Illuminating is required to purchase the remaining 20%. The SHREC Tranche Purchase Price for Tranche 1 and Tranche 2 are \$50.00 per SHREC and \$49.00 per SHREC, respectively. The transaction features a liquidity reserve equal to two quarters worth of interest.

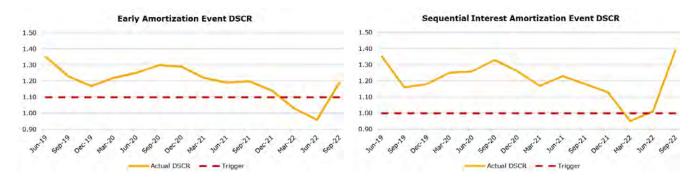
Production performance data is reported on a two-quarter lag to the distribution date. Cumulative production performance is still lower than KBRA's base case production performance.



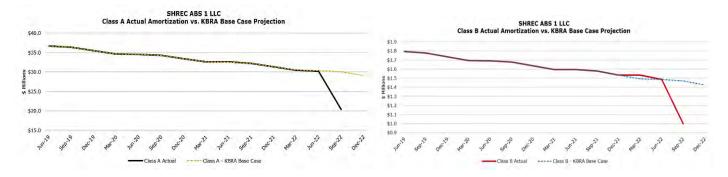
During the last review in June 2022, KBRA maintained the Watch Developing status on the notes due to performance issues related to power outages following Hurricane Henri and Hurricane Ida. Both the Early Amortization Event DSCR (based on collections from the current and previous period) and the Sequential Interest Amortization Event DSCR (based on collections from the current period) had decreased as these hurricanes hit Connecticut in late August 2021 and early September 2021. The hurricanes caused both lower irradiance and part of the power grid to be inoperative for a number of days, which meant that energy credits were not able to be generated by the systems (since they shut off automatically for safety reasons) and sold to the Utilities and consequently resulted in a decrease in collections. As of September 2022, and show in the charts below, the Early Amortization Event DSCR is 1.16x and is now above the trigger level of 1.10x, while the Sequential Interest Amortization Event DSCR is 1.39x and is above the trigger level of 1.00x. As of the September payments **transaction's Early Amortization** Trigger is no longer in effect. Both classes of notes are current on their principal and interest payments.

The Early Amortization Event DSCR is calculated as the ratio of (A) the sum of the available funds for the current and preceding payment date, less the sum of senior fees and expenses for the current and preceding payment date to (B) the sum of the accrued interest and scheduled principal payments (based on the beginning balance of the notes) that the Issuer is required to pay for the current payment date and preceding payment date. The Sequential Interest Amortization Event DSCR is calculated as the ratio of (A) the available funds for the current payment date, less senior fees and expenses for the current payment date to (B) the sum of the accrued interest and scheduled principal payments (based on the beginning balance of the notes) that the Issuer is required to pay on the current payment date.

It should be noted that the New England Power Pool Generation Information System had a reporting error for Q4 2021 production, leading to an incorrect DSCR for that period. This reporting error did not impact KBRA's analysis or rating assessment. The corrected DSCR is shown in the graph below.



The charts below show the actual amortization of the Class A and Class B Notes compared to KBRA's initial base case projections.



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#### **Related Publications**

- <u>ABS: SHREC ABS 1 LLC, Series 2019-1 Surveillance Report</u>
- ABS: SHREC ABS 1 LLC, Series 2019-1 New Issue Report
- <u>ABS: General Rating Methodology for Asset-Backed Securities</u>
- Global Structured Finance Counterparty Methodology
- ESG Global Rating Methodology

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# environmental infrastructure primer

# land conservation





Environmental Markets



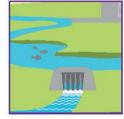
Land Conservation



Parks and Recreation



Agriculture



Water (Coming soon in 2023)



Waste and Recycling (Coming soon in 2024)



# Land Conservation

Primer

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# LAND CONSERVATION

PRIMER

## 1. Introduction

In October of 2021, the Connecticut Green Bank ("Green Bank") developed a plan upon which it was going to engage stakeholders to understand the various components of "environmental infrastructure" – see Figure 1. With its mission to "confront climate change by increasing and accelerating investment into Connecticut's green economy to create more resilient, healthier, and equitable communities," within each component of "environmental infrastructure," the cross-cutting issues of reducing greenhouse gas emissions ("GHG"), increasing climate adaptation and resilience, and enabling investment in vulnerable communities was explored.

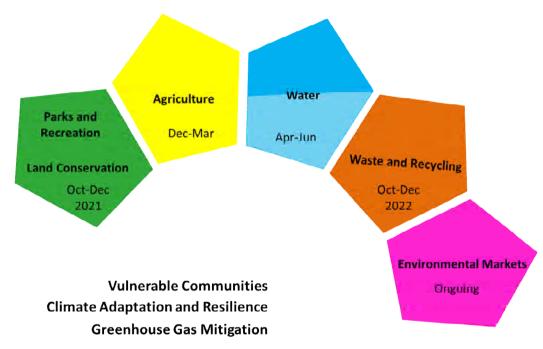


Figure 1. Process to Understand Components of Environmental Infrastructure

This primer reflects the observations, findings, and initial recommendations from the conversations with stakeholders and research conducted on land conservation.

## 2. Overview

On July 6, 2021, Governor Ned Lamont signed Public Act 21-115 "An Act Concerning Climate Change Adaptation" ("the Act") into law. The bipartisan-supported public policy was among the sixty-one (61) recommendations made by the Governor's Council on Climate Change ("GC3"), including a recommendation to expand the scope of the Green Bank beyond "clean energy" to include "environmental infrastructure" (i.e., Recommendation #57).

Since its founding over a decade ago, the Green Bank has focused its efforts on using a limited amount of public resources to mobilize multiples of private investment in Connecticut to

increase and accelerate the deployment of "clean energy" to deliver social and environmental impact – see Figure 2.<sup>1</sup>

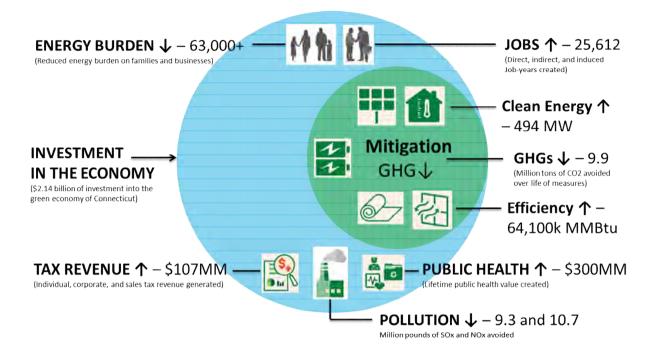


Figure 2. Decennial Impact of the Green Bank with focus on "Clean Energy" Deployment and Mitigation of GHG Emissions

Given its mission, the Green Bank helps the State of Connecticut achieve its ambitious public policy objectives (e.g., GHG emission reductions targets, renewable portfolio standards). In so doing, by 2025, no less than 40 percent of investment and benefits from its programs are to be directed to vulnerable communities.<sup>2</sup>

The Act, expands the scope of the Green Bank beyond "clean energy" to include "environmental infrastructure," and includes the following key provisions:

- <u>Definition</u> "environmental infrastructure" means structures, facilities, systems, services and improvement projects related to (A) water, (B) waste and recycling, (C) climate adaptation and resiliency, (D) agriculture, (E) land conservation, (F) parks and recreation, and (G) environmental markets, including, but not limited to, carbon offsets and ecosystem services;
- <u>Comprehensive Plan</u> requirement for the Green Bank to develop a Comprehensive Plan<sup>3</sup> prior to implementing any programs or initiatives related to "environmental infrastructure";

<sup>&</sup>lt;sup>1</sup> <u>https://www.ctgreenbank.com/wp-content/uploads/2021/12/FY12-FY21-CGB-ImpactReport-web.pdf</u>

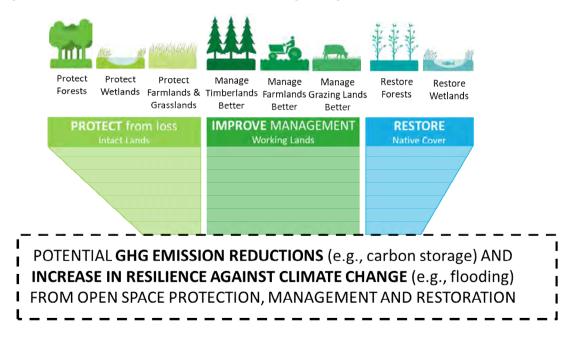
<sup>&</sup>lt;sup>2</sup> "Vulnerable communities" means populations that may be disproportionately impacted by the effects of climate change, including, but not limited to, low and moderate income communities, environmental justice communities pursuant to section 22a-20a, communities eligible for community reinvestment pursuant to section 36a-30 and the Community Reinvestment Act of 1977, 12 USC 2901 et seq., as amended from time to time, populations with increased risk and limited means to adapt to the effects of climate change, or as further defined by DEEP in consultation with community representatives.

<sup>&</sup>lt;sup>3</sup> https://www.ctgreenbank.com/wp-content/uploads/2021/07/3 Comprehensive-Plan FY-2020-and-Beyond Final.pdf

- <u>Reporting</u> inclusion of the Banks Committee and the Environment Committee, alongside the Energy and Technology Committee and Commerce Committee in terms of reporting; and
- <u>Bonding</u> the ability to issue 25-year bonds for "clean energy" and 50-year bonds for "environmental infrastructure" (i.e., no more than the useful life of the projects), supported by the Special Capital Reserve Fund ("SCRF"), for up to 25 years to improve the rating of the bonds issued.

This document attempts to summarize the findings from the research and outreach efforts conducted by the Green Bank<sup>4</sup> on "land conservation" from October 2021 through January of 2022 and includes the following sections: (A) overview, (B) key public policies, (C) market potential, (D) target, (E) funding and financing programs, (F) other programs, (G) stakeholder outreach, (H) findings, (I) opportunities, (J) history of leadership and innovation, (K) references, and (L) definitions.

Nature-based solutions (e.g., land conservation) such as protecting intact lands from loss (e.g., forests), improving the management of working lands (e.g., sustainably certified timberlands), and restoring native land cover, including coastlines, can support the Green Bank's mission by both mitigating the GHG emissions that cause climate change (e.g., forest carbon sequestration) and increasing resilience against the impacts of climate change (e.g., flood protection) – see Figure 3.



#### Figure 3. Nature Based Solutions to Confront Climate Change - Mitigation and Resilience

<sup>&</sup>lt;sup>4</sup> Led by Bryan Garcia (President and CEO) and Ashley Stewart (Consultant)

# 3. Key Public Policies

The following are key public policies that advance "land conservation" in Connecticut, including, but not limited to:

- <u>State Plan of Conservation and Development</u> (CGS 16a-24) is an overarching statement of state policy in matters pertaining to land and water resource conservation and development. The Office of Policy and Management ("OPM") prepares revisions to the State Conservation and Development Plan ("State C&D Plan") on a recurring 5-year cycle and submits it for adoption by the Connecticut General Assembly ("CGA"). Once adopted, the State C&D Plan is then implemented by state agencies whenever they undertake certain actions.<sup>5</sup> The current State C&D Plan (i.e., for 2018-2023), includes the relevant "clean energy" and "environmental infrastructure" items, including, but not limited to:
  - A. <u>Greenhouse Gas Mitigation</u> reducing carbon dioxide emissions in the state consistent with the recommendations of the Connecticut Climate Change Preparedness Plan (i.e., 5.10);
  - **B.** <u>Climate Adaptation and Resilience</u> including developing and deploying innovative energy technologies, and promoting distributed generation and microgrids to provide reliable electrical power or energy-dependent community services during outages and peak demand periods (i.e., 1.12) and minimizing the potential risks and impacts from natural hazards by considering potential impacts of climate change on existing and future development (i.e., 1.13); and
  - C. Land Conservation protecting permanently preserved open space areas, Connecticut Heritage Areas, and archaeological areas of regional and statewide significance (i.e., 4.1), limiting improvements to permanently protected open space areas to those that are consistent with long-term preservation of the natural resource and open space values of the site (i.e., 4.2), expanding the state's open space and greenway network through the acquisition and maintenance of important multi-functional land and other priorities identified in the state's open space plan (i.e., 4.3), encouraging collaborative ventures with municipalities, private non-profit land conservation organizations and other entities to provide a system of appropriately preserved and managed natural areas and resources that allow for a diversity of well-functioning habitats and the sustainable use of resources (i.e., 4.5), and promoting innovative land conservation and banking practices that further local, regional, and state conservation and development objectives, and minimize the need to expand infrastructure to support new development in rural areas (i.e., 4.18).
- <u>Open Space Target</u> (CGS 23-8)<sup>6</sup> establishes a mandate to conserve 21% (i.e., 673,210 acres) of state land area as held by open space land, with 10% from the state (e.g., forests, parks) and not less than 11% from partners (e.g., municipalities, water companies, or non-profit land conservation organizations). The Comprehensive Open

<sup>&</sup>lt;sup>5</sup> Quasi-publics are not subject to this requirement

<sup>&</sup>lt;sup>6</sup> https://law.justia.com/codes/connecticut/2012/title-23/chapter-447/section-23-8/

Space Acquisition Strategy (or "Green Plan")<sup>7</sup> is the comprehensive strategy for achieving the state goal by 2023, which includes priorities for strategic acquisitions of open space for climate change resiliency and preserving open space in perpetuity for state lands with high conservation value.

It should be noted that Connecticut's 2020 Forest Action Plan<sup>8</sup> includes several relevant desired future conditions, including:

- Connecticut will increase the amount of forest protected from development following priority criteria based on core forest areas, connection, Forest Legacy potential, and vulnerability;
- People of Connecticut will understand and value the urban forests as essential parts of healthy urban ecosystems;
- Connecticut forests will support a viable forest products industry that provides marketable products from renewable and diverse forest resources; and
- Management of Connecticut's forests will use the best available scientific information and the best available data as the basis for sound conservation and management decisions.
- 3. <u>Community Investment Act</u> (Public Act 05-228)<sup>9</sup> "An Act Concerning Farm Land Preservation, Land Protection, Affordable Housing and Historic Preservation," also known as the Community Investment Act ("CIA"), CIA provides a dedicated and consistent source of funding for state preservation of open space (Department of Energy and Environmental Protection or "DEEP"), farmland (Department of Agriculture or "DoAg"), historic sites (Department of Economic and Community Development or "DECD"), and affordable housing (Connecticut Housing Finance Authority or "CHFA"). Through a \$40 surcharge on local land recordings (i.e., \$1 to Town Clerk, \$3 to local government, \$10 supplemental income to dairy farmers, and \$26 to State Treasurer), about \$22 MM is raised each year, which is equally distributed in four (4) parts to the priority funding areas.
- 4. <u>Use Value Assessment Law</u> (Public Act 490 or CGS 12-107a-f)<sup>10</sup> passed by the CGA in 1963, allows farm, forest, or open space land to be assessed at its use value rather than its fair market or highest and best use value (as determined by the property's most recent "fair market value" revaluation) for purposes of local property taxation. Without the lower use value assessment, most landowners would have to sell the land because they would not be able to afford the property taxes on farm, forest, or open space land. It must be noted that Public Act 490 allows farmers to continue to farm, and other landowners to continue to own forest and open space land without being forced to sell it to pay the local property taxes. When the legislature passed Public Act 490 in 1963, it included in the law's wording that "it was in the public interest to encourage the

<sup>&</sup>lt;sup>7</sup> <u>https://portal.ct.gov/DEEP/Open-Space/The-Green-Plan</u>

<sup>&</sup>lt;sup>8</sup> <u>https://portal.ct.gov/-/media/DEEP/forestry/2020-Approved-CT-Forest-Action-Plan.pdf</u>

<sup>&</sup>lt;sup>9</sup> https://www.cga.ct.gov/2005/ACT/Pa/pdf/2005PA-00228-R00SB-00410-PA.pdf

<sup>&</sup>lt;sup>10</sup> <u>https://www.cga.ct.gov/current/pub/chap\_203.htm#sec\_12-107a</u>

preservation of farm, forest, and open space land." Studies done across the nation have conclusively proven that property tax revenues generated by farm, forest, or open space land, are far greater than the expenditures by the town to service that land. For example, under the current structure, the residential sector costs a town more to service then the amount of property tax generated from that sector. Thus, farm, forest, and open space land can actually help control and maintain reasonable rates of property taxation for all of a town's taxpayers.

- 5. <u>Ten Mill Program</u> (CGS 12-96) Ten Mill Program was developed in 1913 and required forest landowners to make a 100-year commitment to maintaining land as forest land in exchange for municipalities holding the property at a 10-mill rate and the valuation of the land at evaluation for 50 years after. The Ten Mill program has not added new propertied since the 1970's, however, both programs provide support to landowners that encourages conservation and open space.
- <u>Executive Order 21-3</u> On December 16, 2021, Governor Ned Lamont signed Executive Order 21-3 which calls for 23 actions supporting more than thirty recommendations from the Governor's Council on Climate Change, including several recommendations on working lands: <sup>11</sup>
  - A. <u>Forest Climate Resilience and Mitigation Potential</u> DEEP engagement of stakeholders to ensure Connecticut's forests continue to be resilient against the impacts of climate change and to maximize forest potential to sequester and store carbon in support of Connecticut's GHG emission reduction goals.
  - B. <u>Agriculture Climate Resilience and Mitigation Potential</u> DoAg engagement of stakeholders to ensure Connecticut's working lands and soils continue to be resilient against the impacts of climate change and to maximize forest potential to sequester and store carbon in support of Connecticut's GHG emission reduction goals.
  - C. <u>Climate Resilience Using Nature-Based Solutions on State Properties</u> DEEP and Department of Administrative Services ("DAS") to develop guidance for state agencies to use nature-based solutions for flood and erosion control and stormwater management, integrate coastal marsh migration in state projects in coastal areas, and utilize low impact development and green infrastructure in new state construction and state-funded construction or redevelopment.

In order to identify opportunities to mobilize private investment, it is important to understand the public policy context in which "land conservation" operates. With the focus on the Green Bank's mission (i.e., confront climate change), public policy provides a mechanism to catalyze private investment.

## 4. Market Potential

<sup>&</sup>lt;sup>11</sup> It should be noted that Connecticut is a member of the United States Climate Alliance, and one of the original signatories to the Natural and Working Lands Challenge in 2018 – <u>http://www.usclimatealliance.org/nwlchallenge</u>

The following is the market potential for "land conservation" from the perspective of forest land – see Table 1.

3,205,762 Acres Land in Connecticut						
	1,869,761 Acres Forest Land	1,336,001 Acres Non-Forest Land				
298,994 Acres Protected Core Forests	568,857 Acres Unprotected Core Forest	1,001,910 Acres Non-Core Forest	<b>1,130,000</b> Acres Urban Area	206,001 Acres Other Non- Urban and Non- Forest		

Connecticut's forest products industry contributes at least \$2.1 billion to the state's economy, while forest-based recreation generates approximately \$1.2 billion per year – forest-based employment accounts for 8,200 jobs in Connecticut.<sup>12</sup>

It should be noted that New England is the most forested region in the United States.<sup>13</sup> Approximately 56-61% of Connecticut is forested with approximately two (2) people for every acre of forest land. 191 MMT of carbon is stored in Connecticut's forests, which has increased by 9 MMT over the last decade<sup>14</sup> – approximately 33 MMTCO2 or 3.3 MMTCO2 per year (or nearly 8 percent of annual GHG emissions in Connecticut).<sup>1516</sup> The urban area of Connecticut includes nearly 90% of the population and trees store about 23 MMT of carbon and continue to sequester at the rate of about 750,000 tons per year. If estimates are accurate of carbon sequestered and stored in forests and related soils, then there are about a decade's worth of emission reductions equivalent to 20% of total emissions – see Figure 4.

<sup>&</sup>lt;sup>12</sup> North East State Foresters Association, The Economic Importance of CT's Forest Based Economy 2015.

<sup>&</sup>lt;sup>13</sup> New England Forest Foundation

<sup>&</sup>lt;sup>14</sup> "Forests Sub-Group Final Report 2020" of the Working & Natural Lands Working Group of the Governor's Council in Climate Change (p. 6)

<sup>&</sup>lt;sup>15</sup> Atomic weight of carbon is 12 atomic mass units versus carbon dioxide at 44 because 2 oxygen atoms each weigh 16 atomic units, therefore 1 ton of carbon equals 3.7 tons of CO2 or 1 metric ton of carbon equals 4.1 metric tons of CO2

<sup>&</sup>lt;sup>16</sup> Press Release issued by DEEP on September 7, 2021 entitled "CT Not on Track to Meet Statutory Emissions Targets, New Greenhouse Gas Inventory Finds"

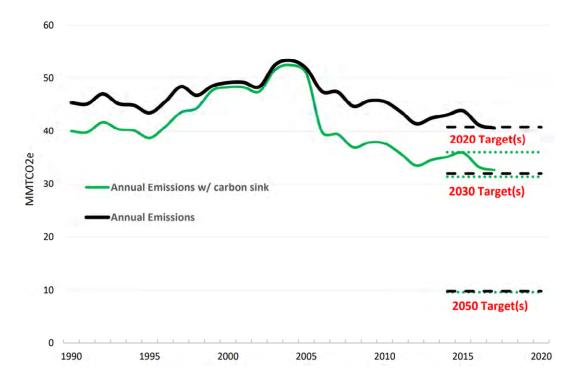


Figure 4. Connecticut Sector-Wide GHG Emissions and Future Emissions Targets, including Carbon Sink Accounting

To retain the multiple benefits that forests provide such as carbon storage, biodiversity, clean water, clean air, resiliency, public health, wood products for human use, and green infrastructure, there is a "no net loss of forest" goal. Of Connecticut's forest lands, 71% is owned by private individuals, corporate landholders (e.g., water companies), and nonprofit land trusts, with 17%, 11% and 1% of the remaining forest land owned by the state, municipalities, and federal government, respectively.

From the perspective of wetlands, there are approximately 220,000 acres in Connecticut representing about 7% of land within the state, which includes tidal and inland wetlands. Of the 91 miles of coastline, tidal wetlands are the most vulnerable natural resource in the face of climate change and rising sea levels.<sup>17</sup> These resources are among the most biologically productive resources in the world, provide habitat for wildlife, improve water quality by trapping sediments and filtering contaminants, protect shorelines, and are a source of carbon sinks. Inland wetlands, including the 5,800 miles of rivers and 65,000 acres of lakes,<sup>18</sup> are key resources in terms of stormwater retention and rivers and ponds provide water retention to mitigate flooding, and they are essential to surface and underground fresh water, provide critical habitat to wildlife, and are a source of carbon sinks. As noted above, wetlands provide a number of ecosystem services, including provision services (e.g., food, water), regulating services (e.g., carbon sequestration, moderation of extreme storms), support services (e.g., habitat, biodiversity), and cultural services (e.g., recreation, tourism, physical and mental health).

<sup>&</sup>lt;sup>17</sup> "Wetlands Sub-Group Report 2020" of the Working & Natural Lands Working Group of the Governor's Council on Climate Change (p. 6)

<sup>&</sup>lt;sup>18</sup> "Rivers Sub-Group Report 2020" of the Working & Natural Lands Working Group of the Governor's Council on Climate Change (p. 4)

# 5. Target

The following is a breakdown of the "land conservation" target outlined in the CGS 23-8 – see Table 2.

3,205,762 Acres Land in Connecticut								
<b>320,576 Acres</b> State Goal (@10%)					2,532,552 Acres			
175,000	36,000	46,000	63,500	84,000	99,000	66,000	104,000	No
Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Land
State	State	Wildlife	left to	Cities	Water	Non-	left to	Conservation
Forests <sup>19</sup>	Parks <sup>20</sup>	Area	achieve	and	Companies	Profit	achieve	(@79%)
		and	target	Towns	-	Land	target	
		Other <sup>21</sup>	-			Trusts	-	

#### Table 2. Progress Towards the Open Space Land Target in Connecticut

Of the open space goal of 21% by 2023 (i.e., 673,210 acres), approximately 510,249 acres are conserved (as of December 31, 2019), or 76% of the open space goal comprising 261,806 acres of state (i.e., 82% of the 10% state target) and 248,953 acres of partner (i.e., 71% of the partner target) – leaving an estimated 162,451 acres of open space left to achieve.

If the average land acquisition cost is \$9,000 per acre, then approximately \$1.5 billion of public and private investment in land conservation would be needed to acquire and protect over 160,000 acres of open space in order to achieve the 21% target.<sup>22</sup>

## 6. Funding and Financing Programs

The following is an alphabetical breakdown of the current funding (i.e., grants) programs in support of "land conservation" in Connecticut, including, but not limited to:

Agriculture Conservation Easement Program ("ACEP") – protects the agriculture viability and related conservation values of eligible land through agricultural land easements that help private and tribal landowners, land trusts, and other entities such as state and local governments protect croplands and grasslands on working farms and ranches by limiting non-agricultural uses of the land through conservation easements. Under the Land Easement component, the Natural Resources Conservation Service ("NRCS") of the USDA, may contribute up to 50 percent of the fair market value of the agricultural land easement, and up to 75 percent where NRCS determines that grasslands and special environmental significance will be protected. Projects must have non-federal matching funds in hand.

<sup>&</sup>lt;sup>19</sup> 33 locations

<sup>&</sup>lt;sup>20</sup> 107 locations

<sup>&</sup>lt;sup>21</sup> Including wildlife management areas, fish hatcheries, flood control, natural area preserve, water access, wildlife sanctuaries, and other

<sup>&</sup>lt;sup>22</sup> It should be noted that although the definition of Open Space Land under CGS 12-107(b)(3) includes "...and not excluding farmland...", that farmland was not included in the progress towards the open space target analysis above. If it were to be included, then it would demonstrate more progress towards the protected land goal bringing the state closer to the 21% goal, but still short of the goal. The use of "open space land" refers to public recreational use when farmlands aren't generally accessible to the public.

- <u>Charter Oak Open Space Trust Account</u> a defunct program for several years now, which included two accounts to fund new open space purchase programs, including 40% to the Charter Oak State Parks and Forest Account for state acquisition of open space and watershed land, and 60% to the Charter Oak Open Space Grant Program to provide grants to municipalities and nonprofit land conservation organizations to acquire open space or watershed protection land.
- <u>Community Forest Program</u> ("CFP") is a competitive grant program through the US Forest Service that provides financial assistance to tribal entities, local governments, and qualified conservation non-profit organizations to acquire and establish community forests that provide community benefits. Community benefits include economic benefits through active forest management, clean water, wildlife habitat, educational opportunities, and public access for recreation.
- <u>Connecticut Farmland Preservation Program</u> (CGS 7-131d) administered by DoAg to leverage state, local, and private funds to permanently protect farms. Initiated in 1998, is funded by state bonding and the CIA, and has four (4) public policy priorities – open space (i.e., DEEP), agriculture preservation (i.e., DoAg), historic preservation (i.e., DECD), and affordable housing (i.e., CHFA).

Since 1978, DoAg has permanently protected 386 farms on 46,142 acres by awarding \$128 MM in Farmland Preservation Program grant funds (or \$2,778/acre).<sup>23</sup> Current law allows the Commissioner the ability to pay up to \$20,000 per acre, subject to appraisal.

**Connecticut Open Space and Watershed Land Acquisition Grant Program** ("OSWA") (CGS 7-131d) – a matching grants program to provide financial assistance to municipalities, land trusts, and water companies to acquire open space and watershed lands. Initiated in 1998, is funded by state bonding and the CIA, provides financial assistance to municipalities and nonprofit land conservation organizations to acquire land for open space, and to water companies to acquire land to be classified as Class I or Class II water supply property, and is administered by DEEP to leverage state, local, and private funds to create a cooperative open space acquisition program.

Since 1998, DEEP has awarded over \$150 MM in open space grant funds to protect over 41,000 acres (or \$3,659/acre).

 <u>Connecticut Wetland Mitigation and In Lieu Fee Program</u> ("ILF")<sup>24</sup> – Per the <u>Clean Water Act (CWA)</u>—landmark environmental protection legislation passed in 1972 that applies to all waters of the United States—parties seeking to construct projects ("permittees") that will have an impact on wetlands must take all reasonable measures to avoid such impacts, to minimize unavoidable impacts, and to provide mitigation for the remaining unavoidable impacts. On the one hand, permittees could themselves be held responsible for taking on wetland and/or stream mitigation projects, but studies have shown that many mitigation sites in southern New England have a high

 <sup>&</sup>lt;sup>23</sup> Status of State PACE Programs by the American Farmland Trust and USDA's Farmland Information Center
 <sup>24</sup> <u>https://ct.audubon.org/conservation/in-lieu-fee-program</u>

failure rate because they fail to meet performance standards (Minkin and Ladd, 2003). For this reason, the National Audubon Society, Inc., through its state office, Audubon Connecticut, became the "sponsor" of a Connecticut "In Lieu Fee" program as of 2013. The program allows permittees to pay a fee *in lieu of* taking on mitigation themselves. Instead, local organizations like land trusts, and other environmental nonprofits, are given the opportunity to apply for and receive grant funding to protect and enhance wetlands.

- Forest Legacy Program ("FLP") DEEP partners with the US Forest Service ("USFS") to implement the FLP. The FLP helps to identify and conserve environmentally important forests. The program protects working forests, those forests that protect water quality and provide habitat, forest products, opportunities for recreation and other public benefits. The program encourages and supports acquisition of conservation easements. Conservation easements are legally binding agreements transferring a negotiated set of property rights from one party to another, without transferring property ownership. Most FLP conservation easements restrict development, require sustainable forestry practices, and protect various environmental values. There are also limited instances under the program where properties are purchased outright for their conservation values. In both instances, the federal government may fund up to 75% of program costs, with at least 25% coming from private, state or local sources.
- Land and Water Conservation Fund ("LWCF") LWCF is a federal program that was established by an Act of Congress in 1965 to provide funds and matching grants to federal, state and local governments for the acquisition of land and water, and easements on land and water, for the benefit of all Americans. The main emphases of the fund are recreation and the protection of national natural treasures in the forms of parks and protected forest and wildlife areas. In August 2020, the President Trump signed the Great American Outdoors Act into law, which requires that the LWCF be funded at \$900 million yearly, a significant increase from previous funding levels.
- Long Island Sound Futures Fund National Fish and Wildlife Foundation ("NFWF) and the Long Island Sounds Study's ("LISS") Long Island Sound Futures Fund ("LISFF") provides grant funding for projects that support the restoration and improvement of the health of the Sound. Since 2005, the LISFF has invested \$32 MM in projects (i.e., grants ranging from \$50,000 to \$1 MM) to improve water quality, restore the natural environment, and engage and inform communities about the importance of a healthy Long Island Sound.
- <u>Recreation and Natural Heritage Trust Program</u> ("RNHT") administered by DEEP, is the main program to purchase or conserve state lands for conservation and public use or benefit.

Since 1998, the State Bond Commission has approved \$177 MM to go towards the RNHTP to protect over 49,000 acres (or \$3,612/acre).

 <u>Regional Greenhouse Gas Initiative</u> ("RGGI") – funded primarily by the proceeds from the sale of RGGI allowance proceeds by energy producers, RGGI funds have been used at times to support forest conservation. In 2020, DEEP invested nearly \$1 MM of RGGI funds to support grant programs through the CT Urban Forest Council, UConn, and DEEP's Urban Forestry program to support urban tree planting, improving the management and maintenance of existing trees and/or wooded areas, local educational, outreach or planning efforts, and community organization capacity-building that will lead to improvements in local tree canopy cover with an emphasis on environmental justice communities and tangible climate change benefits.<sup>25</sup>

The following is a breakdown of the current financing (i.e., loans) programs that could support land conservation in Connecticut:

State Revolving Fund ("SRF") – since 1988, Connecticut has received over \$650 MM from the federal government through the Clean Water SRF, while providing cumulative assistance (i.e., including state investment) of \$2.8 billion of investment primarily in centralized wastewater treatment infrastructure (in comparison to stormwater, energy conservation, and water conservation infrastructure).<sup>26</sup> With the passage of the bipartisan supported "Investing in Infrastructure and Jobs Act" ("IIJA" or Bipartisan Infrastructure Law "BIL") in November of 2021, there were additional resources allocated to the SRF for water quality and drinking water (i.e., \$445 million).<sup>27</sup> SRF could be used to invest in green infrastructure projects (e.g., land conservation, nature-based solutions) for both mitigation and adaptation.

Accessing funding or financing resources for land conservation in Connecticut can be difficult, as evidenced by the unlikelihood of Connecticut achieving the open space land target (i.e., 21% by 2023). Identifying new mechanisms to access additional funding and financing resources, especially those that seek to unlock more private capital investment, could provide a catalyst to increase and accelerate investment in land conservation in Connecticut. The IIJA presents an opportunity to access funding and financing resources through formula or competitive grants for "land conservation".

#### 7. Other Programs

The following are other items of note with respect to "land conservation":

- <u>No Child Left Inside</u> launched in 2006, *No Child Left Inside<sup>®</sup>* is a promise to introduce children to the wonder of nature – for their own health and well-being, for the future of environmental conservation, and for the preservation of the beauty, character and communities of the state.
- <u>Passport to the Parks</u> beginning in 2018, Connecticut offered all residents with Connecticut license plates on their vehicles free entry and parking at all state parks and beaches. Connecticut wants to make state parks, forests, trails, historic sites and beaches more available to residents so they can enjoy the many attractions and beauty they offer.

<sup>&</sup>lt;sup>25</sup> "Policy on Resilient Forests for Connecticut's Future (PRFCT Future)" (December 14, 2021)

<sup>&</sup>lt;sup>26</sup> Including Title II and VI funds – <u>https://www.epa.gov/sites/default/files/2021-02/documents/ct.pdf</u>

<sup>&</sup>lt;sup>27</sup> <u>https://www.whitehouse.gov/wp-content/uploads/2021/08/CONNECTICUT\_The-Infrastructure-Investment-and-Jobs-Act-State-Fact-Sheet.pdf</u>

- <u>State Natural Heritage, Open Space & Land Acquisition Review Board</u> is an independent advisory group of volunteers appointed by the Governor and leadership within the CGA under CGS 7-131(e) to oversee OWSA and RNHT programs.
- Land Registry Public Use and Benefit Land Registry ("Land Registry") pilot portal allows users to browse state lands, determine property ownership, and research, view, and download copies of parcel information, including deeds, surveys, and land management plans. The Land Registry is valuable for many reasons. It provides a public record and notice of title, conservation purpose, funding amounts, and land management plans, when applicable. Furthermore, the Registry can potentially expand public access to open space lands purchased with State conservation funds by highlighting their locations across Connecticut.

#### 8. Stakeholder Outreach

In an effort to understand the public policy and marketplace context for "land conservation" in Connecticut, the Green Bank met with many organizations.<sup>28</sup>

These 24 organizations primarily represent non-profit organizations but include public and forprofit organizations as well.

The objectives of these one-hour conversations included:

- <u>Introductions</u> to get a better understanding of the mission and initiatives of the various public, nonprofit, and for-profit stakeholders operating within the "land conservation" space, and to introduce the Green Bank;
- <u>Environmental Infrastructure</u> inform the various stakeholders about the "environmental infrastructure" policy,<sup>29</sup> process the Green Bank is pursuing to develop a Comprehensive Plan, and to elicit discussion on the following areas:
  - **<u>Relevance</u>** how relevant "environmental infrastructure" and its components (e.g., land conservation) are to the stakeholder's mission and initiatives;
  - <u>Policies and Targets</u> what local, state, and federal policies (e.g., Community Investment Act), including plans (e.g., Green Plan) are important from the stakeholder's perspective, and what targets (e.g., 21% open space land by 2023) are they seeking to achieve;

<sup>&</sup>lt;sup>28</sup> Land Conservation – American Forest Foundation, Audubon Connecticut, Connecticut Audubon, Connecticut Land Conservation Council, Conservation Finance Network, DEEP, Ecosystem Investment Partners, Goldman Sachs, Highstead, New England Forestry Foundation, New England Society of American Foresters, Quantified Ventures, Save the Sound, The Nature Conservancy, TNC's Nature Vest Program, and Yale Forest School

<sup>&</sup>lt;u>Parks and Recreation</u> – Connecticut Forest and Parks Association, Connecticut Greenways Council, Connecticut Recreation and Parks Association, DEEP, Green Eco Warriors, Keney Park Sustainability Project, Sierra Club, Trust for Public Lands, and Urban Resources Initiative.

<sup>&</sup>lt;sup>29</sup> Public Act 21-115 – An Act Concerning Climate Change Adaptation"

- <u>Metrics</u> what are the key metrics stakeholders believe are important in terms of monitoring and evaluating success from investments in "environmental infrastructure" improvements and "land conservation";
- <u>Vulnerable Communities</u> how does the stakeholder's organization think about the impacts that must be addressed from climate change to build the resilience of vulnerable communities; and
- **<u>Stakeholder Identification</u>** who else should the Green Bank meet with on the topic.

From these conversations, the Green Bank was able to develop a better understanding as to the role it might play in terms of financing "land conservation" from the perspective of its mission – to confront climate change.

#### 9. Findings

Based on the various meetings with public, nonprofit, and private stakeholders, the following are key findings with respect to land conservation (it should be noted that additional findings have been generalized in the footnote):<sup>30</sup>

Consistent with Mission to Confront Climate Change – land conservation reduces GHG emissions (e.g., preventing forest conversion to development, better forest management practices, substituting wood for steel in building materials, and storing carbon in new construction) (see Table 3) and increases resilience (e.g., flood protection, stormwater management), and therefore is consistent with the Green Bank's mission to "confront climate change" through the protection, management, and/or restoration of open space land (e.g., forests, wetlands, grasslands, farmlands, timberlands, grazing lands) – see Figure 5.

Table 3. Carbon Emissions, Foregone Sequestration, Total Opportunity from Avoided Deforestation (MMTCO2e/Year/Acre)<sup>31</sup>

	Carbon		Foregone		Total		
	Emis	sions	Sequestration		Sequestration Opportur		tunity
	1990s	2000s	1990s 2000s		1990s	2000s	
СТ	0.35	0.42	0.08	0.09	0.43	0.51	

<sup>&</sup>lt;sup>30</sup> Additional findings – land conservation and nature-based solutions are infrastructure, adaptation is community-centered and important for community engagement, Connecticut is along important ecosystem migration routes for wildlife, Nature Vest is a "green bank," policies are important for performance-based environmental outcomes (i.e., pay for performance) environmental markets requires lawyers (i.e., public policy) and scientists (i.e., pre and post project impacts)

<sup>&</sup>lt;sup>31</sup> Williams CA, Hasler N, Xi L (2021) "Avoided Deforestation: A Climate Mitigation Opportunity in New England and New York", a report prepared for the United States Climate Alliance Natural and Working Lands Research Program, pp.1-42.

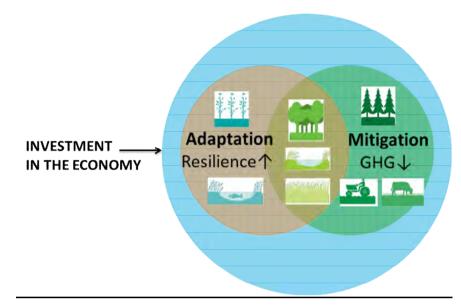


Figure 5. Impact of Investment in Land Conservation – Increase Resilience and Reduce GHG Emissions

 <u>Must Access Federal Resources</u> – leverage Green Bank assets to successfully access formula grant or competitive solicitations from federal sources that can be efficiently and effectively invested by state and local partners (e.g., land trusts, non-profits, etc.).

It should be noted that although the Green Bank can't access the SRF,<sup>32</sup> that \$445 million of additional SRF resources will be received by Connecticut over five years through the IIJA – and SRF resources can be directed towards green infrastructure projects (e.g., land conservation, nature-based solutions) as demonstrated by TNC and Nature Vest.<sup>33</sup>

- Money is Not Always the Problem as important as local, state, federal, and private funding and financing resources are, sometimes not having enough people, having onerous processes, an inability to speak to or monetize co-benefits (e.g., job creation, resilience), or lack of understanding of important tools (e.g., conservation finance) can substantially inhibit progress towards increasing investment in land conservation. There is also an opportunity to prioritize and engage with a broader representation of Connecticut communities in addressing environmental infrastructure that has multiple benefits it will be important to identify opportunities that enable investment in projects that provide numerous outcomes.
- <u>Need Mechanisms to Monetize Environmental Markets</u> stakeholders recognize that environmental markets (e.g., carbon offsets, ecosystem services, resource certification) may be able to provide additional sources of revenue (e.g., from compliance, voluntary, and/or other markets) to finance projects (e.g., proceeds from revenue bonds). For example, carbon stocks are generally higher in older forests, while

<sup>&</sup>lt;sup>32</sup> Per Public Act 21-115

<sup>&</sup>lt;sup>33</sup> Cumberland Forest Project conserving 253,000 acres of conservation easement along Central Appalachia from Kentucky to Virginia. <u>https://www.nature.org/en-us/magazine/magazine-articles/cumberland-forest-project/</u>

the amount of carbon stock added in a given year is higher in younger forests.<sup>34</sup> In Connecticut, the cost of climate mitigation from avoided deforestation is between \$10 (i.e., in parts of Litchfield County) to over \$500 (i.e., in all of Fairfield County) per MTCO2e.<sup>35</sup> Successful projects require public recognition of environmental commodities (i.e., through public policy and compliance markets, procurement, or other means), significant potential (i.e., private landowners of forests with strong GHG mitigation and/or resilience potential), credible partners (e.g., science-based nonprofit conservation organizations, credit-worthy long-term purchasers of carbon offsets), and reliable monitoring and evaluation.

 <u>Impact Metrics</u> – the following is a "high level" breakdown of the types of metrics appropriate for land conservation – see Table 4.

#### Table 4. Relevant Metrics Identified by Stakeholders on Land Conservation

<sup>&</sup>lt;sup>34</sup> Williams CA, Hasler N, Xi L (2021) "Avoided Deforestation: A Climate Mitigation Opportunity in New England and New York",

a report prepared for the United States Climate Alliance Natural and Working Lands Research Program, pp.1-42. <sup>35</sup> Ibid (21)

0	Strengthened municipal
	plans that prioritize "no net
	loss of core forests"
0	
	land conservation and
	greenspace development
	viewed as a community
	necessity and essential
	component of sustainable
	•
	community
0	Health benefits
0	Wildlife habitat
0	Timber for building or wood
	products that store carbon
	for decades
	IUI UELAUES

It is important to note that effective measurement of data on the benefits of environmental commodities (e.g., carbon offsets, ecosystem services) is vital to supporting compliance, voluntary, and other markets (e.g., FSC certification, Connecticut Grown, climate-smart practices).

Vulnerable Communities – not enough nature-based solutions and green spaces in urban communities, which results in investments in gray infrastructure (e.g., wastewater treatment plants) vs. green infrastructure (e.g., nature-based solutions, urban tree canopy cover, parks) thereby increasing, for example, energy usage, urban heat island effects, and air pollution which disproportionately impacts vulnerable communities as a result of climate change. Inequitable access to the benefits of open space results in compounded challenges in vulnerable communities. Benefits include improved health, better air and water quality, and increase in quality of life connected to open space and natural spaces. Increase in development, especially poorly planned development, leads to greater demand on gray infrastructure, which adversely impacts vulnerable communities (e.g., flooding, pollution).

These are the key findings from the stakeholders on land conservation.

#### 10. Opportunities

The following is a list of opportunities for consideration by the Green Bank given the broad categories of information and data, environmental markets and conservation finance, funding and financing sources, and other potential opportunities:

 Information and Data – as a foundation, access to high quality information is important from which to base investment decisions. Stimulating further investment in land conservation may require the Green Bank supporting research (e.g., economic value of land conservation) to identify opportunities that advance public policy to create investment opportunities that support target outcomes (e.g. nature-based solutions, urban climate mitigation and resilience) through community-led initiatives. The following is a breakdown of opportunities for consideration with respect to information and data:

- A. <u>Climate Change Vulnerability Index</u> ("CCVI")<sup>36</sup> including Social Vulnerability ("SV") mapping created for Resilient Connecticut,<sup>37</sup> is an index-based spatial model assembled by the Connecticut Institute for Resilience and Climate Adaptation ("CIRCA") that identifies community vulnerability to flood, wind, and heat-related impacts of climate change. The CCVI characterizes areas based on an equation using sensitivity<sup>38</sup> plus exposure<sup>39</sup> minus adaptive capacity.<sup>40</sup> The CCVI can be used to assist with resiliency planning and to make educated decisions about future development and green infrastructure investment. The Green Bank should consider adopting the CCVI, and/or SV mapping, as a component of the "vulnerable communities" definition to (1) identify areas of investments in infrastructure.
- B. <u>Pipeline Assessment</u> work with CIRCA and DEEP to continuously build and assess the pipeline of potential GHG emission mitigation and climate change adaptation and resilience projects (e.g., type, size, scope, estimated impact, location) related to land conservation and nature-based solutions (e.g., coastal wetlands, forests).
- C. <u>Yale School of the Environment</u> Yale School of the Environment, and its work supporting conservation finance (e.g., partnership with the Conservation Finance Network, Tools for Engaging Landowners Effectively or "TELE")<sup>41</sup> presents a unique opportunity to continuously inform and develop conservation finance practitioners in Connecticut. The Green Bank should consider providing local stakeholders with access to information (e.g., promoting Conservation Finance Network) and professional development opportunities (e.g., sponsorship of bootcamps on conservation finance) to accelerate the advancement and practice of conservation finance in Connecticut.
- D. Land Value, Carbon and Ecosystem Services Potential knowing the average cost of acquiring land (i.e., \$ per acre), including those open space lands that are inland, as well as along coasts and rivers, and the carbon storage and sequestration and ecosystem service value and potential of such lands, will help the Green Bank determine how the investment of Green Bank funds while mobilizing private investment can maximize GHG emissions reduced, and resiliency against climate change increased. The Green Bank should consider supporting or conducting such a study to understand the baseline potential for nature-based solutions to confront climate change in Connecticut.

<sup>&</sup>lt;sup>36</sup> <u>https://resilientconnecticut.uconn.edu/wp-content/uploads/sites/2761/2021/10/CCVI-Fact-Sheet-2.pdf</u>

<sup>37</sup> https://resilientconnecticut.uconn.edu/resources/

<sup>&</sup>lt;sup>38</sup> The degree to which a built, natural, or human system will be impacted by changes in climate conditions.

<sup>&</sup>lt;sup>39</sup> The degree of the stress that certain asset is going through with climate variability. This includes changes such as the magnitude and frequency of extreme events.

<sup>&</sup>lt;sup>40</sup> The ability of a system to adjust to changes, manage damages, take advantage of opportunities, or cope with consequences.

<sup>&</sup>lt;sup>41</sup> <u>https://www.engaginglandowners.org/</u> - TELE is a project of the Sustaining Family Forests Initiative, which is a collaboration between the <u>Family Forest Research Center</u>, the <u>U.S. Forest Service</u>, the <u>Center for Nonprofit Strategies</u>, and the <u>Yale School of</u> <u>the Environment</u>, aimed at gaining and disseminating comprehensive knowledge about family forest owners throughout the United States.

- E. <u>Global Warming Solutions Act</u> as recommended by the Policy on Resilient Forests for Connecticut's Future ("PRFCT"), support advocacy efforts to amend Public Act 08-98 to include definitions for "carbon sink" and "negative emissions", and annual monitoring and reporting of CO2 sequestered, and carbon stored through biological processes alongside the data reported on the transportation, electricity, and other sectors.
- Environmental Markets and Conservation Finance in terms of identifying potential carbon offset and/or ecosystem services revenue streams within compliance and voluntary markets that can support financing of land conservation projects, the following is a breakdown of opportunities for consideration with respect to environmental markets and conservation finance. It should be noted that there is an important role for public policy and government to encourage the creation of environmental value through measurable outcomes-based performance.
  - A. <u>Performance-Based Land Conservation</u> whether it be forest carbon markets within compliance (e.g., California cap-and-trade program)<sup>42</sup> or voluntary (e.g., Amazon purchasing offset credits) markets, or ecosystem services markets for "pay for performance" restoration projects (e.g., reducing nitrogen discharge in rivers in Maryland), producing and selling measurable benefits can generate revenues to support private investment in land conservation projects.
  - B. <u>Conservation Finance Policy</u> modelled after clean energy policy in Connecticut,<sup>43</sup> or passed Senate Bill 348 (i.e., "Conservation Finance Act" in Maryland), consider "pay for performance" conservation finance policies in Connecticut that reward private investment in green and blue infrastructure projects that deliver measurable and verified environmental outcomes (e.g., carbon offsets, ecosystem services). It is important to put value on the land (e.g., forest carbon, forest certification) instead of always taking it off the land (e.g., timber) by implementing floor prices, guarantees, and hosting auctions for the sale of ecosystem services, allocating public funds for development of investment ready nature-based solutions for land and sea, providing catalytic capital for blended finance.

For example, research conducted by Earth Economics for Audubon Connecticut, calculated the ecosystem services value of the East River Marsh as the following – see Table  $5.^{44}$ 

Table 5. Annual, per Acre	Benefits from the East River Marsh
---------------------------	------------------------------------

Benefit	Low Marsh	High Marsh
Resilience		

<sup>&</sup>lt;sup>42</sup> <u>https://ww2.arb.ca.gov/our-work/programs/compliance-offset-program/arb-offset-credit-issuance</u>

<sup>&</sup>lt;sup>43</sup> Zero and low emission renewable energy credit programs (i.e., "ZREC" and "LREC") provided performance-based incentives per MWh of Class I renewable energy produced to support Connecticut's implementation of its renewable portfolio standard ("RPS").

<sup>&</sup>lt;sup>44</sup> East River Marsh – Preserving March Resilience for Coastal Communities by Earth Economics for Audubon (2021)

Annual Total	\$13,951	\$26,350
Recreation	\$382	\$382
Aesthetic Value	\$952	\$952
Community		
Water Quality	\$2,003	\$2,003
indisitat Falais	\$2,803	\$2,803
Habitat Value	\$1,232	\$1,232
Existence Value <sup>45</sup>		\$1,748
Carbon Sequestration	\$2,203	\$4,047
Environment		
Storm Protection	\$5,872	\$14,680
Flood Protection	\$506	\$506

- C. <u>Forest Carbon Market Partnerships</u> partner with land conservation nonprofit organizations (e.g., American Forest Foundation, TNC-Nature Vest, New England Forestry Foundation, NCx) to invest Green Bank capital (i.e., debt and/or equity) into structures (e.g., Family Forest Carbon Program, Exemplary Forestry Investment Fund) that support small landowner participation in forest carbon markets and other ecosystem services in Connecticut (e.g., Pawcatuck Borderlands, Quabbin Corridor, and Berkshire Wildlife Linkage).<sup>464748</sup> Consider adopting or developing a Verra standard for forest carbon offsets.<sup>49</sup>
- 3. <u>Funding and Financing Sources</u> identifying additional funding (i.e., grants) and financing (e.g., loans) that can increase and accelerate investment, the following is a breakdown of opportunities for consideration with respect to funding and financing of land conservation:
  - A. <u>Green Liberty Bonds</u> leverage the strength of the Green Bank balance sheet, with the award-winning climate bond structure of the Green Liberty Bonds modelled after the War Bonds of the 1940's, to support investments in land conservation:
    - i. <u>Pilot Revolving Loan Fund for Buy-Protect-Sell</u> modelling the Conservation Fund's successful \$150 MM green bond issuance in 2019 (i.e., 10-year rated A3 by Moody's), which created the Working Forest Fund,<sup>50</sup> working with DEEP, DoAg, and nonprofit land conservation

<sup>&</sup>lt;sup>45</sup> Existence value if the value that people place on knowing certain ecosystems or species exist, even if they never plan to use or benefit from those ecosystems or species in any direct way.

 <sup>&</sup>lt;sup>46</sup> <u>https://www.forestfoundation.org/what-we-do/increase-carbon-storage/family-forest-carbon-program/</u>
 <sup>47</sup> https://newenglandforestry.org/learn/initiatives/efif/

<sup>&</sup>lt;sup>48</sup> "A Safe Harbor for Nature: New England's Resilient and Connected Network of Lands" by TNC.

<sup>&</sup>lt;sup>49</sup> <u>https://verra.org/worlds-most-widely-used-standard-for-carbon-offset-credits-strengthened-to-advance-forest-preservation-and-restoration/</u>

<sup>&</sup>lt;sup>50</sup> The Working Forest Fund invests green bond proceeds to buy the most at-risk private forests. Once it owns the forest, it protects the land (i.e., easement), develops sustainable harvesting, wildlife, and habitat restoration plans, and then resells the land to private or public buyers to repay the loan. This fund has permanently conserved 500,000 acres, permanently storing over 210 MMTCO2e.

organizations, provide loans to land trust to help them move quickly to permanently protect critical open space from development.

**ii.** <u>Infrastructure Modernization</u> – working with DOAg, to identify opportunities to invest in forestry industry infrastructure modernization projects (e.g., portable mills) that would support climate-smart practices and products to develop and grow in the Connecticut marketplace.

From research conducted by the Green Bank, it can be seen that retail investors in bonds are interested in land conservation, including citizens who are also interested in investing in rooftop solar and home energy efficiency – see Figure 6.

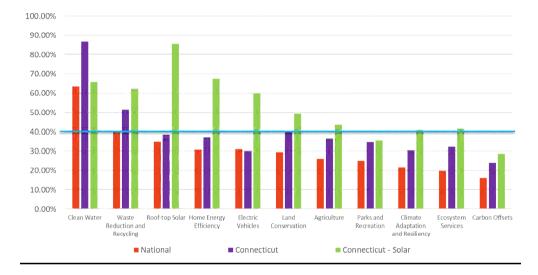


Figure 6. Retail Investor Use of Proceed Interest in Clean Energy and Environmental Infrastructure

B. Partnership for Climate-Smart Commodities – working with UCONN and DoAg, UCONN submitted a \$50 MM proposal, that would have been matched by a \$25 MM Green Liberty Bond, through the \$1 billion competitive solicitation of the United States Department of Agriculture's ("USDA") Commodity Credit Corporation (i.e., USDA-NRCS-COMM-22-NOFO0001139) in response to the climate crisis by supporting actions within the agriculture sector to produce climate-smart commodities.<sup>51</sup> As the lead primary applicant, UCONN would support producers adopt and sustainably implement climate-smart practices, and as the co-lead, the Green Bank, with its expertise from the Residential Solar Investment Program (see Figure 9), would adapt the clean energy model to climate-smart agriculture (see Figure 10). Included with the proposal is \$5 MM for performance-based incentives based on certified and verified carbon offsets. The project submitted by UCONN, in the end, wasn't supported by the USDA. However, DoAg subsequently released a \$14 MM grant program in support of climate smart agriculture in Connecticut.

<sup>&</sup>lt;sup>51</sup> Defined as an agricultural commodity that is produced using agriculture (i.e., farming, ranching, or forestry) practices that reduce greenhouse gas emissions or sequester carbon.

