CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

AGENDA

Budget and Operations Committee of the
Clean Energy Finance and Investment Authority
845 Brook Street
Rocky Hill, CT 06067

Monday, June 9, 2014
2:00-3:30 p.m.

Staff Invited: Mackey Dykes, Brian Farnen, Bryan Garcia, George Bellas

1. Call to order
2. Public Comments – 5 minutes
3. Approve meeting minutes for May 16, 2014 meeting* - 5 minutes
4. Fiscal Year 2015 – 2016 Comprehensive Plan – 40 minutes
5. Fiscal Year 2015 Budget – 40 minutes
6. Adjourn

*Denotes item requiring Committee action
** Denotes item requiring Committee action and recommendation to the Board for approval

Online Meeting Access
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Dial-In
Dial +1 (267) 507-0007
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CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

RESOLUTIONS

Budget and Operations Committee of the
Clean Energy Finance and Investment Authority
845 Brook Street
Rocky Hill, CT 06067

Monday, June 9, 2014
2:00-3:30 p.m.

Staff Invited: Mackey Dykes, Brian Farnen, Bryan Garcia, George Bellas

1. Call to order

2. Public Comments – 5 minutes

3. Approve meeting minutes for May 16, 2014 meeting* - 5 minutes

   Resolution #1

   Motion to approve the minutes of the Budget and Operations Committee meeting for May 16, 2014. Second. Discussion. Vote.

4. Fiscal Year 2015 – 2016 Comprehensive Plan – 40 minutes

   Resolution #2

   RESOLVED, the Clean Energy Finance and Investment Authority's Budget and Operations Committee recommends that the CEFIA Board of Directors approve the Fiscal Year 2015 – 2016 Comprehensive Plan dated 6/3/14.

5. Fiscal Year 2015 Budget – 40 minutes

   Resolution #3

   RESOLVED, the Clean Energy Finance and Investment Authority's Budget and Operations Committee recommends that the CEFIA Board of Directors approve the Fiscal Year 2015 Budget dated 6/3/14.

6. Adjourn

*Denotes item requiring Committee action
** Denotes item requiring Committee action and recommendation to the Board for approval

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CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

Budget and Operations Committee of the Clean Energy Finance and Investment Authority

Agenda Item #1

Call to Order

June 9, 2013

CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

Budget and Operations Committee of the Clean Energy Finance and Investment Authority

Agenda Item #2

Public Comments

June 9, 2013

CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

Budget and Operations Committee of the Clean Energy Finance and Investment Authority

Agenda Item #3

Approve May 16, 2014 Meeting Minutes

June 9, 2013

CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

Budget and Operations Committee of the Clean Energy Finance and Investment Authority

Agenda Item #4

Fiscal Year 2015 – 2016 Comprehensive Plan

June 9, 2013

Residential Programs
FY 2014 Quarterly Targets

CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

Installed Capacity (MW) and Energy Saved (MMBtu)

Program	Q1	Q2	Q3	Q4	Total FY 2014
Smart-E and Cozy	TBD / 2,600	TBD / 5,400	TBD / 10,800	TBD / 18,800	TBD / 37,600
Solar Lease	1.3 / 380	1.4 / 380	2.0 / 935	1.0 / 565	5.7 / 2,260
Solar Loan	0.2 / n.a.	0.3 / n.a.	0.2 / n.a.	0.2 / n.a.	0.9 / n.a.
Total	1.5 / 2,980	1.7 / 5,780	2.2 / 11,735	1.2 / 19,365	6.6 / 39,860

Projects and Funding

Program	Q1	Q2	Q3	Q4	Total FY 2014
Projects	358	479	810	960	2,607
Funding	$2,002,000	$2,190,000	$2,691,000	$2,046,000	$8,929,000

REFERENCES
Note – the reason there is a downtick in Q4 for the solar lease is because there is a winter lag..

Commercial and Industrial Programs
FY 2014 Quarterly Targets

CLEAN ENERGY FINANCE AND INVESTMENT AUTHORITY

Installed Capacity (MW) and Energy Saved (MMBtu)

Program	Q1	Q2	Q3	Q4	Total FY 2014
C-PACE	0.5	1.0	1.5	2.0	5.0
CEBS	-	-	-	-	-
Total	0.5	1.0	1.5	2.0	5.0

Projects and Funding

Program	Q1	Q2	Q3	Q4	Total FY 2014
Projects	8	12	15	20	55
Funding	$4,000,000	$6,000,000	$7,500,000	$12,500,000	$30,000,000

Institutional Programs
FY 2014 Quarterly Targets

CLEAN ENERGY FINANCE AND INVESTMENT AUTHORITY

Installed Capacity (MW) and Energy Saved (MMBtu)

Program	Q1	Q2	Q3	Q4	Total FY 2014
Campus Efficiency Now	0 / 1,250	0 / 1,250	0 / 1,250	0 / 1,250	0 / 5,000
Solar Lease	0.5 / 0	0.5 / 0	0.5 / 0	0.5 / 0	2.0 / 0
Total	0.5 / 1,250	0.5 / 1,250	0.5 / 1,250	0.5 / 1,250	2.0 / 5,000

Projects and Funding

Program	Q1	Q2	Q3	Q4	Total FY 2014
Projects	7	7	8	8	30
Funding	$565,000	$565,000	$565,000	$565,000	$2,260,000

Statutory and Infrastructure Programs
FY 2014 Quarterly Targets

CLEAN ENERGY FINANCE AND INVESTMENT AUTHORITY

Installed Capacity (MW)

Program	Q1	Q2	Q3	Q4	Total FY 2014
RSIP	2	3	3	4	12
CHP and AD	-	3	-	3	6
Grid and Infrastructure	-	-	-	-	-
Total	2	6	3	7	18

Projects and Funding

Program	Q1	Q2	Q3	Q4	Total FY 2014
Projects	285	428	425	584	1,722
Funding	$2,500,000	$4,750,000	$3,000,000	$6,000,000	$16,250,000

REFERENCES
Expecting to double again in FY 2014. Will work with DEEP to perform a LEAN process (i.e. inspectors, application process, etc.).

CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

Budget and Operations Committee of the Clean Energy Finance and Investment Authority

Agenda Item #5

Fiscal Year 2015 Budget

June 9, 2013

Revenues

CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

	2015 Budget General Operations & Programs		2014 Budget General Operations & Programs		Inc(Dec)	% Inc.
Income						
Utility customer assessments	$	27,525.0	$	27,600.0	$ (75.00)	-0.3%
RGGI auction proceeds - renewables	$	6,800.0	$	5,900.0	$ 900.00	15.3%
RGGI proceeds energy efficiency	$	12,200.0	$	12,800.0	$ (600.00)	-4.7%
State bond funds	$	5,000.0	$	-	$ 5,000.00	
Interest Income - cash deposits	$	80.0	$	100.0	$ (20.00)	-20.0%
Interest Income - CPACE loans	$	600.0	$	-	$ 600.00	
Interest Income - Grid Tied loans	$	306.0	$	-	$ 306.00	
Interest Income - Solar lease I promissor	$	125.0	$	110.0	$ 15.00	13.6%
Interest Income - other loans	$	120.0	$	-	$ 120.00	
Closing fees	$	158.8	$	90.0	$ 68.75	76.4%
Grant income (federal programs)	$	146.0	$	300.0	$ (154.00)	-51.3%
REC sales, net of fees	$	575.0	$	575.0	$ -	0.0%
Other income	$	100.0	$	100.0	$ -	0.0%
Total Sources of revenue:	$	53,735.8	$	47,575.0	$ 6,160.8	12.9%

Residential Programs
FY15 Budget

CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

	Loans & Investments	Credit Enhancements	Private Capital Deployed
Smart-E Loan/Cozy Loan	-	$800,000	
CT Solar Lease	$5,813,000		
CT Solar Loan	$2,000,000 net ($10m - $8m sell-off)	$275,000	
Solar PV Capital Competition	$1,000,000	-	

- X
- X
- X

Operating Expenses (000's)		
	FY15	**FY14**
Salary/Benefits	$1,161	$1,241
Program Development & Administration	$732	$537
Marketing	$1,555	$715
Legal	$45	$175
Overhead	$136	$166
Total	**$3,629**	**$2,834**

C&I Programs
FY 2015 Budget

Programs	Loans / Investments	Credit Enhancements	Incentives	Private Capital Deployed
C-PACE	$10,000,000 net ($50m - $40m sell-off)	-	-	
Clean Energy Business Solutions	-	-	$4,500,000	
C&I Loan Product	$2,000,000	-	-	-
C&I Energy Services Agreement RFP	$3,000,000	-	-	-
Micro Grid Program	$5,000,000	-	-	-

- X
- X
- X

Operating Expenses (000's)		
	FY15	**FY14**
Salary/Benefits	$1,576	$1,292
Program Development & Administration	$1,225	$1,230
Legal/Consulting	$260	
Marketing	$660	$600
Overhead	$184	$166
Total	**$3,905**	**$3,288**

Institutional Programs
FY 2015 Budget

CLEAN ENERGY FINANCE AND INVESTMENT AUTHORITY

Programs	Loans / Investments	Credit Enhancements	Private Capital Deployed
WINN LISC	$1,875,000	-	

- X
- X
- X

Operating Expenses (000's)		
	FY15	FY14
Salary/Benefits	$889	$600
Program Development & Administration	-	$50
Marketing	-	-
Legal	$9	-
Overhead	$104	$73
Total	**$1,002**	**$723**

Statutory & Infrastructure Programs
FY 2015 Budget

CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

Programs	Loans / Investments	Credit Enhancements	Incentives	Private Capital Deployed
RSIP	-	-	$14,400,000	
Combined Heat & Power	$9,000,000	-	-	
Anaerobic Digester	$12,500,000	-	-	
Grid-Tied Loan Program	$2,800,000	-	-	

- X
- X

Operating Expenses (000's)		
	FY15	**FY14**
Salary/Benefits	$1,803	$1,148
Program Development & Administration	$850	$685
Legal/Consulting	$95	
Marketing	$250	$100
Overhead	$211	$178
Total	**$3,209**	**$2,111**

Multifamily Programs
FY15 Budget

CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

	Loans & Investments	Credit Enhancements	Private Capital Deployed
CHIF Multifamily	$1,000,000	-	
New Multifamily Product	$5,000,000	-	-
Multifamily RFP	$4,000,000	-	-

- X
- X
- X

Operating Expenses (000's)		
	FY15	**FY14**
Salary/Benefits	$916	-
Program Development & Administration	$175	-
Marketing	$50	-
Legal	$15	-
Overhead	$75	-
Total	**$1,231**	**-**

Other Programs
FY15 Budget

	Loans & Investments	Credit Enhancements	Incentives
Comprehensive Energy Strategy Innovation Fund	$1,500,000	-	-
Alpha/Op Demo	$732,000	-	-
Clean Energy Communities	-	-	$525

- CI managing remaining Alpha and Op Demo projects
- CES Innovation Fund to assist with unique projects that meet the goals of the CES
- Clean Energy Communities program overhauled to reward participation in financing programs

FY15 Overview

CLEAN ENERGY FINANCE AND INVESTMENT AUTHORITY

	Loans & Investments	Credit Enhancements	Grants & Rebates	Program & Admin Expenses	FTEs
Residential	$16,813	$1,075	-	$3,629	
Commercial & Industrial	$60,000	-	$4,500	$3,905	
Institutional	$1,875	-	-	$1,002	
Statutory & Infrastructure	$24,300	-	$14,400	$3,209	
Multifamily	$10,000	-	-	$1,231	
Other	$2,232	-	$525	$225	
General Operations	-	-	-	$3,251	
TOTAL	$115,220	$1,075	$19,425	$16,652	

Outstanding Commitments
Prior to July 1, 2012

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FINANCE AND INVESTMENT AUTHORITY

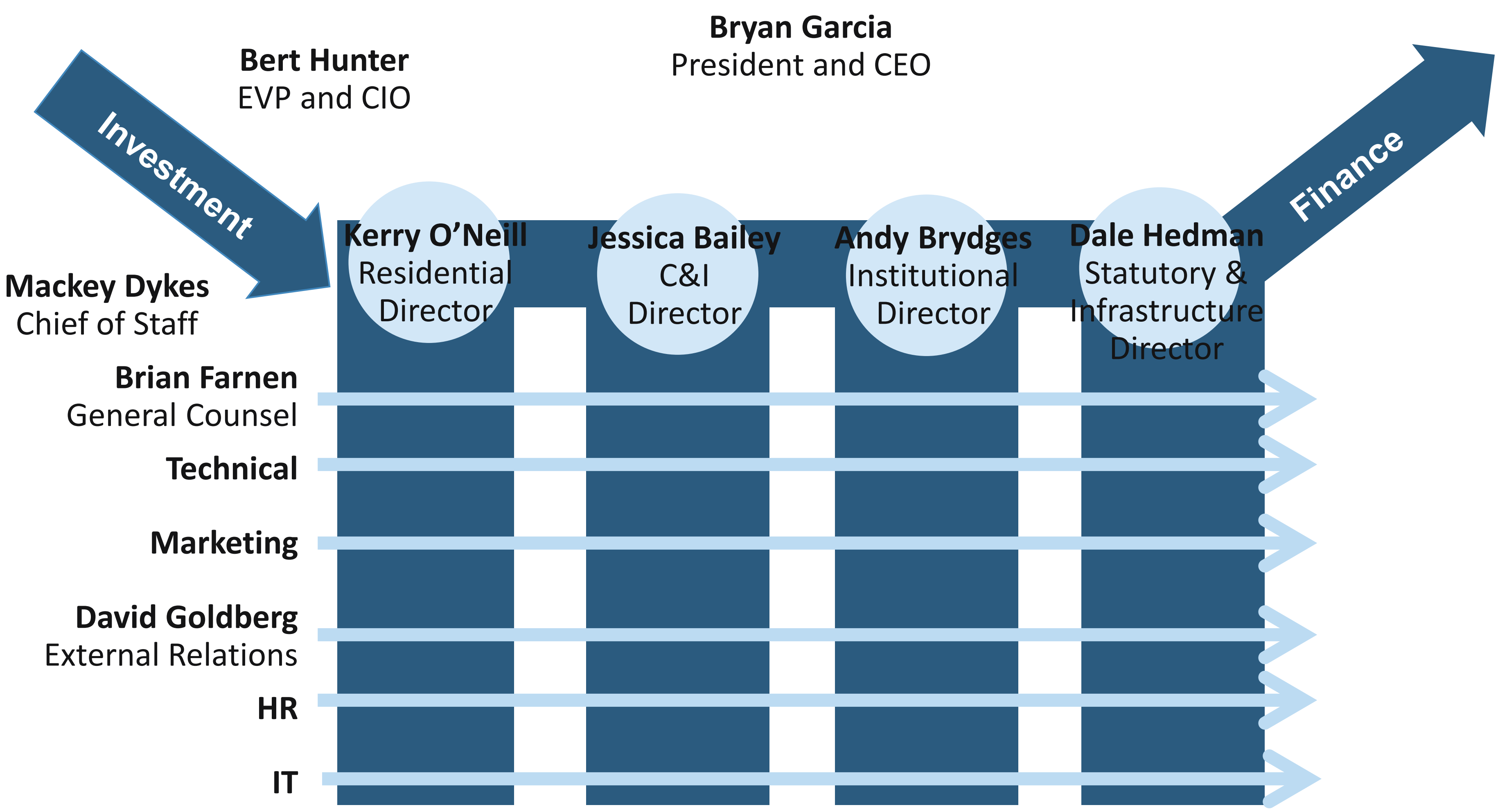
- **Outstanding (as of June 30, 2012)** – $27 million of outstanding commitments
  - Project 150 – $7 million
  - OSDG – $12 million
  - Solar Hot Water and Geothermal - $2.5 million

- **Outstanding (as of April 30, 2013)** – $12 million of outstanding commitments
  - Project 150 - $1.5 million (Bridgeport Fuel Cell Park)
  - OSDG – $7 million
  - Solar Hot Water - $2 million

Director Level Management

Built a Strong and Committed Team

CLEAN ENERGY FINANCE AND INVESTMENT AUTHORITY



Salary Adjustments
COLA, Merit, and Competitive Market

CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

Options under consideration

- **Cost of Living Adjustment** – provide 3% increase in COLA for all staff
- **Merit Compensation** – set aside 3% of salary budget for management merit compensation of between 0-5% of salary; must have been employed with CEFIA for at least 12 months
- **Salary Range Revisions** – adjust director-level and above salary ranges to be consistent with findings of the Buck Study
- **Incentive Plan** – discuss plan in FY 2014 and align with performance against Comprehensive Plan for Director Level II positions and above

Salary Range Revisions
Director Level and Above

		Current Range		Proposed Range		
Position	**Division**	**Min**	**Max**	**Min**	**Max**	**Inc/(Dec)**
Director I	Corporate	$100,301	$141,657	$91,526	$137,289	($4,368)
Director I	Program	$100,301	$141,657	$99,962	$149,431	$7,774
Director I	Investment	n/a	n/a	$106,104	$159,156	-
Director II – VP	Corporate	$116,536	$164,588	$109,832	$164,748	$160
Director II – VP	Program	$116,536	$164,588	$120,000	$180,000	$15,412
Director II – VP	Investment	$129,084	$181,094	$132,632	$198,948	$17,854
Officer						

Staffing

	FY13	FY14
FTEs	30	33
Shared Service FTEs	4.93	5.93
Total	34.93	38.93

Position Changes	
Senior Manager, Residential	New Position
Program Assistant, Residential	New Position
Program Manager, Finance	New Position
Program Assistant, CPACE	New Position
Accounting Assistant, Shared Services	New Position
Director of Energy Efficiency	Eliminated

Budget Process
FY 2014

CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

- **Budget and Operations Committee**
  - **Review of Draft FY 2014 Budget** – May 8, 2013 (Complete)
  - **Further Review of Draft FY 2014 Budget** – June 11, 2013
- **Board of Directors**
  - **Overview of the FY 2013 Program Performance to Comprehensive Plan and Draft FY 2014 Budget Processes** – May 17, 2013 (Complete)
  - **Review of FY 2013 Program Performance to Comprehensive Plan** – June 6th and 10th (Complete)
  - **Recommendation for the Approval of the FY 2014 Budget** – June 21, 2013

CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

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865 Brook Street
Rocky Hill, CT (860) 563-0015

BUDGET AND OPERATIONS COMMITTEE OF THE
CLEAN ENERGY FINANCE AND INVESTMENT AUTHORITY
Draft Minutes – Regular Meeting
Friday, May 16, 2014

A regular meeting of the Budget and Operations Committee ("Budget Committee") of the Board of Directors of the **Clean Energy Finance and Investment Authority (the "CEFIA")** was held on May 16, 2014, at the office of the Clean Energy Finance and Investment Authority, 845 Brook Street, Rocky Hill, CT 06067.

1. **<u>Call to Order</u>**: The meeting was called to order at 2:10 p.m. Budget Committee members participating: Mun Choi (by phone) and Commissioner Rob Klee (by phone) and Norma Glover (by phone).

Staff Attending: George Bellas, Mackey Dykes, Brian Farnen (by phone), Bryan Garcia, Cheryl Samuels, Andrea Janecko, David Goldberg and Suzanne Kaswan.

Others Attending: Alex Kragie (by phone) and Albert Monroe, DEEP Chief of Staff (by phone)

2. **<u>Public Comments</u>:**

There were no public comments.

3. **<u>Approval of Meeting Minutes</u>:**

The Budget Committee members were asked to consider the minutes from the April 17, 2014 meeting.

> **Upon a motion made by Mr. Klee, seconded by Mr. Choi, the Budget Committee members voted unanimously in favor of adopting the minutes from the April 17, 2014 meeting as presented.**

4. **<u>Revised Salary Ranges:</u>**

Mr. Dykes explained that in the fall of 2012 CEFIA along with CI commissioned a study with Buck Associates to conduct a comparison study of CEFIA salaries to private and non-profit/government entities' salaries. The study evaluated CEFIA's market position to base salary and base plus bonuses. The results were weighted to reflect CEFIA's valuable benefits package. Buck Consultants found that, with a few exceptions, the weighted CEFIA base salaries are within an acceptable range, defined by Buck to be plus or minus ten percent, of the market median. However, when compared to total cash compensation (base salary plus bonus), several positions fell short of this range. .

A question was asked should CEFIA be compared to financial institutions since CEFIA does not provide bonuses. Ms. Kaswan stated that concerning program salaries bonuses are not a factor. However, within the finance sector, bonuses should be factored for considered median. A question was asked if CI used the same methodology for their salary evaluation. Ms. Kaswan answered "yes" and further explained that CI brought their evaluation to the board in November of 2013 which received board approval. Most positions on CEFIA and CI side of the house fell into the acceptable ranges but were asking for a recommendation to change the salary ranges for the Director I positions and above. Mr. Dykes explained a diagram of CEFIA's schedule of positions, which is divided into three divisions (Corporate, Program and Investment) and several grade levels. Bryan Garcia further explained that in grades 1-4 (Admin to Associate Manager), skillsets across all three divisions were the same so the ranges are the same. Grades 5- executive grade (Manager Officer) have specialized skillsets so the ranges in the investment division are larger to reflect a more competitive market. A question was asked how will these work in terms of staff promotions and opportunities for advancement and what would be the process that determines the minimum and maximum if that person gets promoted. An example of how it would work was given to the members and further explained by Ms. Kaswan that compensation increase is determined through evaluation of responsibilities and position expectations. Promotions are typically granted a 5 percent increase however, other factors may be considered. Mr. Dykes provided an example of a hypothetical promotion scenario of a Director I. Overall, the new ranges allow for growth and employee retention. A statement was made that within the State of CT system there is a 5 percent cap on salary increases with zero regulated flexibility. A question was asked if the 5 percent cap on increases in state agencies was for all staff or does it apply to managers and above. It was believed that this cap applied across the board. Mr. Dykes explained the midpoint of the new ranges is still staying below the market midpoint for salaries. This action will not change anyone's salary and is intended to increase senior and executive salary ranges to make CEFIA more competitive in recruiting. This new structure will allow for a more natural, even progression through the career ladder. A question was asked if this policy will be put in place after the committee and board approval. Mr. Garcia stated that if approved the policy will be put in practice on June 20th following board approval. If the committee moves forward, revised minimum and maximum compensation for director levels and above will be implemented according to the BUCK Study. A question was asked if position descriptions will reflect new duties and progression. Mr. Garcia answered "yes" and standardized across the organization, progression will be allowed laterally across staff. A question was asked if this was too structured for a quasi-public agency. Mr. Garcia answered that he doesn't feel it's too structured and that this is a good way to organize where we've come because it establishes an appropriate career path for staff moving up and enhances opportunities for young professionals who want to grow. It's a good solid path for attraction and retention of staff within a defined structure.

Upon a motion made by Ms. Glover, seconded by Mr. Choi, the Budget Committee members voted unanimously in favor of adopting the following resolution regarding the Revised Salary Ranges.

RESOLVED, the Clean Energy Finance and Investment Authority's Budget and Operations Committee recommends that the CEFIA Board of Directors approve the salary ranges for Director I level positions and above outlined in Attachment A.

5. Comprehensive Plan Outline and Discussion:

Mr. Dykes made reference that at the previous meeting of the Budget and Operations Committee, it was mentioned that CEFIA's Comprehensive Plan and FY15 budget would be discussed at the next B&O meeting. He stated that as the organization changes the budget also changes. Mr. Garcia stated that per section 99 of PA11-80, CEFIA needed to put together a comprehensive plan. Mr. Garcia explained the process of pulling the pieces together and provided an overview of the comprehensive plan starting with the organization, public policy, stakeholders, financing and marketing. He stated that the plan was more robust than the last plan and will act as a good blueprint for CEFIA as CEFIA becomes a model for other states. Mr. Garcia further explained that staff is looking at the Comprehensive Energy Strategy, Integrated Resources Plan, Conservation and Load Management plan, and gas expansion plans to help guide us. Mr. Klee commented that from the outline it looks like an enormous document and huge undertaking and offered support from DEEP. Mr. Garcia stated that the DEEP staff has been great and engaging in discussions on the pending IRP and how to go about focusing on certain products. Mr. Garcia stated that he would send the comprehensive plan to DEEP for review. Mr. Dykes added that CEFIA is more mature than we were with the first comprehensive plan but still not at a level of market maturity to set two year targets so the plan would include just FY15 targets and budget.

Several other metrics and key performance indicators will be implemented to track progress to targets and Mr. Garcia added that the plan is going to be a plan that helps guide CEFIA going forward. Mr. Garcia mentioned that CEFIA is also going to start building out more robust information and data platforms. Mr. Klee commented that it seems to be an enormous document and a huge undertaking and recommended a clear executive summary.

6. Fiscal Year 2015 Budget Outline and Discussion:

Mr. Dykes explained the budget outline and changes and asked the committee members for feedback. He stated that CEFIA is doing better about building around each sector doing a better job of capturing product costs. . The big changes that CEFIA wanted to bring to the committee and board is structure change to our accounting staffing. Currently our accounting is outsourced to CI. CEFIA is growing and ramping up products so CEFIA wants to bring the treasury/accounting function of the organization in house. It makes sense to have expertise in house and not share or split these responsibilities. George Bellas along with his staff of three would become CEFIA employees. . George and his staff would physically move over and come work for CEFIA at 100 percent salary, except for one who would devote 25% of their time to CI. George explained that he is only doing venture capital items for CI and that he and his team are mostly doing work for CEFIA. Mr. Dykes stated that having George and his team at CEFIA would be very helpful to the financing work that he and his team are currently performing for CEFIA. Mr. Garcia added that CI's Executive Director is in agreement and recognizes the benefits of having accounting in house and that together CI and CEFIA will work on an appropriate transition. Mr. Klee agreed and complimented George on the work that he does for the organization. Mr. Choi also agrees and supports the move of George and his team to CEFIA.

A question was asked when CEFIA would formally be called "The Green Bank". Mr. Garcia answered that once the Governor signs the statute we become the "Connecticut Green Bank" legally. CEFIA will start a rebranding effort around our new name that will be led by the incoming Marketing Director. Mr. Dykes added that all branding is still CT Clean Energy and that we want to take advantage of name change to reorient ourselves to look more like a financial institution. He mentioned that CI's model happened all at once in a coordinated fashion and that although it will take some time for CEFIA we want to remodel our brand and logos, website, etc. and that CEFIA is looking forward to the transition.

7. Other Business:

Mr. Garcia commented that he has been working alongside Mackey Dykes for almost two years to the day and that as you can see Mackey does an extraordinary amount of work for the organization. Mackey came to CEFIA as a Chief of Staff and has helped build the organization by attracting and retaining talent. Mr. Garcia stated that Mackey is an operations expert dealing with all elements of operations and doing an outstanding job. Mr. Garcia mentioned that he will have a conversation with Commissioner Smith to promote Mackey to Vice President of Operations and hoping to have a proposal at the next Budget and Operations meeting. Mr. Choi agreed with Mr. Garcia's assessment of Mackey.

8. Adjourn:

Adjournment: Upon a motion made by Mr. Choi, seconded by Mrs. Glover, the Budget Committee members voted unanimously in favor of adjourning the May 16, 2014 meeting at 3:09 p.m.

Respectfully submitted,

Robert Klee, Chairperson of Budget Committee

Connecticut Green Bank

Comprehensive Plan

Fiscal Years 2015 and 2016

6/3/2014

Table of Contents

Executive Summary

[To be completed…]

Organization Overview

The Connecticut Green Bank ("the Green Bank")[1] was established by 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 state "Green Bank", the Connecticut Green Bank leverages public and private funds to drive investment and scale-up clean energy deployment in Connecticut.

The Connecticut Green Bank's purposes are:

- Developing programs to finance and otherwise support clean energy investment in residential, municipal, small business and larger commercial projects and such other programs as the Bank may determine;

- Supporting financing or other expenditures that promote investment in clean energy sources to foster the growth, development and commercialization of clean energy sources and related enterprises; and

- Stimulating demand for clean energy and the deployment of clean energy sources within the state that serves end-use customers in the state.

The Green Bank's purposes are codified in Section 16-245n(d)(1) of the Connecticut General Statutes (C.G.S.) and its board approved Resolution of Purposes.

Vision

To lead the national green bank movement in attracting and accelerating private investment in clean energy deployment to meet the vital goals of energy independence and the abatement of climate change.

Mission

To support the Governor's and Legislature's energy strategy to achieve cleaner, cheaper and more reliable sources of energy while creating jobs and supporting local economic development.

Goals

To achieve its vision and mission, the Connecticut Green Bank has established the following three goals:

1. To attract and deploy capital to finance the clean energy[2] goals for Connecticut, including:

    a. Help Connecticut in becoming the most energy efficient state in the nation;

[1] Public Act 11-80 repurposed the Connecticut Clean Energy Fund (CCEF) administered by Connecticut Innovations, into a separate quasi-public organization called the Clean Energy Finance and Investment Authority (CEFIA). Per Public Act 14-94, CEFIA was renamed to the Connecticut Green Bank.

[2] Public Act 11-80 defines "clean energy" broadly and includes familiar renewable energy sources such as solar photovoltaic, solar thermal, geothermal, wind and low-impact hydroelectric energy, but also includes fuel cells, energy derived from anaerobic digestion, CHP systems, infrastructure for alternative fuels for transportation and financing energy efficiency projects.

b. Scale-up the deployment of renewable energy in Connecticut; and
c. Provide support for the infrastructure needed to lead the clean energy economy.

2. To develop and implement strategies that bring down the cost of clean energy in order to make it more accessible and affordable to consumers.

3. To reduce reliance on grants, rebates, and other subsidies and move towards innovative low-cost financing of clean energy deployment.

These goals support the implementation of Connecticut's clean energy policies be they statutory (i.e., Public Act 11-80, Public Act 13-298, etc.), planning (i.e., Comprehensive Energy Strategy, Integrated Resources Plan, etc.), or regulatory in nature.

Metrics of Success

The following is a breakdown of the key metrics of success for the Connecticut Green Bank:

- **Objective Function** – maximizing the amount of clean energy generated (or energy saved) per dollar of ratepayer funds at risk;[3]

- **Attract Capital** – there are several measures used, including the total amount of public and private investment in clean energy; amount of private capital or non-ratepayer fund investment in Connecticut's clean energy economy; amount of public capital or ratepayer fund investment in Connecticut's clean energy economy; leverage ratio of the amount of public versus private investment in clean energy; the ratio of the amount of public funds invested in the form of subsidies (i.e., grants), credit enhancements (i.e., loss reserves), and financing (i.e., loans and leases); and credit quality of borrowers (i.e., FICO scores, DTI, etc.).

- **Deploy Capital** – there are several measures used, including the total amount of clean energy deployed (i.e., kW, kW peak, including summer and winter, etc.); amount of clean energy generated and/or saved (i.e., kWh, MMBtu, etc.) over a year and estimated lifetime of a project; savings to investment ratio; and customer acquisition costs or the amount of marketing expenses it costs to acquire a customer to install a project as well as per energy unit generated or saved over its lifetime.

- **Public Benefit** – there are several measures used, including estimate of the direct, indirect and induced jobs created as a result of the total capital invested in clean energy deployment;[4] and estimate of the amount of CO_2 and other air emissions and standard equivalencies (i.e., cars off the road, acres of trees, etc.) reduced over the life of a project.

