



CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

AGENDA

Joint Committee of the Connecticut Energy Efficiency Fund and the
Clean Energy Finance and Investment Authority
10 Franklin Square, New Britain, CT 06051

Wednesday, September 5, 2012 – Regular Meeting
2:00-4:00 p.m.

1. Call to Order
2. Public Comments – 10 minutes
3. Approval of meeting minutes for June 18, 2012* – 5 minutes
4. Committee Updates – 60 minutes
 - Residential Sector
 - HES Field Service Tool inclusion of solar PV and other renewable energy technologies
 - Commercial and Industrial Sector
 - Energy audit coverage and C-PACE
 - Marketing and Outreach
 - Energize CT
 - Solarize Connecticut
5. Financing Program Updates – 30 minutes
 - CEFIA
 - CEEF
6. Next Step Action Items – 15 minutes

*Denotes item requiring Committee action

***Next Regular Meeting: Wednesday, December 5, 2012 from 2:00-4:00
Clean Energy Finance and Investment Authority, 865 Brook Street, Rocky Hill, CT***

**Clean Energy Finance and Investment Authority and
Connecticut Energy Efficient Fund
Joint Advisory Committee Meeting
Minutes – Special
Monday, June 18, 2012**

A special meeting of the **Clean Energy Finance and Investment Authority (“CEFIA”)** and the **Connecticut Energy Efficiency Fund (“CEEF”)** (the “Joint Advisory Committee”) was held on June 18, 2012, at the office of the CEFIA, 865 Brook Street, Rocky Hill, CT.

1. **Attendance:** Ron Araujo (CL&P), Katie Dykes (DEEP), Bryan Garcia (CEFIA Board), Norma Glover (CEFIA Board), Jaime Howland (CEEF Board), Dave Ljungquist (CEFIA), Richard Steeves (CEEF Board), Pat McDonnell (CEEF Board), Rich Rodrigue (DEEP), and Bob Wall (CEFIA).

Others: Mackey Dykes (CEFIA), David Goldberg (CEFIA), Bert Hunter (CEFIA), , and Cal Vinal, Connecticut Housing Investment Fund.

Each of the members introduced themselves and spoke about their background.

2. **Meeting Schedule:**

The Joint Advisory Committee members discussed how often, when and where to meet. After discussing several suggestions, there was general consensus to meet quarterly, the first Wednesday of the month at 2:00 p.m. with the next meeting being scheduled in September, possibly at PURA in New Britain.

- Wednesday, September 5, 2012
- Wednesday, December 5, 2012

A suggestion was made to form subcommittees. However, there was some hesitation about creating subcommittees because of the number of meetings everyone is already attending.

Mr. Garcia introduced Mackey Dykes, CEFIA Chief of Staff, and Bert Hunter, CEFIA Executive Vice President and Chief Investment Officer.

3. **Organizational Updates:**

Mr. Garcia provided an update on CEFIA. He explained that Public Act 11-80 changed the dynamics of the organization, and CEFIA will be moving towards a new direction to achieve the objectives of Public Act 11-80 and the state’s energy goals through finance and investments.

Mr. Garcia mentioned that the CEFIA Board went from 15 members down to 11 members, of which 3 are ex-officio members—The Commissioner of the Department of Economic and Community Development (appointed Chair by the Governor), the Commissioner of the Department of Energy and Environmental Protection (“DEEP”); and a representative from the Treasurer’s office. He mentioned that five members of the CEFIA Board are also members of the CI Board.

Mr. Garcia explained how the Solar Lease Program developed by Mr. Hedman in 2008 for the Connecticut Clean Energy Fund became a model program for other states. Mr. Garcia stated that CEFIA will be building on that model to attract private capital. He noted that being a quasi-public agency will allow CEFIA to be more innovative. Mr. Garcia reviewed CEFIA’s mission “to support the Governor’s and legislature’s strategies to achieve cleaner, cheaper, and more reliable sources of energy through clean energy finance.” He stated that CEFIA’s mission also includes the creation of jobs and stimulating economic development in Connecticut. Mr. Garcia reviewed three significant goals for CEFIA which include: 1) attracting and deploying capital to finance the clean energy goals in Connecticut; 2) developing and implementing strategies that bring down the costs of energy to make clean energy more affordable and accessible to consumers; and 3) transitioning from grant and subsidy programs to a model that attracts lower cost financing to support clean energy deployment.