#### Figure 7. Residential Solar Investment Program – From SHRECs to Green Liberty Bonds

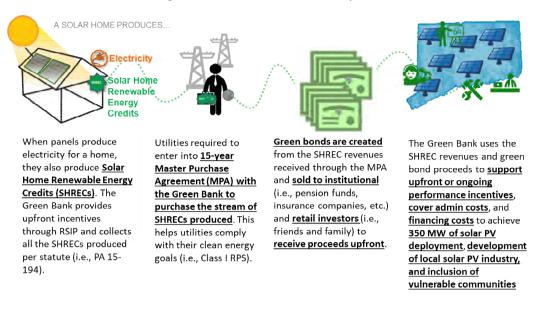
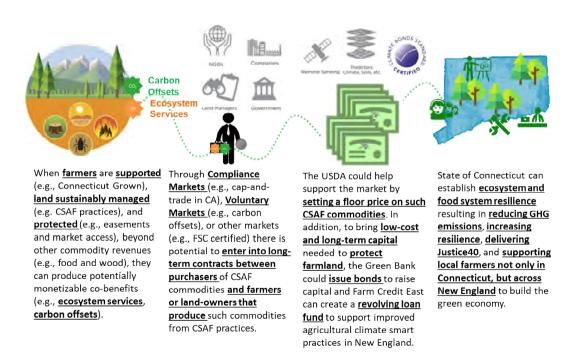


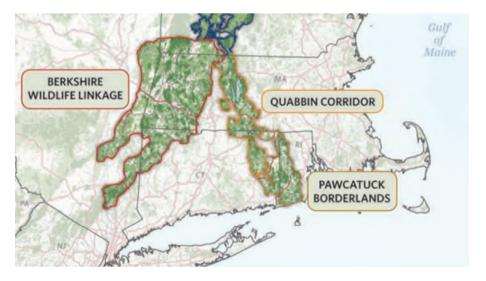
Figure 8. Climate Smart Controlled Environment Agriculture (CEA) for Tribes and Small Farms in New England: Building Profitable, Sustainable and Resilient Farms



C. <u>Community Match Fund</u> ("CMF") – a program of Sustainable CT, the Community Match Fund provides fast, flexible funding, and support for community engagement on a wide-range of sustainability projects. This societal value uses an innovative, online tool to connect grant contributions from the "crowd," which are matched by various donor interests, including, but not limited to individuals, foundations, and the State of Connecticut. As of January 1, 2022, the Fund has raised \$1.3 MM from nearly 10,000 individual contributors, which was matched by \$1.1 MM from various sponsors, and supported 195 projects. The Green Bank could consider working with entities like Sustainable CT, with tools like the CMF, to enable funding for land conservation to be matched by the crowd, while also ensuring that equity and vulnerable communities are front and center in receiving the benefits of such investment.

D. State Revolving Funds - although not a Green Bank resource, existing and additional SRF resources could be used by the state to provide low-cost and long-term capital to finance green infrastructure projects (e.g., land conservation) in Connecticut, or in partnership with other states across the Northeast region. The Green Bank could recommend to its state colleagues that a portion of the SRF be used for green infrastructure projects in Connecticut as is being done by other states. For example, the Rhode Island Infrastructure Bank requires municipal borrowers to identify green infrastructure projects for 10% of the value of their clean water loans; the Commonwealth of Virginia invested \$20 MM of its SRF in a \$130 MM transaction to protect 253,000 acres across threestates to acquire land in Central Appalachia. Regional collaboration on the SRF and land conservation could target focal landscapes in the Berkshire Wildlife Linkage (i.e., 1,579,566 acres in the landscape with 31% protected including lands in MA, NY, and VT), Quabbin Corridor (i.e., 475,864 acres in the landscape with 37% protected including lands in MA and NH), and/or Pawcatuck Borderlands (i.e., 473,397 acres in the landscape with 23% protected including lands in MA and RI) – see Figure 9.52

Figure 9. Regional Opportunity for the State Revolving Fund and Nature-Based Solutions to Climate Change



<sup>&</sup>lt;sup>52</sup> "A Safe Harbor for Nature – New England's Resilient and Connected Network of Land" by The Nature Conservancy

- Other Potential Opportunities there are a number of other potential opportunities that can support land conservation and the advancement of conservation finance, including:
  - A. <u>Clean Energy and Sustainability Accelerator</u> within the climate change programs proposed as part of the Build Back Better Act ("BBBA") is the Clean Energy and Sustainability Accelerator ("CESA"). Modelled after the Connecticut Green Bank, the \$29 billion allocated under CESA would provide state and local government with access to capital to finance projects that reduce GHG emissions and increase resilience, including nature-based solutions.
  - B. <u>Climate Conservation Corps</u> within the climate change programs proposed as part of the BBBA is the Climate Conservation Corps. Modelled after the Civilian Conservation Corps under President Franklin Roosevelt, the climate program centered around equity and environmental justice, could hire hundreds of thousands of young people to help restore forests and wetlands. The Green Bank could include within its investment activity, the requirement for developers to include Climate Conservation Corps members. If Climate Conservation Corps is passed through the BBBA, then Connecticut should prioritize the involvement of BIPOC<sup>53</sup> populations and hire a leader from the BIPOC community to run it.
  - C. <u>30% by 2030 Goal</u> to continue to increase the role land conservation has on mitigating GHG emissions and making Connecticut more resilient to the impacts of climate change, consideration could be given to increase the open space land target policy from 21% by 2023 to 30% by 2030, which would include farmland within the overall open space land target. Supporting the "no net loss of forest" goal and related goals such as increasing urban tree canopy are also important.

These are a few of the opportunities identified by the Green Bank to support its mission and advance land conservation and conservation finance in Connecticut.

Developing a method for prioritizing what opportunities under consideration are ultimately pursued, given the limited human and financial resources, and organizational structure of the Green Bank, is an activity for a later date.

#### 11. References

In addition to the conversations with stakeholders, the Green Bank reviewed the following documents to support its findings and opportunities:

- <u>Green Plan</u> Comprehensive Open Space Acquisition Strategy (2016-2020 Green Plan)
- Forest Action Plan Connecticut's 2020 Forest Action Plan
- <u>Governor's Council on Climate Change</u> Taking Action on Climate Change and Building a More Resilient Connecticut for All (January 2021)

<sup>&</sup>lt;sup>53</sup> Black, Indigenous, or People of Color

- Working and Natural Lands Working Group reports by Forests, Rivers, and Wetlands Subgroups of the Governor's Council on Climate Change (November 2020)
- <u>WAP</u> 2015 Connecticut Wildlife Action Plan

#### 12. Definitions

The following are important definitions when it comes to land conservation in Connecticut:

- <u>Conservation Easement</u> is a deed restriction or deed covenant that landowners voluntarily place on part or all of their land. The easement limits development in order to protect the land's natural resources.
- <u>Conservation Restriction</u> (CGS 47-42a)<sup>54</sup> conservation restriction means a limitation, whether or not stated in the form of a restriction, easement, covenant or condition, in any deed, will or other instrument executed by or on behalf of the owner of the land described therein, including, but not limited to, the state or any political subdivision of the state, or in any order of taking such land whose purpose is to retain land or water areas predominantly in their natural, scenic or open condition or in agricultural, farming, forest or open space use.
- <u>Core Forest</u> forests that are at least 300 feet from non-forest development (e.g., roads, bridges, farms), and are classified as core forests.<sup>55</sup> Small, medium and large core forests are patches that are 250 acres, 250-500 acres, and 500+ acres respectively.
- <u>Environmental Infrastructure</u> means structures, facilities, systems, services and improvement projects related to (A) water, (B) waste and recycling, (C) climate adaptation and resiliency, (D) agriculture, (E) land conservation, (F) parks and recreation, and (G) environmental markets, including, but not limited to, carbon offsets and ecosystem services.
- Forest Land (CGS 12-107(b)(3))<sup>56</sup> forest land means any tract or tracts of land aggregating twenty-five acres or more in area bearing tree growth that conforms to the forest stocking, distribution and condition standards established by the State Forester pursuant to subsection (a) of section 12-107d, and consisting of (A) one tract of land of twenty-five or more contiguous acres, which acres may be in contiguous municipalities, (B) two or more tracts of land aggregating twenty-five acres or more in which no single component tract shall consist of less than ten acres, or (C) any tract of land which is contiguous to a tract owned by the same owner and has been classified as forest land pursuant to this section.
- Open Space Land (CGS 12-107(b)(3))<sup>57</sup> open space land means any area of land, including forest land, land designated as wetland under section 22a-30 and not excluding farm land, the preservation or restriction of the use of which would (A) maintain and enhance the conservation of natural or scenic resources, (B) protect

<sup>&</sup>lt;sup>54</sup> <u>https://www.cga.ct.gov/current/pub/chap 822.htm</u>

<sup>&</sup>lt;sup>55</sup> <u>http://clear.uconn.edu/projects/landscape/v2/forestfrag/measuring/core\_explained.htm</u>

<sup>&</sup>lt;sup>56</sup> https://www.cga.ct.gov/current/pub/chap\_203.htm#sec\_12-107b

<sup>57</sup> https://www.cga.ct.gov/current/pub/chap 203.htm#sec 12-107b

natural streams or water supply, (C) promote conservation of soils, wetlands, beaches or tidal marshes, (D) enhance the value to the public of abutting or neighboring parks, forests, wildlife preserves, nature reservations or sanctuaries or other open spaces, (E) enhance public recreation opportunities, (F) preserve historic sites, or (G) promote orderly urban or suburban development.

- Preservation Restriction (CGS 47-42a)<sup>58</sup> preservation restriction means a limitation, whether or not stated in the form of a restriction, easement, covenant or condition, in any deed, will or other instrument executed by or on behalf of the owner of land, including, but not limited to, the state or any political subdivision of the state, or in any order of taking of such land whose purpose is to preserve historically significant structures or sites.
- Preserved Open Space any area of land that has been acquired and is used for open space purposes, including DEEP's State Parks, State Forests, Wildlife Areas, and Class I and II watershed lands.
- <u>Protected Open Space</u> any area of land with a restriction that would limit its use to open space, including lands subject to conservation restrictions, deed restrictions, or certain reserved rights.
- <u>Resilience</u> 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.
- <u>Vulnerable Communities</u> means populations that may be disproportionately impacted by the effects of climate change, including, but not limited to, (1) low and moderate income communities, (2) environmental justice communities pursuant to section 22a-20a, (3) communities eligible for community reinvestment pursuant to section 36a-30 and the Community Reinvestment Act of 1977, 12 USC 2901 et seq., as amended from time to time, (4) populations with increased risk and limited means to adapt to the effects of climate change, or (5) as further defined by the Department of Energy and Environmental Protection in consultation with community representatives.

<sup>&</sup>lt;sup>58</sup> <u>https://www.cga.ct.gov/current/pub/chap</u> 822.htm



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# environmental infrastructure primer

# parks and recreation





Environmental Markets



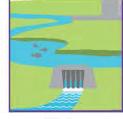
Land Conservation



Parks and Recreation



Agriculture



Water (Coming soon in 2023)



Waste and Recycling (Coming soon in 2024)



# **Parks and Recreation**

Primer

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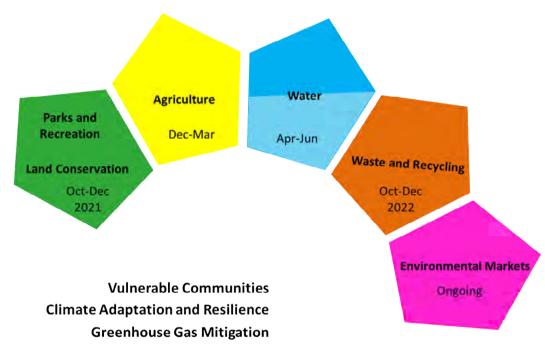
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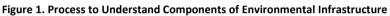
# PARKS AND RECREATION

RESEARCH ON ENVIRONMENTAL INFRASTRUCTURE

## 1. Introduction

In October of 2021, the Connecticut Green Bank ("Green Bank") developed a plan upon which it was going to engage stakeholders to understand the various components of "environmental infrastructure" – see Figure 1. With its mission to "confront climate change by increasing and accelerating investment into Connecticut's green economy to create more resilient, healthier, and equitable communities," within each component of "environmental infrastructure," the cross-cutting issues of reducing greenhouse gas emissions ("GHG"), increasing climate adaptation and resilience, and enabling investment in vulnerable communities was explored.





This primer reflects the observations, findings, and initial recommendations from the conversations with stakeholders and research conducted on parks and recreation.

#### 2. Overview

On July 6, 2021, Governor Ned Lamont signed Public Act 21-115 "An Act Concerning Climate Change Adaptation" ("the Act") into law. The bipartisan-supported public policy was among the sixty-one (61) recommendations made by the Governor's Council on Climate Change ("GC3"), including a recommendation to expand the scope of the Green Bank beyond "clean energy" to include "environmental infrastructure" (i.e., Recommendation #57).

Since its founding over a decade ago, the Green Bank has focused its efforts on using a limited amount of public resources to mobilize multiples of private investment in Connecticut to

increase and accelerate the deployment of "clean energy" to deliver social and environmental impact – see Figure 2.

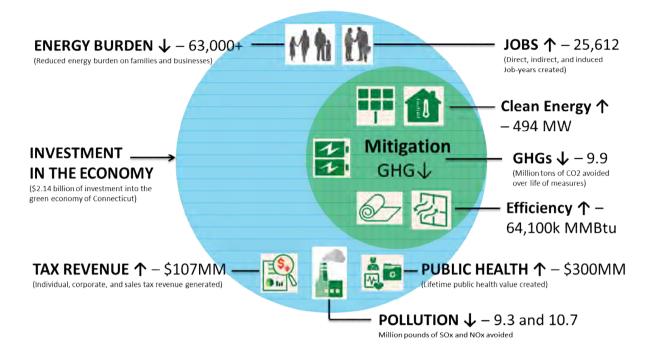


Figure 2. Decennial Impact of the Green Bank with focus on "Clean Energy" Deployment and Mitigation of GHG Emissions

Given its mission, the Green Bank helps the State of Connecticut achieve its ambitious public policy objectives (e.g., GHG emission reductions targets, renewable portfolio standards). In so doing, by 2025, no less than 40 percent of investment and benefits from its programs are to be directed to vulnerable communities.<sup>1</sup>

The Act, expands the scope of the Green Bank beyond "clean energy" to include "environmental infrastructure," and includes the following key provisions:

- <u>Definition</u> "environmental infrastructure" means structures, facilities, systems, services and improvement projects related to (A) water, (B) waste and recycling, (C) climate adaptation and resiliency, (D) agriculture, (E) land conservation, (F) parks and recreation, and (G) environmental markets, including, but not limited to, carbon offsets and ecosystem services;
- <u>Comprehensive Plan</u> requirement for the Green Bank to develop a Comprehensive Plan<sup>2</sup> prior to implementing any programs or initiatives related to "environmental infrastructure";

<sup>&</sup>lt;sup>1</sup> "Vulnerable communities" means populations that may be disproportionately impacted by the effects of climate change, including, but not limited to, low and moderate income communities, environmental justice communities pursuant to section 22a-20a, communities eligible for community reinvestment pursuant to section 36a-30 and the Community Reinvestment Act of 1977, 12 USC 2901 et seq., as amended from time to time, populations with increased risk and limited means to adapt to the effects of climate change, or as further defined by DEEP in consultation with community representatives.

<sup>&</sup>lt;sup>2</sup> https://www.ctgreenbank.com/wp-content/uploads/2021/07/3 Comprehensive-Plan FY-2020-and-Beyond Final.pdf

- <u>Reporting</u> inclusion of the Banks Committee and the Environment Committee, alongside the Energy and Technology Committee and Commerce Committee in terms of reporting; and
- <u>Bonding</u> the ability to issue 25-year bonds for "clean energy" and 50-year bonds for "environmental infrastructure" (i.e., no more than the useful life of the projects), supported by the Special Capital Reserve Fund ("SCRF"), for up to 25 years to improve the rating of the bonds issued.

This document attempts to summarize the findings from the research and outreach efforts conducted by the Green Bank<sup>3</sup> on "parks and recreation" from October 2021 through January of 2022 and includes the following sections: (A) overview, (B) key public policies, (C) market potential, (D) target, (E) funding and financing programs, (F) other programs, (G) stakeholder outreach, (H) findings, (I) opportunities, (J) history of leadership and innovation, (K) references, and (L) definitions.

Infrastructure investments in "parks and recreation" can support the Green Bank's mission by both mitigating the GHG emissions that cause climate change (e.g., carbon sinks from urban tree canopy cover) and increasing resilience against the impacts of climate change (e.g., stormwater management through urban parks).

## 3. Key Public Policies

The following are key public policies that advance "parks and recreation" in Connecticut, including, but not limited to:

- <u>State Plan of Conservation and Development</u> (CGS 16a-24) is an overarching statement of state policy in matters pertaining to land and water resource conservation and development. The Office of Policy and Management ("OPM") prepares revisions to the State Conservation and Development Plan ("State C&D Plan") on a recurring 5-year cycle and submits it for adoption by the Connecticut General Assembly ("CGA"). Once adopted, the State C&D Plan is then implemented by state agencies whenever they undertake certain actions.<sup>4</sup> The current State C&D Plan (i.e., for 2018-2023), includes the relevant "clean energy" and "environmental infrastructure" items, including, but not limited to:
  - A. <u>Greenhouse Gas Mitigation</u> reducing carbon dioxide emissions in the state consistent with the recommendations of the Connecticut Climate Change Preparedness Plan (i.e., 5.10);
  - B. <u>Climate Adaptation and Resilience</u> including developing and deploying innovative energy technologies, and promoting distributed generation and microgrids to provide reliable electrical power or energy-dependent community services during outages and peak demand periods (i.e., 1.12) and minimizing the potential risks and impacts from natural hazards by considering potential impacts of climate change on existing and future development (i.e., 1.13); and

<sup>&</sup>lt;sup>3</sup> Led by Bryan Garcia (President and CEO) and Ashley Stewart (Consultant)

<sup>&</sup>lt;sup>4</sup> Quasi-publics are not subject to this requirement

- C. <u>Parks and Recreation</u> encouraging and promoting access to parks and recreational opportunities, including trails, greenways, community gardens, and mixed-income housing (i.e., 2.8) and protecting the ecological, scenic, and recreational value of lakes, rivers, and streams by promoting compatible land uses and management practices in accordance with adopted plans.
- 2. <u>Open Space Target</u> (CGS 23-8)<sup>5</sup> establishes a mandate to conserve 21% (i.e., 673,210 acres) of state land area as held by open space land, with 10% from the state (e.g., forests, parks) and not less than 11% from partners (e.g., municipalities, water companies, or non-profit land conservation organizations). The Comprehensive Open Space Acquisition Strategy (or "Green Plan")<sup>6</sup> is the comprehensive strategy for achieving the state goal by 2023, which includes priorities for strategic acquisitions of open space for climate change resiliency and preserving open space in perpetuity for state lands with high conservation value.
- 3. Community Investment Act (Public Act 05-228)<sup>7</sup> "An Act Concerning Farm Land Preservation, Land Protection, Affordable Housing and Historic Preservation," also known as the Community Investment Act ("CIA"), CIA provides a dedicated and consistent source of funding for state preservation of open space (Department of Energy and Environmental Protection or "DEEP"), farmland (Department of Agriculture or "DoAg"), historic sites (Department of Economic and Community Development or "DECD"), and affordable housing (Connecticut Housing Finance Authority or "CHFA"). Through a \$40 surcharge on local land recordings (i.e., \$1 to Town Clerk, \$3 to local government, \$10 supplemental income to dairy farmers, and \$26 to State Treasurer), about \$22 MM is raised each year, which is equally distributed in four (4) parts to the priority funding areas.
- 4. <u>Passport to the Parks</u> beginning in 2018, Connecticut offered all residents with Connecticut license plates on their vehicles free entry and parking at all state parks and beaches. Connecticut wants to make state parks, forests, trails, historic sites and beaches more available to residents so they can enjoy the many attractions and beauty they offer. Passports to the Parks raises \$20 MM per year for park operations and maintenance through a \$5/year/vehicle motor vehicle registration fee. This policy supports parks and removes historic cost barriers to enter them.
- <u>Great American Outdoors Act</u> ("GAOA") permanently funds the Land and Water Conservation Fund ("LWCF") at \$900 MM a year, a significant source of resources from the United States Government ("USG") for open space and parks. GAOA also provides \$9.5 billion over five years to address longstanding maintenance backlogs in our national parks, forests, and other public lands.

In order to identify opportunities to mobilize private investment, it is important to understand the public policy context in which "parks and recreation" operates. With the focus on the Green

<sup>&</sup>lt;sup>5</sup> <u>https://law.justia.com/codes/connecticut/2012/title-23/chapter-447/section-23-8/</u>

<sup>&</sup>lt;sup>6</sup> <u>https://portal.ct.gov/DEEP/Open-Space/The-Green-Plan</u>

<sup>&</sup>lt;sup>7</sup> https://www.cga.ct.gov/2005/ACT/Pa/pdf/2005PA-00228-R00SB-00410-PA.pdf

Bank's mission (i.e., confront climate change), public policy provides a mechanism to catalyze private investment.

#### 4. Market Potential

The following is a breakdown of the market potential for "parks and recreation" from the perspective of active<sup>8</sup> and passive<sup>9</sup> outdoor recreation facilities, and on "land" or "water" based activities from the Statewide Comprehensive Outdoor Recreation Plan ("SCORP") – see Table 1.

Outdoor	#	DIRPS <sup>10</sup> per	Ownership			
Recreation	of	10,000	Statewide	Municipal	Other	
Туре	Facilities	Residents	Average	Average	Average	
Active – Land	4,788	1.4	4%	77%	20%	
Active – Water	137	0.4	2%	69%	30%	
Passive – Land	1,957	1.0	27%	46%	27%	
Passive –	1,130	1.1	22%	45%	33%	
Water						
Total	8,012	1.2	14%	62%	24%	

#### Table 1. Outdoor Recreation Facilities in Connecticut (2005)

Despite the age of the data, several general observations can be made with respect to active and passive outdoor recreation, including:

- <u>Active Recreation</u> in a state with the headquarters of the Entertainment Sports Programming Network ("ESPN"), municipalities are the dominant stakeholder when it comes to active outdoor recreation facilities, with the highest use frequency index for swimming;
- <u>Passive Recreation</u> when it comes to passive outdoor recreation facilities, the ownership between stakeholders is dominated by:
  - <u>Statewide</u> hunting;
  - <u>Municipalities</u> beach, boating, fishing, gardens, historic, picnic areas, and trails with the highest use frequency index for hiking on both public and private lands;<sup>11</sup>
  - **<u>Other</u>** camping.

<sup>&</sup>lt;sup>8</sup> Active outdoor recreation facilities based on 2005 data (X – #) and 2017 use frequency index data, if available (# – Y), include fields, courts, and courses for baseball and softball (984 – 16.0), basketball (645 – 23.0), football (154 – 10.0), golf (125 – 13.6), multi-use (624), soccer (495 – 14.6), tennis (384 – 11.2), and volleyball (74 – 23.0), as well as playgrounds (1,065), swimming pools (137 – 60.9), and winter sports (238 – 9.3)

<sup>&</sup>lt;sup>9</sup> Passive outdoor recreation facilities based on 2005 data (X – #) and 2017 use frequency index data, if available (# – Y) include access to sites for beaches (176 – 60.1), boating (285 – 10.9), camping (88 – 13.5), fishing (669 – 19.0), gardens (109), historic landmarks (99 – 35.9), hunting (88 – 3.5), picnics (677), and trails (896 – 102.8)

<sup>&</sup>lt;sup>10</sup> Discrete Identifiable Recreation Places

<sup>&</sup>lt;sup>11</sup> Managed by the Connecticut Forest and Parks Association, the Blue-Blazed Hiking System includes more than 825 miles of hiking to explore the woodlands, remote ridges, and wild places of Connecticut.

 <u>Access Prevention</u> – in terms of what is preventing access to recreation, surveys indicate that 88% and 56% of citizens get to facilities by automobile or walking, respectively, and 20% to 23% of survey respondents indicate that fees are too high and facilities are too far.

The "No Child Left Inside" and "Passport to the Parks" programs, promote Connecticut citizens enjoying active and passive outdoor recreation facilities on land or water-based activities.

The Trust for Public Land's ("TPL") ParkScore Index is a comprehensive rating system to measure how cities are meeting the needs for parks.<sup>12</sup> In an effort to assess ParkScore, the following data are for Connecticut's "Top 10" most populated municipalities – see Table 2.

			%	Acres of	Acres of			
			Land	Land	Parks per		Parks per	10-
City	Population	Acres	as Parks	as Parks	10,000 Residents	# of Parks	10,000 Residents	Minute Walk
Hartford	121,203	11,136	9%	1,002	83	218	18.0	99%
New Haven	130,764	11,968	12%	1,436	110	128	9.8	96%
West								
Hartford	63,063	13,952	20%	2,790	442	48	7.6	82%
Stamford	129,302	24,064	5%	1,203	93	54	4.2	74%
New Britain	72,303	8,576	7%	600	83	23	3.2	73%
Bridgeport	143,653	10,304	7%	721	50	35	2.4	73%
Waterbury	106,458	18,240	6%	1,094	103	30	2.8	60%
Norwalk	88,326	14,656	3%	440	50	45	5.1	55%
Bristol	59,639	16,896	4%	676	113	20	3.4	51%
Danbury	84,732	26,880	5%	1,344	159	17	2.0	37%

#### Table 2. "Top 10" Most Populated Municipalities in Connecticut and ParkScore

ParkScore provides excellent quantitative data in which to make general observations about the state of parks within a municipality in comparison to the national average. For example, the national average for the percentage of residents with a 10-minute walk to parks and the median percentage of municipal lands as parks is 55% and 15%, respectively. For example, 99% of citizens residing in Hartford have a 10-minute walk to a park, which is high compared to the national average, yet only 9% of land in Hartford is parks, which is low compared to the national average.

The quality of parks is difficult to discern. To better understand the quality of parks, TPL partnered with the Urban Resources Institute ("URI") to compare New Haven against the

<sup>&</sup>lt;sup>12</sup> The "% of Land as Parks," "# of Parks," and "10-Minute Walk" data were used from TPL's ParkScore data set.

nation's most populous cities on five (5) categories reflective of an excellent city park system: Acreage,<sup>13</sup> Access,<sup>14</sup> Investment,<sup>15</sup> Amenities,<sup>16</sup> and Equity<sup>17</sup> – see Table 3.<sup>18</sup>

City	Overall	Acreage	Access	Investment	Amenities	Equity
New Haven,	60	36	95	35	71	65
СТ						
Boston, MA	-	47	100	79	65	79
Baltimore, MD	-	25	81	68	40	83
Buffalo, NY	-	25	85	47	61	64

Table 3. TPL and URI Analysis of New Haven Compared to Other Cities

The TPL-URI research also delves deeper into the twenty (20) neighborhoods of New Haven to collect data with respect to population, acres of parks, and acres per 1,000 population, as well as demographic data including income and people of color. Based on data from TPL from 14,000 cities, parks that serve low-income households are four (4) times as crowded as parks that serve high-income households, and parks that serve people of color are five (5) times as crowded as parks that serve majority-white populations.<sup>19</sup> Such analyses in municipalities across Connecticut could elucidate opportunities for areas of improvement, including improving the public health of residents with access to parks and the economic development impact of property values within proximity to parks.

Although Connecticut has the highest urban tree cover in the United States at 62%,<sup>20</sup> there are opportunities to improve urban tree canopy cover to reduce heat island effects in urban neighborhoods across the state that lack the shading benefits that tree canopies provide to reduce heat and improve air quality while supporting better public health.<sup>21</sup> For example, Bridgeport, Hartford, and New Haven's tree canopy cover is 27%,<sup>22</sup> 25%,<sup>23</sup> and 38%<sup>24</sup> respectively.

<sup>&</sup>lt;sup>13</sup> Acreage score indicates the relative abundance of large 'destination' parks, which include large natural areas that provide critical mental health as well as climate and conservation benefits.

<sup>&</sup>lt;sup>14</sup> Access score indicates the percentage of the city's residents that live within a walkable half-mile of a park – the average distance that most people are willing to walk to reach a destination.

<sup>&</sup>lt;sup>15</sup> Investment score indicates the relative financial health of a city's park system, which is essential to ensuring parks are maintained at a high level for all to enjoy.

<sup>&</sup>lt;sup>16</sup> Amenities score indicates the relative abundance of six park activities popular among a multi-generational cross-section of user groups (i.e., playgrounds, basketball courts, dog parks, senior and recreation center, splashpads, and permanent restrooms).

<sup>&</sup>lt;sup>17</sup> Equity score indicates how fairly parks and park space are distributed within a city, including percentage of people of color and low-income households within a 10-minute walk of a park, and comparison of the amount of park space between neighborhoods by race and income.

<sup>&</sup>lt;sup>18</sup> For example, a score of 90 means that the municipality is within the top 90 percent across the country.

<sup>&</sup>lt;sup>19</sup> "The Heat is On" by The Trust for Public Lands

<sup>&</sup>lt;sup>20</sup> Connecticut's 2020 Forest Action Plan (p. 7)

<sup>&</sup>lt;sup>21</sup> "Tree Canopy Assessment – Southern Connecticut Region" by the Southern Connecticut Regional Council of Governments and the University of Vermont Spatial Analysis Laboratory.

<sup>&</sup>lt;sup>22</sup> A Report on the City of Bridgeport's Existing and Possible Urban Tree Canopy

<sup>&</sup>lt;sup>23</sup> Hartford Connecticut's Tree Canopy Action Plan 2020

<sup>&</sup>lt;sup>24</sup> A Report on the City of New Haven's Existing and Possible Urban Tree Canopy

#### 5. Target

There is no public policy target for "parks and recreation" in Connecticut beyond the open space land target outlined in CGS 23-8 and Green Plan, respectively (i.e., 21% by 2023) – see the "land conservation" document for quantitative details. It is the expectation that the open space land policy and goal would provide public recreation opportunities on state, municipal, private, and water utility lands.

Beyond a target the U.S. Bureau of Economic Analysis conducts research on special topics, including the outdoor recreation economy. The Outdoor Recreation Satellite Account measures the economic activity as well as the sales or receipts generated by outdoor recreational activities. These statistics measure each industry's production of outdoor goods and services – see Table 4.

Table 4. Connecticut GSP and Employment for 2020 – Comparison for Outdoor Recreation<sup>25</sup> vs. Clean Energy<sup>26</sup>

Economic Activity	GSP (\$MM's)	Percent of GSP	Employment	% of Employment
Outdoor Recreation	\$3,298	1.2	41,721	2.6
Clean Energy	\$6,640	2.4	41,488	2.6

Expenditures in the outdoor recreation economy in Connecticut includes – see Table 5.

Conventional	Other	All Other	Government	Total
Outdoor	Outdoor	Supporting	Expenditures	Outdoor
Recreation	Recreation	Outdoor	(\$MM's)	Recreation
Activities <sup>27</sup>	Activities <sup>28</sup>	Recreation		Activities
(\$MM's)	(\$MM's)	(\$MM's)		(\$MM's)
\$1,411	\$572	\$1,158	\$156	\$3,298

Table 5. Expenditures in the Outdoor Recreation Economy in Connecticut

#### 6. Funding and Financing Programs

The following is an alphabetical breakdown of the current funding (i.e., grants) programs in support of "parks and recreation" in Connecticut, including, but not limited to:

- <u>Brownfield Remediation Program</u> the Infrastructure Investment and Jobs Act ("IIJA" or Bipartisan Infrastructure Law – "BIL") provides \$1.5 billion in supplemental funding to the EPA for brownfield remediation programs – \$1.2 billion of funds are set aside for competitive grants for site assessment and remediation projects. Funding can be accessed by quasi-public entities.
- <u>Charter Oak Open Space Trust Account</u> a defunct program for several years now, which included two accounts to fund new open space purchase programs, including 40% to the Charter Oak State Parks and Forest Account for state acquisition of open

<sup>&</sup>lt;sup>25</sup> "Outdoor Recreation Satellite Account, US and States, 2020" by the Bureau of Economic Analysis (November 9, 2021)

<sup>&</sup>lt;sup>26</sup> "Connecticut Clean Energy Industry Report" (September 2021)

<sup>&</sup>lt;sup>27</sup> Boating, fishing, RV'ing, and snow activities

<sup>&</sup>lt;sup>28</sup> Amusement parks, water parks, festivals, sporting events, concerts, game areas (e.g., golf, tennis)

space and watershed land, and 60% to the Charter Oak Open Space Grant Program to provide grants to municipalities and nonprofit land conservation organizations to acquire open space or watershed protection land.

Connecticut Open Space and Watershed Land Acquisition Grant Program ("OSWA") (CGS 7-131d) – a matching grants program to provide financial assistance to municipalities, land trusts, and water companies to acquire open space and watershed lands. Initiated in 1998, is funded by state bonding and the CIA, provides financial assistance to municipalities and nonprofit land conservation organizations to acquire land for open space, and to water companies to acquire land to be classified as Class I or Class II water supply property, and is administered by DEEP to leverage state, local, and private funds to create a cooperative open space acquisition program.

Since 1998, DEEP has awarded over \$150 MM in open space grant funds to protect over 41,000 acres (or \$3,659/acre).

- <u>Hazardous Substance Superfund Remediation</u> the IIJA provides \$3.5 billion in supplemental funding to the EPA Superfund Program to support cleanup of large sites contaminated by commercial or industrial pollution that poses risks to people's health and the environment. This program is administered in partnership with states.
- Land and Water Conservation Fund ("LWCF") LWCF is a federal program that was established by an Act of Congress in 1965 to provide funds and matching grants to federal, state and local governments for the acquisition of land and water, and easements on land and water, for the benefit of all Americans. The main emphases of the fund are recreation and the protection of national natural treasures in the forms of parks and protected forest and wildlife areas. In August 2020, the President Trump signed the Great American Outdoors Act into law, which requires that the LWCF be funded at \$900 million yearly, a significant increase from previous funding levels.
- <u>National Park Service Rivers, Trails and Conservation Assistance Program</u> ("NPS-RTCA") – NPS-RTCA's technical assistance program supports locally-led conservation and outdoor recreation projects. The program assists communities and land managers in evolving climate resiliency strategies, developing or restoring parks, conservation areas, rivers, and wildlife habitats, as well as creating outdoor recreation opportunities and programs that engage future generations in the outdoors.
- <u>Recreation and Natural Heritage Trust Program</u> ("RNHT") administered by DEEP, is the main program to purchase or conserve lands for conservation and public use or benefit.

Since 1998, the State Bond Commission has approved \$177 MM to go towards the RNHTP to protect over 49,000 acres (or \$3,611/acre).

 <u>Sustainability and Equity (Raise) Grant Program</u> – the IIJA provides \$7.5 billion in supplemental funding to the DOT for bikeway, trail, and pedestrian projects. The following is a breakdown of the current financing (i.e., loans) programs that could support parks and recreation in Connecticut:

State Revolving Fund ("SRF") – since 1988, Connecticut has received over \$650 MM from the federal government through the Clean Water SRF, while providing cumulative assistance (i.e., including state investment) of \$2.8 billion of investment primarily in centralized wastewater treatment infrastructure (in comparison to stormwater, energy conservation, and water conservation infrastructure).<sup>29</sup> With the passage of the bipartisan supported "Investing in Infrastructure and Jobs Act" ("IIJA" or Bipartisan Infrastructure Law "BIL") in November of 2021, there were additional resources allocated to the SRF for water quality and drinking water (i.e., \$445 million).<sup>30</sup> SRF could be used to invest in green infrastructure projects (e.g., land conservation, nature-based solutions) for both mitigation and adaptation.

Accessing funding or financing resources for "parks and recreation" in Connecticut can be difficult. Identifying new mechanisms to access additional funding and financing resources, especially those that seek to unlock more private capital investment, could provide a catalyst to increase and accelerate investment in parks and recreation in Connecticut. The IIJA presents an opportunity to access funding and financing resources through formula or competitive grants for "parks and recreation".

## 7. Other Programs

The following are other items of note with respect to "parks and recreation":

- <u>Greenways</u> it should be emphasized, that greenways are an integral part of the parks and recreation system as "linear parks" and provide active economic development (i.e., tourism), public health, and transportation opportunities. There is and/or will be 195 miles of greenway in Connecticut, that is frequently visited by millions of users a year, especially during COVID, who use the greenways for walking, jogging, and cycling on the trails for exercise, recreation, and relaxation.
- <u>No Child Left Inside</u> launched in 2006, *No Child Left Inside<sup>®</sup>* is a promise to introduce children to the wonder of nature – for their own health and well-being, for the future of environmental conservation, and for the preservation of the beauty, character and communities of the state.
- <u>State Natural Heritage, Open Space & Land Aquisition Review Board</u> is an independent advisory group of volunteers appointed by the Governor and leadership within the CGA under CGS 7-131(e) to oversee OWSA and RNHT programs.

<sup>&</sup>lt;sup>29</sup> Including Title II and VI funds – <u>https://www.epa.gov/sites/default/files/2021-02/documents/ct.pdf</u>

<sup>&</sup>lt;sup>30</sup> <u>https://www.whitehouse.gov/wp-content/uploads/2021/08/CONNECTICUT\_The-Infrastructure-Investment-and-Jobs-Act-State-Fact-Sheet.pdf</u>

#### 8. Stakeholder Outreach

In an effort to understand the public policy and marketplace context for "parks and recreation" in Connecticut, the Green Bank met with many organizations.<sup>31</sup>

These 24 organizations primarily represent non-profit organizations but include public and forprofit organizations as well.

The objectives of these one-hour conversations included:

- <u>Introductions</u> to get a better understanding of the mission and initiatives of the various public, nonprofit, and for-profit stakeholders operating within the "parks and recreation" space, and to introduce the Green Bank;
- <u>Environmental Infrastructure</u> inform the various stakeholders about the "environmental infrastructure" policy,<sup>32</sup> process the Green Bank is pursuing to develop a Comprehensive Plan, and to elicit discussion on the following areas:
  - **<u>Relevance</u>** how relevant "environmental infrastructure" and its components (e.g., parks and recreation) are to the stakeholder's mission and initiatives;
  - <u>Policies and Targets</u> what local, state, and federal policies (e.g., Community Investment Act), including plans (e.g., Green Plan) are important from the stakeholder's perspective, and what targets (e.g., 21% open space land by 2023) are they seeking to achieve;
  - <u>Metrics</u> what are the key metrics stakeholders believe are important in terms of monitoring and evaluating success from investments in "environmental infrastructure" improvements and "parks and recreation";
  - <u>Vulnerable Communities</u> how does the stakeholder's organization think about the impacts that must be addressed from climate change to build the resilience of vulnerable communities; and
  - **<u>Stakeholder Identification</u>** who else should the Green Bank meet with on the topic.

From these conversations, the Green Bank was able to develop a better understanding as to the role it might play in terms of financing "parks and recreation" from the perspective of its mission – to confront climate change.

<sup>&</sup>lt;sup>31</sup> Land Conservation – American Forest Foundation, Audubon Connecticut, Connecticut Audubon, Connecticut Land Conservation Council, Conservation Finance Network, DEEP, Ecosystem Investment Partners, Goldman Sachs, Highstead, New England Forestry Foundation, New England Society of American Foresters, Quantified Ventures, Save the Sound, The Nature Conservancy, TNC's Nature Vest Program, and Yale Forest School

<sup>&</sup>lt;u>Parks and Recreation</u> – Connecticut Forest and Parks Association, Connecticut Greenways Council, Connecticut Recreation and Parks Association, DEEP, Green Eco Warriors, Keney Park Sustainability Project, Sierra Club, Trust for Public Lands, and Urban Resources Initiative.

<sup>&</sup>lt;sup>32</sup> Public Act 21-115 – An Act Concerning Climate Change Adaptation"

## 9. Findings

Based on the various meetings with public, nonprofit, and private stakeholders, the following are key findings with respect to parks and recreation (it should be noted that additional findings have been generalized in the footnote):<sup>33</sup>

- <u>Consistent with Mission to Confront Climate Change</u> "parks and recreation" reduces GHG emissions (e.g., carbon sequestration) and increases resilience (e.g., stormwater management, heat stress), and therefore is consistent with the Green Bank's mission to "confront climate change". Parks provide an excellent ability to address stormwater, bioswales, and mitigate flooding, and also sequester carbon through urban tree canopy cover.
- <u>Public Health Improvement</u> although no research was provided nor sited, stakeholders continuously spoke to the ability of urban and rural parks to provide public health benefits,<sup>34</sup> including, but not limited to outdoor places as respite from being inside (e.g., managing through COVID), and reducing heat stress (e.g., shade from trees, cooling from splashpads and pavilions). In subsequent analyses by the Green Bank in reading the literature, there were various relevant references noted, including:
  - "A wealth of research indicates that escaping to a neighborhood park, hiking through the woods, or spending a weekend by the lake can lower a person's stress levels, decrease blood pressure and reduce the risk of asthma, allergies, diabetes, and cardiovascular disease, while boosting mental health and increasing life expectancy."<sup>35</sup>
  - "Spending time and living near green spaces have been associated with various improved mental health outcomes, including less depression, anxiety, and stress. Several studies have demonstrated a dose-response relationship between more time spent in green spaces and lower depression rates. Therefore, green space may be a potential buffer between inequitable neighborhood conditions and poor medical health outcomes."<sup>36</sup>
  - "Neighborhoods with more socioeconomically disadvantaged residents and families of color tend to have fewer nearby residential parks, and financial and transportation limitations that prevent access to parks and wilderness outside of city limits...For these reasons, promoting nature contact and ensuring equitable access to green spaces could play a role in improving health outcomes and behaviors, and reducing health disparities."<sup>37</sup>

<sup>&</sup>lt;sup>33</sup> Additional findings – opportunity to connect land trusts to hiking trails, BIPOC communities prioritize basic needs, municipalities shy away from open space investment because no staff to maintain, municipalities are giving up on federal grant programs because they are too onerous (e.g., reporting requirements), nonprofit membership groups have access to practitioners and contractors.

<sup>&</sup>lt;sup>34</sup> "Reconnecting people to the healing value of nature," as noted by Herb Virgo from the Keney Park Sustainability Project, a 693-acre park located in Bloomfield, Hartford, and Windsor

<sup>&</sup>lt;sup>35</sup> *How Much Nature is Enough? 120 Minutes a Week, Doctors Say* as reported by Knvul Sheikh of the New York Times (June 13, 2019)

<sup>&</sup>lt;sup>36</sup> Effect of Greening Vacant Land on Mental Health of Community-Dwelling Adults by Eugenia C. South, et al. Jama Network Open (July 20, 2018)

<sup>&</sup>lt;sup>37</sup> Nature and Children's Health: A Systematic Review by Amber L. Fyfe-Johnson, et al. Pediatrics (October 2021)

- "...a one-hundred dollar increase, in 2010 dollars, in per capita parks and recreation operational expenditures was associated with a decrease in mortality of 3.9 to 3.4 deaths per 100,000,...While a conceptual linkage between parks funding, use, availability, programming and health could be made, our analysis provides robust empirical evidence linking funding and health. When considering the topic of healthcare spending, we view parks and recreation as an indirect form of healthcare spending. Evidence suggests that many individuals view parks and recreation as an essential component of the healthcare system."<sup>38</sup>
- <u>Inadequate Investment in Economic Development</u> parks serve as public places to support the economic development of a community. Municipal budgets often cut financial and human resources to parks first because they are not a public works priority. Park programs have to be self-sufficient (e.g., fees for services) like small businesses to survive. The availability of funding resources to support parks and recreation is inadequate. Investment in parks is an investment in the infrastructure supporting economic development, housing, public health, and transportation – which goes beyond DEEP, and is inclusive of other state agencies, including DECD, DOH, DPH, and DOT, respectively.
- Money is Not Always the Problem as important as local, state, federal, and private funding and financing resources are, sometimes not having enough people (including lack of diversity), having onerous or inappropriate processes (e.g., urban tree removal for powerline protection), an inability to speak to co-benefits (e.g., job creation, resilience, wellness), or lack of engagement of local communities can substantially inhibit progress towards increasing investment in parks and recreation.
- <u>Impact Metrics</u> the following is a "high level" breakdown of the types of metrics appropriate for parks and recreation – see Table 6.

	Inputs		Outputs		Outcomes
0	Investment in parks	0	# and types of amenities	0	GHG emissions reduced or
0	Investment in projects	0	Location of projects		sequestered
0	Sources of public (e.g.,	0	Acres conserved (including	0	Resilience improvement
	local, state, federal) and		donations vs. purchases)		(e.g., # people at reduced
	private funds	0	# of users or visitors		risk of flooding, heat
0	Leverage (i.e., public vs.	0	Annual accessibility		exposure)
	private funds)	0	Park revenues	0	Water quality improvement
0	Individual investment (e.g.,	0	# of closures		(e.g., stormwater
	Community Match Fund,	0	Tree density/linear street		management, bioswales)
	Green Liberty Bonds and		mile	0	Jobs created
	Notes)	0	Distance to a park	0	Address and quantify social
0	Funding (i.e., grants) vs.	0	Acres/population		determinants of health (i.e.,
	financing (i.e., loans)	0	Acres/income		wellness)

<sup>&</sup>lt;sup>38</sup> "The relationship between parks and recreation per capita spending and mortality from 1980 to 2010: A fixed effects model" in Preventative Medicine Reports by J. Tom Mueller, et al (January 2019)

BIPOC community to parks and recreation	<ul> <li>Leadership of BIPOC communities in building resilience for their own communities</li> <li>Local property value</li> <li>Tax revenue to state and local government from park tourism</li> <li>Advancements in public policy to recognize the value of parks and recreation (e.g., municipal budgets)</li> </ul>
	(e.g., municipal budgets)

<u>Vulnerable Communities</u> – are being disproportionately impacted by the impacts of climate change (i.e., those who have contributed the least are being impacted the most). Structural racism is evidenced in vulnerable communities by applications for assistance (e.g., government grants) not being conducive to funding BIPOC communities and leaders (e.g., lack of trust), lack of inclusion of and inability for vulnerable populations to participate in regulatory processes (e.g., compensation for time), lack of workforce development opportunities, including accessible locations for training, and more.

These are the key findings from the stakeholders on parks and recreation.

#### 10. **Opportunities**

The following is a list of opportunities for consideration by the Green Bank given the broad categories of information and data, environmental markets and conservation finance, funding and financing sources, and other potential opportunities:

- 1. <u>Information and Data</u> as a foundation, access to high quality information is important from which to base decisions. The following is a breakdown of opportunities for consideration with respect to information and data:
  - A. <u>ParkScore</u> support the expansion of the TPL-URI ParkScore tool assessing the five (5) areas of quality parks beyond New Haven, and apply to the "Top 5" most populated cities in Connecticut. Explore the possibility of Sustainable CT including within its points-based system, as well as raising funds through the Community Match Fund.
  - B. <u>Pipeline Assessment</u> work with CIRCA and DEEP to continuously build and assess the pipeline of potential GHG emission mitigation and climate change adaptation and resilience projects (e.g., type, size, scope, and estimated impact) related to parks and recreation (e.g., Meriden Green).<sup>39</sup>
  - C. <u>**Data Collection and Research**</u> support data collection and research that attempts to quantify the carbon offset, ecosystem services, public health, and

<sup>&</sup>lt;sup>39</sup> https://www.meridenct.gov/city-services/parks-and-recreation/meriden-green/

economic development values of urban and rural parks. The research should seek to answer the question of "how does investment in parks result in cobenefits to climate change" with a focus on resilience and public health.

- Environmental Markets and Conservation Finance in terms of identifying potential carbon offset and/or ecosystem services revenue streams within compliance and voluntary markets that can support financing of parks and recreation, the following is a breakdown of opportunities for consideration with respect to environmental markets and conservation finance:
  - A. <u>Conserve Urban Lands as Parks</u> improving access to parks and recreation in vulnerable communities, can restore brownfields and abandoned lots, reduce GHG emissions, increase resilience against the impacts of climate change (e.g., flooding, stormwater management), and improve health wellness. Finding ways to support the growth and development of urban parks (e.g., Remington Woods in Bridgeport,<sup>40</sup> Olin Power Farm in Hamden, Keney Park in Hartford, CT) and greening abandoned lots through public-private partnerships that can improve the local economy, improve public health, and confront climate change. Identifying mechanisms, including stormwater management, to raise funds for capital improvements and/or investments in new assets (e.g., urban ecology wellness and/or sustainability centers) to modernize parks in vulnerable and BIPOC communities and make them more accessible will improve opportunities for economic development and public health.
  - B. <u>Urban Tree Canopy</u> support municipal efforts to increase urban tree canopy cover. When planted properly, a tree can save homeowners up to 20 percent on their energy costs, while simultaneously reducing stormwater runoff, improving air quality, reducing urban heat island effects, absorbing carbon, and increasing property value through curb appeal. Hartford has an aggressive tree planting program to grow from 25% (i.e., approximately 568,000 trees) to 35% (i.e., an additional 150,000 trees) tree canopy cover by 2070.<sup>41</sup> Headquartered within the Hartford community, the Green Bank should support neighborhood tree planting, with a focus on the priority area of the Sheldon-Charter Oak neighborhood. Consideration could be given to exploring city forest credits for tree planting, with the Green Bank purchasing carbon offsets.<sup>42</sup>
  - C. <u>Park Prescriptions (ParkRx)</u>– as the birthplace of renown park designer and landscape architect Frederick Law Olmstead, and the self-proclaimed "Insurance Capital of the World," Hartford is the epicenter to where "park prescriptions" (or "ParkRx") should be developed, researched, practiced, and disseminated. ParkRx advantages include low-cost relative to conventional medical interventions, safety, practicality, not requiring dispensing by highly trained

<sup>&</sup>lt;sup>40</sup> 420 acres (i.e., 350 acres in Bridgeport and 70 acres in Stratford), including a 40 acre lake sitting on an old Remington arms testing site and now brownfield owned by Corteva. Corteva currently undergoing site remediation which will require 3-4 years to complete and approximately \$80 million of remediation costs.

<sup>&</sup>lt;sup>41</sup> Hartford Connecticut's Tree Canopy Action Plan 2020.

<sup>&</sup>lt;sup>42</sup> https://www.cityforestcredits.org/

professionals, and multiple co-benefits<sup>43</sup> – including a number of benefits that nature provides, including psychological, cognitive, physiological, social, spiritual, and tangible well-being.<sup>44</sup> The Green Bank could initiate public-private partnerships (e.g., collaboration with Aetna, a subsidiary of CVS Health and managed health care company) that results in ParkRx being used to prevent and treat chronic disease and promote health wellness, while investing in and continuously maintaining urban and rural parks and recreation infrastructure, especially by increasing access to such infrastructure by vulnerable communities. Work with the Department of Insurance, AccessHealthCT, Aetna, and the City of Hartford to develop ParkRx to enable increased investment in parks and recreation that will not only confront climate change but improve public health.

- **3.** <u>Funding and Financing Sources</u> in terms of identifying additional funding (i.e., grants) and financing (e.g., loans) that can increase and accelerate investment, the following is a breakdown of opportunities for consideration with respect to funding and financing of parks and recreation:
  - A. <u>Green Liberty Bonds</u> leverage the strength of the Green Bank balance sheet, with the award-winning climate bond structure of the Green Liberty Bonds modelled after the War Bonds of the 1940's, to support investments in parks and recreation:
    - i. <u>Pilot Revolving Loan Fund for Buy-Protect-Sell</u> modelling the Conservation Fund's successful \$150 MM green bond issuance in 2019 (i.e., 10-year rated A3 by Moody's), which created the Working Forest Fund,<sup>45</sup> and the Farmland Protection and Affordability Investment ("Farmland PAI") program of Washington State,<sup>46</sup> purchase land, including urban lots and potential linear greenways (e.g., abandoned railway lines), and work with appropriate stakeholder partners (e.g., community based organizations) to develop them into parks, community gardens, urban farms, and greenways and connect to ParkRx.
    - ii. <u>Passport to Parks Bonds</u> work with DEEP to issue Green Liberty Bonds to raise capital from individual and institutional investors today for capital improvements and additional recreational assets needed at state parks backed by the expected revenues from Passport to Parks (i.e., generates approximately \$20 MM a year). Focus the use of proceeds from such bonds on parks located within proximity to vulnerable communities to increase access to the co-benefits of such investments (e.g., resilience, public health).

<sup>&</sup>lt;sup>43</sup> "Nature Contact and Human Health: A Research Agenda" in Environmental Health Perspectives by Frumkin, Howard et al (July 2017)

<sup>&</sup>lt;sup>44</sup> "What are the Benefits of Interacting with Nature?" in the International Journal of Environmental Reserahc and Public Health by Keniger, Lucy, et al (2013)

<sup>&</sup>lt;sup>45</sup> The Working Forest Fund invests green bond proceeds to buy the most at-risk private forests. Once it owns the forest, it protects the land (i.e., easement), develops sustainable harvesting, wildlife, and habitat restoration plans, and then resells the land to private or public buyers to repay the loan. This fund has permanently conserved 500,000 acres, permanently storing over 210 MMTCO2e.

<sup>&</sup>lt;sup>46</sup> <u>http://www.wshfc.org/farmranch/FarmPAISlides.pdf</u>

- iii. <u>Municipal Resilience or Stormwater Bonds</u> work with local governments to develop a program to regularly issue Green Liberty Bonds and/or Green Liberty Notes to raise capital from individual and institutional investors today for capital improvements (e.g., bioswales) and additional recreational assets (e.g., trailways) at municipal places that improve resilience (e.g., coastal wetlands) backed by conveyance fees or reserve funds.<sup>47</sup>
- B. <u>Community Match Fund</u> ("CMF") a program of Sustainable CT, the Community Match Fund provides fast, flexible funding, and support for community engagement on a wide-range of sustainability projects. It uses an innovative, online tool to connect grant contributions from the "crowd," which are matched by various donor interests. As of January 1, 2022, the Fund has raised \$1.3 MM from nearly 10,000 individual contributors, which was matched by \$1.1 MM from various sponsors, and supported 195 projects. Work with Sustainable CT to enable the CMF to work for parks and recreation (e.g., ParkScore), as well as expand opportunities for points within the sustainability certification program.
- C. <u>State Revolving Funds</u> although not a Green Bank resource, existing and additional SRF resources could be used by the state to provide low-cost and long-term capital to finance green infrastructure projects (e.g., parks and recreation) in Connecticut. The Green Bank could recommend to its state colleagues that a portion of the SRF be used for green infrastructure projects in Connecticut as is being done by other states. Under the new guidelines for SRF resources, 49% of federal funds can be used as grants or forgivable loans for vulnerable communities. Consideration could be given to protecting parks, especially urban parks, where such loan forgiveness or grants in vulnerable communities could support such opportunities for improving green spaces and access to parks.
- D. Infrastructure Investment and Jobs Act there are a number of competitive grant programs that can be accessed to provide resources to cleanup brownfields. Exploring whether or not these funds can be accessed to cleanup former industrial property and convert them to urban parks (e.g., Bridgeport, Hamden) should be considered. In addition to clean-up programs, there are other programs for park planning, mobility, and other programs relevant to increasing and improving parks and recreation. The Green Bank could consider leveraging the strength of its financial position as a source of resources to hire grant writer(s), and/or serve as matching funds to improve success in competing for and winning federal resources through the IIJA.
- 4. <u>Other Potential Opportunities</u> there are a number of other potential opportunities that can support financing of parks and recreation, including:

<sup>&</sup>lt;sup>47</sup> Public Act 19-77 "An Act Authorizing Municipal Climate Change and Coastal Resiliency Reserve Funds"

- A. <u>Clean Energy and Sustainability Accelerator</u> within the climate change programs proposed as part of the Build Back Better Act ("BBBA") is the Clean Energy and Sustainability Accelerator ("CESA"). Modelled after the Green Bank, the \$29 billion allocated under CESA would provide state and local government with access to capital to finance projects that reduce GHG emissions, including nature-based solutions (e.g., parks and recreation).
- B. <u>Climate Conservation Corps</u> within the climate change programs proposed as part of the BBBA is the Climate Conservation Corps. Modelled after the Civilian Conservation Corps under President Franklin Roosevelt, the climate program centered around equity and environmental justice, could hire hundreds of thousands of young people to help restore and support parks. The Green Bank could include within its investment activity, the requirement for developers to include Climate Conservation Corps members. If Climate Conservation Corps is passed through the BBBA, then Connecticut should prioritize the involvement of BIPOC<sup>48</sup> populations and hire a leader from the BIPOC community to run it.
- C. <u>OImstead 200</u> The acclaimed landscape architect Frederick Law OImstead was born in Hartford, CT. In honor of the 200<sup>th</sup> anniversary of his birth in 1822, consideration could be given to initiating an urban parks design contest.<sup>49</sup> For example, the Green Bank could put up a prize money to the best design of an urban park in Connecticut with a focus on Keney Park (Bloomfield, Hartford, and Windsor), Olin Power Farm (Hamden), and Remington Woods (Bridgeport and Stratford). Connecting OImstead's birthplace with the "Insurance Capital of the World" as noted above, is an opportunity for ParkRx to support public health wellness.
- **D.** <u>Host Federal Official</u> through the Intergovernmental Personnel Act ("IPA"),<sup>50</sup> the Green Bank could temporarily host a professionally skilled federal official from the Environmental Protection Agency, National Park Service, Health and Human Services, or other relevant agency to facilitate cooperation between the federal government and the Green Bank. Such an assignment would need to ensure that it is for sound public purposes and furthers the goals and objectives of the participating organizations.