[3] Objective Function Protocol – Version 1.0 – [Insert Link here…]
[4] The Connecticut Department of Economic Development has approved the jobs estimates calculations as a result of the Green Bank financed clean energy projects – click here.

These key metrics of success for the Green Bank are estimated for each of its programs and investments as well as tracked using established measurement and verification protocols, independently audited, and reported annually through a Comprehensive Annual Financial Review (CAFR).

Governance

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

Table 1. Board of Directors of the Connecticut Green Bank

Position	Status	Voting	Name	Organization
State Treasurer (or designee)	Ex Officio	Yes	Bettina Ferguson	Treasurer's Office
Commissioner of DEEP[5] (or designee)	Ex Officio	Yes	Robert Klee[6]	DEEP
Commissioner of DECD[7] (or designee)	Ex Officio	Yes	Catherine Smith[8]	DECD
Residential or Low Income Group	Appointed	Yes	Pat Wrice	Operation Fuel
Investment Fund Management	Appointed	Yes	Norma Glover	NJG Associates
Environmental Organization	Appointed	Yes	Matthew Ranelli[9]	Shipman & Goodwin
Finance or Deployment	Appointed	Yes	Thomas Flynn	Environmental Data Resources
Finance of Renewable Energy	Appointed	Yes	Reed Hundt[10]	Coalition for Green Capital
Finance of Renewable Energy	Appointed	Yes	Kevin Walsh	GE Energy Financial Services
Labor	Appointed	Yes	John Harrity	IAM Connecticut
R&D or Manufacturing	Appointed	Yes	Mun Choi	University of Connecticut
President of the Green Bank	Ex Officio	No	Bryan Garcia	Connecticut Green Bank
Board of Connecticut Innovations	Ex Officio	No	(unfilled)	(unfilled)

The Board of Directors is governed through the statute, as well as an Ethics Statement and Ethical Conduct Policy, Resolutions of Purposes, Bylaws, and Comprehensive Plan as amended from time-to-time. All meetings, agendas, and materials of the Green Bank's Board of Directors and it's Committees are publicly available on the organizations website.[11,12]

Organizational Structure

The organizational structure of the Connecticut Green Bank is comprised of four parts:

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[5] Department of Energy and Environmental Protection
[6] Vice Chairperson of the Board of Directors and Chairperson of the Budget and Operations Committee
[7] Department of Economic and Community Development
[8] Chairperson of the Board of Directors
[9] Secretary of the Board of Directors and Chairperson of the Audit, Compliance and Governance Committee
[10] Chairperson of the Deployment Committee
[11] http://ctcleanenergy.com/AboutCEFIA/CEFIABoardMeetings/tabid/604/Default.aspx
[12] http://ctcleanenergy.com/AboutCEFIA/CEFIACommitteeMeetings/tabid/603/Default.aspx

- **Corporate Division** – this division is responsible for providing support services to the investment and program divisions, including accounting, legal, marketing, and policy support to help them meet their goals.

- **Investment Division** – this division is responsible for *attracting capital* to finance the clean energy goals for Connecticut.

- **Program Division** – this division is responsible for *deploying capital* to meet the clean energy goals for Connecticut. There are four (4) program divisions –Residential (including multifamily), Commercial & Industrial, Institutional (i.e., state/municipal, universities, schools, hospitals ("SMUSH"), etc.) and Statutory and Infrastructure.

- **Administrative Division** – through a memorandum of understanding (MOU) between Connecticut Innovations (CI) and the Connecticut Green Bank, various administrative services are provided to the Green Bank including human resources and information technology.

The Green Bank staff is attentive to the needs of its stakeholders, committed to the vision and mission of the organization, and conducts itself in a collaborative and professional manner that demonstrates its knowledge and leadership of clean energy policy, finance, and technology.

An Employee Handbook and Operating Procedures have 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.

Public Policy

The Connecticut Green Bank's role is to support the implementation of public policy on clean energy in Connecticut by attracting and deploying capital to finance the achievement of those goals. Over the course of the legislative history on clean energy in Connecticut and specifically the last decade, there have been significant public policies passed that guide the programs of the Green Bank, including, but not limited to:[13]

- **Public Act 78-262** – "An Act Establishing a State Energy Policy" is Connecticut's original energy policy from 1978. The original energy policy declared the following matters as important and are the focus of the policy - engaging in energy conservation, energy efficiency, renewable energy deployment, energy diversification, reducing reliance on interruptible sources of energy, reducing energy costs, assuring that low-income households have essential energy services, public education and consumer awareness, and including financial and technical assistance.

- **Public Act 98-28** – "An Act Concerning Electric Restructuring," deregulated the generation component of the electric utility industry and opened it up to competition, established the Class I and Class II Renewable Portfolio Standards, and created the Conservation and Load Management (C&LM) Fund to be administered by the electric distribution companies (EDCs) and the Renewable Energy Investment Fund (CEF or Clean Energy Fund) to be administered by Connecticut Innovations (CI) and later on by the Connecticut Green Bank.

- **Public Act 05-01** – "An Act Concerning Energy Independence," established the Class III Renewable Portfolio Standard for CHP and energy efficiency, Project 100 requiring the electric distribution companies to sign long-term power purchase agreements for no less than 100 megawatts of Class I renewable energy sources developed in Connecticut, and the joint committee of the ECMB and CEF to coordinate on programs and activities.

- **Public Act 07-242** – "An Act Concerning Electricity and Energy Efficiency," expanded Project 100 to Project 150, requires the municipal utilities to submit a comprehensive report to the CEF on the actions to promote renewable energy sources, modifies the definition of clean energy for the CEF, and creates a "Municipal Renewable Energy and Efficient Energy Grant Account" for disaster relief centers and high schools to be run by CI through the CEF in consultation with the Department of Public Utility Control, Department of Education, and Department of Emergency Management and Homeland Security.[14] The act also addresses energy improvement districts, interconnection standards, property, sales, and use tax exemptions for clean energy, a definition for weatherization, and modifies the Class I and III RPS.

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[13] Public Policy Review – Comprehensive Plan FY 2015 through FY 2016 Memo – [Insert Link here…]
[14] The bonds were authorized in Sec. 91 of PA 07-242 and codified in CGS Sec. 16-245bb. Sec. 30 of PA 10-44 decreased the authorization from $50,000,000 to $18,000,000, effective July 1, 2010.

Definition of Clean Energy

Clean energy means solar photovoltaic energy, solar thermal, geothermal energy, wind, ocean thermal energy, wave or tidal energy, fuel cells, landfill gas, hydropower that meets the low-impact standards of the Low-Impact Hydropower Institute, hydrogen production and hydrogen conversion technologies, low emission advanced biomass conversion technologies, alternative fuels, used for electricity generation including ethanol, biodiesel or other fuel produced in Connecticut and derived from agricultural produce, food waste or waste vegetable oil, provided the Commissioner of Energy and Environmental Protection determines that such fuels provide net reductions in greenhouse gas emissions and fossil fuel consumption, usable electricity from combined heat and power systems with waste heat recovery systems, thermal storage systems, other energy resources and emerging technologies which have significant potential for commercialization and which do not involve the combustion of coal, petroleum or petroleum products, municipal solid waste or nuclear fission, financing of energy efficiency projects, projects that seek to deploy electric, electric hybrid, natural gas or alternative fuel vehicles and associated infrastructure, any related storage, distribution, manufacturing technologies or facilities and any Class I renewable energy source, as defined in section 16-1.

- **Public Act 11-80** – "An Act Concerning the Establishment of the Department of Energy and Environmental Protection and Planning for Connecticut's Energy Future," created DEEP and charged it with energy and policy planning and regulation, including increasing the use of clean energy and technologies that support clean energy. The act also creates the Connecticut Green Bank, sets energy reduction targets for state facilities of 20% by 2018, initiates a 3-year pilot anaerobic digester and combined heat and power program administered by the Green Bank, establishes a residential solar investment program administered by the Green Bank, creates a zero-emission renewable energy credit (ZREC) and low-emission renewable energy credit (LREC) reverse auction program for long-term contracts administered by the EDCs, and designates the Green Bank to oversee a $20 million Green Loan Guaranty Fund capitalized through utility surcharges – not bond funds – in consultation with the Energy Conservation Management Board (ECMB) and Connecticut Health and Educational Facilities Authority (CHEFA).

- **Public Act 12-2** – "An Act Implementing Certain Provisions Concerning Government Administration," established the Commercial Property Assessed Clean Energy Program (C-PACE) to be administered by the Connecticut Green Bank, modifies the definition of clean energy for the Green Bank, permits the Green Bank to issue up to $50 million in bonds backed by a special capital reserve fund (SCRF) to support bond financing for the Green Bank,[15] and clarifies the quasi-public status of the Green Bank.

[15] Sec. 161 of PA 12-2 of the June Special Session contains the SCRF bonding provisions.

- **Public Act 12-189** – "An Act Authorizing and Adjusting Bonds of the State for Capital Improvements, Transportation, and Other Purposes," changes the "Municipal Renewable Energy and Efficient Energy Grant Account" to the "Renewable Energy and Efficient Energy Finance Account" and redirects the use of bond proceeds from CI to the Green Bank who must work in consultation with DEEP, DECD, and the State Treasurer.[16] The $18 million in bond funds can be used for financial assistance for energy efficient generation with priority given to disaster relief centers and high schools as well as projects that use major system components manufactured or assembled in Connecticut.

- **Public Act 13-298** – "An Act Concerning Implementation of Connecticut's Comprehensive Energy Strategy," reinforces key findings from DEEP with regards to the implementation of the Comprehensive Energy Strategy (CES) and includes the Green Bank in numerous instances, including coordination with ECMB, implementation of community-based marketing campaign pilots for natural gas conversions and energy efficiency, inclusion of thermal energy and electric storage technologies in the "Renewable Energy and Efficient Energy Finance Account" reinforcing the importance of financing towards the micro grid policy, and the development and implementation of an on bill repayment program for residential customers using private capital. The act also makes important adjustments to the C-PACE program to support lender consent, further defines critical facilities for micro grid purposes, and clarifies language with respect to virtual net metering, sub-metering, and energy improvement district policy.

- **Public Act 14-94** – "An Act Concerning Connecticut's Recycling and Materials Management Strategy, the Underground Damage Prevention Program, and Revisions to Energy and Environmental Statutes," renames the Clean Energy Finance and Investment Authority to the Connecticut Green Bank, allows micro grid projects as eligible for C-PACE financing, and provides cost recovery mechanism for the residential on bill repayment program. The bill also requires the Green Bank to conduct a study on residential property assessed clean energy (R-PACE), establishes building standards for state facilities, and authorized a limited liability company to be a thermal energy transportation company, regulated by PURA, for a district heating loop in Bridgeport which the Green Bank is involved in.

These statutes comprise a majority of the public policies that seek to advance clean energy in Connecticut and fall within the sphere of the Connecticut Green Bank. [17]

Beyond these statutes, there are various planning documents (i.e., the Comprehensive Energy Strategy, Integrated Resources Plan, etc.) as well as regulatory decisions (i.e., approval of the Conservation and Load Management Plan) that also serve to inform the clean energy policies of the state. The public policies outlined in the Comprehensive Energy Strategy (CES) and the Integrated Resources Plan (IRP) released by DEEP, and their impact on the programs of the Green Bank, are highlighted within each of the four programmatic sectors below.

[16] Sec. 36 of PA 12-189 changed the administering entity in CGS Sec. 16-245bb from Connecticut Innovations, Incorporated, to Clean Energy Finance and Investment Authority and added investments, loans and other forms of financial assistance to allowable uses of proceeds, effective July 1, 2012.

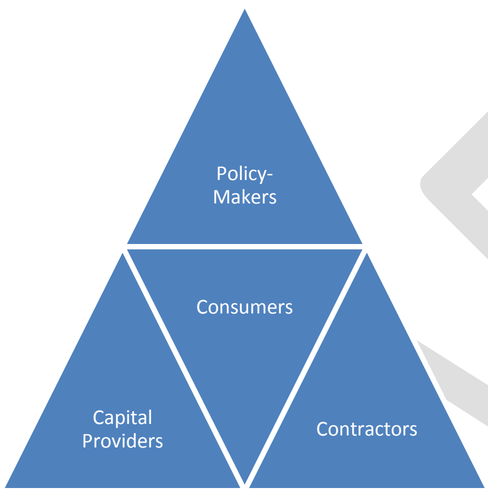
[17] Special thanks to Kevin McCarthy and his team at the Office of Legislative Research for their support in reviewing this section.

Stakeholders

The Connecticut Green Bank identifies four (4) primary stakeholders (see Figure 1) that are the focus of its programs, products, and services, including:

- Consumers
- Capital Providers
- Contractors
- Policy-Makers

Figure 1. Stakeholders - The Three C's (Capital Providers, Consumers, and Contractors) and Policy-Makers



Consumers

A key Green Bank goal is to eliminate the financial barriers to energy efficiency upgrades and clean energy investment as well as reduce consumer reliance on grants, rebates, and other subsidies by , facilitating the transition to innovative low-cost financing of clean energy deployment using private capital. Consumers of all types (e.g., homeowners, renters, businesses, not-for-profits, etc.) seek cheaper, cleaner and more reliable sources of energy. Contractors must be able to provide consumers with comprehensive and "deeper" energy solutions while capital providers must offer consumers immediate cash flow positive returns by financing their investments. The Green Bank plays an important role in bringing consumers and contractors together by providing them with easy access to affordable capital so that they can implement energy solutions for their homes, businesses, or institutions.

Capital Providers

As a key goal is to attract capital to finance the clean energy goals for Connecticut and to develop and implement strategies that bring down the costs of clean energy (including lower interest rates, extended maturities, etc.) to make it more accessible and affordable to consumers, working in partnership with capital providers is vital to the success of the green bank model. There are local (i.e., community banks and credit unions), state, regional, and national banks, as well as equity, tax equity, and other institutional and crowd-sourced investors that seek to finance and invest in clean energy projects in Connecticut. The Green Bank's role is to use the limited public funds that it receives and leverage it to attract more private capital investment in clean energy deployment in Connecticut. The Green Bank provides several channels for capital providers to get into clean energy investing in Connecticut while earning a reasonable rate of return.

Contractors

As a key goal is to deploy capital to finance the clean energy goals for Connecticut and to develop and implement strategies that bring down the costs of clean energy (i.e., installed costs) to make it more accessible and affordable to consumers, working in partnership with qualified and certified contractors is also vital to the success of the green bank model. Qualified contractors (including the full gamut from smaller and more local businesses to the largest of energy services companies, or "ESCOs", that operate on a regional, national and even global scale) must have access to working capital to support the growth and operations of their businesses – including creating new jobs – while providing quality, timely, and cost-effective clean energy and energy efficiency solutions and financing options for consumers.

Policy-Makers

The Connecticut Green Bank was established by policy-makers to leverage public funds to attract more private capital investment to scale-up clean energy deployment in Connecticut. It is the mission of the Green Bank to support the Governor's and Legislature's energy strategy to achieve cleaner, cheaper and more reliable sources of energy while creating jobs and supporting local economic development. Through its Board of Directors, the Green Bank has established a Comprehensive Plan that seeks to implement the objectives of policy-makers to deploy more clean energy at a faster pace while more efficiently managing public funds and attracting significantly more private capital. As the implementer of the C&LM Plan, the Energy Efficiency Board (EEB) and EDCs are important stakeholders for the Green Bank as well, including through the Joint EEB-Connecticut Green Bank Committee.

Financing

A major focus of the Green Bank is to attract private capital to finance the clean energy goals for Connecticut and to ensure that consumers and contractors are able to access cleaner, cheaper and more reliable sources of energy. Connecticut energy policy has ambitious goals and targets across all sectors. Goals such as:

- Enable energy efficiency improvements for at least 15% of single family homes in the state by 2020 – approximately 150,000 homes at $10,000 to achieve 20% energy reduction would require an investment of *$1.5 billion* (PA 11-80, Sec. 124)

- Support the conversion from oil to natural gas for at least 200,000 households in the state in 8 years – at $7,500 for an average cost of conversion with equipment yields an estimated investment of *$1.5 billion* (Comprehensive Energy Strategy)

- Realize on the estimated potential market of over 150,000 households to install solar PV in the state – at an average cost of $27,000 per system would require an investment of *$4.0 billion* (PA 11-80, Sec. 106, Residential Solar Investment Program)

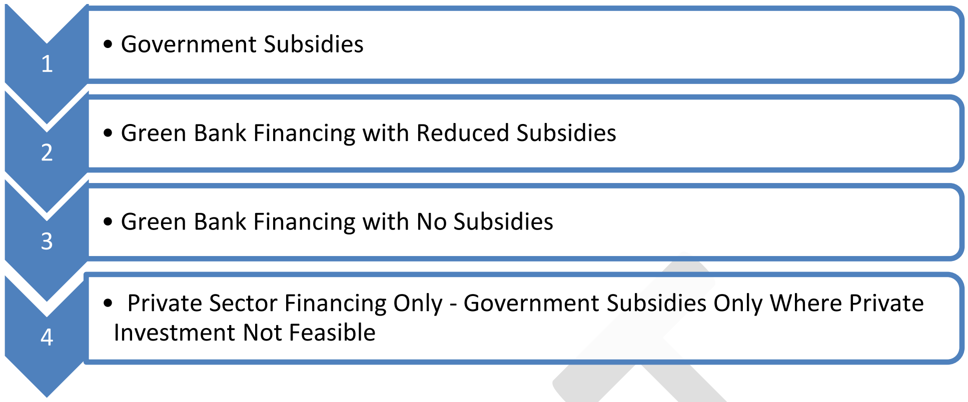
- Reduce energy use in State government buildings (which collectively spend approximately $200 million annually on energy) at least 20% from 2010 levels by January 1, 2018, would require an investment of at least *$500 million* (PA 11-80, Sec. 118)

- Realize opportunities for energy efficiency in the commercial real estate sector, estimated by HR&A to be approximately 400 million SF state-wide, could easily require *$3 billion* (PA 12-2, C-PACE enabling legislation)

Meeting these goals alone, which do not begin to consider industrial, municipal or institutional potential, could require more than *$10 billion* in investment over the next 5-10 years. Utilizing the typical energy efficiency policy models of the 2000s (notable for incentives, rebates and subsidized "low or no" interest financing) to attain such levels of investment would soon be beyond ratepayer or taxpayer resources. Federal funding support, while always welcome, has been reduced dramatically and the policy dysfunction of Washington would suggest that states not have high expectations for more funding in the years immediately ahead.

The green bank model, which works by designing and implementing innovative financing, security and collection structures, has already enabled Connecticut to use its limited ratepayer and taxpayer resources to attract more than $200 million in private investment from local, regional and national sources. This model offers Connecticut and other states the most promise to source the capital required to achieve ambitious policy objectives and to transition (ultimately) to a sustainable clean energy marketplace driven solely by private sector financing (see Figure 2).

Figure 2. Purpose of Green Bank Financing - Towards a Sustainable Clean Energy Marketplace



Acknowledging the importance of attracting more and more private capital to help Connecticut meet its clean energy goals, DEEP established a policy to ensure that subsidized financing products aren't unfairly preventing private capital from entering the market.

The ratepayer-supported C&LM financing products should be positioned in the market in such a way that they do not undermine financing products offered by the private market."

Final Decision on the 2013-2015 C&LM Plan
Department of Energy and Environmental Protection
October 13, 2013

Capitalization

The Connecticut Green Bank is capitalized through a number of public – state and federal – sources including ratepayers through a system benefit charge, greenhouse gas allowance proceeds, and bond and stimulus funds.

System Benefit Charge

As its main source of capitalization, the Green Bank receives a 1 mill surcharge called the Clean Energy Fund from customers of Connecticut Light & Power and United Illuminating. The fund has been in existence since Connecticut deregulated its electric industry in the late 1990's. On average, the Clean Energy Fund cost households about $10 a year and generates nearly $30 million a year to support the programs and initiatives of the Green Bank.

Regional Greenhouse Gas Emission Allowance Proceeds

The Green Bank receives a portion of Connecticut's funds from the Regional Greenhouse Gas Initiative (RGGI). In fiscal year 2015, the Green Bank will receive nearly $16 million of RGGI funds designated for energy efficiency and all of the state RGGI funds for renewable energy. In fiscal year 2016, the Green Bank will continue to receive all the RGGI funds designated for renewable energy.

State Bond Funds

There are various sources of state bond funds that have been made available to the Green Bank to support its purposes including a special capital reserve fund, loan guaranty funds, and bonding to support renewable energy and efficient energy projects.

Special Capital Reserve Fund

The Special Capital Reserve Fund (SCRF) allows quasi-public agencies to issue bonds for self-supporting projects or programs that are backed by the State of Connecticut, lowering the cost of capital for the program. The Green Bank received $50 million in SCRF authorization for self-sufficient financing for energy efficiency and clean energy programs.

Green Connecticut Loan Guaranty Fund

The Green Connecticut Loan Guaranty Fund provides the Green Bank with access to $20 million to attract lending institutions to participate in clean energy financing programs for individuals, non-profit organizations, and small businesses through a first loss credit enhancement. The program is to be designed in consultation with the ECMB and CHEFA.

Renewable Energy and Efficient Energy Finance Account

The Renewable Energy and Efficient Energy Finance Account of $18 million may support grants, investments, loans or other forms of financing assistance to clean energy projects. The program is to be designed in consultation with the DEEP, DECD, and the Office of the Treasurer and priority shall be given to projects that use major system components manufactured or assembled in Connecticut.

Federal Funds

Alongside public funds made available through state channels, the Green Bank has access to or expects to pursue federal funds including stimulus and revolving loan funds as well as loan guarantees.

American Recovery and Reinvestment Act

The American Recovery and Reinvestment Act (ARRA) of 2009 awarded the Green Bank, and its predecessor the CCEF, $20 million for its programs and initiatives. About $8.25 million of those funds are currently being used as credit enhancements for the Green Bank's residential financing programs including the Smart-E Loan, Cozy Home Loan, CT Solar Loan, and CT Solar Lease.

Clean Water State Revolving Fund

The Clean Water State Revolving Fund (CWSRF) serves as the nation's largest water quality financing source, helping communities across the country meet the goals of the Clean Water Act. The CWSRF programs provide low interest and long-term loans for many things including water quality protection projects for wastewater treatment.

Loan Guarantee

The U.S. Department of Energy has established a $4 billion renewable energy and efficient energy loan guarantee program to support innovative, renewable energy and energy efficiency projects in the U.S. that reduce, avoid or sequester greenhouse gases. From advanced grid integration and storage projects to waste to energy and efficiency improvements, the program can potentially support a unitary plan for the implementation of important clean energy projects in multiple locations throughout the state including micro grids, food waste to energy, and district heating and cooling.

Public-Private Partnerships

The foundation of the green bank model rests on Connecticut's achievement of a legislative and regulatory policy framework that makes it possible for financing, security and collection structures and mechanisms to be put in place in order to facilitate significant pools of private capital into the marketplace to finance a diverse array of energy efficiency and clean energy investment across all sectors. Since its formation, the Green Bank has attracted more than $200 million in private investment from local, regional and national sources. These investments are the quintessential public private partnerships for clean energy finance. Investments such as:

- Green Bank financing in support of the largest fuel cell in North America – a 15 MW project on an old brownfield site in a distressed community using a technology manufactured in Connecticut – attracted $65M in initial investment from Dominion Resources while creating ~150 direct jobs (i.e., manufacturing, construction, and servicing).

- A unique combination of a tax equity investor, a syndicate of debt providers and the Green Bank to create a $60 million fund for rooftop solar PV (i.e., residential lease financing for solar PV and solar hot water systems and commercial leases/PPAs for solar PV).

- A $5 million crowd-funded solar loan program supported by the Green Bank that will ultimately enable ordinary citizens to finance their neighbors' solar PV systems.

- A 2nd loss reserve provided by the Green Bank (using $2.5 million of ARRA funds) to attract $30 million of private capital for Smart-E Loans offered by nine local community banks and credit unions offering state-wide coverage. A plan for repayment of these loans on the utility bill was statutorily approved in 2013 and is presently making its way through the appropriate channels for regulatory approval.

- An offering by the Green Bank of C-PACE funded transactions that resulted in attracting $24 million in private capital using $6 million of Green Bank investment to fund a $30 million portfolio of commercial, industrial, non-profit, and multifamily projects.

These partnerships with private capital are positive signs that the funds are ready, willing and able to be supplied to the clean energy marketplace in Connecticut.

Cost of Capital

It is not sufficient for private capital to be supplied into the market for clean energy and energy efficiency investment. Capital "at any cost" will not permit the market to scale up to levels required to enable Connecticut to achieve its policy goals. This is particularly true in Connecticut where the marketplace has become conditioned to subsidized interest rate loans, particularly for energy efficiency. To date, much success has been observed in the Green Bank's ability to attract capital at rates that are viewed by consumers as both reasonable and affordable. The Green Bank's Smart-E loan for homeowners is available at 5-year rates starting at 4.49% (i.e. 4.24% from at least one lender). For homeowners without access to home equity financing, these rates compare quite favorably to unsecured lending rates, which frequently range from 9% to 12% or more. The C-PACE program is attracting funding at a level of approximately 300 basis points (100 basis points = 1%) over long term swap rates. An even lower rate was achieved for the debt funding associated with the leveraged solar lease fund. Crowd-funding could provide funding at even lower yields, but the potential for crowd funding is too uncertain at the present time to be relied upon as a meaningful supply of capital for clean energy projects.

Maturity

To date, the Green Bank has been successful in attracting capital for terms that enable consumers of all types to make the desired investments in clean energy with no cash investment up front in most cases. In fact, Green Bank programs have demonstrated that lengthening the maturity of the loan can be an effective way to raise more capital for these projects. For instance, it would require a reduction in interest rate from 5% to nearly 0% to have the same impact as a one year extension in repayment terms (i.e., from 6 years to 7 years) to finance a home oil-to-gas conversion with a new boiler/furnace for about the same $100 per month outlay. The benefits of extended terms become even more significant for financing comprehensive energy efficiency retrofits called for by the Comprehensive Energy Strategy that cost more to implement and deliver benefits to the homeowner over somewhat longer payback periods. In these cases, the 10 and 12 year maturities for the Smart-E loan and the 15 year maturity for the Solar Loan permit homeowners to become cash flow positive either throughout the life of the loan or after a modest fraction of the total loan payments have been made. With C-PACE, commercial and industrial property owners are able to finance their investments at periods extending up to 20 years, with a statutory requirement that expected energy savings exceed financing obligations levied on their property tax bill.

Private Investment and Leverage Ratio

In the end, these public-private partnerships are efforts by the Green Bank to attract private investment to finance Connecticut's clean energy goals. In doing so, the Green Bank uses a diverse array of financial structures and instruments to facilitate co-investment with a host of capital providers, participating in every level of the capital stack, from equity, to subordinated debt and senior debt (i.e., earning returns that range from "concessional rates" to market rates of return). The Green Bank will also provide other credit enhancements, such as loan loss reserves, guarantees, funding warehouses, and other forms of support where such support for the sector or achieving Connecticut's policy goals is warranted. The Green Bank has no formula for the manner or level of support or credit enhancement it ultimately provides, but seeks to provide the least amount of support necessary to result in the highest possible levels of private financing for the projects concerned or to meet programmatic goals. That said, the Green Bank has been successful in leveraging ratepayer and other forms of public capital from 4:1 to 12:1.

Marketing

A major focus of the Green Bank is to not only attract capital to finance the clean energy goals for Connecticut, but to also *deploy* capital. Through the statewide brand of Energize Connecticut (or EnergizeCT), consumers and contractors are provided with easy access to incentives and financing. Through the Connecticut Green Bank, more and more private capital is being attracted and deployed in our state to support clean energy. Through various marketing channels including our utility partners, local lenders and contractors, on the ground community efforts, and online, more and more consumers are receiving access to cleaner, cheaper, and more reliable sources of energy.

Energize Connecticut

Energize Connecticut℠ is an initiative dedicated to empowering Connecticut citizens to make smart energy choices, now and in the future. It provides Connecticut consumers, businesses and communities the resources and information they need to make it easy to save energy and build a clean energy future for everyone in the state. It is an initiative of the Connecticut Energy Efficiency Fund, the Connecticut Green Bank, the state, and the local electric and gas utilities. The Green Bank's market-facing products and programs operate under the Energize Connecticut brand. The Green Bank, in conjunction with its Energize Connecticut partners, has developed a marketing plan for the brand to raise awareness as well realize the goal stated in the CES:

> "To create a culture that understands the value of and therefore demands energy efficiency, establishes standards that enable consumers to easily ascertain the efficiency profile of their own homes or buildings, and makes financing for energy efficiency measures both easily accessible and affordable."

For more information, go to www.energizect.com

Connecticut Green Bank

In May of 2014 through Public Act 14-94, the Clean Energy Finance and Investment Authority (CEFIA) became the Connecticut Green Bank . As the former name of the organization was thought to be long, confusing, and difficult to pronounce, the new name needs very little explanation, has more resonance, is friendlier and is closer to the mission of the organization.

The Green Bank is guided by its knowledgeable, collaborative, helpful, and solutions-oriented people – its most important asset – by providing contractors and consumers with easy access to affordable private capital. For more information, go to www.ctcleanenergy.com[18]

Channel Marketing

The Green Bank works on the ground in communities throughout the state with its channel marketing partners including the utilities, local lenders and contractors, and volunteer citizens and community-based organizations. It also engages consumers online through www.energizect.com and other campaign-based or programmatic platforms like www.gosolarct.com, www.solarizect.com, and www.c-pace.com.

[18] The future website of the Connecticut Green Bank is www.connecticutgreenbank.com

Utility Partners

The electric (i.e., United Illuminating, Connecticut Light & Power, and Connecticut Municipal Electric Energy Cooperative) and natural gas (i.e., Connecticut Natural Gas, Southern Connecticut Gas, Yankee Gas, etc.) distribution companies are an important channel marketing partner. As administrators of the Connecticut Energy Efficiency Fund, our utility partners are helping consumers reduce their energy consumption, lower peak electric demand, and provide consumers with opportunities to access natural gas.

Local Lending Partners

The Green Bank partners with local lenders including credit unions, community, state, regional, and national banks. Through credit enhancements – like subordinated debt, loan loss reserves, and interest rate buy downs – the Green Bank supports local lenders in providing consumers with easy access to affordable capital. With low interest loans that have long maturities, consumers can receive immediate positive cash flow investments from their energy improvements as their energy savings exceed debt service payments.

Local Contractors

The Green Bank supports local contractors installing clean energy systems in the residential, commercial, industrial, and institutional sectors. Contractors serving renewable energy, energy efficiency, and natural gas conversion projects – all components of the Comprehensive Energy Strategy – are supported with access to private capital sources to support the growth of their businesses through working capital, as well as easy access to affordable capital for their consumers.

Community-Based Campaigns

Community-based campaigns provide an opportunity to engage local residents, businesses and institutions in advancing the clean energy policy goals of the state. Over the years, the Green Bank, and its predecessor the CCEF, have been involved in the creation of several community-based campaigns that are attracting foundation contributions and winning federal grants by accelerating the deployment of clean energy in communities across the state, including the Clean Energy Communities program,[19] Neighbor to Neighbor Energy Challenge, Solarize Connecticut, and Energize Norwich.