In response to a question, Mr. Garcia noted that CEFIA has outstanding grant commitments with Project 150, and that CEFIA will be working with PURA to try to develop a plan to release the Project 150 grant commitments for several projects to free up restricted liabilities on CEFIA’s balance sheet. Mr. Garcia indicated that CEFIA does have assets to finance programs such as credit enhancements and subordinated debt through repurposed ARRA-SEP funds as well as ratepayer contributions through the system benefit charge and RGGI allowance revenue.

Mr. Garcia spoke about CEFIA’s Residential Solar Investment Program. He noted that the law requires a declining incentive structure. Mr. Garcia stated that the first several steps were announced, but the full schedule for the 30 megawatt target was not provided because of the constant changes in the solar market. He mentioned that changes to the steps are announced approximately three months in advance so the installer community has sufficient notice of impending changes. Mr. Garcia mentioned that the average sizes of the systems and costs have decreased between steps 1 and 2 by nearly 10 percent. He noted that the focus of the program at this point is to continue to decrease incentives, build demand and attract private capital. Mr. Garcia stated that incentives are available in different ways: 1) performance-based incentives (i.e. third party financing) or 2) expected performance-based buy downs (i.e. upfront rebates).

CEEF members were asked how the special legislation has impacted CEEF. Mr. Howland stated that Public Act 11-80 had a more significant impact on CEEF. He explained that Public Act 11-80 sets forth a clearer focus and direction for CEEF to invest in energy efficiency. It was noted that the special legislation removed the restriction for oil-heated residential households for one year.

The Joint Advisory Committee members talked about some of the broader goals of Public Act 11-80, in particular, weatherization. Mr. Howland stated that the intention is to maximize weatherization and go beyond the goal of 80 percent by 2030. He noted the need to first define “weatherization.” Mr. Howland indicated that the Home Energy Solutions Program may be used to help target customers.

The Joint Committee members talked about the goal of having 15 percent of single-family homes becoming more energy efficient by 2020 which equates to approximately 18,750 homes per year or approximately \$200,000,000 of investments to make those energy efficiencies over the next 8 years. One of the issues that needs to be determined is who will be providing the funding, and the challenge is how to effectively utilize funding available to attract capital to make the investments in energy efficiency.

Mr. Garcia explained how CEFIA is transitioning its early-stage technology innovation programs so that it can focus on the statutorily mandated programs under public act 11-80 and a financing model to support the deployment of commercially available technology. Mr. Hunter stated that CEFIA will have to determine the role it can play in supporting and encouraging capital in the market. He discussed the two approaches to try to attract private capital—1) the direct approach and 2) indirect approach. Mr. Hunter explained each of the approaches and spoke about the success of the “Michigan Saves model” which involves going out and communicating with individual credit unions and community banks. He also talked about the indirect approach which involves aggregating loans together to a pool that larger banks fund into.

A discussion ensued on Commercial Property Assessed Clean Energy (“PACE”) program. Commercial PACE was approved in special legislative session and will be critical to helping the state achieve its energy efficiency goals. It was noted that CEFIA is developing strategies for the role it will play in the development of Commercial PACE programs, and has established working groups with municipalities, financial institutions, and businesses to begin to plan out the next steps for the policy’s implementation. The Joint Advisory Committee members noted the need to model the program after other successful Commercial PACE programs. A discussion ensued on some of the issues with securing interest in energy efficiency projects. One of the next steps in the process is to form a committee to talk about standardizing how towns and municipalities can opt into a program, how to target customers, and how to attract private capital.

Mr. Ljungquist opened a discussion about the agencies collaborating. He noted that some applicants think of energy efficiency improvements as an impediment rather than a benefit because of the process. Not having sufficient knowledge and information about energy audits was noted as being a particular concern with the solar industry. The Joint Advisory Committee members noted the need to work together to make the process better for the residential solar and energy efficiency industries/communities, which should begin with education about the programs. A suggestion was made for CEFIA to consider requiring a Home Energy Solutions Audit before an application to the residential solar PV program can be made. Another suggestion was made to establish

a standardized energy efficiency level and require a certain level in order to qualify for incentives.