These are a few of the opportunities identified by the Green Bank to support its mission and advance parks and recreation in Connecticut. Developing a method for prioritizing what opportunities under consideration are ultimately pursued, given the limited human and financial resources, and organizational structure of the Green Bank, is an activity for a later date.

#### 11. References

In addition to the conversations with stakeholders, the Green Bank reviewed the following documents to support its findings and opportunities:

<sup>&</sup>lt;sup>48</sup> Black, Indigenous, or People of Color

<sup>&</sup>lt;sup>49</sup> https://olmsted200.org/

<sup>&</sup>lt;sup>50</sup> <u>https://www.usgs.gov/human-capital/intergovernmental-personnel-act-ipa-mobility-program-</u> guidance#:~:text=The%20Intergovernmental%20Personnel%20Act%20(IPA,and%20the%20non%2DFederal%20entity

- <u>Green Plan</u> Comprehensive Open Space Acquisition Strategy (2016-2020 Green Plan)
- <u>Going Outside in Connecticut</u> Statewide Comprehensive Outdoor and Recreation Plan (SCORP) for 2017-2022

# 12. Definitions

The following are important definitions when it comes to "parks and recreation" in Connecticut:

- **Ecosystem Services** there are four types of ecosystem services, including:
  - <u>Provisioning Services</u> provide goods to people including food, water, and materials;
  - <u>Regulating Services</u> refer to benefits gained by natural control of ecosystem processes (e.g., clean air, filter water, bacteria decompose waste, flood control);
  - **<u>Cultural Services</u>** provide humans meaningful interaction with nature; and
  - **<u>Supporting Services</u>** provide indirect benefits through provision of habitat, biodiversity, and support for all other ecosystem services.
- <u>Environmental Infrastructure</u> means structures, facilities, systems, services and improvement projects related to (A) water, (B) waste and recycling, (C) climate adaptation and resiliency, (D) agriculture, (E) land conservation, (F) parks and recreation, and (G) environmental markets, including, but not limited to, carbon offsets and ecosystem services.
- <u>Greenway</u> (CGS 23-100) means a corridor of open space that (1) may protect natural resources, preserve scenic landscapes and historical resources or offer opportunities for recreation or nonmotorized transportation, (2) may connect existing protected areas and provide access to the outdoors, (3) may be located along a defining natural feature, such as a waterway, along a man-made corridor, including an unused right-of-way, traditional trail routes or historic barge canals or (4) may be a greenspace along a highway or around a village.
- Open Space Land (CGS 12-107(b)(3))<sup>51</sup> open space land means any area of land, including forest land, land designated as wetland under section 22a-30 and not excluding farm land, the preservation or restriction of the use of which would (A) maintain and enhance the conservation of natural or scenic resources, (B) protect natural streams or water supply, (C) promote conservation of soils, wetlands, beaches or tidal marshes, (D) enhance the value to the public of abutting or neighboring parks, forests, wildlife preserves, nature reservations or sanctuaries or other open spaces, (E) enhance public recreation opportunities, (F) preserve historic sites, or (G) promote orderly urban or suburban development.

<sup>&</sup>lt;sup>51</sup> https://www.cga.ct.gov/current/pub/chap 203.htm#sec 12-107b

- Parks and Recreation parks and recreation are resources and services provided for the purposes of leisure, entertainment, and recreational pursuits. Resources may be public spaces and facilities like parks, nature preserves, open space areas, greenways, trails, and built structures for sport, recreation, or arts programs. Examples of services include recreation activity programs, athletic leagues, special events, arts programs, and environmental education programs. The field of parks and recreation also encompasses resources and services offered by sector, though they are only delivered to members or paying visitors. Examples include YMCAs, health and fitness centers, resorts, and guide services. There are also quasi-public providers like power companies, land trusts, and other authorities that manage resources that may be used for recreation purposes. An example in Connecticut is the MDC reservoir trail.<sup>52</sup>
- <u>Resilience</u> 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.
- <u>Vulnerable Communities</u> means populations that may be disproportionately impacted by the effects of climate change, including, but not limited to, (1) low and moderate income communities, (2) environmental justice communities pursuant to section 22a-20a, (3) communities eligible for community reinvestment pursuant to section 36a-30 and the Community Reinvestment Act of 1977, 12 USC 2901 et seq., as amended from time to time, (4) populations with increased risk and limited means to adapt to the effects of climate change, or (5) as further defined by the Department of Energy and Environmental Protection in consultation with community representatives.

<sup>&</sup>lt;sup>52</sup> As defined by the Connecticut Recreation and Parks Association



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# environmental infrastructure primer

# agriculture





Environmental Markets



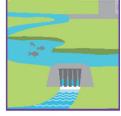
Land Conservation



Parks and Recreation



Agriculture



Water (Coming soon in 2023)



Waste and Recycling (Coming soon in 2024)



# Agriculture Primer

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# AGRICULTURE

PRIMER

# 1. Introduction

In October of 2021, the Connecticut Green Bank ("Green Bank") developed a plan upon which it was going to engage stakeholders to understand the various components of "environmental infrastructure" – see Figure 1. With its mission to "confront climate change by increasing and accelerating investment into Connecticut's green economy to create more resilient, healthier, and equitable communities," within each component of "environmental infrastructure," the cross-cutting issues of reducing greenhouse gas emissions ("GHG"), increasing climate adaptation and resilience, and enabling investment in vulnerable communities was explored.

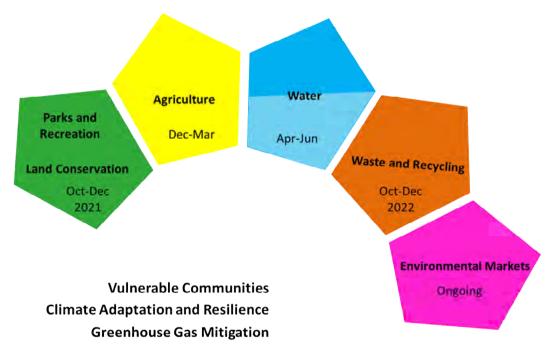


Figure 1. Process to Understand Components of Environmental Infrastructure

This primer reflects the observations, findings, and initial recommendations from the conversations with stakeholders and research conducted on agriculture.

#### 2. Overview

On July 6, 2021, Governor Ned Lamont signed Public Act 21-115 "An Act Concerning Climate Change Adaptation" ("the Act") into law. The bipartisan-supported public policy was among the sixty-one (61) recommendations made by the Governor's Council on Climate Change ("GC3"), including a recommendation to expand the scope of the Green Bank beyond "clean energy" to include "environmental infrastructure" (i.e., Recommendation #57).

Since its founding over a decade ago, the Green Bank has focused its efforts on using a limited amount of public resources to mobilize multiples of private investment in Connecticut to

increase and accelerate the deployment of "clean energy" to deliver social and environmental impact – see Figure 2.

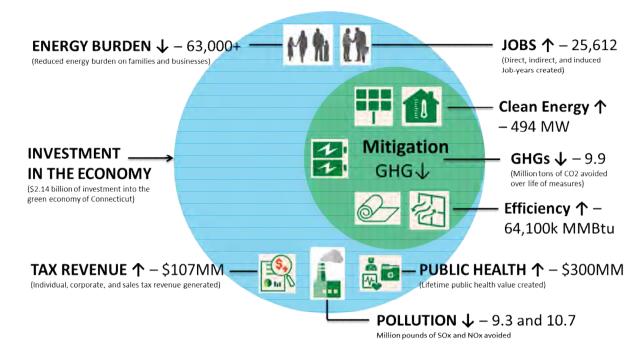


Figure 2. Decennial Impact of the Green Bank with focus on "Clean Energy" Deployment and Mitigation of GHG Emissions

Given its mission, the Green Bank helps the State of Connecticut achieve its ambitious public policy objectives (e.g., GHG emission reductions targets, renewable portfolio standards). In so doing, by 2025, no less than 40 percent of investment and benefits from its programs are to be directed to vulnerable communities.<sup>1</sup>

The Act, expands the scope of the Green Bank beyond "clean energy" to include "environmental infrastructure," and includes the following key provisions:

- <u>Definition</u> "environmental infrastructure" means structures, facilities, systems, services and improvement projects related to (A) water, (B) waste and recycling, (C) climate adaptation and resiliency, (D) agriculture, (E) land conservation, (F) parks and recreation, and (G) environmental markets, including, but not limited to, carbon offsets and ecosystem services;
- <u>Comprehensive Plan</u> requirement for the Green Bank to develop a Comprehensive Plan<sup>2</sup> prior to implementing any programs or initiatives related to "environmental infrastructure";

<sup>&</sup>lt;sup>1</sup> "Vulnerable communities" means populations that may be disproportionately impacted by the effects of climate change, including, but not limited to, low and moderate income communities, environmental justice communities pursuant to section 22a-20a, communities eligible for community reinvestment pursuant to section 36a-30 and the Community Reinvestment Act of 1977, 12 USC 2901 et seq., as amended from time to time, populations with increased risk and limited means to adapt to the effects of climate change, or as further defined by DEEP in consultation with community representatives.

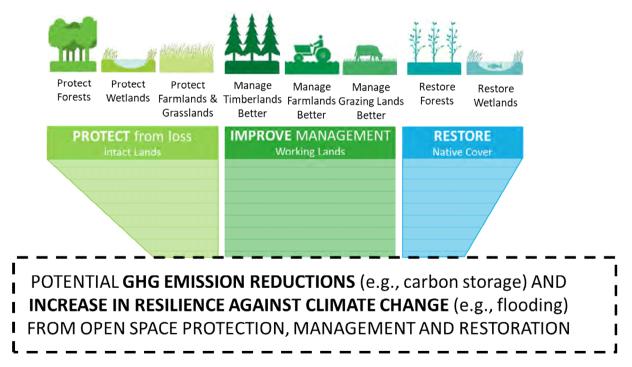
<sup>&</sup>lt;sup>2</sup> https://www.ctgreenbank.com/wp-content/uploads/2021/07/3 Comprehensive-Plan FY-2020-and-Beyond Final.pdf

- <u>Reporting</u> inclusion of the Banks Committee and the Environment Committee, alongside the Energy and Technology Committee and Commerce Committee in terms of reporting; and
- Bonding the ability to issue 25-year bonds for "clean energy" and 50-year bonds for "environmental infrastructure" (i.e., no more than the useful life of the projects), supported by the Special Capital Reserve Fund ("SCRF"), for up to 25 years to improve the rating of the bonds issued.

This document attempts to summarize the findings from the research and outreach efforts conducted by the Green Bank<sup>3</sup> on "agriculture" from December 2021 through March of 2022 and includes the following sections: (A) overview, (B) key public policies, (C) market potential, (D) target, (E) funding and financing programs, (F) other programs, (G) stakeholder outreach, (H) findings, (I) opportunities, (J) history of leadership and innovation, (K) references, and (L) definitions.

Nature-based solutions (e.g., agriculture) such as protecting farmlands from loss and improving farming practices, can support the Green Bank's mission by both mitigating the GHG emissions that cause climate change (e.g., climate smart agriculture) and increasing resilience against the impacts of climate change (e.g., flood protection) – see Figure 3.

Figure 3. Nature Based Solutions to Confront Climate Change - Mitigation and Resilience



# 3. Key Public Policies

The following are key public policies that advance "agriculture" in Connecticut, including, but not limited to:

<sup>&</sup>lt;sup>3</sup> Led by Bryan Garcia (President and CEO) and Ashley Stewart (Consultant)

- <u>State Plan of Conservation and Development</u> (CGS 16a-24) is an overarching statement of state policy in matters pertaining to land and water resource conservation and development. The Office of Policy and Management ("OPM") prepares revisions to the State Conservation and Development Plan ("State C&D Plan") on a recurring 5-year cycle and submits it for adoption by the Connecticut General Assembly ("CGA"). Once adopted, the State C&D Plan is then implemented by state agencies whenever they undertake certain actions.<sup>4</sup> The current State C&D Plan (i.e., for 2018-2023), includes the relevant "clean energy" and "environmental infrastructure" items, including, but not limited to:
  - A. <u>Greenhouse Gas Mitigation</u> reducing carbon dioxide emissions in the state consistent with the recommendations of the Connecticut Climate Change Preparedness Plan (i.e., 5.10);
  - B. <u>Climate Adaptation and Resilience</u> utilizing the state's renewable power generation potential to the extent compatible with the state goals for environmental protection, and minimize potential impacts to rural and suburban character and agricultural and scenic resources when siting new power generation facilities and/or transmission infrastructure (i.e., 4.8); and
  - C. <u>Agriculture</u> supporting community-based agriculture, historic preservation, and access to urban green spaces and waterways (i.e., 1.11), encouraging and promoting access to parks and recreational opportunities, including trails, greenways, community gardens, and mixed-income housing (i.e., 2.8), promoting agricultural businesses and supportive industries that are vital to the regional economy, preserve prime farmland through the acquisition of development rights, and when avoidance of such lands is not practical, minimize the loss of or conversion of agricultural lands by state-sponsored development actions (i.e., 4.10), promoting Connecticut's commercial and recreational fishing and aquaculture industries (i.e., 4.11), preserving and maintaining traditional working lands for the production of food, fiber, horticultural plant production, and supporting niche agricultural operations that enhance community food security throughout Connecticut (i.e., 5.8).
- <u>Executive Order 21-3</u> On December 16, 2021, Governor Ned Lamont signed Executive Order 21-3 which calls for 23 actions supporting more than thirty recommendations from the Governor's Council on Climate Change, including several recommendations on working lands:<sup>5</sup>
  - A. <u>Forest Climate Resilience and Mitigation Potential</u> DEEP engagement of stakeholders to ensure Connecticut's forests continue to be resilient against the impacts of climate change and to maximize forest potential to sequester and store carbon in support of Connecticut's GHG emission reduction goals.

<sup>&</sup>lt;sup>4</sup> Quasi-publics are not subject to this requirement

<sup>&</sup>lt;sup>5</sup> It should be noted that Connecticut is a member of the United States Climate Alliance, and one of the original signatories to the Natural and Working Lands Challenge in 2018 – <u>http://www.usclimatealliance.org/nwlchallenge</u>

- B. <u>Agriculture Climate Resilience and Mitigation Potential</u> DoAg engagement of stakeholders to ensure Connecticut's working lands and soils continue to be resilient against the impacts of climate change and to maximize forest potential to sequester and store carbon in support of Connecticut's GHG emission reduction goals.
- C. <u>Climate Resilience Using Nature-Based Solutions on State Properties</u> DEEP and Department of Administrative Services ("DAS") to develop guidance for state agencies to use nature-based solutions for flood and erosion control and stormwater management, integrate coastal marsh migration in state projects in coastal areas, and utilize low impact development and green infrastructure in new state construction and state-funded construction or redevelopment.
- 3. Use Value Assessment Law (Public Act 490 or CGS 12-107a-f)<sup>6</sup> passed by the CGA in 1963, it allows a farm, forest, or open space land to be assessed at its use value rather than its fair market or highest and best use value (as determined by the property's most recent "fair market value" revaluation) for purposes of local property taxation. Without the lower use value assessment, most landowners would have to sell the land because they would not be able to afford the property taxes on farm, forest, or open space land. It must be noted that Public Act 490 allows farmers to continue to farm, and other landowners to continue to own forest and open space land without being forced to sell it to pay the local property taxes. When the legislature passed Public Act 490 in 1963, it included in the law's wording that "it was in the public interest to encourage the preservation of farm, forest, and open space land." Studies done across the nation have conclusively proven that property tax revenues generated by farm, forest, or open space land, are far greater than the expenditures by the town to service that land. For example, under the current structure, the residential sector costs a town more to service then the amount of property tax generated from that sector. Thus, farm, forest, and open space land can actually help control and maintain reasonable rates of property taxation for all of a town's taxpayers.
- 4. <u>Ten Mill Program</u> (CGS 12-96) Ten Mill Program was developed in 1913 and required forest landowners to make a 100-year commitment to maintaining land as forest land in exchange for municipalities holding the property at a 10-mill rate and the valuation of the land at evaluation for 50 years after. The Ten Mill program has not added new propertied since the 1970's, however, both programs provide support to landowners that encourages conservation and open space.
- 5. Property Tax Exemptions (CGS 12-81) including farming tools (38), farm products, including produce and animals (39-42), and temporary structures (73). In addition to PA 490, a municipality may also vote to abate up to 50 percent of the property taxes of various farms (e.g., dairy, fruit, nursery) if the farm employs nontraditional cultivation methods (i.e., CGS 12-81m). And farm machinery (except motor vehicles) and building (per building) up to \$100,000 is value is already exempt from local property taxes, and a municipality may vote to provide an additional \$100,000 exemption for machinery and/or buildings (e.g., housing for seasonal employees).

<sup>&</sup>lt;sup>6</sup> https://www.cga.ct.gov/current/pub/chap 203.htm#sec 12-107a

- 6. Open Space Target (CGS 23-8)<sup>7</sup> establishes a 21% (i.e., 673,210 acres) of state land area by 2023 held by open space land, with 10% from the state (e.g., forests, parks) and not less than 11% from partners (e.g., municipalities, water companies, or non-profit land conservation organizations). The Comprehensive Open Space Acquisition Strategy (or "Green Plan")<sup>8</sup> is the comprehensive strategy for achieving the state goal, which includes priorities for strategic acquisitions of open space for climate change resiliency and preserving open space in perpetuity for state lands with high conservation value.
- 7. <u>Community Investment Act</u> (Public Act 05-228)<sup>9</sup> "An Act Concerning Farm Land Preservation, Land Protection, Affordable Housing and Historic Preservation," also known as the Community Investment Act ("CIA"), CIA provides a dedicated and consistent source of funding for state preservation of open space (Department of Energy and Environmental Protection or "DEEP"), farmland (Department of Agriculture or "DoAg"), historic sites (Department of Economic and Community Development or "DECD"), and affordable housing (Connecticut Housing Finance Authority or "CHFA"). Through a \$40 surcharge on local land recordings (i.e., \$1 to Town Clerk, \$3 to local government, \$10 supplemental income to dairy farmers, and \$26 to State Treasurer), about \$22 MM is raised each year, which is equally distributed in four (4) parts to the priority funding areas. DoAg is required to distribute CIA funds as follows: \$100,000 for the "Connecticut Grown" program, \$75,000 for Connecticut Farm Link Program, and \$1 million for the Agriculture Viability Grants Program. CIA also funds DoAg's Farmland Preservation Programs and supports the Connecticut Food Policy Council, Connecticut Seafood Advisory Council, and Connecticut Farm Wine Development Council.
- 8. <u>Forest Management Act</u> (CGS 23-20(b))<sup>10</sup> makes several changes in the Public Act 490 tax relief program for owners of eligible forest land and authorizes the Commissioner of DEEP to apply for certification or licensure of publicly owned woodlands and products from those woodlands under at least one of nine specified sustainable forest programs.<sup>11</sup> The 490 program provides farm, forest, and open-space landowners with tax relief to reduce the financial pressure to convert their property to other uses. Forest landowners whose property meets certain criteria may apply to the state forester for the relief.
- 9. <u>Climate Smart Agricultural Practices</u> as part of the passage of the budget by the Connecticut General Assembly within the 2022 legislative session, "An Act Concerning Climate Smart Agricultural Practices" was passed. Beyond providing \$14 MM in funding resources to support farmers through the policy, the DoAg may pay or reimburse nonprofit organizations, soil and water conservation districts, UCONN Extension Services, or municipalities for providing technical assistance, distributing grant funds to producers,

<sup>&</sup>lt;sup>7</sup> <u>https://law.justia.com/codes/connecticut/2012/title-23/chapter-447/section-23-8/</u>

<sup>&</sup>lt;sup>8</sup> https://portal.ct.gov/DEEP/Open-Space/The-Green-Plan

<sup>&</sup>lt;sup>9</sup> https://www.cga.ct.gov/2005/ACT/Pa/pdf/2005PA-00228-R00SB-00410-PA.pdf

<sup>&</sup>lt;sup>10</sup> Kingdon Woodland Assurance Scheme, or Smart Wood Program

<sup>&</sup>lt;sup>11</sup> Sustainable Forestry Initiative Program, American Tree Farm System, Canadian Standards Association's Sustainable Management System Standards, Finnish Standard, Forest Stewardship Council, Pan-European Forest Certification Program, Swedish Standards, United Kingdon Woodland Assurance Scheme, or Smart Wood Program

and other activities that will increase the number of farmers who are implementing climate-smart agriculture and forestry practices.

In order to identify opportunities to mobilize private investment, it is important to understand the public policy context in which "agriculture" operates. With the focus on the Green Bank's mission (i.e., confront climate change), public policy provides a mechanism to catalyze private investment.

# 4. Market Potential

#### Land Cover

The following is a breakdown of the markets potential for "agriculture" (i.e., farmland), including other natural forms of land cover (i.e., forestland and wetlands) – see Table 1.

#### Table 1. Land Cover in Connecticut (2015)<sup>12</sup>

3,179,253 Acres Land and Water in Connecticut						
921,827 Acres Developed	233,847 Acres Farmland	<b>1,873,471</b> Forestland <sup>14</sup>	<b>129,153</b> Wetlands <sup>15</sup>	20,955 Other Lands <sup>16</sup>		
Land <sup>13</sup>	7%	59%	4%	1%		
29%						

More than 70% of Connecticut's land is farmland, forestland, or wetland – see Figure 4.

It should be noted that CGS 23-20(b) allows DEEP to apply for sustainable forest management status for its 175,000 acres of state forests at 33 locations. State forests achieving such certification status may create opportunities to sell sustainably harvested timber or other wood products from state-owned forestlands.

<sup>&</sup>lt;sup>12</sup> UCONN CLEAR Project – 2015 Land Cover

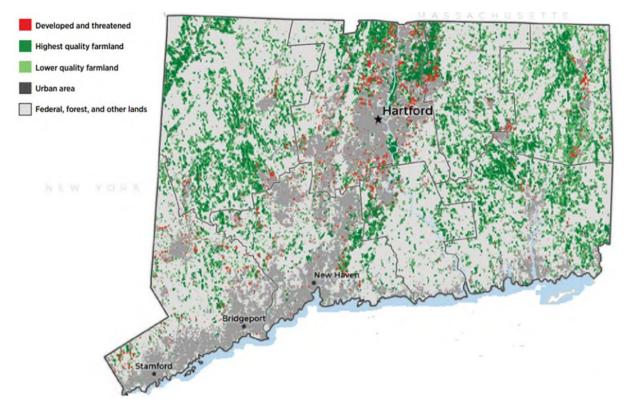
<sup>&</sup>lt;sup>13</sup> Includes "Developed," "Turf & Grass," and "Other Grasses" classifications

<sup>&</sup>lt;sup>14</sup> Includes "Deciduous Forest," "Coniferous Forest," "Forested Wetland," and "Utility-Rights-of-Way (Forest)" classifications

<sup>&</sup>lt;sup>15</sup> Includes "Water," "Non-Forested Wetlands," and "Tidal Wetlands" classifications

<sup>&</sup>lt;sup>16</sup> Includes "Barren" classification

#### Figure 4. Statewide Land Cover Map of Connecticut



Over the past twenty years, farmland and forestland have been lost to development – see Figure 5.

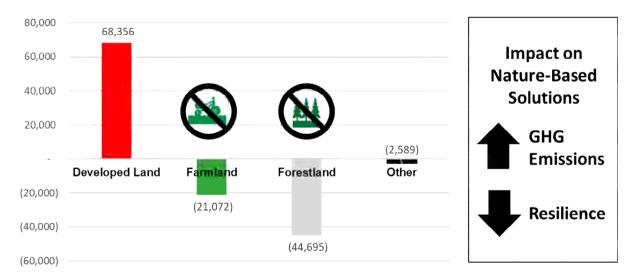


Figure 5. Statewide Land Cover Change (Acres) from 1995-2015

From 2001 through 2016, approximately 6% of the state's farmland was converted to urban or low-density residential development – placing the state in the top three nationally in percent of

farmland lost to development.<sup>17</sup> This loss of farmland and forestland, results in an increase in GHG emissions and a reduction in resilience as a result of development. Therefore a "no net loss of farmlands and forestlands" policy is important when it comes to confronting climate change in Connecticut.<sup>18</sup>

#### Use Value and Local Property Taxes

Recognizing the many public benefits nature provides the residents and businesses of the state, it is a policy in Connecticut that owners of farms, forests, and open space NOT experience burden through excessive property tax assessments that do not represent or align with the owner's current land-use. Public Act 490, known as the current-use law, allows farms, woodlots, or open space to be assessed at its use value, rather than its fair market or highest and best use value for purposes of local property taxation – see Table 2.

Category	State-Wide	River Valley
Tillable A	\$1,880	\$2,530
Tillable B	\$1,280	\$1,810
Tillable C	\$1,110	\$1,690
Tillable D	\$850	\$1,170
Orchard E	\$990	\$990
Pasture F	\$280	\$280
Swamp, Ledge, Scrub	\$40	\$40
G		
Woodland, Forestland	\$390	\$390

Assessed property tax is calculated at the town mill rate times the number of acres times the value of the land – in case of Public Act 490 land, the value is use value per the table above.

The following is a breakdown of natural lands (i.e., farmland, forestland, and wetlands, including open space land) in Connecticut served by the use value for property taxes under Public Act 490 – see Table 3.

#### Table 3. Natural Lands in Connecticut Served by Public Act 490

<b>2,236,471 Acres</b>	921,827 Acres	
Natural Lands	Developed Land	
70%	(including Other)	
856,385 <sup>19</sup> Acres Natural Lands Served by Public Act 490 38%	1,380,086 Acres	30%

<sup>&</sup>lt;sup>17</sup> "Planning for Agriculture – A Guide for Connecticut Municipalities: Emerging Agricultural Trends" by the American Farmland Trust and Connecticut Department of Agriculture (2020 Edition) (Page 19)

<sup>&</sup>lt;sup>18</sup> It should be noted that Connecticut is a signatory to the Natural and Working Lands Challenge of the United States Climate Alliance where there is an action to support an Alliance-wide goal to maintain natural and working lands as a net sink of carbon and protect and increase carbon storage capacity, while balancing near and long-term sequestration objectives.

<sup>&</sup>lt;sup>19</sup> As of September 15, 2021 with 83% of towns reporting – <u>https://portal.ct.gov/DEEP/Forestry/Forest-Land-</u> Taxation/Classification-of-Land-as-Forest-Land

233,895	465,774	149,942	6,774	Natural Lands	
Acres	Acres	Acres	Acres	<u>not</u> Served by	
Farmland	Forestland	Open	Other Land	Public Act 490	
27%	54%	Space	1%	62%	
		Land			
		18%			

Farmers pay an estimated \$34.5 MM per year in property taxes.<sup>20</sup>

#### Economic Development and Other Factors

The agriculture industry in Connecticut is worth \$5.2 billion,<sup>21</sup> supports 29,163 jobs, 5,521 farms totaling approximately 381,539 acres, including from cropland (i.e., 148,609 acres), pastureland (i.e., 31,923 acres), and woodlands (i.e., 201,007 acres) and 69% of farms are less than 50 acres, including:

- <u>Ownership</u> 72% are owned and operated vs. leased from others, 6.5% of farms and 10% of farmland is operated by tenant farmers who own none of the land they farm; and
- <u>Demographics</u> 31% of producers are 65 or older, over 40% of producers are woman, and less than 2% of producers are BIPOC (compared to 37% BIPOC population in Connecticut).<sup>22</sup>
- **Example Products** from land and sea farms, including, but not limited to:
  - <u>Dairy Farms</u> there are 90 licensed dairy farms that produce 428 million pounds of milk in 2019 (i.e., enough to satisfy about 86% of the milk consumed by Connecticut residents), and nearly \$80 million in dairy products in 2020;
  - **<u>Poultry Farms</u>** there are 1265 egg-laying and 159 meat producing chicken farms, with \$260 million in poultry and poultry product sales in 2020; and
  - <u>Shellfish Farms</u> 300 licensed farmers, 75,000 acres of shellfish farms are available for cultivation in Connecticut's coastal waters, producing 450,000 bushels of hard clams and 200,000 bushels of oysters, and \$30 million in shellfish products per year, the fastest growing agriculture sector in the state.

It is estimated that for every \$1 million of expenditures in agriculture, that between 20 to 40 jobs are created (e.g., 5, 8, and 35 jobs per \$1 million of expenditures from poultry and egg production, dairy cattle and milk production, and commercial fishing, respectively).<sup>23</sup>

Farms require on average 35 cents in Cost of Community Services ("COCS") for each dollar of property tax paid, in comparison to 25 cents for commercial and industrial, and \$1.12 for residential.

<sup>&</sup>lt;sup>20</sup> 2017 Census of Agriculture – Connecticut (14)

<sup>&</sup>lt;sup>21</sup> \$4.8 billion value of land and buildings and \$0.3 billion value of machinery and equipment

<sup>&</sup>lt;sup>22</sup> US Census Bureau, 2020

<sup>&</sup>lt;sup>23</sup> "Climate 21 Project" transition memo for the US Department of Agriculture

# 5. Target

There are two potential targets for agriculture in Connecticut – Farmland Preservation Program for Connecticut or Forestland and Farmland Protection in New England.

#### Farmland Preservation Program in Connecticut – 130,000 Acres

The long-term goal of the Farmland Preservation Program, which was set back in the 1980's, is to preserve 130,000 acres of farmland – see Table 4.

		<b>3,205,762</b> Land in Conr		
	<b>381,53</b> 9 Farn	2,824,223 Acres Non-Farmland		
<b>148,609</b> <b>Acres</b> Farmland	113,355 Acres Woodland	31,923 Acres Pastureland	<b>87,652</b> <b>Acres</b> Other <sup>25</sup>	
	<b>130,00</b> Preserved Fa			
48,744 Preserved	ł			

#### Table 4. Progress Towards the Farmland Preservation Program Target in Connecticut

As of October 2020, the Farmland Preservation Program has protected nearly 49,000 acres on 418 farms with agricultural conservation easements – leaving 81,000 acres of farmland left to preserve.<sup>26</sup> If the average real estate value of an acre of farmland in Connecticut in 2019 was \$12,200, and Purchasing Development Rights ("PDR") is 30-50% of value, then between \$300 to \$500 MM of public investment (e.g., through DoAg and/or USDA-NRCS) would be needed to protect 81,000 acres of farmland to achieve the 130,000 acres of farmland preserved target.

If 100% of Connecticut farms incorporated better management practices that had the potential to remove carbon from the atmosphere, including non-till, legume cover cropping, and spreading more compost, it would remove 94,902 MTCO2e from the atmosphere each year<sup>27</sup> – the equivalent of 150 MW of residential solar PV.<sup>28</sup> USDA expects to reduce net emissions and enhance carbon sequestration by more than 120 million MTCO2e per year by 2025.

#### Wildlands and Woodlands Vision for New England - 70 and 7 by 2060

The Wildlands and Woodlands vision calls for retaining <u>and</u> permanently protecting (e.g., conservation easements) at least 70 percent of the landscape in forestland (i.e., 90% woodlands and 10% wildlands) and another 7 percent in farmland by 2060 – see Figures 6 and 7.

<sup>&</sup>lt;sup>24</sup> USDA Economic Research Service – 2017 data

<sup>&</sup>lt;sup>25</sup> Land in house lots, ponds, roads, wasteland, etc.

<sup>&</sup>lt;sup>26</sup> Connecticut Department of Agriculture, Farmland Preservation Programs Report (January 2022)

<sup>&</sup>lt;sup>27</sup> "Planning for Agriculture – A Guide for Connecticut Municipalities: Emerging Agricultural Trends" by the American Farmland Trust and Connecticut Department of Agriculture (2020 Edition) (Page 17)

<sup>&</sup>lt;sup>28</sup> Based on Connecticut Green Bank analysis – see Annual Comprehensive Finance Report for FY21 (p. 218-241)



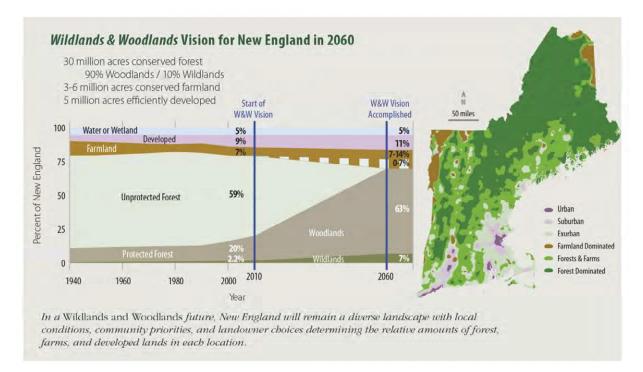
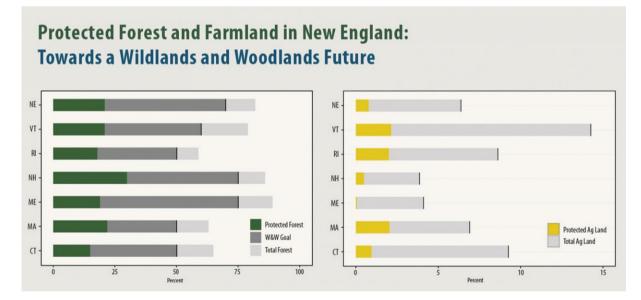


Figure 7. Protected Forestland and Farmland in New England



The single greatest challenge for achieving this goal is funding for the purchase of land and especially of easements on private lands to ensure that they remain undeveloped in perpetuity.

#### Forestland

Currently, in Connecticut, 59% of land is forestland (i.e., 1,873,471 acres) – of which, approximately 33% of forestland is protected by Public Act 490 (i.e., 622,490 acres).<sup>29</sup> Not only would a "no net loss of forestland" policy have to be pursued, but an additional 222,853 acres of developed land (i.e., excluding wetlands or 7% of additional land cover) would have to be converted to forestland to achieve the 70 percent of landscape as forestland target (i.e., about 6,400 acres per year). This would require growing smarter in cities and suburbs by encouraging efficient land use and smart growth, and redeveloping built landscape such as former industrial mills on recovering rivers and commercial brownfields. A significant effort would have to be initiated to permanently protect the 2,225,477 acres (i.e., 70% of land) as forestland through property tax benefits, conservation easements, and/or other mechanisms.

#### Farmland

Currently, in Connecticut, 7% of total land is farmland (i.e., 233,847 acres) – of which, about 46,000 acres or 20% is protected by agriculture conservation easements.<sup>30</sup> A "no net loss of farmland" policy would have to be pursued, and continued efforts to permanently protect farmland would require going beyond property tax benefits towards securing agriculture easements.

#### 6. Funding and Financing Programs

The following is an alphabetic breakdown of the current funding (i.e., grants) programs in support of "agriculture" in Connecticut, including, but not limited to:

- Agriculture Conservation Easement Program ("ACEP") USDA-NRCS's ACEP protects the agriculture viability and related conservation values of eligible land through agricultural land easements that help private and tribal landowners, land trusts, and other entities such as state and local governments protect croplands and grasslands on working farms and ranches by limiting non-agricultural uses of the land through conservation easements. Under the Land Easement component, the Natural Resources Conservation Service ("NRCS") of the USDA, may contribute up to 50 percent of the fair market value of the agricultural land easement (i.e., matching resources for DoAg Purchase of Development Rights ("PDR") program), and up to 75 percent where NRCS determines that grasslands and special environmental significance will be protected. Projects must have non-federal matching funds in hand.
- <u>Connecticut Farmland Preservation Program</u> (CGS 7-131d) administered by DoAg to leverage state, local, and private funds to permanently protect farms. Initiated in 1978, is funded by state bonding and the CIA, and has four (4) public policy priorities – open space (i.e., DEEP), agriculture preservation (i.e., DoAg), historic preservation (i.e., DECD), and affordable housing (i.e., CHFA).

Since 1978, DoAg has permanently protected 386 farms on 46,142 acres (i.e., about a third of the total acreage goal) by awarding \$128 MM in Farmland Preservation Program

<sup>&</sup>lt;sup>29</sup> Including forestland, open space land, and other lands

<sup>&</sup>lt;sup>30</sup> These are DoAg supported easements, and does not include easements through DEEP's OSWA program (i.e., see Land Conservation), nor USDS-NRCS programs.

grant funds (or \$2,778/acre).<sup>31</sup> Current law allows the Commissioner the ability to pay up to \$20,000 per acre, subject to appraisal.

It should be noted that USDA NRCS contributes \$2-\$4 million per year to the program as partners.

Connecticut Open Space and Watershed Land Acquisition Grant Program ("OSWA") (CGS 7-131d) – a matching grants program to provide financial assistance to municipalities, land trusts, and water companies to acquire open space and watershed lands, including the Urban Green and Community Garden Program for vulnerable communities. Initiated in 1998, is funded by state bonding and the CIA, provides financial assistance to municipalities and nonprofit land conservation organizations to acquire land for open space, and to water companies to acquire land to be classified as Class I or Class II water supply property, and is administered by DEEP to leverage state, local, and private funds to create a cooperative open space acquisition program.

Since 1998, DEEP has awarded over \$150 MM in open space grant funds to protect over 41,000 acres (or \$3,659/acre).

- <u>Connecticut Agriculture Viability Grants Program</u> for matching grants up to \$50,000 to plan and implement local farmland preservation strategies, to institute agriculture-friendly land use regulations, or to develop marketing initiatives to support local farm businesses.
- <u>Conservation Stewardship Program</u> ("CSP") for producers who practice conservation and environmental stewardship, by providing them technical and financial assistance through the USDA-NRCS to help them advance their efforts adopting additional conservation activities and maintaining their baseline level of conservation.
- <u>Emergency Watershed Protection Program</u> program administered by NRCS to respond to floods, fires, windstorms, and other natural disasters. The program funds removing debris, protecting eroded banks, correcting damaged drainage facilities, repairing levees, and purchasing flood plain easements. For construction activities, it provides up to 75% of the project costs.
- Environmental Quality Incentives Program ("EQIP") cost-share assistance program that provides up to 75 percent (90 percent for historically underserved producers) of the cost to implement certain structural and management practices on eligible agricultural land, including the following management practices: conservation tillage, cover cropping, nutrient management, and integrated pest management. EQIP payments are capped at \$450,000 in aggregate payments over five years.
- <u>Farmland Restoration Grant Program</u> a component of the climate-smart agricultural practices bill that passed the Connecticut General Assembly 2022 session, will provide farmers with resources to implement climate-smart practices.

<sup>&</sup>lt;sup>31</sup> Status of State PACE Programs by the American Farmland Trust and USDA's Farmland Information Center

The following is a breakdown of the current financing (i.e., loans, tax credits) programs that could support agriculture in Connecticut:

- <u>Business and Industry Loan Guarantee Program</u> through the USDA's Rural Development programs, this program provides a loan guarantee that allows businesses to work with commercial lenders who might not otherwise extend credit. A borrower may be a cooperative organization or a number of other forms, including individuals and land trusts. Loans can be used for preventing a business from closing, expand or convert a business, or purchase land, machinery, or equipment. The total loan amount may not exceed \$10 MM.
- Municipal Loan Program (CGS 22-26mm) the Commissioner of Agriculture shall administer a program providing eligible municipalities with a loan for purchasing or agricultural lands, through the "municipal purchasing of agricultural land account" within the General Fund. Such loan shall be for a period not to exceed five years and shall not be subject to interest. Municipalities shall be eligible for such loan if they provide not less than twenty percent of the purchase price of such lands and may apply for such loan on a form prescribed by the Commissioner.
- Rural Energy Savings Program ("RESP") RESP provides loans to rural utilities and other companies who provide energy efficiency loans to qualified consumers to implement durable cost-effective energy efficiency measures. The terms of the RESP loans are up to 20 years at 0% interest rate, up to 5% interest rate for relending to end-use customers for up to 10 years, and up to 4% of the loan may be used for start-up costs. Funds may be used for the purpose of implementing energy efficiency measures to decrease energy use or costs for rural families and small business. On September 20, 2020, the Green Bank submitted an application into the USDA's Rural Utilities Service's RESP to borrow \$10 MM for the purpose of financing clean energy projects in rural communities throughout Connecticut. The proceeds from the RESP would be used as capital to finance projects through the Green Bank Solar PPA, Capital Solutions, and C-PACE programs, along with Shared Clean Energy Facilities projects. As of June 1, 2022, the USDA has not yet made a determination on the Green Bank application.
- <u>Tax Considerations</u> per Internal Revenue Code section 170(h) criteria, donations of agricultural conservation easements generally qualifies as a tax-deductible charitable gift. This means that a landowner can claim the value of the easement as a federal income tax deduction. The value of an agricultural conservation easement is the difference between the property's fair market value (the "before" value) and its value as restricted by the easement (the "after" value) as determined by a qualified appraiser. Landowners may claim a federal tax deduction for a donated portion of a sale (i.e., difference between easement appraised value and its actual sales price). The federal tax code in 2006 established an enhanced tax deduction for conservation easements that allows landowners to claim a deduction of up to 50 percent of their adjusted gross income in any given year and to spread those deductions over a period of 15 years corporations are limited to 10 percent deductions.

Accessing funding or financing resources for agriculture in Connecticut can be difficult. Identifying new mechanisms to access additional funding and financing resources, especially those that seek to unlock more private capital investment, could provide a catalyst to increase and accelerate investment in agriculture in Connecticut. The Infrastructure Investment and Jobs Act ("IIJA") presents an opportunity to access funding and financing resources through formula or competitive grants for "agriculture".

# 7. Other Programs

The following are other items of note with respect to "agriculture":

- <u>Connecticut Farm Link Program</u> established by DoAg in 2007, and funded by CIA, it connects farmers seeking land with farmland owners looking to sell or lease acreage. CT Farmlink provides resource information and some technical assistance about farm leasing, farm transfer, farm succession planning, family farm estate planning, and farm transfer strategies. <u>www.ctfarmlink.org</u>
- <u>COMET Farm</u> is a farm and ranch carbon and greenhouse gas accounting system developed by the USDA-NRCS. The tool guides farmers through describing how their farm and ranch management practices compare the carbon changes and greenhouse gas emissions between current and future scenarios. <u>https://comet-farm.com/Home</u>
- <u>Center for Land-Use Education and Research ("CLEAR")</u> within the College of Agriculture, Health, and Natural Resources at the UCONN, CLEAR's mission is to provide information and assistance to land-use decision-makers and other audiences in support of better land-use decisions, healthier natural resources, and more resilient communities. <u>http://clear.uconn.edu/projects/landscape/CT/landcoverviewer.htm#top</u>
- <u>Open Space Review Board</u> is an independent advisory group of volunteers appointed by the Governor and leadership within the CGA under CGS 7-131(e) to oversee OWSA and RNHT programs.
- <u>Various Other Boards and Councils</u> including, but not limited to Connecticut Farm Wine Development Council, Connecticut Food Policy Council, Connecticut Seafood Development Council, Farmland Preservation Advisory Board, and DEI in Connecticut Agriculture Working Group.<sup>32</sup>

#### 8. Stakeholder Outreach

In an effort to understand the public policy and marketplace context for "agriculture" in Connecticut, the Green Bank met with many organizations.<sup>33</sup>

<sup>32</sup> https://portal.ct.gov/DOAG/Boards/Boards/Boards-Councils-and-Commissions

<sup>&</sup>lt;sup>33</sup><u>Agriculture</u> – American Farmland Trust, Berkshire Agriculture Ventures, City Seed, Connecticut Farm Bureau Association, Connecticut Farmland Trust, Connecticut Resource and Conservation Development, Dirt Capital Partners, DoAg, Gather New Haven, Green Wave, The Last Green Valley, Natural Resources Conservation Service, UCONN, Washington State Housing Finance Commission, Working Lands Alliance, and Yale Forest School

Land Conservation – American Forest Foundation, Audubon Connecticut, Connecticut Audubon, Connecticut Land Conservation Council, Conservation Finance Network, DEEP, Ecosystem Investment Partners, Goldman Sachs, Highstead, New

These 16 agriculture-related organizations primarily represent non-profit organizations but included public and for-profit organizations as well.

The objectives of these one-hour conversations included:

- <u>Introductions</u> to get a better understanding of the mission and initiatives of the various public, nonprofit, and for-profit stakeholders operating within the "agriculture" space, and to introduce the Green Bank;
- <u>Environmental Infrastructure</u> inform the various stakeholders about the "environmental infrastructure" policy,<sup>34</sup> process the Green Bank is pursuing to develop a Comprehensive Plan, and to elicit discussion on the following areas:
  - **<u>Relevance</u>** how relevant "environmental infrastructure" and its components (e.g., agriculture) are to the stakeholder's mission and initiatives;
  - <u>Policies and Targets</u> what local, state, and federal policies (e.g., Community Investment Act), including plans (e.g., Green Plan) are important from the stakeholder's perspective, and what targets (e.g., 130,000 acres of preserved farmland) are they seeking to achieve;
  - <u>Metrics</u> what are the key metrics stakeholders believe are important in terms of monitoring and evaluating success from investments in "environmental infrastructure" improvements and "agriculture";
  - <u>Vulnerable Communities</u> how does the stakeholder's organization think about the impacts that must be addressed from climate change to build the resilience of vulnerable communities;<sup>35</sup> and
  - **<u>Stakeholder Identification</u>** who else should the Green Bank meet with on the topic.

From these conversations, the Green Bank was able to develop a better understanding as to the role it might play in terms of financing "agriculture" from the perspective of its mission – to confront climate change.

England Forestry Foundation, New England Society of American Foresters, Quantified Ventures, Save the Sound, The Nature Conservancy, TNC's Nature Vest Program, and Yale Forest School

<sup>&</sup>lt;u>Parks and Recreation</u> – Connecticut Forest and Parks Association, Connecticut Greenways Council, Connecticut Recreation and Parks Association, DEEP, Green Eco Warriors, Keney Park Sustainability Project, Sierra Club, Trust for Public Lands, and Urban Resources Initiative.

<sup>&</sup>lt;sup>34</sup> Public Act 21-115 – An Act Concerning Climate Change Adaptation"

<sup>&</sup>lt;sup>35</sup> As defined by Public Act 20-05

# 9. Findings

Based on the various meetings with public, nonprofit, and private stakeholders, the following are key findings with respect to agriculture (it should be noted that additional findings have been generalized in the footnote):<sup>36</sup>

- Consistent with Mission to Confront Climate Change "agriculture," including its lands and a range of stewardship practices by farmers, ranchers, and forest landowners, sequester carbon and reduce GHG emissions, while also improving resilience to extreme weather (e.g., flood control), and therefore is consistent with the Green Bank's mission to "confront climate change". As the impacts of climate change are outpacing the ability for gray infrastructure (e.g., stormwater systems) to manage it, green infrastructure (e.g., agriculture) provides an excellent ability to mitigate flooding, and sequester carbon through climate smart practices and resilience through production of commodities (e.g., carbon offsets, ecosystem services).
- Agricultural Land is an Endangered Species there is a need to slowdown the loss of farmland in Connecticut from development, and protect it to provide benefits (e.g., food security,<sup>37</sup> public health, local and regional economic development, housing) to citizens and communities of Connecticut if we lose it, it is gone forever. The cost of community services ("COCS") versus the potential for local property tax revenues<sup>38</sup> come into conflict for land-use planners when faced with decisions to support agriculture versus development. It is important to not only protect marginal farmlands, but to specifically protect prime farmland because maintaining and continuously improving soil quality is vital for delivering the full benefits agriculture industry can provide across the state. Clean energy development (e.g., large solar fields or large scale solar) is adversely impacting farmlands, especially when sited on prime farmland. Dual-use solar on land (e.g., agrivoltaics) that has not been designated prime farmland by DoAg, nor important by USDA-NRCS could be explored.
- <u>Business is Difficult but Necessary</u> the \$580 MM agriculture industry in Connecticut<sup>39</sup> bears significant expenses. Primary amongst the cost of farming in Connecticut is labor (i.e., \$170 MM), equipment and supplies (\$49 MM), energy (i.e., \$44 MM),<sup>40</sup> and interest from debt (\$14 MM). In managing profits and expenses, farmers, generally, resist debt because loans create challenges to profit margins. With the everchanging climate, weather patterns are creating challenges to growing seasons and there is a need to invest in the modernization of infrastructure for the agriculture industry in Connecticut (e.g., urban agriculture, smart farms, livestock processing,

<sup>&</sup>lt;sup>36</sup> Additional findings – there are a number of additional funding sources for agriculture assistance (e.g., Supplemental Nutrition Assistance Program or "SNAP", Women, Infants, and Children or "WIC"), eel grass is for water as lichen is for air, kelp starts to deteriorate in 24 hours, can sink kelp to store carbon, farms must be places for food production and not a living space for the rich, role of local land-use boards determining battlegrounds for agriculture, value of volunteer time for federal resource match is \$33 per hour, need for crop insurance as filing for losses is cumbersome and not currently being practiced, PFAS contamination, manure management problems from phosphorus, culverts being undersized, stream bank erosion, dam removal (i.e., \$800,000 cost) vs. improvement (i.e., \$9 MM cost last for 50-100 years), from seeds to soils.

<sup>&</sup>lt;sup>37</sup> It should be noted that based on data from the Bureau of Economic Analysis, 11.8% of households in Connecticut experience food insecurity – with 4.9% as very low food secure households.

<sup>&</sup>lt;sup>38</sup> And the impacts of Public Act 490 on use value for local property taxation

<sup>&</sup>lt;sup>39</sup> 2017 Census of Agriculture – Connecticut (7)

<sup>&</sup>lt;sup>40</sup> Other major expenses include seeds, plants, vines, and trees (i.e., \$60 MM), feed (i.e., \$52 MM), and depreciation (\$33 MM)

distribution networks) to make the state more resilient to such dramatic changes.<sup>41</sup> Crop insurance – of which about 74% or 290 million acres in 2016 and \$8 billion from the federal government in 2019 subsidizing the crop insurance system – protects farmers against large financial loss caused by crop failures or market fluctuations (e.g., commodity price fluctuations).<sup>42</sup>

- Money is Not Always the Problem as important as local, state, federal, and private funding and financing resources are, sometimes not having enough people in government (e.g., streamlining farmland protection efforts), shortage of farm labor, having onerous processes (i.e., "red tape"), an inability to speak to co-benefits (e.g., job creation, resilience), or lack of understanding of important tools (e.g., conservation finance) can substantially inhibit progress towards increasing investment in agriculture.
- Need Mechanisms to Monetize Environmental Markets stakeholders recognize that environmental markets (e.g., carbon offsets, ecosystem services) may be able to provide additional sources of revenue from "climate-smart practices"<sup>4344</sup> to support the growth and development of the agriculture industry in Connecticut. Successful projects require public and/or private recognition of environmental commodity value, involvement of producers (i.e., farmers, including those who are working farmlands, pasturelands, and forestlands) adopting "climate-smart practices," engagement of scientists and conservation organizations providing technical assistance, credit-worthy long-term purchasers of such commodities, and reliable certifiers and verifiers.
- Blue Agriculture Potential regenerative ocean farming of seaweed and shellfish (i.e., Integrated Multi-Tropic Agriculture or "IMTA" or "3D-Ocean Farming") is a Connecticut innovation.<sup>45</sup> Connecticut's blue agriculture industry is not an offshore fisheries industry, but instead a \$30 MM shellfish industry in the estuary waters of Connecticut and New York's Long Island Sound. Farmers can bid for 5 to 15-year leases (i.e., 75,000 acres) and request permits to farm (i.e., currently 25,000 acres of active production) for seaweed and shellfish to produce 10 to 30 tubs of seaweed and 250,000 shellfish per acre, which as a bio-remediator absorbs nitrogen and phosphorus from non-point source pollution (e.g., stormwater and combined sewage overflow from Connecticut, air pollution from the west) and store carbon,<sup>46</sup> generate \$300,000 in revenue per farm, and provide 2 to 3 fulltime jobs and 7 to 10 seasonal jobs.<sup>47</sup> Seaweed can also produce bioplastics, bioenergy, and other consumer products.

<sup>&</sup>lt;sup>41</sup> As highlighted by the public health impact of COVID, there are only 3 days of perishable food available this side of the Hudson.

<sup>&</sup>lt;sup>42</sup> "The Case for Crop Insurance Reform" by Cortney Ahern Renton and Claire Huntley Lafave in the Conservation Finance Forum (April 8, 2020)

<sup>&</sup>lt;sup>43</sup> Native Energy produced carbon offsets (certified by the Voluntary Carbon Standard) from the 275-acre Laurel Brook Farm in East Canann from over 800 cows producing 2,000 TCO<sub>2</sub> offsets per year

 <sup>&</sup>lt;sup>44</sup> Various agricultural and forestry practices (e.g., replacing synthetic nitrogen over time, soil health shares) within the COMET planner and 2017 NASS AgCensus data within the United States Climate Alliance Report
 <sup>45</sup> <u>https://www.youtube.com/watch?v=6GchLfXTgIl</u>

<sup>&</sup>lt;sup>46</sup> Through the Kelp Climate Fund, Green Wave provides farmers \$0.10/pound of kelp farmed -

https://www.greenwave.org/kelp-climate-fund

<sup>&</sup>lt;sup>47</sup> Seaweed is 25% carbon and about 2-3% nitrogen according to Green Wave

 <u>Impact Metrics</u> – the following is a "high level" breakdown of the types of metrics appropriate for agriculture – see Table 5.

	Inputs		Outputs		Outcomes	
0	# of Farmers	0	Produce	0	Profitable Connecticut	
0	Diversity of Farmers	0	Types of Produce		Grown producers	
0	# of Farms	0	Culturally relevant crops	0	Increased ownership of	
0	Types of farms (farmlands,	0	Agriculture revenues and		farms by BIPOC farmers	
	pasturelands, forestlands,		expenses (including per	0	Connecticut Grown	
	oceanlands)		acre)		consumers	
0	Acres of Farms	0	Wholesale and retail price	0	Climate smart commodities	
0	New farmlands (e.g.,	0	Infrastructure (e.g.,		(e.g., carbon offsets)	
	community gardens,		housing, production,		including total, price, and	
	controlled environment		processing, distribution,		term	
	agriculture)		energy costs)	0	Ecosystem services (e.g.,	
0	New practices (e.g., climate-	0	Cost to transport		resilience, public health,	
	smart)	0	Community Supported		water quality, soil quality)	
0	Infrastructure Investment		Agriculture subscriptions	0	Jobs	
0	Agricultural Conservation	0	Protected farmland	0	Food security (e.g., reduced	
	Easements				food imports)	
0	Programs for BIPOC farmers			0	Fewer crop losses (e.g.,	
0	Municipal land-use boards				crop insurance claims)	
	support of agriculture					
0	Location of farms (e.g.,					
	urban farms)					

Table 5. Relevant Metrics Identified by Stakeholders on Agriculture

• <u>Vulnerable Communities</u> – even though BIPOC represent nearly one-quarter of the U.S. population, they operate less than 5% of farms, and cultivate less than 1% of farmland – in Connecticut, approximately 1.4% of farmers are BIPOC, compared to the BIPOC population being nearly 37% in the state.<sup>48</sup> About 6.5% of farms and 10.0% of farmland is operated by tenant farmers who own none of their land. Increasing BIPOC access to farming and ownership of farms by BIPOC entrepreneurs is needed.

These are the key findings from the stakeholders on agriculture.