Clean Energy Communities

A joint program of the Green Bank and CEEF, the Clean Energy Communities program provides cities and towns across Connecticut with rewards for advancing the clean energy goals of the state.[20] There are three (3) things a city or town must do to become a Clean Energy Community:

1. <u>Make a Commitment</u> – make a municipal pledge to save energy in municipal buildings, voluntarily purchase clean energy, and establish a consumer-friendly marketplace for clean energy (i.e., expedient and low-cost permitting processes).

[19] The U.S. Environmental Protection Agency and U.S. Department of Energy awarded the CCEF and SmartPower with the Green Power Pilot Award for the Connecticut Clean Energy Communities Program in 2006. Such programs were supported by contributions from the Emily Hall Tremaine Foundation, John Merck Fund, Pew Charitable Trusts, Rockefeller Brothers Fund, Surdna Foundation, and others.

[20] http://www.energizect.com/communities/programs/clean-energy-communities

2. Take Action – fulfill the pledge by helping households, businesses and institutions to save energy and install clean energy through various incentive and financing programs.
3. Receive Rewards – earn points that can be redeemed for clean energy systems and grants for energy-saving projects.

There are currently 95 communities in the state – representing 70 percent of the population – that have joined the program.

Solarize

Solarize Connecticut℠ is a program designed to encourage the adoption of residential solar photovoltaic (PV) systems by deploying a coordinated education, marketing and outreach effort, combined with a tiered pricing structure that provides increasing savings to homeowners as more people in a community go solar.[21] The program, in partnership with SmartPower and the John Merck Fund, is designed based on a proven residential aggregation model to bring down the cost of solar PV when more and more residents sign-up for a pre-selected installer offering. The more residents that sign-up to install solar, the more price decreases for everyone who participates – see Table 2.

Table 2. Consumer Benefits from Solarize Connecticut within the Residential Solar Investment Program (as of May 30, 2014)

Performance Metric	Solarize	Non-Solarize	Total
# of Installations	1,117	2,500	3,617
Installed Capacity (kW)	7,980	17,739	25,719
# of Cities and Towns	31	138	169
Installed Cost ($/$kW_{STC}$)	$3,833	$4,662	$4,405
Costs Saved ($)	$6,615,420	-	$6,615,420

As a result of Solarize Connecticut, the "soft costs" of customer acquisition are decreased from $300-$600 per kilowatt installed to between $50 to $100 per kilowatt installed – reducing overall system costs by up to 20 percent or about $6,000 per project. As a result of the program nine of the "Top 10" cities and towns in installed capacity, watts per capita, and penetration rate for residential solar PV participated in the Solarize program. Through a federal grant from the U.S. Department of Energy through the Solar Energy Evolution Diffusion Study (SEEDS), Yale University, New York University, SmartPower and the Green Bank are evaluating the relative performance, cost-effectiveness, scalability, and persistence of the community-based campaign model.[22]

The Solarize Connecticut model is being adapted beyond the geographic boundaries of cities and towns to include affinity groups like large employers (i.e., colleges and universities) and membership-based organizations (i.e., faith and environmental groups) through programs like Solarize U.[23]

Energize

[21] www.solarizect.com
[22] http://solarizect.com/us-department-of-energy-grant-award-validates-success-of-solarize-connecticut-program/
[23] http://solarizect.com/solarize-u-announced/

Based on the success and adaptation of the Solarize Connecticut model for creating significant consumer demand for clean energy, the Comprehensive Energy Strategy goal to convert hundreds of thousands of households from heating oil to natural gas, and Section 52 of Public Act 13-298 "An Act Concerning Implementation of Connecticut's Comprehensive Energy Strategy and Various Revisions to the Energy Statutes," the Energize campaign was developed by the Green Bank, DEEP, SmartPower, and Norwich Public Utilities (NPU) to support heating oil to natural gas conversions and energy efficiency upgrades in Connecticut households.

Energize Norwich, the pilot program, was launched by the Green Bank in partnership with the Town of Norwich, NPU, SmartPower, and two local lenders – Eastern Savings Bank and Core Plus Federal Credit Union. The pilot program established a stretch target of converting 400 households to natural gas in 6 months. As a result of the strong partnership between the parties and a successful outreach campaign, the target was achieved delivering over 400 natural gas conversions in less than 6 months. The pilot program created so much consumer demand for natural gas conversions that NPU had to expand their working crews in order to handle more jobs.

The success of the Energize Norwich pilot will lead to further experimentation with NPU in the Town of Norwich and an expansion into other cities and towns across Connecticut that have expressed interest to the Green Bank in supporting a similar campaign for natural gas conversions and energy efficiency upgrades for their households.

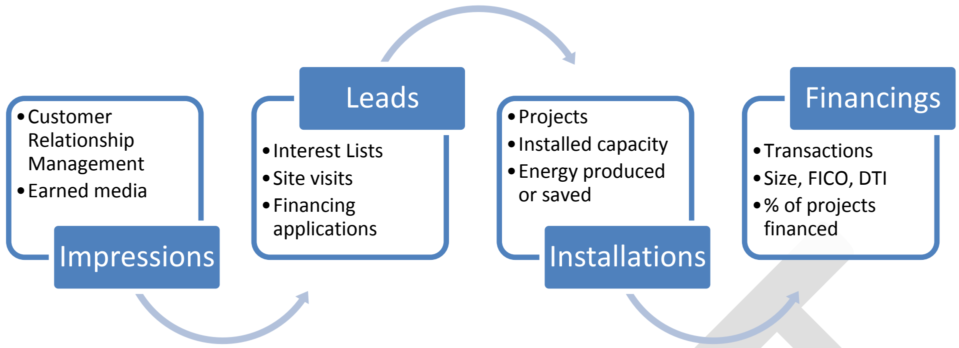
Digital and Online Media

Another important marketing channel is digital and online media. Over the past decade, much has changed with regards to providing consumers with easier, quicker, and more substantive access to information through the internet and things like Google, Facebook, Twitter, and other online information resources. The Green Bank uses these tools to increase the level of awareness and education of consumers to help them take action to receive cleaner, cheaper, and more reliable sources of energy.

Customer Classifications

In order to achieve the ambitious energy policy objectives of Connecticut, it is important to ensure that consumers are not only increasingly becoming more educated and aware of what they can do to improve their situation, but more importantly to also use public incentives and financing from private capital sources to take action and do something. Increasing consumer education and awareness by making strong impressions and generating leads will drive more consumers to install clean energy technologies and use more private capital to finance those projects – see Figure 3.

Figure 3. Customer Classifications from Awareness to Acquisition



- **Impressions** – an impression is the earliest stage of consumer education and awareness. It includes things like earned media, website hits, event attendance and customer relationship management. Impressions are a leading indicator of consumer action.

- **Leads** –an expressed interest by a consumer in wanting to understand the opportunity further. It includes less tangible things like signing an interest list or having a site visit or audit, to more action oriented things like submitting an application for approval on incentives and/or financing.

- **Installations** –a clean energy project that has received approval for an incentive (i.e., Residential Solar Investment Program), in construction, or commissioned. Installations are expressed in terms of the number of consumers reached, renewable energy produced (i.e., kW installed, kWh generated, etc.), and energy saved (i.e., MMBtu's), along with the associated societal benefits that come with those installations (i.e., GHG emission reductions, jobs, etc.).

- **Financings** –a closed loan, lease, PPA, ESA or other financing transaction where the Green Bank is repaid (versus a subsidy), including the number of transactions, size of transactions, credit scores of borrowers and the trends towards increased financing over time.

Customer Acquisition

The Connecticut Green Bank has developed a set of customer acquisition cost metrics for its financing products and marketing initiatives that includes:

- **Acquisition Cost per Install** – determining the costs – or marketing expenditures – per installation or customer acquired. For example, a marketing budget for Solarize of $100,000 that leads to the installation of solar PV systems on 220 homes would have an acquisition cost of $450 per household.

- **Market Share from Financing** – tracking over time the percentage of customers that use financing products from private capital sources with and without the Green Bank support, will help transition the market from grants, rebates, and subsidies and move towards low-cost and long-term private capital. For example, in communities that are implementing Solarize campaigns, there are a greater percentage of households that are using financing than self-funding projects – which will help the market transition away from subsidies and towards private investment in the future.

- **Acquisition Cost per Energy Unit** – determining the acquisition costs per energy unit will help the Green Bank determine how effectively its marketing resources can be allocated to generate clean energy or save energy. For example, if the acquisition costs per install for solar PV on households is $450, and that system is expected to produce 175,000 kWh over its 25-year lifetime, then the acquisition cost per energy unit is $0.0025/kWh.

Over time, the goal is to reduce customer acquisition costs per install, see a gradual increase in the use of financing by consumers over time as subsidies are reduced, and lowering the acquisition cost per unit of clean energy produced or energy saved – see Table 3.

Table 3. Customer Acquisition Costs – Example for Community-Based Campaigns

Customer Acquisition Costs	Acquisition Cost per Install	Market Share from Financing Trends				Acquisition Cost per Energy Unit
		Q1	Q2	Q3	Q4	
Solarize Connecticut	$450	35%	44%	36%	8%	$0.0025/kWh or $0.75/MMBtu
Energize Norwich	$225	13%	32%	24%	26%	$1.16/MMBtu (boiler) $0.71/MMBtu (furnace)

Statutory and Infrastructure Sector

The Statutory and Infrastructure Sector is focused on implementing statutorily mandated programs[24] as well as infrastructure projects[25] that provide cheaper, cleaner and more reliable sources of energy while creating jobs and supporting local economic development.

Comprehensive Energy Strategy and Integrated Resources Plan

The Statutory and Infrastructure Sector programs support the implementation of the CES and IRP. Specifically, the deployment of clean energy supports many of the strategy recommendations in Chapter 2 (i.e., Industry Sector Strategy) and Chapter 3 (i.e., Electricity Sector Strategy) of the CES that better enable Connecticut residents and businesses to take advantage of the opportunities outlined, including, but not limited to:

- Expanding access to and realizing the full potential of combined heat and power;
- Working with municipalities to expand programs and policies that drive down the cost of in-state renewable resources;
- Developing and deploying micro grids to support critical services and ensure public safety during electricity outage crises; and
- Expanding virtual net metering opportunities to promote deployment of large-scale renewable systems.

Programs like the U.S. Department of Energy SunShot Initiative Rooftop Solar Challenge and the Anaerobic Digester and Combined Heat and Power Pilot Programs are but a few examples where the Green Bank's Statutory and Infrastructure Sector is supporting the implementation of the CES.

[Section on the IRP…]

The programs of the Statutory and infrastructure Sector are intended to support the implementation of the strategies and recommendations outlined in the CES and IRP.

Conservation and Load Management Plan

The Statutory and Infrastructure Sector programs support the implementation of programs in the C&LM Plan. Specifically, the deployment of solar photovoltaic (PV) systems through the Residential Solar Investment Program (RSIP) supports several of the programs in Chapter 3 (i.e., Residential Programs) of the C&LM Plan, including:

- **Home Energy Solutions (HES)** – every residential solar PV project is required to undertake a HES assessment or an equivalent energy audit.

[24] Examples of statutorily mandated programs would be, but are not limited to, Sections 103 (i.e., anaerobic digester and combined heat and power pilot programs) and Section 106 (residential solar investment program) of Public Act 11-80.

[25] Examples of infrastructure projects include Section 26 of Public Act 05-01 (i.e., Project 100) which resulted in the Dominion Bridgeport Fuel Cell Park or Section 127 of Public Act 11-80 (i.e., 30 MW of grid tied renewable energy projects sited in Connecticut) which resulted in Colebrook Wind.

- **Residential Behavior Program** – every residential solar PV installation includes a real-time Wi-Fi or cellular enabled monitoring system that measures the amount of energy produced from the system. On average, these systems produce nearly 70% of the energy consumption needs of the household. The data collected from these systems is made available online and serves as a way for the homeowner to adjust their behavior in order to reduce their energy consumption to equate to the level of clean energy production.

The RSIP of the Statutory and Infrastructure Sector supports the implementation of several of the programs within the C&LM Plan intended to reduce energy consumption through weatherization and behavior-based strategies. As the current installed costs of residential solar PV continue to decline below $4.00 per watt and the accompanying incentives from the Green Bank through the RSIP drop below $1.00 per watt as the market transitions towards financing, clean energy will become increasingly cost-effective at [Add Cadmus cost-effective number here], delivering quicker paybacks and greater returns that can be reinvested in deeper household energy efficiency measures.

TAM and SAM

For the Statutory and Infrastructure Sector, there are several Total Addressable Market (TAM) and Serviceable Addressable Market (SAM) scenarios with respect to residential solar PV, anaerobic digesters, and combined heat and power.

Residential Solar PV

Per Public Act 11-80, the Green Bank is to structure and implement a residential solar investment program which shall result in a minimum of 30 megawatts of new residential solar photovoltaic installations located in Connecticut on or before December 31, 2022. In order to assess the market potential for residential solar PV to determine if the goal established by the legislature is achievable, the Green Bank worked with Geostellar[26] to use big-data geomatics to determine the technical and economic viability (i.e., TAM) and market penetration (i.e., SAM) in Connecticut (see Tables 4 and 5).

Table 4. Residential Solar PV Market in Connecticut and Penetration – By Customers

Market Definition	Market Size (# of Customers)	Current Penetration (2013)
All of Connecticut	1,609,735	0.21%
Residential Sector	1,454,651	0.24%
Technically Viable Rooftops	659,312	0.52%
Economically Viable Rooftops	506,714	0.68%

Table 5. Residential Solar PV Market in Connecticut and Penetration – By Generation

Market Definition	Market Size (MWh)	Current Penetration (2013)
All of Connecticut	29,492,338	0.09%

[26] www.geostellar.com

Residential Sector	12,757,633	0.21%
Technically Viable Rooftops	6,559,940	0.41%
Economically Viable Rooftops	3,915,000	0.69%

Given the existing federal and state subsidies, according to Geostellar, more than 500,000 residential rooftops can carry solar panels that produce a net present value gain for the residences taking solar electricity off their own roofs. The potential market represents more than 40% of all buildings in the state – and about 120 times the legislative target of 30 MW. At saturation, the total investment would be about $12 billion and create about 70,000 to 100,000 job years within the state. Geostellar has also estimated that the size of the market will grow to 650,000 rooftops, as solar costs decline. These rooftops would generate 6,599 GWh per year, equivalent to approximately 22% of total electricity consumption in the state, satisfying the state's Class I RPS.

Anaerobic Digesters

Per Public Act 11-80, the Green Bank is to set aside $2 million a year to pilot a 3-year anaerobic digester (AD) program to provide grant, loan, or power purchase agreement support to no more than five (5) projects. The three common types of AD projects that can readily be deployed in the State are Food Waste, Waste Water Treatment Facility (WWTF) sludge and Animal Waste (Farm). Because of the availability and economics of processing feedstock (i.e., food waste, sludge and animal waste), these projects take more time than other energy projects to develop.

The available food waste market assessment was based on information taken from the DEEP study (September 2001)[27] identifying all Connecticut large food waste generators. Large food waste generators are classified as any business or institution that generates greater than 104 tons of organic food waste per year. Per the new recycling legislation (Public Act 11-217) these large food waste generator are required to bring their waste to a recycling facility within a 20-mile radius of the point of origin. The study estimated the total food generation for large food waste generators within Connecticut to be in excess of 320,000 ton/yr. If all the available food waste from the large generators was made available for waste to energy plants, it could support up to 9.6 MW of generation capacity. In the future we will look to expand the TAM, such as small to medium sized generators, less than 104 tons per year, as well as individual household organic food waste recycling.

For WWTF, the TAM and SAM are limited to the number of facilities in the State. A WWTF study assessment done by Fuss & O'Neill (F&O) for the Green Bank[28] identified a total of 84 WWTF throughout Connecticut. The total available market capacity of all the facilities is 551-million gallons of sludge per day (MGD). However, the serviceable market, based on F&O's assessment of what criteria WWTF use as their guide for acceptable paybacks for capital investments (between 5 and 10 years), identifies facilities with greater than 5 MGD as required to achieve these paybacks. This leaves the serviceable market size at 102 MGD which accounts for less than 20 of the 84 total WWTF. The market size in the table reflects the serviceable market size based on installed generation capacity of up to 2.7 MW.

[27] Can we include a reference to this?
[28] Can we include an actual reference for the study?

Data used to determine the potential market size for animal waste, primarily cow manure, was estimated using information provided by the agriculture department at the University of Connecticut. This TAM is directly correlated to the dairy cow population in Connecticut, which currently is estimated to be around 20,000. The market size below is a rough order of magnitude based on information gathered from several recent studies and case studies for farm AD applications. From these studies it is estimated that the manure from 1,000 cows can provide enough methane to support a generator capacity of 250 kW. Determining the serviceable available market is a bit tougher because 60% of Connecticut dairy farms are either 100 cows or less. In order for any of these farms to make an AD installation feasible it would require partnering and aggregating feedstock with other local farmers. There are only a handful of farms that are large enough, 800 plus cows, to even consider a small scale AD project without supplementing the feedstock with organic food waste.

Both food waste and waste sludge are dependent on the number of feedstock generators (see Table 6). The table below shows a preliminary estimate of the market by annual electricity generation for projects using the feedstock.

Table 6. Anaerobic Digester Market in Connecticut for Food Waste, Waste Water Treatment Sludge, and Animal Waste

Market Definition	Market Capacity (MW)	Market Size (MWh)
Food Waste	9.6	75,923
WWTF Sludge	2.7	21,318
Animal Waste (Farm)	TBD	35,040
Total	**12.3**	**132,281**

Micro Grid Combined Heat and Power

Per Public Act 11-80, the Green Bank is to set aside $2 million a year to pilot a 3-year combined heat and power (CHP) program to provide grant, loan, or power purchase agreement support to no more than fifty megawatts of projects. Given that Public Act 11-80 established two CHP programs, a pilot program administered by the Green Bank and a proscriptive program managed by DEEP, the Green Bank's CHP pilot will concentrate on funding micro grid projects that can utilize a CHP installation. As funding for micro grid projects under Connecticut General Statues, Section 16-243y, as modified by Public Act 13-298, Section 34, does not include incentive for the generation portion of a micro grid project, the Green Bank can make better use of its CHP Pilot Program funding by supporting critical facility micro grid projects. Because this change in the use of CHP Pilot Program funding was recently decided, Staff has yet to determine the TAM and SAM for the micro grid CHP market.

The Green Bank currently has approximately $25 million of CHP projects in the pipeline. The average installed cost of these projects fall in the range of $2,500 to $4,000 per kilowatt. If all the projects get built it would add 8 MW of additional installed clean energy capacity into Connecticut.

Product or Program Overview

The Statutory and Infrastructure Sector has established the following program targets for FY 2015 (see Table 7).

Table 7. Statutory and Infrastructure Sector Fiscal Year 2015 Targets

Program	Projects	Capital Deployed	Clean Energy Deployed (MW)	Clean Energy Generated and Saved (MMBtu)
RSIP	3,200	$92,160,000	23.0	91,557
AD	5	$90,000,000	6.8	300,849
CHP	12	$25,000,000	8.0	383,515
Total	**3,017**	**$204,600,000**	**37.2**	**775,921**

Meeting these targets would generate 137,863 MWh of clean energy (or 470,528 MMBtu's) and save 775,921 MMBtus annually and 2,282,548 MWh of clean energy (or 2,425,316 MMBtu's) and save 12,371,234 MMBtus over the life of the projects.

Residential Solar Investment Program

The Residential Solar Investment Program (RSIP) requires that a minimum of 30 MW of new residential solar PV be installed in Connecticut on or before December 31, 2022, at a reasonable payback to the customer all the while developing a sustainable market for contractors. The RSIP provides to residential customers, via solar PV contractors, direct financial incentives in the form of expected performance-based buy-down incentives (EPBB) and performance-based incentives (PBI) for the purchase and/or lease of qualifying residential PV systems.

Benchmarks

Below are some of the Benchmarks to be used to compare the Residential Solar Investment Program with other states in the region.

Table 8. Benchmark of Residential Solar PV Program Incentives

Benchmarks	CT	MA	NJ	NY
Electric Retail Rate ($/kWh)				
Installed Cost ($/W)				
Incentive ($/W)[29]				
Net Cost to Customer				
Payback				
Average Size System (kW)				
Energy Efficiency Requirement				

Key Performance Indicators

Below are the Key Performance Indicators that will be used to measure the success of the RSIP for FY 2015 against previous fiscal years.

- Number of projects submitted, approved, and completed
- Total MW (name plate)

[29] Includes present value of all state incentives (i.e., SRECs, state tax credit, etc.)

- First year and lifetime generation (MWh)
- Installed cost ($/W)
- Incentive ($/W) and percent of incentive as installed cost
- ITC ($/W) and percent of ITC as installed cost
- Ratio of ITC to incentive
- Net cost to the customer ($/W)
- Aggregate levelized cost of energy to customer ($/kWh)
- Aggregate payback to customer
- Aggregate internal rate of return to customer

Anaerobic Digester and Combine Heat and Power Pilot Program

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 can be used as grants, power purchase agreements or loans. There are 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 to not exceed 5 MW in size. Both pilot programs support projects at no more than $450 per kW on a grant basis. The pilots commenced at the end of FY 2012 and are to be evaluated with a report submitted to the Energy and Technology Committee prior to January 1, 2015.

To date, four AD projects have been approved or are seeking approval by the staff from the Green Bank Board of Directors for a total of 5.75 MW and $14 million in sub-debt, and three CHP projects totaling 3.7 MW and about $1 million in grants have been commissioned with an open solicitation to provide loan or PPA financing for additional projects.

Benchmarks

AD using food waste and other organics is relatively new to the New England region. The Massachusetts Clean Energy Center (MassCEC) has recently awarded $2.3 million in FY 2013 for Organic-to-Energy projects, studies, and services relating to the development of new AD facilities in an effort to divert food waste from its landfills and incinerator facilities. Of the total amount awarded, $1.75 million was awarded in grants to develop 5 new AD facilities throughout Massachusetts and remaining funds were awarded to 12 public entities and 1 non-profit for studies and other services leading up to the development of new AD facilities.

CHP deployment is common in Connecticut and throughout the New England region. Through the MassSaves program in Massachusetts, incentives for CHP include payments for feasibility studies, procurement, and installation – projects less than 150 kW receive $750 per kW up to $112,000; projects greater than 150 kW and less than 2 MW receive a payment amount that is determined by the utility administrator and can be approximately 50 percent of the installed cost of a small to medium sized project; and projects greater than 2 MW receive incentives commensurate with the availability of funds.

Key Performance Indicators

Below are the Key Performance Indicators that will be used to measure the success of the AD and CHP pilot programs for FY 2015.

- Number of projects submitted, approved and completed
- Total MW (name plate)
- First year and lifetime clean energy generation
- Amount of food waste diverted from landfills and incinerators

- Installed cost ($/kW)
- Loan to private capital ratio
- MWh's generated and/or saved per $1 of ratepayer funds at risk

Objective Function

The objective functions for the average sized project underneath each program are computed below (see Table 9).

Table 9. Objective Function for a Typical Project Under the Statutory and Infrastructure Sector Programs

Program	Lifetime Energy Generated and/or Saved (MWh's / MMBtu)	Dollars of Ratepayer Funds at Risk ($'s)	Objective Function (kWh's Generated and/or MMBtu Saved per $1 of Ratepayer Funds at Risk)
RSIP			
▪ EPBB	187.8 / 641	3,838	48.9 / 0.1669
▪ PBI	187.8 / 641	4,949	37.9 / 0.1295
AD	168,192 / 1,068,103	3,384,000	49.70 / 0.316
CHP	295,650 / 1,781,028	1,300,000	227.42 / 1.37

Other Areas of Strategic Importance

U.S. Department of Energy SunShot Initiative Rooftop Solar Challenge

The U.S. Department of Energy (DOE) SunShot Initiative goal is to achieve cost reductions for solar PV systems in the United States of 75% by 2020 to enable solar electricity to be cost-competitive with other forms of energy without subsidies. As overall solar PV costs continue to decline, and as subsidies are reduced and eliminated, reduction of soft costs will continue to be critical to improvement of solar PV economics and scaling of the market.

The Green Bank has applied for and won two Rooftop Solar Challenge funding awards totaling almost $850,000. In FY 2013, the Bank led a collaborative Connecticut Rooftop Solar Challenge Round I team to analyze and document soft cost reduction opportunities in Connecticut, resulting in a Final Project Report and development of recommendations to improve permitting, planning and zoning, and interconnection processes for solar PV. [30] In FY 2014, the Green Bank partnered with four other New England states, under the leadership of the Clean Energy States Alliance (CESA), to continue soft-cost reduction efforts under the Rooftop Solar Challenge II. In this second round of the program, the Green Bank has finished development and production of a Connecticut Rooftop Solar PV Permitting Guide[31] which completes and packages permitting recommendations and tools developed or begun in Round I. FY 2015 activities will focus on outreach to municipalities, solar PV installers and other stakeholders to implement the Permitting Guide and achieve soft cost reductions.

The Green Bank's Solarize program has already contributed to soft cost reductions of about 20% through customer acquisition. Efforts to streamline permitting could result in an additional 5-10% or

[30] Final Project Report is available for download at www.energizect.com/sunrisene.
[31] See the Permitting Guide tab at www.energizect.com/sunrisene.

more in soft cost reductions over the next couple fiscal years, and significantly greater in the long term, in addition to removing or reducing market barriers associated with permitting and planning and zoning processes and rules. Interconnection improvements implemented by Connecticut's utilities would further add to soft cost reductions.

Micro Grid Initiative

The Green Bank plans to develop micro grid specific financing structures in FY 2015 and 2016, centered around, but not limited to, DEEP's activities. DEEP has released two rounds of RFPs to source micro grid projects, the second of which is due August 2014. Winners of the RFP will receive DEEP grants to cover the cost of micro grid interconnection. The Green Bank has partnered with DEEP to assist winners in both rounds access financing and transaction structuring for the generating assets of the micro grid. The Green Bank will leverage its current programs, including C-PACE, Lead by Example, and Anaerobic Digestion and CHP pilots to bring low-cost capital to these micro grid projects. At the end of the pilot period, the existing CHP program will transition into the Green Bank's micro grid support efforts. The Green Bank has also set aside $5 million to support micro grid projects not falling into one of these categories, which will be leveraged with private capital.

Alternative Fuel Vehicle Infrastructure

Alternative Fuel Vehicles are included in the definition of "clean energy" in Public Act 11-80. Specifically, vehicles powered by "natural gas, electricity, hydrogen or propane"[32] , all represent savings of between 20-60%[33] over typical gas-powered vehicles. The Green Bank is planning to release a RFP for alternative fuel vehicle pilot programs in FY 2015 to source innovative structures and paths to market for alternative fuel vehicle infrastructure financing. Additionally, the Green Bank plans to conduct a community-based marketing campaign pilot around residential electric vehicle purchasing in FY 2015.

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32 http://www.cga.ct.gov/2014/FC/2014HB-05117-R000335-FC.htm

33 http://olgpropane.com/alternative_fuel_vehicle_conversion.html and http://www.greenfleetmagazine.com/natural-gas

Residential Sector

The Residential Sector is focused on deployment of residential financial products for renewable energy, natural gas conversions, and energy efficiency projects, as well as programs and platforms that support the scaled growth of those instruments in order to provide cheaper, cleaner and more reliable sources of energy while creating jobs and supporting local economic development.

Comprehensive Energy Strategy and Integrated Resources Plan

The Residential Sector programs support the implementation of the CES and IRP. Specifically, they support the implementation of the energy efficiency, electricity, and natural gas strategy recommendations in Chapters 1, 3 and 4 of the CES.

As identified in the CES, buildings constitute 58% of the state's energy use and 87% of its electricity, with residential buildings as a whole consuming 70% more than their commercial counterparts. Due to the lack of significant residential home construction in the state, the existing opportunity for energy improvements in the residential sector is in existing housing stock, 50% of which are heated by oil, and only one-third by natural gas. Further, while 74,000 state residents have participated in the HES program through 2013 (less than 10% of eligible customers statewide), less than 10% of those who complete the HES audit go on to install deeper energy savings measures, curtailing the program's gross impact to date in the absence of a strong call to action mobilized by low-cost financing.

DEEP's 2012 Integrated Resources Plan calls for the state's electricity sector to mitigate the impact of expected rate increases beginning in 2017 and the potential for both summer and winter peaks. However, this call fails to address cost efficiency fuel savings for natural gas or fuel oil. Through 2022, the State would need $327 million dollars per year to achieve mandated cost effective savings across all fuel types.

Conservation and Load Management Plan

The 2013-2015 Conservation and Loan Management Plan proposes to transform the HES program to a true market-based program with a strong emphasis on leveraging private investment utilizing low-cost financing options, focusing on deep energy retrofits, and enhancing the sales and marketing of the monetary value of those energy savings. As described in the C&LM Plan, "an increasingly important component of the Department's strategy to meet the state's energy efficiency goals is using limited ratepayer and public funds to leverage private capital investment in energy efficiency." The Plan echoes the CES too noting that "the development of these financing programs is critical to moderate ratepayer costs of energy efficiency programs over time," by scaling private capital investment in clean energy, lowering the cost of borrowing, doing more with fewer ratepayer resources.

The Residential Sector team has established ongoing collaboration with the EEB and utility staff, including the following:

- Monthly residential financing meetings with DEEP, EEB Chair, EEB consultants, electric and gas utility staff – the primary forum for aligning products, marketing, and outreach across the various residential financing options

- Quarterly reports on the Green Bank Residential Sector progress to the Residential Committee of the EEB
- Joint development of an on-bill repayment program through collaboration with the Green Bank/EEB On-Bill Repayment Working Group and the Utility Working Group.

TAM and SAM

Solar PV

For Solar, the TAM is calculated to be the total number of residences with rooftops viable for siting a solar array. Using a weighted average analysis of county data by Geostellar, we calculate this value as 506,714 residences (see Table 10).

Table 10. Residential Solar PV TAM in Connecticut

County	# of Residential Rooftop Sites	% Viable	# Viable Residential Rooftop Sites
Fairfield	107,883	51%	54,718
Hartford	194,144	90%	175,273
Litchfield	52,034	85%	44,468
Middlesex	34,433	87%	29,970
New Haven	161,738	85%	137,316
New London	61,093	63%	28,684
Tolland	26,423	54%	14,316
Windham	21,564	56%	11,968
Total	**659,312**		**506,714**

Approximately 83% of Connecticut's residents meet the minimum credit requirements in order to qualify for Green Bank financing. Based on data from the six-month period from Nov. 1st, 2013 through April 30th, 2014 during which the Green Bank's Residential financing products were available, approximately 18.8% of RSIP projects during that period utilized Green Bank financing, yielding a net total addressable market for Green Bank PV financings of 78,981. Since the launch of the Green Bank's residential financing products in FY 2014 for PV systems (i.e., CT Solar Lease, CT Solar Loan, and Smart-E), a total of 398 systems have been financed, yielding a share of the total addressable market of 0.50% (see Table 11).