The Joint Committee members talked about the importance of reducing the cost of capital. It was noted that CEIFA has had discussions with a consortium of Connecticut independent colleges and universities and energy service companies about a pilot program to provide funding for capital outlays for energy efficiency for colleges. That pilot program can potentially be used to eventually roll out a larger group of colleges and attract more investors and more leveraging of private capital into the non-profit institutional marketplace (i.e. municipalities, universities, schools, and hospitals).

A suggestion was made for the Joint Advisory Committee to make the state's clean energy programs work more efficiently and effectively and ensure that goals are being accomplished.

Katie Dykes encouraged members of the Joint Advisory Committee to share information about the respective agencies in between meetings. She noted the importance of determining how programs will work together and to support each other through the collaboration of marketing efforts, eco-distribution of funds, etc. Katie Dykes spoke about the opportunity for the agencies to utilize an integrated design approach and pooling of resources to attract additional private capital and/or better rates.

Some concern was expressed with regulatory barriers that could impede some of the progress. Concern was also expressed about potential problems collaborating if the different agencies handle things differently.

4. **Adjournment:** The meeting was adjourned at 2:25 p.m.



Market Watch Report

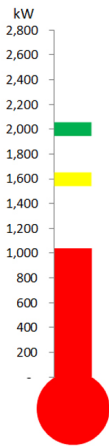
Residential Solar Investment Program

Program Data as of August 31, 2012

Race to the Rooftop

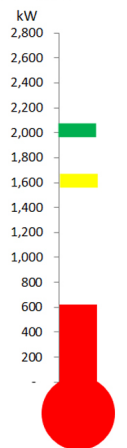
EPBB

37% of Goal



PBI

22% of Goal



The **YELLOW BAR** at 1,600 kW represents a point in time when CEZIA staff will make a recommendation on the Step 3 funding and incentive level to the Deployment Committee for consideration. The **GREEN BAR** at 2,000 kW represents a point in time when the Deployment Committee and CEZIA staff will propose Step 3 funding and incentive level to the Board of Directors for consideration and approval.

Executive Summary

- **Market Data** – CEZIA to release all installed cost and incentive data for the Residential Solar Investment Program in September 2012
- **Solarize Connecticut** – The four towns participating in Phase I of the pilot program have selected four different installers to serve their communities: Durham – BeFree Green Solar, Fairfield – Astrum Solar, Portland – Real Goods Solar and Westport – Encon. Each of the installers will offer tiered pricing based on installed capacity for both purchase and lease/PPA options within the respective communities. With respect to the purchase option, the selected installers offered opening prices ranging from \$3.95 - \$4.50/W for projects totaling up to 25 kW (Tier 1) and \$3.47 - \$3.61 for projects totaling more than 250 kW (Tier 5). Each installer also has provided a schedule of adders reflecting premium equipment options or non-standard installations.

Step 2 - Effective 5/18/2012	Rebate	PBI	Total	Average
Applications Received	159	86	245	
Applications Approved	154	85	239	
Applications In Progress	48	0	48	
Applications Completed	22	0	22	
Total Cost	\$5,248,675	\$3,046,845	\$8,295,521	
Total kW STC	1,038.7	619.9	1,658.6	
Average System Size kW STC	6.7	7.3		6.9
Cost / kW STC	\$5,053	\$4,915		\$5,002
Average Total Cost	\$34,082	\$35,845		\$34,709
Total Incentive Amount	\$1,676,987	\$1,141,713	\$2,818,700	
Incentive / kW STC	\$1,615	\$1,842		\$1,699
ZREC Equivalent Incentive Price	\$0.106	\$0.113		
Rooftop Solar Capacity Remaining	1,761.3 kW	2,180.1 kW	3,941.4 kW	

Applications Received – the total number of applications submitted by installers and received by CEZIA through PowerClerk.

Applications Approved – the total number of applications received and approved by CEZIA staff for project incentives.

Applications In Progress – the total number of projects that have received 60% in upfront incentives for delivery of materials to the site.

Applications Completed – the total number of projects that have received 100% in incentives after inspection and completion of the project.

ZREC Equivalent Incentive Price - Given the total system cost, total incentive and total capacity (stc) of all Approved applications, the ZREC Equivalent Price is determined by calculating the net present ZREC Equivalent Price from a 15 years stream of payments that equals net present value of CEZIA's incentive.