# 10. **Opportunities**

The following is a list of opportunities for consideration by the Green Bank given the broad categories of information and data, environmental markets and conservation finance, funding and financing sources, and other potential opportunities:

1. <u>Information and Data</u> – as a foundation, access to high quality information is important from which to base decisions. The following is a breakdown of opportunities for consideration with respect to information and data:

<sup>&</sup>lt;sup>48</sup> "Farmland Needed – How Connecticut Can Help Farmers Access the Land They Need to Succeed" by the American Farmland Trust and Connecticut Department of Agriculture (January 2021)

- A. <u>Connecticut Grown</u> is the marketing brand for promoting products made in Connecticut and sold to consumers. Continuing to increase the awareness of the logo by and the purchasing of products from consumers is an important demandside approach for fostering the sustained orderly development of the local agriculture industry. Considering community-based marketing approaches such as Solarize,<sup>49</sup> into an agriculture-focused community-based campaign for CSA's, farmers markets, food waste collection, etc. can increase consumer demand for Connecticut Grown products.
- B. <u>Connecticut Farm Link</u> to improve the capabilities of connecting farmland owners to farmland seekers and producers, support for improving the Connecticut Farm Link technology may be necessary. Currently, there are more farmland seekers than owners, and farmland owners rely on traditional realtor sites like Zillow and Realtor.com to list their properties.
- C. Land Grant and Sea Grant Universities Connecticut has robust land grant (i.e., UCONN – Storrs) and sea grant (i.e., UCONN – Avery Point) universities, and the Yale School of the Environment's Forestry School, which owns nearly 8,000 acres of managed forestland in Connecticut. Utilizing these resources for research, education, and outreach to confront climate change through agriculture is necessary.
- D. <u>Yale School of the Environment</u> Yale School of the Environment, and its work supporting conservation finance (e.g., partnership with the Conservation Finance Network) presents a unique opportunity to continuously inform and develop conservation finance practitioners in Connecticut. The Green Bank should consider providing local stakeholders with access to information (e.g., promoting Conservation Finance Network) and professional development opportunities (e.g., sponsorship of bootcamps on conservation finance) to accelerate the advancement and practice of conservation finance in Connecticut.
- E. <u>Land Trusts</u> included within the data warehouse the inventory of land trusts across the state where there are easements held.
- Environmental Markets and Conservation Finance in terms of identifying potential carbon offset and/or ecosystem services revenue streams within compliance and voluntary markets that can support financing of agriculture, the following is a breakdown of opportunities for consideration with respect to environmental markets and conservation finance:
  - A. <u>Partnership for Climate-Smart Commodities</u> see below under "Funding and Financing" section.
  - **B.** <u>**Procurement**</u> similar to power purchase agreements for clean energy, assisting producers connect with consumers of climate-smart products and

<sup>&</sup>lt;sup>49</sup> https://cbey.yale.edu/research/solarize-your-community-an-evidence-based-guide-for-accelerating-the-adoption-of

commodities through guaranteed offtake agreements,<sup>50</sup> including community-supported agriculture.

- Funding and Financing Sources in terms of identifying additional funding (i.e., grants) and financing (e.g., loans) that can increase and accelerate investment, the following is a breakdown of opportunities for consideration with respect to funding and financing of agriculture:
  - **A.** <u>Green Liberty Bonds</u> issue a \$25 MM bond<sup>51</sup> to raise proceeds to support investments in agriculture, including, but not limited to:
    - i. Pilot Revolving Loan Fund for Buy-Protect-Sell (or Lease to Own) - modelling the Farmland Protection and Affordability Investment ("Farmland PAI") Program of Washington State, working in collaboration with DoAg and nonprofit agricultural conservation organizations, provide loans to land trusts to help them move quickly to permanently protect critical farmland from development. A \$25 MM pilot revolving loan fund<sup>52</sup> would offer low interest rates and better terms to support land trusts buy land now for later protection and management (i.e., working land easements), and sale (or lease), including priority for BIPOC farmers and farm ownership. The Green Bank needs to understand if it can pursue this approach as a foundational strategy for agriculture (and land conservation). A growing number of states also offer loan programs to assist beginning farmers and ranchers with eligible purchases of farmland, equipment, buildings, and livestock through Aggie Bonds.<sup>53</sup> Food systems are ripe for the attention that state and municipal clean energy bind finance has received over the last decade from philanthropy and green banks providing credit enhancements to strengthen credit ratings of municipal bonds.54
    - ii. <u>Infrastructure Modernization</u> working with DoAg, to identify opportunities to invest in critical agriculture industry infrastructure modernization projects (e.g., production, processing, and distribution facilities, resource hubs, cooperative farming models) that would support climate-smart practices and products to develop and grow in the Connecticut marketplace.<sup>55</sup> This would also include financing physical infrastructure such as food and farm-waste to energy projects, food banks, regional markets, equipment, and industrial kitchens and technological and promotional infrastructure such as Connecticut Farm

53 https://www.cdfa.net/cdfa/cdfaweb.nsf/0/3515CC91CAB651C1882579360059F5E7

<sup>&</sup>lt;sup>50</sup> <u>https://www.conservationfinancenetwork.org/2019/07/24/how-guaranteed-offtake-can-drive-sustainable-agriculture</u>

<sup>&</sup>lt;sup>51</sup> Amount is for discussion purposes only, and set at an amount to match a Connecticut proposal into the USDA's Commodity Credit Corporation's "Partnership for Climate Smart Commodities" funding opportunity announcement.

<sup>&</sup>lt;sup>52</sup> Assuming the average price for agriculture land is \$12,200 per acre, this fund could support over 2,000 acres of farmland, revolving on average every 5 years.

<sup>&</sup>lt;sup>54</sup> "Soil Wealth: Investing in Regenerative Agriculture across Asset Classes" by Croatan Institute, Delta Institute, and Organic Agriculture Revitalization Strategy (July 2019)

<sup>&</sup>lt;sup>55</sup> For example, providing financing to the redevelopment of Connecticut's Regional Agriculture Market in Hartford in collaboration with DoAg and CRDA

Link, "Connecticut Grown – Climate Smart," and direct delivery of community supported agriculture memberships. Low cost and long-term financing for clean energy (e.g. dual-use solar, battery storage, combined heat and power, fuel cells) to lower energy costs and meet qualifications for forage and crop yield should be considered.

From research conducted by the Green Bank, it can be seen that retail investors in bonds are interested in agriculture, including Connecticut citizens who are also interested in investing in rooftop solar and home energy efficiency – see Figure 8.

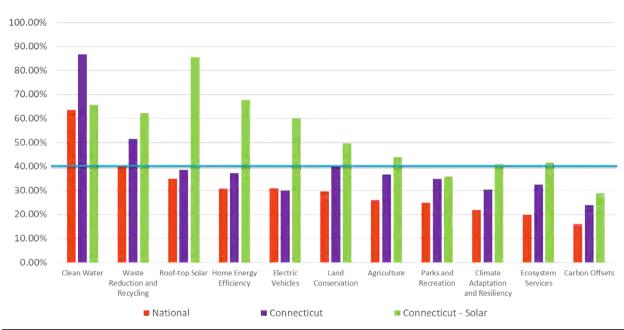
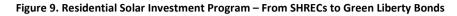


Figure 8. Retail Investor Use of Proceed Interest in Clean Energy and Environmental Infrastructure

B. Partnership for Climate-Smart Commodities – working with UCONN and DoAg, UCONN submitted a \$50 MM proposal, that would have been matched by a \$25 MM Green Liberty Bond, through the \$1 billion competitive solicitation of the United States Department of Agriculture's ("USDA") Commodity Credit Corporation (i.e., USDA-NRCS-COMM-22-NOFO0001139) in response to the climate crisis by supporting actions within the agriculture sector to produce climate-smart commodities.<sup>56</sup> As the lead primary applicant, UCONN would support producers adopt and sustainably implement climate-smart practices, and as the co-lead, the Green Bank, with its expertise from the Residential Solar Investment Program (see Figure 9), would adapt the clean energy model to climate-smart agriculture (see Figure 10). Included with the proposal is \$5 MM for performance-based incentives based on certified and verified carbon offsets. The project submitted by UCONN, in the end, wasn't supported by the USDA.

<sup>&</sup>lt;sup>56</sup> Defined as an agricultural commodity that is produced using agriculture (i.e., farming, ranching, or forestry) practices that reduce greenhouse gas emissions or sequester carbon.

However, DoAg subsequently released a \$14 MM grant program in support of climate smart agriculture in Connecticut.



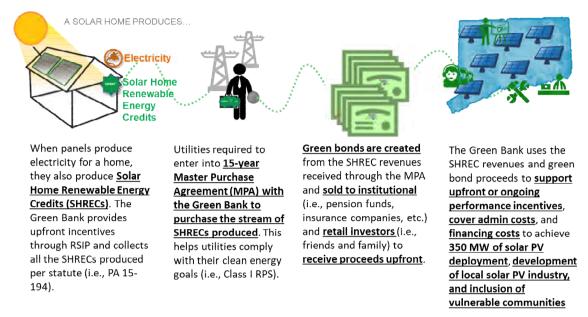
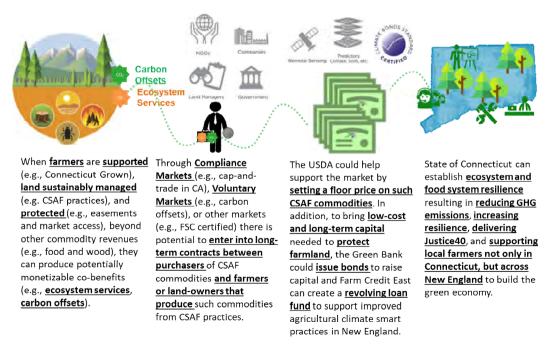


Figure 10. Climate Smart Controlled Environment Agriculture (CEA) for Tribes and Small Farms in New England: Building Profitable, Sustainable and Resilient Farms



C. <u>Community Match Fund</u> ("CMF") – a program of Sustainable CT, the Community Match Fund provides fast, flexible funding, and support for community engagement on a wide-range of sustainability projects. This societal value uses an innovative, online tool to connect grant contributions from the "crowd," which are matched by various donor interests, including, but not limited to individuals, foundations, and the State of Connecticut. As of January 1, 2022, the Fund has raised \$1.3 MM from nearly 10,000 individual contributors, which was matched by \$1.1 MM from various sponsors, and supported 195 projects. The Green Bank could consider working with entities like Sustainable CT, with tools like the CMF, to enable funding for agriculture to be matched by the crowd, while also ensuring that equity and vulnerable communities are front and center in receiving the benefits of such investment.

- Other Potential Opportunities there are a number of other potential opportunities that can support financing of agriculture, including:
  - A. <u>Public Policy</u> working with DoAg, consider public policies to advance farmland protection in Connecticut with the goal of "no net loss of farmlands and forestlands to development," including, but not limited to:
    - i. <u>Establishing Statutory Goals</u> similar to the Open Space goal (i.e., 22% by 2023, which may include agriculture), renewable energy goal (i.e., RPS), and GHG emission reduction goal (i.e., Global Warming Solutions Act), establish targets for farmland protection as the foundation to goal setting, including bringing new farmers into the agriculture industry.
    - ii. <u>Negative Emissions</u> as proposed by the Connecticut Forest and Parks Association with respect to Senate Bill 10, add a "negative emissions" definition,<sup>57</sup> require "negative emissions" in GHG emissions inventory, and recognize the importance of nature-based solutions within the Global Warming Solutions Act.
    - iii. <u>Conservation Finance Act</u> consider public policies that provide incentives for performance-based outcomes modelled after proposed Senate Bill 348 "Conservation Finance Act" in Maryland,<sup>58</sup> which would enable more private investment in nature-based solutions that result in measurable improvements to ecosystems, including carbon offsets and ecosystem services.
  - B. <u>Sustainable CT</u> commits municipalities to take on a variety of tasks to promote sustainability and earn points for community designation, including "Developing Agriculture-Friendly Practices," including:
    - i. <u>4.3.1.</u> adopt land use policies and regulations that allow and support active agricultural uses;

 <sup>&</sup>lt;sup>57</sup> "Negative emissions" means greenhouse gases that are removed from the atmosphere through nature-based solutions such as soils, forests, wetlands, and other working or natural lands, or through negative emissions technologies.
 <sup>58</sup> https://mgaleg.maryland.gov/mgawebsite/Legislation/Details/SB0348

- **ii.** <u>4.3.2.</u> allow active agriculture use of municipal land or provide outreach on CT Farmlink (linking available municipal or private lands to farmers looking for land to farm.
- iii. <u>4.3.3.</u> develop a Transfer or Purchase of Development Rights program.
- iv. <u>4.3.4.</u> hold a farmer forum to identify critical needs or issues for agriculture in the community.

Promote the existing areas noted above while exploring the possibility of additional points to advance agriculture in Connecticut.

**C.** <u>Commitment to Prime Farmland</u> – given their inefficiency<sup>59</sup> and footprint, and given the importance of quality soil for agriculture and food security, the Green Bank should consider never providing capital to finance solar PV projects on prime farmland unless dual-use solar (e.g., agrivoltaics). It should be noted that the Green Bank has financed clean energy projects on farmland (i.e., farm waste to energy – AD and CHP)<sup>60</sup> and forestland (i.e., wind power).<sup>61</sup>

These are a few of the opportunities identified by the Green Bank to support its mission and advance agriculture in Connecticut. Developing a method for prioritizing what opportunities under consideration are ultimately pursued, given the limited human and financial resources, and organizational structure of the Green Bank, is an activity for a later date.

# 11. References

In addition to the conversations with stakeholders, the Green Bank reviewed the following documents to support its findings and opportunities:

- <u>Building Blocks for Climate Smart Agriculture and Forestry</u> A USDA resource, including Implementation Plan and Progress Report (May 2016)
- <u>Conservation Options for Connecticut Farmland</u> A Guide for Landowners, Land Trusts, and Municipalities (2020 Edition) by the American Farmland Trust
- <u>Climate 21 Project</u> Biden-Harris Transition Memo for the Department of Agriculture
- Economic Impacts of Connecticut's Agricultural Industry by the UCONN College of Agriculture, Health and Natural Resources: Report No. 6 (September 2017)
- <u>Planning for Agriculture</u> A Guide for Connecticut Municipalities: Emerging Agricultural Trends (2020 Edition) by the American Farmland Trust and Connecticut Department of Agriculture

<sup>&</sup>lt;sup>59</sup> Solar PV has capacity factor of 15% versus wind of 35%, hydro of 35%, AD of 30-80%, and fuel cells of 90%.

<sup>&</sup>lt;sup>60</sup> <u>https://aggridenergy.com/fort-hill-ag-grid-digester/</u>

<sup>&</sup>lt;sup>61</sup> <u>https://www.thewindpower.net/windfarm\_en\_22885\_colebrook-south.php</u>

 Wildlands and Woodlands – Farmlands and Communities: Broadening the <u>Vision for New England</u> – by The Harvard Forest, Highstead Foundation, and New England Forestry Foundation (2017)

# 12. Definitions

The following are important definitions when it comes to "agriculture" in Connecticut:

- **Agriculture** (CGS 1-1(g)) shall include cultivation of the soil, dairying, forestry, raising or harvesting any agricultural or horticultural commodity, including the raising, shearing, feeding, caring for, training and management of livestock, including horses, bees, the production of honey, poultry, fur-bearing animals and wildlife, and the raising or harvesting of oysters, clams, mussels, other molluscan shellfish or fish; the operation, management, conservation, improvement or maintenance of a farm and its buildings, tools and equipment, or salvaging timber or cleared land of brush or other debris left by a storm, as an incident to such farming operations; the production or harvesting of maple syrup or maple sugar, or any agricultural commodity, including lumber, as an incident to ordinary farming operations or the harvesting of mushrooms, the hatching of poultry, or the construction, operation or maintenance of ditches, canals, reservoirs or waterways used exclusively for farming purposes; handling, planting, drying, packing, packaging, processing, freezing, grading, storing or delivering to storage or to market, or to a carrier for transportation to market, or for direct sale any agricultural or horticultural commodity as an incident to ordinary farming operations, or, in the case of fruits and vegetables, as an incident to the preparation of such fruits or vegetables for market or for direct sale.
- <u>Agriculture Conservation Easement</u> is an easement specifically designed for agricultural land. It is a deed restriction or deed covenant that landowners donate or are paid to place on their property.
- <u>Aquaculture</u> (CGS 1-1(q)) means the farming of the waters of the state and tidal wetlands and the production of protein food, including fish, oysters, clams, mussels and other molluscan shellfish, on leased, franchised and public underwater farmlands.
- <u>Community Supported Agriculture ("CSA")</u> is a food production and distribution system that directly connects farmers and consumers with Connecticut grown products. Consumers purchase shares of a farm's harvest in advance and then receive a portion of the crops as they are harvested.
- <u>Conservation Easement</u> is a deed restriction or deed covenant that landowners voluntarily place on part or all of their land. The easement limits development in order to protect the land's natural resources.
- <u>Environmental Infrastructure</u> means structures, facilities, systems, services and improvement projects related to (A) water, (B) waste and recycling, (C) climate adaptation and resiliency, (D) agriculture, (E) land conservation, (F) parks and recreation, and (G) environmental markets, including, but not limited to, carbon offsets and ecosystem services.

- <u>Farm</u> (CGS 1-1(q)) includes farm buildings, and accessory buildings thereto, nurseries, orchards, ranges, greenhouses, hoophouses and other temporary structures or other structures used primarily for the raising and, as an incident to ordinary farming operations, the sale of agricultural or horticultural commodities.
- Farm Land (CGS 12-107b) means any tract or tracts of land, including woodland and wasteland, constituting a farm unit.
- Open Space Land (CGS 12-107(b)(3))<sup>62</sup> open space land means any area of land, including forest land, land designated as wetland under section 22a-30 and not excluding farm land, the preservation or restriction of the use of which would (A) maintain and enhance the conservation of natural or scenic resources, (B) protect natural streams or water supply, (C) promote conservation of soils, wetlands, beaches or tidal marshes, (D) enhance the value to the public of abutting or neighboring parks, forests, wildlife preserves, nature reservations or sanctuaries or other open spaces, (E) enhance public recreation opportunities, (F) preserve historic sites, or (G) promote orderly urban or suburban development.
- Option to Purchase at Agriculture Value ("OPAV") is a voluntary legal agreement that restricts the sale of land to only certain farmers or to family members, and restricts the sale price to agricultural value (versus the higher fair market value). An OPAV is placed when the landowner sells or donates an OPAV to a land trust or government agency. Once land has an OPAV, its value is usually lowered (because the land is no longer able to be sold to all willing buyers and must be sold for agricultural value). This decreased value can make land with an OPAV more affordable for buyers, including farmers who may want to purchase the land.
- Prime Farmland based on Natural Resources Conservation Service ("NRCS") criteria, "prime" farmland is land with soils that have the best combination of physical and chemical characteristics for producing crops.
- Purchase of Development Rights ("PDR") also referred to as the Purchase of an Agricultural Conservation Easement ("PACE") in other states, PDR is process by which an entity, usually a town or state government, purchase the development rights from a willing landowner, restricting future use of the land. Typically a conservation easement restricts residential and non-farm commercial development of the property in perpetuity, while allowing continued use of the land for farming. The landowner retains ownership of the land and may sell it or pass land on to heirs. The current, and all future owners, must abide by the terms of the easement. Easements are held by state, local government, and/or land conservation organization, and the entity that holds the easement is responsible for ensuring that the terms of the easement are upheld. Land under an agricultural conservation easement may be permanently assessed at its use value.
- <u>Resilience</u> means the ability to prepare for and adapt to changing conditions and withstand and recover rapidly from deliberate attacks, accidents or naturally occurring

<sup>62</sup> https://www.cga.ct.gov/current/pub/chap 203.htm#sec 12-107b

threats or incidents, including, but not limited to, threats or incidents associated with the impacts of climate change.

- <u>Vulnerable Communities</u> means populations that may be disproportionately impacted by the effects of climate change, including, but not limited to, (1) low and moderate income communities, (2) environmental justice communities pursuant to section 22a-20a, (3) communities eligible for community reinvestment pursuant to section 36a-30 and the Community Reinvestment Act of 1977, 12 USC 2901 et seq., as amended from time to time, (4) populations with increased risk and limited means to adapt to the effects of climate change, or (5) as further defined by the Department of Energy and Environmental Protection in consultation with community representatives.
- Working Lands Easement help private and tribal landowners, land trusts, and other entities such as state and local governments protect croplands and grasslands on working farms and ranches by limiting non-agricultural uses of the land through conservation easements.



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# STATE OF CONNECTICUT DEPARTMENT OF BANKING 260 CONSTITUTION PLAZA – HARTFORD, CT 06103-1800



Jorge L. Perez Commissioner

August 9, 2022

Ann E. Misback Secretary, Board of Governors of the Federal Reserve System 20<sup>th</sup> Street and Constitution Avenue, NW Washington, DC 20551

Chief Counsel's Office Attention: Comment Processing Office of the Comptroller of the Currency 400 7th Street, SW Suite 3E-218 Washington, DC 20219

James P. Sheesley Assistant Executive Secretary, Federal Deposit Insurance Corporation Attention: Comments RIN 3064-AF81 550 17th Street, NW Washington, DC 20429

### Re: Connecticut Department of Banking Comments on Proposed Rule – Community Reinvestment Act Regulations (RIN 7100-AG29; OCC Docket ID OCC-2022-0002; RIN 3064-AF81)

To whom it may concern:

The Connecticut Department of Banking (the "Department")<sup>1</sup> submits the following

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<sup>&</sup>lt;sup>1</sup> We note that the Department is an agency accredited by both the Conference of State Bank Supervisors (CSBS) and National Association of State Credit Union Supervisors (NASCUS). The accreditations issued by CSBS and NASCUS afford the Department with the ability to conduct alternating and joint examinations with our federal agency counterparts, signaling a recognition of the Department's strong examination program. The

comments in response to the Board of Governors of the Federal Reserve's, the Office of the Comptroller of the Currency's, and the Federal Deposit Insurance Corporation's (collectively, the "Agencies") request for comments on proposed changes to the Agencies' Community Reinvestment Act ("CRA") regulations.

We applaud the Agencies' attempts to clarify CRA compliance requirements through the proposed rule. We are also encouraged by the coordinated rulemaking approach of the Agencies so that a uniform CRA standard is developed applicable to all banks. We also urge the Agencies to consider broadening the scope of CRA coverage to include certain socially beneficial activities that may not have a direct connection to low- and moderate-income ("LMI") communities, but would indirectly benefit those communities. Finally, the Agencies should broaden the carve-out in CRA regulations to allow state banking regulators to continue to independently examine and evaluate state-chartered institutions for CRA compliance and should develop a formal mechanism for the identification of CRA eligible loans and activities agreed jointly by the relevant state and federal supervisory authorities.

## <u>Coordinated Agency rulemaking helps promote fairness by establishing a uniform CRA</u> <u>standard.</u>

We believe any modernization of CRA standards should be conducted through a coordinated effort of the Agencies so that a uniform standard is created. To that end, we are encouraged that the Agencies have now issued this proposed rulemaking jointly with the aim to establish a uniform standard. Absent such a uniform standard, there is increased likelihood of disparate bank CRA evaluation. We believe such a piecemeal approach does a disservice to all supervised institutions and creates more confusion in the industry. CRA reform should create more certainty for industry and regulators alike. The Agencies' coordinated approach to this rulemaking should hopefully provide needed clarity for the industry and further CRA's goal of having a positive impact on LMI communities.

## <u>Publishing a non-exhaustive list of qualifying activities and confirming that an activity</u> <u>qualifies for CRA credit will provide clarification and ease compliance burdens.</u>

The Agencies' proposal to clarify what types of activities qualify for CRA credit is a positive aspect of the proposed rule and will ease CRA-related compliance burdens for financial institutions, particularly community banks. We support efforts to more clearly delineate the CRA treatment of certain activities. Of particular significance, we believe that requiring the Agencies to periodically publish a non-exhaustive list of examples of qualifying activities and establishing a process for banks to seek confirmation that an activity is a qualifying activity will provide much-needed relief and guidance for financial institutions. The list of examples of qualifying activities should be created in consultation and coordination with the Agencies' state regulatory counterparts. State input will help ensure consistent application of CRA standards.

Department's examiners' and managers' significant regulatory experience also includes the supervision of systemically important financial institutions.

These changes will remove much of the guess work that financial institutions must currently undertake to figure out whether an activity would qualify for CRA credit. Reducing this uncertainty will ease compliance burdens on financial institutions and allow them to focus more resources on actually engaging in CRA-qualifying activities.

# <u>Socially beneficial activities, particularly efforts to address climate change, should also count as CRA-qualifying activities.</u>

In order to more fully achieve CRA's fundamental purpose of encouraging banks to serve LMI communities, we believe the scope of CRA-qualifying activities should be modernized and expanded to include those activities that are still socially beneficial for LMI communities even if such transactions do not directly involve a LMI party.

At present, certain investments by banks in broad environmental initiatives or green technology do not qualify for CRA credit. However, such socially beneficial investments could have a significant impact on LMI communities, which are particularly vulnerable to the adverse effects of climate change, and higher energy costs.<sup>2</sup> States continue to adopt innovative programs that leverage private investment to combat climate change.<sup>3</sup> We support efforts that afford CRA credit to financial institutions who invest in such state programs.

We believe this is yet another opportunity for the Agencies to coordinate with their state regulatory counterparts. Such collaboration will allow states to provide useful input regarding the types of socially beneficial activities that should qualify for CRA credit. This will also allow for more consistent application of CRA standards.

We encourage the Agencies to consider such socially and environmentally beneficial activities within the scope of activities for which financial institutions receive CRA credit. Including such activities within the scope of those considered for CRA credit will allow for financial institutions to more holistically serve LMI communities.

### <u>State ability to independently examine and evaluate CRA performance should be preserved</u> and coordination between state and federal regulators should be improved.

At present, Connecticut is one of a handful of states that also retains the authority to examine and evaluate state-chartered financial institutions for CRA compliance.<sup>4</sup> The Department has decades

<sup>&</sup>lt;sup>2</sup> See Fourth National Climate Assessment, *available at <u>https://nca2018.globalchange.gov/</u>. ("Impacts [of climate change] within and across regions will not be distributed equally. People who are already vulnerable, including lower-income and other marginalized communities, have lower capacity to prepare for and cope with extreme weather and climate-related events and are expected to experience greater impacts. Prioritizing adaptation actions for the most vulnerable populations would contribute to a more equitable future within and across communities.")* 

<sup>&</sup>lt;sup>3</sup> In Connecticut, for example, the legislature created the Green Bank, which is a quasi-public entity that works with private financial institutions to ensure, among others, that vulnerable communities have access to capital in order to benefit from a so-called "green economy."

<sup>&</sup>lt;sup>4</sup> Conn. Gen. Stat. §§ 36a-30 through 36a-37e. Moreover, Connecticut's CRA authority also includes

of experience evaluating the CRA performance of state-chartered financial institutions.<sup>5</sup> We believe that our ability to continue to independently evaluate state-chartered institutions' CRA activities strengthens financial institution commitment to the underlying principles of CRA and has a positive impact on LMI communities in Connecticut. Accordingly, any changes to the CRA regulations should preserve states' ability to independently examine and evaluate the CRA performance of state-chartered financial institutions.

Additionally, we believe additional coordination between federal and state regulators can be achieved to further the mission of CRA. A joint body comprised of representatives from both federal and state agencies should be established to vet and accept activities that qualify for CRA credit to ensure consistency throughout exam cycles. It is also worth exploring the possibility of state and federal agreement to an alternating CRA examination schedule similar to that used for coordination of safety and soundness examinations. Under such an alternating examination schedule, federal agencies would accept state ratings and vice versa, similar to the current state of affairs regarding safety and soundness examinations. This coordinated approach will provide greater clarity to regulated institutions and allow for efficiencies that will reduce regulatory burden.

We thank you for the opportunity to comment on the Agencies' proposed rule-making and are available to answer any questions and work with the Agencies in modernizing CRA regulations.

Sincerely,

rge L. Pirz JORGE L. PEREZ BANKING COMMISSIONER

cc: The Honorable Richard Blumenthal, U.S. Senate The Honorable Christopher Murphy, U.S. Senate The Honorable John Larson, U.S. House of Representatives The Honorable Joseph Courtney, U.S. House of Representatives The Honorable Rosa DeLauro, U.S. House of Representatives The Honorable Jim Himes, U.S. House of Representatives The Honorable Jahana Hayes, U.S. House of Representatives Dan DeSimone, Director of the Governor's Washington D.C. Office

examinations and evaluations of state-chartered credit unions for CRA compliance.

<sup>&</sup>lt;sup>5</sup> We note that state CRA examinations are conducted concurrently with federal CRA examinations and involve collection of similar data from the financial institutions, effectively resulting in no additional regulatory burden on state-chartered financial institutions.



August 5, 2022

Ann E. Misback Secretary Board of Governors of the Federal Reserve System 20<sup>th</sup> Street and Constitution Avenue NW Washington, DC 20551

Chief Counsel's Office Office of the Comptroller of the Currency 400 7<sup>th</sup> Street SW, Suite 3E-218 Washington, DC 20219

James P. Sheesley Assistant Executive Secretary Federal Deposit Insurance Corporation 550 17<sup>th</sup> Street NW Washington, DC 20429

#### SUBJECT: Community Reinvestment Act Federal Reserve Board: Docket No. R-1769, RIN 7100-AG29 OCC: Docket ID OCC-2022-0002 FDIC: RIN 3064-AF81

To Whom it May Concern:

The Connecticut Green Bank ("Green Bank") appreciates the Board of Governors of the Federal Reserve System, the Department of the Treasury, Office of the Comptroller of the Currency, and the Federal Deposit Insurance Corporation (i.e., the "Agencies") for the opportunity to comment on the proposed revisions to the implementing regulations for the Community Reinvestment Act ("CRA").

The Green Bank would like to comment on the following three (3) areas:

1. Proposed definition for "disaster preparedness and climate resiliency" ("DPCR"), including comparisons with definitions for "resilience" and "vulnerable communities";<sup>1</sup>

<sup>&</sup>lt;sup>1</sup> Connecticut Public Act 20-05 "AN ACT CONCERNING EMERGENCY RESPONSE BY ELECTRIC DISTRIBUTION COMPANIES, THE REGULATION OF OTHER PUBLIC UTILITIES AND NEXUS PROVISIONS FOR CERTAIN DISASTER-RELATED OR EMERGENCY-RELATED WORK PERFORMED IN THE STATE."

- 2. Historically filed written comments of April 8, 2020 to the Agencies (less the Federal Reserve System) regarding the role of local and state government; and
- Recently filed written comments of July 1, 2022 to the U.S. Department of Energy ("DOE") regarding proposed changes to the Title XVII Innovative Technologies Loan Guaranty Program ("Title XVII") of the Loan Program Office ("LPO").

#### DEFINITIONS

The Green Bank supports the Agencies' proposal to (1) add DPCR activities as a new category in community development activities eligible for CRA credit, and (2) include the three (3) criteria to qualify for CRA credit.<sup>2</sup> Benefitting a specific geographic area that includes targeted census tracts should also include Justice 40 Initiative<sup>3</sup> disadvantaged communities identified by the DOE.<sup>4</sup> The proposed rule defines DPCR activities as "activities that assist individuals and communities prepare for, adapt to, and withstand natural disasters, weather-related disasters, or climate-related risks."

In Connecticut, the following are statutory definitions for "resilience" and "vulnerable communities":

- <u>Resilience</u> 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; and
- 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 [of the Connecticut General Statutes ("CGS")], 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 [emphasis added], 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.

It should be noted that the Green Bank reports investments and benefits in CRA-eligible communities within the impact sections of its Annual Comprehensive Financial Report.<sup>5</sup> It should also be noted that the Green Bank reports investments by ethnicity in Metropolitan Statistical Area ("MSA").<sup>6</sup>

The Green Bank supports the Agencies' proposed definition of DPCR, however, would encourage the Agencies' consider relevant policies at the state level to also be included within CRA so as to be mutually inclusive and reinforcing.

<sup>&</sup>lt;sup>2</sup> (1) the activities must "benefit or serve residents, including low- or moderate-income residents, in one or more of the targeted census tracts"; (2) the activities must "not displace or exclude low- or moderate-income residents in the targeted census tracts"; and (3) the activities must "be conducted in conjunction with a federal, state, local, or tribal government plan, program or initiative focused on disaster preparedness or climate resiliency that includes an explicit focus on benefitting a geographic area that includes the targeted census tracts."

<sup>&</sup>lt;sup>3</sup> <u>https://www.energy.gov/diversity/justice40-initiative</u>

<sup>&</sup>lt;sup>4</sup> <u>https://energyjustice.egs.anl.gov/</u>

<sup>&</sup>lt;sup>5</sup> <u>https://www.ctgreenbank.com/wp-content/uploads/2021/11/FY21-CGB-ACFR-Final-11.08.21.pdf</u> (for example, see Table 157 on Page 270)

<sup>&</sup>lt;sup>6</sup> Ibid (Table 161 on Page 274)

#### ROLE OF LOCAL AND STATE GOVERNMENT

Specifically, with respect to the role of states, the Green Bank would like to acknowledge that alongside the Agencies, there are state regulators that implement CRA for state-chartered banks and community credit unions. Since states better understand the needs of their local economies, including the need to enable investments in DPCR, they should have a role in assisting with and offering their perspective towards federal CRA implementation (e.g., local determination of national qualifying activities).

State and local government should play a role in receiving, assessing, and determining what activities qualify for CRA credit locally, with those determinations then being accepted regionally, or nationally through an appropriate process. For example, the Green Bank enables private investment in "clean energy"<sup>7</sup> and "environmental infrastructure"<sup>8</sup> to support the public policy objectives of the State of Connecticut, including, but not limited to, community benefit agreements<sup>9</sup> and neighborhood-based projects like microgrids, district heating and cooling loops, green spaces (e.g., parks and recreation), and resilience.<sup>10</sup> Those determinations would then be included in the Federal Register on an annual basis.

Local and state government have a role to play in determining federal qualifying activities for CRA.

#### TITLE XVII LOAN GUARANTY PROGRAM

To implement provisions from the Energy Act of 2020 and the Infrastructure Investments and Jobs Act of 2021, on June 1, 2022, the DOE LPO sought public comments with respect to Title XVII. In an effort to encourage Title XVII to enable investment in CRA-eligible communities, the Green Bank provided the following comments:

- <u>Redefine Commercial Technologies</u> to increase access to commercial technologies for vulnerable communities, the Green Bank proposed "...including communities eligible for the Community Reinvestment Act of 1977..." with the definition of commercial technologies.
- Including CRA Definition just as the Title XVII Rules include provisions for the Davis Bacon Act of 1931 to acknowledge the importance of paying the local prevailing wage on public works projects, the Green Bank proposed that CRA also be included within Title XVII to

<sup>&</sup>lt;sup>7</sup> Clean energy means solar photovoltaic energy, solar thermal, geothermal energy, wind, ocean thermal energy, wave or tidal energy, fuel cells, landfill gas, hydropower that meets the low-impact standards of the Low-Impact Hydropower Institute, hydrogen production and hydrogen conversion technologies, low emission advanced biomass conversion technologies, alternative fuels, used for electricity generation including ethanol, biodiesel or other fuel produced in Connecticut and derived from agricultural produce, food waste or waste vegetable oil, provided the Commissioner of Energy and Environmental Protection determines that such fuels provide net reductions in GHG emissions and fossil fuel consumption, usable electricity from combined heat and power systems with waste heat recovery systems, thermal storage systems, other energy resources and emerging technologies which have significant potential for commercialization and which do not involve the combustion of coal, petroleum or petroleum products, municipal solid waste or nuclear fission, financing of energy efficiency projects, projects that seek to deploy electric, electric hybrid, natural gas or alternative fuel vehicles and associated infrastructure, any related storage, distribution, manufacturing technologies or facilities and any Class I renewable energy source, as defined in section 16-1.

<sup>&</sup>lt;sup>8</sup> Environmental infrastructure means structures, facilities, systems, services and improvement projects related to (A) water, (B) waste and recycling, (C) climate adaptation and resiliency, (D) agriculture, (E) land conservation, (F) parks and recreation, and (G) environmental markets, including, but not limited to carbon offsets22 and ecosystem services.

<sup>&</sup>lt;sup>9</sup> Connecticut Public Act 21-43 "AN ACT CONCERNING A JUST TRANSITION TO CLIMATE PROTECTIVE ENERGY PRODUCTION AND COMMUNITY INVESTMENT"

<sup>&</sup>lt;sup>10</sup> Commercial Property Assessed Clean Energy

acknowledge the importance of enabling private investment in projects in vulnerable communities (i.e., environmental justice communities);

- Including CRA-Eligible Projects to enable CRA eligible projects to be considered under Title XVII, the Green Bank proposed to include communities eligible for CRA within the eligible project definition to acknowledge the importance of enabling private investment in projects in vulnerable communities; and
- 4. <u>National Loan Loss Reserve</u> in an effort to enable across government solutions (i.e., between DOE and the Agencies), the Green Bank proposed that the LPO create a national loan loss reserve program in collaboration with "state energy financing institutions" (e.g., green banks, CDFIs, CUs) to enable private investment in CRA-eligible projects.

With the current public comment process on the proposed revisions to CRA, together with the recent public comment process on proposed revisions to Title XVII, the Green Bank puts forth a set of recommendations between the Agencies and the DOE to enable increased private investment and coordination in solutions to confront climate change.

The Green Bank appreciates the Agencies' efforts to solicit public comment on the proposed changes to CRA. We look forward to seeing how the Agencies, working across government with the DOE, can enable increased investment in qualifying activities and eligible projects, respectively.

Sincerely,

Bryan Garcia

Bryan Garcia President and CEO

.Bert Hunter

Bert Hunter Chief Investment Officer

#### About the Connecticut Green Bank

As the nation's first state-level green bank, the Connecticut Green Bank leverages the limited public resources it receives to attract multiples of private investment to scale up clean energy deployment. Since its inception, the Green Bank has mobilized \$2.14 billion of investment into Connecticut's clean energy economy at a 7.4 to 1 leverage ratio of private to public funds, supported the creation of 25,612 direct, indirect and induced jobs, reduced the energy burden on over 63,000 families and businesses, deployed over 494 MW of clean renewable energy, helped avoid 9.9 million tons of  $CO_2$  emissions over the life of the projects, and generated \$107.4 million in individual income, corporate, and sales tax revenues to the State of Connecticut.

#### **Attachments**

Green Bank – Fact Sheet Decennial Societal Impact Report – Fact Sheet The Impact of Federal Funds in Connecticut – Fact Sheet Comments from the Green Bank submitted to the Agencies (less the Federal Reserve System) on April 8, 2020 Comments from the Green Bank submitted to the DOE LPO on July 1, 2022





#### **Connecticut Green Bank is the nation's first green bank.** Our 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. Established in 2011 as a quasi-public agency, the Green Bank uses limited public dollars to attract private capital investment and offers green solutions that help people, businesses and all of Connecticut thrive.

# our solutions

The Green Bank is helping Connecticut flourish by offering green solutions for homes and buildings, and by creating innovative ways to invest in the green economy.





# homes

Empowering all Connecticut families and households with accessible and affordable green solutions that bring them comfort and security. Find incentives for battery storage or use the Green Bank's flexible financing to reduce costs with health and safety improvements and the newest energy efficient technologies.





buildings

Creating stronger, more resilient communities with green solutions for buildings of all types, from businesses and nonprofits to multifamily housing and local government. Leverage Green Bank financing to save money and realize the benefits of more modern, sustainable buildings.



# investments

Securing a healthier planet with smart ways for individuals and businesses to invest in green solutions – and our future – while also earning a return. Energize the green economy by investing in it today. Buy a Green Liberty Bond, invest through a crowdfunding offering, or join the movement by finding other ways to invest.

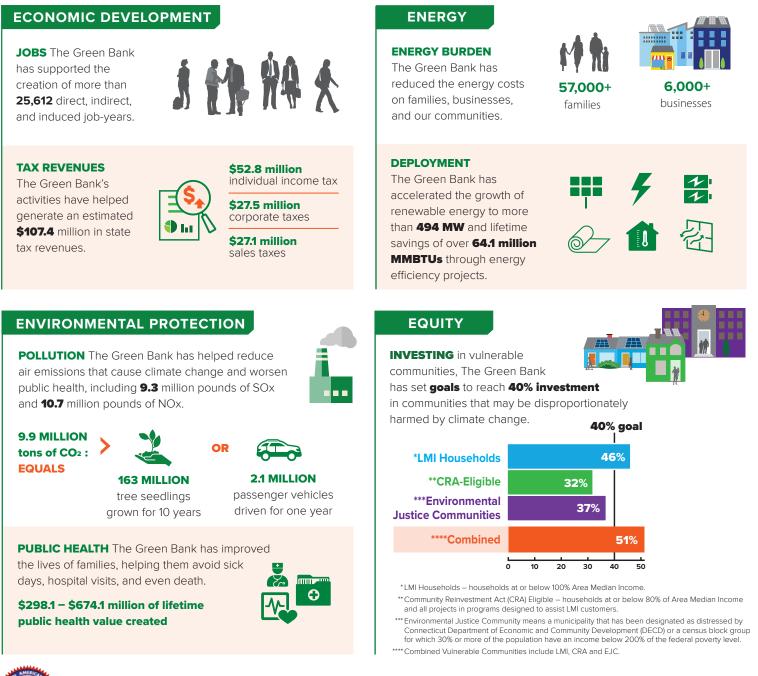
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# **Decennial Societal Impact Report**

FY12 FY21

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



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

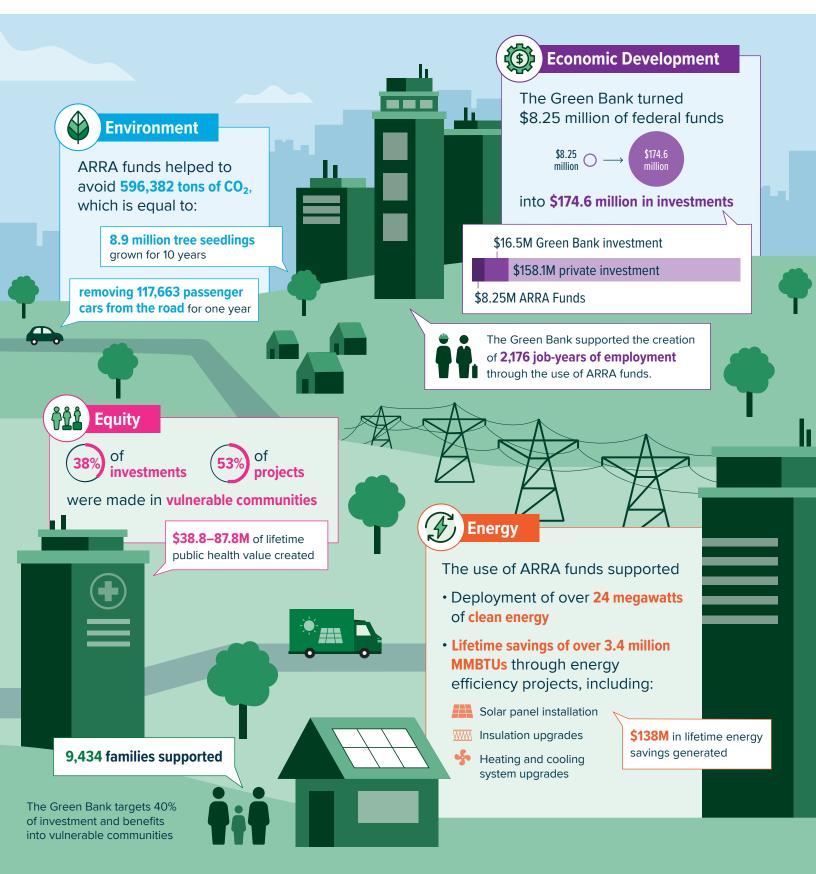
Winner of the 2017 Harvard Kennedy School Ash Center Award for Innovation in American Government, the Connecticut Green Bank is the nation's first green bank.

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# The Impact of Federal Funds in Connecticut

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

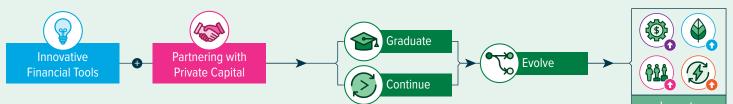




# **Financing Programs with Federal Funds**



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



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



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



Public Comments of the Connecticut Green Bank Proposed Changes to the Community Reinvestment Act Regulations April 8, 2020

#### **Department of Treasury**

Office of the Comptroller of the Currency 12 CFR Parts 25 and 195 Docket ID OCC-2018-0008 RIN 1557-AE34 Chief Counsel's Office Attention: Comment Processing 400 7<sup>th</sup> Street, SW Suite 3E-218 Washington, DC 20219

#### Federal Deposit Insurance Corporation 12 CFR Part 345 RIN 3064-AF22 Robert E. Feldman Executive Secretary Attention: Comments

550 17<sup>th</sup> Street. NW

Washington, DC 20429

As the nation's first state level "green bank," the Connecticut Green Bank ("Green Bank")<sup>1</sup> leverages the limited public resources it receives to attract multiples of private investment to scale up clean energy deployment. Since its inception in July of 2011, the Green Bank has mobilized over \$1.6 billion of investment into Connecticut's clean energy economy at nearly a 7 to 1 leverage ratio of private to public funds, supported the creation of over 20,000 direct, indirect and induced jobs, reduced the energy burden on over 40,000 families and businesses, deployed nearly 360 MW of clean energy, helped avoid over 5.8 million tons of CO<sub>2</sub> emissions over the life of the projects, and generated nearly \$90 million in individual income, corporate, and sales tax revenues to the State of Connecticut through June of 2019.

### INTRODUCTION

The Connecticut General Assembly ("CGA") has found and determined that stimulating, supporting, and increasing the use of clean energy,<sup>2</sup> investments in clean energy projects

<sup>&</sup>lt;sup>1</sup> The Connecticut Green Bank is not a bank – it is a quasi-public agency of the State of Connecticut. The state has established a number of quasi-public agencies that are not departments, institutions or agencies of the State. They are, however, bodies politic and corporate that constitute public instrumentalities and political subdivisions of the State and whose exercise of authority granted to them is deemed to be the performance of an essential public and governmental function. These organizations provide a wide range of services that might otherwise be provided directly by the State.

<sup>&</sup>lt;sup>2</sup> CGS 16-245n(a) – for the purposes of the Green Bank, "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 Commissions 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

and sources, demand for clean energy, the development of technologies that support clean energy, and the development of the state's energy-related economy are important state policy objectives. To achieve those objectives, the CGA created the Green Bank.<sup>3</sup>

The mission of the Green Bank is to "confront climate change and provide <u>all of society</u> a healthier and more prosperous future by <u>increasing and accelerating the flow of private</u> <u>capital</u> into markets that energize the green economy."<sup>4</sup> With this mission as its focus, the Green Bank has 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.

The Green Bank works with private financial institutions (including regulated financial institutions – banks) to achieve its mission and goals, and importantly, to ensure that low-to-moderate-income ("LMI") communities and small businesses have access to capital in order to benefit from the green economy. Since its inception, the Green Bank has enabled nearly a half-a-billion-dollars of investment in communities that are eligible for CRA (i.e., below eighty percent of Area Median Income ("AMI")) – see Table 1.

Fiscal Year	80% or Below AMI	Over 80% AMI	Total Investment	% Investment 80% or Below
2012	\$0.3	\$9.6	\$9.9	3%
2013	\$76.2	\$35.2	\$111.4	68%
2014	\$16.9	\$101.3	\$118.2	14%
2015	\$72.7	\$288.8	\$361.5	20%
2016	\$76.9	\$265.9	\$342.8	22%
2017	\$90.1	\$143.1	\$233.2	39%
2018	\$91.2	\$187.3	\$278.5	33%
2019	\$108.4	\$226.1	\$334.6	32%
Total	\$485.1	\$1,147.3	\$1,632.4	30%

#### Table 1. Public and Private Investment (\$'s MM) in Clean Energy by AMI in Connecticut from FY12-FY19

The Green Bank has worked with banks on a number of essential critical clean energy infrastructure projects including community development loans for:

 Combined heat and power project in Bridgeport with KeyBank<sup>5</sup> that serves as a microgrid for the community;

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

<sup>&</sup>lt;sup>3</sup> CGS 16-245n

<sup>&</sup>lt;sup>4</sup> https://ctgreenbank.com/wp-content/uploads/2019/07/Comprehensive-Plan\_FY-2020-and-Beyond\_Final\_071819.pdf

<sup>&</sup>lt;sup>5</sup> Regulated by the OCC

- Food waste to energy project in Southington with Peoples United Bank<sup>6</sup> that serves as an important energy and environmental waste management project for the state;
- Wind power project in Colebrook with Webster Bank<sup>7</sup> providing zero emission energy and economic development to the community; and
- Fuel cell park in Bridgeport with Fifth Third Bank<sup>8</sup> and Liberty Bank<sup>9</sup> to provide high reliable and clean power to the electric grid through the use of a cutting-edge technology manufactured in the state.

Beyond these projects, the Green Bank has also worked with banks on a number of essential clean energy infrastructure programs and products including, but not limited to the following consumer loans and community development loans, investments, and services:

- Solar lease and power-purchase-agreement ("PPA") financing with KeyBank, US Bank,<sup>10</sup> and Webster Bank for residential and commercial end-use customers to reduce the burden of energy costs while improving the reliability of the electric grid;
- Clean energy, including health and safety measures through consumer loans for homeowners through eleven (11) banks, including community banks and credit unions, that help families reduce the burden of energy costs, make needed repairs to their home while increasing the value of their property;
- Energy efficiency improvement "on bill" financing with Eversource Energy and Amalgamated Bank<sup>11</sup> for small business customers, including essential community facilities, to reduce the burden of energy costs while improving the reliability of the electric grid; and
- Property improvement services through the Commercial Property Assessed Clean Energy Program ("C-PACE"), including thirty-six (36) banks that are enabling the property owner to understand how to lower their operating expenses from energy by deploying clean energy, and then providing consent for investment in such improvements to be senior to their mortgage on the property because the savings are greater than the investment (i.e., deliver positive cash flow to the business).

Leveraging public funds to increase private investment in clean energy generates tax revenues, creates jobs, reduces the burden of energy costs on families and businesses, protects the environment, and improves public health – see Green Bank Impact Report attached.

Investment in essential clean energy infrastructure – through our families and businesses and through public-private partnerships – strengthens communities.

### OVERVIEW OF PROPOSED CHANGES TO CRA

<sup>&</sup>lt;sup>6</sup> Regulated by the OCC

<sup>&</sup>lt;sup>7</sup> Regulated by the OCC

<sup>&</sup>lt;sup>8</sup> Regulated by the Federal Reserve System

<sup>&</sup>lt;sup>9</sup> Regulated by the Connecticut Department of Banking

<sup>&</sup>lt;sup>10</sup> Regulated by the OCC

<sup>&</sup>lt;sup>11</sup> Regulated by the FDIC

With the Green Bank's focus on increasing and accelerating private capital investment in Connecticut's green economy, with an emphasis on underserved populations (e.g., LMI families, communities of color, small businesses, farms, etc.), the Community Reinvestment Act ("CRA") serves as a federal public policy tool to connect public and private interests. In fact, currently, CRA has specifically recognized community development loans and investments in clean energy as qualifying activities:

"...borrowers to finance renewable energy, energy-efficient, or water conservation equipment or projects that support the development, rehabilitation, improvement or maintenance of affordable housing or community facilities..."<sup>12</sup>

And, looking ahead into the future, based on the recent Notice of Proposed Changes to the CRA, the Office of the Comptroller of the Currency ("OCC") and the Federal Deposit Insurance Corporation ("FDIC") continue to express support for clean energy as a qualifying activity:

"The rehabilitation, improvement, or construction of affordable housing, essential community facilities, or essential infrastructure may include (1) renewable energy, energy-efficiency, or water conservation equipment or...(2) the abatement or remediation of, or other actions to correct, environmental hazards, such as lead-based paint, lead pipes,(such as those used in antiquated water supply systems), asbestos, mold, or radon that is present in housing...<sup>\*13</sup>

The OCC and FDIC are proposing changes in the following areas of CRA:

- <u>Qualifying Activities</u> clarifying which activities qualify for CRA credit;
- <u>Assessment Areas</u> updating where activities qualify for CRA credit;
- <u>Performance Scoring</u> creating a more transparent and objective method for measuring CRA performance; and
- <u>Data Collection and Reporting</u> providing for more transparent, consistent, and timely CRA-related data collection, record-keeping, and reporting

Given these proposed changes, and focus of the Green Bank, the Green Bank offers the following public comments:

 <u>Role of the States</u> – like OCC, FDIC and the Federal Reserve System, there are state regulators (e.g., Connecticut Department of Banking) that implement CRA for state-chartered banks and community credit unions. Since states better understand the needs of their local economies, they should have a role in assisting with and offering their perspective towards federal CRA implementation (e.g., local determination of national qualifying activities).

<sup>&</sup>lt;sup>12</sup> Federal Register Vol. 81 No. 142 of July 25, 2016 (48529)

<sup>&</sup>lt;sup>13</sup> RIN 3064-AF22 (p. 25)

- 2. <u>Deserts vs. Hotspots</u> the goal of any changes to CRA regulations should emphasize the need to prioritize increasing investments in underserved segments of the market, including LMI families, communities of color, small businesses, and farms. Equitable distribution of investment by banks in these underserved segments of the market – especially reducing CRA deserts – through "greenlining" and not "redlining" should be the priority. For example, the following qualifying activity feels like it is "redlining" – "an investment in a project in a high-cost area where 30 percent of the rental units are set aside as affordable to middle-income individuals through local inclusionary zoning."<sup>14</sup> It could be "greenlining" if "middle-income" were changed with "low-to-moderate-income".
- 3. Long-Term Commitment with clean energy, as with other types of economic development investments, the long-term commitment by banks to invest in underserved communities must be encouraged certainly encouraged beyond the CRA assessment periods. For example, providing banks more incentive to provide long-term loans for clean energy (e.g., with up to 20-year terms), that extends through its useful life as an asset, will ensure that the economic benefits of those investments (e.g., energy savings) inures to the borrower. Perhaps this is an area (i.e., longer term maturities of loans) where "bonus" consideration in CRA credit could be included.
- 4. <u>Smaller Loans and Investments</u> with clean energy, there are many transactions that are small due to the size of a project (e.g., \$10,000 energy efficiency project on a nonprofit or small business). Regulated financial institutions should be encouraged to invest directly in or through a securitized pool of loans that aggregate small projects. Perhaps this is another area where "bonus" consideration in CRA credit could be included.

The Green Bank sees the current CRA as providing an opportunity for increased investment in clean energy in underserved communities through public-private partnerships. Any changes to the CRA should seek to increase this investment in order to strengthen communities through the modernization of the essential clean energy infrastructure necessary for our families and businesses to thrive and our green economy to grow.

#### **GREEN BANK RESPONSE AND RECOMMENDATIONS TO SPECIFIC QUESTIONS**

From the Green Bank's perspective, we would like to specifically comment on and make recommendations for several of the questions raised in the notice with respect to qualifying activities,<sup>15</sup> assessment areas,<sup>16</sup> and data collection and reporting<sup>17</sup> – we do not have comments on performance scoring.

#### **Qualifying Activities**

The Green Bank would like to offer comments and recommendations on four (4) of the ten questions raised under qualifying activities, including:

1. Are the proposed criteria for determining which activities would qualify for credit under the CRA sufficiently clear and consistent with the CRA's objective of encouraging banks to conduct CRA activities in the communities they serve?

<sup>&</sup>lt;sup>14</sup> Federal Register / Vol. 85 No. 6 / Thursday, January 9, 2020 / Proposed Rules (p. 1231)

<sup>&</sup>lt;sup>15</sup> Federal Register / Vol. 85 No. 6 / Thursday, January 9, 2020 / Proposed Rules (p. 1216)

<sup>&</sup>lt;sup>16</sup> Federal Register / Vol. 85 No. 6 / Thursday, January 9, 2020 / Proposed Rules (p. 1217)

<sup>&</sup>lt;sup>17</sup> Federal Register / Vol. 85 No. 6 / Thursday, January 9, 2020 / Proposed Rules (p. 1228)

In terms of "retail loans," the definition of an "other consumer loans" can be misconstrued as broad and vague. Perhaps building a list of "qualifying other consumer loans" would be useful guidance to banks. For example, an "energy improvement loan" that finances insulation in walls and ceilings, efficient appliances and windows, electric vehicle recharging outlets, solar power, and other clean energy technologies, would be on the "other consumer loans" list.