Table 11. Residential Solar PV TAM and SAM for the Green Bank Financing Products in Connecticut

Total # Viable Residential Rooftops		506,714
Fraction that Qualify for Credit Requirements	83.0%	420,572
Fraction Utilizing Green Bank Financing – TAM	18.8%	78,981
Total # of the Green Bank Financings (as of 05/16/14)		398
Share of Addressable Market – SAM		0.50%

Natural Gas Conversions

The CES characterizes the state's market for natural gas conversions, dividing prospective residential end-users into two classifications, Segment A and B. Prospective consumers in Segment A are comprised of residential – low use and residential – on main, while Segment B prospective consumers are comprised of residential – off main (see Table 12).

Table 12. Estimate of the Residential Natural Gas Conversion Market in Connecticut

Segment	Type	Prospective Consumers
A	Residential, Low Use	39,000
A	Residential, On Main	161,000
B	Residential, Off Main	51,500
Total		**251,500**

Given the present payback economics, the TAM is limited to Segment A, 200,000 residences in total. Based on Smart-E project data through May 7th, Green Bank financing has resulted in 28 natural gas conversions, or .014% of the addressable market. The Green Bank's Smart-E financing for natural gas conversions currently competes against the gas companies' Energize CT Heating Loan product. DEEP's stated policy is that ratepayer-subsidized products should be positioned such that they do not undermine products backed by private capital. This is an ongoing area of focus for DEEP, the Green Bank, the utilities and EEB.

Deeper Energy Efficiency

The CES and the C&LM Plan both call out the need for deeper energy efficiency measures to be undertaken in Connecticut homes. The Green Bank sees an opportunity to support high efficiency heating, cooling and hot water equipment upgrades. Additionally, there is a growing focus on whole home performance as an industry in the state. There are 1.4 million residential properties in Connecticut, approximately 82% of which are low-rise single family or multi-unit (1-4), 1,148,000 in total. The Green Bank estimates that approximately 83% of homeowners are credit eligible to qualify for Green Bank energy efficiency financing. This yields a total addressable market of 952,840 credit eligible households. While industry estimates vary widely, and by type of equipment, it is estimated that on average 1% of HVAC equipment is replaced each year nationally – this includes lower efficiency models. However, using this method, the Green Bank estimates a total addressable market of 9,530 projects per year.

Based on Smart-E project data through May 7th, the Green Bank has financed 90 projects incorporating high efficiency heating, cooling or hot water equipment in its first year. Therefore, the Green Bank's share of the total addressable market is 0.0001%, and 0.94% of the current market. The Green Bank's Smart-E financing for deeper residential energy efficiency projects currently competes against the Connecticut Housing Investment Fund's Residential Energy Efficiency and Energy Conservation Loan financing programs, a ratepayer-subsidized financing product. DEEP's stated policy is that ratepayer-subsidized products should be positioned such that they do not undermine products backed by private capital. This is an ongoing area of focus for DEEP, the Green Bank, the utilities and EEB.

Product or Program Overview

The Residential Sector has established the following program targets for FY 2015 (see Table 13).

Table 13. Residential Sector Fiscal Year 2015 Targets

Program	Projects	Capital Deployed	Clean Energy Deployed (MW)	Clean Energy Generated and Saved (MMBtu)
Smart-E	300	$4,050,000	0.72	5,518
CT Solar Lease	390	$14,625,000	2.81	10,919
CT Solar Loan	455	$9,327,500	3.28	12,745
Cozy Home Loan	50	$500,000		680
Total	**1,195**	**$28,502,500**	**6.81**	**29,861**

Meeting these targets would generate 7,342 MWh of clean energy (or [Y] MMBtu's) and save 3,400 MMBtus annually and 182,524 MWh of clean energy (or [Y] MMBtu's) and save 68,000 MMBtus over the life of the projects.

Energize CT Smart-E Loan

In partnership with Connecticut's community banks and credit unions, household customers are offered low-interest (between 4.49% to 6.99%) and long-term (5 to 12 year terms) financing for a range of credit quality consumers (no less than 640 FICO) through unsecured loans backed by a second loan loss reserve from the Green Bank. Financing is available for all measures that the CES supports (i.e. energy efficiency, renewable energy, natural gas conversions, alternative fuel vehicle infrastructure, etc.) as well as up to 20% of a loan can be used for healthy home measures (i.e. asbestos remediation, lead abatement, etc.) an other related improvements. The Smart-E Loan program uses $2.8 million of repurposed ARRA-SEP funds for a second loan loss reserve and interest rate buy-downs to attract nearly $30 million of private capital.

Cozy Home Loan

The Cozy Home Loan program is a credit enhancement program that uses $410,000 of repurposed ARRA-SEP funds as a loan loss reserve and interest rate buy down to attract $2.5 million of private capital from Community Development Financial Institutions (i.e. Opportunity Finance Network). The product, administered by the Housing Development Fund, provides 10-year loans for technologies that are consistent with the goals of the Comprehensive Energy Strategy to households below 80% of area median income in the Fairfield, Litchfield, and New Haven counties.

Energize CT Solar Loan

In partnership with a crowd-sourced fund (i.e. Mosaic) and a servicer (i.e. Sungage Financial), a 15-year solar loan product is offered to a range of credit quality consumers (no less than 680 FICO) interested in solar PV. A specialty product designed for solar PV, interest rates are affordable at 6.49% and the CT Solar Loan may re-amortize after the ITC is received by the borrower to ensure the positive cash flow of energy savings from solar PV exceeding the debt service of the loan.

Energize CT Solar Lease

In partnership with state and regional banks (i.e. First Niagara Bank, Webster Bank, Liberty Bank, and Peoples United Bank), a tax equity investor (i.e. US Bank), an insurer (i.e. Assurant), and a servicer (i.e.

AFC First Financial), a 20-year solar lease product is offered to a range of credit quality consumers (no less than 640 FICO) interested in solar PV and a 15-year lease product is offered for solar thermal hot water. The solar PV side of the CT Solar Lease, provides electricity at a rate that is typically 10-20% lower than the standard offer and has both fixed and variable rates.

Benchmarks

The Green Bank will benchmark residential financing program progress in the following way:

- Number of projects financed
- Level of energy savings/clean energy production achieved
- Ratio of public to private capital deployed

Key Performance Indicators

Below are the Key Performance Indicators that will be used to measure the success of the residential financing programs for FY 2015.

- Number of applications received
- Application approval rate
- Average FICO and DTI
- Average loan size, term and rate
- Delinquency and default rate
- Average energy savings/production per project
- Average system size (solar)
- Percent of projects with multiple measures (Smart-E)
- Number of eligible contractors
- Contractor engagement – percent of eligible contractors bringing in applications/repeat applications
- RSIP market penetration;
- Ratio of public to private capital deployed
- Successful innovation in marketing and outreach (ex: performance-based customer acquisition)

Objective Function

The objective functions for the average sized project underneath each program are computed below.

Table 14. Objective Function for the Residential Sector Programs

Program	Lifetime Energy Generated and/or Saved (MWh's / MMBtu)	Dollars of Ratepayer Funds at Risk ($'s)	Objective Function (kWh's Generated and/or MMBtu Saved per $1 of Ratepayer Funds at Risk)
Smart-E Loan – EE			
Smart-E Loan – Solar PV	187.8 / 641	$5,938	31.6 / 0.1079
Smart-E Loan – EEPV			
Cozy Home Loan			

CT Solar Loan	187.8 / 641	$11,118	16.9 / 0.0576
CT Solar Lease	187.8 / 641	$11,036	17.0 / 0.0581

Other Areas of Strategic Importance

On-Bill Repayment Program

The Smart-E Loan will be the first loan product available under a new on-bill repayment program being developed jointly with the EEB and electric utilities (in June 2013, the State of Connecticut General Assembly authorized On-Bill Repayment ("OBR") in Section 58 of Public Act 13-298, codified in Section 16a-40m of the Connecticut General Statutes). The OBR program is being developed as an open market platform that will ultimately allow multiple financing products access to repayment through the utility bill. The legislation authorizes transferability of the repayment obligation and disconnection of service (with applicable consumer protections) for non-payment of obligation. The OBR program is being developed in phases.

Solar and Energy Efficiency Market Integration

The Green Bank will be piloting a variety of strategies to encourage consumers to combine solar energy installations with energy efficiency. This will include special offers such as interest rate buy-downs for qualifying projects that combine solar and efficiency; contractor matchmaking events to encourage partnerships between solar installers and efficiency contractors; and a variety of pilot marketing strategies.

Institutional Sector

The Institutional Sector is focused on the development and deployment of programs that support investments in energy efficiency and renewable energy projects at state buildings as well as in municipal, university, school and hospital (MUSH) settings in order to provide cheaper, cleaner and more reliable sources of energy while creating jobs and supporting local economic development.

This sector is particularly limited in its ability to generate revenue to pay for energy projects, and often severely credit constrained which makes borrowing difficult. The Green Bank is focused on the development of low- or no-upfront cost financing mechanisms that use energy savings to fully finance investments in comprehensive retrofits that can address the aging infrastructure issues common to the MUSH market.

Comprehensive Energy Strategy and Integrated Resources Plan

"Limited government resources" is used throughout the CES, often in the context of the need to leverage private capital to increase the total flow of funds into energy efficiency and renewable power projects. It also applies to state, municipal, and other institutional budgets, which are severely limited and further threatened by volatile and rising energy prices. Meanwhile, much of the State's "critical facility" and "core service" infrastructure falls under the Institutional heading (including hospitals, prisons, sewage treatment plants, police and fire departments, and other buildings that can be used as gathering places by a community in a crisis), raising the importance of investments in reliability. The CES and IRP identify programs, policies, and strategies not only for lowering utility bills and improving the environmental performance of Institutional Sector facilities, but also for increasing their resilience and reliability for Connecticut's citizens.

The CES seeks to deepen efficiency investments beyond simple measures such as changing out light bulbs to those that address heating and ventilation systems, insulation, and other deeper efficiency improvements. For state and municipal buildings, the CES describes Connecticut's Lead by Example program, which was created in 2011 to fund energy efficiency improvements in state and local government buildings through a standardized Energy Savings Performance Contracting (ESPC) process that enables state agencies and municipalities to implement comprehensive energy retrofits that are paid for by guaranteed future energy savings and can be structured to require no upfront capital investment. The first municipal and state participants in the performance contracting program launched projects in 2013.

The IRP focuses primarily on resource strategies that can be implemented by the State to make electricity cheaper, cleaner, and more reliable. This includes a sustained commitment to energy efficiency, and an assumed expansion in the availability of financing. The Green Bank will play an important role in developing innovative finance structures that enable credit-constrained Institutional customers to borrow.

Conservation and Load Management Plan

The increased funding for the conservation and load management programs approved by DEEP in October 2013 was designed to complement numerous other initiatives the State has undertaken to reduce energy costs in Connecticut. In the Institutional Sector, these include the development of the standardized Energy Savings Performance Contracting (ESPC) process within the Lead by Example program, third party financing programs for hospitals and acute care facilities, and education, outreach, and assistance with energy benchmarking for Connecticut schools and municipalities. In the C&LM plan, several initiatives were outlined to assist that Sector in contributing their share of the State's 20% by 2018 energy reduction goal. Increased funding in the C&LM plan included budget for a Program Manager for the Lead by Example program to accelerate the development of ESPC projects in state agencies and municipalities, enhanced training and consultation for the LBE and ESPC programs, as well as increased program budgets for a number of applicable C&I programs (Institutional Sector customers are generally eligible to participate in C&I Program offerings as applicable).

Key areas for collaboration between CEEF and the Green Bank include:

- The Lead by Example program, in which CEEF incentives for comprehensive retrofits encourage deeper efficiency measures, and the Green Bank is assisting in developing financing mechanisms or providing guidance to customers on financing options.

- Performance contracting, which is to be further supported in the C&LM plan both by increased benchmarking as an assessment tool to evaluate baseline energy use for ESPC projects, and by the provision of energy consumption data to support strategic energy management practices among municipalities and schools.

- The design of programs (e.g., positioning rebates or financing products to encourage bundling of deeper measures), and the delivery of programs (e.g. partnerships with state and local government) including the development of collateral and targeted messages, which can be supported by the increased C&LM marketing budget.

TAM and SAM

Estimates of the Total Addressable Market (TAM) are based on known and estimated data on the number of facilities, square footage, and estimated energy expenditures. Estimates of the Serviceable Available Market (SAM) are primarily based on market penetration studies for the energy savings performance contracting industry, as a proxy for comprehensive retrofits that would be undertaken under any financing mechanism that uses energy savings to finance investments in upgraded equipment. Market potential in terms of energy and dollars are based on percentage energy savings from comprehensive retrofits applied to estimates of energy use intensity per square foot.

To calculate the Institutional sector TAM, we use data that exists on various unit measures of the MUSH market segments, including number of state buildings, population, and lists of facilities from trade associations for private colleges and schools and hospitals; however, robust square footage data varies is not widely available. Square footage of state buildings was quantified by OPM in the most recent State Building Inventory (March 2014). Square footage estimates for municipalities are based on average per capita square footage for some known Connecticut towns and cities, extrapolated to the entire Connecticut population. While preliminary, these estimates appear to be in line with available estimates of Level of Service Standards for municipalities in other parts of the country. Estimates for square footage of hospital facilities are based on national estimates of square footage per available hospital beds. Estimates for private colleges and schools are based on average building square footage per student for some known schools in Connecticut, extrapolated to the total number of schools. This data will be refined over time (see Table .

The Green Bank's estimates of the total number of facilities and square footage of buildings in Connecticut's Institutional sector are presented in the table below. Overall, the sector is estimated to include about 300 million square feet, and at an estimated energy cost of about $3/square foot where exact energy expenditures are unavailable, the MUSH sector in Connecticut is estimated to currently spend over $900 million per year on energy.

Table 15. Institutional Sector TAM in Connecticut

Market Segment	#	Units	Million ft^2	Estimated Annual Energy Use (million MMBtu)	Estimated Annual Energy Expenditures (million $)
State Facilities	3,200	Buildings	60.5	9	$200
UCONN and State Colleges	23	Campuses	29.5	4.4	$88.5
Municipal Facilities	169	Towns	104.5	15.5	$314
Private K-12 Schools	97	Schools	30	4.5	$90
Private Colleges and Universities	47	Schools	82	12.3	$246.5
Hospitals	37	Hospitals	22	5	$66.5
Total	3,550		300	46.6	$917

Lawrence Berkeley National Laboratory (September 2013) issued a report on the current size and remaining market potential of the U.S. energy service company (ESCO) industry. Data on market penetration was obtained from surveys of ESCO companies. Median values of market penetration (as a percentage of total floor area) that were reported for the Northeast are presented below. This data supports the Green Bank's assessment that traditional performance contracting, with associated debt commitments for bond or lease financing commonly used, has been most successful to the segments of the MUSH sector with good credit (i.e. state and local facilities including K-12 schools). The development of an off-credit financing structure, described in the program section below, will be necessary to unlock the market potential of those portions of the MUSH sector that are more credit constrained (i.e. hospitals, private colleges/universities and private schools).

Market Segment	Median Estimate of ESCO Market Penetration Since 2003 (% of total market floor area)
K-12 Schools	45%
State and Local	39%
Universities and Colleges	25%
Health and Hospitals	10%

For purposes of estimating SAM, we assume that K-12 schools represent mostly public schools which were included in the TAM under the municipal facilities market segment. Further, we know that the standardized ESPC program in Connecticut was only recently developed, and that state facilities in Connecticut, including public colleges and universities, have not used performance contracting since 2003. Therefore, we have adapted LBNL's estimates of the market opportunity to estimate the SAM, based on square footage. To estimate the market potential in terms of lifetime MMBtu saved, we have assumed a 25% reduction in energy consumption over 15 years (see Table 16).

Table 16. Institutional Sector SAM in Connecticut

Market Segment	Estimated TAM (million ft^2)	Estimated Market Penetration	Estimated SAM (million ft^2)	Estimated Lifetime Savings (million MMBtu)
State Facilities	60.5	0%	60.5	34
Municipal Facilities	104.5	43%	59.5	59
Private K-12 Schools	30	25%	22.5	17
Private Higher Education	82	25%	61.5	46
Hospitals	22	10%	19.8	19
Total	**300**		**224**	**175**

Product or Program Overview

The Institutional Sector has established the following program targets for FY 2015 (see Table 17).

Table 17. Institutional Sector Fiscal Year 2015 Targets

Program	Projects	Capital Deployed (million $)	Clean Energy Deployed (MW)	Lifetime Clean Energy Produced and Saved (MWh / MMBtu)
Lead By Example – State	7	$125		4,000,000 MMBtu
Lead By Example – Municipal	6	$25		2,500,000 MMBtu
Institutional Off Credit ESA	2	$10		1,000,000 MMBtu
CT Solar Lease	10	$6	2	61,320 MWh
Winn-LISC MF Open Market ESCO	5	$2	0.5	15,330 MWh
Total				

For the primarily energy efficiency driven programs, including the Lead By Example and Off Credit ESA programs, meeting these targets would save 500,000 MMBtus annually and 7,500,000 MMBtus over the life of the projects. For the primarily clean energy focused programs, including the CT Solar Lease and Open Market ESCO programs, meeting these targets would generate 3,000 MWh of clean energy annually, and 76,500 MWh of clean energy over the life of the projects.

Due to the extended project development times for comprehensive energy retrofits, including the sales cycle, the Investment Grade Energy Audit (typically lasting 4-6 months), and a potentially multi-year construction schedule that forms the basis for guaranteed savings typical in these financial structures, for Lead By Example and off-credit, energy savings agreement programs, we will define Projects as those that have completed the Investment Grade Energy Audit and contracted for construction, though construction is unlikely to be complete prior to the end of FY15.

Lead by Example – State and Municipal Facilities

The State of Connecticut created a standardized ESPC Program for use by state agencies and municipalities, as required by Connecticut General Statutes 16a-37x. The program is intended to help state and municipal governments implement a portfolio of comprehensive energy savings measures with no upfront capital. The costs of the energy retrofits are paid for by guaranteed future savings from utility and maintenance budgets. ESPC projects will be implemented by qualified Energy Service Companies (QESPs) that are on contract with the State of Connecticut to implement ESPC projects for municipalities and state agencies and have committed to follow the rules and guidelines of the ESPC program. In addition, project hosts will receive technical support from a pool of pre-qualified professional energy engineers that are available to review and interpret the QESPs work during the project development and contracting process. Program and technical support for both state and municipal project sponsors includes assistance in evaluating projects, defining eligible conservation and renewable energy measures, monitoring and verifying the energy savings, qualifying additional technical service providers, and managing data.

The Green Bank participates in the implementation of the State's ESPC program by providing the following resources to support state and municipal projects:

- Assistance and support with outreach and education about the state ESPC program. The Green Bank will continue to assist DEEP in this effort.

A set of ESPC contract documents that have been pre-approved by the Connecticut Attorney General's Office. The Green Bank will work with other state government stakeholders, including DEEP, the Office of Policy and Management (OPM), and the Office of the Treasurer (OTT), and the Attorney General's Office (AGO), to develop and implement standardized financial agreements for ESPC projects at state buildings. The Green Bank will also provide guidance to municipal ESPC projects on financing, and may assist in qualifying and procuring lenders in that sector.

Benchmarks
Performance contracting is active in many other states and the federal government. Primary industry benchmarks that the Green Bank will use to compare the progress and performance of the CT ESPC program include:

- Number of projects
- Project square footage
- Total project investments ($)
- Project investments per capita
- Project investments per square foot
- Job years created
- Time from project conception to contracting

Key Performance Indicators
The Green Bank will track the following key performance indicators for the ESPC program:

- Outreach and education – number of communities and state agencies attending presentations
- Percentage reductions in energy consumption
- Annual and lifetime MMBtu saved

- MW clean energy installed, average system size, and annual and lifetime MWh produced, where clean energy generation is installed
- Annual and lifetime avoided greenhouse gas emissions
- Job years created
- Ratepayer funds expended (utility incentives or other)

CT Solar Lease

As discussed above, in the residential sector, the Green Bank has established the CT Solar Lease program, in partnership with state and regional banks, a tax equity investor, an insurer, and a servicer. Though primarily intended for residential customers, a portion of the Solar Lease facility has also been reserved for municipal or institutional projects, where it is offered as a 20-year power purchase agreement which enables the third-party owner of the PV system to access federal tax credits.

Benchmarks

The Green Bank will benchmark the CT Solar Lease program for Institutional projects as follows:

- Number of projects financed
- MW installed and annual and lifetime MWh produced
- Ratio of public to private capital deployed

Key Performance Indicators

Below are the Key Performance Indicators that will be used to measure the success of the CT Solar Lease program for Institutional projects:

- Number of applications received and approved
- Number of applications awarded ZRECs
- Number of applications that proceed to construction
- Average PV system size
- Delinquency and default rate
- Average energy production per project
- Contractor engagement – percent of eligible contractors bringing in applications/repeat applications

Institutional Off-Credit ESA Program

The Green Bank has previously tested an off-credit energy savings agreement (ESA) model through a $1 million pilot program called Campus Efficiency Now; two projects were contracted at private colleges in Connecticut. In that program, loans were made to a special purpose entity (SPE) that contracted separately for the project's construction, and the sale of the energy savings. For the energy savings, the SPE entered into an ESA with the project host to pay for the energy saved at a rate discounted from the host's retail utility rates, creating immediate savings for the host while assigning the performance risk and debt obligation to the SPE. Because it does not create a long term debt obligation for the host, these types of projects can be treated as an off-balance sheet and off-credit ownership and financing approach, which, as discussed above, is critical for credit constrained segments of the Institutional sector such as hospitals and private education facilities.

Seeking to expand on the Campus Efficiency Now pilot to enable both more and larger projects, the Green Bank intends to create or facilitate an off-credit ESA model for financing clean energy projects with private capital or through non-taxpayer supported bonds. Such a model has been tested in the State of Maryland by the Maryland Clean Energy Center (MCEC), which, like the Green Bank, has bonding authority. In that model, the Green Bank would establish or be part of the special purpose entity (SPE). In either case, individual projects would be underwritten based on the credit-worthiness of the institution implementing the project. A shared energy savings agreement between a SPE and the project host would make the host's payments contingent on realized savings, ensuring a positive cash flow for the host. Simultaneously, the SPE would enter into a guaranteed ESPC with the chosen contractor, and the energy savings guarantee from the ESPC contractor would be directly payable to the SPE to make up for any shortfalls in the debt service obligation that remain after the shared energy savings.

The Green Bank believes the off-credit ESA model is replicable in Connecticut, and the Green Bank will be able to utilize this model to raise financing for Institutional sector projects such as hospitals, private colleges/universities, or independent schools; it may also be a viable financing mechanism for state or municipal ESPC projects in addition to some commercial projects that are unable to utilize C-PACE. Whether or not the Green Bank plays a central role in the transaction or provides credit enhancement in some form, the intention of the program is to expand on the Campus Efficiency Now pilot to create an expanded pool of capital to fund larger, deeper energy retrofits at Institutional buildings and campuses.

Benchmarks

The ESA financing model is less well developed than other forms of financing for performance contracting projects (i.e. bonds or tax exempt lease purchasing), but many of the benchmarks will be similar. They include:

- Number of projects
- Project square footage
- Total project investments ($)
- Project investments per capita
- Project investments per square foot
- Job years created
- Time from project conception to contracting

Key Performance Indicators

The Green Bank will track the following key performance indicators for the ESA program:

- Outreach and education – number of institutions attending presentations
- Percentage reductions in energy consumption
- Percentage reductions in energy expenditures
- Annual and lifetime MMBtu saved
- MW clean energy installed, average system size, and annual and lifetime MWh produced, where clean energy generation is installed
- Annual and lifetime avoided greenhouse gas emissions
- Job years created

Ratepayer funds expended (utility incentives or other)

Winn-LISC Open Market ESCO

In the fall of 2011, WINN Development applied for and was awarded a $5.25 million grant from HUD, with a letter of support from the Green Bank, to pilot an innovative energy efficiency program designed to serve multifamily low-income housing developments. This HUD innovation initiative was established to facilitate "game-changing" solutions to effective investment of private capital to improve the energy efficiency of low-income multifamily housing. The WINN proposal – *Multifamily Energy Loan Fund* – created a loan fund to facilitate energy savings agreements (ESA) in the multifamily (40-300 units) housing market. The program operates in Connecticut, Massachusetts and New York.

Because existing debt, programmatic restrictions, and complex partnerships limit the ability of low-income properties to add new debt to finance energy improvements, WINN developed an off-balance sheet approach. Through Energy Savings Performance Contracts (ESPC) and insured savings guarantees, a third party energy services integrator – the Open Market ESCO – borrows funds to finance an energy project on behalf of the multifamily property owner. HUD and the Green Bank funds are used to leverage private capital and finance the improvements through the Open Market ESCO.

The Green Bank has supported WINN through the program development process and, in August 2013, the Green Bank executed a *Master Credit Enhancement and Participation Agreement*, committing up to $1.87MM for Connecticut projects financed through this program.

Unfortunately, WINN has not made hoped-for progress in selling the program and closing loans because of structural issues with the financing that are not attractive to owners. To its credit, the WINN team has put these issues on the table with HUD and the Green Bank, and efforts are being made to restructure the program as a result of lessons learned. The Winn team is pursuing an extension of the program with HUD, through FY2015, and currently believes that the program may be best suited to the implementation of solar PV. The Green Bank staff actively participates in regular pipeline reviews with WINN and has actively supported marketing efforts in CT. We will continue to support WINN as they work to identify projects that can be successful.

Benchmarks

Anticipating that the program is able to successfully pivot to pursue solar PV projects, the Green Bank plans to benchmark and track indicators of performance similarly to the way that the CT Solar Lease program is tracked, including:

- Number of projects financed
- MW installed, average system size, and annual and lifetime MWh produced
- Ratio of public to private capital deployed

Key Performance Indicators

The Green Bank will track the following indicators of performance:

- Avoided greenhouse gas emissions
- Job years created
- Ratio of public to private capital deployed
- Delinquency and default rate

- Average energy production per project

Objective Function

The objective functions for the average sized project underneath each program are computed below (see Table 18). Objective functions for the LBE and Institutional ESA programs are very high because it is assumed that the Green Bank is playing primarily a facilitative role, and that no further credit enhancement will be necessary for these projects. Therefore, ratepayer funds are limited to program administrative costs (i.e. salaries).

Table 18. Objective Function for the Institutional Sector Programs

Program	Lifetime Energy Generated and/or Saved (MWh's / MMBtu)	Dollars of Ratepayer Funds at Risk ($'s)	Objective Function (MWh's Generated and/or MMBtu Saved per $1 of Ratepayer Funds at Risk)
Lead by Example – State	550,000	$100,000	5.50
Lead by Example – Municipal	425,000	$90,000	4.72
Institutional ESA	425,000	$50,000	8.50
CT Solar Lease	21,000	$200,000	0.11
Winn-LISC MF Open Market ESCO	10,500	$125,000	0.08

Commercial and Industrial Sector

The Commercial and Industrial Sector is focused on the implementation of commercial and industrial property assessed clean energy (C-PACE) in order to provide cheaper, cleaner and more reliable sources of energy while creating jobs and supporting local economic development.

Comprehensive Energy Strategy and Integrated Resources Plan

The CES relies heavily on C-PACE financing to accomplish its goals for the C&I sector in Connecticut. The Executive Summary of the CES notes the goal to: "Leverage private capital through innovative financing mechanisms including Connecticut's first-in-the-nation Green Bank (the Clean Energy Finance and Investment Authority), standardized energy efficiency performance contracts, and the state's new Commercial Property-Assessed Clean Energy (C-PACE) program."

- In addition to referencing C-PACE financing as a way to meet the state's goals in the C&I sector around energy efficiency, the CES also notes several policy goals that would ramp up demand for C-PACE financing such as decoupling, benchmarking and energy efficiency standards.

- Throughout the CES, there is an expanded commitment to "all cost effective" and a goal of going deeper with energy efficiency is mentioned. C-PACE enables these deeper projects, with the average C-PACE project becoming 45 to55% more efficient.

- The CES notes that the development of financing programs is critical to moderate ratepayer costs of energy efficiency programs over time. To that end, the Green Bank is working closely with the EEB to optimize incentives and ensure that the rebates and incentives are leading customers to do larger projects, possibly financed by C-PACE.

The CES has been of great benefit to the Green Bank in its research on the building composition in Connecticut. According to the CES, residential and commercial buildings are the largest users of energy in Connecticut, collectively accounting for 58% of the State's energy usage and 87% of its electricity usage annually. In a business-as-usual scenario (which assumes modest energy efficiency savings per year), consumption is projected to grow to 550 trillion British Thermal Units (BTUs) per year in 2050, nearly 20% higher than today's energy use of approximately 468 trillion BTUs. While buildings in Connecticut vary in their ownership and size, commercial and residential buildings consume energy in very similar ways. Over 60% of the energy used in buildings is for heating and cooling. The next highest uses are water heating in residential buildings and lighting in commercial buildings, representing about 1/6th of energy usage in each respective building type. Of the primary energy (that is, energy produced from raw fuels or otherwise found in nature) used by buildings today, 59% comes from electricity, 21% from oil, and 20% from natural gas. Electricity and natural gas use has increased while oil and biomass consumption has declined. Another common feature across building types is the prevalence of existing building stock (as opposed to new construction).

This data, coupled with data the Green Bank commissioned about the location, size and class of buildings in Connecticut from HR&A Associates, a leading real estate advisory firm, is important in determining our goals for this sector.

Conservation and Load Management Plan

Among the many goals outlined in the CL&M plan, there are several that impact the C&I sector and The Green Bank's C-PACE program. Indeed, it is noted that the companies should coordinate with the Green Bank on C-PACE financing. That coordination has been ongoing and fruitful.

- The focus on promoting deeper upgrades by aligning incentives to reward comprehensive projects is also a place of overlap.

- The focus on marketing in the CL&M plan is consistent with the Green Bank's goals of increasing volume for its financing products. 2014 and 2015 will integrate customer segmentation efforts and data driven analytics to increase market penetration in targeted Residential and C&I areas.

- As noted in the CL&M plan, the Companies will continue their efforts to leverage CEEF funds through promotion and enhancement of CEEF financing offerings, coordination with partners' complementary programs (CPACE, LBE-ESPC) in an effort to reduce financing costs, etc. We have seen many building owners go deeper with their projects when combining incentives with C-PACE financing. In fact, several projects meet the Savings to Investment Ratio (SIR) criteria of C-PACE due to utility incentives.

- C-PACE's ongoing collaboration with C&I Committee of the EEB includes the following:

    - Monthly meetings with UI and NU
    - Regular sharing of deal flow information
    - Joint outreach efforts and marketing
    - Streamlined approvals of C-PACE applications with EEB incentives.

TAM and SAM

The Total Addressable Market (TAM) for the C-PACE program is approximately 83% of Rentable Building Area (RBA) in Connecticut and the Share of Addressable Market (SAM) is approximately 0.2%.[34]

We calculate TAM as the total square feet of RBA for Commercial & Industrial buildings within C-PACE municipalities divided by the total square feet of RBA for all Commercial & Industrial buildings in the state of Connecticut. We calculate SAM as the total square feet of RBA for all closed C-PACE projects divided by the total square feet of RBA for all Commercial & Industrial buildings in C-PACE municipalities.