About the Clean Energy Finance and Investment Authority

CEFIA was established by Connecticut's General Assembly on July 1, 2011 as a part of Public Act 11-80. This new quasi-public agency supersedes the former Connecticut Clean Energy Fund. CEFIA's mission is to help ensure Connecticut's energy security and community prosperity by realizing its environmental and economic opportunities through clean energy finance and investments. As the nation's first full-scale clean energy finance authority, CEFIA will leverage public and private funds to drive investment and scale-up clean energy deployment in Connecticut.

Historical Program Data (Previous Steps)

Step 1 - Fully Subscribed	Rebate	PBI	Total	Average
Applications Received	161	16	177	
Applications Approved	161	16	177	
Applications In Progress	55	3	58	
Applications Completed	55	0	55	
Total Cost	\$5,707,382	\$594,599	\$6,301,980	
Total kW STC	1,067.4	125.5	1,192.9	
Average System Size kW STC	6.6	7.8		6.7
Cost / kW STC	\$5,347	\$4,737		\$5,283
Average Total Cost	\$35,450	\$37,162		\$35,604
Total Incentive Amount	\$1,879,917	\$229,999	\$2,109,916	
Incentive / kW STC	\$1,761	\$1,832		\$1,769
ZREC Equivalent Incentive Price	\$0.115	\$0.113		

Based on estimated lifetime system production under Step 1, current residential deployment represents an average levelized cost of solar energy within the range of \$0.223 - \$0.240 / kWh. Of that total, CEFIA's support accounts for \$0.074 - \$0.085 / kWh.

Environmental Factors - Calculated based upon all Approved Applications

Lifetime CO ₂ Reduction	Lifetime NO _x Reduction	Lifetime SO ₂ Reduction	Annual Cars off the Road	Equivalent Acres of Trees Planted
70,262,591 lbs.	31,845 lbs.	29,135 lbs.	234	468





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Clean Energy Finance and Investment Authority

Updates

Joint CEEF-CEFIA Committee
September 5, 2012

Committee Updates

Residential Sector



CLEAN ENERGY
FINANCE AND INVESTMENT AUTHORITY

- ▶ **1– CEFIA Program Updates:**
 - ▶ Solar Photovoltaic (PV)
 - ▶ Solar Hot Water (SHW)
- ▶ **2– Question: Solar energy systems included in Field Sales Tool for HES Program?**

Committee Updates

PV Residential Sector – Step 1 of RSIP



Step 1 - Fully Subscribed	Rebate	PBI	Total	Average
Applications Received	161	16	177	
Applications Approved	161	16	177	
Applications In Progress	55	0	55	
Applications Completed	47	0	47	
Total Cost	\$5,707,898	\$594,599	\$6,302,496	
Total kW STC	1,065.9	124.9	1,190.8	
Average System Size kW STC	6.6	7.8		6.7
Cost / kW STC	\$5,355	\$4,759		\$5,293
Average Total Cost	\$35,453	\$37,162		\$35,607
Total Incentive Amount	\$1,879,958	\$229,165	\$2,109,123	
Incentive / kW STC	\$1,764	\$1,834		\$1,771
ZREC Equivalent Incentive Price	\$0.117	\$0.112		

1 Over 90% of the applications approved and installed capacity were through the rebate

2 Nearly \$1 of ratepayer incentive attracted over \$2 of capital from other sources

3 Approximately \$1,750/kW STC incentive – nearly 30% less than the \$2,450/kW STC incentive

Committee Updates

Solar Hot Water - Residential Sector



Program Activity – Residential SHW, thru 9/4/12	Total	Average
Applications Received	50	-
Applications Approved	29	-
Applications Completed	13	-
System Cost	\$622,996.54	\$12,979.09
Annual Usable MMBtu	697.574	14.533
System Size (Square Feet of Collectors)	3,823.40	79.65
Cost / Annual MMBtu	\$893.09	-
Cost / Square Foot of Collector	\$162.94	-
Incentive Awarded	\$168,293.19	\$3,506.11
Incentive / MMBtu	\$241.26	-
Incentive / Square Foot	\$44.02	-