In terms of "community development" activities, there are two (2) key criteria that provide a useful guide with nearly no ambiguity in its interpretation with respect to the Green Bank's interests in advancing clean energy and the green economy, including:

- Essential Infrastructure financing for "essential infrastructure that benefits or serves LMI individuals or areas of identified need," is clearly articulated when it includes "...(1) renewable energy, energy efficiency, or water conservation equipment or projects associated with affordable housing, essential community facilities, or essential infrastructure or (2) the abatement ore remediation of, or other actions to correct, environmental hazards, such as lead-based paint, lead pipes (such as those used in antiquated water supply systems), asbestos, mold, or radon that is present in housing, facilities, or site where the housing or facility is located." From the Green Bank's perspective, based on the proposed CRA changes, clean energy would be considered "essential infrastructure".
- Government Programs financing for "government programs, projects, or initiatives that partially or primarily benefit LMI individuals (e.g., a program that supports urban renewal), small businesses, small farms, and areas of identified need" recognizes the importance of state and local governments in determining which programs, projects or initiatives should be determined to be qualifying activities. From the Green Bank's perspective, based on the proposed CRA changes, local and state governments can determine what is a federal qualifying activity.

From the Green Bank's perspective, with respect to retail loans, "other consumer loans" can be interpreted as vague unless a growing list of examples is produced, and in terms of community development activity, "essential infrastructure" and "government programs" are sufficiently clear and consistent with CRA objectives of encouraging banks to conduct CRA activities involving clean energy investment.

2. Are there other criteria for determining which activities would qualify for CRA credit that the agencies should consider?

In terms of adding "essential community facilities," such as schools and hospitals that benefit or serve LMI individuals, LMI census tracts, or other targeted areas of need as a criteria for a CRA-qualifying activity, the Green Bank would suggest:

 <u>LMI Individuals and Communities as "Primary" Beneficiaries</u> – that such "essential community facilities" <u>primarily</u> benefit LMI individuals (e.g., proportionally serve LMI more than non-LMI individuals) and LMI census tracts, as opposed to simply <u>serving</u> LMI individuals and LMI census tracts. Not only will this serve to revitalize and stabilize targeted areas, but more importantly to strengthen targeted communities;

- <u>Clean Energy Infrastructure</u> enable investments in microgrid infrastructure that serves critical facilities, including "police station, fire station, water treatment plant, sewage treatment plant, public shelter or correctional facility, any commercial area of a municipality, or a municipal center"<sup>18</sup> in order to stabilize access to power in a community;
- <u>Environmental Infrastructure</u> enable investments in critical environmental infrastructure including structures, facilities, systems, services and improvement projects related to water, waste and recycling, agriculture, land conservation, parks and recreation, and other environmental infrastructure; and
- <u>Resiliency Infrastructure</u> enable investments in resiliency infrastructure that provides a community the "ability to anticipate, prepare for, and adapt to changing climate conditions and withstand, respond to, and recover rapidly from climate disruptions"<sup>19</sup> in order to stabilize and revitalize the community after a hurricane, snow-storm, or other weather or natural disaster-related event.

Essential infrastructure includes clean energy, environmental, and resiliency infrastructure that help revitalize, stabilize, and strengthen our communities.

5. The agencies plan to publish the illustrative list on their websites and to update the list both on an ongoing basis and through notice and comment process. Should the list instead be published as an Appendix to the final rule or be otherwise published in the Federal Register? In addition, how often should the list be updated?

Both – the list of qualifying activities should be published in the Appendix to the final rule, as well as on an ongoing basis in the Federal Register.

And, as noted above, under "Government Programs," state and local government regulators (e.g., Connecticut Department of Banking) should also play a role in receiving, assessing, and determining what activities qualify for CRA credit locally, with those determinations then being accepted regionally, or nationally through an appropriate process. Those determinations would then be included in the Federal Register on an annual basis.

8. The use of multipliers is intended to incentivize banks to engage in activities that benefit LMI individuals and areas and to other areas of need; however, multipliers may cause banks to conduct a smaller dollar value of impactful activities because they will receive additional credit for those activities. Are there ways the agencies can ensure that multipliers encourage activities that benefit LMI individuals and areas while limiting or preventing the potential for decreasing the dollar volume of activities (e.g., establishing a minimum floor for activities before a multiplier would be applied)?

As suggested above, the Green Bank believes that long-term commitments by banks in smaller loans and investments can be extremely beneficial to improving the essential clean energy infrastructure for LMI individuals, as well as small businesses in LMI census tracts.

<sup>&</sup>lt;sup>18</sup> Connecticut Public Act 12-148 (Section 7)

<sup>&</sup>lt;sup>19</sup> This definition derives from a federal Notice of Funding Availability for the National Disaster Resilience Competition (page 12). The term "climate" is added above to further specify the domain of resilience, and because climate change impacts are required inclusions throughout the Notice (i.e., pages 5 and 18).

Perhaps, the multipliers apply only within those banks who are seeking an "Outstanding" CRA rating. Within this rating category, for example, an appropriate calculation can be determined based on:

- Longevity the length of the loan, investment or service;
- <u>Size</u> the amount of the loan, investment or service; and
- <u>Location</u> either within the assessment area, or in another assessment area (e.g., CRA desert).

In order to receive an "Outstanding" CRA-rating, a threshold of multiplier points could be established through an objective methodology, or a specific distinction could be bestowed on those who are receiving multiplier credits

The objective is to reward those banks who are "greenlining" to receive credit and recognition for their investment in LMI communities that advance the spirit and policy foundation of CRA.

#### **Assessment Areas**

The Green Bank would like to offer a comment and recommendation on one (1) of the three questions raised under assessment areas, including:

11. Are the proposed methods for delineating assessment areas clear, simple, and transparent?

From the Green Bank's perspective, the proposed methods for delineating assessment areas appears to be clear (including recommendation below), and simple, however, additional transparency would be useful.

With regards to delineating assessment areas, there appears to be two (2) ways for a bank, including:

<u>Facility Based Assessment Area</u> – area which either (a) houses the main office, a branch, or a deposit-taking facility (i.e., bricks-and-mortar), as well as (b) any surrounding geographies where the bank has originated or purchased a substantial portion of its loans.

Recommendation – as is noted in the proposed assessment area that has fiftypercent (50%) or more of its deposits outside of the facility-based assessment area, for "facility based assessment areas" that are beyond "bricks-and-mortar" in surrounding geographies, include "a state" as an option,<sup>20</sup> for the bank's determination to be consistent across assessment area determinations – "The proposal would require a bank to delineate these facility-based assessment areas in any of the following areas: (1) a state..."; and

 Fifty Percent or More of Deposits Outside Facility Based Assessment Area – area in which more than fifty-percent of the deposits are outside the facility based assessment area (including alternative considerations that would include between forty-percent to sixty-percent) that receive no less than five-percent (including

<sup>&</sup>lt;sup>20</sup> Federal Register / Vol. 85 No. 6 / Thursday, January 9, 2020 / Proposed Rules (p. 1216 – Column 1, 2<sup>nd</sup> Paragraph)

alternative considerations of no less than two or no less than eight percent) of deposits.

If this understanding of the delineation is correct, then it appears to be clear and simple.

In terms of transparency, in order to ensure that the proposal would "retain the requirements that a bank's assessment area must not reflect illegal discrimination or arbitrarily exclude low- or moderate-income geographies" (i.e., prevent "redlining"), the Green Bank would request full and transparent disclosure by banks of their assessment area(s) by census tract be <u>easily accessible</u> and <u>publicly available</u>. In the 21<sup>st</sup> century, where information technology has enabled society to collect and analyze data quicker and more reliably, this would provide third-parties with information to discern whether or not the bank is meeting the spirit of CRA policy by "greenlining" investment in underserved geographies (e.g., reducing CRA deserts) or "redlining".

#### Performance Scoring

With regards to performance scoring, the Green Bank has no comments on any of the six (6) questions posed.

#### Data Collection and Reporting

The Green Bank would like to offer comments and recommendations on one (1) of the three questions raised under data collection and reporting, including:

20. As discussed above, the proposal would require banks to collect and report additional data to support the proposed rule. Although most of this data is already collected and maintained in some form, some additional data collection may be required. For example, banks may need to gather additional data to determine whether existing on-balance sheet loans and investments are qualified activities. Are there impediments to acquiring this data? If so, what are they?

From the perspective of the Green Bank, it would only seem prudent that along with the collection of data like dollar value of the activity, the activity location, how the activity satisfies the qualifying activities criteria, and whether it serves a particular assessment area, that gathering additional data to justify all qualifying activities (and non-qualifying activities) is essential to the successful implementation of the proposed changes to CRA.

The Green Bank stresses the importance of transparency and accessibility of data by thirdparties who seek to independently assess the performance of the banks in terms of meeting the spirit of CRA policy by investing in qualifying activities within their respective assessment areas.

### **RECOMMENDATIONS FOR QUALIFYING ACTIVITIES LIST**

The Notice includes a "Qualifying Activities Illustrative List" to help better inform regulated financial institutions about the types of activities that would qualify for CRA. The Green Bank would like to offer additional qualifying activities given (1) that essential clean energy, environmental and resiliency infrastructure is paramount in terms of strengthening LMI communities, and (2) that local and state governments have a role to play in determining federal qualifying activities.

Here is a list of additional qualifying activities that the Green Bank would propose be included on the "Qualifying Activities Illustrative List":

- Consumer loan, lease, PPA, or energy savings agreement to an LMI individual, multifamily affordable property owner, business or farm to undertake an essential clean energy (e.g., energy efficiency, renewable energy, etc.) or environmental (e.g., water, asbestos remediation, resilience, etc.) infrastructure and improvement project on their property.
- Financing for commercial property owners (e.g., small businesses, farms, non-profit organizations, etc.) that finance an essential energy (e.g., energy efficiency, renewable energy, etc.) or environmental (e.g., water, asbestos remediation, resilience, etc.) infrastructure and improvement project on their property through the use of a benefit assessment.
- Purchasing loans from "on bill" utility programs for LMI individual, multifamily
  affordable property owner, business or farm that undertake an essential energy (e.g.,
  energy efficiency, renewable energy, etc.) or environmental (e.g., water) infrastructure
  and improvement project financed through their utility bill.
- Providing line of credit to a state or local government or investing in bonds issued by a state or local government whose proceeds are being used to support LMI communities, small businesses, and farms undertake essential energy (e.g., energy efficiency, renewable energy, etc.) or environmental (e.g., water, asbestos remediation, resilience, etc.) infrastructure and improvement projects on their property.
- Providing services to commercial property owners that help them better understand their operating expenses from utilities (e.g., electricity, gas, and water), while then offering them essential clean energy or environmental infrastructure projects can reduce costs, by regulated financial institutions providing consent for benefit assessment to be senior to existing mortgages on a property.
- Providing services and contributions to local nonprofit organizations that provide technical assistance to strengthen communities through the promotion of sustainability (e.g., Sustainable CT, Sustainable Jersey, etc.).

These additional qualifying activities identified by the Green Bank, help regulated financial institutions meet the credit needs of the local community, including low- and moderate-income neighborhoods, in which they are chartered.

#### CONCLUSION

The Green Bank has worked with community, state, and federally chartered banks and credit unions to invest in the essential clean energy infrastructure of Connecticut – specifically in LMI census tracts and with small businesses. This increasing investment is helping grow the green economy of Connecticut – reducing the burden of energy costs on our families and businesses, creating jobs in our communities, improving public health, and protecting the environment. Any proposed improvements in CRA should further encourage banks to increasingly meet the credit needs of the entire local communities, especially low- and moderate-income neighborhoods. By acknowledging the importance of essential energy, environmental, and resilience infrastructure as a component of strong communities, and by

recognizing the important role of local and state governments, CRA will be positioned to meet the needs of the United States well into the 21<sup>st</sup> century.





# **Green Bank Impact Report**

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 from FY 2012 through FY 2019.

### **INVESTMENT IN CONNECTICUT**

Investment Since inception, the Green Bank has mobilized **\$1.68** *billion* of investment into the State's economy.

# Private Investment

Green Bank Investment





# ECONOMIC DEVELOPMENT

Jobs The Green Bank has supported the creation of more than **20,000** direct, indirect, and induced job-years.

\$6.50

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 \$6.50 of private investment.

Tax revenues The Green Bank's activities have helped generate an estimated **\$87.1** *million* in state tax revenues.



pursuing beyond.

\$43.1 million individual income tax

\$23.0 million corporate taxes

\$21.1 million sales taxes

# Energy burden The Green Bank has reduced

40,000+ families

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



### **ENVIRONMENTAL PROTECTION**

375+ businesses



Accessible and affordable The Green

Bank has supported residential solar PV

installation to reach income parity and

54% Below AMI

Deployment The Green Bank has accelerated the growth of clean energy to more than **350 MW**.



Pollution The Green Bank has helped reduce air emissions that cause climate change and worsen public health, including 5.1 million pounds of SOx and 6.3 million pounds of NOx.

#### 5.8 million tons of CO<sub>2</sub>



**88 million** tree seedlings grown for 10 years



1.1 million

passenger vehicles

driven for one year

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



lifetime public health value created

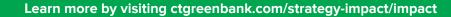
## Learn more by visiting ctgreenbank.com/strategy-impact/impact

or

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Winner of the 2017 Harvard Kennedy School Ash Center Award for Innovation in American Government, the Connecticut Green Bank is the nation's first green bank. We're creating a thriving marketplace to accelerate green energy deployment in Connecticut by making green energy financing accessible and affordable for homeowners, businesses and institutions.

Sources: Connecticut Green Bank Comprehensive Annual Financial Reports



# **Lenders on Connecticut Green Bank**

"As America's socially responsible bank, Amalgamated Bank is on a mission to align our investments with our values. We are committed to sustainability and environmental protection, and we want to help increase accessibility to the benefits of clean energy. Working with the Connecticut Green Bank, we have found a partner driven by the same mission. Together, we are making investments to fuel the green energy revolution."

#### Keith Mestrich, President & CEO, Amalgamated Bank

"The importance of public-private partnerships, like the one between KeyBank and the Connecticut Green Bank, cannot be overstated, especially when it comes to the financing of renewable and other clean energy projects. Our partnership with the Green Bank through the

CT Solar Lease led to over \$100 million of investment to reduce the energy burden on nearly 1,200 families and 75 businesses in our communities. Additionally, it was the involvement of the Green Bank that helped attract financing from Key Bank toward microgrid construction at critical facilities in Bridgeport, and a first-of-its-kind 'micro-hydro' generator at Hanover Pond in Meriden."

#### Christopher Gorman, Vice Chairman and President of Banking, KeyBank

"Liberty Bank has been a partner with the Connecticut Green Bank from the start. Liberty Bank recently provided a financing facility for the Green Bank's capital needs for solar on homes across the state, which is supporting the state's growing green economy."

#### Chandler Howard, President and CEO, Liberty Bank

"Our partnership with the Green Bank has helped us to invest in our local communities, while assisting the State of Connecticut in achieving its important energy, environment, and economic goals."

#### Larry Holderman, President and CEO, Mutual Security Credit Union

"The CT Solar Loan program was a game-changer for solar financing and Sungage Financial. Our partnership with the Green Bank in Connecticut helped our company grow and become a national leader in helping families finance solar and realize the important benefits it provides."

Sara Ross, Co-Founder and CEO, Sungage Financial





IBERTY









KeyBank 🖓 🕋



July 1, 2022

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

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

To Whom it May Concern:

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

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

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

<sup>&</sup>lt;sup>1</sup> The Community Reinvestment Act (CRA), enacted in 1977, requires the Federal Reserve and other <u>federal banking</u> <u>regulators</u> to encourage financial institutions to help meet the credit needs of the communities in which they do business, including <u>low- and moderate-income (LMI) neighborhoods</u>.

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

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

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

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

#### A. Energy Act of 2020

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

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

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

<sup>&</sup>lt;sup>5</sup> (A-1)(i-iv)

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

#### RECOMMENDATIONS

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

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

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

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

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

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

#### RECOMMENDATIONS

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

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

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

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

<sup>&</sup>lt;sup>6</sup> It should be noted that the Community Reinvestment Act of 1977, 12 USC 2901 et seq. acknowledges the need for FDICinsured commercial banks to provide access to capital to families and businesses in less than 80 percent AMI census tracts.

<sup>&</sup>lt;sup>7</sup> (A-3)

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

#### B. Infrastructure Investments and Jobs Act

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

In terms of what types of entities should be considered "state energy financing institutions" for implementing Title XVII,<sup>8</sup> the Green Bank would recommend:

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

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

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

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

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

Other financing should also be included:

Transaction warehousing through standardized documentation

<sup>&</sup>lt;sup>8</sup> (B-1)(i-iii)

<sup>&</sup>lt;sup>9</sup> (B-2)

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

 Securitization credit enhancements to reduce the costs of capital (e.g., Special Capital Reserve Fund or "SCRF")<sup>11</sup>

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

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

#### RECOMMENDATION

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

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

#### C. <u>Title XVII Financing Structures</u><sup>13</sup>

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

#### RECOMMENDATION

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

<sup>12</sup> (B-3)

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

<sup>&</sup>lt;sup>13</sup> (C-1) through (C-2) only

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

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

#### D. <u>Title XVII Loan Guarantee Program Improvements</u>

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

In terms of how the LPO navigates through this challenge,<sup>15</sup> the Green Bank provides the following observations. The Operating Procedures of the Green Bank allow us to invest in projects through competitive solicitations, designed programs, or strategic opportunities.<sup>16</sup> If posed with budget and time constraints, it is likely that the Green Bank would focus its resources on areas that delivered the most impact (i.e., "bang for the buck") with respect to our primary inputs, outputs, and outcomes (i.e., maximize societal benefit per public dollar invested) – which includes investment (i.e., both public and private), clean energy produced (e.g., kWh, MMBtu), emissions avoided (e.g., CO<sub>2</sub>, particulate matter), jobs created, and ensuring that no less than forty percent of investment and benefits is directed to vulnerable communities. For the LPO, this might translate into explicit requests for proposals with detailed funding currently available over a specified period of time. For example, the LPO has [\$X] billion of existing loan guarantee authority for innovative [Type of Technology] projects that it seeks to invest in the next [X] years by mobilizing [X] times more private investment. For the Green Bank, mobilizing investment, specifically multiples of private investment using limited public resources, is the key metric for achieving the ambitious social and environmental public policy goals of the State of Connecticut.

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

Within the "project costs" definition of the Rules, includes:

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

<sup>14</sup> Sec. 40401(c)(2) of the IIJA

<sup>&</sup>lt;sup>15</sup> (D-1) through (D-4)

<sup>&</sup>lt;sup>16</sup> <u>https://www.ctgreenbank.com/wp-content/uploads/2022/05/5ai\_Green-Bank-Operating-Procedures.pdf</u>

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

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

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

And removing the following from § 609.10(b):

• (9) Operating costs

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

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

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

Sincerely,

Bryan Garcia

Bryan Garcia President and CEO

Bert Hunter

Bert Hunter EVP and CIO

### About the Connecticut Green Bank

As the nation's first state-level green bank, the Connecticut Green Bank leverages the limited public resources it receives to attract multiples of private investment to scale up clean energy deployment. Since its inception, the Green Bank has mobilized \$2.14 billion of investment into Connecticut's clean energy economy at a 7.4 to 1 leverage ratio of private to public funds, supported the creation of 25,612 direct, indirect and induced jobs, reduced the energy burden on over 63,000 families and businesses, deployed over 494 MW of clean renewable energy, helped avoid 9.9 million tons of  $CO_2$  emissions over the life of the projects, and generated \$107.4 million in individual income, corporate, and sales tax revenues to the State of Connecticut.

### **Attachments**

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

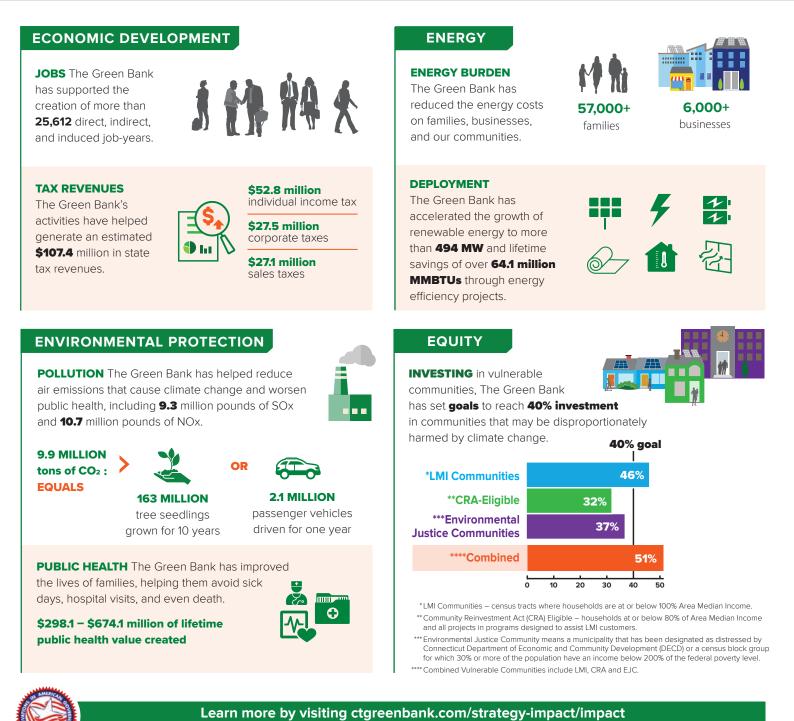
#### ATTACHMENT A



### **Decennial Societal Impact Report**

FY12 FY21

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



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

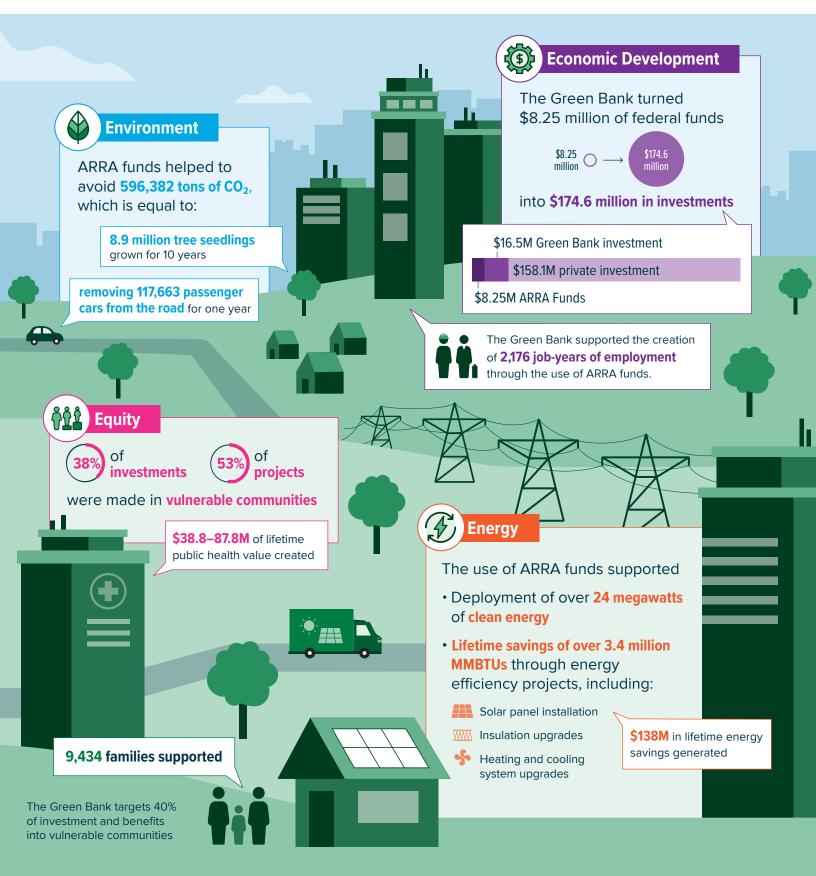
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#### ATTACHMENT B

### The Impact of Federal Funds in Connecticut

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

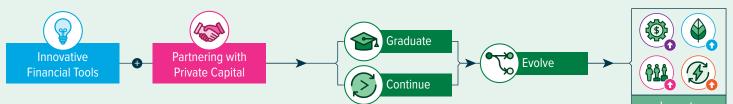




### **Financing Programs with Federal Funds**



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



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



ATTACHMENT C



May 6, 2022

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

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

To Whom it May Concern:

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

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

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

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

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

The Green Bank offers the following comments.

### <u>Category 1— Equitable Access to Financing</u>

Question 1 — the Lawrence Berkeley National Laboratory ("LBNL") report<sup>2</sup> highlights two (2) program models for RLFs for residential energy efficiency financing – New York's "Green Jobs – Green New York" and Pennsylvania's "Keystone HELPS" – capitalized from bond proceeds from municipal bonds<sup>3</sup> and asset backed securities, respectively. The research report emphasizes that these carefully designed and administered energy efficiency loan programs – including Connecticut's "Smart-E Loan" and Michigan's "Michigan Saves" supported by federal funds as credit enhancements (i.e., not RLF's) – exhibit stronger performance than other similar loans and therefore capital providers and lenders should offer better terms (i.e., lower interest rates, longer tenors, or both), and that such lending can help support policy goals related to equitable access to capital such as Justice 40 and the Community Reinvestment Act<sup>4</sup> compliance requirements. The DOE should look to this report, and the four residential energy efficiency financing programs highlighted, for design elements that result in equitable access and greater energy and environmental justice for residential end-use customers.

Although not an RLF, the Green Bank's Smart-E Loan<sup>5</sup> was developed in collaboration with local contractors and capital providers (i.e., community banks, credit unions ("CU"), community development financial institutions ("CDFI")) through the use of ARRA funds. With the Green Bank goal by 2025 of no less than 40 percent of investment and benefits from financing and incentive programs being directed to vulnerable communities, the Smart-E Loan is making steady progress – see Table 1.

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

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

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

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

<sup>&</sup>lt;sup>3</sup> Secured by the Clean Water State Revolving Fund

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

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

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

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

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

The DOE should look to reports from LBNL for other financing tools that are driving equitable access to clean energy financing that can be extrapolated to answer this important question, including solar PV financing and the role of incentives.<sup>910</sup> As the DOE looks to enable RLF to mobilize greater private investment in energy efficiency, it should also look to non-financing tools such as the Weatherization Assistance Program ("WAP")<sup>11</sup> for funding that provides incentives (i.e., grants) that can also play a role in increasing equitable access to energy efficiency. Given the market for weatherization is approximately 39.5 million households requiring between \$300-\$400 billion of investment, the DOE needs to see RLFs in a manner that mobilizes private investment and not simply grant out such resources if we are to achieve such high targets.

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

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

<sup>&</sup>lt;sup>6</sup> Ibid (p. 316)

<sup>&</sup>lt;sup>7</sup> Ibid (p. 332)

<sup>&</sup>lt;sup>8</sup> Ibid (p.266)

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

<sup>&</sup>lt;sup>10</sup> (April 2022). *Rooftop Solar Incentives Remain Effective for Low- and Moderate-Income Adoption*. Prepared by Eric O'Shaughnessy of Lawrence Berkeley National Laboratory.

<sup>&</sup>lt;sup>11</sup> "Biden Administration Announces New Funding to Make Homes Energy-Efficient" by Anna Phillips of The Washington Post (March 30, 2022)

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

- a. Small Business Energy Advantage ("SBEA")<sup>12</sup> through a partnership with Eversource Energy<sup>13</sup> and Amalgamated Bank,<sup>14</sup> the Green Bank supports the SBEA program an onbill, zero-percent interest rate, an "RLF-like" program for small businesses (i.e., commercial and industrial, non-profits, municipalities and state agency customers that use less than 1,000,000 kWh a year across all their properties). SBEA provides financing for up to 7 years for up to \$1.0 MM per business customer. The Connecticut Energy Efficiency Fund (a statutorily established fund replenished by a small recurring charge on electric and gas utility ratepayer bills) provides funds for an interest rate buydown (to 0%) and to absorb any loan losses (historically ~1% of outstanding loan balances per annum). Over the past three years, SBEA, through utility managed installation contractors, has provided nearly 5,400 on-bill financings totaling \$67.4 MM (of which 90% is financed by Amalgamated Bank) with an estimated 1.8 GWh of energy savings over the life of the measures. Due to its success, this partnership was recently renewed for an additional 3 years to 12/31/2024.
- b. <u>Commercial Property Assessed Clean Energy</u> ("C-PACE")<sup>15</sup> through a partnership with over twenty (20) qualified capital providers and 137 (of 169) of Connecticut's municipalities, the Green Bank administers the C-PACE program a benefit assessment lien to finance clean energy improvements on commercial, industrial, and multifamily properties. C-PACE, an RLF-like program, provides financing up to 25 years. Since its inception in 2013, C-PACE has provided nearly 350 financings totaling \$220.1 MM (of which 75% is from private capital) and an estimated 4.1 million MMBtu of clean energy production or energy savings over the life of the measures delivering a savings to investment ratio greater than 1. Green Bank capital for the program is provided primarily from funds provided by the Regional Greenhouse Gas Initiative (RGGI) as well as through securitization of the loan receivables with private capital sources.

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

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

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

<sup>&</sup>lt;sup>13</sup> www.eversource.com

<sup>&</sup>lt;sup>14</sup> www.amalgamatedbank.com

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

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

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

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

Question 6 — carefully designed and administered energy efficiency loan programs by electric and natural gas distribution companies,<sup>16</sup> local, state, and nonprofit green banks,<sup>1718</sup> climate banks, or other public or nonprofit CDFI's, establish contractor pre-qualification conditions or labor standards, as well as technical review, to ensure that high-quality workmanship delivers the intended energy savings to consumers. Typically guided by state policy or energy regulation to deliver all cost-effective energy efficiency, program administrators ensure high-quality workmanship and delivery of energy savings to participating consumers.

### **IMPORTANT NOTE**

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

<sup>&</sup>lt;sup>16</sup> Small Business Energy Advantage – <u>https://energizect.com/find-a-contractor</u>

<sup>&</sup>lt;sup>17</sup> Smart-E Loan – <u>https://www.ctgreenbank.com/programs/find-a-contractor/</u>

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

DOE staff to review the "Use Cases" describing these financing programs in detail within its Annual Comprehensive Financial Report for FY21.<sup>19</sup>

### Category 2 – Program Success & Sustainability

- <u>Question 7</u> the following is a breakdown of Green Bank program models and design factors in response to the RFI questions:
  - a. <u>Small Business Energy Advantage</u> beginning with a no-cost energy assessment<sup>20</sup> to receiving combination of upfront incentives and access to on-bill financing for the remainder of the installed costs.<sup>21</sup>
  - b. <u>Commercial Property Assessed Clean Energy</u> easy and affordable access to private capital (and public capital from Green Bank), including, in collaboration with the Connecticut Department of Economic and Community Development, additional incentives provided to manufacturers through Energy On the Line.<sup>22</sup>
  - c. <u>Decarbonization</u> the Green Bank has established impact methodologies to measure decarbonization<sup>23</sup> and the public health benefits<sup>24</sup> resulting from reduced air pollution as a result of clean energy deployment through its financing programs see Table 3.

Program	Sector	Decarbonization	Decarbonization Air Pollution	
		(LT Avoided	(LT Avoided (LT Avoided	
		MMTCO2e)	Pounds) <sup>25</sup>	(\$MM)
Smart-E Loan	Residential	281,623	521,373	\$8.7-\$19.6
CT Solar Loan	Residential	35,018	103,089	\$1.2-\$2.7
CT Solar Lease	Residential	154,900	381,464	\$5.3-\$11.9
Solar for All	Residential	700,785	1,287,120	\$20.5-\$46.5
SBEA	C&I	-	-	-
C-PACE	C&I	851,192	1,704,781	\$24.9-\$56.4

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

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

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

<sup>&</sup>lt;sup>20</sup> <u>https://www.eversource-ct.com/small-business/</u>

<sup>&</sup>lt;sup>21</sup> <u>https://energizect.com/your-business/solutions-list/Small-Business-Energy-Advantage</u>

<sup>&</sup>lt;sup>22</sup> <u>https://www.energyontheline.com/</u>

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

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

 $<sup>^{\</sup>rm 25}$  Includes NOx, SOx, and  $PM_{\rm 2.5}$ 

d. <u>Job Creation</u> – the Green Bank has established impact methodologies to measure job creation,<sup>2627</sup> including tax revenue generation,<sup>28</sup> as a result of increased investment in clean energy deployment – see Table 4.

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

#### **Table 4. Job Creation Benefits**

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

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

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

<sup>29</sup> https://www.ctgreenbank.com/wp-content/uploads/2020/11/2020-Connecticut-Clean-Energy-Industry-Report.pdf (p. 33)

<sup>&</sup>lt;sup>26</sup> https://www.ctgreenbank.com/wp-content/uploads/2018/03/CGB\_DECD\_Jobs-Study\_Fact-Sheet.pdf

 <sup>&</sup>lt;sup>27</sup> <u>https://www.ctgreenbank.com/wp-content/uploads/2017/02/CTGReenBank-Clean-Energy-Jobs-CT-August102016.pdf</u>
 <sup>28</sup> <u>https://www.ctgreenbank.com/wp-content/uploads/2018/09/CGB-Eval-Tax-Methodology-7-24-18.pdf</u>

<sup>&</sup>lt;sup>30</sup> Bryan Garcia, President and CEO of the Connecticut Green Bank

can be reviewed to identify the lessons learned from successful and unsuccessful RLF programs, including, but not limited to:

- Energy Efficiency Financing for Low- and Moderate-Income (LMI) Households: Current State of the Market, Issues, and Opportunities (August 2017)<sup>31</sup>
- Making it Count: Understanding the Calue of Energy Efficiency Financing Programs Funded by Utility Customers (December 2015)<sup>32</sup>
- Accessing Secondary Markets as a Capital Source for Energy Efficiency Finance Programs: Program Design Considerations for Policymakers and Administrators (February 2015)<sup>33</sup>
- Energy Efficiency Finance Programs: Use Case Analysis to Define Data Needs and Guidelines (July 2014)<sup>34</sup>
- Financing Energy Improvements on Utility Bills: Market Updates and Key program Design Considerations for Policymakers and Administrators (May 2014)<sup>35</sup>
- o Energy Efficiency Financing Program Implementation Primer (January 2014)<sup>36</sup>
- Credit Enhance Overview Guide (January 2014)<sup>37</sup>

The DOE should review these reports to identify relevant lessons learned that can inform RLF program design.

 Question 9 — reducing asymmetric information by requiring that all data from federally-funded RLF programs be collected, made available, and publicly disclosed will reduce the perception of risk by private lenders and encourage more competition in the marketplace. Increased competition is good for borrowers as this should result in increased access to capital, lower interest rates, more term options, better underwriting criteria, greater marketing by financial institutions, and other benefits, including an increase in demand for clean energy projects and measures by consumers – see Figure 1.<sup>38</sup>

<sup>&</sup>lt;sup>31</sup> https://www.energy.gov/sites/default/files/2021-07/ee-financing-lmi.pdf

<sup>32</sup> https://www.energy.gov/sites/default/files/2021-07/making-it-count-final-v2.pdf

<sup>&</sup>lt;sup>33</sup> https://www.energy.gov/sites/default/files/2021-07/accessing-secondary-markets-ee-finance.pdf

<sup>&</sup>lt;sup>34</sup> https://www.energy.gov/sites/default/files/2021-07/energy-efficiency-finance-programs.pdf

<sup>&</sup>lt;sup>35</sup> <u>https://www.energy.gov/sites/default/files/2021-07/financing-energy-improvements-utility-bills-market.pdf</u>

<sup>&</sup>lt;sup>36</sup> <u>https://www.energy.gov/sites/default/files/2021-07/ee-financing-program-implementation-primer.pdf</u>

<sup>37</sup> https://www.energy.gov/sites/default/files/2021-07/credit enhancement guide.pdf

<sup>&</sup>lt;sup>38</sup> <u>https://www.ctgreenbank.com/wp-content/uploads/2017/02/CTGreenBank-Evaluation-Framework-July-2016.pdf</u>

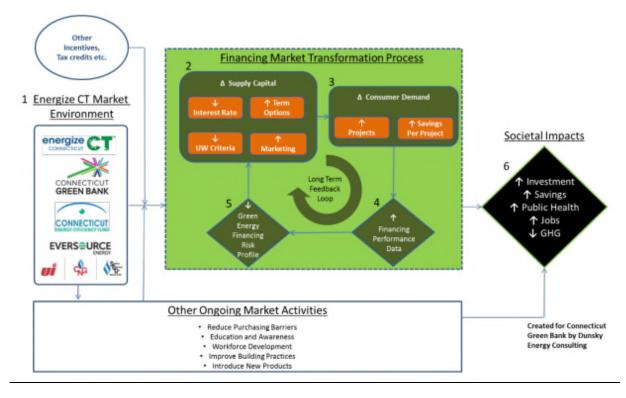


Figure 1. Program Logic Model of the Connecticut Green Bank – Financing Market Transformation Process

Instilling greater confidence to private lenders that investment in the program provides acceptable levels of risk and benefits requires engagement from local and state entities and the utilities. For example, the Smart-E Loan in Connecticut, is supported by the Green Bank providing technical assistance in terms of eligible clean energy and energy efficiency measures consistent with the public policy of the state, and qualifying eligible contractors who are trained and don't have poor records with respect to consumer protection violations.

<u>Question 10</u> – see response to Question 6.

### **IMPORTANT NOTE**

Over the years, the Green Bank has been asked by local and state governments about how they could develop and/or use the social and environmental impact methodologies developed by the Green Bank to communicate the benefits of clean energy deployment. The Green Bank staff is willing and able to meet with the DOE staff as appropriate, with respect to its impact methodologies, including its program logic model for financing market transformation that guides data collection and reporting.

### Category 3 – Supporting Tools & Resources

 <u>Question 11</u> — long-term success of RLFs in reaching more low- and moderate-income, underserved, or disadvantaged communities, occurs when the investment of such funds develop local funding ecosystems, including, but not limited to incentives (i.e., electric and gas distribution companies), tax credits (e.g., sales, property, investment), and credit enhancements for financing (e.g., loan loss reserves, interest rate buydowns). Easy and affordable access to capital, in its various forms from funding (i.e., grants) to financing (i.e., loans), provides end-use customers and their contractors with the financial resources they need to develop, construct, commission, and operate such systems.

- **<u>Question 12</u>** see response to Question 21.
- <u>Question 13</u> this is not an area of expertise of the Green Bank, however, we would offer the following observations:
  - Financial Institutions encouraging partnerships between local and state governments with financial institutions that share these objectives given their corporate structure (e.g., Amalgamated Bank<sup>39</sup>) and/or their commitment to CRA (e.g., Liberty Bank, Webster Bank, KeyBank) may improve pay, unionization, and increased access to disadvantaged workers.
  - <u>US Energy and Employment Jobs Report</u> ("USEER") the DOE, working in collaboration with the National Association of State Energy Offices ("NASEO"), Energy Futures Initiative, and [bw] Research Partnership produce information on state-level and national jobs in the clean energy industry. The DOE should increase its support of this research to track key information over time (e.g., unionized workers, compensation) to monitor progress. The Green Bank would like to thank the DOE for its continued support of such research efforts as it helps states track jobs in the clean energy industry.<sup>40</sup>
- <u>Questions 14</u> this is not an area of expertise of the Green Bank, however, we would offer the following observation:

There are several federal auditing tools that are useful for residential (i.e., Home Energy Score) and non-residential (i.e., Energy Star Benchmarking) end-use customers. The DOE should not limit data collection, auditing, modelling and sales tools to government platforms, but should encourage innovation in such tools.

What is important to note is that any data collected as a result of RLF support for residential, commercial, and industrial projects should be made publicly available to the DOE. For example, the data collected by the Green Bank from the Smart-E Loan, supported by credit enhancements from ARRA, were made available to LBNL for scientific research purposes. Reducing asymmetric information should be an important outcome for the DOE in terms of loan and energy savings performance through the RLF because it increases competition in the market for easy and affordable access to capital to consumers and contractors.

<u>Question 15</u> – see various responses above.

As local and state, nonprofit and utility administrators of clean energy programs know, the qualification and eligibility of contractors to access and operate within incentive programs is important and essential.

 <sup>&</sup>lt;sup>39</sup> Founded in 1923 by the Amalgamated Clothing Workers of America, Amalgamated Bank is the largest union-owned bank and one of the only unionized banks in the United States. It is currently majority owned by Workers United and SEIU Affiliate.
 <sup>40</sup> https://www.ctgreenbank.com/wp-content/uploads/2022/01/2021-CT-Clean-Energy-Industry-Report.pdf

Beyond demonstrating local certifications (e.g., journeyman licenses, including E-2, PV-2, and STC-2 Licenses in Connecticut) and standards, frequent and random project inspections are important to ensure proper installation and operation of projects. By inspecting new contractors and randomly inspecting old contractors in the program, program administrators are able to improve consumer protections and increase energy savings from such projects.

 <u>Questions 16</u> – as the DOE knows, there are various ways to track program success and impacts while relieving burden on contractors and programs. The following are the key pieces of data that are essential to collect to estimate E<sup>4</sup> impact – see Table 5.

#### Table 5. Data Collection to Compute Success and Impact

	Economy	Energy	Environment	Equity
Installed Cost	х			
Project Type	x			
Installed Capacity		x	x	х
Location	х			х

- <u>Economy</u> per every \$1.0 MM invested in funding (i.e., grants) and financing (i.e., loans) from public and private sources of capital in various clean energy projects (e.g., renewable energy, energy efficiency) direct, indirect and induced jobs years and sales, property, corporate, and individual tax revenues can be estimated.
- <u>Energy</u> based on the installed capacity of a project, including its estimated production (i.e., kWh) and/or savings (i.e., MMBtu), and the energy consumption of participating residential, commercial, and industrial end-use electric and gas customers, the energy burden and security can be calculated depending upon the rate structure.
- <u>Environment</u> based on the estimated production and/or savings of such systems, using tools developed by the EPA, an estimate of GHG and criteria pollutant emissions avoided and the associated public health benefits from cleaner air (e.g., reduced sick days, hospitalizations, deaths) can be estimated.
- <u>Equity</u> if data on income and race is not being collected, then the location of a project with respect to census tract can enable an estimate of what families and businesses are benefitting from such investment in and deployment of clean energy.

For further details, see "Decennial Societal Impact Report" fact sheet.

#### **IMPORTANT NOTE**

DOE should consider providing technical assistance to local and state governments and/or developing standardized methodologies for impact tracking and reporting based on the data it collects from investment through the BIL and other programs. Given its experience, the Green Bank is willing to assist the DOE as appropriate.

### Category 4 – Job Quality, Buy America, and Climate Impact

- **Question 17** the RLF, might impact a region's workforce by:
  - a. Job Growth and Quality if the RLF is able to unlock and leverage multiples of private investment, then it is able to increase the capacity to lend to projects and increase job growth and quality. For example, if \$10.0 MM were available for an RLF that has no ability to mobilize additional private investment and revolves every 4 years, then in Connecticut, such a facility could support 62 direct jobs from commercial energy efficiency projects every 4 years.<sup>41</sup> However, if the \$10.0 MM RLF were able to be invested through a green bank as subordinated debt within a capital structure (e.g., 10-20 percent) in partnership with a private lender (e.g., 80-90 percent) as senior debt, then 4-9 times more capital would be available for projects thereby supporting a \$50.0-\$100.0 MM RLF facility that could support 248-558 additional direct jobs. This is the capital structure of the SBEA program noted above (i.e. response to 3a). More capital available and deployed in projects leads to job growth and an increase in the supply of projects in a market, results in an increase in job quality (e.g., compensation) as the competition for labor increases.
  - b. <u>Construction Jobs</u> as noted above, a \$10.0 MM RLF without mobilizing private investment versus a \$50.0-\$100.0 MM RLF whose \$10.0 MM of investment is subordinated to \$40.0-\$90.0 MM of private investment as senior debt, would produce an additional 248-558 more direct (i.e., construction) and 320-720 indirect and induced jobs. Greater and easier access to affordable capital fosters the sustained orderly development of a local construction industry.
  - c. <u>Prevailing Wage Requirement</u> a considerable amount of deployment for projects for SMEs and residential homeowners are accomplished by less substantial local contractors that generally lack the wherewithal to comply with Davis Bacon prevailing wage requirements. We would recommend that, like ARRA, that there be categorical exclusions for such requirements related to the size of such projects. Where Davis Bacon prevailing wage requirements will apply, compliance protocols for such requirements should be made as straightforward as possible with readily-available technical assistance for contractors (particularly those contractors with annual revenues below a certain threshold (for instance).

The Green Bank, working with [bw] Research Partnership, EDCs, DEEP, and Connecticut Department of Labor, broadly collect wage and benefit (i.e., health care and retirement) data to discern how the clean energy economy is supporting families.<sup>42</sup>

 <u>Question 18</u> — in general, residential and commercial energy efficiency projects tend to use Energy Star products. Beyond the procurement of these Energy Star products from domestic or foreign sources (e.g., LG appliance manufacturing plant in the U.S.), project developers typically don't track the domestic or foreign procurement of iron, steel, cement or other construction materials for a project outside of the model and serial information collected on an invoice.

<sup>&</sup>lt;sup>41</sup> <u>https://www.ctgreenbank.com/wp-content/uploads/2017/02/CTGReenBank-Clean-Energy-Jobs-CT-August102016.pdf</u>

<sup>&</sup>lt;sup>42</sup> <u>https://www1.ctdol.state.ct.us/lmi/green/CTGreenBank.asp</u>

- Question 19 this is beyond the expertise of the Green Bank, however there are a number of ways an RLF could encourage procurement of domestic products and materials, including, but not limited to:
  - <u>Additional Pool of Resources</u> the DOE could allow RLF program administrators to access a pool of additional resources to lower interest rates (e.g., first-come, firstserve);
  - <u>Federal Procurement</u> given the procurement power of the federal government, long-term contracts could create competitive domestic markets that can help local and state governments, utilities, developers, and others procure lower cost products and materials that are domestically manufactured (e.g., buyers pool); and/or
  - Innovative Customer Acquisition Strategies as demonstrated through the SunShot Program, and its support of community-based Solarize campaigns, customers could be given a pricing choice by contractors to offer two bid prices – including a conventional lowest bid price versus a bid price that includes American made products and materials allowing the customer to decide.

It should be noted that although well intended, adding additional domestic manufactured requirements may have unintended consequences (e.g., reduce customer participation) that would reduce economic activity across the market (e.g., installation of projects).

 Questions 20 – the RLF could encourage the use of funds for beneficial electrification by lowering interest rates. For example, the Smart-E Loan used ARRA funds as interest rate buydowns to catalyze the market for weatherization in combination with air source heat pumps and Energy Star windows. If RLF are to be used to finance projects that are reliant on fossil fuels, then equipment installed should be more efficient than what it is displacing.

It should be noted that the transition to beneficial electrification will not only put additional stress on the electric grid (i.e., increase demand, specifically peak demand), but it will also adversely impact small businesses, typically family-owned businesses, that are being displaced as a result of this shift in technology. The DOE should provide additional technical assistance (e.g., workforce development) to enable a just transition for those small businesses currently focused on installing fossil-fuel powered equipment.

### Category 5 – Open Response on Revolving Loan Fund Program Design

Question 21 — with the objective to maximize the impact that BIL provides to help as many families and businesses as possible, within future formula grant or competitive RFPs in support of Sections 40209, 40502, and similar programs, we would recommend language along the following be included within the program documentation:

In its effort to maximize support to the most families and SME's as possible, the DOE seeks innovative public-private partnership approaches that mobilize private investment, including, but not limited to the following:

- technical assistance (i.e., focus on Justice 40 and Just Transition)
- o predevelopment capital

- o credit enhancements (i.e., interest rate buydowns, loan loss reserve funds)
- o revolving loan funds
- participation agreements to lower cost of and increase access to private capital
- o utility on-bill financing programs
- o commercial property assessed clean energy
- o bridge, construction, term, off-taker, and secondary capital loans
- partnerships with local, state, and nonprofit green banks, climate banks, or other public or nonprofit community development financial institutions, as intermediaries to directly or indirectly channel financing to SME's, including meaningful involvement of veteran, minority, women, and disabled-owned businesses

Also, separate from this RFI, the Green Bank would recommend DOE consider the following aspects of supporting local and state efforts to unlock private investment to support the deployment of clean energy for families and businesses:

- National Loan Loss Reserve Fund through an "across government" strategy, the DOE's Loan Program Office ("LPO")<sup>43</sup> working with the U.S. Department of Treasury's Community Reinvestment Act ("CRA") division, has the potential to mobilize billions of dollars of public and private investment that will be needed in order to achieve the Biden Administration's ambitious objectives. Work with leading green banks at the local and state-level focused on credit enhancement strategies (e.g., CT, HI, IL, Montgomery County) and non-profit organizations (e.g., Inclusive Prosperity Capital, Inclusiv, Michigan Saves, SELF) to develop a standardized "opt-in" program to enable easy and affordable access to capital to finance clean energy improvements for families and businesses with a priority focus on Justice 40 (e.g., vulnerable communities).
- <u>Credit Enhancements</u> the importance of loan loss reserves ("LLR") in attracting private capital investment and interest rate buydowns ("IRB") in catalyzing contractor deployment of clean energy, are two key lessons from ARRA that should be advanced through RLF mechanisms. Although not an RLF per se, credit enhancements have the potential to engage local lenders to invest their private capital in clean energy markets. As those investments yield returns, local lenders will continue to invest private capital in clean energy market development revolving their own capital sources by continuously investing in the clean energy economy above and beyond local, state, and national government resources.
- <u>Cost-Effectiveness Testing</u> conventional utility or third-party administered energy conservation and load management incentive programs are designed using cost-effectiveness testing (e.g., National Standard Practice Manual).<sup>44</sup> This approach allows for various benefit-cost analyses ("BCA") including, but not limited to Participant Cost Test ("PCT"), Program Administrator Cost Test ("PACT"), Total Resource Cost Test ("TRC"), Societal Cost Test ("SCT"), and Ratepayer Impact Measure ("RIM"). Prioritizing

<sup>&</sup>lt;sup>43</sup> LPO authority to work with local and state government was expanded under Sec. 40401(c)(2) of the BIL amending the terms and conditions of Title 17 loans to include projects receiving financial support or credit enhancements from state energy financing institutions as eligible projects, and that such projects are not required to meet Section 1703(a)(2)'s requirement for new or significantly improved technologies, but instead meet emissions requirements.

<sup>&</sup>lt;sup>44</sup> https://www.nationalenergyscreeningproject.org/national-standard-practice-manual/

vulnerable communities to achieve Justice 40 objectives, could be justified by providing additional incentives to such communities using the cost-effectiveness framework. For example, Energy Storage Solutions in Connecticut, prioritizes low-income households, households located in distressed communities, and affordable housing by receiving additional incentives justified by the BCA framework which should result in an increase in deployment in vulnerable communities.<sup>45</sup> DOE could provide technical assistance to states to support the analytical framework for higher incentives for vulnerable communities for such distributed energy resources such as solar PV + battery storage that both reduce energy burden and increase energy security for vulnerable communities.

#### **IMPORTANT NOTE**

The Green Bank would request to meet with the DOE staff for 30-minutes to discuss how a National Loan Loss Reserve and/or Credit Enhancements (e.g., LLR, IRB) strategy could unlock private capital investment at the scale necessary to achieve the ambitious Biden Administration policies.

The Green Bank appreciates the DOE's efforts to solicit public comment on the pending RLF request for proposals. We look forward to working with our public and private capital partners to submit an application, where appropriate, for consideration into the Revolving Loan Fund Program formula or competitive grant solicitation(s).

Sincerely,

Bryan Garcia

Bryan Garcia President and CEO

.Bert Kunter

Bert Hunter EVP and CIO

#### About the Connecticut Green Bank

As the nation's first state-level green bank, the Connecticut Green Bank leverages the limited public resources it receives to attract multiples of private investment to scale up clean energy deployment. Since its inception, the Green Bank has mobilized \$2.14 billion of investment into Connecticut's clean energy economy at a 7.4 to 1 leverage ratio of private to public funds, supported the creation of 25,612 direct, indirect and induced jobs, reduced the energy burden on over 63,000 families and businesses, deployed over 494 MW of clean renewable energy, helped avoid 9.9 million tons of  $CO_2$  emissions over the life of the projects, and generated \$107.4 million in individual income, corporate, and sales tax revenues to the State of Connecticut.

#### **Attachments**

- A. Green Bank Fact Sheet
- B. Decennial Societal Impact Report Fact Sheet
- C. The Impact of Federal Funds in Connecticut Fact Sheet

<sup>&</sup>lt;sup>45</sup> <u>https://www.cleanegroup.org/webinar/connecticuts-new-energy-storage-solutions-program/</u>



October 17, 2022

U.S. Department of Energy Office of Manufacturing & Energy Supply Chains Office of Energy Efficiency and Renewable Energy <u>bil-batterymanufacturing@hq.doe.gov</u>

### SUBJECT: Comments from the Connecticut Green Bank – BIL-Battery Recycling RFI – DE-FOA-0002833

To Whom it May Concern:

The Connecticut Green Bank ("Green Bank") appreciates the U.S. Department of Energy's ("DOE") efforts through the Office of Manufacturing and Energy Supply Chains ("MESC") and the Office of Energy Efficiency and Renewable Energy ("EERE") issuing this request for Information ("RFI") – Collection, Transportation, Sorting, Processing, and Second Life Applications for End-of-Life Lithium-Ion Batteries. The RFI is intended to provide the DOE with public input to help inform its implementation of the Infrastructure Investments and Jobs Act ("IIJA"), also known as the Bipartisan Infrastructure Law ("BIL"), specifically Sections 40207(e), 40207(f)(2), (f)(3), (f)(4) and 40208. The Green Bank, seeks to provide public comment on Section 40207(f)(2) "Battery Recycling Research, Development, and Demonstration Grants" and Section 40207(f)(3) "State and Local Programs," and in particular Category G "State and Local Collection Programs for Lithium-Ion Batteries" and Category J "Equity, Environmental, and Energy Justice (EEEJ) Priorities".

### **Background**

There are numerous public policies in Connecticut that support the Biden Administration's policies, including:

- <u>GHG Reduction Targets</u> Public Act 08-98 "An Act Concerning Connecticut Global Warming Solutions," established GHG emission reduction targets for 2010, 2020, [2030, 2040] and 2050.<sup>1</sup>
- <u>Renewable Portfolio Standards</u> Connecticut has a Renewable Portfolio Standard ("RPS") of 40% by 2030.
- <u>Resilience and Vulnerable Communities</u> Public Act 20-05 "An Act Concerning Emergency Response by Electric Distribution Companies, the Regulation of Other Public Utilities and Nexus

<sup>&</sup>lt;sup>1</sup> It should be noted, that through Public Act 18-82, a 45% reduction of GHG emissions from 2001 levels by 2030 was established. This target is consistent with President Biden's 50% reduction of GHG emissions from 2005 levels by 2030. And, through the passage of Public Act 22-5, that a 100% zero carbon electric sector by 2040 was established.

Provisions for Certain Disaster-Related or Emergency-Related Work Performed in the State," established definitions for resilience<sup>2</sup> and vulnerable communities,<sup>3</sup> including incentive programs (i.e., Microgrid and Resilience Grant and Loan Pilot Program).

 Just Transition Requirements – Public Act 21-43 "An Act Concerning a Just-Transition to Climate-Protective Energy Production and Community Investment," established requirements for community benefit agreements.

The Green Bank shares the DOE's goals for the investment under Section 20207(f) of the BIL. And specifically, with respect to Section 20207(f), there are several public policies in Connecticut that will lead to the use, and potential recycling, of lithium-ion batteries, including:

- <u>Battery Storage Target</u> Public Act 21-53 "An Act Concerning Energy Storage," established a 1000 MW target for battery storage by 2030.
- Electric Vehicle Deployment Goal The Connecticut Department of Energy and Environmental Protection ("CT DEEP") released the EV Roadmap for Connecticut, which sets a state goal for 20% of the statewide light-duty fleet, or 500,000 vehicles, to be EV by 2030. Cars and light-duty trucks purchased by state agencies in Connecticut will also transition to EV by 2030 100% of vehicle acquisitions must be EVs per Connecticut General Statutes 4a-67d.
- <u>Zero Emission Buses</u> Public Act 22-25 "An Act Concerning the Connecticut Clean Air Act," established a 100% zero-emission target for school buses in environmental justice communities by 2030, and all school districts by 2040. Per Senate Bill 4, at least 30% of transit buses purchased or leased by the state must be zero emission by 2030.
- Waste and Recycling Public Act 21-115 "An Act Concerning Climate Adaptation," expanded the scope of the Connecticut Green Bank beyond "clean energy" to include "environmental infrastructure"<sup>4</sup> allowing the green bank model to accelerate and grow Connecticut's green economy, including climate adaptation and resilience and waste and recycling.