The TAM calculation shows that the program has secured over 4/5 of the commercial and industrial building stock in the state of Connecticut as eligible applicants for C-PACE, an impressive statistic for the program's first year of existence. The SAM calculation demonstrates that completed C-PACE projects

[34] HR&A CT Building Data 2013

account for roughly 0.2% of all Commercial & Industrial building area in C-PACE eligible municipalities, an equally important metric for the program.

Commercial Facilities

TAM for Commercial buildings is approximately 84%. SAM for Commercial buildings is approximately 0.5%.[35]

Industrial Facilities

TAM for Industrial buildings is approximately 77%. SAM for Industrial buildings is approximately 0.01%.[36]

Product or Program Overview

The Commercial and Industrial Sector has established the following program targets for FY 2015 (see Table 19).

Table 19. Commercial & Industrial Sector Fiscal Year 2015 Targets

Program	Projects	Capital Deployed	Clean Energy Deployed (MW)	Clean Energy Generated and Saved (MWh / MMBtu)
C-PACE	64	$48.7M	8.8MW	37,644,728

Meeting these targets would generate [X] MWh of clean energy (or [Y] MMBtu's) and save [Z] MMBtus annually and [X] MWh of clean energy (or [Y] MMBtu's) and save [Z] MMBtus over the life of the projects.

Commercial and Industrial Property Assessed Clean Energy (C-PACE)

In January 2013, the Green Bank introduced the C-PACE program. C-PACE is one of the country's first statewide programs to provide 100 percent upfront financing for energy upgrades to commercial, industrial and nonprofit buildings. Under this program, property owners obtain financing needed to make key energy improvements, and then repay it as a benefit assessment charge on their property tax bill. Because the payments can be spread over a period of up to 20 years, owners save on energy costs immediately and for years to come. The financed improvements increase the building's value, while preserving the building owner's capital and credit lines for core investments.

C-PACE financing is available for a wide range of clean energy and energy efficiency improvements, including new boilers and chillers, upgraded insulation, new windows or solar installations. Energy audits and construction costs can also be financed through C-PACE.

[35] *Ibid.*
[36] *Ibid.*

C-PACE has been a notable success in deploying clean energy throughout the state. Eighty Connecticut municipalities, together accounting for 83 percent of the state's commercial and industrial building stock, have signed onto the program. Since launching C-PACE, the Green Bank has approved 30 projects totaling $23 million all financed with a $40 million warehouse facility using the Green Bank's balance sheet. This has resulted in the deployment of 3.7 MW of clean energy and will lead to an estimated 160 million kWh in electric savings and over 320 million MMBTU in fuel savings over the lifetime of the projects. Total savings in avoided electric and fuel costs will exceed $38M in aggregate for the benefited property owners.

Working with its group of qualified capital providers, the Green Bank auctioned its first group of transactions and secured private capital to purchase the initial $30 million portfolio of transactions that the Green Bank has and will originate. This has allowed the Green Bank to replenish its funding warehouse facility and leverage its resources at a ratio of 4:1 with the potential to achieve a leverage ratio of 9:1 through a subsequent financing round.

Benchmarks

Because there are several other states operating PACE programs, it is useful for the Green Bank to benchmark ourselves against the rest of the country. We will benchmark our progress in the following way:

- Number of projects completed
- Level of energy savings achieved
- Ratio of public to private capital deployed

We will benchmark ourselves against the best C-PACE programs in the country, including California, Florida, New York, Ohio, and Michigan.

Key Performance Indicators

Throughout the year, we will continually monitor the performance of the C-PACE program based on the following indicators:

- Number of applications coming in;
- Number of C-PACE towns opting into;
- Speed of approval process for applications;
- Size of the project and level of energy savings;
- Ratio of public to private capital deployed
- Growth into new markets (ex: multifamily)
- Successful innovation in marketing and outreach (ex: relationship managers)
- Number of trained contractors
- Number of new contractors bringing in applications
- Number of jobs created and environmental emissions reduced
- Amount of dollars saved by building owners using C-PACE financing

Objective Function

The objective functions for the average sized project underneath each program are computed below (see Table 20).

Table 20. Objective Function for the Commercial and Industrial Sector Programs

Program	**Lifetime Energy Generated and/or Saved** (MWh's / MMBtu)	**Dollars of Ratepayer Funds at Risk** ($'s)	**Objective Function** (kWh's Generated and/or MMBtu Saved per $1 of Ratepayer Funds at Risk)
C-PACE – Solar PV			
C-PACE – Fuel Cell			
C-PACE – EE			
C-PACE – EEPV			
C-PACE – CHP			
CT Solar Lease			

Other Areas of Strategic Importance

Small Business Energy Advantage (SBEA)

While C-PACE is a tool that works for many building owners in the C&I sector, due to the rigor of the review process it is not a financing option well-suited for very small projects. The C&I Program will be working with the EEB to determine how the Green Bank should work with this sector in FY 2015.

Non-C-PACE Commercial Financing Product

In addition to C-PACE, the C&I program will engage a consultant to consider other financial offerings in the C&I market. For example, C-PACE does not work for condominiums and we would like to be sure that market is covered with an offering from the Green Bank. Also, we are learning that some borrowers like the idea of a off-balance sheet offering, so we will explore an Energy Services Agreement (ESA) model.

Multifamily Market Rate and Affordable Housing

The Green Bank is developing several multifamily and affordable housing (MFAH) programs, which is a new area of program development and a priority for the Green Bank. The Green Bank has established working relationships with key channel partners to begin sourcing deal flow utilizing a variety of financing options.

Implementing energy improvements in the MFAH market has been difficult to achieve, both in Connecticut and nationally, because of challenges related to securing financing, split incentives between owners and tenants, lack of reliable performance data and case studies to build investor confidence, as well as various other challenges. Therefore, a key tenet of the Green Bank's MFAH strategy has been to identify and bring in national leaders, from within and outside Connecticut, with demonstrated ability to *"crack the multifamily housing nut"* and successfully build and close deal flow and run programs. The Green Bank has several strong partnerships in place, each with nationally recognized MFAH experts on their teams, and who are bringing resources to Connecticut to build the market – attracted by the cutting edge clean energy leadership and achievements underway in Connecticut.

As with all Green Bank programs, our approach is to use the minimum level of Green Bank funds necessary to support the market, and then to reduce the Green Bank's participation over time as the market takes off and the private sector takes over. The Green Bank has four major multifamily affordable housing initiatives in place:

1. *Building the Multifamily Market through C-PACE*
2. *Building the Multifamily Market through CDFI's and Strategic Partners*
3. *WINN-HUD open market ESCO*
4. *CT Housing Finance Authority Partnership*

Additionally, the Green Bank will be developing market rate multifamily financing options, with an initial focus on condominium financing to support natural gas conversions in communities where the gas companies are focused on low use and/or line expansion (although any financing developed will support the full range of clean energy measures).

Background

Connecticut's Multifamily and Affordable Housing (MFAH) sector presents a critical imperative and significant opportunity for investment in clean energy improvements, with a priority focus on affordable housing, and targeted to:

- Reduce energy costs for residents as well as energy and energy-related maintenance costs for building owners,
- Fund all cost effective energy measures, within the context of a building's lifetime capital improvement plan, including energy related capital improvements, and
- Improve the safety, health and comfort of low income residents.

This MFAH opportunity sits at the nexus of priorities established by the CES, *Governor Malloy's Commitment to Affordable Housing* including more than $360 million for State funded affordable housing projects for seniors, working families, young professionals and other residents, and the Green Bank's Comprehensive Plan. It includes an important partnership with the CT Housing Finance Authority (CHFA), which finances approximately 45% of the State's affordable, multifamily units[37] and has a *stated policy* to require cost effective energy efficiency measures in all multifamily developments as well as support for the use of renewable and alternative energy.

The Green Bank's multifamily initiative began with a review of the MFAH sector to identify priority opportunities and challenges as well as holding exploratory meetings to establish relationships with sector leaders and key stakeholders including: CHFA, U.S. Department of Housing and Urban Development (HUD), CT based Community Development Financial Institutions (CDFI's), Utilities (CL&P and UI), CT Housing Coalition, Community Action Councils, CT Department of Public Health (DPH), Operation Fuel, and various private and non-profit housing developers. The Green Bank's overarching strategy in building deployment capacity in the multifamily affordable housing sector is to identify and fill gaps and leverage Green Bank resources by supporting and partnering with organizations identified with a demonstrated track record of success both in Connecticut and nationally.

Market Opportunity

Deployment of cost effective energy efficiency and renewable energy improvements in multifamily housing is sorely lacking in Connecticut (and nationally) and presents significant opportunity for investment. The Green Bank estimates, conservatively, that potential annual utility cost savings for the multi-family housing sector is on the order of $125 million per year[38].

Much of this housing stock was built before 1970 and now faces significant needs for energy updates and other capital improvements. Approximately 45% of multifamily housing units in Connecticut are located in properties with 20 or more units, which are predominantly concentrated in the State's largest cities (Bridgeport, Hartford, New Haven, Stamford, Waterbury), as well as located near existing or planned natural gas lines. Many are heated by oil furnaces and electrical heating systems, offering significant opportunity for fuel conversion to natural gas as well as other clean energy measures.

The "Fuel Poverty" Imperative. Home energy bills present a significant financial burden to low-income residents in Connecticut, where about one in five households cannot afford to pay their energy bills. These findings are based on a *study recently commissioned by Operation Fuel*. The annual home energy affordability gap currently is about $700 million for more than 295,000 Connecticut households with

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[37] Over the past 40 years, CHFA has provided financing for the acquisition, construction and/or rehabilitation of more than 35,800 units of affordable rental housing for families and the elderly across Connecticut.

[38] This number assumes approximately 250,000 units in multi-family buildings (defined as buildings with 5 or more units) with potential to reduce average annual utility costs on the order of about $500/unit).

incomes at or below 200 percent of the Federal Poverty Level. This means that the average low-income household owes about $2,363 more in energy bills than it can afford to pay[39].

The primary source of energy assistance for Connecticut's lower-income households is the federal *Low-Income Home Energy Assistance Program (LIHEAP)*. With a CT state allocation of about $76 million, LIHEAP covers less than 11 percent of the state's home energy affordability gap. As a result, Connecticut's lower-income families and elderly residents must often choose between energy, food and other basic necessities and look to organizations such as Operation Fuel for energy assistance.

Initiatives

The Green Bank's overall market development approach responds to the key gaps and challenges identified above and, with several strategic partners, are supporting the following initiatives:

1. ***C-PACE multifamily loans****, made on the basis of projected energy cost savings, and secured by a public benefit assessment and lien on the property.* C-PACE projects will include CHFA financed properties as well as market rate multifamily rental properties that can secure the lender consent required for C-PACE financing. Properties are anticipated to contain 100 units or more, given the project size needed to make C-PACE economics work. The Green Bank secured Urban Ingenuity as its C-PACE multifamily housing partner who will be responsible for sourcing C-PACE multifamily transactions, providing technical assistance to owners in developing and submitting applications, and structuring and financing C-PACE eligible energy upgrades.
2. ***Unsecured multifamily loans****, made on the basis of projected energy cost savings, with credit enhancements from the Green Bank,* predominantly anticipated to consist of loan loss reserves. Given the programmatic and financial barriers described above, many MFAH properties, especially those with existing HUD or FHA financing or insurance, are banned from securing the lender consent required for C-PACE financing and, in most cases, can take on unsecured debt only. This category includes HUD funded public housing, all FHA and HUD funded or insured properties, as well as many of the underserved 3- to 6-unit buildings in our large cities, which are often over 100 years old, and in great need of energy and other capital improvements. The Green Bank has supported the establishment of the Multifamily Permanent Energy Loan Program with the Connecticut Housing Investment Fund, focused specifically on affordable multifamily. The Green Bank is providing a $300,000 loan loss reserve and an initial $1MM capitalization.
3. ***WINN-HUD Open Market ESCO,*** in the fall of 2011, WINN Development applied for and was awarded a $5.25 million grant from HUD, with a letter of support from the Green Bank, to pilot an innovative energy efficiency program designed to serve multifamily low-income housing developments. This HUD innovation initiative was established to facilitate "game-changing" solutions to effective investment of private capital to improve the energy efficiency of low-income multifamily housing. The WINN proposal – *Multifamily Energy Loan Fund* – created a loan fund to facilitate energy savings agreements (ESA) in the multifamily (40-300 units) housing market. The program operates in Connecticut, Massachusetts and New York. The Green Bank has supported

[39] The Affordability Gap measures the dollar amount by which actual home energy bills exceed affordable home energy bills. If a Connecticut household has an annual income of $12,000 and an annual home energy bill of $3,000, that household has a home energy burden of 25% ($3,000 / $12,000 = 0.25). An *affordable* home energy burden is set at 6% of annual income.

WINN through the program development process and, in August 2013, the Green Bank executed a *Master Credit Enhancement and Participation Agreement*, committing up to $1.87MM for Connecticut projects financed through this program.

4. ***CHFA Pilots,*** in 2013 the Green Bank and CHFA signed a Memorandum of Agreement (MOA) that recognized the importance and benefits of cooperation between the two organizations in accelerating the implementation of energy efficiency and renewable energy improvements for owners and tenants of affordable multifamily rental housing. To this end, and in an effort to streamline and coordinate program offerings, the Green Bank and CHFA continue to collaborate and share information related to proposed loan programs and funding availability, respective project pipelines, as well as energy monitoring and verification (EM&V) initiatives and requirements. CHFA and the Green Bank are collaborating on a pilot initiative to help inform multifamily energy monitoring and verification (EM&V) and underwriting requirements. The pilot will be undertaken on five (5) master-metered properties previously identified by CHFA. The Pilot process includes, for each property, energy benchmarking and auditing, definition of project scope to include all cost effective energy measures, financing, implementation, commissioning, and post project energy performance monitoring and verification. Work will be carried out by the Green Bank's C-PACE and multifamily housing technical advisors, with oversight from the Green Bank's MFAH and C-PACE teams. The implementation of energy improvements for all 5 properties is anticipated to take about 1 year, with 3 years of energy monitoring post commissioning.
5. ***Credit Enhancement RFP*** – The Green Bank has $4MM allocated to an open RFP for credit enhancements to support project or program level multifamily financing, with a focus on the affordable market.

MFAH Strategic Partners

As the Green Bank's MFAH Technical Assistance Partner, the team of New Ecology and CNT Energy will be recommended to multifamily property owners as a trusted energy advisor and owner's agent to help navigate the energy improvement process including: benchmarking, auditing, scoping, financing, implementing, commissioning and post-completion monitoring. New Ecology and CNT Energy are both nationally recognized leaders in building and operating successful MFAH energy improvement programs. They have been funded by the JPB Foundation of NY, focused on poverty alleviation, to develop the *National Delivery Network for Energy-Efficiency Services to Multifamily Affordable Housing Owners*. Connecticut has been strategically identified as one of their first locations, where this team has opened and staffed an office and will invest approximately $1MM ($500K cash/ $500 in-kind) to help build the market.

MFAH Channel Partners

We have identified the following organizations as key channels partners for building the Green Bank's MFAH pipeline, and have begun to establish working relationships with each. CHFA, in particular, is a critical partner, with whom the Green Bank has been working closely on all our MFAH initiatives, including program development and sourcing deals.

- Connecticut Housing Finance Authority (CHFA)
- Connecticut Housing Coalition
- Community Action Councils

- Community Development Financial Institutions (CDFI's)
- Federal Department of Housing and Urban Development (HUD)
- Large multifamily property owners and developers, both private and non-profit
- Public Housing Authorities, both state and federally financed
- Utility companies CL&P and UI, including properties deferred from weatherization and other energy improvements due to health and safety hazards

New Initiatives

The Green Bank will be developing market rate financing programs with an initial focus on the condominium market. Condominiums are a prime target for natural gas conversions, particularly in communities that have previously been identified by the gas companies as having a large concentration of housing units on main with low use, and/or targeted for expansion of gas lines. The Green Bank's strategy will be to work with lenders active in the condo financing market and develop products that leverage the Green Bank's credit enhancements and encourage lenders to finance clean energy projects. The Green Bank will look to encourage lending in complexes that don't work for C-PACE, that don't meet FHA guidelines, that require longer maturities, more generous underwriting criteria, etc.

Budget

Pending Approval

Key Definitions

Class I Renewable Energy

Conn. Gen. Stat. §16-1(a)(26) defines “Class I renewable energy source” as: “(A) energy derived from solar power, wind power, a fuel cell, methane gas from landfills, ocean thermal power, wave or tidal power, low emission advanced renewable energy conversion technologies, a run-of-the-river hydropower facility provided such facility has a generating capacity of not more than five megawatts, does not cause an appreciable change in the river flow, and began operation after July 1, 2003, or a sustainable biomass facility with an average emission rate of equal to or less than .075 pounds of nitrogen oxides per million BTU of heat input for the previous calendar quarter, except that energy derived from a sustainable biomass facility with a capacity of less than five hundred kilowatts that began construction before July 1, 2003, may be considered a Class I renewable energy source, or (B) any electrical generation, including distributed generation, generated from a Class I renewable energy source.”

Class II Renewable Energy

Conn. Gen. Stat. §16-1(a)(27) defines “Class II renewable energy source” as: “energy derived from a trash-to-energy facility, a biomass facility that began operation before July 1, 1998, provided the average emission rate for such facility is equal to or less than .2 pounds of nitrogen oxides per million BTU of heat input for the previous calendar quarter, or a run-of-the-river hydropower facility provided such facility has a generating capacity of not more than five megawatts, does not cause an appreciable change in the riverflow, and began operation prior to July 1, 2003.”

Class III Renewable Energy

Conn. Gen. Stat. §16-1(a)(44) defines “Class III source” as: “the electricity output from combined heat and power systems with an operating efficiency level of no less than fifty per cent that are part of customer-side distributed resources developed at commercial and industrial facilities in this state on or after January 1, 2006, a waste heat recovery system installed on or after April 1, 2007, that produces electrical or thermal energy by capturing preexisting waste heat or pressure from industrial or commercial processes, or the electricity savings created in this state from conservation and load management programs begun on or after January 1, 2006."

Clean Energy Fund (CEF)

A fund formed pursuant to Conn. Gen. Stat. 16-245n which is supported by a one mill per kilowatt hour charge to each end use customer of electric services in the state plus any federal funds as may become available to the state for clean energy investments. The fund is used by Connecticut Green Bank to promote investment in clean energy in accordance with a comprehensive plan developed by Connecticut Green Bank to foster the growth, development and commercialization of clean energy sources, related enterprises and stimulate demand for clean energy and deployment of clean energy sources that serve end use customers in this state and for the further purpose of supporting operational demonstration projects for advanced technologies that reduce energy use from traditional sources.

Comprehensive Energy Strategy (CES)

Pursuant to Conn. Gen. Stat. § 16a-3d, the comprehensive energy strategy is developed by DEEP every three years which assesses and plans for all energy needs in the state, including, but not limited to electricity, heating, cooling, and transportation, includes the findings of the IRP, C&LM Plan, CP, and Energy Assurance Plan.

Comprehensive Plan (CP)
Pursuant to Conn. Gen. Stat. § 16-245n, the comprehensive plan is developed by the Green Bank to foster the growth, development and commercialization of clean energy sources, related enterprises and stimulate demand for clean energy and deployment of clean energy sources that serve end use customers in the state as well as support operational demonstration projects for advanced technologies that reduce energy use from traditional sources.

Connecticut Energy Efficiency Fund (CEEF)
A fund formed pursuant to Conn. Gen. Stat. § 16-245m, supported by a charge of up to three mills per kWh on electric bills which is used to implement cost-effective energy conservation programs and market transformation initiatives in accordance with the Conservation and Load Management Plan approved by the Energy Efficiency Board and DEEP.

Connecticut Renewable Portfolio Standards (RPS)
Pursuant to Conn. Gen. Stat. § 16-245a, each electric supplier and electric distribution company is required to demonstrate by January 1, 2020 that not less than twenty per cent of the total output or services of any such supplier or distribution company shall be generated from Class I renewable energy sources and an additional three per cent of the total output or services shall be from Class I or Class II renewable energy sources.

Critical Facilities
Conn. Gen. Stat. § 16-243y(a)(2) defines "critical facility" as: "any hospital, police station, fire station, water treatment plant, sewage treatment plant, public shelter, correctional facility or production and transmission facility of a television or radio station, whether broadcast, cable or satellite, licensed by the Federal Communications Commission, any commercial area of a municipality, a municipal center, as identified by the chief elected official of any municipality, or any other facility or area identified by the DEEP as critical."

Economically Viable
Economically viable means the costs are cheaper than the grid. For example, what makes solar viable?

- A large system with economies of scale resulting in a lower installed cost
- Panels must receive enough sun
- Installed cost must be low enough or the subsidy high enough
- Price of the alternative, grid-power, must be high enough.

Energize Connecticut
Energize Connecticut is an initiative of the Energy Efficiency Fund, the Clean Energy Finance and Investment Authority, the State and your local electric and gas utilities dedicated to empowering Connecticut citizens to make smart energy choices, now and in the future.

Green Connecticut Loan Guaranty Fund
A fund formed by the Connecticut Green Bank pursuant to Conn. Gen. Stat. § 16a-40e and Conn. Gen. Stat. § 16a-40f, the fund is used for the purpose of guaranteeing loans made by participating lending institutions to a participating qualified nonprofit organization for eligible energy conservation projects, including for two or more joint eligible energy conservation projects.

Integrated Resources Plan (IRP)

Pursuant to Conn. Gen. Stat. § 16a-3a, the integrated resource plan is developed by the DEEP, in consultation with the electric distribution companies, for the procurement of energy resources, including, but not limited to, conventional and renewable generating facilities, energy efficiency, load management, demand response, combined heat and power facilities, distributed generation and other emerging energy technologies to meet the projected requirements of customers in a manner that minimizes the cost of all energy resources to customers over time and maximizes consumer benefits consistent with the state's environmental goals and standards.

Levelized Cost of Energy (LCOE)

Levelized cost of electricity (LCOE) is a summary measure of the overall competiveness of different generating technologies. It represents the per-kilowatt hour cost (in real dollars) of building and operating a generating plant over an assumed financial life and duty cycle. Key inputs to calculating LCOE include capital costs, fuel costs, fixed and variable operations and maintenance (O&M) costs, financing costs, and an assumed utilization rate for each plant type.

Low Emission Renewable Energy Credit (LREC)

An LREC is a Class I Renewable Energy Certificate from a low-emissions project as defined in Conn. Gen. Stat. § 16-244t. LREC-qualified projects are Connecticut generation projects that are located behind company customer meters, achieve commercial operation on or after July 1, 2011, and have emissions of no more than 0.07 pounds per megawatt-hour (MWh) of nitrogen oxides, 0.10 pounds per MWh of carbon monoxide, 0.02 pounds per MWh of volatile organic compounds, and one grain per 100 standard cubic feet. To qualify for the LREC/ZREC Program, LREC projects may not be larger than 2,000 kilowatts (kW).

Micro Grid

Conn. Gen. Stat. § 16-243y(a)(5) defines "microgrid" as: "a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid and that connects and disconnects from such grid to enable it to operate in both grid-connected or island mode."

Net Metering

Pursuant to Conn. Gen. Stat. § 16-243h net metering is the process by which electric suppliers and electric distribution companies are required to interconnect and give a credit for any electricity generated by customers from Class I renewable energy sources or hydropower facility of less than two megawatts. The amount of electricity the customer produces shall be deducted from the amount the customer uses in each monthly billing period and any excess generation shall be credited toward the next monthly billing period. At the end of each year, the electric distribution company or electric supplier shall compensate the customer-generator for any excess kilowatt-hours generated, at the avoided cost of wholesale power.

Renewable Energy Credit (REC)

A REC represents the property rights to the environmental, social, and other nonpower qualities of renewable electricity generation. A REC, and its associated attributes and benefits, can be sold separately from the underlying physical electricity associated with a renewable-based generation source. Connecticut Statutory Framework - Pursuant to Conn. Gen. Stat. § 16-245a, RECs are used to satisfy the Class I, II, and III RPS obligations mandated by Conn. Gen. Stat. §§ 16-245; 16-243q. Electric suppliers may procure RECs by long-term contracting mechanisms, purchasing eligible certificates issued by the New England Power Pool Generation Information System or by purchasing eligible renewable electricity and associated attributes from residential customers who are net producers. Additionally there are two subcategories of RECs.

Serviceable Addressable Market (SAM)
SAM is a market for which the technology makes economic sense. A SAM is a segment of the TAM that should be targeted and must meet select criteria of what makes the market serviceable. TAM and SAM are not static. In other words, what is technically possible or economically viable today will change in the future. TAM and SAM represent measurements at a point in time.

Special Capital Reserve Fund (SCRF)
SCRF allows quasi-public agencies to issue bonds for self-supporting projects or programs that are backed by the State of Connecticut, lowering the cost of capital for the program. SCRF has historically been used to help launch new financing programs in Connecticut, including CDA, CHESLA, CHFA, CHEFA, CRRA, and UCONN student fees. Pursuant to Conn. Gen. Stat. § 16-245mm, the Green Bank received $50 million in SCRF authorization, for self-sufficient financing for energy efficiency/clean energy programs.

Total Addressable Market (TAM)
TAM is maximum technical potential of a market. A TAM describes a goal in relation to a market. Focusing on a market permits identification of customers. Market definition permits comparison of financing goals. TAM helps the Green Bank understand how market size changes in relation to subsidy level, technology cost, and financing costs. The Green Bank uses the TAM data to make tailored financial offerings to each customer, listing terms and savings that demonstrate economic gains of clean energy.

Zero Emission Renewable Energy Credit (ZREC)
A ZREC is Class I Renewable Energy Certificate from a zero emissions project as defined in Conn. Gen. Stat. § 16-244r. ZREC-qualified projects are Connecticut generation projects that are located behind company customer meters, achieve commercial operation on or after July 1, 2011, and emit no pollutants. To qualify for the LREC/ZREC Program, ZREC projects may not be larger than 1,000 kW.

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CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

Memo

To: CEFIA Staff

From: Bryan Garcia, President and CEO, and Jeffrey Schub, Consultant

CC: Board of Directors

Date: June 2, 2014

Re: Objective Function Protocol – Version 1.0

Overview

The objective function (OF) is a metric that measures the amount of clean energy generated or energy saved per public dollar at risk in an energy project. The OF can be presented either as units of energy per dollar, or dollars per unit of energy. The dollars included in the OF represent the number of dollars that are invested or used to support a given investment. For example, a grant, a loan and a loan loss reserve fund are public dollars used to support a clean energy project. (This is explained in further detail below.) The OF can be measured for various time periods. The 1-year OF captures the amount of energy created or saved in the first year of the project per dollars spent. Similar OF's can be calculated for 5-year, 10-year or lifetime periods. The basic formula for the OF is as follows:

$$\frac{(Energy\ Generated\ or\ Saved) * (1\ +/-\ \%\ Realized)}{CEFIA\ Rebates\ +\ Program\ and\ Administrative\ Cost + Credit\ Enhancements + Amount\ of\ Financing - REC\ Revenue}$$

The numerator captures the amount of energy generated or saved and the denominator captures the number of dollars at risk in a project.[1] The OF is calculated at the project level, and can be aggregated by programs, by sector, by geography, by contractor and for the entire organization. It is important to note that metrics like return on investment and recycling are not reflected in the OF. However, these are critical organizational measurements that should be captured and reviewed alongside the OF.

Numerator of the Objective Function

Energy Generated or Saved

This is the amount of clean energy generated by renewables, or the amount of energy saved by energy efficiency over the specified period of time for the specific OF measured. OF can by a 1 year, 5 year, 10 year or project lifetime term. Clean energy is measured in kWh, and energy saved is measured in MMBtus. For any transactions that have both generation and efficiency, the generation can be converted to MMBtus. OF calculated prior to project implementation will require energy forecasts. However, real data should be substituted for forecasts as it is collected upon project completion. This difference between forecast and real energy is captured in the "realization" term. For instance, if it is found that a

[1] Some of these dollars earn a return, while others are permanently expended. This distinction is not meant to be captured in the OF. Rather, this metric captures the amount of CEFIA resources devoted to a specific project. The amount of return those dollars earn may be captured in a separate metric.

solar project is generating 10% more kWh's than expected, then the Energy Generated figure can be multiplied by 1.10 to properly account for this unexpected increase.

Denominator of the Objective Function

State Rebates

Rebates include any cash subsidy from CEFIA that goes to the relevant clean energy or energy efficiency project. Examples include the RSIP EPBB and PBI. These figures should be expressed in present value, so a stream of payments like the PBI needs to be converted to real terms. In future versions of this calculation, CEFIA may want to include all state or ratepayer funded rebates (as outlined below).

Program and Administrative Costs

At this stage of organizational and metric development, the OF will not include CEFIA's program and administrative costs. Many CEFIA programs are still at an early stage of market and program development. This means that the resulting cost, on a per project basis, will be higher than is expected during a "steady-state" of market adoption. These costs will be tracked, and will be included in future versions of the OF (as outlined below).

Credit Enhancements

This cost category includes any dollars specifically committed to support the credit of the underlying borrower in order to draw in greater private investment. Examples include interest rate buy downs, loan loss reserves, or guarantees. Dollars paid to allow the bank to offer a lower interest rate to consumers would be included in this category. The number of dollars CEFIA commits to a loan loss reserve would also be captured. For example, CEFIA has put $3.5 million into a reserve to support the Solar Lease 2 product. Each individual project's share of that $3.5 million would be included in the OF.[2]

Amount of Financing

This accounts for the total dollars that CEFIA provides to customers in the form of equity, loans or leases. The figure included in the denominator is the actual principal of the investment. For instance, if CEFIA finances 100% of a C-PACE project that costs $1 million, then that entire figure will be included in the denominator. For lending funds like CT Solar Loan and Solar Lease 2, CEFIA's capital commitment will be calculated on a per loan basis.

REC Revenue

CEFIA's capital commitment in the forms outlined above is offset by RECs that it retains for RSIP grants. CEFIA is free to then sell these RECs and keep the proceeds. This money offsets the dollars at risk associated with the project and should be subtracted from the denominator of the OF. REC revenue will be calculated based on expected prices using a forward pricing curve, and should be discounted to the present value of the future REC revenue. CEFIA has some level of visibility into future REC prices five six years out, and these prices should be used for the calculation. Beyond six years there is less visibility into specific REC prices, but there is still a high level of certainty that the RECs will have value greater than zero. Therefore the price for year 6 should be assumed to apply to RECs generated in years 6 through 10. And then a price equal to 50% of the year 6 price should be applied to RECs generated in years 11 through 15. There is too much uncertainty about future REC markets and prices to assume any value for RECs beyond the 15 year time horizon. The single value attributable to the RECs over this 15 year period will be applied to a project's OF no matter the OF horizon. For example, a project's 5-year OF and lifetime OF will have the same total REC value in the denominator.