1 - Equivalent to 195 kW of PV capacity (< \$3200/kW)

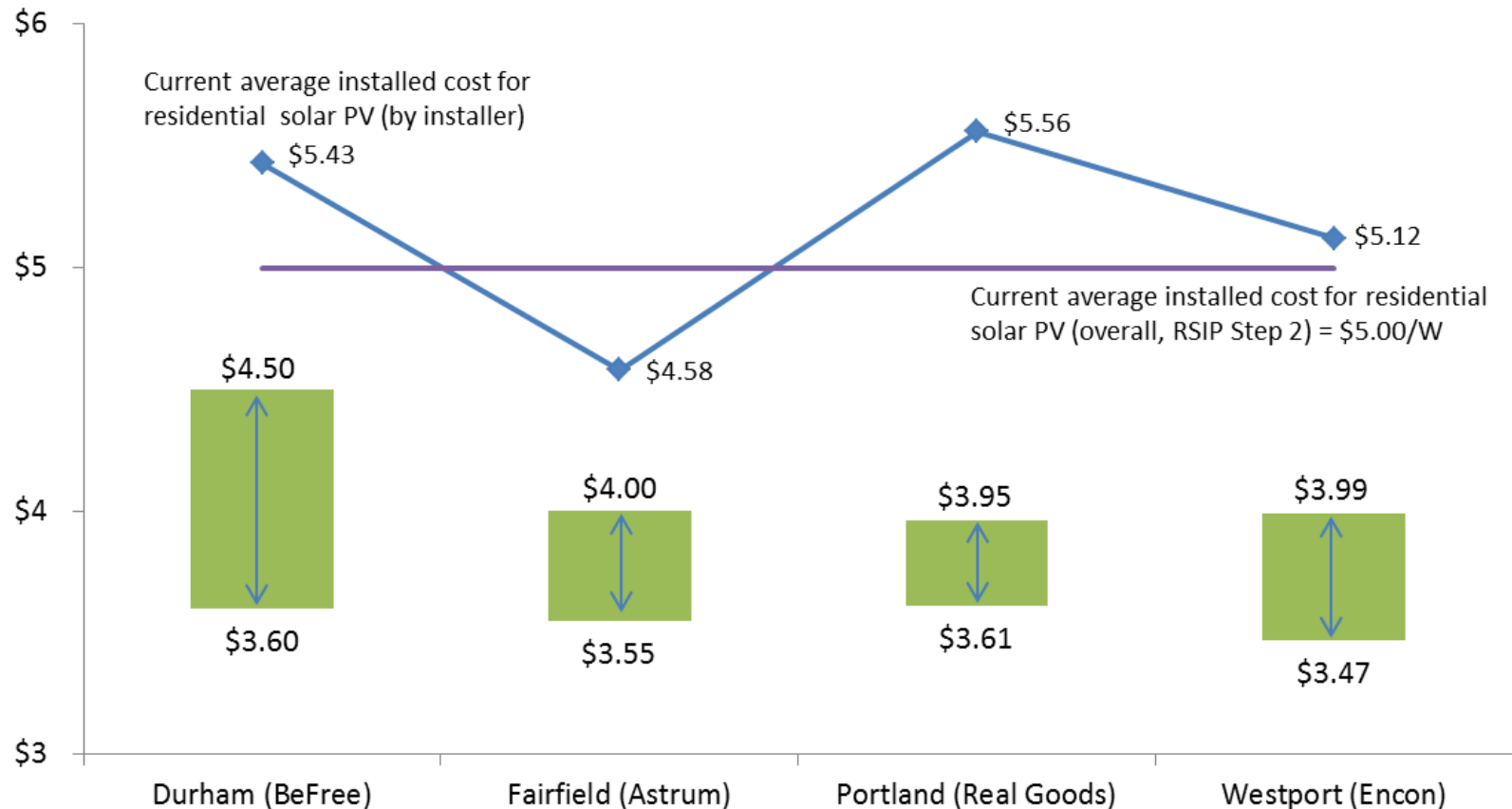
2 - Each \$ of ratepayer incentive attracted over \$3.70 of private capital. Grants only to date; loans offered in Round 2.