In October 2019, the Public Utilities Regulatory Authority ("PURA") initiated an Equitable Modern Grid Framework that includes battery storage (i.e., Docket No. 17-12-03RE03) and zero emission vehicles (i.e., Docket No. 17-12-03RE04). The Green Bank, in collaboration with Eversource Energy and United Illuminating (i.e., the two investor-owned electric distribution utilities in Connecticut), are coadministering a 580 MW by 2030 behind the meter battery storage incentive program for residential (i.e., 290 MW) and non-residential (i.e., 290 MW) end-use customers called Energy Storage Solutions – see Attachments A and B. Per PURA directive, no less than 40 percent of residential projects will be

<sup>&</sup>lt;sup>2</sup> "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.

<sup>&</sup>lt;sup>3</sup> "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.

 <sup>&</sup>lt;sup>4</sup> "Environmental infrastructure" means structures, facilities, systems, services and improvement projects related to (A) water,
 (B) waste and recycling, (C) climate adaptation and resiliency, (D) agriculture, (E) land conservation, (F) parks and recreation, and (G) environmental markets, including, but not limited to, carbon offsets and ecosystem services.

installed for low-income families, in homes located in distressed communities, or in multi-family affordable housing. In this bring-your-own device program, the majority of batteries that have been approved to date are lithium-ion – see Table 1 below.

Manufacturer	Model/Model #	Composition	kWh	Weight (lbs.)	Dimensions
Sun Power	SV-BASE13-12-B	Li-ion (LiFePO4)	13	528	26 x 63 x 15
Electriq Power	350-10LC	Li-ion (LiFePO4)	15	725	60 x 50 x 9
EndurEnergy Systems	ESP-5100	Li-ion (LiFePO4)	5.12	92.6	17.4 x 19.7 x 5.2
Enphase	Encharge 3	Li-ion (LiFePO4)	3.5	114	14.5 x 26.1 x 12.6
Enphase	Encharge 10	Li-ion (LiFePO4)	10.08	341	42.1 x 26.1 x 12.6
Equana	Evolve LFP	Li-ion (LiFePO4)	14	23	15.3 x 17.3 x 6.7
Urban Electric Power	Ohm-20	ZnMNO2	8.8	395	25 x 9.6 x 62
Tesla	Megapack 2	Li-ion (LMC)	3000		
Generac	M3	Li-ion (NMC)	9	175.8	3*(17.3 x 17.7 x 3.5)
Generac	M4	Li-ion (NMC)	12	234.4	4*(17.3 x 17.7 x 3.5)
Generac	M5	Li-ion (NMC)	15	293	5*(17.3 x 17.7 x 3.5)
Generac	M6	Li-ion (NMC)	18	351.6	6*(17.3 x 17.7 x 3.5)
SolarEdge Technologies	BAT 10K 1P	Li-ion (LMC)	361		48 x 40 x 20
Cadenza	CI-P-1-371	Li-ion			
Northern Reliability, Inc	NRI-E1000-K24	Li-ion			

Table 1. Example of batteries that could potentially be used in Energy Storage Solutions and need end-of-life services.

As we transition both our heavy- and light-duty vehicles to zero-emissions alternatives, EVs will be an essential tool to decarbonize. For instance, there are approximately 8,600 school buses in Connecticut that are entirely powered by fossil fuels. To achieve the transformative investment to deploy zero emission school buses (e.g., electric school buses), and associate charging infrastructure, requires successful public-private partnerships. This will result not only in a reduction of GHG emissions and local criteria pollutants, but also other opportunities (e.g., vehicle-to-grid) to improve the resilience of the grid during power outages or periods of peak electric demand.

In Connecticut, we have the public policy infrastructure to reduce the burden of energy costs through the deployment of renewable energy and increase energy security through the deployment of battery storage, with a priority towards vulnerable communities. As our state ramps up deployment of battery technology, both stationary and in transit, we are looking ahead to a future in which the batteries deployed today are retired from use. To build the sustainable future our state envisions, we need both technical and financial assistance from the DOE to support the end-of-life of lithium-ion batteries.

### Category G – State and Local Collection Programs

## 1. What are used batteries classified as when they are collected and stored (waste, used material, universal waste, hazardous waste)? How is the location and time impacted by this classification?

The Green Bank is unaware of how used batteries are classified when they are collected and stored. In consulting with the Connecticut Department of Energy and Environmental Protection ("CT DEEP"), the Green Bank has learned that batteries are regulated differently depending on whether or not they are generated in a household. Batteries that are not generated in a household are regulated as: (1) universal waste, if they are characteristically hazardous; or (2) so-called "Connecticut Regulated Waste<sup>5</sup>" if they are not characteristically hazardous. Batteries generated in a household are exempt from federal and state hazardous waste regulations, and can be legally disposed of with the homeowner's municipal solid waste in Connecticut, although the State strongly promotes and encourages the recycling of household batteries, especially larger types that constitute a significant fire or safety hazard if disposed of in the municipal solid waste stream. Persons that aggregate household batteries (e.g., for recycling purposes) would either have to manage them as universal waste or under Connecticut's solid waste permitting requirements.

As the Green Bank implements Energy Storage Solutions, we anticipate a useful life of participating lithium-ion batteries of ten years.<sup>6</sup>

### 2. What regulatory agencies have jurisdiction over used battery management at specific points in the EOL lifecycle?

In Connecticut the following state entities have jurisdiction over the identified areas:

- a. Environmental Overseen by CT DEEP
- **b.** Fire Overseen by the State Fire Marshall
- **c. Transportation** Overseen by US Department of Transportation ("US DOT"), specifically the US DOT's hazardous materials regulations. CT DEEP has oversight with respect to the transportation of batteries that are regulated as universal waste.
- d. Other unknown

Connecticut could use technical and financial assistance from the DOE to determine what federal or international regulations and standards our state could adopt to support the management of batteries at specific points in the end-of-life lifecycle, especially whether there should be distinct regulation for depleted batteries versus systems with remaining charge.

As far as the Green Bank is aware, the current guidance from the Environmental Protection Agency for consumers of mid-range to large lithium-ion batteries is:

*"Contact the manufacturer, automobile dealer, or company that installed the Li-ion battery for management options; do not put it in the trash or municipal recycling bins.* 

<sup>&</sup>lt;sup>5</sup> <u>Connecticut-Regulated Waste</u>

<sup>&</sup>lt;sup>6</sup> For a list of participating batteries – <u>https://energystoragect.com/submitted\_ess\_system\_status\_list/</u>

Because of the size and complexity of these battery systems, medium and large-scale Li-ion batteries may not be able to be removed by the consumer. Refer to the manufacturer's instructions and heed warnings and safety instructions."<sup>7</sup>

The EPA's guidance for disposal of energy storage systems of the size and kW being installed under the Energy Storage Program, is to contact the manufacturer. However, the Green Bank is aware that there are potential environmental and fire risks which would make it hazardous for the consumer to attempt disposal of the energy storage systems without appropriate training. While the EPA's guidance puts responsibility on manufacturers to perform decommissioning, the responsibility of the battery at end-of-life has not been codified in Extended Producer Responsibility regulation, warranty information, or consumer contracts.

The State of Connecticut is currently considering whether to develop Extended Producer Responsibility laws, either independently or in conjunction with other states that have similar home and business battery storage programs. Please see Attachment C for a list of state-run storage programs that Connecticut would consider partnering with on this initiative.

### 3. What are the laws for compliance at the state and local level on end-of-life battery disposition?

Batteries that are classified as universal waste as described above would be subject to Section 22a-449(c)-113 of the Regulations of Connecticut State Agencies ("RCSA"), which incorporates the federal universal waste regulations at 40 CFR 273 with specified changes. Batteries that are classified as "Connecticut Regulated Waste" would be subject to Connecticut General Statutes Section 22a-454. Batteries that are generated in a household would be subject to regulation under Connecticut's solid waste regulations, i.e., RCSA Section 22a-209-1 through -17, inclusive. The US DOT's hazardous materials regulations (i.e., 49 CFR parts 100 through 180) apply to the transportation of batteries at the end of life. The Green Bank is unaware of existing transportation, storage, or disposal laws at the state and local level specific to energy storage or EV battery systems beyond the battery rules described above.

Specific to the behind-the-meter storage program co-administered by the Green Bank, within the program manual of Energy Storage Solutions,<sup>8</sup> it is noted:

"The decommissioning of any BESS participating in Energy Storage Solutions shall be completed by the Contractor, TPO, or another party as designed by the Contractor or TPO. The Contractor or TPO shall be held responsible by the Program Administrators for ensuring that all appropriate steps have been taken to dispose of and recycle all BESS components in such a manner that minimizes waste and environmental harm in compliance with all local, state, and federal regulations"

Connecticut could use technical and financial assistance from the DOE and the EPA to support the development of laws for compliance at the state and local level on end-of-life energy storage and EV battery processing.

<sup>&</sup>lt;sup>7</sup>EPA, "Used Lithium-ion Batteries", <u>https://www.epa.gov/recycle/used-lithium-ion-batteries</u>.

<sup>&</sup>lt;sup>8</sup> https://energystoragect.com/wp-content/uploads/2022/01/ESS-Program-Manual Final-1-14-2022.pdf

It should be noted that the DOE SunShot Initiative was an excellent tool that helped Connecticut, and its 169 municipalities, work towards standardized permitting for residential solar PV. Perhaps there is a SunShot Initiative (or EarthShot Initiative) best practice there for the DOE to consider with respect to battery storage recycling.

4. How do you keep track of regulations at the state and local level and how do you determine your compliance? Are there multi-state agreements with the handling and storage of materials (as materials travel between states)?

The Green Bank is not currently keeping track of regulations at the state and local level in order to determine compliance, as this is largely the responsibility of CT DEEP. The Green Bank will work with CT DEEP to determine how to keep track of regulations at the state and local level and how to determine compliance.

While not specific to battery waste, regionally, CT DEEP works with Northeast Waste Management Officials (NEWMOA) to communicate with other northeast states on interstate regulatory issues and promote consistency. The Green Bank is unaware of other multi-state agreements with regards to the handling and storage of materials.

NEWMOA is a multi-state funded initiative and could use technical and financial assistance from the DOE to better keep track of regulations at the state and regional level. NEWMOA has not yet looked specifically at storage or EV battery waste but would benefit from support to coordinate end-of-life management best practices for handling, storing, and processing these resources. Connecticut intends to continue to work through NEWMOA with the EPA Region 1 and Region 2 as well as other neighboring states on multi-state agreements.

### 5. What liabilities are these programs responsible for? And how are these programs insured?

Hazardous waste contractors and transporters are permitted by the state and as a condition of obtaining a permit must carry certain levels of insurance and surety. At the state level, there are no battery/storage-specific permits.

For contractors to participate in Energy Storage Solutions, they must provide both Workmanship Warranty and General Liability Insurance:<sup>9</sup>

- <u>Workmanship Warranty</u> Provide a copy of Eligible Contractor's workmanship warranty. Contractors participating in Energy Storage Solutions must provide a ten (10) year or longer workmanship warranty. The warranty must cover full costs of labor for repair or replacement of any defective system components or components that failed due to improper or insufficient design or installation.
- <u>General Liability Insurance</u> All Eligible Contractors and subcontractors must carry at least one million dollars in general liability insurance to participate in Energy Storage Solutions. Additionally, all Eligible Contractors and subcontracts must carry worker's compensation, and auto insurance.

It should also be noted that in Energy Storage Solutions:

<sup>&</sup>lt;sup>9</sup> Ibid (pp. 24)

"Neither the Connecticut Green Bank, Eversource Energy, United Illuminating (Program Administrators) nor the State of Connecticut: (1) endorses the workmanship of any Contractor; nor (2) guarantees, warranties, or in any way represents or assumes liability for any work proposed or carried out by a Contractor. Additionally, the Program Administrators are not responsible for assuring the design, engineering, and construction of any BESS is proper or complies with any particular laws, regulations, codes, licensing, certification and permit requirements, or industry standards. The Program Administrators do not make any representations of any kind regarding the results to be achieved by the system or the adequacy or safety of such measures."<sup>10</sup>

### 6. Is there an estimate of building requirements based on quantity of batteries stored? Is this variable depending on where the batteries are stored?

The Green Bank is unaware of an estimate of building requirements based on the quantity of batteries stored. In Connecticut, CT DEEP would individually evaluate and permit battery storage facilities, including reviewing plans for the location for storing batteries at each facility.

Connecticut could use technical and financial assistance from the DOE to determine these building requirements for batteries stored.

## 7. Do you have examples of education and outreach programs, materials, or approaches to improve recycling, source reduction, recycling, recovering, reusing, repairing, or refurbishing that are associated with demonstrated results?

While Connecticut has numerous education campaigns in the waste sector, the Green Bank does not have examples of education and outreach programs, materials, or approaches to improve recycling, source reduction, recycling, recovering, reusing, repairing, or refurbishing that are associated with demonstrated results that are specific to EV battery or energy storage disposal.

Connecticut could use technical and financial assistance from the DOE on consumer education and outreach programs on battery recycling. As stated above, perhaps there are lessons to be learned from the SunShot Initiative and soft-cost reduction strategies that can inform a DOE approach to battery storage recycling (i.e., EarthShot Initiative).

# 8. Can you direct us to any specific examples of useful consumer educational materials or other content that states, Tribes, and units of government can adapt and use in recycling programs? What were the associated impacts and costs (financial, staff, an/or other resources) of the effective programs?

The Green Bank cannot direct the DOE to any specific examples of useful consumer educational materials on EV battery or energy storage recycling programs. However,

<sup>&</sup>lt;sup>10</sup> Ibid (pp. 4)

Connecticut has run numerous consumer educational programs on waste such as *What Do I Do With...*<sup>11</sup>

### 9. Can you direct us to any specific good examples of local and state coordination and/or collaboration on laws, permitting, zoning, etc. on recycling programs?

The Connecticut Coalition for Sustainable Materials Management ("CCSMM") has convened 100 municipalities from across the state to explore ways to reduce the amount of waste that is generated in our state, improve reuse, recycling, organics collection, support extended producer responsibility ("EPR") legislation, and consider other innovative solutions.

The Green Bank cannot direct the DOE to any examples of local and state coordination and/or collaboration on laws, permitting, zoning, etc. specific to storage recycling programs. To our knowledge, there are no such initiatives in the state. However, as noted above, the DOE should consider a SunShot Initiative best practice approach to battery storage recycling.

### Category J: Equity, Environmental, and Energy Justice (EEEJ) Priorities

1. Please give input on how the Battery Recycling Provisions help achieve the Justice40 policy priorities that could benefit disadvantaged communities and to maximize implementation co-benefits.

On October 12, 2021, the Green Bank, along with the Greater Bridgeport Community Enterprises and Operation Fuel, submitted public comments into the DOE's Communities Local Energy Action Plan ("LEAP") pilot program process – see Attachment D. Within those comments, we suggested that the DOE include a "Recycling Planning and Investment Pathway" alongside all of the other pathways. Such a pathway would have sought to support the development of facilities for recycled materials (e.g., solar PV panels, battery storage, Energy Star appliances) and support workforce training.

Since this pathway was not included within the pilot Communities LEAP program, the Green Bank would suggest that consideration be given to expanding Communities LEAP and including recycling within the eligible pathways of the program through the program(s) envisioned by DE-FOA-0002833. Expanding Communities LEAP, through its inclusion of recycling pathways, would serve to benefit the Justice40 policy priorities. Also, as noted within the comments, the DOE should consider providing additional support from potential applicants under the envisioned programs through this RFI.

## 2. What program requirements or review criteria should DOE consider ensuring that regional economic growth flowing from funded projects will be shared with disadvantaged communities?

As battery storage recycling [and all clean energy recycling (e.g., solar PV, appliances)], is likely to be a regional opportunity, the Green Bank would suggest that the DOE work across government with the EPA to encourage regional applications and/or planning. For example,

<sup>&</sup>lt;sup>11</sup> https://portal.ct.gov/DEEP/Waste-Management-and-Disposal/What-Do-I-Do-With

given the ambitious public policies and incentives for battery storage and electric vehicles in New England that are leading to significant technology adoption, EPA Region 1 and the DOE could be unifying voices to bring our states together. With the Green Bank's new scope expansion inclusion of "waste and recycling" within "environmental infrastructure," we stand ready to coordinate with the DOE, EPA, CT DEEP, and New England states to support the investment in and operation of battery storage recycling facilities.

It should be noted, per CGS 22a-20a(2)(D),<sup>12</sup> that "environmental justice communities"<sup>13</sup> in Connecticut would likely treat battery storage recycling facilities as "affecting facilities"<sup>14</sup> and therefore require the planning and development of such facilities to enable meaningful public participation, including a community environmental benefit agreement.

## 3. How are adverse impacts of manufacturing and recycling facilities currently measured or monitored? Which materials, processes, and/or components result in the largest environmental impacts? What opportunities exist to minimize such impacts?

The Green Bank is not aware of how adverse impacts of manufacturing and recycling facilities are currently measured or monitored.

Connecticut could use technical and financial assistance from the DOE to help us determine how adverse impacts of manufacturing and recycling facilities are measured and monitored, including materials, processes and/or components, in order to identify opportunities to minimize such impacts.

4. Describe possible human health, environmental, or ecological considerations, both positive and negative (e.g., are there any air quality impacts, sensitive ecosystems, National Environmental Policy Act (NEPA) issues, environmental justice communities, other considerations) that the DOE should consider in conjunction with design and implementation of the Battery Recycling Provisions?

Li-ion batteries are prone to thermal runaway, fires, and explosions. Thermal runaway is an uncontrollable self-heating reaction that can lead to fires or explosions. Several things can cause the battery to overheat, including mechanical failures, overcharging the battery, a short circuit, and internal chemical reactions. The likelihood of thermal runaway increases as cells

<sup>&</sup>lt;sup>12</sup> CGS 22a-20a – <u>https://portal.ct.gov/-/media/DOT/CGSSec22a20aEnvironmentalJusticeCommunitypdf.pdf</u>

<sup>&</sup>lt;sup>13</sup> "Environmental justice community" means (A) a United States census block group, as determined in accordance with the most recent United States census, for which thirty per cent or more of the population consists of low income persons who are not institutionalized and have an income below two hundred per cent of the federal poverty level, or (B) a distressed municipality, as defined in subsection (b) of section 32-9p;

<sup>&</sup>lt;sup>14</sup> (2) "Affecting facility" means any (A) electric generating facility with a capacity of more than ten megawatts; (B) sludge or solid waste incinerator or combustor; (C) sewage treatment plant with a capacity of more than fifty million gallons per day; (D) intermediate processing center, volume reduction facility or multitown recycling facility with a combined monthly volume in excess of twenty-five tons; (E) new or expanded landfill, including, but not limited to, a landfill that contains ash, construction and demolition debris or solid waste; (F) medical waste incinerator; or (G) major source of air pollution, as defined by the federal Clean Air Act. "Affecting facility" shall not include (i) the portion of an electric generating facility that uses nonemitting and nonpolluting renewable resources such as wind, solar and hydro power or that uses fuel cells, (ii) any facility for which a certificate of environmental compatibility and public need was obtained from the Connecticut Siting Council on or before January 1, 2000, or (iii) a facility of a constituent unit of the state system of higher education that has been the subject of an environmental impact evaluation in accordance with the provisions of sections 22a-1b to 22a-1h, inclusive, and such evaluation has been determined to be satisfactory in accordance with section 22a-1e.

age. When burned, Li-ion batteries produce toxic sulfur dioxide fumes and may produce toxic HF.

Connecticut could use technical and financial assistance from the DOE to help us understand the possible human health, environmental, or ecological considerations from battery storage recycling facilities.

### 5. How will Tribal communities or lands potentially be impacted by design and implementation of the Battery Recycling Provisions?

The Green Bank is unaware of how Tribal communities or lands could potentially be impacted by the design and implementation of the Battery Recycling Provisions. As the DOE's Justice40 Initiative has identified Disadvantaged Communities ("DACs") within each state, including Tribal areas, if there were technical and financial resources for states, Tribal communities could be included within community engagement efforts to assess the costs and benefits of such facility deployment.

### 6. What are key equity-aligned criteria that DOE should use to evaluate and select projects in the Battery Recycling Provisions?

The Green Bank would prioritize the eight (8) policy priorities of the DOE's Justice40 Initiative, and therefore align them to the key-equity criteria, in the following manner when it comes to Battery Recycling Provisions:

- 1) Increase energy democracy in DACs
- 2) Decrease environmental exposure and burdens for DACs
- 3) Increase energy resilience in DACs
- 4) Increase clean energy enterprise creation and contracting (MBE/DBE) in DACs
- 5) Increase clean energy jobs, jobs pipeline, and job training for individuals from DACs
- 6) Increase access to low-cost capital in DACs
- 7) Increase parity in clean energy technology (e.g., solar, storage) access and adoption in DACs
- 8) Decrease energy burden in DACs

### 7. In what ways, if any, do you anticipate battery manufacturing, recycling, and associated activities could impact the workforce? For example:

a. To what extent do you anticipate job creation, loss, or changes in job quality?

The Green Bank anticipates job creation and high quality jobs when it comes to battery storage recycling.

### b. To what extent do you anticipate the creation of jobs? Ongoing operations and maintenance jobs? Other jobs across the supply chain?

The Green Bank anticipates sustained job creation in battery storage recycling beginning in the 3 to 5 years. The Green Bank would suggest that future United States Energy and Employment Report ("USEER") take-up the opportunity for

assessing job creation when it comes to not only battery storage recycling, but also clean energy recycling in general.

### c. What is needed to train, secure, and maintain a qualified workforce for these activities?

The Green Bank is unsure about what is needed to train, secure, and maintain a qualified workforce for these activities.

The Green Bank, working with its regulatory (e.g., CT DEEP, PURA), and implementation (i.e., Eversource Energy, United Illuminating) partners, have the ability to create an extended consumer [or producer] responsibility program as aspects of our initiatives. However, we are not experts and need technical and financial assistance from the DOE, including from its national labs (e.g., ReCell Center at Argonne National Laboratory), to assist us in ensuring that the clean energy economy we are building stands-up to the green economy that we want to create.

The Green Bank appreciates the DOE's efforts to solicit public comment on the pending RLF request for proposals. We look forward to working with our private capital partners to submit an application for consideration into the Revolving Loan Fund Program solicitation.

Sincerely,

Bryan Garcia

Bryan Garcia President and CEO

. Sara Harari

Sara Harari Associate Director of Innovation and Senior Advisor to the President and CEO

### About the Connecticut Green Bank

As the nation's first state-level green bank, the Connecticut Green Bank leverages the limited public resources it receives to attract multiples of private investment to scale up clean energy deployment. Since its inception, the Green Bank has mobilized \$2.26 billion of investment into Connecticut's clean energy economy at a 7 to 1 leverage ratio of private to public funds, supported the creation of 27,720 direct, indirect and induced jobs, reduced the energy burden on over 66,500 families and businesses, deployed nearly 510 MW of clean renewable energy, helped avoid 10.4 million tons of CO<sub>2</sub> emissions over the life of the projects, and generated \$113.6 million in individual income, corporate, and sales tax revenues to the State of Connecticut.

#### **Attachments**

Attachment A – Energy Storage Solutions Fact Sheet (Homes)

Attachment B – Energy Storage Solutions Fact Sheet (Buildings)

Attachment C – Behind-the-Meter Storage Programs

Attachment D - Comments to DOE on Recycling Pathway under Communities LEAP

Attachment A – Energy Storage Solutions Fact Sheet (Homes)





### **Introducing Energy Storage Solutions**

Energy Storage Solutions is a new incentive program designed to help Eversource and United Illuminating customers install energy storage for their home. Installing a battery in your home can help you be prepared when extreme weather events are on the horizon. Batteries can provide backup power when the electricity goes out to keep your lights, small appliances, and medical equipment running without the need to run an onsite generator. Plus, batteries work even better when you add them to an existing solar PV system or pair them with a new one, allowing batteries to recharge with the sun's energy.

**Battery Benefits** 

Cleaner / Quieter: Unlike

**Resilient:** With battery storage, you're always ready for a storm without needing to buy or store fossil fuels. Keep your lights on and your refrigerator running without the stress and hassle.





generators that run on fossil fuels,

batteries are a cleaner, quieter

option for powering your home

during an outage.

**Affordable:** With Energy Storage Solutions, it's more affordable than ever to purchase a battery system. Upfront and performance-based incentives allow you to save money at the time of purchase and over the life of your system. Residential customers could receive up to \$7,500 upfront per installation with additional incentives as your system contributes to the utility grid. Visit https://energystoragect.com/.

Talk to an eligible contractor who will help you size a battery system based on what you want to power, how long you want to power it, and where you have suitable space to install a battery system.

### 1 What do you want to power in an outage?

Your contractor will look at the appliances, lighting, or priority equipment you want to power in an outage to determine how much power you'll need during a power outage.

### 2 Where is there suitable space to install batteries?

Depending on the type, batteries may need to be located inside or outside. Your contractor may need to adjust the size of your battery system to accommodate your available space.

### **3** How long can the battery run without being re-charged?

The larger the battery, the longer it will be able to power your appliances and lights without being re-charged by solar PV or your homes power supply. Your contractor will help you decide on a battery size that works for the goals of your household.



To learn more about Energy Storage Solutions or get started with an eligible contractor, visit https://energystoragect.com/







This program is overseen by the Public Utilities Regulatory Authority (PURA), is paid for by ratepayers, and is administered by the Green Bank, Eversource, and UI. Attachment B – Energy Storage Solutions Fact Sheet (Buildings)

## -energy storage



### **Introducing Energy Storage Solutions**

Energy Storage Solutions is a new incentive program designed to help Eversource and United Illuminating customers install energy storage for their commercial, industrial and institutional properties. Installing a battery for your business, nonprofit or government facility can help you lower your building's peak demand to reduce energy costs. Batteries can also provide backup power when the electricity goes out to keep your lights on and your facility running without interruption. Upfront and performance-based incentives are available to reduce the cost of an energy storage system. Additional value may be available for customers on the grid edge, critical facilities, facilities replacing fossil fuel generators, and small businesses.

### **Energy Storage Solutions Benefits**

**Affordable:** With Energy Storage Solutions, there has never been a better business case for purchasing a battery system. Upfront and performance-based incentives allow you to save money at the time of purchase and earn over the life of your system. You could receive up to 50% off the installation price with additional performance incentive payments based on the average power your battery system contributes during critical periods. Visit https://energystoragect.com/ for details.

\$

**Resilient:** With battery storage, you're always ready for a storm. Keep your business or facility running so that you can continue to serve the needs of your customers or members.

**Cleaner & Quieter:** Unlike generators that run on fossil fuels, batteries are a cleaner, quieter option for powering your business during an outage. They're better for the environment and friendlier for your customers, members or constituents. Battery systems tied to new or existing solar PV systems can charge during an outage.



Talk to an Eligible Contractor who will help you size and identify the best location for your battery system based on your facility's needs or the core function of your business. Your contractor will help you decide on a battery size that works for the goals of your facility.

### Commercial and Industrial End-Use Customer Upfront Declining Incentive Block Structure (2022-2024)

	Effective Upfront Incentive (\$/kWh)			
	Small Commercial Medium Commercial		Large Commercial	
Peak Demand	<200 kW	200 kW – 500 kW	>500 kW	
Incentive for first 50 MW of Commercial Storage Projects	\$200	\$175	\$100	

### Commercial and Industrial End-Use Customer Annual Performance-Based Incentive (2022-2024)

	Years 1-5		Years 6-10	
	Summer Winter		Summer	Winter
Season Incentive (\$/kW)	\$200	\$25	\$115	\$15

To learn more about Energy Storage Solutions or get started with an eligible contractor, visit https://energystoragect.com/



This program is overseen by the Public Utilities Regulatory Authority (PURA), is paid for by ratepayers, and is administered by the Green Bank, Eversource, and UI. Attachment C – Behind-the-Meter Storage Programs

Program Name	State	Program	Eligible Sectors	Description
Self-Generation Incentive Program	California	Public Utilities Commission PG&E, SCE, SoCalGas, and SDG&E	Electric and/or gas customers of PG&E, SCE, and SDG&E both residential and non- residential facilities	Offers rebates for installing energy storage technology at both residential and non-residential facilities. System must be sized according to the customer's electricity usage. Incentives for storage vary by system size, sector, and whether or not the system is claiming the ITC or not.
Battery Storage for Homeowners	California	Sacramento Municipal Utility District	Residential	Incentive level varies by engagement level. The highest incentive level (\$250/kWh up to \$2,500 for enrollment and additional performance payments) requires that the customer allow their Tesla Powerwall to be participate in peak events year-round. The second tier is to allow SMUD to optimize the battery during peak periods during the summer, and the lowest is to optimize the battery using a time of day rate.
Holy Cross Energy – Renewable Energy Rebate Program	Colorado	Holy Cross Energy	Available for commercial, local government, nonprofit, residential, schools, federal government, agricultural, and	\$250 per kW incentive for energy storage systems up to 25 kW; if systems are enrolled in the Distribution Flexibility Program, they are eligible for an incentive of \$500 per kW
Residential Battery Storage Program	Colorado	Fort Collins Utilities	Residential systems (standalone or PV paired)	Upfront incentive of \$100 per kWh up to \$1,500 for new installation
Energy Storage Solutions	Connecticut	Connecticut Green Bank, United Illuminating & Eversource	Available for commercial and residential sectors	Offers both an upfront and performance incentive to commercial and residential customers installing storage.
JEA Battery Incentive Program	Florida	Jacksonville Electric Authority (JEA)	Available for commercial and residential sectors	Rebate of \$4,000 for residential and commercial storage systems that have a minimum capacity rating of 6 kWh. System must be paired with a renewable generation system that charges the battery.

Program Name	State	Program	Eligible Sectors	Description
Battery Bonus	Hawaii	Hawaiian Electric	Residential or commercial customers with PV-paired energy storage systems	Incentive for customers to add energy storage to PV systems. Participants must commit to a firm two-hour schedule for battery dispatch.
Wattsmart Battery Program	Idaho, Wyoming, and Utah	Rocky Mountain Power	Residential and commercial customers with storage systems paired with solar PV	Upfront incentive of \$400 per kW and participation incentive of \$15 per kW for residential customers. Participation requires batteries to be called upon during events.
Solar Massachusetts Renewable Target (SMART) Program	Massachusetts	Department of Energy Resources	Commercial, industrial, govrnment, nonprofit, resdiential	Solar projects co-located with storage will receive a compensation rate adder as part of their per kWh incentive through the program
ConnectedSolutions	Massachusetts	MassSave - National Grid, Eversource, Cape Light Compact	Residential and small business	Performance-based incentive of \$275 per kW (National Grid), \$225 per kW (Eversource), for participating in summer events. Standalone batteries are eligible.
NV Energy – Energy Storage Incentive Program	Nevada	Nevada Power Co, Sierra Pacific Power Co	Available for commercial, local government, nonprofit, residential, schools, federal government, agricultural, and institutional for energy storage sited with a previously installed renewable energy system or	Incentives available for residential systems between 4 and 100 kW and commercial systems between 4 and 1,000 kW. Incentives are and dependent on system size and system type (commercial or residential). The max residential system incentive is the lessor of 50% of the system cost of \$3,000.
Liberty Battery Storage Program	New Hampshire	Liberty	Residential	Monthly cost to participants for the battery. Liberty Utilities programs the battery to charge at certain times. Customers are eligible for net metering.
NYSERDA Retail Energy Storage Incentive Program	New York	NYSERDA	Available for commercial, industrial, residential, government, nonprofit, agricultural	Incentives for behind-the-meter energy storage projects that are less than 5 MW (AC) that are connected to the customer's meter or directly to the distribution system. Incentives are based on system capacity up to a system size of 15 MWh per system. Uses a block system with declining incentive levels.

Program Name	State	Program	Eligible Sectors	Description
PSEG Long Island Battery Storage Rewards	New York	PSEG	Residential and commercial customers with either standalone battery or PV-	Performance-based incentive during summer month events (amount not specified). Participation is done through an aggregator.
Solar + Storage Rebate Program	Oregon	Oregon Department of Energy	Available for residential and low income residential	This program offers incentives for residential solar plus storage systems with higher rebates for low-income customers. The standard storage incentives are \$300 per kWh of installed capacity up to the lessor of \$2,500 or 60% of net costs. Low-income customers are eligible for up to \$15,000 or 60% of system costs, whichever is lower.
PGE Smart Battery Pilot	Oregon	PGE	Residential standlone or PV- paired systems	Rebate of \$1,000 to \$3,000 for installing a battery (only available in PGE Smart Grid Test Bed communities), and \$20 per month if the battery only charges from your solar system.
Battery Program	Rhode Island	Rhode Island Energy	Residential batteries paired with on-site renewable generation or standalone systems (limited incentives)	Performance-based incentive of \$400 per kW for summer events.
Bring Your Own Device Program	Vermont	Green Mountain Power	Residential and small business customers	Upfront incentive of \$850 per kW enrolled for three hour discharge, \$950 per kW enrolled for four hour discharge. Extra \$100 per kW in certain areas.
APS Storage Rewards	Arizona	APS	Residential customers in targeted areas	APS owns and operates the battery while customers receive a one-time enrollment bill credit of \$500.

Attachment D – Comments to DOE on Recycling Pathway under Communities LEAP







October 12, 2021

U.S. Department of Energy Offices of EERE, Electricity, Policy, Fossil Energy and Carbon Management, and Economic Impact and Diversity Communities LEAP Pilot <u>CommunitiesLEAPInfo@hq.doe.gov</u>

SUBJECT: Comments from the Greater Bridgeport Community Enterprises, Operation Fuel, and Connecticut Green Bank – Communities LEAP Pilot

To Whom it May Concern:

The Greater Bridgeport Community Enterprises ("GBCE"), Operation Fuel, and the Connecticut Green Bank ("Green Bank") (i.e., together the "Respondents"), appreciate the U.S. Department of Energy's ("DOE") efforts through the Office of Energy Efficiency and Renewable Energy ("EERE"), Electricity, Policy, Fossil Energy and Carbon Management, and Economic Impact and Diversity for issuing this competitive opportunity – Communities Local Energy Action Plan ("LEAP") Pilot – which will support 24-36 communities with technical assistance services.

As diverse leaders of organizations serving underserved communities throughout Connecticut, the Respondents support the Justice 40 Initiative by the DOE to ensure that everyone is afforded an opportunity to participate fully in its programs, opportunities, and resources. The following are comments by the Respondents on the Communities LEAP Pilot:

- Include "Recycling Planning and Investment" Pathway the Communities LEAP Pilot identifies seven (7) pathways to clean energy-related economic development with an emphasis on developing energy jobs and workforce skills, as well as promoting minority-owned businesses and small- to mid-size businesses. Consideration should be given to including an additional pathway called "Recycling Planning and Investment" that would seek to support the development of facilities for recycled materials (e.g., solar PV panels, battery storage, Energy Star appliances), support workforce training, and acquire the necessary machinery arising from the successful growth and development of a clean energy economy. The Respondents would be happy to work with the DOE staff to develop a "Recycling Planning and Investment" pathway to be included in Appendix A.
- <u>Race to All vs. Race to the Top</u> the Respondents appreciate the efforts by the DOE to support competitive solicitations for technical assistance through programs such as the Communities LEAP Pilot such competitive solicitations inspire collaboration and innovation. However, for those communities that are encouraged to register and apply, but are unsuccessful this can be devastating to expectations and progress made within a community and result in less participation

(e.g., application) in future DOE solicitations. The Respondents would suggest that the DOE consider additional support like:

- <u>Applicant Technical Assistance</u> provide potential applicants with preproposal stage technical assistance directed to preparing community actors for the application process. For example, the DOE could initiate a program that prepares communities and their environmental justice groups to respond to opportunities presented by the Administration.
- Additional Program Resources increasing the budget for technical assistance to support local communities develop their Launch or Accelerate develop their project concepts (i.e. go beyond supporting up to 36 applicants and unlock it to thousands of environmental justice communities). Perhaps state and local governments, and/or philanthropic institutions (e.g., community-based foundations) would be interested in co-funding such an effort alongside the DOE to ensure that the race for environmental justice is for all and not the select few.
- Participatory Democracy and Unheard Voices everyone within the environmental justice community recognizes the challenges of having consistent participation in regulatory, statutory, and other political processes (e.g., planning) in order to effectively advocate for vulnerable communities. The Respondents are unsure as to what the DOE can do to support the foundational needs of community engagement in local democracies, but offer-up the notion that there needs to be steady representation that can advocate on behalf of the community in order to develop and then implement actions to advance the local clean energy economy. Perhaps each state, or DOE-identified environmental justice communities within a state, could be provided access to an experienced consulting firm like 38 North Solutions, APPRISE, Institute for Sustainable Communities who can support the advocacy, facilitation, guidance, and other needs of the community.
- Eligible Entities: Local, Tribal, or Territorial Government Entity making steady progress in environmental justice communities to advance the benefits of the clean energy economy can ebband-flow with local politics albeit new leadership, changing staff, or other dynamics. The Respondents would recommend that all levels of formal and informal government be allowed to be considered as part of multi-stakeholder teams, so as to navigate the ever-changing transitions of leadership in government – "Include at least one <u>neighborhood revitalization zone</u>, local, <u>regional</u>, <u>state</u>, tribal, or territorial government entity."

We stand ready as minority-led organizations from Connecticut to work with the DOE to advance its Justice 40 Initiatives to enable our communities to access the economic and environmental benefits of clean energy.

Sincerely,

/Brenda Watson/ Brenda Watson Executive Director Operation Fuel

/Bryan Garcia/ Bryan Garcia President and CEO Connecticut Green Bank /Adrienne Farrar Houël/ Adrienne Farrar Houël President and CEO Greater Bridgeport Community Enterprises



75 Charter Oak Ave Suite 1 - 103 Hartford, CT 06106 700 Canal Street, 5th Floor Stamford, CT 06902



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

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

A regular meeting of the Board of Directors of the **Connecticut Green Bank (the "Green Bank")** was held on July 22, 2022.

Board Members Present: Bettina Bronisz for Sarah Sanders, Binu Chandy, Matthew Dayton, Thomas Flynn, Victoria Hackett, Adrienne Farrar Houël, Laura Hoydick, Matthew Ranelli, Lonnie Reed

Board Members Absent: Dominick Grant, John Harrity, Brenda Watson

Staff Attending: Emily Basham, Sergio Carrillo, Shawne Cartelli, Catherine Duncan, Mackey Dykes, Brian Farnen, Bryan Garcia, Sara Harari, Bert Hunter, Alex Kovtunenko, Cheryl Lumpkin, Ariel Schneider, Eric Shrago, Dan Smith

Others present: Claire Sickinger, Giulia Bambara

#### 1. Call to Order

• Lonnie Reed called the meeting to order at 9:03 a.m.

#### 2. Public Comments

• No public comments.

Bryan Garcia proposed changes to the Agenda to move item 8a up to before item 5, and then to add item 5b for Asset Backed Securities (ABS) – Bond Matters.

Upon a motion made by Laura Hoydick and seconded by Adrienne Houël, the Board of Directors voted to approve the amendment to the meeting Agenda. None opposed or abstained. Motion approved unanimously.

3. Consent Agenda a. Meeting Minutes of June 24, 2022

#### Resolution #1

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

#### b. FY22 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**, the Board of Directors of the Connecticut Green Bank approved a Comprehensive Plan for FY 20212 including approving annual budgets and targets for FY 2022.

**NOW**, therefore be it:

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

#### c. Governance Compliance Reporting

#### Resolution #3

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

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

NOW, therefore be it:

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

#### d. Energy Storage Solutions

#### Resolution #4

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

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

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

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

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

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

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

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

**NOW**, therefore be it:

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

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

Upon a motion made by Thomas Flynn and seconded by Bettina Bronisz, the Board of Directors voted to approve the Consent Agenda which includes Resolutions 1 - 4. None opposed or abstained. Motion approved unanimously.

#### 4. Committee Recommendations and Updates

a. Audit, Compliance, and Governance Committee

i. Ad Hoc Committee – Recommendation of Kevin Walsh

• Brian Farnen summarized the proposal of Kevin Walsh to be added to the Ad Hoc Committee as well as the nature of the Ad Hoc Committee and the Ad Hoc Ethical Conduct Policy.

o Matthew Dayton asked about the requirement to complete the SFI (Statement of Financial Interest). Brian Farnen answered that he talked to the Office of Ethics, and they stated it would not apply to the Ad Hoc Committee as they are non-voting and advisory in nature. Brian Farnen then asked the Office of Ethics if the members could be asked to apply for it anyway, and the Office of Ethics answered that they could submit a SFI filing to Ethics though it is not typical. Brian Farnen stated doing the SFI may deter some of them to become involved however, and recommends against it, instead suggesting the adoption of an Ad Hoc Ethics Policy. Matthew Dayton clarified his reason for wanting the SFI, and Brian Farnen agreed that it should be okay to not involve them in those types of matters.

• Victoria Hackett stated she would abstain as she has not had time to review it with DEEP legal counsel. Brian Farnen suggested it be moved to the next meeting in order to give DEEP the necessary time to review. Victoria Hackett agreed and thanked him.

Resolution #5 was tabled until the next Board of Directors meeting.

#### Resolution #5

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

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

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

**NOW**, therefore be it:

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

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

# Upon a motion made by Laura Hoydick and seconded by Victoria Hackett, the Board of Directors voted to table Resolution 5 until the next Board of Directors meeting. None opposed or abstained. Motion approved unanimously.

The next Agenda item discussed was 8a.

#### 5. Incentive Programs Updates and Recommendations a. FY 2022 Report Out – Incentive Programs

• Sergio Carrillo summarized the FY22 performance of the Incentive Programs. Overall, the project goals were met, capital deployed was at 98% met, and capacity was 86% met, but he noted that RSIP, RSIP-E, and Solar for All performed very well. Smart-E capacity was under-target for capacity because many of the projects were home performance and HVAC which do not have a megawatt capacity associated with the project.

• Sergio Carrillo summarized the current statuses of the RSIP and RSIP-E projects.

• Bryan Garcia commented that the initial Public Act 11-80 established a target of 30 MW by the end of 2022, which was increased to 300 MW in 2015, then 350 MW in 2019. It shows how successful the program has been and he noted the final report will be submitted in January 2023 as the program ends on December 31, 2022.

• Sergio Carrillo continued with a summary of the Battery Storage program status, which has been a bit slow while the infrastructure needed to manage the program is being built. Many aspects of that portion of the program is being built from scratch.

• Lonnie Reed commented that the battery storage program was asked to be managed by PURA, and she thanked the staff for their hard work.

• Adrienne Houël asked how many projects the current Battery Storage program represents. Sergio Carrillo answered for Residential, which comprises 185 kW, there are 125 projects and 39 of them have been approved. For Non-Residential, which comprises 2.9 MW, there are 45 projects.

Binu Chandy left the meeting at 9:35 am.

#### b. Asset Backed Securities (ABS) – Bond Matters

• Sergio Carrillo summarized the background of the RGM upgrade from using 3G meters, including the adoption of the Ken Gillingham methodology to estimate production for meters affected by the shutdown, and though some production was lost, much of it has been recovered thanks to that developed methodology.

• Bert Hunter explained the impact of the meter upgrades as well as 2 hurricanes which impaired production and the need to amend the ABS documents. He noted that bond payments are not in jeopardy but that payments to the holder of "B Notes" were ceased with all payments going to the "A Notes." Kroll placed the ABS bonds on "Watch Developing" status in March, though it is not affecting the Green Liberty Notes. The issue is that the ABS Bonds are in jeopardy of a ratings downgrade and the proposed solution is to work with the bondholder to amend the documents to permit the Green Bank the option to cure revenue shortfalls for

matters related to interruptions of reporting or production that the Green Bank considered temporary. He also stated there is no foreseen material adverse economic impact to the Green Bank.

• Bettina Bronisz asked how many bond holders there are, and Bert Hunter said one, though he could not publicly disclose their name but did state they are an insurance company. Bettina Bronisz asked what the coverage ratio that was tested and tripped and Bert Hunter responded there were two, one is an Early Amortization Event and the second is a Sequential Interest Amortization Event. He then explained what the tests require and the recent testing results.

• Bettina Bronisz asked which law firm drafted the Resolution and Brian Farnen responded that Pullman & Comley, though Shipman and Goodwin is typically used, but Pullman & Comley was this time because of their renewable energy and regulatory expertise.

• Bettina Bronisz asked if the bond holder has already been contacted and Bert Hunter said yes, there is an upcoming meeting with them.

• Bettina Bronisz asked about the Kroll Rating and Bert Hunter said he would look up the details and get back to her.

• Thomas Flynn asked about the Resolution for clarifications about the "A Note" and "B Note" holders. Bert Hunter answered that the one company is the holder for both, but the way they are being paid has changed. Thomas Flynn asked for clarification about the details of those payments, the covenants broken, and how long this issue is expected to last. Bert Hunter answered that it may continue for a few quarters until the reporting issue is resolved.

• Thomas Flynn asked for clarification about the three issues that caused the covenant to be tripped and for more information regarding the RGM meter upgrade process, specifically why it is considered out of the control of the Green Bank. Bert Hunter responded that part of the meter upgrade issues are related to supply chain shortages, which has impacted progress. Sergio Carrillo added that there is no set estimated date for the meter upgrades to be complete.

• Thomas Flynn asked about the economic cost of paying the bonds out compared to other solutions. Bert Hunter answered that when he discussed the resolution with the investment bank, they did not believe it would be a material cost. Thomas Flynn was dissatisfied with that answer, but Bert Hunter estimated he believed it would cost less than \$25,000 and the investment bank is not charging the Green Bank. As well, he believes the bondholder would be interested in cooperating based on what the rating downgrade could do.

• Thomas Flynn expressed his concern about the meters not reporting and the requirement to report the production. Bert Hunter explained more about the Ken Gillingham methodology and other aspects of the solution to the reporting issue. The group discussed the potential future timeline of implementing the solutions and being free of the covenant trip.

 $_{\odot}$   $\,$  Bettina Bronisz asked for a recap of the Resolution text and Brian Farnen summarized it.

#### Resolution #11

WHEREAS, a special purpose Delaware limited liability company that is a wholly-owned subsidiary of the Connecticut Green Bank, SHREC ABS 1 LLC (the "Issuer"), entered into a certain Base Indenture between the Issuer and The Bank of New York Mellon Trust Company, N.A., as Trustee, dated as of April 2, 2019 (the "Base Indenture"), allowing the Green Bank to issue one or more series of notes pursuant to one or more series indenture supplements

thereto, with the obligations under each separate series of notes secured by the accounts receivable (the "SHREC Receivables") generated by the sale of a specific type of Renewable Energy Credit ("REC") called a "solar home renewable energy credit" and the related environmental attributes (collectively, a "SHREC") from the homeowners and third-party system owners ("TPOs") receiving Connecticut's Residential Solar Incentive Program ("RSIP") incentives, to each of The Connecticut Light and Power Company d/b/a Eversource Energy ("Eversource") and The United Illuminating Company ("United Illuminating" and together with Eversource, each, a "Utility" and together, the "Utilities"), pursuant to two 15-year contracts dated as of February 7, 2017 and amended as of July 30, 2018 (each, a "Master Purchase Agreement"); and

WHEREAS, the Green Bank sold two classes of Series 2019-1 Notes as follows: (i) approximately \$36,800,000 of Class A Notes (the "Series 2019-1 Class A Notes") and (ii) approximately \$1,800,000 of Series 2019-1 of Class B Notes (the "Series 2019-1 Class B Notes", and together with the Series 2019-1 Class A Notes, the "Series 2019-1 Notes"), in offerings intended to be exempt from registration under the Securities Act of 1933, as amended (the "Offering"), pursuant to the terms of the Base Indenture and the series indenture supplement thereto with respect to the Series 2019-1 Notes (the "Series 2019-1 Indenture Supplement"), between the Issuer and the Trustee (the "Indenture"), and a certain Management Agreement between the Green Bank and the Issuer, a certain Sale and Contribution Agreement between the Green Bank and the Issuer, and related documents (collectively, the "Collateral Documents"); and

WHEREAS, two hurricanes that occurred in Connecticut in August and September of 2021 led to lower irradiance and temporary power grid inoperability, resulting in temporarily lower than expected generation of SHREC Receivables and breaches of certain covenants in the Collateral Documents, causing the holders of the Series 2019-1 Class B Notes to miss a payment and accelerating the amortization schedule of the Series 2019-1 of Class A Notes; and

WHEREAS, the 3G network that was initially metering a high percentage of the SHRECs is being shut down, resulting in a temporary inability of the Green Bank to collect the data necessary to bill the Utilities under the Master Purchase Agreements for the SHRECs being generated, resulting in a temporary shortfall in the value of the SHREC Receivables securing the Series 2019-1 Notes; and

WHEREAS, the Board of Directors of the Green Bank has determined that it is in the best interest of the Green Bank to enter into amendments to the Series 2019-1 Notes and Collateral Documents for the purpose of allowing the Green Bank to elect to provide funds to the Issuer, in the Green Bank's discretion, in amounts sufficient to allow the Issuer to restore compliance with, and to remain in compliance with, the terms of the Series 2019-1 Notes and the Collateral Agreements ;

**NOW**, therefor be it:

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

**RESOLVED**, that in connection with the Amendment, the President and any other officer

#### Subject to Changes and Deletions

of the Green Bank (each, a "Proper Officer") be, and each of them acting individually hereby is. authorized and directed in the name and on behalf of the Green Bank, in its own capacity and as member and manager of SHREC ABS 1 LLC, to prepare and deliver, or cause to be prepared and delivered, each of the Amendment to the Series 2019-1 Notes and the Collateral Agreements, with such modifications, amendments or changes therein as the Proper Officer executing the same may approve, such approval and the approval thereof by such Proper Officer to be conclusively established by such execution and delivery; and to execute and deliver any and all instruments, certificates, receipts, undertakings, commitments, consents, representations, financing statements, control agreements and other ancillary documents contemplated by any of the foregoing agreements; and to take or cause to be taken all such action and to execute and deliver or cause to be executed and delivered, and, if appropriate, file or record, or cause to be filed and recorded, all such applications, agreements, contracts, undertakings, commitments, consents, certificates, reports, affidavits, statements, and other documents, instruments or papers as such officer deems necessary, and to make such payments desirable or appropriate to carry out and consummate the intent and purposes of the foregoing resolutions and/or all of the transactions contemplated therein or thereby, the authorization therefor to be conclusively evidenced by the taking of such action or the execution and delivery of such agreements, amendments to agreements, certificates, instruments, agreements or documents; and further

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

Upon a motion made by Victoria Hackett and seconded by Thomas Flynn, the Board of Directors voted to approve Resolution 11. None opposed or abstained. Motion approved unanimously.

#### 6. Financing Programs Updates and Recommendations a. FY 2022 Report Out – Financing Programs

• Mackey Dykes summarized the performance of the Financing Programs, which overall did well aside from poor performance of the Commercial Solar PPA program. He reviewed the details of the C-PACE performance, noting that most lenders are focused on large, new construction and repositioning projects, which caused the project goal to fall short as less projects are being initiated, though they are larger sized which reflects in the capital deployed which exceeded the target. For Commercial Solar PPA, there were significant solar disruptions that caused it to be severely under-target, which impacted not onto Connecticut but national numbers. Mackey Dykes reviewed several of the issues that took place and explained there is a pipeline to meet the goals, but issues outside of the Green Bank's control, such as supply chain shortages and equipment tariffs, lead to the delays. Work is being done with the installers to navigate the issues and minimize the impact on customers.

• Thomas Flynn recognized the supply chain shortages and asked if the increased cost to complete the projects makes them still viable to continue with, and Mackey Dykes responded that that exact question is what is being asked to installers, and work is being done to help them determine each project's viability. The initial analysis is that the projects should still deliver savings to customers. Thomas Flynn cautioned going slowly when proceeding due to the current market fluctuations.

• Thomas Flynn asked if discussions have been had to extend the incentives while the market is unstable and Mackey Dykes answered that a request to PURA was submitted and granted to extend the termination dates, however PURA has not expressed interest in extending the contract term, so they are still locked into 15-year periods.

• Thomas Flynn asked if future projects are paused or how they are being managed. Mackey Dykes responded that yes, the Solar MAP program has been slowed for these reasons and some others.

#### b. C-PACE Program Guidelines – Recharging Infrastructure

• Mackey Dykes began summarizing the background of the two C-PACE statute changes. Catherine Duncan summarized the proposed edits to the C-PACE program guidelines to implement the statutory changes as well as the future timeline to getting them accepted. Mackey Dykes explained there is no Resolution but the team wanted to keep the Board up to date as there will be in the future and to give them an opportunity to provide feedback before Public Comment.

#### c. Sustainable CT

• Emily Basham summarized the background of Sustainable CT, their accomplishments, and reviewed the proposal to renew the \$125,000 grant to continue to support them.

#### Resolution #6

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

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

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

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

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

**NOW**, therefore be it:

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

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

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

Upon a motion made by Laura Hoydick and seconded by Matthew Ranelli, the Board of Directors voted to approve Resolution 6. None opposed or abstained. Motion approved unanimously.

#### d. Municipal Assistance Program(s)

• Emily Basham summarized the background of the Solar MAP program and the challenges faced by municipalities which this program aims to relieve. Mackey Dykes explained some criticism that was recently received and wanted to be sure the Board of Directors was aware of it as well as provide additional information related to it. As for the raised transparency concern, the group that raised the concerns was contacted and efforts are being made to increase the transparency of the program such as posting more data points publicly. As for the competition and lack of clarity to acceptable targets, Mackey Dykes explained the goal of the program is to make projects happen that would not have otherwise happened. Several towns and installers were also met with to survey them for feedback about the program. Emily Basham summarized that the towns surveyed expressed that without the Solar MAP program, they would not have the staff, time, or other resources to pursue clean energy projects. They also have difficulty getting approval from their Boards, even when proposed internally, and so the Solar MAP program gave them the additional support needed to identify the most effective project options and get their Boards' approval. Other installers surveyed confirmed that the projects discussed would not have been pursued or able to gain on their own.

• Mackey Dykes summarized that the team still wanted to take the claims seriously and confirm that the program is achieving what it set out to do.

o Lonnie Reed commented that she agrees that the Solar MAP program is reaching underserved customers and the efforts are noticed. She stated she is glad that contact is being made to smaller communities. Matthew Ranelli agreed with Lonnie Reed that although it is always important to listen to market concerns, the demand was present, and the Green Bank is filling that role since that portion of the market wasn't being served. As well, he stated the Solar MAP program has created a good template and is providing a model for getting municipal approvals, which in his experience those customers may have been unaware of how to proceed.

 Laura Hoydick pointed out that the volume-buying and bulk purchasing aspects of the program is something many towns are pursuing themselves through the COGs. She questioned whether there should be a population limit on towns that the Green Bank is reaching out to for the program.

#### Resolution #7

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

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

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

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

**NOW**, therefore be it:

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

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

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

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

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

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

#### 7. Investment Updates and Recommendations a. FY 2022 Report Out – Investments

Agenda item 7a was bypassed for time and because a memo was also submitted recently in relation to it.

#### b. Extension Request – Groton Fuel Cell Project

• Bert Hunter reviewed another update and delay to the Groton Fuel Cell project and a proposed extension. The commissioning of it, to be accepted by the US Navy, is currently

anticipated to be complete by the first week of August 2022. The transaction documentation is underway though it is slow and the banks are currently refreshing the credit approvals, as they went stale during the project pause.

#### Resolution #8

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

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

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

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

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

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

**NOW**, therefore be it:

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

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

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

# Upon a motion made by Bettina Bronisz and seconded by Adrienne Houël, the Board of Directors voted to approve Resolution 8. None opposed and Matthew Ranelli abstained. Motion approved.

Adrienne Houël left the meeting at 11:05 am.