Discount Rate

The appropriate discount rate for CEFIA could be based on numerous possible inputs, such as: 1) the rate of inflation; or 2) the rate of ratepayer dollars; or 3) market cost of capital; or 4) risk-free rate; or 5) the

[2] These funds were technically from ARRA, but they are treated here as CEFIA dollars, as CEFIA has discretion over how they are used. This effectively makes them CEFIA dollars for decision-making purposes.

state's cost of capital; or 6) some other reasonable assumption. It has been determined that option #5 will be used for the discount rate and thus 3% will be used for the OF. This is based on the rationale that marginal cost of an additional dollar to CEFIA, if it were to raise funds using its bonding authority through the state, would roughly equal the cost of Connecticut's general obligation bonds. Connecticut is currently raising funds at 2.66%. Adding in a small premium for CEFIA's quasi-public status yields an assumed discount rate of 3%

Version 2.0 – Thinking Ahead

This version of the OF, Version 1.0, represents the organizations first attempt to formalize this metric. Moving forward, CEFIA may want to add additional sources of revenue or expense, or build in greater accuracy or nuance to the calculations. Listed below are several possible additions for Version 2.0.

- **CEEF Rebate** – The present objective of the OF is to measure the impact CEFIA has, as an organization, through its clean energy investments and grants. In the future, though, the OF can be expanded to consider the impact of state or other ratepayer dollars overall, which would include rebates from CEEF.

- **Energy or Environmental Attribute Revenue** – In the future, CEFIA may be able to earn additional revenue on its investments by monetizing certain energy or environmental attributes. Forward capacity markets and other ancillary benefits may present an opportunity for CEFIA to extract even greater value for each dollar it spends.

- **Servicing Costs** – It is reasonable to expect that CEFIA will incur loan servicing costs in the future as the organization will necessarily work to ensure loan repayments. This may be an additional expense calculation to be included in the denominator of a Version 2.0 OF.

- **Program & Administrative Costs** – Version 2.0 of the OF should include the program and administration costs associated with each CEFIA program. Over time, these per-project costs should normalize as demand becomes steady and start-up costs are no longer needed. These costs can be calculated by allocating program-specific costs, including salaries and marketing, across each project in a given program.

  In addition, general administrative costs for CEFIA will also be allocated per project.

  Also, as CEEF rebates are included in the future OF, program and administrative costs associated with CEEF grant programs should also be included. This presents challenges, as it may be difficult to accurately capture these costs from the utilities that administer the program. In sum, the program and administrative costs of CEFIA and CEEF will be included in the OF as follows.

	Include Program & Admin Costs	Exclude Program & Admin Costs
CEFIA Only	Track for FY 2015 (OF Version 2.0)	Calculate for FY 2015 (OF Version 1.0)
CEFIA and CEEF	Calculate for FY 2016 (OF Version X)	Track for FY 2015 (OF Version 2.0)

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CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

Memo

To: CEFIA Staff

From: Brian Farnen, General Counsel and CLO, and Bryan Garcia, President and CEO

CC: Board of Directors

Date: June 2, 2014

Re: Public Policy Review – Comprehensive Plan FY 2015 through FY 2016

As part of the FY 2015 through FY 2016 Comprehensive Plan, we have accessed historical public policies in Connecticut to identify opportunities to attract and deploy capital to help the state meet its clean energy goals. The following public policy review looks at those statutes that either directly or indirectly involve CEFIA.

Public Act 98-28

Direct CEFIA Involvement

- **Section 44 (Creation of the Clean Energy Fund) – Conn. Gen. Stat. § 16-245n** – establishes the Renewable Energy Investment Fund (later renamed the Clean Energy Fund or "CEF") to be administered by Connecticut Innovations ("CI") through a 1 mill per kWh surcharge on utility bills.

Indirect CEFIA Involvement

- **Section 25 (Class I and II RPS) – Conn. Gen. Stat. § 16-245a** – establishes a Class I and II renewable portfolio standard for renewable sources of generation.

- **Section 33 (Creation of the Conservation and Load Management Fund) – Conn. Gen. Stat. § 16-245m** – establishes the Energy Conservation and Load Management Fund ("EC&LM Fund") to be administered by the electric distribution companies through a 3 mill per kWh surcharge on utility bills.

- **Section 45 (Residential Property Tax Exemption) – Conn. Gen. Stat. §12-81(57)** – establishes a property tax exemption for Class I renewable energy sources or hydropower facilities installed for the generation of electricity for private residential use (single family dwelling or multifamily dwelling consisting of two to four units).

Public Act 05-01

Direct CEFIA Involvement

- **<u>Section 5 (Coordination with ECMB) – Conn. Gen. Stat. § 16-245m</u>** – requires the Energy Conservation Management Board ("ECMB") to:
    - Establish a joint committee of the ECMB and the Renewable Energy Investments Advisory Committee (later renamed CEFIA) to examine opportunities to coordinate the programs and activities funded by the CEF with the programs and activities contained in the C&LM Plan to reduce the long-term cost, environmental impacts and security risks of energy in the state.
    - Consult with the Renewable Energy Investments Advisory Committee (later renamed CEFIA) to conduct an evaluation of the performance of the programs and activities of the EC&LM Fund.

- **<u>Section 6 (Coordination with ECMB) – Conn. Gen. Stat. § 16-245n</u>** - requires the Renewable Energy Investments Advisory Committee (later renamed CEFIA) to:
    - Participate in the joint committee with the ECMB to carry out the tasks described in Section 5 of the Act (described above).
    - Develop a comprehensive plan and expenditure of funds that gives preference to projects that maximize the reduction of federally mandated congestion charges and are consistent with the comprehensive energy plan of the Connecticut Energy Advisory Board.

- **<u>Section 15 (On Bill Repayment Cost Recovery) – Conn. Gen. Stat. §16-243p</u>** – Allows electric distribution companies to recover their costs and investments that have been prudently incurred under the requirements of certain general statutes.

- **<u>Section 26 (Project 100) – Conn. Gen. Stat. § 16-244c</u>** – establishes a process for the electric utilities to sign long-term power purchase agreements for projects that receive funding from the Renewable Energy Investment Fund for no less than 100 MW of Class I projects to be sited in Connecticut.

Indirect CEFIA Involvement

- **<u>Section 16 (Class III RPS) – Conn. Gen. Stat. § 16-243q</u>** – establishes a Class III renewable portfolio standard to support CHP and energy efficiency measures.

- **<u>Section 17 (Municipal EC&LM Fund) – Conn. Gen. Stat. § 7-233y</u>** – requires municipal electric utilities to create a Municipal Energy Conservation and Load Management Fund ("Municipal EC&LM Fund") with a plan that is consistent with the comprehensive plan of the ECMB.

Public Act 07-242

Direct CEFIA Involvement

- **<u>Section 15 (Definition of Clean Energy) – Conn. Gen. Stat. § 16-245n</u>** – expands the definition of "clean energy" for the CEF to include solar thermal, geothermal, hydropower that meets low-impact standards of the Low-Impact Hydropower Institute, and alternative fuels used for electricity generation derived from agricultural produce, food waste, or waste vegetable oil (i.e. biodiesel, ethanol, etc.).

- **<u>Section 41 (Municipal Renewable Energy) – Conn. Gen. Stat. § 7-233z</u>** – requires any municipal electric energy cooperative (e.g. the CMEEC) to submit a comprehensive report to the Renewable Energy Investments Advisory Committee (later renamed CEFIA) on the activities taken to promote renewable energy sources, including the encouragement and expansion of the deployment and use of renewable energy sources and development of standards to promote renewable resources.

- **<u>Section 91 (Municipal Renewable Energy and Efficient Energy Grant Account) – Conn. Gen. Stat. § 16-245aa</u>** – establishes a $50 million non-elapsing account within the CEF for CI, in consultation with DPUC (later renamed PURA), the Department of Education, and the Department of Emergency Management and Homeland Security to make grants-in-aid for renewable energy-efficient generation projects giving priority to disaster relief centers and high schools.

- **<u>Section 118 (Demand Charge Waivers for Fuel Cells) - Conn. Gen. Stat. 16-245cc</u>** – electric suppliers and distribution companies are to waive demand charges for the operators of a fuel cell during a loss of power due to problems at any distribution resource or a scheduled or unscheduled shutdown of the fuel cell if the shutdown occurs during off-peak hours.

- **<u>Section 124 (Project 150) - Conn. Gen. Stat. 16-244c</u>** – expands Project 100 by an additional 50 megawatts for Project 150.

Indirect CEFIA Involvement

- **<u>Section 13 (Hardship Provisions) – Conn. Gen. Stat. § 16-245l</u>** – establishes the collection of a system benefit charge which shall be used to fund, among other things, the cost of hardship protection measures including, but not limited to, electric service bill payment programs.

- **<u>Sections 21-36 (Energy Improvement Districts) - Conn. Gen. Stat. §§ 32-80a; 32-80B; 32-80c</u>** – authorizes any municipality to form an Energy Improvement District Board which shall fund energy improvement district distributed resource projects in its district.

- **<u>Section 38 (Interconnection Standards) - Conn. Gen. Stat. § 16-243a</u>** – requires the Department of Public Utility Control (later renamed PURA) to issue a final decision, no later than January 1, 2008, approving interconnection standards for all platforms behind the meter that meet or exceed national standards of interconnectivity.

- **<u>Section 39 (Net Metering) – Conn. Gen. Stat. § 16-243h</u>** – Requires electric suppliers and electric distribution companies to interconnect and give a credit for any electricity generated by customers from Class I renewable energy sources or hydropower facility of less than two megawatts. The amount of electricity the customer produces shall be deducted from the amount the customer uses in each monthly billing period and any excess generation shall be credited toward the next monthly billing period. At the end of each year, the electric distribution company or electric supplier shall compensate the customer-generator for any excess kilowatt-hours generated, at the avoided cost of wholesale power.

- **<u>Section 40 (Class I RPS) - Conn. Gen. Stat. § 16-245a</u>** – amends the Class I RPS by increasing the amount necessary starting in 2011 at no less than 8% and increases to no less than 20% in 2020.

- **<u>Sections 42-44 (Class III RPS) – Conn. Gen. Stat. § 16-243t</u>** – appends to the Class III RPS how Class III RECs are established and distributed to customers based on incentives received from the C&LM Fund and the process for determining whether or not a resource qualifies. It also changes the definition to remove Class III RECs from applying to only commercial and industrial facilities, opening up the RPS to residential as well.

- **<u>Sections 46-47 (Residential Property Tax Exemption) – Conn. Gen. Stat. §12-81(57)</u>** – adds passive or active solar water or space heating system or geothermal energy resource to the existing property tax exemption for Class I renewables and hydropower.

- **<u>Section 67 (Shut-Off Provisions) – Conn. Gen. Stat. § 16-262c</u>** – amends electric and gas distribution company restrictions on terminating service in financial hardship cases, extending the covered period to May first.

- **<u>Section 68 (Sales and Use Tax Exemption) – Conn. Gen. Stat. § 12-412</u>** – Establishes a sales and use tax exemption for solar energy electricity generating systems and passive or active solar water or space heating systems, geothermal resource systems, and ice storage systems used for cooling, including equipment related to such systems.

- **<u>Section 69 (Definition of Weatherization) – Conn. Gen. Stat. § 12-412k</u>** – amends the definition of “residential weatherization products” to include oil furnaces and boilers that are not less than eighty-four per cent efficient and ground-source heat pumps that meet the minimum federal energy efficiency rating.

- **<u>Section 71 (Utility Procurement of Class I, II, and III Renewable Sources) – Conn. Gen. Stat. § 16-245a(g)</u>** – authorizes each electric distribution company to procure renewable energy certificates from Class I, Class II, and Class III renewable energy sources through long-term contracting mechanisms.

- **<u>Section 72 (Tax Credit for Investing in Low-Income Energy Conservation Projects) – Conn. Gen. Stat. § 12-635</u>** – amends the percentage of the tax credit granted for investing in energy conservations projects directed toward properties occupied by low-income persons, charitable corporations, foundations, or trusts.

- **<u>Section 73 (Bond Funds for State Projects) – Conn. Gen. Stat. § 16a-38m</u>** – authorizes bond funding of up to $30 million per year to support Department of Public Works projects resulting in increased energy efficiency measures in state buildings.

- **<u>Section 82 (Fundraising for CT Residents in Need of Emergency Energy Assistance) – Conn. Gen. Stat. § 16a-41h</u>** – requires electric distribution companies, gas companies and municipal utilities to request donations from their customers to Operation Fuel, Inc., a state-wide nonprofit organization designed to respond to people within the state who are in financial crisis and need emergency energy assistance.

- **<u>Sections 87-88, 111 (State-Wide Energy Efficiency and Outreach Marketing Campaign) – Conn. Gen. Stat. §§ 16a-47a; 16a-47b; 16a-47c</u>** – requires that the DPUC (later renamed PURA), in coordination with the ECMB, establish a state-wide energy efficiency and outreach marketing campaign as well as a real-time energy report by daily use by media which, among other things, gives visibility to communities and businesses that have implemented energy saving changes or have installed and are operating renewable energy resources. Authorizes the establishment of an account separate from the General Fund for DPUC (later renamed PURA) to use in carrying out this program.

Public Act 11-80

Direct CEFIA Involvement

- **<u>Section 99 (Creation of CEFIA) – Conn. Gen. Stat. § 16-245n</u>** – renames the Renewable Energy Investment Fund as the Clean Energy Fund ("CEF") and creates a successor agency of the Renewable Energy Investments Advisory Board in the quasi-public organization called the Clean Energy Finance and Investment Authority ("CEFIA") to use funds for expenditures that promote investment in clean energy in accordance with a comprehensive plan. CEFIA shall: (A) develop separate programs to finance and otherwise support clean energy investment in residential, municipal, small business and larger commercial projects and such others as it may determine; (B) support financing or other expenditures that promote investment in clean energy sources in accordance with a comprehensive plan developed by it to foster the growth, development and commercialization of clean energy sources and related enterprises; and (C) stimulate demand for clean energy and the deployment of clean energy sources with the state that serve end-use customers in the state.

- **Section 103 (Anaerobic Digesters and Combined Heat and Power)** – requires CEFIA to develop a three-year pilot program for combined heat and power (CHP) and anaerobic digesters (AD) by setting aside $2 million each year per program for a total of $6 million. CEFIA can use funds for grants, PPA's or loans.

- **Section 106 and 109 (Residential Solar Investment Program) – Conn. Gen. Stat. §§ 16-245ff; 16-245gg** – requires CEFIA to establish a residential solar investment program ("RSIP") which shall result in at least 30 MW of new residential solar PV installations located in Connecticut on or before December 31, 2022. The cost of the RSIP shall not exceed one-third of the total surcharge collected annually and shall offer expected performance-based buydown and performance-based buydown incentives for the purchase or lease of qualifying solar PV systems. Section 109 provides an additional incentive through PURA of 5% for major system components manufactured or assembled in Connecticut and an additional 5% if manufactured or assembled in a distressed municipality.

- **Sections 124 and 137-138 (Green Loan Guaranty Fund) – Conn. Gen. Stat. §§ 16a-40d; 16a-40e; 16a-40f** – authorizes CEFIA to guarantee loans for eligible energy conservation projects for qualified nonprofit organizations and small businesses. CEFIA will, in consultation with the ECMB and OPM, identify the types of projects that qualify, integrate the program with other state renewable energy programs, establish performance targets, and administer the program. Authorizes bond funding of up to five million dollars a year to be placed into a fund used to guarantee authorized loans under the program.

Indirect CEFIA Involvement

- **Section 1 (Formation of the DEEP) – Conn. Gen. Stat. § 22a-2d** – developed the Department of Energy and Environmental Protection as a successor department to the Department of Environmental Protection and the Department of Public Utility Control with the purpose of coordinating energy and environmental protection policy and regulation.

- **Sections 39-40 and 89-90 (Integrated Resources Plan) – Conn. Gen. Stat. §§ 16a-3a; 16a-3b; 16a-3c; 16a-3e** – requires DEEP every two years in consultation with the electric distribution companies to review the state's energy and capacity resource assessment and approve an Integrated Resources Plan ("IRP") for the procurement of energy resources, including renewable generating facilities, energy efficiency, and combined heat and power to minimize energy costs on customers and maximize consumer benefits consistent with the state's environmental goals and standards. The

Public Utilities Regulatory Authority ("PURA") oversees the implementation of the IRP and procurement plan.

- **Section 51 (Comprehensive Energy Strategy) – Conn. Gen. Stat. § 16a-3d** – requires DEEP every three years to prepare and adopt a Comprehensive Energy Strategy ("CES") that assesses and plans for all energy needs in the state, including but not limited to electricity, heating, cooling, and transportation, and includes the findings of the IRP, C&LM Plan, CEFIA Plan, and Energy Assurance Plan.

- **Section 100 (Property Assessed Clean Energy) – Conn. Gen. Stat. § 7-121n** – authorizes municipalities to establishes a PACE program to be administered by municipalities for single-family, multifamily, or non-residential buildings.

- **Sections 107-108 and 110 (ZREC and LREC Program) – Conn. Gen. Stat. §§ 16-244r; 16-244s; 16-244t** – establishes a 6-year zero emissions renewable energy credit ("ZREC") and a 5-year low emission renewable energy credit ("LREC") program for long-term 15-year contracts from behind-the-meter installations of Class I resources using a reverse auction process administered by the electric distribution companies and approved by PURA. $720 million and $300 million in long-term contracts are available for ZREC and LREC projects respectively.

- **Section 111 (Condominium Grant Program) – Conn. Gen. Stat. § 16-245hh** – CEFIA in consultation with DEEP shall establish a "condominium renewable energy grant program" to provide grants, within available funds, to residential condominium associations and owners for purchasing clean energy sources.

- **Sections 118 and 122-123 (Leading by Example) – Conn. Gen. Stat. §§ 16a-37u; 7-148(c)(6)(B); 16a-37x** – requires DEEP in consultation with DAS to develop a plan to reduce energy use in buildings owned or leased by the state by 20% by January 1, 2018. It allows any state agency or municipality to enter into financing measures through an energy-savings performance contract with the assistance of DEEP and DAS in consultation with OPM.

- **Section 127 (Grid Tied Renewable Energy Projects) – Conn. Gen. Stat. § 16-244v** – authorizes electric distribution companies, upon approval of such proposal by the DEEP, to build, own or operate one or more generating facilities up to an aggregate of thirty megawatts using Class I renewable energy sources.

- **Section 128 (Building Permit Fees) – Conn. Gen. Stat. § 29-263** – authorizes any municipality to exempt Class I renewable energy source projects from payment of building permit fees imposed by the municipality.

- **Section 130 (CMEEC) – Conn. Gen. Stat. § 7-233z** – requires municipal electric energy cooperatives to submit a comprehensive report to CEFIA regarding its activities in promoting renewable energy sources. Also requires such cooperatives to develop standards for promotion of renewable energy sources.

Public Act 12-2

Direct CEFIA Involvement

- **<u>Section 156 (Combined Heat and Power)</u>** – modifies Section 103 of PA 11-80 by increasing the capacity size of any CHP unit from 2 to 5 megawatts and the incentive from $350 to $450 per kilowatt cost, as well as the capacity size of AD from 1.5 to 3.0 megawatts.

- **<u>Section 157 (C-PACE) – Conn. Gen. Stat. § 16a-40g</u>** – establishes the commercial and industrial property assessed clean energy program to be administered statewide by CEFIA.

- **<u>Section 158 (Definition of Clean Energy) – Conn. Gen. Stat. § 16-245n</u>** – expands the definition of clean energy for CEFIA to include "any Class I renewable energy source, as defined in section 16-1." It also clarifies that CEFIA is an independent quasi-public organization with administrative purposes only from CI.

- **<u>Sections 159-162 (Special Capital Reserve Fund and Bonding) – Conn. Gen. Stat. § 16-245kk</u>** – establishes a special capital reserve fund ("SCRF") of up to $50 million which pledges the full faith and credit of the State of Connecticut to support bonds issued by CEFIA.

- **<u>Sections 164-166 (Quasi-Public Status) – Conn. Gen. Stat. §§ 1-79; 1-124; 1-125</u>** – notes CEFIA as an official quasi-public agency operating in the State of Connecticut.

Public Act 12-189

Direct CEFIA Involvement

- **<u>Section 36 (Renewable Energy and Efficient Energy Finance Account) – Conn. Gen. Stat. § 16-245aa</u>** – changes the "Municipal Renewable Energy and Efficient Energy Grant Account" to the "Renewable Energy and Efficient Energy Finance Account" and redirects the use of bond proceeds from CI to CEFIA who must work in consultation with DEEP, DECD, and the State Treasurer.

Public Act 13-298

Direct CEFIA Involvement

- **<u>Section 16 (Coordination with ECMB) – Conn. Gen. Stat. § 16-245m</u>** – requires the ECMB to:

    - Assist the electric distribution and gas companies in implementing the C&LM Plan and coordinate with CEFIA to further the goals of the plan.

- Establish a joint committee of the ECMB and the Board of Directors of CEFIA to examine opportunities to coordinate the programs and activities funded by the Clean Energy Fund with the programs and activities contained in the C&LM Plan *and to provide financing to increase the benefits of programs funded by the plan* so as to reduce the long-term cost, environmental impacts and security risks of energy in the state.

- **<u>Section 18 (Condominium Grant Program) – Conn. Gen. Stat. § 16-245hh</u>** – CEFIA in consultation with DEEP shall establish a "condominium renewable energy grant program" to provide grants, within available funds, to residential condominium associations and owners for purchasing clean energy sources.

- **<u>Sections 42 and 43 (C-PACE Modifications) – Conn. Gen. Stat. § 16a-40g</u>** – amends the C-PACE statute to clarify when a benefit assessment is levied on a property (i.e. prior to completion or upon completion of a project) and how benefit assessments are to be paid in the event of a foreclosure.

- **<u>Section 52 (Community-Based Marketing Campaign)</u>** – requires DEEP, CEFIA, and the ECMB in coordination with the electric distribution and gas companies to establish a pilot program in at least four municipalities, consistent with the policy goals of the Comprehensive Energy Strategy to: (1) ensure that potential customers targeted for conversion to natural gas are incented to install efficient equipment and improve the efficiency of the building envelope at the time of conversion; (2) ensure that customers who cannot cost-effectively convert to natural gas are incented to install efficient equipment and improve the efficiency of the building envelope; and (3) provide access to low-cost financing for natural gas conversion or efficiency upgrades. The pilot shall use a community-based marketing campaign and competitive solicitation for volume pricing on high efficiency heating equipment and insulation.

- **<u>Section 55 (Renewable Energy and Efficient Energy Finance Account) – Conn. Gen. Stat. § 16-245aa</u>** – requires CEFIA in consultation with DEEP, DECD, and the State Treasurer to establish a clean energy finance program that offers financial assistance to projects for the purchase or installation of renewable energy sources and energy-efficient generation sources (i.e. CHP). CEFIA shall give priority to applications for financial assistance to projects that use major system components manufactured or assembled in Connecticut. There is $18 million of bond funds available from the State of Connecticut for CEFIA to use for this program.

- **<u>Section 58 (On Bill Repayment) – Conn. Gen. Stat. § 16a-40m</u>** – requires the ECMB and CEFIA in consultation with the electric distribution companies and gas companies to establish a comprehensive residential clean energy on bill repayment program financed by third-party private capital managed by CEFIA.

Indirect CEFIA Involvement

- **<u>Sections 20 through 22 and 24 (Integrated Resources Plan) – Conn. Gen. Stat. §§ 16a-3a; 16a-3b; 16a-3c; 16a-3e</u>** – requires DEEP every two years in consultation with the electric distribution companies to review the state's energy and capacity resource assessment and approve an Integrated Resources Plan (IRP) for the procurement of energy resources, including renewable generating facilities, energy efficiency, and combined heat and power to minimize energy costs on customers and maximize consumer benefits consistent with the state's environmental goals and standards. The PURA oversees the implementation of the IRP and procurement plan.

- **<u>Section 23 (Comprehensive Energy Strategy) – Conn. Gen. Stat. § 16a-3d</u>** – requires DEEP every three years to prepare and adopt a Comprehensive Energy Strategy (CES) that assesses and plans for all energy needs in the state, including but not limited to electricity, heating, cooling, and transportation, and includes the findings of the IRP, C&LM Plan, CEFIA Plan, and Energy Assurance Plan.

- **<u>Section 27 (Lead by Example) – Conn. Gen. Stat. § 16a-37u</u>** – allows any state agency or municipality to enter into an energy-savings performance contract with the assistance of DEEP and DAS in consultation with OPM.

Public Act 14-94

Direct CEFIA Involvement

- **<u>Sections 23 and 24 (C-PACE and Micro Grids and R-PACE Study)</u>**[1] – expands the energy improvements eligible for participation in the C-PACE program to include participation in a microgrid that incorporates clean energy. By law, a "microgrid" is a group of interconnected electricity users and generators that (1) is within clearly defined boundaries and acts as a single controllable entity in respect to the larger grid and (2) can operate as either a part of the grid or independent of it. The bill also requires CEFIA, by January 1, 2015, to submit a report on a residential property assessed clean energy program. The report must evaluate (1) the potential consistency between such a program and C-PACE and similar national programs and (2) the legal framework and need for such a program. (Current state law allows a residential PACE program, however implementation has been effectively blocked by the Federal Housing Finance Agency.)

- **<u>Sections 29 (Connecticut Green Bank)</u>**[2] – renames CEFIA as the Connecticut Green Bank, and makes conforming changes throughout the statutes. It makes the Connecticut Green Bank a successor agency to CEFIA for purposes of administering the Clean Energy Fund.

[1] Section 23 amends Conn. Gen. Stat. § 16a-40g and Section 24 is not yet codified in the Connecticut General Statutes.
[2] Not yet codified in the Connecticut General Statutes.

- **Sections 31 (On Bill Repayment Cost Recovery)**[3] – adds costs and investments that have been prudently incurred by electric distribution companies under Sections 16a-40l and 16a-40m of the Connecticut General Statues as eligible sections for cost recovery mechanisms.

Indirect CEFIA Involvement

- **Section 19 (State Building Standards)**[4] – requires the DEEP, in consultation with the Commissioner of Administrative Services, to adopt regulations for state building construction standards that achieve at least seventy-five points on the EPA national energy performance rating system; such regulations shall include a standard for inclusion of electric vehicle charging stations. There is an exemption from these regulations for facilities that cannot be defined as eligible building types and must therefore meet a different standard.

- **Section 21 (Bridgeport Thermal Loop)**[5] – forms the "The Bridgeport Thermal Limited Liability Company" a thermal energy transportation company, authorizing it to (1) furnish heat or conditioned air from its plant(s) in Bridgeport, (2) lay, install, maintain or erect pipes, mains, conduits or other fixtures and improvements which may be necessary for the purpose of carrying heated or chilled water or other medium from its plant(s) to the locations to be served, and (3) lease to corporations or limited liability companies formed under the general law or specially chartered for the purpose of furnishing heat or air conditioning, or both.

- **Section 25 (Project 150)**[6] – requires PURA to grant, upon request, an extension of the latest of any in-service date or contractual arrangement made as part of Project 100 or Project 150 not more than thirty-six months for any project having a capacity of less than five megawatts, provided any such project (1) commences construction by April 30, 2015, and (2) PURA has provided previous approval of such project.

- **Sections 56 and 57 (Property Tax Exemptions)**[7] – amends the property tax exemption in the case of passive or active solar water or space heating system or any geothermal energy resource, so that such exemption shall apply only to the amount by which the assessed valuation of the real property equipped with such system or resource exceeds the assessed valuation of such real property equipped with the conventional portion of the system or resource.

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[3] Amends Conn. Gen. Stat. § 16-243p.
[4] Amends Conn. Gen. Stat. § 16a-38k.
[5] Not yet codified in the Connecticut General Statutes.
[6] Amends Conn. Gen. Stat. § 16-244c(h)(2).
[7] Section 56 amends Conn. Gen. Stat. § 12-81(57)(A) and Section 57 amends Conn. Gen. Stat. § 12-81(57)(D).

Public Act 14-136

Indirect CEFIA Involvement

- **<u>Section 1 (Definition of Clean Alternative Fuel)</u>**[8] – adds hydrogen and propane when used as a motor vehicle fuel to the definition of "clean alternative fuel."

[8] Amends Conn. Gen. Stat. § 4a-59.

BUDGET AND OPERATIONS COMMITTEE OF THE
CLEAN ENERGY FINANCE AND INVESTMENT AUTHORITY
Draft Minutes – Regular Meeting
Friday, May 16, 2014

A regular meeting of the Budget and Operations Committee ("Budget Committee") of the Board of Directors of the **Clean Energy Finance and Investment Authority (the "CEFIA")** was held on May 16, 2014, at the office of the Clean Energy Finance and Investment Authority, 845 Brook Street, Rocky Hill, CT 06067.

1. **Call to Order**: The meeting was called to order at 2:10 p.m. Budget Committee members participating: Mun Choi (by phone) and Commissioner Rob Klee (by phone) and Norma Glover (by phone).

Staff Attending: George Bellas, Mackey Dykes, Brian Farnen (by phone), Bryan Garcia, Cheryl Samuels, Andrea Janecko, David Goldberg and Suzanne Kaswan.

Others Attending: Alex Kragie (by phone) and Albert Monroe, DEEP Chief of Staff (by phone)

2. **Public Comments:**

There were no public comments.

3. **Approval of Meeting Minutes:**

The Budget Committee members were asked to consider the minutes from the April 17, 2014 meeting.

> **Upon a motion made by Mr. Klee, seconded by Mr. Choi, the Budget Committee members voted unanimously in favor of adopting the minutes from the April 17, 2014 meeting as presented.**

4. **Revised Salary Ranges:**

Mr. Dykes explained that in the fall of 2012 CEFIA along with CI commissioned a study with Buck Associates to conduct a comparison study of CEFIA salaries to private and non-profit/government entities' salaries. The study evaluated CEFIA's market position to base salary and base plus bonuses. The results were weighted to reflect CEFIA's valuable benefits package. Buck Consultants found that, with a few exceptions, the weighted CEFIA base salaries are within an acceptable range, defined by Buck to be plus or minus ten percent, of the market median. However, when compared to total cash compensation (base salary plus bonus), several positions fell short of this range. .

A question was asked should CEFIA be compared to financial institutions since CEFIA does not provide bonuses. Ms. Kaswan stated that concerning program salaries bonuses are not a factor. However, within the finance sector, bonuses should be factored for considered median. A question was asked if CI used the same methodology for their salary evaluation. Ms. Kaswan answered "yes" and further explained that CI brought their evaluation to the board in November of 2013 which received board approval. Most positions on CEFIA and CI side of the house fell into the acceptable ranges but were asking for a recommendation to change the salary ranges for the Director I positions and above. Mr. Dykes explained a diagram of CEFIA's schedule of positions, which is divided into three divisions (Corporate, Program and Investment) and several grade levels. Bryan Garcia further explained that in grades 1-4 (Admin to Associate Manager), skillsets across all three divisions were the same so the ranges are the same. Grades 5- executive grade (Manager Officer) have specialized skillsets so the ranges in the investment division are larger to reflect a more competitive market. A question was asked how will these work in terms of staff promotions and opportunities for advancement and what would be the process that determines the minimum and maximum if that person gets promoted. An example of how it would work was given to the members and further explained by Ms. Kaswan that compensation increase is determined through evaluation of responsibilities and position expectations. Promotions are typically granted a 5 percent increase however, other factors may be considered. Mr. Dykes provided an example of a hypothetical promotion scenario of a Director I. Overall, the new ranges allow for growth and employee retention. A statement was made that within the State of CT system there is a 5 percent cap on salary increases with zero regulated flexibility. A question was asked if the 5 percent cap on increases in state agencies was for all staff or does it apply to managers and above. It was believed that this cap applied across the board. Mr. Dykes explained the midpoint of the new ranges is still staying below the market midpoint for salaries. This action will not change anyone's salary and is intended to increase senior and executive salary ranges to make CEFIA more competitive in recruiting. This new structure will allow for a more natural, even progression through the career ladder. A question was asked if this policy will be put in place after the committee and board approval. Mr. Garcia stated that if approved the policy will be put in practice on June 20th following board approval. If the committee moves forward, revised minimum and maximum compensation for director levels and above will be implemented according to the BUCK Study. A question was asked if position descriptions will reflect new duties and progression. Mr. Garcia answered "yes" and standardized across the organization, progression will be allowed laterally across staff. A question was asked if this was too structured for a quasi-public agency. Mr. Garcia answered that he doesn't feel it's too structured and that this is a good way to organize where we've come because it establishes an appropriate career path for staff moving up and enhances opportunities for young professionals who want to grow. It's a good solid path for attraction and retention of staff within a defined structure.