Committee Updates

Marketing and Outreach – Solarize Connecticut



Solarize Connecticut Price Ranges (\$/W)



Marketing and Outreach

Solarize Connecticut – PV Economics



Average System Size (kW)		7.00	7.00	7.00	7.00	7.00
Total System Cost \$/(kW)		\$5.00	\$4.50	\$4.00	\$3.50	\$3.00
Total System Cost		\$35,000	\$31,500	\$28,000	\$24,500	\$21,000
% Average Rebate (EPBB) to Total System Cost		32.4%	36.0%	40.5%	46.3%	54.0%
Average Rebate (EPBB) at Step 2		\$11,333	\$11,333	\$11,333	\$11,333	\$11,333
Total System less Rebate		\$23,667	\$20,167	\$16,667	\$13,167	\$9,667
30% Federal Tax Credit		\$7,100	\$6,050	\$5,000	\$3,950	\$2,900
Net System Cost - Loan Amount		\$16,567	\$14,117	\$11,667	\$9,217	\$6,767
Rebate /kW		\$1,619	\$1,619	\$1,619	\$1,619	\$1,619
*LCOE (Avoided Cost) /kWh (\$0.17 /kWh - Year 1 escalating at 2%)		\$0.2058	\$0.2058	\$0.2058	\$0.2058	\$0.2058
*LCOE (Avoided Cost)		\$1,685	\$1,685	\$1,685	\$1,685	\$1,685
Simple Payback - Years (w/financing cost)		9.8	8.4	6.9	5.5	4.0

Financing Program Updates

Overview



- ▶ **Residential Sector** – solar PV and thermal lease and loan product and energy efficiency loan product (i.e. deeper energy efficiency upgrades, geothermal, fuel conversion, etc.)
- ▶ **Commercial and Industrial Sector** – clean energy solutions product (i.e. support DECD and CI economic development efforts) and C-PACE
- ▶ **Institutional Sector** – support “Leading by Example” effort for state and municipalities and Campus Efficiency Now pilot program
- ▶ **Grid and Infrastructure** – support Project 150 (i.e. 15 MW fuel cell farm in Bridgeport), other grid-tied projects (i.e. 5.4 MW wind farm in Colebrook and microgrid), and infrastructure projects

Financing Programs Updates

Residential Sector



Program	Partners	ARRA-SEP LLR	ARRA-SEP IRB	CEFIA Sub-Debt	Private Capital	Interest Rate	# of Loans
Solar Lease	Tax equity, commercial debt, servicer, DEEP, and DOE	TBD	TBD	\$5.00-\$10.00 MM	\$20.00-\$40.00 MM	7-10%	2,500
Solar Loan (Pilot)	Institutional investor, servicer, DEEP, and DOE	TBD	\$0.30 MM	\$1.25 MM	\$5.00 MM	7-10%	400
Multifamily Energy Loan Fund (Pilot)	Winn, LISC, HUD, and CHFA			\$0.50-\$2.00 MM	\$2.00-\$8.00 MM	5-7%	5-10
Low Income Energy Loan Fund (Pilot)*	HDF, CHIF, DEEP, DOE, OFN	\$0.50 MM	\$0.25 MM		\$3.50 MM	3-5%	200
Energy Efficiency Loan (Pilot)*	Financial institutions, DEEP, DOE, and contractor	\$0.30 MM			\$3.00 MM		300
Total		\$0.80 MM	\$0.55 MM	\$6.75-\$13.25 MM	\$33.50-\$59.50 MM		~3,400

* - names of the programs are subject to change

Financing Program Updates

Commercial and Industrial Sector



- ▶ **C-PACE** – develop and administer a statewide commercial and industrial clean energy financing program
- ▶ **Clean Energy Business Solutions** – develop and implement a clean energy financing program with DECD and CI to support their economic development objectives