#### c. Investment Modification Request – Cargill Falls

• Bert Hunter summarized the background to the Cargill Falls project and the proposal to a financial restructuring due to a delay on of the hydroelectric side of the project which has caused a revenue shortfall to make the C-PACE payment. This restructuring would roll the principal that would be due on July 1 (to be received by August 1) to one of the benefit assessment liens that is on a shorter term (10 years). About \$255,000 would be moved to the second, shorter benefit assessment lien.

• Matthew Ranelli asked about alternatives to moving that money into the shorter lien, if there is a way to create a different structure in order to get the \$255,000 on a first-out basis, and whether that kind of change would make a difference. Bert Hunter answered that yes, the Green Bank is setup currently to receive any excess cash flow to pay down the note. However, there is a shorter term note with the contractor, who has invested millions of his own company money into the project, is getting repaid first.

• Matthew Ranelli asked why there has not been more capital interest in the private sector, considering there has been such high demand. Bert Hunter responded that he believes the project needs to reach a point where everything is stabilized, and that means getting the hydroelectric portion complete which will allow the development to start to build a history from a completely functioning point of view.

• Bettina Bronisz asked if the July 1 payment was missed. Bert Hunter clarified that the project is paying the interest portion to the Green Bank, not that the Green Bank is making a payment. The principal is being deferred – no additional cash is being advanced.

#### Resolution #9

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

WHEREAS, the Board of Directors ("Board") of the Green Bank previously approved a

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

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

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

**NOW**, therefore be it:

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

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

Resolution 9 was not voted on as quorum was lost. A meeting was scheduled for a future date to discuss further and vote.

#### 8. Environmental Infrastructure Updates and Recommendations a. Comprehensive Plan

Agenda item 8a was moved to earlier in the meeting before Agenda item 5.

• Sara Harari summarized the themes that came from the Strategic Retreat and its effect on Environmental Infrastructure. Lonnie Reed added that one of the key takeaways from the retreat was how eager stakeholders are to work with the Green Bank, that the Green Bank has the ability to determine who the effective stakeholders are, and which partnerships should be encouraged.

• Bryan Garcia summarized the Comprehensive Plan timeline, deliverables, stakeholder engagement cycle, and the current state of the Plan's draft. He reviewed the table of contents, areas of focus, and the formatting which effectively communicates to different audiences. He reviewed the revision to the mission statement and focus points for FY 2023.

#### Resolution #10

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

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

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

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

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

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

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

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

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

WHEREAS, per Connecticut General Statutes 16-1245n, the Green Bank must (a) develop a comprehensive plan to foster the growth, development and commercialization of clean energy sources, related enterprises and stimulate demand clean energy and deployment of clean energy sources that serve end use customers in this state, and (b) develop a comprehensive plan to foster the growth, development, commercialization and, where applicable, preservation of environmental infrastructure and related enterprises.

**NOW**, therefore be it:

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

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

# Upon a motion made by Adrienne Houël and seconded by Laura Hoydick, the Board of Directors voted to approve Resolution 10. None opposed and Victoria Hackett abstained. Motion approved.

The next Agenda item discussed was 5a.

#### 9. Other Business

• Bryan Garcia gave an update to the Hydrogen Study Task Force. The first meeting was held on Tuesday, July 12, 2022. The next meeting is August 8, 2022. He reviewed the current members and consultants, though members are still being appointed and onboarded.

• Bryan Garcia noted there is a site tour of Quantum Biopower scheduled for July 27, 2022 at 10:00 am.

• Lonnie Reed congratulated the Accounting Department of the Green Bank for receiving a Certificate of Achievement for Excellence in Reporting from the GFOA for the FY21 ACFR. She thanked the staff for their hard work.

#### 10. Adjourn

Upon a motion made Lonnie Reed, the Board of Directors Meeting adjourned at 11:15 am.

Respectfully submitted,

Lonnie Reed, Chairperson



#### BOARD OF DIRECTORS OF THE CONNECTICUT GREEN BANK Special Meeting Minutes

Thursday, July 28, 2022 8:00 a.m. – 8:30 a.m.

A special meeting of the Board of Directors of the **Connecticut Green Bank (the "Green Bank")** was held on July 28, 2022.

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

Board Members Present: Binu Chandy, Matthew Dayton, Dominick Grant Victoria Hackett, John Harrity, Adrienne Farrar Houël, Matthew Ranelli, Lonnie Reed, Sarah Sanders, Brenda Watson

Board Members Absent: Thomas Flynn, Laura Hoydick

Staff Attending: Sergio Carrillo, Brian Farnen, Bryan Garcia, Bert Hunter, Cheryl Lumpkin, Ariel Schneider, Eric Shrago

Others present: Claire Sickinger

#### 1. Call to Order

• Lonnie Reed called the meeting to order at 8:01 am.

#### 2. Public Comments

• No public comments.

#### 3. Investment Updates and Recommendations a. Investment Modification Request – Cargill Falls

• Bert Hunter summarized the background to the Cargill Falls project, including a real estate update which is thriving, and the proposal to a financial restructuring due to a delay on of the hydroelectric side of the project which has caused a revenue shortfall. This restructuring would roll the principal that would be due on July 1 (to be received by August 1) to one of the benefit assessment liens that is on a shorter term. About \$255,000 would be moved. He clarified there is no additional cash being advanced and that the Green Bank is set to receive excess cash first once the project is complete, not the developer.

• John Harrity commented that he just wanted to make sure there was signage showing the Green Bank's contribution and involvement in the project, which Lonnie Reed agreed would be important. Bert Hunter answered that yes, it was written into the financing

agreement to include signage.

• Matthew Dayton asked if a loan was made at the same term, if the interest rate would be comparable to current market rates. Bert Hunter responded that the loan details would be similar in terms of interest rate, 5.0% vs 5.9%, and that there is a sweep in place to get the yield higher as part of the overall arrangement, which would bring it up to 5.95%.

#### Resolution #1

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

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

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

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

#### **NOW**, therefore be it:

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

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

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

#### 4. Adjourn

Lonnie Reed adjourned the Board of Directors Meeting at 8:14 am.

Respectfully submitted,

\_\_\_\_\_

Lonnie Reed, Chairperson



75 Charter Oak Avenue, Suite 1 - 103, Hartford, CT 06106 T 860.563.0015 ctgreenbank.com

## Memo

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

From: Bryan Garcia (President and CEO)

CC:

Date: October 21, 2022

Re: Approval of Funding Requests below \$500,000 and No More in Aggregate than \$1,000,000 – Update

At the October 20, 2017 Board of Directors (BOD) meeting of the Connecticut Green Bank ("Green Bank") it was resolved that the BOD approves the authorization of Green Bank staff to evaluate and approve funding requests less than \$500,000 which are pursuant to an established formal approval process requiring the signature of a Green Bank officer, consistent with the Comprehensive Plan, approved within Green Bank's fiscal budget and in an aggregate amount not to exceed \$1,000,000 from the date of the last Deployment Committee meeting. This memo provides an update on funding requests below \$500,000 that were evaluated and approved. During this period, 2 projects were evaluated and approved for funding in an aggregate amount of approximately \$384,912. If members of the board or committee would be interested in the internal documentation of the review and approval process Green Bank staff and officers go through, then please request it.

Address	2303-2315 Berlin Turnpike, Newington, CT 06111			
Owner		JCJ Associates, LLC		
Proposed Assessment	\$59,355			
Term (years)		15		
Term Remaining (months)	Per	ding construction completion		
Annual Interest Rate		5.00%		
Annual C-PACE Assessment		\$5,672		
Savings-to-Investment Ratio		1.01		
Average DSCR over Term				
Lien-to-Value				
Loan-to-Value				
Projected Energy Savings	Year 1	36		
(mmBTU)	Over 15 Year EUL	540		
Estimated Cost Savings	Year 1	\$4,622		
(incl. ZRECs and tax benefits)	Over 15 Year EUL	\$85,907		
Objective Function	9.1 kBTU / ratepayer dollar at risk			
Location	Newington, CT			
Type of Building	Retail			
Year of Build		1971		
Building Size (sf)		10,400		
Year Acquired by Owner		1996		
As-Complete Appraised Value				
Mortgage Outstanding				
Mortgage Lender Consent	N/A			
Proposed Project Description	Replacement of 5 HVAC roof top units with new energy efficient units			
Est. Date of Construction	Pending closing			
Completion				
Current Status	Awaiting Staff Approval			
Energy Contractor				
L	1			

Address	44a Shelter Rock Road, Danbury, CT 06708			
Owner	Shelter Rock Road LLC			
Proposed Assessment	\$325,557			
Term (years)		20		
Term Remaining (months)	Pending con	struction completion		
Annual Interest Rate <sup>1</sup>		5.25%		
Annual C-PACE Assessment		\$26,680		
Savings-to-Investment Ratio		1.73		
Average DSCR				
Lien-to-Value				
Loan-to-Value				
Projected Energy Savings		Total		
(mmBTU)	Per year	587		
(IIIIIDIC)	Over EUL	11,192		
Estimated Cost Savings	Per year	\$21,360		
(incl. ZRECs and tax benefits)	Over EUL	\$557,090		
Objective Function	34.38 kBTU /	ratepayer dollar at risk		
Location	Da	anbury CT		
Type of Building		School		
Year of Build		1982		
Building Size (sf)		21,237		
Year Acquired by Owner		2004		
As-Complete Appraised Value <sup>2</sup>				
Mortgage				
Proposed Project Description	134.5 kW Solar PV			
Est. Date of Construction	Pending Closing			
Completion				
Energy Contractor				

<sup>&</sup>lt;sup>1</sup> Nominal rate unadjusted for actual/360 calculation

#### **Resolution**

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 21, 2022 which were approved by Green Bank staff since the last Deployment Committee meeting and which are consistent with the Staff Approval Policy for Projects Under \$500,000;

**NOW**, therefore be it:

**RESOLVED**, that the Board approves the funding requests listed in the Memo to the Board dated October 21, 2022 which were approved by Green Bank staff since the last Deployment Committee meeting. The Board authorizes Green Bank staff to approve funding requests in accordance with the Staff Approval Policy for Projects Under \$500,000 in an aggregate amount to exceed \$1,000,000 from the date of this Board meeting until the next Deployment Committee meeting.



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## Memo

To: Board of Directors of the Connecticut Green Bank

From: Lucy Charpentier, Bryan Garcia, Sergio Carrillo, and Eric Shrago

Cc Mackey Dykes, Brian Farnen, and Bert Hunter

Date: July 15 October 21, 2022

Re: Incentive Programs – Program Performance towards Targets for FY 2022 – PreliminaryFinal

#### Overview

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

#### **Performance Targets and Progress**

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

### Table 1. Program Performance Targets and Progress Made to the Comprehensive Plan for FY 2022<sup>1</sup>

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

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

<sup>&</sup>lt;sup>2</sup> Includes only closed transactions

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

Key Metrics	Program Performance Revised Targets	Program Progress <sup>2</sup>	% of Goal
Investment at Risk <sup>4</sup>		\$5,320,893 <sup>5</sup>	
Private Capital <sup>6</sup>		\$75,148,651	
Deployed (MW)	20.1	17.2	86%
# of Loans/Projects	2,734	2,730	100%
Leverage Ratio		15.1	

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

#### **Executive Summary for the Incentive Programs**

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

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

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

<sup>&</sup>lt;sup>5</sup> Interest rate buydowns of \$1,173,242 and loan loss reserve of \$1,864,996 are not included.

<sup>&</sup>lt;sup>6</sup> Private Investment is based on the Gross System Cost and includes adjustments related to financing costs.

- Green Bank staff have been engaged with Eversource and United illuminating, as
  program administrators, conceptualizing and designing the program that launched
  January 1, and is called Energy Storage Solutions (ESS) Program. Over the first six
  months of ESS, Green Bank staff efforts have been focused on building the
  infrastructure required to run the program, including a project incentive application portal
  that went live on 12/31/2021, developing resources for, vetting, and onboarding
  contractors; reviewing and approving new technologies, and providing educational
  resources for stakeholders to learn about the program, and how to participate.
- As of July 13, ESS has received 117 residential applications totaling 1.5 MW of storage capacity, and 40 non-residential applications totaling 70.2 MW of capacity.
  - The average size of a residential system is 10.2 KW of power rating and 23.7 kWh of energy capacity
  - The average size of a non-residential system is 1.76 MW of power rating and 4.957 kWh of energy capacity
- The federal Department of Energy (DOE) grant, "Bringing LMI Solar Financing Models to Scale", led by CESA, began in FY20 and provides funding for three years to help accelerate widespread adoption of a residential rooftop solar PV deployment model among LMI single-family homes, based on the Green Bank's Solar for All program with PosiGen, throughout the country. The Green Bank in partnership with Inclusive Prosperity Capital (IPC) provides advisory support on this project assisting states in evaluating and launching LMI solar programs.

#### Energize CT Smart-E Loan

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

#### PosiGen Solar for All

 The PosiGen Solar for All partnership closed out with the end of the RSIP program. The partnership hosted two Solar for All campaigns in Norwalk and Branford to help maintain sales volume through the changing business climate. The Norwalk Solar for All campaign reached 62 families and closed 38 solar leases. The Branford Solar for All campaign reached 74 families and closed 32 leases. The program's message resonated with families feeling the pandemic's pressures despite the increased challenges in reaching people with fewer outreach tactics available. Overall, the campaigns were quite successful demonstrating the traction of solar and the program offering. As the RSIP deadline neared, the partnership worked to bring in as many new projects as possible to secure incentives before transitioning projects to the successor incentive program, RRES.

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

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

\$3.7 million in subsidies<sup>7</sup> from the Green Bank has attracted \$54.2 million of funds from other sources.

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

#### Table 2. RSIP and RSIP-E Overview for FY 2022<sup>8</sup>

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

<sup>&</sup>lt;sup>7</sup> Note the distribution of EPBB and PBI and the 6-year payout of the PBI.

<sup>&</sup>lt;sup>8</sup> Program data includes RSIP-E projects which accounted for 13.7 kW or 1392 projects, accounting for \$3,431,826 in Connecticut Green Bank investment and \$52.873.408 of total investment.

<sup>&</sup>lt;sup>9</sup> This represents projects that are currently approved but not closed. It does not include projects that were approved but have since closed.

<sup>&</sup>lt;sup>10</sup> Approximately 85% of projects approved result in project completions.



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

 Table 3. RSIP and RSIP-E Historical Installed Costs, Incentives, Net Customer Cost,

 Installed Capacity, FY 2012-2022

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

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

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

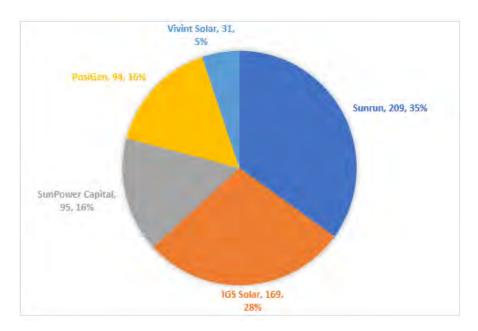
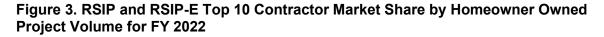
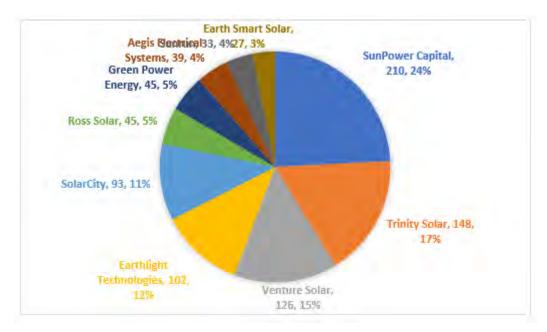


Figure 2. RSIP and RSIP-E Market Share by Third Party System Owner and by Contractor by Project Volume for FY 2022

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





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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

#### Energize CT Smart-E Loan

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

Program Data	Approved <sup>14</sup>	Closed	Total
Projects	550	909	1,459
Installed Capacity (MW)	0.1	0.2	0.3
Lifetime Clean Energy Produced (MWh)	2,791	68,979	71,770
Annual Combined Energy Generated & Saved (MMBtu)	9,527	11,441	20,968
Subsidies (\$'s)	\$0	\$0	\$0
Credit Enhancement (\$'s)	\$0	\$0 <sup>15</sup>	
Loans or Leases (\$'s)	\$0	\$0	\$0
Total Green Bank Investment (\$'s)	\$0	\$0	\$0
Private Capital (\$'s)	\$8,613,662	\$16,488,177	\$25,101,839
Direct Job Years	3	95	98
Indirect & Induced Job Years	4	124	128
Lifetime Tons of CO2 Emissions	458	23,013	23,471

#### Table 8. Energize CT Smart-E Loan Overview for FY 2022<sup>13</sup>

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

Smart-E Loan Channel	Closed	% of All Loans
EV	0	0%
Health And Safety	1	0%
Home Performance	85	9%
HVAC	791	87%
Solar	22	2%
Unknown <sup>16</sup>	10	1%
Total	909	100%

<sup>&</sup>lt;sup>13</sup> All lender data is as of 6/30/2022.

<sup>&</sup>lt;sup>14</sup> This represents projects that are currently approved but not closed. It does not include projects that were approved but have since closed.

<sup>&</sup>lt;sup>15</sup> Interest rate buydowns of \$1,173,242 and loan loss reserve of \$1,864,996 are not included.

<sup>&</sup>lt;sup>16</sup> Channel not known due to trailing documentation/timing of data pull.

Table 10. Energize CT Smart-E Credit Scores for FY 2022	2
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	Credit Ranges										
-579 599 600-639 640-679 680-699 700-719 720-739 740-779 7							780+	Grand Total			
1	3	27	102	96	129	103	235	213	909		

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

Table 11. Energize CT Smart-E Closed Activity in Vulnerable Communities for FY 2022
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Designation	# of Project Units	% Project Unit Distribution	Installed Capacity (MW)	% MW Distribution	Invoetmont	% Investment Distribution
Vulnerable	380	42%	0.0	10%	\$6,300,246	38%
Not Vulnerable	529	58%	0.2	90%	\$10,187,931	62%
Total	909	100%	0.2	100%	\$16,488,177	100%

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

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

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

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

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

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

 FY 2022

#### PosiGen Solar for All

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

Program Data	Approved <sup>17</sup>	Closed	Total
Projects	10	330	340
Installed Capacity (MW)	0.1	2.2	2.3
Lifetime Clean Energy Produced (MWh)	2,993	100,007	103,000
Annual Combined Energy Generated & Saved (MMBtu) <sup>18</sup>	6,800	13,926	20,726
Subsidies (\$'s)	\$0	\$0	\$0
Credit Enhancement (\$'s)	\$0	\$0	\$0
Loans or Leases (\$'s)	\$50,000	\$1,650,000	\$1,700,000
Total Green Bank Investment (\$'s)	\$50,000	\$1,650,000	\$1,700,000
Private Capital (\$'s)	\$223,796	\$7,729,672	\$7,953,468
Direct Job Years	1	36	38
Indirect & Induced Job Years	2	48	50
Lifetime Tons of CO2 Emissions	1,654	55,271	56,925

#### Table 15. PosiGen Solar for All Overview for FY 2022

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

<sup>&</sup>lt;sup>17</sup> This represents projects that are currently approved but not closed. It does not include projects that were approved but have since closed.

<sup>&</sup>lt;sup>18</sup> Includes an additional 15.0 MMBtu for each project for the HES audit.

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

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

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

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

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

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

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

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

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

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

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

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

Table 21. Program Progress Made in FY 2022<sup>21</sup>

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

#### "Top 5" Headlines

The following are the "Top 5" headlines for the Incentive Programs:

#### <u>Residential Solar Investment Program (RSIP), Smart-E, PosiGen Solar for All, and Battery</u> <u>Storage</u>

1. PURA establishes new energy storage program

Hartford Business Journal, July 28, 2021 The ruling establishes upfront and annual performance-based incentive structures to reduce the cost of buying and installing a storage system for customers of Eversource and UI.

<sup>&</sup>lt;sup>19</sup> Totals are adjusted to remove projects that overlap programs.

<sup>&</sup>lt;sup>20</sup> Interest rate buydowns of \$1,173,242 and loan loss reserve of \$1,864,996 are not included.

<sup>&</sup>lt;sup>21</sup> Includes only closed transactions

<sup>&</sup>lt;sup>22</sup> Totals are adjusted to remove projects that overlap programs.

<sup>&</sup>lt;sup>23</sup> Interest rate buydowns of \$1,173,242 and loan loss reserve of \$1,864,996 are not included.

### 2. Connecticut details incentives, equity goals for energy storage program

#### Utility Dive, July 29, 2021

PURA outlined proposals by the Connecticut Green Bank to offer incentives for up to a total 50 MW of residential storage, with incentives depending on system size and whether customers have a low-to-moderate income status, with a maximum project incentive of \$7,500.

3. Go Solar: Branford's 'Solar For All' Program Deadline Extended

Patch Community Corner November 18, 2021

The town announced its "Solar for All" program is being extended for residents. There has been high interest with over 30 Branford homeowners reached and over a dozen in process of going solar!

4. <u>4 things to know about Connecticut's new energy storage incentive program</u> Energy News Network, Feb. 4, 2022 Connecticut regulators are offering upfront money to help pay for the installation of an inhome or business battery system, and customers can earn more money by allowing utilities to tap into them during peak demand.

#### 5. Connecticut Green Bank Presents 2021 Awards

North American Clean Energy, March 28, 2022

The 2021 awards recognize 27 contractors who are offering Green Bank's Home Solutions (Smart-E) or Building Solutions programs and are performing at a high level and developing outstanding projects, as well as recognizing other Green Bank partners.

#### **Customer Reviews**

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

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

#### **Lessons Learned**

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

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

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

#### Energize CT Smart-E Loan

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

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

#### PosiGen Solar for All

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

#### Incentive Programs FY 2023 Targets

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

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

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

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



# Memo

- To: Board of Directors of the Connecticut Green Bank
- From: Lucy Charpentier, Mackey Dykes, Bryan Garcia, and Eric Shrago
- Cc Brian Farnen and Bert Hunter
- Date: July 15October 21, 2022

Re:	Financing Programs –	Program Performan	ce towards Targets for F	Y 2022 – PreliminaryFinal
				<u> </u>

### Overview

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

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

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

<sup>1</sup> CGS 16a-40g

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

#### **Performance Targets and Progress**

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

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

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

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

<sup>&</sup>lt;sup>2</sup> Includes only closed transactions

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

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

<sup>&</sup>lt;sup>5</sup> Private Investment is based on the Gross System Cost and includes adjustments related to financing costs.

### **Executive Summary for the Financing Programs**

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

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

#### Commercial Solar PPA

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

- In FY22, PPAs were signed with 2 towns as part of SolarMAP, to build 3 projects, comprising 724 kW capacity, with a construction cost of \$1.28M.
- Under Round 2 of SolarMAP, CGB is in PPA negotiations with another 5 towns for FY23, for a further 2.24 MW worth of solar across a total of 13 PPAs with an indicative construction cost of \$3.85 M.

#### Small Business Energy Advantage (SBEA)

- Exceeded program goals for the fiscal year
- Extended the partnership with Eversource and Amalgamated Bank for another years while also increasing customer access to capital by increasing loan limits
- Doubled CGB's participation in loan purchases from 10% to 20%

#### Multifamily Affordable Housing

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

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

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

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

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

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

<sup>&</sup>lt;sup>6</sup> This represents projects that are currently approved but not closed. It does not include projects that were approved but have since closed.

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

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

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

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

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

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

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

Table 4. C-PACE and C-PACE-backed Commercial Solar PPA Closed Activity inMetropolitan Statistical Area (MSA) Area Median Income (AMI) Bands Above or Below100% LMI for FY 2022

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

# Table 5. C-PACE and C-PACE-backed Commercial Solar PPA Closed Activity inMetropolitan Statistical Area (MSA) Area Median Income (AMI) Bands Above or Below80% CRA for FY 2022

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

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

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

#### Commercial Solar PPA

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

The Green Bank also provides debt financing to other third-party owners and these projects are included here.

Table 7. Commercia	I Solar PPA	<b>A Overview for FY 2022</b>
--------------------	-------------	-------------------------------

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

<sup>&</sup>lt;sup>7</sup> This represents projects that are currently approved but not closed. It does not include projects that were approved but have since closed.

Program Data	Approved <sup>7</sup>	Closed	Total
Private Capital (\$'s)	\$0	\$2,923,576	\$2,923,576
Direct Job Years	0	12	12
Indirect & Induced Job Years	0	16	16
Lifetime Tons of CO2 Emissions	0	39,438	39,438

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

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

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

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

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

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

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

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

EJ Designation	# of Project Units	% Project Unit Distribution	Installed Capacity (MW)	% MW Distribution	Total Investment	% Investment Distribution
EJ Community	2	13%	0.2	7%	\$462,428	9%

EJ Designation	# of Project Units	% Project Unit Distribution	Installed Capacity (MW)	% MW Distribution		% Investment Distribution
Not EJ Community	13	87%	2.3	93%	\$4,720,171	91%
Total	15	100%	2.5	100%	\$5,182,599	100%

#### Small Business Energy Advantage (SBEA)

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

#### Table 8. SBEA Overview for FY 2022

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

#### <u>Multifamily</u>

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

#### Table 9. Multifamily Term Financing Overview for FY 2022

Program Data	Approved <sup>9</sup>	Closed	Total
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<sup>&</sup>lt;sup>8</sup> This number includes energy and health and safety capital deployed.

<sup>&</sup>lt;sup>9</sup> This represents projects that are currently approved but not closed. It does not include projects that were approved but have since closed.

Projects	7	3	10
Installed Capacity (MW)	0.1	0.9	1.1
Lifetime Clean Energy Produced (MWh)	3,473	97,706	101,180
Annual Combined Energy Generated & Saved (MMBtu)	9,125	4,609	13,734
Subsidies (\$'s)	\$0	\$0	\$0
Credit Enhancement (\$'s)	\$0	\$0	\$0
Loans or Leases (\$'s)	\$0	\$1,959,400	\$1,959,400
Total Green Bank Investment (\$'s)	\$0	\$1,959,400	\$1,959,400
Private Capital (\$'s) <sup>10</sup>	\$1,678,256	\$100,600	\$1,778,856
Direct Job Years	9	18	27
Indirect & Induced Job Years	11	29	40
Lifetime Tons of CO2 Emissions	1,920	50,796	52,716

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

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

#### Table 11. Multifamily Number of Units

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

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

#### Strategic Investments

<sup>&</sup>lt;sup>10</sup> This number includes energy and health and safety capital deployed.

<sup>&</sup>lt;sup>11</sup> This represents projects that are currently approved but not closed. It does not include projects that were approved but have since closed.

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

#### Table 12. Strategic Investment Financing Overview for FY 2022

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

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

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

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

<sup>&</sup>lt;sup>12</sup> This represents projects that are currently approved but not closed. It does not include projects that were approved but have since closed.

<sup>&</sup>lt;sup>13</sup> This number includes energy and health and safety capital deployed.

<sup>&</sup>lt;sup>14</sup> Totals are adjusted to remove projects that overlap programs.

Key Metrics	C-PACE	Commercial Lease	SBEA	Multifamily Pre-Dev <sup>16</sup>	Multifamily Term	Strategic	Total Program Progress <sup>17</sup>
Date of Program Approval	Sep-2012	Jun-2013	-	Oct 2013 – Jan 2017	Oct 2013 – Oct 2015		
Date of Program Launch	Jan-2013	Sep-2013	-	Oct 2013 – Jan 2017	Oct 2013 – Oct 2015		
Ratepayer Capital at Risk	\$5,004,220	\$2,259,023	\$1,461,453	\$0	\$1,959,400	\$0	\$7,960,090
Private Capital	\$19,157,987	\$2,923,576	\$10,431,452	\$0	\$100,600	\$0	\$31,683,298
Deployed (MW)	3.2	2.5	0.0	0.0	0.9	0.0	5.0
# of Loans/Installations	23	15	652	0	3	0	688
Lifetime Production (MWh)	163,109	71,266	219,523	0	97,706	0	431,798
Annual Combined Energy Generated & Saved (MMBtu)	7,438	7,436	0	0	4,609	0	14,191

#### Table 14. Program Progress Made in FY 2022<sup>15</sup>

#### "Top 5" Headlines

The following are the "Top 5" headlines for the Financing Programs:

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

Hartford Business Journal, April 19, 2022

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

#### 2. Connecticut Green Bank Awards 2021 celebrate resilience and innovation

Clean Technica, March 29, 2022

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

#### 3. <u>New solar systems installed at East Windsor apartments</u>

Hartford Business Journal, Oct. 14, 2021

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

<sup>&</sup>lt;sup>15</sup> Includes only closed transactions

<sup>&</sup>lt;sup>16</sup> Multifamily is a collection of individual programs, each with their own approval and launch dates.

<sup>&</sup>lt;sup>17</sup> Totals are adjusted to remove projects that overlap programs.

### 4. Connecticut's Westville Seafood adds solar PV system to roof via C-PACE

#### program

#### Solar Builder Mag, Sept. 28, 2021

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

#### 5. <u>Connecticut Governor's Report: Leading From The Front</u>

#### Business Facilities, Aug. 16, 2021

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

#### Lessons Learned

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

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

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

sheet. CGB should continue to grow the CPACE market and create new opportunities that the private lenders are not focused on.

#### Commercial Solar PPA

- Operations and maintenance (O&M) continues to be a key tenet of the asset management program for CGB's 19.5MW of owned commercial solar projects. Staff has been pleased with CTEC's quality of work, which became the commercial solar O&M provider in May 2021. While under contract with CTEC, the Green Bank's commercial solar portfolio's performance has improved: Q1 2022 commercial solar sites performed at 96% of expectation, vs. 92% in Q1 2021 (prior to CTEC).
- Using the findings of the O&M program, CGB continues to hone the risk protection aspects of the engineering, procurement and construction 'form contract'.
- CGB has continued to secure competitive construction costs for state and municipal solar PPA projects, despite the challenges with solar costs that have been previously mentioned. The development and construction of these projects has emphasized the importance for Green Bank and its independent engineer partner to remain involved to ensure the projects are flowing smoothly and challenges along the way are resolved.

#### Small Business Energy Advantage (SBEA)

- The partnership with Green Bank and Amalgamated to provide capital for SBEA loans continues to be a success in delivering savings for the SBEA program and expanding access to capital. With the new 3 year Conservation and Load Management Plan's focus on deeper savings, the Green Bank will work with Eversource to identify changes to the program to support this.
- Green Bank is working with Eversource to expand the SBEA financing model to battery storage and EV chargers

#### Multifamily Affordable Housing

Multifamily Programs Focused on Solar-PPA Program Development in FY22 CTGB Multifamily Programs are now primarily focused on solar PPA's, as this product is anticipated to deliver the required financial returns to CT Green Bank. Green Bank staff have been actively working with DEEP, DOH, CHFA and other stakeholders to review and provide public comments to PURA on the new multifamily solar incentive. This program will actively reopen once guidance for the new multifamily solar incentive is finalized by PURA. Capital for Change has continued to take full ownership of the Loans Improving Multifamily Energy (LIME) loan program, including marketing and outreach, which has been limited. LIME is primarily focused on funding energy efficiency improvements for mid-cycle multifamily properties.

#### Deployment of EnergizeCT Health & Safety Loan Funds was a priority in FY22.

IPC is responsible for deploying these funds, with \$1.5MM originating as a grant from DEEP to CT Green Bank, and then subsequently transferred from CTGB to IPC in 2019. In FY22 IPC approved H&S funds in the amount of approximately \$1.3MM for two distressed coops in New Haven, Seabury Coop and Antillean Manor, which are anticipated to close in FY23. These projects now fully commit the remaining Health & Safety funds. In order to ensure funds remain available for these projects, IPC requested, and DEEP approved, a one-year term extension of this funding to June 30, 2023.

### Financing Programs FY 2023 Targets

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

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

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

For the Financing Programs, there are 18.4 full time equivalent staff members supporting ten (10) different programs.



75 Charter Oak Avenue, Suite 1 - 103, Hartford, CT 06106 T 860.563.0015 ctgreenbank.com

# Memo

- To: Connecticut Green Bank Board of Directors
- From: Eric Shrago, VP of Operations
- CC: Bryan Garcia (President and CEO), Bert Hunter (EVP and CIO), Jane Murphy (EVP of Finance and Accounting), Sergio Carrillo (Director of Incentive Programs), and Mackey Dykes (VP of Financing Programs and Officer)
- Date: October 19, 2022
- Re: Investments Performance towards Targets for FY 2022

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

				В	udge	et					Actual				
Program	Description	Activity Type	Rate	Term		Principal	Rate	Term		Principal	Total Inves	stment Income	PV o	of Interest Income	Notes
		Forecast draws on													
Multifamily Pgms	C4C Lime facility draws	existing loan facility	4.0%	15	\$	200,000	4.0%	15	\$	200,000	\$	67,900.00	\$	57,789.00	
CPACE	CGB Portfolio	New CPACE Loans	5.60%	17.5	\$	5,000,000	5.38%	18.2	\$	5,387,722	\$	1,880,521.00	\$	1,544,216.00	
		New Debt to fund													
		supporting State Solar													
Solar PPA Development	PPA State	PPA projects	3.0%	20	\$	9,000,000	3%	20							
		New Debt to fund													
		supporting Municipal													
Solar PPA Development	PPA Municipality	Solar PPA projects	3.75%	20	\$	2,347,200	4%	20	\$	741,496	\$	339,240.00	\$	275,789.00	
Solar PPA Development	PPA Developers		4.50%	20	\$	1,257,000	5%	20	\$	659,295	\$	387,482.00	\$	314,132.00	
Solar PPA Development	PPA Debt to 3rd parties		4.50%	15	\$	4,100,000	5%	15	\$	1,794,111	\$	766,796.00	\$	654,787.00	
		3 additional tranches													
SBEA/BEA	Regular Loan Purchases	purchased	3.50%	4	\$	1,447,000	2.25%	5	\$	819,022	\$	49,137.00	\$	46,609.00	
		expected closing of													
Multifamily Programs	PPA Multifamily	projects in pipeline	4.25%	20	\$	270,000	0%	0	\$						
		Debt to support the													
CE Finance Prg	Strategic Investments	FuelCell Groton	8.0%	10	\$	3,200,000	0%	0	\$						Project delayed to FY23
		Canton Hydro: Loan													
		\$1.2M loan + \$.5M													
Hydro Projects	Strategic Investments	Guaranty	8%	15	\$	1,700,000	8%	15	\$	1,170,157	\$	859,952.00	\$	727,275.00	
															Loan Facility for
CE Finance Prg	Strategic Investments	Unspecified	4.0%	10	\$	5,000,000	9%	6	\$	5,014,583	\$	1,489,193.00	\$	1,397,882.00	Budderfly
		Restructured Facility													
		for Resi Solar - PBI													
LMI Programs	Posigen - Junior facility	Loan	0%	0	\$	-	7.5%	6	\$ 7	7,189,102.76	\$	1,944,355.00	\$	1,825,135.40	
Solar PPA Development	Commercial Projects		0%	0	\$	-	3.75%	20	\$	96,621	\$	41,152.00	\$	33,479.00	
Total					\$	33,521,200			\$	21,925,504	\$	7,825,728	\$	6,877,093	

#### Table 1. Budget to Actual Investment Activity<sup>1</sup>

For FY2022, the board approved a budget where the staff sought to disburse or commit \$33.5 MM. The team was able to lend, commit, or disburse <del>\$22.3 MM</del> \$21.9 MM. These investments will generate a forecast of interest of more than <del>\$8.2MM</del> \$7.8 MM over the course of their lives. In addition, the warrants resulting from the Budderfly investment have already generated an additional

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

\$200K if income for the organization, bringing the total investment income generated from FY22 investments to  $\frac{8.2MM}{8} MM$  (which has a present value of  $\frac{7.1MM}{8} 6.8 MM$ )<sup>2</sup>. The average interest rate was 6.54% for a term of 10.9 years.

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

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



## **BOARD OF DIRECTORS**

### **REGULAR MEETING SCHEDULE FOR 2023**

The following is a list of dates and times for **<u>regular meetings</u>** of the Connecticut Green Bank Board of Directors through 2023.

- Friday, January 20, 2023 Regular Meeting from 9:00 to 11:00 a.m.
- Friday, March 17, 2023 Regular Meeting from 9:00 to 11:00 a.m.
- Friday, April 21, 2023 Regular Meeting from 9:00 to 11:00 a.m.
- Friday, June 23, 2023 Regular Meeting from 9:00 to 11:00 a.m.
- Friday, July 21, 2023 Regular Meeting from 9:00 to 11:00 a.m.
- Friday, October 20, 2023 Regular Meeting from 9:00 to 11:00 a.m.
- Friday, December 15, 2023 Regular Meeting from 9:00 to 11:00 a.m.

Should a **<u>special meeting</u>** need to be convened for the Connecticut Green Bank board of Directors to review staff proposals or to address other issues that arise, a meeting will be scheduled accordingly.

All regular and special meetings will take place at the:

Connecticut Green Bank 75 Charter Oak Avenue, Building #1-103 Albert Pope Board Room Hartford, CT 06106



### AUDIT, COMPLIANCE AND GOVERNANCE COMMITTEE

### **REGULAR MEETING SCHEDULE FOR 2023**

The following is a list of dates and times for **regular meetings** of the Connecticut Green Bank Audit, Compliance and Governance Committee through 2023.

- Tuesday, January 17, 2023 Regular Meeting from 8:30am 9:30am
- Tuesday, May 16, 2023 Regular Meeting from 8:30am 9:30am
- Tuesday, October 10, 2023 Regular Meeting from 8:30am 9:30am

Should a **<u>special meeting</u>** need to be convened for the Connecticut Green Bank board of Directors to review staff proposals or to address other issues that arise, a meeting will be scheduled accordingly.

All regular meetings will take place at:

Connecticut Green Bank 75 Charter Oak Avenue, Building 1-103 Albert Pope Board Room Hartford, CT 06106



### **BUDGET, OPERATIONS AND COMPENSATION COMMITTEE**

### **REGULAR MEETING SCHEDULE FOR 2023**

The following is a list of dates and times for <u>regular meetings</u> of the Connecticut Green Bank Budget, Operations and Compensation Committee through 2023.

- Wednesday, January 11, 2023 Regular Meeting from 2:00 to 3:30 p.m.
- Wednesday, May 10, 2023 Regular Meeting from 2:00 to 3:30 p.m.
- Wednesday, June 7, 2023 Regular Meeting from 2:00 to 3:30 p.m.
- Wednesday, June 14, 2023 Regular Meeting from 2:00 to 3:30 p.m.

Should a **<u>special meeting</u>** need to be convened for the Connecticut Green Bank board of Directors to review staff proposals or to address other issues that arise, a meeting will be scheduled accordingly.

All regular meetings will take place at:

Connecticut Green Bank 75 Charter Oak Avenue, Building 1-103 Albert Pope Board Room Hartford, CT 06106



### DEPLOYMENT COMMITTEE

### **REGULAR MEETING SCHEDULE FOR 2023**

The following is a list of dates and times for <u>regular meetings</u> of the Connecticut Green Bank Deployment Committee through 2023.

- Wednesday, February 22, 2023 Regular Meeting from 2:00pm 3:00pm
- Wednesday, May 24, 2023 Regular Meeting from 2:00pm 3:00pm
- Wednesday, September 20, 2023 Regular Meeting from 2:00pm 3:00pm
- Wednesday, November 15, 2023 Regular Meeting from 2:00pm 3:00pm

Should a **<u>special meeting</u>** need to be convened for the Connecticut Green Bank board of Directors to review staff proposals or to address other issues that arise, a meeting will be scheduled accordingly.

All regular meetings will take place at:

Connecticut Green Bank 75 Charter Oak Avenue, Building 1-103 Albert Pope Board Room Hartford, CT 06106



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

# **REGULAR QUARTERLY MEETING SCHEDULE FOR 2023**

The following is a list of dates and times for **regular meetings** of the Connecticut Green Bank and the Connecticut Energy Efficiency Board through 2023

- <u>March 22, 2023</u> Wednesday from 1:30-3:00 p.m. Location: TBD
- <u>June 28, 2023</u> Wednesday from 1:30-3:00 p.m. Location: TBD
- <u>September 20, 2023</u> Wednesday from 1:30-3:00 p.m. Location: TBD
- <u>December 20, 2023</u> Wednesday from 1:30-3:00 p.m. Location: TBD

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



75 Charter Oak Avenue, Suite 1 - 103, Hartford, CT 06106 T 860.563.0015 ctgreenbank.com

# Memo

To: Connecticut Green Bank Board of Directors

From: Eric Shrago

CC: Bryan Garcia, Sergio Carrillo, and Mackey Dykes

Date: July 15 October 21, 2022

Re: Fiscal Year 2022 Progress to Targets through Q4 - PreliminaryFinal

The following memo outlines Connecticut Green Bank (CGB) progress to targets for Fiscal Year (FY) 2022 as of June 30, 2022<sup>1</sup>.

#### Table 1. Incentive Programs FY 2022 Progress to Targets

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

#### Table 2. Smart-E Channels

Smart-E Loan Channels	Closed	% of Loans
EV	0	0%
Health and Safety	1	0%
Home Performance	85	9%
HVAC	791	87%
Solar	22	2%
(blank)	10	1%
Total	909	100%

<sup>1</sup> Power BI data source: <u>https://app.powerbi.com/groups/289235dd-d77d-4043-8dae-</u>

d232a51a116a/reports/b24ec66b-a2c1-49f0-9a62-3f7443077b3f/ReportSection13c15e79a907a30b650e

#### Table 3. Financing Programs FY 2022 Progress to Targets

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

#### Table 4. Multi-Family Units

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

# Table 5. CGB Totals FY 2022 Progress to Targets

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

75 Charter Oak Avenue, Suite 1-103 Hartford, CT 06106 T 860.563.0015 InclusiveProsperityCapital.org



# Memo

- To: Connecticut Green Bank Senior Team
- From: Inclusive Prosperity Capital Staff

Date: August 16, 2022

Re: IPC Quarterly Reporting – Q4 FY22 (April 1, 2022 – June 30, 2022)

## Progress to targets for Fiscal Year 2021, as of 06/30/2022<sup>1</sup>

Product	Number of Projects	Projects Target	% to goal	Total Financed Amount	Financed Target	% to goal	MW Installed	MW Target	% to goal
Smart-E Loan	909	800	113.63%	\$14,814,673	\$11,200,000	132.27%	0.2	0.8	0.25%
Multi- Family H&S	0	1	0%	\$0	\$0	0%	n/a	n/a	n/a
Multi- Family Pre- Dev.	0	0	0%	\$0	\$0	0%	0.0	0.0	0%
Multi- Family Term	3	3	100%	\$2,060,000 <sup>2</sup>	\$300,000	686.7.3%	0.94	0.20	470.0%
Solar PPA	3	23	13.0%	\$1,338,753	\$6,457,000	20.7%	0.7	3.4	8.8%

<sup>&</sup>lt;sup>1</sup> Source: CT Green Bank PowerBI

<sup>&</sup>lt;sup>2</sup> 100% of the financed amount was energy financing.

Solar	351	96	365.6%	\$9,960,894	\$2,478,528	401.9%	2.4	0.7	343%
For All <sup>3</sup>									

## PSA 5410 – Smart-E Loan

- Volume continued to increase each month from 76 loans in April to 89 loans in May and 96 loans in June. The quarter finished with a total funded loan amount of \$4,738,072. We believe this is a direct result of increased contractor outreach efforts in partnership with the CGB marketing team.
- HVAC projects continue to be the majority of volume, representing 88% of projects, followed by home performance 10%, and solar and health and safety each representing 1%.
- IPC staff worked with the CGB Accounting team and processed the remaining 41 IRB payments for \$124,669.89. These are the final payments for the ARRA-SEP FY21 special offer.
- IPC staff worked closely with the CGB team preparing a special offer starting July 1, 2022 using the final ARRA-SEP funds. The special offer is in the form of an IRB to 2.99% for terms of 5, 7 and 10 years on heat pumps, EV chargers, solar thermal and battery storage-up to \$25,000.
- CMEEC engaged CGB regarding providing their members a direct IRB program, highlighting heat pump technology. The target launch date is first quarter 2023.

## PSA 5411 – Multifamily

- <u>Three (3) Projects Closed in FY'22</u>. Supporting the Green Bank, IPC staff continue to shepherd a handful of prospective LIME financing opportunities that are currently at the evaluation/underwriting stage.
- <u>The ECT Health & Safety Revolving Loan Fund capital has been fully allocated</u> to two distressed co-ops, both loans of which have been approved and are anticipated to **close in FY'23**. (See further details below.)
- <u>IPC has actively supported design/development of solar programs that will use</u> <u>the new solar tariff incentive</u>. Supporting the Green Bank, IPC staff have actively provided scenario modeling and participated in CTGB- and DEEP-led policy deliberations to inform PURA decision-**making as part of PURA's affordable multifamily solar tariff rule**making docket. Once these are finalized, we will continue to collaborate with CTGB in revisiting program design for this sector, with an eye towards higher volume deployment that leverages the final form of the tariff offering.
- <u>We continued to provide support for long-term distressed projects, Seabury Coop in New Haven and Success Village in Bridgeport</u>, that are being stabilized and preserved as affordable housing by funding energy and health and safety improvements.

<sup>&</sup>lt;sup>3</sup> **This portfolio is considered "closed" as of the** conclusion of the RSIP program in Fall 2021. The data has been revised down from the previous quarter to account for cancelled projects.

Seabury is moving towards the end of its respective pre-development processes and securing term financing for project implementation. Success Village has recently undergone governance and management changes that are impacting how this project proceeds.

## PSA 5412 - Solar PPA

- IPC staff responded to PPA pricing requests received by CTGB staff, particularly extensive scenarios to support the Solar MAP initiative.
- IPC staff continues to survey and monitor pricing competitiveness across installer and developer channels. General feedback is that our current pricing offering is competitive (for those projects requesting pricing).
- Formalized use of IPC Salesforce Platform to provide formatted installer/developer pricing responses via Salesforce.
- IPC continues to work with CTGB staff to fund the full suite of Solar MAP Round 1 projects in this year's CT partnership. The first set of five (5) Manchester projects are expected to be tranched in mid-August.
- IPC staff is working toward issuance of a new engineering services provider for O&M, project inspection, etc. in CT by early September.

## PSA 5413 – Investment Management (LMI Solar and Green and Healthy Homes)

## PosiGen Solar for All Program Management

• The CGB-**IPC team has been focused on PosiGen's transition out** of RSIP. With that program ended, work is focused on final issues resolution.

## Green and Healthy Homes Project

 As noted in previous updates, the final report on the CT Medicaid ROI analysis and pilot design remains with the project team state agencies, including the CT Department of Public Health, for review and final sign-off. Currently waiting for the final partner sign off before releasing findings publicly. The CT Department of Public Health has been understandably focused on the pandemic and has not yet revisited the subject.

## Investment Management

IPC staff supported Green Bank staff on the following financings:

- PosiGen:
  - o Nothing to report
- Residential SL2 and CT Soar Loan:
  - An IPC staff member continued to assist with the management of CT Solar Lease 2 ("SL2") and CT Solar Loan tasks, though in an advisory role as many of the administrative tasks have been transitioned to a junior CGB employee.

## Use of DEEP Proceeds

## Energize CT Health & Safety Revolving Loan Fund

• The multifamily housing team is in process of finalizing loan documentation and closing two H&S loans to distressed co-ops: Seabury Co-op in New Haven for \$892,500 (in

coordination with other funders) and Antillean Manor Co-op in New Haven for \$400,000 (in coordination with CHFA and HUD). Antillean Manor is very close to closing, anticipated in Sept 2022. The Seabury closing is several months out still due to recent (positive) staff and management changes.

- DEEP has agreed to extend the ECT Health & Safety Revolving Loan Fund grant for an additional year, giving us the time needed to get funds deployed into these projects.
- The two loans described above account for the remaining H&S funds available. Once deployed, we will begin funding projects with capital as it becomes available from repayments.

## \$5M Capital Grant

 In Q1 FY20, IPC's Board approved a \$1.2M investment in Capital for Change to provide liquidity under its successful LIME Loan program offered in partnership with the Connecticut Green Bank. Although the transaction was expected to close in February 2020 under a master facility construct with CGB, in the wake of the COVID-19 outbreak, CGB funded the entirety of the LIME recapitalization in IPC's stead. IPC continues to monitor for favorable conditions for future investment and is evaluating other opportunities to invest the remaining \$900K of funds under the \$5M capital grant from DEEP.

## General Updates

Below are updates for the fourth quarter of FY22:

- Capital raising:
  - Closed \$1.5M of PRI from Sierra Club Foundation under same terms as 3 other foundations and \$1M of PRI from a donor-advised fund housed at Tides Foundation.
  - Closed a \$15M facility of senior debt from Amalgamated Bank against our Kresge Guarantee.
- Business/Product Development/Initiatives of interest to Connecticut:
  - Software licensing agreement for the NGEN platform
    - Colorado Energy Office has transferred the program out of the state energy office to the CO Clean Energy Fund (their green bank) for easier contracting. Discussions back on for licensing NGEN.
    - Exploring NGEN licensing with CAETFA. However, contracting will be challenging and significant custom development would be required, which CAETFA would pay for.
    - Continued work with Inclusiv (the member network of CDFI/community development credit unions) and UNH Carsey (under a DOE grant) on a potential launch of a Smart-E programs in various geographies, many led by lender interest, some by green bank or state/local government interest.
    - Working with Inclusiv on Smart-E launch in NM with AZ to follow later this year and TX in 2023 with funding provided by Wells Fargo Foundation. This is for a lender-led model, meaning no green bank or state energy office sponsoring the program, and IPC being compensated to manage the program. The partners are in the process of final diligence for a credit

enhancement for participating lenders through the Community Investment Guarantee Program.

- Received approval for a \$720K 1-year grant for product development, platform development and pipeline-building for our affordable multifamily products. We will be a sub-grantee to UNH, funding provided by a major bank foundation. Contract expected by end of June.
- Continued to work with a number of green banks, local governments, etc. on leveraging IPC's products and financing strategies. Developing multifamily pipeline with Philadelphia Green Capital Corp., continuing to work with MI Saves and DC Green Bank; continue to coordinate with CGC on a variety of opportunities.
- IPC continues to participate in the following advisory councils/initiatives related to DOE grants or programs for expanded access to solar/solar financing:
  - Achieving Cooperative Community Equitable in Solar Sources

     (ACCESS) Stakeholder Group National Rural Electric Cooperative
     Association (NRECA) is partnered with National Rural Utilities Cooperative
     Finance Corporation, CoBank and GRID Alternatives to make solar energy
     more affordable for LMI members of cooperatives. The
     project is engaging community and regional financial institutions.
  - NREL/NYSERDA Solar Finance Inclusion Initiative focused on new financial products for solar energy. The financial products, described as flexible financial credit agreements (FFCAs), are focused on enabling greater participation in solar energy by LMI customers. The goal of the joint initiative is to devise ways to address persistent barriers by LMI customers solar such as income fluctuations, housing transitions or other issues.
  - Inclusive Shared Solar Initiative (ISSI) Advisory Board the National Association of State Energy Officials (NASEO) and the National Energy Assistance Directors' Association (NEADA) seek to advance strategies that increase the scalability of LMI) community solar programs. The basis for ISSI is the NYS Solar for All program, a pilot sponsored by the NYSERDA, which improves access to community solar facilities for LMI households.
  - National Community Solar Partnership a learning network of over 300 devoted to the expansion of community solar across the US.
- IPC was asked to join a project team led by NRDC and including CT Green Bank, NYCEEC, Inclusiv, Opportunity Finance Network, Coalition for Green Capital and Forsyth Street Advisors. The project expands on work conducted in 2019-2020 to explore whether the CDFI infrastructure/regulatory framework could be leveraged as a scaled source of low-cost, long-term capital for green banks – and now to include other CDFIs.
- Administrative:
  - IPC onboarded several new employees in April-Jun 2022:
    - 0
    - Kristine Musademba joined as Senior Associate, Clean Energy Transactions based in New York City
  - Connor Finn joined as Associate, Clean Energy Transactions based in Boston, MAIPC continues to recruit for additions to the accounting and operations team as well as a Smart-E Southwest regional program manager.



75 Charter Oak Avenue, Suite 1 - 103, Hartford, CT 06106 T 860.563.0015 ctgreenbank.com

# Memo

- To: Connecticut Green Bank Board of Directors
- From: Eric Shrago
- CC: Bryan Garcia, Sergio Carrillo, and Mackey Dykes
- Date: October 21, 2022
- Re: Fiscal Year 2023 Progress to Targets through Q1

The following memo outlines Connecticut Green Bank (CGB) progress to targets for Fiscal Year (FY) 2023 as of September 30, 2022<sup>1</sup>.

#### Table 1. Incentive Programs FY 2023 Progress to Targets

		Projects	5		Capital Deployed			Capacity (	MW)
Product/Program	Closed	Target	% to Target	Closed	Target	% to Target	Closed	Target	% to Target
Battery Storage	3	500	1%	\$147,285	\$20,000,000	1%	0.0	7.6	0%
Smart-E <sup>2</sup>	317	960	33%	\$5,920,688	\$14,994,623	39%	0.0	0.2	21%
<b>Total Incentive Programs</b>	320	1,460	22%	\$6,067,973	\$34,994,623	17%	0.1	7.8	1%

## Table 2. Smart-E Channels

Smart-E Loan Channels	Closed	% of Loans
EV	0	0%
Health and Safety	0	0%
Home Performance	19	6%
HVAC	285	90%
Solar	6	2%
(blank)	7	2%
Total	317	100%

<sup>&</sup>lt;sup>1</sup> Power BI data source: <u>https://app.powerbi.com/groups/289235dd-d77d-4043-8dae-</u>

d232a51a116a/reports/b24ec66b-a2c1-49f0-9a62-3f7443077b3f/ReportSection13c15e79a907a30b650e

<sup>&</sup>lt;sup>2</sup> See Table 6 for current reporting periods for Smart-E lenders

## Table 3. Financing Programs FY 2023 Progress to Targets

	Projects			Capital Deployed			Capacity (MW)		
Product/Program	Closed	Target	% to Target	Closed	Target	% to Target	Closed	Target	% to Target
Commercial Lease	0	19	0%	\$0	\$13,710,000	0%	0.0	7.6	0%
CPACE	1	23	4%	\$972,415	\$31,000,000	3%	0.5	0.0	0%
SBEA	0	839	0%	\$0	\$18,600,000	0%	0.0	0.0	0%
Multi-Family Health and Safety	0	1	0%	\$0	\$892,500	0%	0.0	0.0	0%
Multi-Family Term	0	6	0%	\$0	\$1,380,000	0%	0.0	0.6	0%
Total Financing Programs	1	882	0%	\$972,415	\$64,202,500	2%	0.5	7.6	7%

## Table 4. Multi-Family Units

MFH # of Units	Closed
Affordable	0
Market Rate	0
Total	0

## Table 5. CGB Totals FY 2023 Progress to Targets

	Projects			Capital Deployed			Capacity (MW)		
Segment	Closed	Target	% to Target	Closed	Target	% to Target	Closed	Target	% to Target
Incentive Programs	320	1,460	22%	\$6,067,973	\$34,994,623	17%	0.1	7.8	1%
Financing Programs	1	882	0%	\$972,415	\$64,202,500	2%	0.5	7.6	7%
Total	318	2,342	14%	\$6,893,103	\$99,197,123	7%	0.5	15.4	4%

## Table 6. Current Reporting Periods for Smart-E Lenders

Lender	Current Reporting Period
Capital For Change	7/2022
CorePlus Federal Credit Union	9/2022
Eastern Connecticut Savings Bank	9/2022
Ion Bank	9/2022
Mutual Security Credit Union	8/2022
Nutmeg State Financial Credit Union	9/2022
Patriot Bank	9/2022
Thomaston Savings Bank	9/2022
Union Savings Bank	9/2022

**Annual Comprehensive Financial Report** 

of

Connecticut Green Bank (A Component Unit of the State of Connecticut)

For the Fiscal Year Ended June 30, 2022 (With Summarized Totals as of and for Fiscal Year Ended June 30, 2021)

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

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Case 10 - CT Solar Loan (Graduated)

Case 11 - CT Solar Loan (Graduated)

#### Appendix

7

Terms and Definitions

Community Activity Table

**Contractor Activity Table** 

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**Calculations and Assumptions** 

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Introductory Section



75 Charter Oak Avenue, Suite 1 - 103, Hartford, CT 06106 T 860.563.0015 ctgreenbank.com

#### October 28, 2022

To the Members of the Board of Directors, Connecticut General Assembly, Governor, and the Citizens of the State of Connecticut.