Upon a motion made by Ms. Glover, seconded by Mr. Choi, the Budget Committee members voted unanimously in favor of adopting the following resolution regarding the Revised Salary Ranges.

RESOLVED, the Clean Energy Finance and Investment Authority's Budget and Operations Committee recommends that the CEFIA Board of Directors approve the salary ranges for Director I level positions and above outlined in Attachment A.

5. Comprehensive Plan Outline and Discussion:

Mr. Dykes made reference that at the previous meeting of the Budget and Operations Committee, it was mentioned that CEFIA's Comprehensive Plan and FY15 budget would be discussed at the next B&O meeting. He stated that as the organization changes the budget also changes. Mr. Garcia stated that per section 99 of PA11-80, CEFIA needed to put together a comprehensive plan. Mr. Garcia explained the process of pulling the pieces together and provided an overview of the comprehensive plan starting with the organization, public policy, stakeholders, financing and marketing. He stated that the plan was more robust than the last plan and will act as a good blueprint for CEFIA as CEFIA becomes a model for other states. Mr. Garcia further explained that staff is looking at the Comprehensive Energy Strategy, Integrated Resources Plan, Conservation and Load Management plan, and gas expansion plans to help guide us. Mr. Klee commented that from the outline it looks like an enormous document and huge undertaking and offered support from DEEP. Mr. Garcia stated that the DEEP staff has been great and engaging in discussions on the pending IRP and how to go about focusing on certain products. Mr. Garcia stated that he would send the comprehensive plan to DEEP for review. Mr. Dykes added that CEFIA is more mature than we were with the first comprehensive plan but still not at a level of market maturity to set two year targets so the plan would include just FY15 targets and budget.

Several other metrics and key performance indicators will be implemented to track progress to targets and Mr. Garcia added that the plan is going to be a plan that helps guide CEFIA going forward. Mr. Garcia mentioned that CEFIA is also going to start building out more robust information and data platforms. Mr. Klee commented that it seems to be an enormous document and a huge undertaking and recommended a clear executive summary.

6. Fiscal Year 2015 Budget Outline and Discussion:

Mr. Dykes explained the budget outline and changes and asked the committee members for feedback. He stated that CEFIA is doing better about building around each sector doing a better job of capturing product costs. . The big changes that CEFIA wanted to bring to the committee and board is structure change to our accounting staffing. Currently our accounting is outsourced to CI. CEFIA is growing and ramping up products so CEFIA wants to bring the treasury/accounting function of the organization in house. It makes sense to have expertise in house and not share or split these responsibilities. George Bellas along with his staff of three would become CEFIA employees. . George and his staff would physically move over and come work for CEFIA at 100 percent salary, except for one who would devote 25% of their time to CI. George explained that he is only doing venture capital items for CI and that he and his team are mostly doing work for CEFIA. Mr. Dykes stated that having George and his team at CEFIA would be very helpful to the financing work that he and his team are currently performing for CEFIA. Mr. Garcia added that CI's Executive Director is in agreement and recognizes the benefits of having accounting in house and that together CI and CEFIA will work on an appropriate transition. Mr. Klee agreed and complimented George on the work that he does for the organization. Mr. Choi also agrees and supports the move of George and his team to CEFIA.

A question was asked when CEFIA would formally be called "The Green Bank". Mr. Garcia answered that once the Governor signs the statute we become the "Connecticut Green Bank" legally. CEFIA will start a rebranding effort around our new name that will be led by the incoming Marketing Director. Mr. Dykes added that all branding is still CT Clean Energy and that we want to take advantage of name change to reorient ourselves to look more like a financial institution. He mentioned that CI's model happened all at once in a coordinated fashion and that although it will take some time for CEFIA we want to remodel our brand and logos, website, etc. and that CEFIA is looking forward to the transition.

7. <u>Other Business:</u>

Mr. Garcia commented that he has been working alongside Mackey Dykes for almost two years to the day and that as you can see Mackey does an extraordinary amount of work for the organization. Mackey came to CEFIA as a Chief of Staff and has helped build the organization by attracting and retaining talent. Mr. Garcia stated that Mackey is an operations expert dealing with all elements of operations and doing an outstanding job. Mr. Garcia mentioned that he will have a conversation with Commissioner Smith to promote Mackey to Vice President of Operations and hoping to have a proposal at the next Budget and Operations meeting. Mr. Choi agreed with Mr. Garcia's assessment of Mackey.

8. <u>Adjourn:</u>

<u>Adjournment</u>: Upon a motion made by Mr. Choi, seconded by Mrs. Glover, the Budget Committee members voted unanimously in favor of adjourning the May 16, 2014 meeting at 3:09 p.m.

Respectfully submitted,

Robert Klee, Chairperson of Budget Committee

Clean Energy Finance and Investment Authority

FY 2015 Operating and Program Budget

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As of June 3, 2014

Primary Schedules

Clean Energy Finance and Investment Authority

FY15 Operations and Program Budget

Schedule of Program Loans & Equity Contributions/Credit Enhancements/Incentives

FY2015

Loans and Equity Contributions

	FY15 Budget	FY14 Budget
Advances to CEFIA Services to make equity contributions to CT Solar Lease 2 LLC to fund PV and SHW residential and commercial leases	$ 5,813.0	$ 4,500.0
Advances to CT Solar Loan I to fund residential loans	$ 10,000.0	$ 2,800.0
Alpha/Op Demo Legacy Program	$ 732.0	$ 1,335.0
Anaerobic Digestor Pilot	$ 12,500.0	$ 2,500.0
C&I ESA RFP	$ 3,000.0	$ -
C&I Loans	$ 2,000.0	$ -
Campus Efficiency NOW Loan Program	$ -	$ 875.0
CES Innovation Fund	$ 1,500.0	$ -
CHIF Multifamily	$ 1,000.0	$ -
CHP Pilot	$ 9,000.0	$ -
CPACE Loan Program	$ 50,000.0	$ 25,000.0
Energy Efficiency Loan Program	$ -	$ 5,000.0
Grid tied Loan Program	$ 2,800.0	$ 3,500.0
Micro Grid program	$ 5,000.0	$ 5,000.0
Multifamily	$ 5,000.0	$ -
Multifamily RFP	$ 4,000.0	$ -
Solar PV Capital Competition	$ 1,000.0	$ 1,000.0
WINN LISC Program	$ 1,875.0	$ 1,875.0
Loans Funded during FY15:	$ 115,220.0	$ 53,385.0
Sale of CPACE loans:	$ (40,000.0)	$ -
Sale of CT Solar Loan I loans6/3/2014	$ (8,000.0)	$ -
Sale of other loans (AD,CHp,Gried-tied)	$ (5,000.0)	$ -
Loans Sold during FY15:	$ (53,000.0)	$ -
FY 15 Loans remaining on CEFIA Balance Sheet:	$ 62,220.0	$ 53,385.0

Provisions for Loan Losses

	Loss Ratio	FY15 Budget	FY14 Budget
Alpha/Op Demo Legacy Program	50%	$ 366.0	$ 667.5
Anaerobic Digestor Pilot	10%	$ 1,250.0	$ -
Campus Efficiency NOW Loan Program	10%	$ -	$ 87.5
CHP Pilot	10%	$ 900.0	$ -
CPACE Loan Program	5%	$ 500.0	$ 1,250.0
Energy Efficiency Loan Program	5%	$ -	$ 250.0
Grid tied Loan Program	10%	$ 280.0	$ 350.0
Micro Grid program	10%	$ 500.0	$ 500.0
WINN LISC Program	10%	$ 187.5	$ 187.5
		$ 3,983.5	$ 2,537.5

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Clean Energy Finance and Investment Authority

FY15 Operations and Program Budget

Schedule of Program Loans & Equity Contributions/Credit Enhancements/Incentives

FY2015

Credit Enhancements

LLR, OBR timeliness reserve and IRB programs:

LLR:

Loan Loss Reserves (LLR) are "credit enhancement" mechanisms provided to incentivize lenders into a loan fund. Until a "loss" which utilizes the reserve occurs, cash to support the reserve is segregated on the balance sheet an labeled "restricted cash".

Setting up the reserve is a cash movement, balance sheet phenomenon.

There is NO P&L effect to establish a Loan Loss Reserve - only "actual losses" hit the P&L.

If a loss occurs, the restricted cash is reduced, and the P&L is charged a "loss" in equal amount.

Loan Loss Reserves - ARRA funds	Program Administrator	Board Allocations	Deployed to Program Administrator	Reserve Drawdowns Pre FY15	Projected Drawdowns FY15
CHIF/MPEL product	CHIF	$ 300.0	$ -	$ -	$ -
Cozy Loan product through HDF	HDF	$ 360.0	$ (360.0)	$ -	$ -
Smart E Loan product through financial institutions	CEFIA	$ 2,300.0	$ -	$ -	$ -
Solar Lease product through CT Solar Lease 2 LLC	CT Solar Lease 2 LLC	$ 3,500.0	$ (3,500.0)	$ -	$ -
Solar Loan product through CT Solar Loan I LLC	CT Solar Loan I LLC	$ 300.0	$ (300.0)	$ -	$ -
		$ 6,760.0	**$ (4,160.0)**	**$ -**	**$ -**

Loan Loss Reserves - CEFIA funds	Program Administrator	Board Deployment	Deployed to Program FY15 Budget	Reserve Drawdowns Prior to FY15	Projected Drawdowns Total
		$ -	$ -	$ -	$ -
		$ -	**$ -**	**$ -**	**$ -**

OBR timeliness reserve:

This reserve will be set up by CEFIA to match the Lenders' repayment schedule with the Utilities billing and collections schedule and to allow for set-up and lead time once a loan goes to repayment. Activity is in reserve does not effect CEFIA's P&L. It effects CEFIA's cash flow statement and thus the projected FY15 activity is reflected in the cash flow statement.

	Program Administrator	Total Reserve	Projected Drawdowns FY15	Projected Repayments FY15	Year End Cash Position
OBR timeliness reserve- CEFIA Funds:	CEFIA	$ 500.0	$ (500.0)	$ 250.0	$ (250.0)
		$ 500.0	**$ (500.0)**	**$ 250.0**	**$ (250.0)**

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Clean Energy Finance and Investment Authority

FY15 Operations and Program Budget

Schedule of Program Loans & Equity Contributions/Credit Enhancements/Incentives

FY2015

IRB:

An interest rate buydown (IRB) is a "yield enhancement" sum in cash paid to the lender in order for the loan rate to the end use borrower to be reduced. When the IRB is paid, cash is reduced and the P&L is charged in equal amount reflecting an "incentive expense".

Interest Rate Buydowns - ARRA funds	Program Administrator	Board Allocations	Deployed to Program Administrator	Payments Made Pre FY15	Budgeted Payments FY15
Cozy Loan product	HDF	$ 50.0	$ (50.0)	$ -	$ -
Smart E Loan product through financial institutions	CEFIA	$ 504.7	$ -	$ (60.0)	$ (300.0)
Solar Lease product through CT Solar Lease 2 LLC	CEFIA	$ 641.6	$ -	$ -	$ -
Solar Loan product through CT Solar Loan I LLC	CEFIA	$ 405.0	$ -	$ (15.0)	$ (275.0)
		$ 1,601.3	**$ (50.0)**	**$ (75.0)**	**$ (575.0)**

TPI:

Under a Third Party Insurance (TPI) credit enhancement program, CEFIA would purchase an insurance policy from a specialty insurer which would provide coverage for lossos incurred by a capital provider of residential clean energy loans up to a stop loss. CEFIA would incur an expense through its P&L when the policy is purchased.

	Program Administrator	Board Allocations	Payments Made Pre FY15	Budgeted Payments FY15
TPI policy	TBD	$ 150.0	$ -	$ -
		$ 150.0	**$ -**	**$ -**

Total ARRA Funds allocated to programs: **$ 8,511.3**

Financial Incentives - Grants and Rebates

	FY15 Budget	FY14 Budget
Anaerobic Digestor Pilot	$ -	$ 1,000.0
CHP Pilot	$ -	$ 2,000.0
Clean Energy Business Solutions	$ 4,500.00	$ 3,000.0
Clean Energy Communities	$ 500.00	$ 550.0
Community Innovation Grants	$ 25.00	$ 75.0
Project Opportunity/Strategic Investment Fund	$ -	$ 500.0
Residential Solar PV rebates	$ 14,400.00	$ 9,200.0
	$ 19,425.00	$ 16,325.0
Pre FY15 Legacy Commitments	$ 3,600.00	$ 8,000.0
	$ 23,025.00	$ 24,325.0

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Clean Energy Finance and Investment Authority

FY 15 Operations and Program Budget

Statement of Revenues and General Operations and Program Expenses

CONSOLIDATED

	FY 2015 Budget			FY 2014 Budget				
	General Operations	Total Programs	Total Operations & Program Budget	General Operations	Total Programs	Total Operations & Program Budget	Inc(Dec)	% Inc.
Revenues								
Utility customer assessments	$ 27,525.0	$ -	$ 27,525.0	$ 27,600.0	$ -	$ 27,600.0	$ (75.00)	-0.3%
RGGI auction proceeds - renewables	$ 6,800.0	$ -	$ 6,800.0	$ 5,900.0	$ -	$ 5,900.0	$ 900.00	15.3%
RGGI proceeds - energy efficiency	$ 12,200.0	$ -	$ 12,200.0	$ 12,800.0	$ -	$ 12,800.0	$ (600.00)	-4.7%
State bond funds	$ 5,000.0	$ -	$ 5,000.0	$ -	$ -	$ -	$ 5,000.00	
Interest Income	$ 1,231.0	$ -	$ 1,231.0	$ 210.0	$ -	$ 210.0	$ 1,021.00	486.2%
Grant income (Federal Programs)	$ -	$ 146.0	$ 146.0	$ -	$ 300.0	$ 300.0	$ (154.00)	-51.3%
Renewable Energy Credits,net of fees	$ -	$ 575.0	$ 575.0	$ -	$ 575.0	$ 575.0	$ -	0.0%
CPACE Loan closing fees,net	$ -	$ 158.8	$ 158.8	$ -	$ 90.0	$ 90.0	$ 68.75	76.4%
Other income	$ 100.0	$ -	$ 100.0	$ 100.0	$ -	$ 100.0	$ -	0.0%
Total Revenues:	$ 52,856.0	$ 879.8	$ 53,735.8	$ 46,610.0	$ 965.0	$ 47,575.0	$ 6,160.8	12.9%
Expenses								
Compensation and benefits	$ 2,035.1	$ 6,179.6	$ 8,214.7	$ 1,851.5	$ 4,817.1	$ 6,668.6	$ 1,546.13	23.2%
Program development and administration	$ -	$ 2,881.9	$ 2,881.9	$ -	$ 2,592.0	$ 2,592.0	$ 289.90	11.2%
Marketing	$ 740.3	$ 2,514.6	$ 3,255.0	$ 810.3	$ 1,722.5	$ 2,532.8	$ 722.17	28.5%
EM&V	$ -	$ 200.0	$ 200.0	$ -	$ 430.0	$ 430.0	$ (230.00)	-53.5%
Consulting fees	$ 97.0	$ 195.0	$ 292.0	$ 20.0	$ 295.0	$ 315.0	$ (23.00)	-7.3%
Professional fees	$ 125.0	$ 424.0	$ 549.0	$ 170.5	$ 285.0	$ 455.5	$ 93.50	20.5%
Rent and location related expenses	$ 104.9	$ 398.3	$ 503.3	$ 91.5	$ 411.0	$ 502.5	$ 0.78	0.2%
Office, computer & other expenses	$ 148.7	$ 331.8	$ 480.5	$ 224.4	$ 233.0	$ 457.4	$ 23.04	5.0%
Expenses before Financial Incentives:	$ 3,251.1	$ 13,125.2	$ 16,376.3	$ 3,168.2	$ 10,785.6	$ 13,953.8	$ 2,422.5	17.4%
Federal Grant expenditures	$ -	$ 75.0	$ 75.0	$ -	$ 300.0	$ 300.0	$ (225.00)	-75.0%
Financial Incentives- Grants	$ -	$ 23,025.0	$ 23,025.0	$ -	$ 16,325.0	$ 16,325.0	$ 6,700.00	41.0%
Interest Rate Buydowns	$ -	$ 575.0	$ 575.0	$ -	$ 525.0	$ 525.0	$ 50.00	9.5%
Provision for Loan Loss	$ -	$ 3,983.5	$ 3,983.5	$ -	$ 3,432.70	$ 3,432.7	$ 550.80	16.0%
Financial Incentives:	$ -	$ 27,658.5	$ 27,658.5	$ -	$ 20,582.7	$ 20,582.7	$ 7,075.8	34.4%
Total Expenditures:	$ 3,251.1	$ 40,783.7	$ 44,034.8	$ 3,168.2	$ 31,368.3	$ 34,536.5	$ 9,498.3	27.5%
Total Expenditures over Revenue:			$ 9,700.9			$ 13,038.5		

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Clean Energy Finance and Investment Authority

FY 15 Operations and Program Budget

Sources of Revenue

	2015 Budget		2014 Budget				
		General Operations & Programs		General Operations & Programs		Inc(Dec)	% Inc.
Income							
Utility customer assessments	$	27,525.0	$	27,600.0	$	(75.00)	-0.3%
RGGI auction proceeds - renewables	$	6,800.0	$	5,900.0	$	900.00	15.3%
RGGI proceeds energy efficiency	$	12,200.0	$	12,800.0	$	(600.00)	-4.7%
State bond funds	$	5,000.0	$	-	$	5,000.00	
Interest Income - cash deposits	$	80.0	$	100.0	$	(20.00)	-20.0%
Interest Income - CPACE loans	$	600.0	$	-	$	600.00	
Interest Income - Grid Tied loans	$	306.0	$	-	$	306.00	
Interest Income - Solar lease I promissory notes,net	$	125.0	$	110.0	$	15.00	13.6%
Interest Income - other loans	$	120.0	$	-	$	120.00	
Closing fees - (gross of $773,750 less payments to TPA of $615,000),net	$	158.8	$	90.0	$	68.75	76.4%
Grant income (federal programs)	$	146.0	$	300.0	$	(154.00)	-51.3%
REC sales, net of fees	$	575.0	$	575.0	$	-	0.0%
Other income	$	100.0	$	100.0	$	-	0.0%
Total Sources of revenue:	$	53,735.8	$	47,575.0	$	6,160.8	12.9%

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Clean Energy Finance and Investment Authority

FY 15 Operations and Program Budget

General Operations Budget

	2015 Budget General Operations		2014 Budget General Operations		Inc(Dec)	% Inc.
Expenses						
Compensation and benefits						
-Salaries & Wages - CEFIA Employees	$	938.5	$	598.6	$ 339.90	56.8%
-Salaries & Wages - CI Shared Services	$	176.9	$	430.3	$ (253.43)	-58.9%
-Employee Benefits - CEFIA Employees	$	713.3	$	445.3	$ 267.96	60.2%
-Employee Benefits - CI Shared Services	$	151.5	$	347.3	$ (195.79)	-56.4%
-Temporary employees	$	55.0	$	30.0	$ 25.00	83.3%
Marketing	$	740.3	$	536.0	$ 204.34	38.1%
Consulting fees	$	97.0	$	20.0	$ 77.00	385.0%
Professional fees	$	125.0	$	80.0	$ 45.00	56.3%
Rent and location related expenses						
-Rent/Utilities/Maintenance	$	51.4	$	48.8	$ 2.64	5.4%
-Telephone/Communications	$	14.8	$	11.6	$ 3.21	27.6%
-Depreciation FF&E	$	38.7	$	31.1	$ 7.60	24.4%
Office, computer & other expenses						
-Office expense	$	18.1	$	15.5	$ 2.55	16.5%
-IT operations	$	37.7	$	10.9	$ 26.83	246.1%
-Training/education/subsriptions	$	9.7	$	51.0	$ (41.30)	-81.0%
-Travel,meeting& related expenses	$	23.2	$	85.0	$ (61.80)	-72.7%
-Insurance	$	60.0	$	62.0	$ (2.00)	-3.2%
Total General Operations expenses:	$	3,251.1	$	2,803.4	$ 447.7	16.0%

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Clean Energy Finance and Investment Authority

FY 14 Operations and Program Budget

Statutory and Infrastructure Programs

	2015					2014		
	Budget					Budget		
	Anaerobic Digestor Pilot	Micro Grid CHP Pilot	Residential Solar PV Investment Program	SunShot	All Programs	All Programs	Inc(Dec)	% Inc.
Expenses								
Compensation and benefits								
-Salaries & Wages	$ 180.6	$ 192.0	$ 524.9	$ 126.8	$ 1,024.3	$ 635.4	$ 388.90	61.2%
-Employee Benefits	$ 137.2	$ 145.9	$ 399.0	$ 96.3	$ 778.5	$ 472.7	$ 305.74	64.7%
-Temporary employees	$ -	$ -	$ -	$ -	$ -	$ 40.0	$ (40.00)	-100.0%
Program development and administration								
- Program development costs	$ -	$ 15.0	$ 35.0	$ -	$ 50.0	$ 175.0	$ (125.00)	-71.4%
- Technology support costs	$ -	$ -	$ 290.0	$ -	$ 290.0	$ 150.0	$ 140.00	
- Project Inspection fees	$ 5.0	$ 5.0	$ 350.0	$ -	$ 360.0	$ 260.0	$ 100.00	38.5%
Marketing	$ -	$ -	$ -	$ -	$ -			
- Outreach campaigns	$ -	$ -	$ 250.0	$ -	$ 250.0	$ 100.0	$ 150.00	150.0%
EM&V	$ 25.0	$ 25.0	$ 100.0	$ -	$ 150.0	$ 100.0	$ 50.00	50.0%
Professional fees								
- Consulting	$ 10.0	$ 15.0	$ 45.0	$ -	$ 70.0	$ -	$ 70.00	
- Legal	$ 20.0	$ 5.0	$ -	$ -	$ 25.0	$ -	$ 25.00	
Rent and location related expenses								
-Rent/Utilities/Maintenance	$ 9.9	$ 10.5	$ 28.8	$ 6.9	$ 56.1	$ 32.4	$ 23.75	73.3%
-Telephone/Communications	$ 2.8	$ 3.0	$ 8.3	$ 2.0	$ 16.2	$ 7.7	$ 8.46	109.9%
-Depreciation FF&E	$ 7.4	$ 7.9	$ 21.6	$ 5.2	$ 42.2	$ 20.7	$ 21.54	104.1%
Office, computer & other expenses								
-Office expense	$ 3.5	$ 3.7	$ 10.1	$ 2.4	$ 19.7	$ 10.3	$ 9.41	91.3%
-IT operations	$ 7.3	$ 7.7	$ 21.1	$ 5.1	$ 41.2	$ 7.3	$ 33.88	464.1%
-Training/education/subsriptions	$ 1.9	$ 2.0	$ 5.4	$ 1.3	$ 10.6	$ 50.0	$ (39.41)	-78.8%
-Travel,meeting& related expenses	$ 4.5	$ 4.7	$ 13.0	$ 3.1	$ 25.3	$ 50.0	$ (24.68)	-49.4%
Total Statutory and Infrastructure Program expenses:	$ 415.1	$ 442.6	$ 2,102.2	$ 249.3	$ 3,209.1	$ 2,111.5	$ 1,097.6	52.0%

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Clean Energy Finance and Investment Authority

FY 15 Operations and Program Budget

Residential and Multifamily Programs

	2015 Budget: Smart E Loans	2015 Budget: Cozy Loans	2015 Budget: CT Solar Lease 2 program	2015 Budget: CT Solar Loan I program	2015 Budget: Total Residential	2015 Budget: CHIF Multifamily Permanent Energy Loan	2015 Budget: CHFA Pilot	2015 Budget: Multifamily Programs	2015 Budget: Total Multifamily	2015 Budget: Total Residential & Multifamily	2014 Budget: Total	Inc(Dec)	% Inc.
Expenses													
Compensation and benefits													
-Salaries & Wages	$ 191.0	$ 53.8	$ 269.4	$ 145.3	$ 659.5	$ 40.7	$ 66.5	$ 256.4	$ 363.6	$ 1,023.1	$ 711.6	$ 311.51	43.8%
-Employee Benefits	$ 145.2	$ 40.9	$ 204.8	$ 110.4	$ 501.2	$ 30.9	$ 50.5	$ 194.8	$ 276.3	$ 777.6	$ 529.4	$ 248.13	46.9%
Program development and administration													
- Program development costs	$ 50.0	$ -	$ -	$ -	$ 50.0	$ -	$ 75.0	$ 100.0	$ 175.0	$ 225.0	$ 171.3	$ 53.70	31.3%
- OBR Program development costs	$ 50.0	$ -	$ -	$ -	$ 50.0	$ -	$ -	$ -	$ -	$ 50.0			
- Program administration costs	$ 148.0	$ 7.0	$ 47.6	$ 54.4	$ 256.9	$ -	$ -	$ -	$ -	$ 256.9			
- OBR Program administration costs	$ 80.0	$ -	$ -	$ -	$ 80.0	$ -	$ -	$ -	$ -	$ 80.0			
-Technology support costs	$ 85.0	$ 9.0	$ 88.0	$ 63.0	$ 245.0	$ -	$ -	$ -	$ -	$ 245.0	$ 152.5	$ 92.50	60.7%
- Project Inspection fees	$ 40.0	$ 10.0	$ -	$ -	$ 50.0	$ -	$ -	$ -	$ -	$ 50.0	$ 38.1	$ 11.90	31.2%
Marketing													
- Agency expense	$ 125.0	$ 20.0	$ 75.0	$ 75.0	$ 295.0	$ -	$ -	$ -	$ -	$ 295.0	$ -	$ 295.00	
- Public relations	$ 25.0	$ -	$ 15.0	$ 15.0	$ 55.0	$ -	$ -	$ -	$ -	$ 55.0	$ -	$ 55.00	
- Outreach campaigns	$ 280.0	$ 40.0	$ 155.0	$ 180.0	$ 655.0	$ -	$ -	$ -	$ -	$ 655.0	$ 715.0	$ (60.00)	-8.4%
- Paid media	$ 87.0	$ 12.5	$ 81.0	$ 81.0	$ 261.5	$ -	$ -	$ -	$ -	$ 261.5	$ -	$ 261.50	
- Collateral production	$ 15.0	$ 5.0	$ 10.0	$ 5.0	$ 35.0	$ -	$ -	$ -	$ -	$ 35.0	$ -	$ 35.00	
- Incentive promotions	$ 35.0	$ -	$ -	$ 53.1	$ 88.1	$ -	$ -	$ -	$ -	$ 88.1	$ -	$ 88.13	
- Web development	$ 50.0		$ 30.0	$ 30.0	$ 110.0	$ -	$ -	$ -	$ -	$ 110.0			
- other costs	$ 25.0	$ -	$ 20.0	$ 10.0	$ 55.0	$ -	$ -	$ 50.0	$ 50.0	$ 105.0	$ -	$ 105.00	
EM&V	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 175.0	$ (175.00)	-100.0%
Professional fees													
- Legal	$ 40.0	$ 5.0	$ -	$ -	$ 45.0	$ 5.0	$ 5.0	$ 5.0	$ 15.0	$ 60.0	$ 175.0	$ (115.00)	-65.7%
Rent and location related expenses													
-Rent/Utilities/Maintenance	$ 10.5	$ 2.9	$ 14.8	$ 8.0	$ 36.2	$ 2.2	$ 3.6	$ 14.1	$ 19.9	$ 56.1	$ 58.0	$ (1.92)	-3.3%
-Telephone/Communications	$ 3.0	$ 0.8	$ 4.3	$ 2.3	$ 10.4	$ 0.6	$ 1.0	$ 4.0	$ 5.7	$ 16.1	$ 13.8	$ 2.34	17.0%
-Depreciation FF&E	$ 7.9	$ 2.2	$ 11.1	$ 6.0	$ 27.2	$ 1.7	$ 2.7	$ 10.6	$ 15.0	$ 42.2	$ 37.0	$ 5.19	14.0%
Office, computer & other expenses													
-Office expense	$ 3.7	$ 1.0	$ 5.2	$ 2.8	$ 12.7	$ 0.8	$ 1.3	$ 4.9	$ 7.0	$ 19.7	$ 18.3	$ 1.38	7.6%
-IT operations	$ 7.7	$ 2.2	$ 10.8	$ 5.8	$ 26.5	$ 1.6	$ 2.7	$ 10.3	$ 14.6	$ 41.1	$ 13.0	$ 28.13	216.4%
-Training/education/subsriptions	$ 2.0	$ 0.6	$ 2.8	$ 1.5	$ 6.8	$ 0.4	$ 0.7	$ 2.7	$ 3.8	$ 10.6	$ 10.8	$ (0.22)	-2.1%
-Travel,meeting& related expenses	$ 4.7	$ 1.3	$ 6.7	$ 3.6	$ 16.3	$ 1.0	$ 1.6	$ 6.3	$ 9.0	$ 25.3	$ 15.1	$ 10.19	67.5%
Total Residential and Multifamily Program expenses:	$ 1,510.6	$ 214.2	$ 1,051.4	$ 852.2	$ 3,628.4	$ 85.1	$ 210.8	$ 659.1	$ 954.9	$ 4,583.3	$ 2,833.9	$ 1,252.5	44.2%

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Clean Energy Finance and Investment Authority