Financing Program Updates

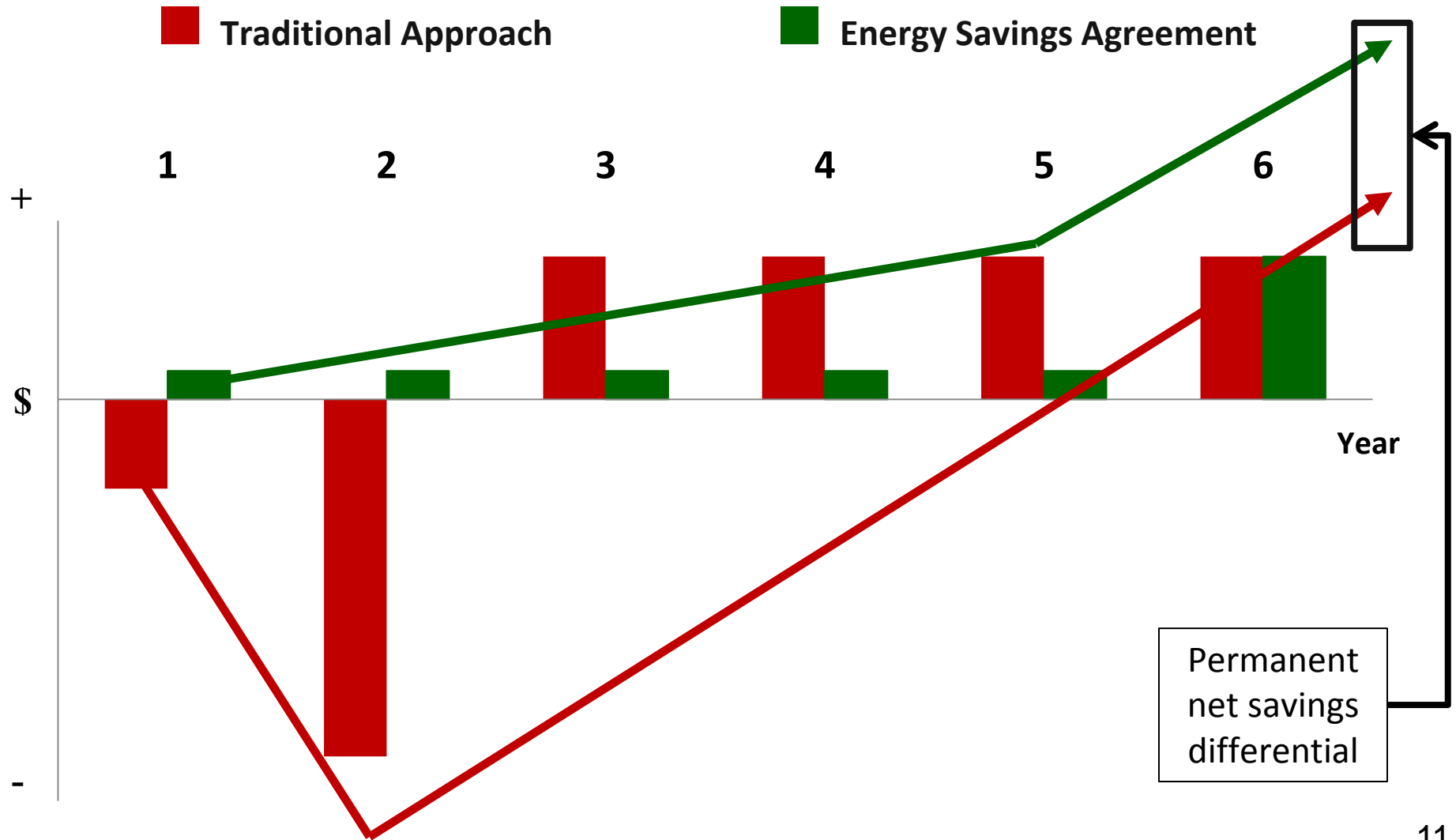
Institutional Sector



- ▶ **Campus Efficiency Now** – \$1 MM program to pilot a university-based energy efficiency financing mechanism in partnership with the Connecticut Conference of Independent Colleges (CCIC)
- ▶ **Lead by Example** – support the State of Connecticut in attracting capital for its LBE efforts
- ▶ **Solar Tax Equity Fund** – raise private capital to finance the deployment of solar PV and thermal on municipal buildings