As we complete our eleventh year as the nation's first green bank, we are pleased to present the Annual Comprehensive Financial Report (ACFR) of Connecticut Green Bank (Green Bank) for the fiscal year ended June 30, 2022 accompanied by summarized totals as of and for the fiscal year ended June 30, 2021.

Management assumes full responsibility for the completeness and reliability of the information contained in this report based upon a comprehensive framework of internal controls that it has established for this purpose. To provide a reasonable basis for making these representations, the management of Green Bank has established a comprehensive internal control framework that is designed both to protect the entity's assets from loss, theft, or misuse, and to compile sufficient reliable information for the preparation of Green Bank's financial statements in conformity with accounting principles generally accepted in the United States of America (GAAP). Because the cost of internal controls should not outweigh the benefits, Green Bank's comprehensive framework of internal controls has been designed to provide reasonable, rather than absolute assurance that the financial statements will be free from material misstatement. As such, management asserts that this financial report is complete and reliable in all material respects to the best of managements' knowledge and belief.

PKF O'Connor Davies, LLP has issued an unmodified opinion on Green Bank's financial statements for the fiscal year ended June 30, 2022. The independent auditors' report is presented in the financial section of this report. This letter of transmittal is designed to complement the Management's Discussion and Analysis (MD&A) and should be read in conjunction with it. Green Bank's MD&A can be found immediately following the report of the independent auditors.

Kestrel Verifiers has issued an independent opinion that the metrics, data collection, calculation methodologies, and transparency for the social and environmental benefits supported by Green Bank are sound and represent best practice. The independent opinion is presented in the non-financial statistics section of this report.

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to the Connecticut Green Bank for its annual comprehensive financial report for the fiscal year ended June 30, 2021. This is the eighth consecutive year that Green Bank has achieved this prestigious award. In order to be awarded a Certificate of Achievement, a government must publish an easily readable and efficiently organized annual comprehensive financial report. This report must satisfy both generally accepted accounting principles and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year only. We believe that our current annual comprehensive financial report continues to meet the Certificate of Achievement Program's requirements and we are submitting it to the GFOA to determine its eligibility for another certificate.

#### Profile of the Connecticut Green Bank

Green Bank<sup>1</sup> was established in a bipartisan manner by the Governor and Connecticut's General Assembly on July 1, 2011 through Public Act 11-80 as a quasi-public agency that supersedes the former Connecticut Clean Energy Fund. As the nation's first green bank, Green Bank makes clean energy and environmental infrastructure more accessible and affordable for all Connecticut citizens and businesses by creating a thriving marketplace to accelerate the growth of the green economy. We facilitate clean energy and environmental infrastructure deployment by leveraging a public-private financing model that uses limited public dollars to attract and mobilize private capital investments. By partnering with the private sector, we create solutions that result in long-term, affordable financing to increase the number of clean energy and environmental infrastructure projects statewide.

As outlined in its Comprehensive Plan: Green Bonds US,<sup>2</sup> Green Bank's vision is a planet protected by the love of humanity. Green Bank's mission is to confront climate change by increasing and accelerating investment into Connecticut's green economy to create more resilient, healthier, and equitable communities.

To achieve its vision and mission, Green Bank has established the following three goals:

- 1. To leverage limited public resources to scale-up and mobilize private capital investment in the green economy of Connecticut.
- 2. To strengthen Connecticut's communities, especially vulnerable communities, by making the benefits of the green economy inclusive and accessible to all individuals, families, and businesses.
- 3. To pursue investment strategies that advance market transformation in green investing while supporting the organization's pursuit of financial sustainability.

These goals support the implementation of Connecticut's clean energy policies be they statutory (e.g., Public Act 11-80, Public Act 13-298, Public Act 15-194, Public Act 21-115, Public Act 21-53), planning (e.g., Comprehensive Energy Strategy, Integrated Resources Plan), or regulatory (e.g., Docket No. 17-12-03(RE03)) in nature. The powers of the Green Bank are vested in and exercised by a Board of Directors that is comprised of twelve voting and one non-voting members each with knowledge and expertise in matters related to the purpose of the organization. Upon the passage of Public Act 21-115 on July 6, 2021, one additional voting member was added to the Board of Directors. Board of Directors and Staff are governed through the statute, as well as an Ethics Statement and Ethical Conduct Policy, Resolutions of Purposes, Bylaws, and Comprehensive Plan.

<sup>&</sup>lt;sup>1</sup> Public Act 11-80 repurposed the Connecticut Clean Energy Fund (CCEF) administered by Connecticut Innovations, into a separate quasipublic organization called the Clean Energy Finance and Investment Authority (CEFIA). Per Public Act 14-94, CEFIA was renamed to the Connecticut Green Bank.

<sup>&</sup>lt;sup>2</sup> https://www.ctgreenbank.com/wp-content/uploads/2022/08/Comprehensive-Plan FY-2023 FINAL 080122-1.pdf

#### Initiatives and Results

#### Accelerate the Growth of and Investment in the Green Economy

Green Bank makes clean energy and environmental infrastructure more accessible and affordable for all Connecticut citizens and businesses by creating a thriving marketplace to accelerate the growth of the green economy. As a result of the efforts undertaken over the past eleven years, we are enabling more investment in the green economy of our state than ever before (see Table 1).

Fiscal Year	Total Investment (MM)	Green Bank Investment (MM)	Leverage Ratio	% of Funding as Grants	Installed Capacity (MW)
2022	\$ 120.1	\$ 13.3	9.0	28%	22.2
2021	\$ 270.7	\$ 34.5	7.8	36%	66.1
2020	\$ 286.2	\$ 33.1	8.7	45%	74.0
2019	\$ 319.6	\$ 32.5	9.8	47%	64.3
2018	\$ 221.8	\$ 28.5	7.8	44%	56.4
2017	\$ 180.5	\$ 30.1	6.0	41%	50.0
2016	\$ 320.4	\$ 38.0	8.4	52%	65.9
2015	\$ 320.6	\$ 58.7	5.5	56%	62.2
2014	\$ 107.1	\$ 31.8	3.4	65%	23.4
2013	\$ 111.1	\$ 18.5	6.0	67%	23.5
2012	\$ 9.9	\$ 3.4	2.9	100%	1.9
Total	\$ 2,268.0	\$ 322.4	7.0	50%	509.8

Table 1. Project Investments between FY 2012 through FY 2022<sup>3</sup>

By investing \$322.4 million of Green Bank funds,<sup>4</sup> we have helped attract \$1,945.6 million of private investment in clean energy for a total investment of nearly \$2.3 billion in Connecticut's green economy. In addition, \$113.6 million in estimated tax revenues have been generated from this investment. This is supporting the deployment of 509.8 MW of clean renewable energy, saving an estimated 65.6 million MMBtu of energy, producing 21.3 million MWh of clean energy, and avoiding an estimated 10.4 million tons of CO<sub>2</sub> emissions over the life of the projects, while creating over 26,000 job-years, and improving public health benefits by \$317.1 to \$717.2 million as a result of cleaner air.

#### Responsible Public Investment in Green Energy

Green Bank receives funding through a number of public revenue sources, including a Systems Benefit Charge (i.e., Clean Energy Fund), and allowance proceeds from the Regional Greenhouse Gas Initiative (RGGI), as well as earned revenues from renewable energy certificate (REC) sales, interest income from its loans, fees, and the federal government. Green Bank's predecessor organization's programs were primarily structured as grants, which meant the funds were spent with no expectation of return. This model put the organization at the mercy of these funding streams which, while reliable, are largely determined by activities outside of our control such as levels of state electricity use and RGGI allowance prices. With the transition to a new financing model, Green Bank is able to invest its funds in activities that earn a return and begin to build revenue streams that can be reinvested in clean energy and environmental infrastructure in Connecticut while strengthening the financial position and sustainability of the organization.

<sup>&</sup>lt;sup>3</sup> Includes closed transactions approved by the Board of Directors consistent with its Comprehensive Plan and Budget.

<sup>&</sup>lt;sup>4</sup> Including, but not limited to public resources such as the Clean Energy Fund and Regional Greenhouse Gas Initiative allowance proceeds, as well as earned revenues such as interest income, sales of renewable energy credits, and fees.

#### Acknowledgements

First and foremost, we would like to thank the staff of Connecticut Green Bank. Through their hard work, commitment and innovation, in eleven years we have eclipsed over \$2.2 billion of investment into Connecticut's green economy and have built a model that is delivering results for our state and serving as a model across the country and around the world, including inspiring the \$27 billion Greenhouse Gas Reduction Fund included within the Inflation Reduction Act passed by the US Congress and signed into law by President Biden.

We are grateful to our independent auditors, PKF O'Connor Davies, LLP and Kestrel Verifiers, for their assistance and advice during the course of this audit and review, and for supporting our interests in continuing to disclose not only our financial position, but also the public benefits to society resulting from increasing public and private investment and the deployment of clean energy and environmental infrastructure.

Finally, we thank the Board of Directors, Connecticut General Assembly, and the Governor for their continued leadership and guidance as we continue to prove that there is a new model for how government is able to support the growth and development of a green economy, at a faster pace, while using public resources responsibly.

Respectfully submitted,

Bryan T. Garcia President and CEO

Jane J. Murphy Executive Vice President - Finance

## **Board of Directors**

## **Connecticut Green Bank**

Position	Status	Voting	Name	Organization
State Treasurer (or designee)	Ex Officio	Yes	Sarah Sanders	Treasurer's Office
Commissioner of DEEP <sup>5</sup> (or designee)	Ex Officio	Yes	Victoria Hackett <sup>6</sup>	DEEP
Commissioner of DECD 7 (or designee)	Ex Officio	Yes	Binu Chandy	DECD
Secretary of the Office of Policy Management (or designee) <sup>8</sup>	Ex Officio	Yes	Matthew Dayton	ОРМ
Residential or Low-Income Group	Appointed	Yes	Brenda Watson 9	Operation Fuel
Investment Fund Management	Appointed	Yes	Adrienne Farrar Houël	Greater Bridgeport Community Enterprises
Environmental Organization	Appointed	Yes	Matthew Ranelli 10	Shipman & Goodwin
Finance or Deployment	Appointed	Yes	Thomas Flynn 11	Alvarez & Marsal
Finance of Renewable Energy	Appointed	Yes	Dominick Grant	Dirt Capital Partners
Finance of Renewable Energy	Appointed	Yes	Laura Hoydick	Mayor of Stratford, CT
Labor Organization	Appointed	Yes	John Harrity 12	IAM Connecticut
R&D or Manufacturing	Appointed	Yes	Lonnie Reed 13	Former Chair of E&T Committee
President of the Green Bank	Ex Officio	No	Bryan Garcia	Connecticut Green Bank

## **Discretely Presented Component Units**

Position	Name
President	Bryan Garcia
Treasurer	Jane Murphy
Secretary	Brian Farnen
Chief Investment Officer	Roberto Hunter

<sup>&</sup>lt;sup>5</sup> Department of Energy and Environmental Protection

<sup>&</sup>lt;sup>6</sup> Vice Chair of the Board of Directors

<sup>&</sup>lt;sup>7</sup> Department of Economic and Community Development

<sup>&</sup>lt;sup>8</sup> As of July 1, 2021, with the passage of Public Act 21-115, the Board of Directors was expanded by an additional member, including the Secretary of the Office of Policy Management (or their designee).

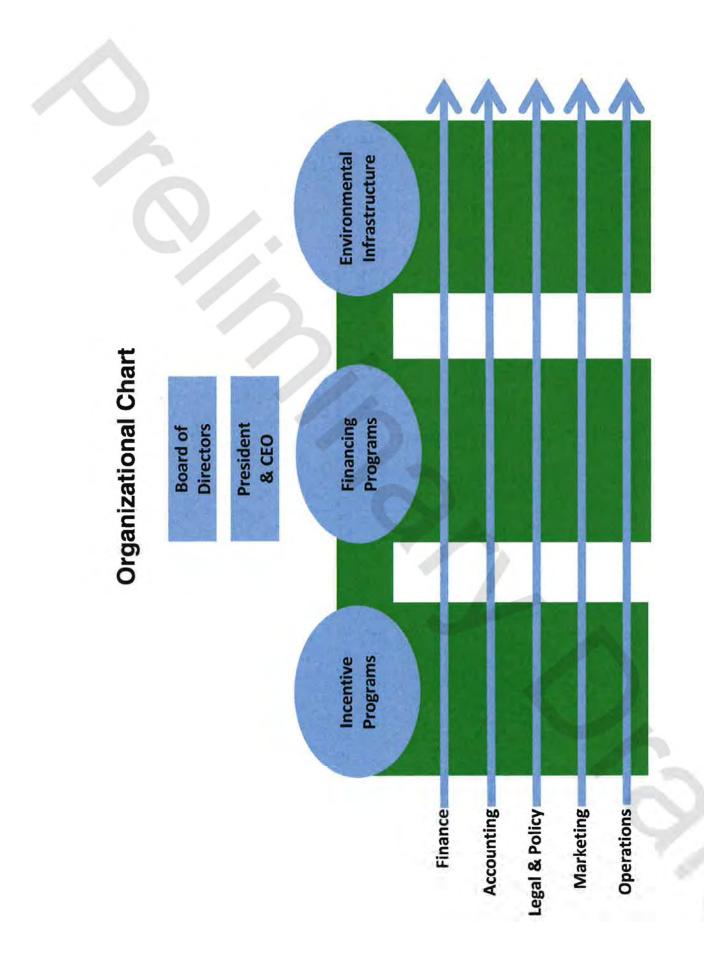
<sup>&</sup>lt;sup>9</sup> Chairperson of the joint committee of the EEB and CGB

<sup>&</sup>lt;sup>10</sup> Secretary of the Board of Directors

<sup>&</sup>lt;sup>11</sup> Chairperson of the Audit, Compliance and Governance Committee

<sup>&</sup>lt;sup>12</sup> Chairperson of the Budget, Operations, and Compensation Committee

<sup>&</sup>lt;sup>13</sup> Appointed by Governor Lamont and designated as Chair on 10/10/19



**Government Finance Officers Association** 

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# **Connecticut Green Bank**

For its Annual Comprehensive Financial Report For the Fiscal Year Ended

June 30, 2021

Financial Section



Independent Auditors' Report

#### Board of Directors Connecticut Green Bank

#### Report on the Audit of the Financial Statements

#### Opinions

We have audited the financial statements of the business-type activities, discretely presented component units and the reporting entity totals of Connecticut Green Bank (a component unit of the State of Connecticut), as of and for the year ended June 30, 2022, and the related notes to the financial statements, which collectively comprise Connecticut Green Bank's basic financial statements as listed in the table of contents.

In our opinion, the accompanying financial statements referred to above present fairly, in all material respects, the respective financial position of the business-type activities, discretely presented component units and the reporting entity totals of Connecticut Green Bank, as of June 30, 2022, and the respective changes in financial position and, where applicable, cash flows thereof for the year then ended in accordance with accounting principles generally accepted in the United States of America.

#### Basis for Opinions

We conducted our audit in accordance with auditing standards generally accepted in the United States of America ("GAAS") and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Our responsibilities under those standards are further described in the Auditors' Responsibilities for the Audit of the Financial Statements section of our report. We are required to be independent of Connecticut Green Bank, and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

#### Responsibilities of Management for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with accounting principles generally accepted in the United States of America, and for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about Connecticut Green Bank's ability to continue as a going concern for twelve months beyond the financial statement date, including any currently known information that may raise substantial doubt shortly thereafter.

#### Board of Directors Connecticut Green Bank

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### Auditors' Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinions. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS and *Government Auditing Standards* will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

In performing an audit in accordance with GAAS and Government Auditing Standards, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud
  or error, and design and perform audit procedures responsive to those risks. Such procedures include
  examining, on a test basis, evidence regarding the amounts and disclosures in the financial
  statements.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of Connecticut Green Bank's internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.
- Conclude whether, in our judgement, there are conditions or events, considered in the aggregate, that
  raise substantial doubt about Connecticut Green Bank's ability to continue as a going concern for a
  reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control-related matters that we identified during the audit.

#### Prior Year Summarized Comparative Information

The financial statements of Connecticut Green Bank as of June 30, 2021, before restatement, were audited by other auditors whose report dated October 31, 2021 expressed an unmodified opinion on those statements, from which the prior year summarized financial information included in the basic financial statements and footnotes was derived.

#### Board of Directors Connecticut Green Bank

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#### **Required Supplementary Information**

Accounting principles generally accepted in the United States of America require that Management's Discussion and Analysis, and the pension and other post-employment benefit schedules, as listed in the table of contents, be presented to supplement the basic financial statements. Such information is the responsibility of management and, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information provide us with sufficient evidence to express an opinion or provide any assurance.

#### Other Information

Management is responsible for the other information included in the annual comprehensive financial report. The other information comprises the introductory, financial statistical and other statistical sections but does not include the basic financial statements and our auditors' report thereon. Our opinions on the basic financial statements do not cover the other information, and we do not express an opinion or any form of assurance thereon.

In connection with our audit of the basic financial statements, our responsibility is to read the other information and consider whether a material inconsistency exists between the other information and the basic financial statements, or the other information otherwise appears to be materially misstated. If, based on the work performed, we conclude that an uncorrected material misstatement of the other information exists, we are required to describe it in our report.

#### Other Reporting Required by Government Auditing Standards

In accordance with *Government Auditing Standards*, we have also issued our report dated October xx, 2022 on our consideration of the Connecticut Green Bank's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of Connecticut Green Bank's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the Connecticut Green Bank's internal control over financial reporting and compliance.

Wethersfield, Connecticut October xx, 2022

#### Management's Discussion and Analysis

The following Management's Discussion and Analysis (MD&A) provides an overview of the financial performance of Connecticut Green Bank (Green Bank), formerly known as the Clean Energy Finance and Investment Authority, (a component unit of the State of Connecticut) for the fiscal year ended June 30, 2022. The information contained in this MD&A should be considered in conjunction with the information contained in the financial statements and notes to the financial statements included in the "Basic Financial Statements" section of this report.

Green Bank as a reporting entity is comprised of the primary government and three discretely presented component units as defined under generally accepted accounting principles.

This MD&A discusses financial performance of both the primary government, Green Bank, and its discretely presented component units, CT Solar Lease 2 LLC, CT Solar Lease 3 LLC and CEFIA Solar Services Inc. We are including the performance of these component units in the consolidated data tables included in this analysis because they play an integral part in assisting Green Bank in achieving its goal to deploy renewable energy in the State of Connecticut and to omit them from the analysis would not provide a complete picture of Green Bank's activities. Where possible we have distinguished activity pertaining solely to a component unit or the primary government in the discussion that follows.

#### **Financial Statements Presented in this Report**

On June 6, 2014, Public Act 14-94 of the State of Connecticut changed the name of the Clean Energy Finance and Investment Authority to Connecticut Green Bank.

Green Bank is a quasi-public agency of the State of Connecticut established on July 1, 2011 by Section 16-245n of the Connecticut General Statutes ('CGS'), created for the purposes of, but not limited to: (1) implementing the Comprehensive Plan developed by Green Bank pursuant to Section 16-245n(c) of the CGS, as amended; (2) developing programs to finance and otherwise support clean energy investment in residential, municipal, small business and larger commercial projects, and such others as Green Bank may determine; (3) supporting financing or other expenditures that promote investment in clean energy sources to foster the growth, development and commercialization of clean energy resources and related enterprises; and (4) stimulating demand for clean energy and the deployment of clean energy sources within the Sate that serve end-use customers in the State. Green Bank constitutes the successor agency to Connecticut Innovations for the purposes of administering the Connecticut Clean Energy Fund in accordance with section 4-38d of the CGS and therefore the net position of such fund was transferred to the newly created Green Bank as of July 1, 2011.

On July 6, 2021, Public Act No. 21-115 extended the green bank model beyond clean energy and increased the scope of Green Bank's mission to now include environmental infrastructure (structures, facilities, systems, services, and improvement projects related to water, waste and recycling, climate adaptation and resiliency, agriculture, land conservation, parks and recreation, and environmental markets such as carbon offsets and ecosystem services).

The basic financial statements include: Statement of Net Position, Statement of Revenues, Expenses and Changes in Net Position, and the Statement of Cash Flows. The Statement of Net Position provides a measure of Green Bank's economic resources. The Statement of Revenues, Expenses and Changes in Net Position measures the transactions for the periods presented and the impact of those transactions on the resources of Green Bank. The Statement of Cash Flows reconciles the changes in cash and cash equivalents with the activities of Green Bank for the period presented. The activities are classified as to operating, noncapital financing, capital and related financing, and investing activities.

Notes to the basic financial statements provide additional detailed information to supplement the basis for reporting and nature of key assets and liabilities.

#### Management's Discussion and Analysis

#### Financial highlights for the fiscal year 2022

## Net position

Green Bank's net position, which is reflective of the reporting entity's overall financial position, increased year over year. Net position as of June 30, 2022 and 2021 was \$111.1 million and \$89.5 million, respectively, an increase of \$21.6 million. Unrestricted net position increased to \$31.0 million as of June 30, 2022 as compared to \$4.6 million as of June 30, 2021, an increase of \$26.4 million. Contributing to this increase was a \$16.9 million increase in Connecticut Green Bank (CGB)'s net position due to a \$5.1 million increase in RGGI revenues, a \$2.9 million increase in REC revenues, as well as the release of \$3.2 million in loan loss reserves no longer needed for the related loan portfolios leading to a \$2.4 million overall decrease in operating expenses. Nonexpendable restricted net position decreased to \$57.7 million as of June 30, 2021, a decrease of \$4.9 million. Net position restricted for energy programs remained consistent at \$16.9 million as of both June 30, 2022 and 2021. Note II. F Restricted Net Position provides additional details of cash balances restricted by program.

Green Bank assets increased \$6.2 million in fiscal year 2022 to \$284.5 million. As of June 30, 2021, assets totaled \$278.3 million. Program loans decreased by \$0.1 million. Note II.B.2 Program Loans provides additional details on program loans by project type.

Unrestricted cash and cash equivalents increased \$9.4 million to \$52.3 million as of June 30, 2022 compared to \$42.9 million as of June 30, 2021 and restricted cash and cash equivalents decreased \$0.3 million to \$21.6 million as of June 30, 2022 from \$21.9 million as of June 30, 2021. The net increase in unrestricted cash was primarily the result of the positive operations for fiscal year 2022. The Statement of Cash Flows provides additional details on changes in cash balances in the current year.

Capital assets net of depreciation decreased \$3.5 million to \$76.2 million as of June 30, 2022 from \$79.7 million as of June 30, 2021. This decrease was due primarily to depreciation expense for the total reporting entity of \$3.5 million. Note II.C Capital Assets provides further details on capital assets by type and reporting unit.

Green Bank liabilities decreased by \$15.3 million in fiscal year 2022 to \$155.1 million as of June 30, 2022 from \$170.4 million as of June 30, 2021. Current liabilities, comprised of current maturities of long-term debt, accounts payable, accrued payroll and related liabilities, accrued expenses, short-term notes payable, warranty management, line of credit and performance bonds increased \$10.7 million to \$29.9 million as of June 30, 2022 compared to \$19.2 million as of June 30, 2021. This increase is primarily due to current maturities of long-term debt increasing by \$11.5 million from the prior year due primarily to a prepayment of the SHREC ABS 1 bonds in fiscal year 2023 that was \$9.3 million more than originally scheduled under the agreement.

Green Bank's allocation of the State of Connecticut State Employee Retirement System net pension liability increased \$1.0 million to \$21.3 million as of June 30, 2022 compared to \$20.3 million as of June 30, 2021. The related deferred outflows of resources, which represents timing differences in plan earnings, assumptions and Green Bank pension contributions increased \$1.8 million to \$6.4 million as of June 30, 2022 compared to \$4.6 million as of June 30, 2021. Deferred inflows of resources related to the pension liability, which represent timing of changes in proportion and differences between employer contributions and proportionate share of contributions increased \$0.3 million to \$5.4 million as of June 30, 2022 compared to \$5.1 million as of June 30, 2021. Note IV.A provides further detail regarding the pension plan. Green Bank, the primary government is responsible for the net pension liability.

#### Management's Discussion and Analysis

Green Bank's allocation of the State of Connecticut State Employee Retirement System net other postemployment benefit (OPEB) liability decreased \$3.2 million to \$20.5 million as of June 30, 2022 compared to \$23.7 million as of June 30, 2021. The related deferred outflows of resources, which represents timing differences in plan earnings, assumptions, and Green Bank OPEB contributions remained consistent at \$5.2 million as of June 30, 2022 and June 30, 2021. Deferred inflows of resources related to the OPEB liability, which represent timing of changes in proportion and differences between employer contributions and proportionate share of contributions and other actuarial assumptions, increased \$2.5 million to \$9.7 million at June 30, 2022 compared to \$7.2 million at June 30, 2021. Note IV.B provides further detail regarding the OPEB plan. Green Bank, the primary government is responsible for this net OPEB liability.

Long term debt decreased \$23.3 million to \$79.3 million as of June 30, 2022 as compared to \$102.6 million as of June 30, 2021. The decrease is due partially to the aforementioned increase in current maturities as well as \$11.5 million in principal payments made on outstanding debt in fiscal year 2022. The Green Bank made principal payments of \$2.5 million against the SHREC Collateralized Note, principal payments \$1.6 million against Green Liberty Bonds, and principal payments of \$0.7 million on the Meriden Hydro and CSCU Clean Renewable Energy Bonds ('CREBs'). An additional \$6.7 million decrease resulted from repayments of principal by CT Solar Lease 2 LLC of funds borrowed under its credit facility. Note II.D Long Term Debt provides a breakout by dollar amount of the types of long term debt including changes during fiscal year 2022.

As of June 30, 2022, the Green Bank's unfunded contingent grant and loan commitments the majority of which represent Performance Based Incentive ('PBI') payments to third party owners of solar facilities as well as loan commitments for Solar PPA, SBEA and Multifamily/LMI loan programs as described in Note III.B, totaled \$81.5 million. These grant and loan commitments are expected to be funded over the next one to six years from current and future unrestricted cash balances.

#### Management's Discussion and Analysis

Summary Statement of Net Position

#### The following table summarizes the net position of the reporting entity at June 30, 2022 and 2021:

Summary Statement of Net Position												
June 30 (Thousands)												
	Primary Government	Discretely Presented Component Units	Eliminations	2022	Primary Government	Discretely Presented Component Units	Eliminations	2021	Primary Government	Discretely Presented Component Units	Eliminations	Total Increase (Decrease)
Cash and cash equivalents	\$ 49,111	\$ 3,166	\$ -	\$ 52,277	\$ 40,056	\$ 2,805	\$	\$ 42,861	\$ 9,055	\$ 361	\$•	\$ 9,416
Restricted cash and cash equivalents	18,134	3,511		21,645	18,390	3,510		21,900	(256)	1	*	(255)
Investments	912			912	1,232	2	8	1,232	(320)	3	2	(320)
Other assets	60,882	62,233	(86,862)	36,253	51,764	62,604	(79,538)	34,830	9,118	(371)	(7,325)	1,423
Receivables:												
Program loans	91,835	÷.	8	91,835	91,937			91,937	(102)		2	(102)
Solar lease notes	3,004		*	3,004	3,960	~	*	3,960	(956)		8	(956)
SBEA promissory notes	2,405		8	2,405	1,877		0	1,877	528	3		528
Capital assets, net	16,028	60,137	· · ·	76,165	16,864	62,829		79,693	(836)	(2,692	·	(3,528)
Total assets	242,311	129,047	(86,862)	284,496	226,080	131,748	(79,538)	278,290	16,231	(2,701)	(7,325)	6,206
Deferred outflows of resources	11,612	2,317	-	13,929	9,789	2,488	-	12,277	1,823	(171)		1,652
Current liabilities	26,903	3,004	•	29,907	15,550	3,683	(58)	19,175	11,353	(679)	58	10,732
Other long term liabilities	120	59,597	(55,598)	4,119	279	51,955	(48,216)	4,018	(159)	7,642	(7,383)	101
Long-term debt, less current maturities	68,643	10,653		79,296	84,281	18,270		102,551	(15,638)	(7,617)		(23,255)
Fair value of interest rate swap				•		699	-	699		(699)		(699)
Net pension liability	21,273			21,273	20,269	-		20,269	1,004			1,004
Net OPEB liability	20,517	-	-	20,517	23,689			23,689	(3,172)		· · ·	(3,172)
Total liabilities	137,456	73,254	(55,598)	155,112	144,068	74,607	(48,274)	170,401	(6,612)	(1,353)	(7,325)	(15,289)
Deferred inflows of resources	15,119	17,056		32,175	12,299	18,373	<u> </u>	30,672	2,820	(1,317)		1,503
Net position:	0.504	1 001		6 515	0.610	1 715		E 200	(70)	266		187
Net investment in capital assets Restricted net position:	3,534	1,981	2	5,515	3,613	1,715		5,328	(79)	200		
Nonexpendable	-	57,730		57,730	-	62,674		62,674		(4,944)		(4,944)
Restricted for energy programs	16,748	117		16,865	16,764	117	•	16,881	(16)		•	(16)
Unrestricted	81,066	(18,774)	(31,264)	31,028	59,125	(23,250)	(31,264)	4,611	21,941	4,476	×	26,417
Total net position	\$ 101,348	\$ 41,054	\$ (31,264)	\$ 111,138	\$ 79,502	\$ 41,256	\$ (31,264)	\$ 89,494	\$ 21,846	\$ (202)	\$ -	\$ 21,644

#### CHANGES IN NET POSITION

Operating revenues increased by \$4.8 million to \$60.7 million as of June 30, 2022 as compared to \$55.9 million as of June 30, 2021. Remittances to Green Bank from utility companies representing the one mil per kilowatt hour charge to each end use customer of electric services in the State of Connecticut increased \$0.1 million to \$25.3 million for the fiscal year ended June 30, 2022 as compared to \$25.2 million for the fiscal year ending June 30, 2021. Interest earned on promissory notes decreased by \$0.7 million in to \$6.1 million as compared to \$6.8 million in fiscal 2021 as a result of \$0.5 million decreased program loans interest earned in fiscal year 2022 compared to fiscal year 2021. Interest, however, is expected to increase in future years, as the Green Bank expands its investment portfolio. Sales of energy systems decreased \$0.2 million to \$0.5 million in 2022 compared to \$0.7 million in 2021. The decrease is due to fewer sales of commercial Power Purchase Agreements ('PPA') projects to third-party renewable energy companies than in the prior year. Sales of Renewable Energy Credits (RECs) increased \$0.9 million to \$13.1 million in 2022 compared to \$12.2 million in 2021 primarily as a result of the inclusion of sales of RECs for Tranche 5 systems to the two public utility companies in Connecticut. Fiscal year 2021 only included sales of RECs for Tranche 1, 2, 3 and 4 systems. Proceeds received by the primary government from quarterly Regional Greenhouse Gas Initiative (RGGI) auctions increased \$5.1 million year over year with proceeds of \$11.6 million in fiscal year 2022 compared to proceeds of \$6.5 million in fiscal year 2021. The increase in proceeds is due to the price per allowance increasing substantially throughout fiscal year 2022 compared to fiscal year 2021.

#### Management's Discussion and Analysis

Provision for loan losses decreased \$3.8 million to (\$3.6 million) in fiscal 2022 from \$0.2 million in fiscal 2021. The decrease is from higher reserves being provided in the prior year due to anticipated loan payment deferrals as a result of COVID-19. As Green Bank did not see many negative affects in payments received as a result of COVID-19, the reserves were decreased as of June 30, 2022 as they were no longer deemed necessary, thus decreasing the provision for loan losses during fiscal year 2022.

Total payments of grants and incentives to commercial, not for profit, municipal and residential owners by the primary government to install either solar PV systems or energy efficiency measures increased \$0.1 million to \$16.0 million in fiscal year 2022 compared to \$15.9 million for the fiscal year 2021. The decrease is primarily due to slightly lower PBI solar PV payments under the Residential Solar Investment Program offset by an increase in interest-rate buydowns paid out in 2022. PBI payments comprised the largest component of incentives paid in both these fiscal years.

Program administration expenses increased \$2.2 million to \$19.7 million in fiscal 2022 from \$17.5 million in fiscal 2021, a 12.5% increase. General and administrative costs decreased by \$0.8 million to \$3.2 million in fiscal year 2022 from \$4.0 million in fiscal year 2021, a 20% decrease. Included in general and administrative costs for 2022 and 2021 is (\$1.2 million) and \$0.6 million respectively for the non-cash GASB 68 pension expense and GASB 75 OPEB expense allocated to Green Bank by the State of Connecticut which is not an expense that is controllable by Green Bank management. General and administrative expense excluding these non-cash charges for 2021 and 2020 were \$4.4 million and \$3.4 million, respectively.

Interest expense increased \$0.2 million to \$3.5 million from \$3.3 million due to an increase related to the first full year of Green Liberty Bonds Series 2021 interest expense. Debt issuance costs decreased \$1.0 million due to the issuance of Series 2020-1 and 2021-1 Green Liberty Bonds in fiscal year 2021.

#### Management's Discussion and Analysis

#### The following table summarizes the changes in net position between June 30, 2022 and 2021:

#### Summary Statement of Changes in Net Position For the Years Ended June 30 (Thousands)

	Primary Government	Discretely Presented Component Units	Eliminating Entries	2022	Primary Government	Discretely Presented Component Units	Eliminating Entries	2021	Primary Government	Discretely Presented Component Units	Eliminatin Entries	Total Increase (Decrease)
Operating revenues:												
Utility remittances	\$ 25,279	\$ _ =	\$ .	\$ 25,279	\$ 25,144	\$-	\$-	\$ 25,144	\$ 135	ş -	ş.	\$ 135
Interest income - promissory notes	6,143	- × 🌰	5 <b>.</b> )	6,143	6,845		•	6,845	(702)	•	•	(702)
RGGI auction proceeds	11,569			11,569	6,500		•	6,500	5,069	•	•	5,069
Energy system sales	451	× .	3 <b>9</b> 0	451	747			747	(296)	-	•	(296)
Renewable energy credits/certificate sales	12,013	1,053	1	13,066	10,844	1,346	-	12,190	1,169	(293)	-	876
Other	794	4,051	(638)	4,207	1,173	4,373	(1,051)	4,495	(379)	(322)	413	(288)
Total operating revenues	56,249	5,104	(638)	60,715	51,253	5,719	(1,051)	55,921	4,996	(615)	413	4,794
Operating expenses:												
Cost of goods sold - energy systems	451			451	747			747	(296)			(296)
Provision for loan losses	(3,561)			(3,561)	239			239	(3,800)			(3,800)
Grants and incentive programs	16,488	•	(491)	15,997	16,788		(908)	15,880	(300)		417	117
Programs administration	15,579	4,139		19,718	13,399	4,170		17,569	2,180	(31)	-	2,149
General and administrative	3,006	355	(147)	3,214	3,748	348	(143)	3,953	(742)	7	(4)	(739)
Total operating expenses	31,963	4,494	(638)	35,819	34,921	4,518	(1,051)	38,388	(2,958)	(24)	413	(2,569)
Operating income	24,286	610		24,896	16,332	1,201		17,533	7,954	(591)		7,363
Nonoperating revenues (expenses):												
Interest income	208	56	(121)	143	84	53	(118)	19	124	3	(3)	124
Interest expense	(2,740)	(907)	121	(3,526)	(2,481)	(986)	118	(3,349)	(259)	79	3	(177)
Debt issuance costs	(13)	-		(13)	(1,001)		2.00	(1,001)	988	-		988
Distributions to member	-	(601)		(601)		(527)		(527)	-	(74)		(74)
Net change in fair value of investments	105	(152)		(47)	(75)	(313)	(*)	(388)	180	161		341
Unrealized gain (loss) on interest rate swap	<u> </u>	792		792	-	465		465	×	327		327
Total nonoperating revenues (expenses)	(2,440)	(812)		(3,252)	(3,473)	(1,308)		(4,781)	1,033	496		1,529
Change in net position	21,846	(202)	-	21,644	12,859	(107)		12,752	8,987	(95)		8,892
Total net position - July 1 (as restated)	79,502	41,256	(31,264)	89,494	66,643	41,363	(31,264)	76,742	12,859	(107)		12,752
Total net position - June 30	\$ 101,348	\$ 41,054	\$ (31,264)	\$ 111,138	\$ 79,502	\$ 41,256	\$ (31,264)	\$ 89,494	\$ 21,846	\$ (202)	<u>\$</u> -	\$ 21,644

#### Financial highlights for the fiscal 2021

#### Net position

Green Bank's net position, which is reflective of the reporting entity's overall financial position, increased year over year. Net position as of June 30, 2021 and 2020 was \$89.5 million and \$76.7 million, respectively, an increase of \$12.8 million. Unrestricted net position increased to \$4.6 million as of June 30, 2021 as compared to \$(2.8) million as of June 30, 2020, an increase of \$7.3 million. Contributing to this increase was a \$3.2 million increase in SHREC ABS 1 LLC's net position due to lower bond obligations of \$2.2 million and a \$1.0 million increase in unrestricted cash from residual funds received after quarterly bond payments were satisfied. Nonexpendable restricted net position decreased to \$62.7 million as of June 30, 2020, a decrease of \$1.7 million. Net position restricted for energy programs increased to \$16.9 million as of June 30, 2021 as compared to \$10.6 million as of June 30, 2020, an increase of \$6.3 million. Contributing to this increase was an increase of \$7.0 million in the Green Bank's restricted cash, of which \$5.2 million is restricted cash related to the closing and issuance of both the 2020-1 and 2021-1 series of Green Liberty Bonds in Fiscal 2021. Note II.F Restricted Net Position provides additional details on cash balances restricted by program.

#### Management's Discussion and Analysis

Green Bank assets increased \$65.0 million in fiscal year 2021 to \$278.3 million. As of June 30, 2020, assets totaled \$213.3 million. Program loans increased by \$6.3 million due to an increase in CPACE program benefit assessment financing of \$7.9 million offset by a decrease in CPACE lending facilities of \$2.0 million. Note II.B.2 Program Loans provides additional details on program loans by project type.

Unrestricted cash and cash equivalents increased \$34.6 million to \$42.9 million as of June 30, 2021 compared to \$8.2 million as of June 30, 2020 and restricted cash and cash equivalents increased \$7.0 million to \$21.9 million as of June 30, 2021 from \$14.9 million as of June 30, 2020. The net increase in both unrestricted cash and restricted cash was primarily the result of the closing of the 2020-1 series and 2021-1 series Green Liberty Bonds in fiscal 2021.

Capital assets net of depreciation decreased \$0.3 million to \$79.7 million as of June 30, 2021 from \$80.0 million as of June 30, 2020. This decrease was due to depreciation expense for the total reporting entity of \$3.5 million, partially offset by an increase to capital assets of \$3.4 million due to capital expenditures related to relocating Green Bank offices in fiscal year 2021. Note II.C Capital Assets provides further details on capital assets by type and reporting unit.

Green Bank liabilities increased by \$23.4 million in fiscal year 2021 to \$170.4 million as of June 30, 2021 from \$147.0 million as of June 30, 2020. Current liabilities, comprised of current maturities of long-term debt, accounts payable and accrued expenses, line of credit and performance bonds liabilities decreased \$3.4 million to \$19.2 million as of June 30, 2021 compared to \$22.6 million as of June 30, 2020. Lines of credit decreased by \$6.0 million due to full repayment on the SHREC Warehouse 1 LLC Line of Credit with Webster Bank and Liberty Bank in fiscal year 2021. This decrease was offset by increases in accounts payable and accrued expenses of \$1.8 million and current maturities of long-term debt of \$1.8 million.

Green Bank's allocation of the State of Connecticut State Employee Retirement System net pension liability decreased \$4.9 million to \$20.3 million as of June 30, 2021 compared to \$25.2 million as of June 30, 2020. The related deferred outflows of resources, which represents timing differences in plan earnings, assumptions and Green Bank pension contributions decreased \$1.7 million to \$4.6 million as of June 30, 2021 compared to \$6.3 million as of June 30, 2020. Deferred inflows of resources related to the pension liability, which represent timing of changes in proportion and differences between employer contributions and proportionate share of contributions increased \$3.7 million to \$5.1 million as of June 30, 2021 compared to \$1.4 million as of June 30, 2020. Note IV A provides further detail regarding the pension plan. Green Bank, the primary government is responsible for this net pension liability.

Green Bank's allocation of the State of Connecticut State Employee Retirement System net other postemployment benefit (OPEB) liability 75 decreased \$4.8 million to \$23.7 million as of June 30, 2021 compared to \$28.5 million as of June 30, 2020. The related deferred outflows of resources, which represents timing differences in plan earnings, assumptions, and Green Bank OPEB contributions remained consistent at \$5.2 million as of June 30, 2021 and June 30, 2020. Deferred inflows of resources related to the OPEB liability, which represent timing of changes in proportion and differences between employer contributions and proportionate share of contributions and other actuarial assumptions, increased \$4.9 million to \$7.2 million at June 30, 2021 compared to \$2.3 million at June 30, 2020. Note IV.A provides further detail regarding the OPEB plan. Green Bank, the primary government is responsible for this net OPEB liability.

#### Management's Discussion and Analysis

Long term debt increased \$37.1 million to \$102.6 million as of June 30, 2021 as compared to \$65.4 million as of June 30, 2020. The increase is due to the issuance of the 2020-1 and 2021-1 series Green Liberty Bonds in fiscal year 2021, totaling \$16.8 million and \$24.8 million respectively. Offsetting these, the Green Bank made principal payments of \$2.3 million against the SHREC Collateralized Note and principal payments of \$0.7 million on the Meriden Hydro and CSCU Clean Renewable Energy Bonds ('CREBs'). An additional \$2.4 million decrease resulted from repayments of principal by CT Solar Lease 2 LLC of funds borrowed under its credit facility. Note II.D Long Term Debt provides additional details on the types of long term debt including changes during fiscal year 2021.

As of June 30, 2021, the Green Bank's unfunded contingent grant and loan commitments the majority of which represent Performance Based Incentive ('PBI') payments to third party owners of solar facilities as described in Note III.B, totaled \$66.6 million. These grant and loan commitments are expected to be funded over the next one to six years from current and future unrestricted cash balances.

Summary Statement of Net Position

The following table summarizes the net position of the reporting entity at June 30, 2021 and 2020:

					June 30 (Thousands)	)						
	Primary Government	Discretely Presented Component Units	Eliminating Entries	2021	Primary Government	Discretely Presented Component Units	Eliminating Entries	2020	Primary Government	Discretely Presented Compone Units	Eliminating Entries	Total Increase (Decrease)
Cash and cash equivalents Restricted cash and cash	\$ 40,056	\$ 2,805	\$ -	\$ 42,861	\$ 5,473	\$ 2,683	\$-	\$ 8,156	\$ 34,583	\$ 122	\$ -	\$ 34,705
equivalents	18,390	3,510		21,900	10,857	4,053		14,910	7,533	(543)	*	6,990
Investments	1,232	*	×	1,232	3,031	*		3,031	(1,799)	×		(1,799)
Other assets	51,764	62,604	(79,538)	34,830	48,780	44,643	(79,342)	14,081	2,984	17,961	(196)	20,749
Receivables:												
Program Ioans	91,937		2	91,937	85,682			85,682	6,255			6,255
Solar lease notes	3,960	*		3,960	4,948	1		4,948	(988)			(988)
SBEA promissory notes	1,877	ŝ	8	1,877	2,518	8		2,518	(641)	8		(641)
Capital assets, net	16,864	62,829	-	79,693	14,169	65,803		79,972	2,695	(2,974)	-	(279)
Total assets	226,080	131,748	(79,538)	278,290	175,458	117,182	(79,342)	213,298	50,622	14,566	(196)	64,992
Deferred outflows of resources	9,789	2,488		12,277	11,455	2,658		14,113	(1,666)	(170)		(1,836)
Current liabilities	15,550	3,683	(58)	19,175	17.902	4,715		22,617	(2,352)	(1,032)	(58)	(3,442)
Other long term liabilities	279	51,955	(48,216)	4,018	303	51,883	(48,078)	4,108	(24)	72	(138)	(90)
Long-term debt, less current			(/-,-/-/	.,			(	.,	(= ·/		(/	(/
maturities	84,281	18,270		102,551	44,689	20,716		65,405	39,592	(2,446)		37,146
Fair value of interest rate swap		699		699		1,164		1,164	•	(465)	ŝ.	(465)
Net pension liability	20,269	-		20,269	25,174		2	25,174	(4,905)		2	(4,905)
Net OPEB liability	23,689	-	-	23,689	28,485	8		28,485	(4,796)	4	2	(4,796)
Total liabilities	144,068	74,607	(48,274)	170,401	116,553	78,478	(48,078)	146,953	27,515	(3,871)	(196)	23,448
Deferred inflows of resources	12,299	18,373	Ċ.	30,672	3,716			3,716	8,583	18,373		26,956
Net position:						-		· · · · ·				
Investment in capital assets Restricted net position:	3,613	1,715	*	5,328	2,894	1,635		4,529	719	80		799
Nonexpendable		62,674		62,674		64,388		64,388		(1,714)		(1,714)
Restricted for energy programs	16,764	117		16,881	10,462	123		10,585	6,302	(1,714) (6)		6,296
Unrestricted	59,125	(23,250)	(31,264)	4,611	53,288	(24,784)	(31,264)	(2,760)	5,837	1,534		7,371
5		(20,200)	(0, )=04)			(2.1.04)	(01)201)	(2). 00)				
Total net position	\$ 79,502	\$ 41,256	\$ (31,264)	\$ 89,494	\$ 66,644	\$ 41,362	\$ (31,264)	\$ 76,742	\$ 12,858	\$ (106)	<u>\$ -</u>	\$ 12,752

#### Management's Discussion and Analysis

#### Changes in net position

Operating revenues increased by \$2.6 million to \$55.9 million as of June 30, 2021 as compared to \$53.3 million as of June 30, 2020. Remittances to the primary government from utility companies representing the one mil per kilowatt hour charge to each end use customer of electric services in the State of Connecticut increased \$0.2 million to \$25.1 million for the fiscal year ended June 30, 2021 as compared to \$24.9 million for the fiscal year ending June 30, 2020. Interest earned on promissory notes increased by \$0.7 million in 2021 to \$6.8 million as compared to \$6.1 million in fiscal 2020 as a result of increased program and CPACE loans originated in Green Bank's investment portfolio. Interest as a revenue source is expected to continue to increase in future years as Green Bank expands its investment portfolio. Sales of energy systems decreased \$3.3 million to \$0.7 million in 2021 compared to \$4.0 million in 2020. The decrease is due to fewer sales of commercial Power Purchase Agreements ('PPA') projects to third-party renewable energy companies than in the prior year. Sales of Renewable Energy Credits (RECs) increased \$2.9 million to \$12.2 million in 2021 compared to \$9.2 million in 2020 primarily as a result of the inclusion of sales of RECs for Tranche 4 systems to the two public utility companies in Connecticut. Fiscal year 2020 only included sales of RECs for Tranche 1, 2, and 3 systems. Proceeds received by the primary government from guarterly Regional Greenhouse Gas Initiative (RGGI) auctions increased \$1.9 million year over year with proceeds of \$6.5 million in fiscal year 2021 compared to proceeds of \$4.6 million in fiscal year 2020. The increase in proceeds is due to the price per allowance increasing substantially throughout fiscal year 2021 compared to fiscal year 2020.

Provision for loan losses decreased \$4.9 million to \$0.2 million in fiscal 2021 from \$5.0 million in fiscal 2020. The decrease is from higher reserves being provided in the prior year due to anticipated loan payment deferrals as a result of COVID-19. Due to the ongoing uncertainty of COVID-19 in fiscal 2021, these reserves remained in place, thus decreasing the provision for loan losses during fiscal year 2021.

Total payments of grants and incentives to commercial, not for profit, municipal and residential owners by the primary government to install either solar PV systems or energy efficiency measures decreased \$0.4 million to \$15.9 million in fiscal year 2021 compared to \$16.3 million for the fiscal year 2020. The decrease is primarily due to slightly lower PBI and Expected Performance-Based Buydown ('EPBB') solar PV payments under the Residential Solar Investment Program. PBI payments comprised the largest component of incentives paid in both these fiscal years.

Program administration expenses increased \$1.1 million to \$17.6 million in fiscal 2021 from \$16.5 million in fiscal 2020, a 7% increase. General and administrative costs decreased by \$2.9 million to \$4.0 million in fiscal year 2020 from \$6.9 million in fiscal year 2020, a 42% decrease. Included in general and administrative costs for 2021 and 2020 is \$0.6 million and \$3.6 million respectively for the noncash GASB 68 pension expense and GASB 75 OPEB expense allocated to the Green Bank by the State of Connecticut which is not an expense that is controllable by Green Bank management. General and administrative expense excluding these non-cash charges for 2021 and 2020 were \$3.4 million and \$3.3 million, respectively.

Interest expense decreased \$0.1 million to \$3.3 million from \$3.4 million due to a slight decrease in interest on the SHREC Collateralized Notes. Debt issuance costs increased \$1.0 million due to the issuance of Series 2020-1 and 2021-1 Green Liberty Bonds in fiscal year 2021. Capital contributions decreased to zero from \$0.5 million due to final true-up contributions for the Solar Lease 3 program occurring in fiscal 2020.

## **Management's Discussion and Analysis**

## The following table summarizes the changes in net position between June 30, 2021 and 2020:

Summary Statement of Changes in Net Position For the Years Ended June 30 (Thousands)												
	Primary Government	Discretely Presented Component Units	Eliminating Entries	2021	Primary Government	Discretely Presented Component Units	Eliminating Entries	2020	Primary Government	Discretely Presented Component Units	Eliminating Entries	Total Increase (Decrease)
Operating revenues: Utility remittances Interest income - promissory noles RGGI auction proceeds Energy system sales Renewable energy credits/certificate sales Other	\$ 25,144 6,845 6,500 747 10,844 1,173	\$ - - 1,346 4,373	\$ - - - - (1,051)	\$ 25,144 6,845 6,500 747 12,190 4,495	\$ 24,854 6,106 4,600 4,373 7,975 1,668	\$ - - 1,281 3,943	\$ - (367) - (1,109)	\$ 24,854 6,106 4,600 4,006 9,256 4,502	\$ 290 739 1,900 (3,626) 2,869 (495)	\$ - - - - - - - - - - - - - - - - - - -	\$- - - - - - - - - - - - - - - - - - -	\$ 29D 739 1,90D (3,259) 2,934 (7)
Total operating revenues	51,253	5,719	(1,051)	55,921	49,576	5,224	(1,476)	53,324	1,677	495	425	2,597
Operating expenses: Cost of goods sold - energy systems Provision for loan losses Grants and incentive programs Programs administration General and administrative	747 239 16,788 13,399 3,748	4,170	(908) (143)	747 239 15,880 17,569 3,953	4,371 4,962 17,314 12,334 6,702	4,129	(365) - (970) (2) (139)	4,006 4,962 16,344 16,461 6,937	(3,624) (4,723) (526) 1,065 (2,954)	- - 41 (26)	365 - 62 2 (4)	(3,259) (4,723) (464) 1,108 (2,984)
Total operating expenses	34.921	4,518	(1,051)	38,388	45,683	4,503	(1,476)	48,710	(10,762)	15	425	(10,322)
Operating income	16,332	1,201		17,533	3,893	721		4,614	12,439	480		12,919
Nonoperating revenues (expenses): Interest income Interest expense	84 (2,481)	53 (986)	(118) 118	19 (3,349)	227 (2,327)	54 (1,184)	(116) 116	165 (3,395)	(143) (154)	(1) 198	(2) 2	(146) 46
Debt issuance costs	(1,001)	(555)	3	(1,001)	(19)	-		(19)	(982)			(982)
Distributions to member	20	(527)		(527)		(597)		(597)		70	× .	70
Net change in fair value of investments	(75)	(313)	10	(388)	(107)	(13)		(120)	32	(300)		(268)
Unrealized gain (loss) on interest rate swap	-	465	<u> </u>	465		(641)	<u> </u>	(641)		1,106		1,106
Total nonoperating revenues (expenses)	(3,473)	(1,308)		(4,781)	(2,226)	(2,381)	<u> </u>	(4,607)	(1,247)	1,073	<u> </u>	(174)
Change in net position	12,859	(107)		12,752	1,667	(1,660)		7	11,192	1,553		12,745
Capital contribution	5	*	2		•	453		453		(453)		(453)
Total net position - July 1 (as restated)	66,643	41,363	(31,264)	76,742	64,977	42,569	(31,264)	76,282	1,666	(1,206)		460
Total net position - June 30	\$ 79,502	\$ 41,256	\$ (31,264)	\$ 89,494	\$ 66,644	\$ 41,362	\$ (31,264)	\$ 76,742	\$ 12,858	\$ (106)	\$ -	\$ 12,752

Basic Financial Statements

Exhibit A (1 of 2)		2021 Total Reporting Entity	\$ 42,861,047	3,892,590 9,038,575 2,044,619 990,505 1,185,782 1,185,782 1,058,634 1,171,584 111,123 2,264,815 2,264,815 259,148	64,878,422	21,900,295 1,231,792	82,898,451 2,969,206 348,716 690,752 17,049,036 3,163,239 3,163,239 3,466,587 79,694,398 213,412,472	278,290,894	4,550,879 5,238,343 2,487,824	12,277,046 (Continued)
		2022 Total Reporting Entity	\$ 52,277,220	4,210,087 9,547,825 2,041,786 1,016,267 1,129,900 987,476 1,162,737 2,085,934 1,554,577 261,131	76,274,940	21,645,395 912,217	82,287,432 1,987,394 229,019 1,275,487 16,281,320 4,122,609 4,122,609 3,221,310 93,107 76,164,896 208,220,186	284,495,126	6,439,478 5,172,871 2,317,404	13,929,753
		Eliminating Entries	•				(54,231,900) (1,366,560) (1,264,399) (31,264,399) (86,862,859)	(86,862,859)	5. K 1	•
	30, 2021) ent Units	CT Solar Lease 3 LLC	\$ 2,336,679	41,358 41,358 320,324 36,590	2,734,951		225 225 9,884,803 9,885,028	12,619,979	483,943	483,943
Connecticut Green Bank Statement of Net Position June 30, 2022	ith Summarized Totals as of June 30, 2021) Discretely Presented Component Units	CEFIA Solar Services, Inc.	\$ 373,463	2,049  2,550  752,815	1,130,877	89,383	66,269 6,308,584 1,366,560 31,264,299 403,648 39,498,743	40,629,620	5 K X	ſ
Cor		CT Solar Lease 2 LLC	\$ 455,596	94,030 984,926 736,610 345,611 261,131	2,877,904	3,421,563	16,215,051 120,000 3,221,310 93,107 49,848,375 72,919,406	75,797,310	1,833,461	1,833,461
		Primary Government	\$ 49,111,482	4,072,650 9,547,825 2,041,786 1,016,267 1,129,900 1,129,900 1,122,737 276,185 1,172,376	69,531,208	18,134,449 912,217	82,287,432 1,987,394 229,019 1,275,487 4,122,609 47,803,091 47,803,091 16,028,070	242,311,076	6,439,478 5,172,871	11,612,349
		Assets	Current assets: Cash and cash equivalents	Heceivables: Accounts Program loans Utility remittance Solar lease notes SBEA promissory notes Leases Interest Other Prepaid expenses and other assets Prepaid warranty management	Total current assets	Noncurrent assets: Restricted cash and cash equivalents Investments Providents	Program loans Solar lease notes Solar lease notes Renewable energy credits BEEA promissory notes Leases Other Due from component units Advances to component units Advances to component units Advances to component units Capital assets, net Capital assets, net	Total assets Deferred Outflows of Resources	Pension related OPEB related Asset retirement obligations	Total deferred outflows of resources