FY 15 Operations and Program Budget

C & I Programs

	2015					2014		
			Budget Development (mid market product with EEB; ESA			Budget		
	CPACE	Clean Energy Business Solutions		SL2 Commercial	Total	Total	Inc(Dec)	% Inc.
Expenses								
Compensation and benefits								
-Salaries & Wages	$ 658.2	$ 24.0	$ 80.7	$ 132.4	$ 895.2	$ 741.0	$ 154.20	20.8%
-Employee Benefits	$ 500.2	$ 18.2	$ 61.3	$ 100.6	$ 680.4	$ 551.3	$ 129.05	23.4%
Program development and administration								
- Program development costs/consultants	$ 75.0	$ -	$ 100.0	$ -	$ 175.0	$ 185.0	$ (10.00)	-5.4%
-Technology support costs	$ 25.0	$ -	$ -	$ -	$ 25.0	$ 15.0	$ 10.00	66.7%
-Technical administrator	$ 800.0	$ -	$ -	$ -	$ 800.0	$ 800.0	$ -	0.0%
- Third party servicing fees	$ 75.0	$ -	$ -	$ -	$ 75.0	$ 100.0	$ (25.00)	-25.0%
- Municipal support	$ 80.0	$ -	$ -	$ -	$ 80.0	$ 80.0	$ -	0.0%
- Project Inspection fees	$ 20.0	$ -	$ -	$ -	$ 20.0	$ -	$ 20.00	
Professional Fees								
- Consulting	$ 100.0	$ 25.0	$ -	$ -	$ 125.0	$ -	$ 125.00	
- Legal	$ 115.0	$ -	$ 20.0	$ -	$ 135.0	$ -	$ 135.00	
Marketing								
- Agency	$ 300.0	$ -	$ -	$ -	$ 300.0	$ -	$ 300.00	
- Municipal Marketing Grants	$ 60.0	$ -	$ -	$ -	$ 60.0	$ -	$ 60.00	
- Events and consultants	$ 50.0	$ -	$ -	$ -	$ 50.0	$ -	$ 50.00	
-Relationship Managers	$ 250.0	$ -	$ -	$ -	$ 250.0	$ -	$ 250.00	
EM&V	$ 50.0	$ -	$ -	$ -	$ 50.0	$ 50.0	$ -	0.0%
Rent and location related expenses								
-Rent/Utilities/Maintenance	$ 36.1	$ 1.3	$ 4.4	$ 7.3	$ 49.1	$ 56.4	$ (7.33)	-13.0%
-Telephone/Communications	$ 10.4	$ 0.4	$ 1.3	$ 2.1	$ 14.1	$ 13.4	$ 0.72	5.4%
-Depreciation FF&E	$ 27.1	$ 1.0	$ 3.3	$ 5.5	$ 36.9	$ 36.0	$ 0.91	2.5%
Office, computer & other expenses								
-Office expense	$ 12.7	$ 0.5	$ 1.6	$ 2.5	$ 17.2	$ 17.8	$ (0.58)	-3.3%
-IT operations	$ 26.5	$ 1.0	$ 3.2	$ 5.3	$ 36.0	$ 12.6	$ 23.39	185.6%
-Training/education/subsriptions	$ 6.8	$ 0.2	$ 0.8	$ 1.4	$ 9.3	$ 10.0	$ (0.75)	-7.5%
-Travel,meeting& related expenses	$ 16.3	$ 0.6	$ 2.0	$ 3.3	$ 22.1	$ 20.0	$ 2.13	10.7%
Total C&I Program expenses:	$ 3,294.2	$ 72.1	$ 278.6	$ 260.3	$ 3,905.3	$ 2,688.5	$ 1,216.8	45.3%

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Clean Energy Finance and Investment Authority

FY 15 Operations and Program Budget

Institutional Programs

	2015 Budget						2014 Budget		
	Institutional ESA	LBE - State	LBE - Municipal	SL2 Muni and Institutional	Winn-LISC Multifamily OME Program	Total	Total	Inc(Dec)	% Inc.
Expenses									
Compensation and benefits									
-Salaries & Wages	$ 141.8	$ 135.5	$ 123.3	$ 54.1	$ 50.2	$ 504.9	$ 343.9	$ 161.00	46.8%
-Employee Benefits	$ 107.8	$ 102.9	$ 93.7	$ 41.1	$ 38.2	$ 383.7	$ 255.8	$ 127.92	50.0%
Program development and administration									
- Program development costs	$ -	$ -	$ -	$ -	$ -	$ -	$ 50.0	$ (50.00)	-100.0%
Marketing	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
EM&V	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
Professional fees	$ -	$ 3.0	$ 3.0	$ 3.0	$ -	$ 9.0	$ -	$ 9.00	
Rent and location related expenses									
-Rent/Utilities/Maintenance	$ 7.8	$ 7.4	$ 6.8	$ 3.0	$ 2.8	$ 27.7	$ 28.0	$ (0.32)	-1.2%
-Telephone/Communications	$ 2.2	$ 2.1	$ 1.9	$ 0.9	$ 0.8	$ 8.0	$ 6.7	$ 1.27	18.9%
-Depreciation FF&E	$ 5.8	$ 5.6	$ 5.1	$ 2.2	$ 2.1	$ 20.8	$ 17.9	$ 2.92	16.3%
Office, computer & other expenses									
-Office expense	$ 2.7	$ 2.6	$ 2.4	$ 1.0	$ 1.0	$ 9.7	$ 9.0	$ 0.71	7.9%
-IT operations	$ 5.7	$ 5.4	$ 5.0	$ 2.2	$ 2.0	$ 20.3	$ 6.2	$ 14.10	227.4%
-Training/education/subscriptions	$ 1.5	$ 1.4	$ 1.3	$ 0.6	$ 0.5	$ 5.2	$ -	$ 5.22	
-Travel,meeting& related expenses	$ 3.5	$ 3.3	$ 3.0	$ 1.3	$ 1.2	$ 12.5	$ 5.0	$ 7.48	149.6%
Tptal Institutional Program expenses:	$ 278.8	$ 269.3	$ 245.5	$ 109.4	$ 98.7	$ 1,001.8	$ 722.5	$ 279.3	38.7%

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Clean Energy Finance and Investment Authority

FY 15 Operations and Program Budget

Other Programs

FY 15 Budget - New Program

		CES Innovation Fund
Expenses		
Compensation and benefits		
-Salaries & Wages	$	63.6
-Employee Benefits	$	48.3
Program development and administration		
- Program development costs	$	100.0
Marketing	$	-
EM&V	$	-
Professional Fees	$	-
Rent and location related expenses		
-Rent/Utilities/Maintenance	$	3.5
-Telephone/Communications	$	1.0
-Depreciation FF&E	$	2.6
Office, computer & other expenses		
-Office expense	$	1.2
-IT operations	$	2.6
-Training/education/subsriptions	$	0.7
-Travel,meeting& related expenses	$	1.6
Total Other Programs expenses:	$	225.1

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Clean Energy Finance and Investment Authority

Statement of Cash Flows

FY 15 Operations and Program Budget

(000's)

	Budget Fiscal Year 6/30/2014	Budget Fiscal Year 6/30/2015
Cash flows from operating activities		
CASH IN:		
Proceeds from utility customer assessments	$ 27,600.0	$ 27,525.0
Proceeds from RGGI auctions - renewables	$ 5,900.0	$ 6,800.0
Proceeds from RGGI auctions - energy efficiency	$ 12,800.0	$ 14,400.0
Proceeds from grants	$ 300.0	$ 146.0
Proceeds from RECs/other income	$ 240.0	$ 833.8
Proceeds from Interest income	$ 260.0	$ 1,231.0
Proceeds from State Bonds	$ -	$ 5,000.0
Repayments to CEFIA OBR timeliness reserve	$ -	$ 250.0
CASH OUT:		
Expenditures General Operations	$ (2,331.0)	$ (2,884.9)
Expenditures Program Administration	$ (9,327.5)	$ (11,689.2)
Expenditures federal and pf grants	$ (300.0)	$ (75.0)
Expenditures grants and rebates approved prior to FY 15	$ (8,000.0)	$ (3,600.0)
Expenditures grants and rebates -other programs	$ (9,850.0)	$ (19,425.0)
Expenditures-Credit Enhancement IRB	$ -	$ (575.0)
Advances from CEFIA OBR timeliness reserve	$ -	$ (500.0)
Net cash used by operating activities	$ 17,291.5	$ 17,436.7
Cash flows from investing activities		
LOAN RECOVERY		
Return of principal on solar lease V1 promissory notes	$ 720.0	$ 660.0
Proceeds from WINN LISC program	$ -	$ -
Proceeds from Campus Efficiency NOW program	$ -	$ -
Proceeds from EEloan programs	$ -	$ -
Proceeds from Sale of Other Loans (AD, CHP, Grid-tied)	$ -	$ 5,000.0
Repayment of Advances by CT Solar Loan I	$ -	$ 8,000.0
Sale of CPACE Loans to PFA	$ -	$ 40,000.0
	720.0	53,660.0
LOAN DISBURSEMENTS		
Alpha/Op Demo Legacy Program	$ (1,335.0)	$ (732.0)
Anaerobic Digestor Pilot	$ -	$ (12,500.0)
C&I ESA RFP	$ -	$ (3,000.0)
C&I Loans	$ -	$ (2,000.0)
Campus Efficiency NOW Loan Program	$ (875.0)	$ -
CES Innovation Fund	$ -	$ (1,500.0)

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Clean Energy Finance and Investment Authority

Statement of Cash Flows

FY 15 Operations and Program Budget

(000's)

	Budget Fiscal Year 6/30/2014	Budget Fiscal Year 6/30/2015
CHIF Multifamily	$ -	$ (1,000.0)
CHP Pilot	$ (2,500.0)	$ (9,000.0)
CPACE Loan Program	$ (25,000.0)	$ (50,000.0)
Energy Efficiency Loan Program	$ (5,000.0)	$ -
Grid tied Loan Program	$ (3,500.0)	$ (2,800.0)
Micro Grid program	$ (5,000.0)	$ (5,000.0)
Multifamily	$ -	$ (5,000.0)
Multifamily RFP	$ -	$ (4,000.0)
Solar PV Capital Competition	$ (1,000.0)	$ (1,000.0)
WINN LISC Program	$ (1,875.0)	$ (1,875.0)
	(46,085.0)	(99,407.0)
ADVANCES TO AFFLIATES		
Advances to CT Solar Loan I LLC	$ (2,729.0)	$ (10,000.0)
Advances to CEFIS Services Inc/CT Solar Lease 2 LLC	$ (4,500.0)	$ (5,813.0)
	(7,229.0)	(15,813.0)
Net cash used by investing activities	$ (52,594.0)	$ (61,560.0)
Cash flows from capital activities		
Purchase of furniture,equipment & software	$ (25.0)	$ (158.0)
Net cash used in operating,investing and capital activities	$ (35,327.5)	$ (44,281.3)
State of Connecticut Cash Sweep	$ (6,200.0)	$ (19,200.0)
Cash and cash equiv., Beginning of Period	$ 62,840.0	$ 75,000.0
Cash and cash equiv., End of Period	$ 21,312.5	$ 11,518.7
UNRESTRICTED CASH:	$ 9,938.0	$ 7,968.7
RESTRICTED CASH FEDERAL FUNDS FOR ARRA SEP:	$ 11,374.5	$ 3,550.0
	$ 21,312.5	$ 11,518.7

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Clean Energy Finance and Investment Authority

FY 15 Operations and Program Budget

Statement of Net Assets

(000's)

	Budget 6/30/2014	Budget 6/30/2015
Assets		
Current assets		
Cash and cash equivalents (Unrestricted)	$ 11,007.9	$ 7,969.0
Utility receivables	$ 2,200.0	$ 2,400.0
Accounts receivable	$ 1,200.0	$ 3,100.0
Other current assets	$ 200.0	$ 200.0
Total current assets	$ 14,607.9	$ 13,669.0
Noncurrent assets		
Investments		
Promissory notes - solar lease program V1 ,net	$ 10,496.8	$ 9,836.0
Promissory notes - solar lease program V2,net	$ 2,185.0	$ 2,300.0
Promissory notes - solar loan program-CT Solar Loan I,net	$ 2,937.2	$ 2,000.0
Promissory notes - WIN LISC program,net	$ 1,800.0	$ 1,687.5
Promissory notes - Campus Efficiency NOW program,net	$ 900.0	$ 200.0
Promissory notes - Energy Efficiency Loan programs,net	$ 4,750.0	$ -
Promissory notes - CPACE program,net	$ 24,495.0	$ 9,500.0
Promissory notes - Alpha/Op Demo programs,net	$ 667.5	$ 1,033.0
Promissory notes - Grid tied program,net	$ 6,570.0	$ 2,900.0
Promissory notes - AD/CHP programs,net	$ 2,500.0	$ 19,350.0
Promissory notes - Solar PV Capital Competition program,net	$ 1,000.0	$ 1,000.0
Promissory notes - Micro Grid program,net	$ 4,500.0	$ 4,500.0
Promissory notes - C&I, CES Innovation Fund,Multifamily programs,net	$ -	$ 16,500.0
Equity Investment/Solar Lease program	$ 4,500.0	$ 7,200.0
Equityinvestments (pre FY11)	$ 2,000.0	$ 1,000.0
Investments-REC's	$ 1,500.0	$ 1,500.0
Capital assets		
Furniture,Equipment & L/H Improvements	$ 200.0	$ 310.0
Cash and cash equivalents (Restricted)	$ 5,036.0	$ 3,550.0
Total non current assets	$ 76,037.5	$ 84,366.5
Total assets	$ 90,645.4	$ 98,035.5

	Budget 6/30/2014	Budget 6/30/2015
Liabilities and Net Assets		
Accounts,grants payable and accrued expenses	$ 4,000.0	$ 4,000.0
Total liblilities	$ 4,000.0	$ 4,000.0
Net Assets:		
Investment in capital assets	$ 200.0	$ 310.0
Restricted net assets	$ 5,036.0	$ 3,550.0
Unrestricted net assets	$ 81,409.4	$ 90,175.5
Total Net Assets	$ 86,645.4	$ 94,035.5
Total Liabilities and Net Assets	$ 90,645.4	$ 98,035.5

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Clean Energy Finance and Investment Authority
FY 15 Operations and Program Budget
Utility Customer Assessment Projections
(in thousands)

	FY 14 Budget	FY14 Actual	(Under) Over FY 14	FY15 Budget	(Under) Over FY14 Budget
July	$ 2,650	$ 2,820	$ 170	$ 2,643	$ (7)
August	$ 2,850	$ 2,659	$ (191)	$ 2,842	$ (8)
September	$ 2,400	$ 2,375	$ (25)	$ 2,393	$ (7)
October	$ 2,150	$ 1,958	$ (192)	$ 2,144	$ (6)
November	$ 2,000	$ 1,997	$ (3)	$ 1,995	$ (5)
December	$ 2,250	$ 2,237	$ (13)	$ 2,244	$ (6)
January	$ 2,450	$ 2,732	$ 282	$ 2,443	$ (7)
February	$ 2,300	$ 2,431	$ 131	$ 2,294	$ (6)
March	$ 2,250	$ 2,396	$ 146	$ 2,244	$ (6)
April	$ 2,250	$ 2,069	$ (181)	$ 2,245	$ (5)
May	$ 1,850	$ 1,850	$ -	$ 1,845	$ (5)
June	$ 2,200	$ 2,200	$ -	$ 2,192	$ (8)
Total assessments:	$ 27,600	$ 27,724	$ 124	$ 27,524	$ (76)
			0.5%		-0.3%

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Clean Energy Finance and Investment Authority
FY 2015 Operations and Program Budget
Staffing Plan

Position		FY15 Staffing Budget	FY14 Staffing Actual	FY14 Staffing Budget
CEFIA Employees				
President, CEFIA	Garcia,Bryan	2,080	2,080	2,080
Chief of Staff	Dykes,Mackey	2,080	2,080	2,080
Executive Vice President and Chief Investment Officer	Hunter,Bert	2,080	2,080	2,080
General Counsel	Farnen,Brian	2,080	2,080	2,080
Director,PACE	Bailey,Jessica	2,080	2,080	2,080
Director of Institutional Programs	Brydges,Andy	2,080	2,080	2,080
Director,Government and External Relations	Goldberg,David	2,080	2,080	2,080
Director of Statutory & Infrastructure Programs	Hedman,Dale	2,080	2,080	2,080
Director of Residential Programs	O'Neill,Kerry	2,080	2,080	2,080
Associate Director of Outreach	Wall,Bob	2,080	2,080	2,080
Associate Director of Technology Innovation	Stevenson,Kim	2,080	2,080	2,080
Senior Manager, Clean Energy Finance	Healey,Ben	2,080	2,080	2,080
Senior Manager of Marketing and Outreach	Murphy,Jon	2,080	2,080	2,080
Senior Manager of Marketing and Outreach	Rivera, Gladys	2,080	2,080	2,080
Senior Manager of Clean Energy Deployment	Ross,Rick	2,080	2,080	2,080
Manager of Evaluation Measurement and Verification	Charpentier,Lucy	2,080	2,080	2,080
Senior Manager, Clean Energy Finance	Lieberman,Ali	2,080	2,080	2,080
Manager, Technology Innovation	Price, Selya	2,080	2,080	2,080
Manager,CPACE	Sherman,Genevieve	2,080	2,080	2,080
Associate of Clean Energy Deployment	McCarthy,Neil	2,080	2,080	2,080
Associate of Marketing and Outreach	Schmitt,Robert	2,080	2,080	2,080
Project Assistant	Buonannata,Joe	2,080	2,080	2,080
Project Assistant	Kranich,Ed	2,080	2,080	2,080
Project Assistant	Lewis,Lynne	2,080	2,080	2,080
Project Assistant	Mancini,Andrea	2,080	2,080	2,080
Project Assistant	Stewart,Fiona	2,080	2,080	2,080
Project Assistant	Vigil,Marycruz	2,080	2,080	2,080
Paralegal	French,Loyola	2,080	2,080	2,080
Executive Assistant	Samuels,Cheryl	2,080	2,080	2,080
VP Finance and Administration	Bellas,George	2,080	-	-
Senior Accountant (P/T)	Landry,Joe	998	-	-
Staff Accountant	Turker,Irene	2,080	-	-
Staff Accountant	Soares, Natalia	2,080	-	-

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Clean Energy Finance and Investment Authority
FY 2015 Operations and Program Budget
Staffing Plan

Position		FY15 Staffing Budget	FY14 Staffing Actual	FY14 Staffing Budget
New Hires - FY14				
Senior Manager, (Residential Programs)	D'Agostino, John	2,080	1,390	2,080
Administrative Assistant, (CPACE)	Harvey,Marlena	2,080	700	-
Project Assistant, (CPACE)	McCalpin,William	2,080	1,560	2,080
Project Assistant, (Residential Programs)	Priest, Madeline	2,080	1,450	2,080
Project Assistant (Federal Grant - SunShot) Durational	Hazlewood, Isabelle	1,560	1,200	-
Open Positions approved in FY14:				
1. Director of Marketing		2,080	-	-
2. Loan Administrator		2,080	-	-
New Hires in FY15:				
1. Senior Manager/Residential/Q2(Kerry)		1,560	-	-
2. Program Assistant/S&I/Q2(Dale) (Durational - 2 years)		1,560	-	-
3. Manager/Finance/Q1(Bert)		2,080	-	-
4 Manager/Finance/Q1(Bert)		2,080	-	-
5 Senior Manager/Q1(Brian)		2,080	-	-
CI Shared Employees				
SVP - CFO	Siuta,Phil	-	104	104
VP Finance and Administration	Bellas,George	-	1,560	1,560
VP Human Resources	Kaswan,Sue	1,040	1,040	1,040
Manager,Human Resources	Baisden, Chris	832	832	832
Director IT and Facilities	Casparino,Joe	624	624	624
IT Staff	Peretto,Kim	624	624	624
IT Staff	Schiavo,Chris	-	-	624
Senior Accountant (P/T)	Landry,Joe	-	998	998
Staff Accountant	Turker,Irene	-	2,080	2,080
Staff Accountant	Soares, Natalia	-	1,560	2,080
Reception/Switchboard	Perusse,Gina	624	624	624
	Total Hours:	94,702	76,666	77,750
	Total FTE's:	45.53	36.86	37.38
	Dollars:			
	CEFIA Employees	$ 4,146,565		$ 3,012,800
	CI Shared Employees	$ 176,875		$ 430,324
	COLA	$ -		$ 60,256
	Merit Pool	$ 186,595		$ 75,320
	Promotion Pool	$ 41,466		$ 30,128
	Intern Pool:	$ 75,000		$ 75,000
	Total:	$ 4,626,501		$ 3,683,828

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Clean Energy Finance and Investment Authority

FY 2015 Operating and Program Budget

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As of June 3, 2014

Supplementary Schedules

Clean Energy Finance and Investment Authority
FY 2015 Operations and Program Budget
Consulting and Professional Fees - General Operations
(in thousands)

	FY 2014 Budget	FY 2015 Budget	FY 2015 Budget Inc. (Dec.)	% Inc.(Dec.)
Summary:				
Legal	35.0	65.0	30.0	86%
Accounting	45.0	60.0	15.0	33%
Advisory fees	20.0	97.0	77.0	385%
	100.0	222.0	122.0	122%
Detail:				
Legal				
Governance	5.0	10.0	5.0	
Statutory matters	10.0	15.0	5.0	
Other legal matters	20.0	40.0	20.0	
	35.0	65.0	30.0	
Accounting				
Annual Audit	40.0	45.0	5.0	
Other matters	5.0	15.0	10.0	
	45.0	60.0	15.0	
Advisory Fees				
Consultants:				
Recruiting Efforts/Onboarding	-	2.0	2.0	
Organization EM&V	-	40.0	40.0	
Risk Management/Insurance	-	35.0	35.0	
Strategic Plan/Process Improvement Consulting	10.0	10.0	-	
Other	10.0	10.0	-	
	20.0	97.0	77.0	
Advisory Fees - Clean Energy Communities Program				
Consultants/Inspectors for Program	40.0	45.0	5.0	
	40.0	45.0	5.0	

Clean Energy Finance and Investment Authority
FY 2015 Operations and Program Budget
Marketing and External Relations - General Operations
(in thousands)

	FY 2014 Budget	FY 2015 Budget	FY 2015 Budget Inc. (Dec)	% Inc. (Dec)
Media Relations	**66.00**	**85.00**	**19.00**	29%
Public Relations	20.00	50.00	30.00	
Creative Writing	16.00	5.00	(11.00)	
Media Tracking/Distribution	20.00	20.00	-	
Misc.	10.00	10.00	-	
Marketing CollateraL	**15.00**	**30.00**	**15.00**	100%
Annual report design & printing	5.00	15.00	10.00	
Program collateral	5.00	10.00	5.00	
Promotional Items	5.00	5.00	-	
Website	**20.00**	**20.00**	**-**	0%
Website design	10.00	10.00	-	
Website maintenance	10.00	10.00	-	
Sponsorship & Event Expenses	**61.00**	**85.00**	**24.00**	39%
CEFIA Annual Awards Event	10.00	10.00	-	
CPES WTD Conference	2.50	2.50	-	
Matchmaking Events	10.00	10.00	-	
NESEA	4.00	5.00	1.00	
New Haven Green Expo	2.50	2.50	-	
CCM Annual Event	5.00	5.00	-	
Wall Street Green	10.00	2.50	(7.50)	
CBIA Sustainability	2.00	2.00	-	
REFF Wall Street	-	10.00	10.00	
Fuel Cell Seminar	-	6.00	6.00	
COST	-	2.00	2.00	
HBA Home Show	-	10.00	10.00	
ACEEE	-	2.50	2.50	
Unidentified	15.00	15.00	-	
Advertising & Branding	**10.00**	**390.00**	**380.00**	3800%
General advertising	10.00	-	(10.00)	
EnergizeCT	-	275.00	275.00	
Social Media	-	15.00	15.00	
Branding	-	100.00	100.00	

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Clean Energy Finance and Investment Authority
FY 2015 Operations and Program Budget
Marketing and External Relations - General Operations
(in thousands)

	FY 2014 Budget	FY 2015 Budget	FY 2015 Budget Inc. (Dec)	% Inc. (Dec)
Memberships	**89.00**	**115.34**	**26.34**	30%
Clean Energy States Alliance	68.50	68.50	-	
CCAT	2.50	3.00	0.50	
US Fuel Cell Council	2.00	2.00	-	
CCIC	1.00	1.00	-	
Energy Services Coalition		0.12	0.12	
CDFA		0.75	0.75	
MPI		0.33	0.33	
AMA		0.26	0.26	
CBIA		1.00	1.00	
HPACT		0.38	0.38	
CBA		1.00	1.00	
Bloomberg		18.00	18.00	
Agrion		4.00	4.00	
Miscellaneous Memberships:	15.00	15.00	-	
Other- General	**275.00**	**15.00**	**-**	0%
Rollforward from FY13	260.00	-	(260.00)	
Misc.	15.00	15.00	-	
Total Marketing	**536.00**	**740.34**	**464.34**	87%

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Clean Energy Finance and Investment Authority
FY 2015 Operations and Program Budget
Other Operating Costs
(in thousands)

	FY14 Budget	FY15 Budget	FY 2015 Budget Inc. (Dec)	% Inc. (Dec)
Rent	$ 154.0	$ 243.9	$ 89.9	58%
Telephone/Communications	$ 53.0	$ 70.2	$ 17.2	32%
Internet/Voice - WindStream	$ 21.0	$ 30.6	$ 9.6	
Internet Service -redundancy	$ 5.0	$ 7.8	$ 2.8	
Citrix Go To Meeting CE	$ 3.0	$ 6.0	$ 3.0	
Citrix Open Voice Teleconference	$ 3.0	$ 4.8	$ 1.8	
Cell Phones	$ 16.0	$ 18.0	$ 2.0	
Misc.	$ 5.0	$ 3.0	$ (2.0)	
Office expense	$ 75.5	$ 76.0	$ 0.5	1%
Printer Maintenance	$ 2.5	$ 0.5	$ (2.0)	
Offsite Storage	$ 3.0	$ 3.0	$ -	
Security Monitoring Service	$ 2.5	$ 3.0	$ 0.5	
Office Supplies	$ 45.0	$ 45.0	$ -	
Kitchen Supplies	$ 5.5	$ 5.0	$ (0.5)	
Postage/Express Mail	$ 5.5	$ 7.5	$ 2.0	
Move Expenses	$ 2.0	$ 2.0	$ -	
Misc	$ 9.5	$ 10.0	$ 0.5	
Equipment Leases	$ 5.0	$ 9.6	$ 4.6	92%
Xerox Color Copier/Printers	$ 5.0	$ 9.6	$ 4.6	
IT operations	$ 77.5	$ 178.9	$ 101.4	131%
Consultant Support Services	$ 25.0	$ 118.2	$ 93.2	373%
SI Help Desk Contract	$ 10.0	$ 7.8	$ (2.2)	
SI Technician - 1	$ -	$ 33.4	$ 33.4	
SI Technician - 2	$ -	$ 33.4	$ 33.4	
Project Engineer T&M	$ 10.0	$ 16.5	$ 6.5	
Adnet CIO Contract	$ -	$ 21.2	$ 21.2	
Sugar CRM Support Services	$ 5.0	$ 6.0	$ 1.0	
Software Maintenance/Annual Licenses	$ 39.5	$ 50.9	$ 11.4	29%
ScanMail Maintenance	$ 10.0	$ -	$ (10.0)	
Anti Virus / Firewall Maintenance	$ 9.0	$ 1.2	$ (7.8)	
CRM Software Maintenance	$ 1.5	$ -	$ (1.5)	
CRM Additional Software Licenses	$ 2.0	$ -	$ (2.0)	
Adobe Software maintenance-marketing	$ 3.0	$ 3.2	$ 0.2	
Visionpoint Maintenance - Conf. Rooms	$ 3.0	$ 2.4	$ (0.6)	

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Clean Energy Finance and Investment Authority
FY 2015 Operations and Program Budget
Other Operating Costs
(in thousands)

	FY14 Budget	FY15 Budget	FY 2015 Budget Inc. (Dec)	% Inc. (Dec)
Datto Offsite Storage & Maintenance Service	$ 5.0	$ 4.8	$ (0.2)	
Gramite(telephone) software maintenance	$ 1.0	$ 0.7	$ (0.3)	
FortiGate Firewall maintenance/support	$ 2.5	$ 2.5	$ -	
FOIA-software maintenance/support	$ 1.5	$ 1.5	$ -	
Quickbooks maintenance/support	$ 1.0	$ 1.0	$ -	
Tableau software license	$ -	$ 14.0	$ 14.0	
Microsoft Office & Server licenses	$ -	$ 12.4	$ 12.4	
Microsoft Exchange Cloud licenses	$ -	$ 7.2	$ 7.2	
Web Hosting & Conferencing	$ 8.0	$ 1.6	$ (0.4)	-5%
Web Page Hosting Fees	$ 2.0	$ 1.6	$ (0.4)	
Conferencing	$ 6.0	$ -		
Noncapitalized hardware & supplies	$ 5.0	$ 8.2	$ 3.2	63%
LCD monitors	$ 1.0	$ 1.0	$ -	
Telephone equipment	$ 2.0	$ 2.8	$ 0.8	
Misc. hardware & supplies	$ 2.0	$ 4.4	$ 2.4	
Staff training/education/subsriptions	$ 66.0	$ 46.0	$ (20.0)	-30%
Subscriptions	$ 15.0	$ 10.0	$ (5.0)	
Training for IT department	$ 16.0	$ 6.0	$ (10.0)	
Training-All Staff	$ 35.0	$ 30.0	$ (5.0)	
Insurance	$ 62.0	$ 60.0	$ (2.0)	-3%
Commercial Pkg.	$ 12.0	$ 15.0	$ 3.0	
D&O CEFIA	$ 50.0	$ 45.0	$ (5.0)	
Travel & Travel Related Expense	$ 81.0	$ 110.0	$ 29.0	36%
Travel	$ 75.0	$ 100.0	$ 25.0	
Meals & Travel Related	$ 6.0	$ 10.0	$ 4.0	
Total:	$ 574.0	$ 794.6	$ 220.6	38%

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Clean Energy Finance and Investment Authority
FY 2015 Operations and Program Budget
Capital Expenditure Budget
(in thousands)

	FY14 Budget	FY14 Actual		FY15 Budget Total by Line	FY15 Budget Total by Category	Annual Depreciation	Depreciation Period
IT Hardware							
New/Replacement Desktops & Laptops	$ 8.0	$ -	*	$ 16.0			
Firewalls and Traffic Analyzer	$ -	$ -	*	$ 15.0			
Data Backup Unit	$ 3.0	$ -	*	$ -			
ISCSI drive array	$ 15.0	$ -	*	$ -			
Replacement: VM (virtual server) hosts	$ 5.0	$ -	*	$ -			
Server & Ethernet switch hardware	$ 4.0	$ -	*	$ 5.0	$ 36.0	$ 7.2	5 Years
IT Software							
Telephone system software upgrade	$ 2.0	$ -	*	$ 2.0			
SugarCRM/Custom Programming	$ 75.0	$ 86.3	*	$ -			
Human Resources Tracking System	$ -	$ -	*	$ 20.0			
Accounting/Financial Management Software	$ -	$ -	*	$ 75.0	$ 97.0	$ 32.3	3 Years
Office Furniture, Equipment and Improvements							
Rocky Hill							
Cublicles/Fumiture/Leasehold Improvements	$ 20.0	$ -	*	$ 20.0			
Stamford							
Cublicles/Fumiture/Leasehold Improvements	$ 20.0	$ -	*	$ 5.0	$ 25.0	$ 2.5	10 Years
	$ 152.0	$ 86.3		$ 158.0	$ 158.0	$ 42.0	
					Depreciation on existing capitalized assets	$ 141.5	
					Projected FY 15 depreciation:	$ 183.5	

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