Financing Program Updates

Institutional Sector – ESA



Financing Program Updates

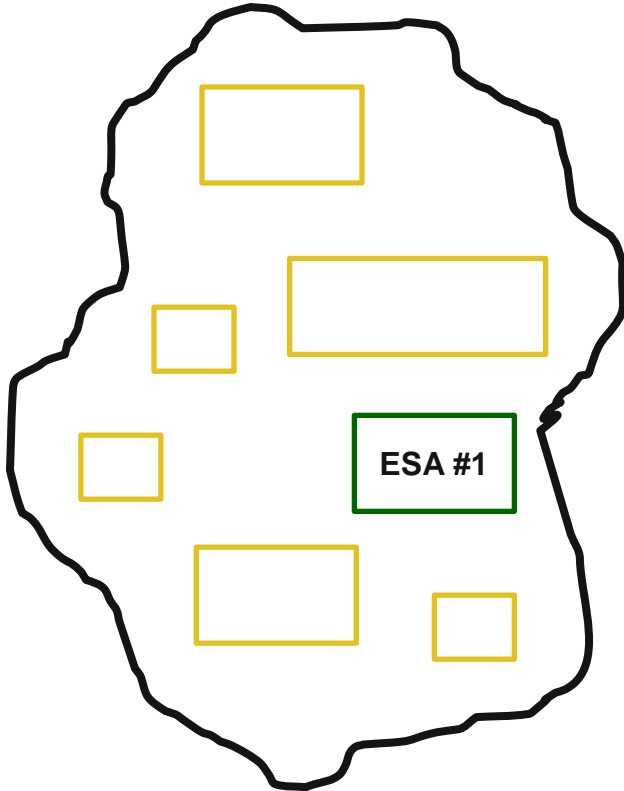
Institutional Sector – ESA to SCRF



Stage #1

Stage #2

Stage #3



1. Energy savings performance
2. Loan repayment performance
3. Identification of additional measures

Pilot
Loan

Replicate
Loans

Scale
Tax Exempt Bonds₂

2012 Connecticut Energy Efficiency Fund (CEEF) Financing Programs

August 2012

Key Financing Objectives

- *Effective* for customers
 - Attractive to customers (low interest rates, attractive terms)
 - Convenient for customers (easy and convenient application, quick processing)
 - Reach many customers (i.e., underwriting criteria)
- *Low cost* for ratepayers
 - Low cost of capital (low cost to the EE Fund)
 - Low fees and expenses

CEEF Financing Programs - Summary

Sector	Program Description	Admin by	Cost of Funds	Interest Rate to Customer
Residential (Began 2/12)	Insulation: size of loan is \$1,000 minimum to maximum of \$2,500	CHIF	CL&P: 9.25%*; UI: 7.53%**	0%
Residential	Focus of financing is on deeper measures/whole house approach	CHIF	CL&P: 9.25%*; UI: 7.53%**	2.99%; 4.99%; 9.25%
Small Business/ Municipality < 200 kW	Nationally recognized as “Best Practice” program; \$70M in loans since inception (10+ years)	Utilities	Capital: CL&P: 10.89%; UI: 6.31%	0%
C&I >10kW <350kW	CEEF C&I program, jointly offered by the utilities	Univest Capital / M-Core Capital	8-14%	2.99%; 4.99%

* Proxy interest rate, set to demonstrate an interest rate to the secondary market (for potential resale of loans).
Source of capital is ratepayer funds (self-funding), with 0% interest to CEEF, but presumes 5.25% interest and 4% fees.

** Includes both interest assumptions and fees.

CEEF Product Matrix - Based on 2012 June YTD

Sector	Min Loan Amount	Max Loan Amount	Avg Loan Amount	Max Term	Repayment options
Residential Insulation	\$1,000	\$2,500	\$2,100	3 years	On-bill
Residential	\$2,500	\$20,000	\$10,500	10 years	Separate bill or on-bill
Small Business/ Municipality SBEA*	\$500	\$100,000	\$11,000	3 or 4 years	On-bill financed
C&I: >10kW <350kW	\$2,000	\$250,000, \$100,000 w/ subsidy	\$50,000	5 years	Separate bill

*Small Business Energy Advantage

2012 Financing Highlights

- 0% insulation-only loan pilot extended through December 31, 2012
- SBEA/Muni loan program with 0% interest to customer continues to be well received by small businesses and municipalities
- Increased interest in C&I third party financing applications due to lowered interest rates (from 7% to 4.99% or 2.99%)
- For both residential and commercial projects that include measures eligible for 2.99% financing, the entire project can receive the 2.99% rate (to encourage comprehensiveness)