Finance and Real Estate Platform Launch:

Advanced Energy Retrofit Financing

Strategies that Work and Why

SUMMARY REPORT

June 12, 2013 – EEB Hub
The Navy Yard, Building 101
4747 South Broad Street
Philadelphia, PA

Finance and Real Estate Platform Launch:
Advanced Energy Retrofit Financing Strategies that Work and Why

Executive Summary

On June 12, 2013, the Energy Efficient Buildings Hub (EEB Hub) Platform series launched the Finance and Real Estate Platform, with an initial engagement that drew attendees from the Philadelphia-area Finance and Owner/Operator stakeholder communities, as well as online viewers from around the region. This convening of industry leaders and EEB Hub researchers served to identify barriers to retrofit uptake and pinpoint ways to accelerate investments in Advanced Energy Retrofit (AER) projects. The launch reviewed the current state of AER funding across six different financial institutions and organizations for small commercial and multi-family buildings, and discussed techniques for increased adoption to create nationwide momentum in the marketplace.

The EEB Hub had identified three preliminary barriers to finance: information transparency in the market, investment time horizon and expected yield, and lack of appropriate return and valuation metrics. After the panelists' presentations and panel discussions, Platform participants joined working groups to generate additional barriers and a set of opportunities to address these barriers through the work of the EEB Hub.

The Finance Platform Launch addressed barriers to retrofit investment and shed light on proven methods for financial lenders to educate building owners, occupants, and policy-makers on AER financing. Dr. Susan Wachter (Richard B. Worley Professor of Financial Management, Wharton Professor of Real Estate and Finance, and EEB Hub investigator) moderated the afternoon event and introduced the speakers' unique financing approaches. The Platform's six guest speakers shared their organization's strategies which cross the public, private, and non-profit sectors:

- Platform Keynote, Jay Merves (Director, Business Dev. and Finance at NYC Energy Efficiency Corp.)
- Joel Freehling (Sr. Energy Finance Consultant at Shaw Environmental and Infrastructure Group)
- Deane Evans (Research Professor and EEB Hub Investigator, New Jersey Institute of Technology)
- Alexandra Lieberman (Senior Manager, Connecticut Clean Energy Finance and Investment Authority)
- Jonathan Cloud (Managing Director, NJ PACE, by the Center for Regenerative Community Solutions)
- Roger Clark (Manager of the Sustainable Development Fund (SDF), The Reinvestment Fund (TRF))

The public and private sector display varying characteristics in the structure and returns from financing AERs. Non-traditional financing mechanisms discussed at the Finance Platform Launch also include quasi-public, public-private partnerships, and non-profit approaches.

The outcome of the meeting included the generation of the following lists of barriers that can or cannot be directly impacted by the EEB Hub. These sets were generated by the Platform participants individually and addressed in small groups, were action plans were created for select barriers.

Barriers the EEB Hub can directly impact:

- **No demand for energy savings from tenant**
- **Uncertainty of payback**
- **Limited proof of concept in market**
- **Lack of awareness within government**
- **Lack of reliable series of building energy data**
- **Differentiating the variables in energy savings**
- **Lack of results by ECMs**
- **Lack of education on environmental impacts**
- **Lack of information across stakeholders**
- **Educating owners on significance of savings**
- **Build trust in incentive programs**
- **Addressing political indifference on efficiency**
- **Translating AERs to energy savings per square ft**
- **Outline a clear decision-making process**

Barriers the EEB Hub cannot directly impact:

- **Low energy costs**
- **Long- vs. short-term investment horizons**
- **Focus on long- vs. short-term incentives**
- **Uncertainty between long- vs. short term benefits**
- **Small projects are not feasible for financing**
- **Make energy efficiency a priority**
- **Building world is on first cost basis not life cycle cost**
- **Energy-efficiency loan versus total overall value of project is small**
- **Transaction and up-front costs for small buildings**
- **Accounting treatment clarity is needed such as "right ruling by FASB"**

A more in-depth look at financing solutions and action plans for the EEB Hub will follow with the convening of the Finance Platform in October 2013.

What will it take for retrofit financing to become mainstream?

- ***"The issue is societal; the buy-in from the tenants (customers) will make the final EE business case when they are confronted with two similar options." – Jay Merves***
- ***"Transformation will mean that every loan is looking at energy with a technical and economic analysis to make smart decisions based on life cycle costs." – Roger Clark***
- ***"You need to reposition the value proposition. If you can get a better building, and get it financed, that's good for the building and the occupants." – Deane Evans***

Models for Advanced Energy Retrofit Financing

Retrofit financing mechanisms range from more traditional public and private financing, which have been around for decades, to newer models that combine non-profits, governmental and private business practices through unique collaborations to address the barriers to retrofits.

The panelists presented examples of successful models of sector-aggregated approaches which have been instituted at their respective organizations: Public Financing, Private Financing, Public-Private Partnership Financing, Quasi-Governmental Financing, and Non-Profit Financing.

Public Retrofit Financing

Many of the barriers that exist in scaling AERs could be addressed through enabling local and national policy and regulation. Many states also have major initiatives to encourage energy efficiency, where strategies range from tax credits/abatements to grants, loans, and rebates.

Public financing models such as government loans are repaid through energy savings, and require utility involvement and legislation to unlock residential market development. These programs benefit the owner and occupant of the buildings, and require participation from many stakeholders in both private and public sectors. **Incentives in public financing are designed to make energy efficiency retrofit investments more attractive by improving the ROI and payback terms.**

Property Assessed Clean Energy (PACE) models can take many forms, one of which allows local governments to fund energy improvements on commercial properties via an additional assessment on the property tax bill. While the positive outcomes are easy to understand, challenges remain in that there is still a limited understanding and amount of information available to financial institutions, as well as a lack of state and local government support.

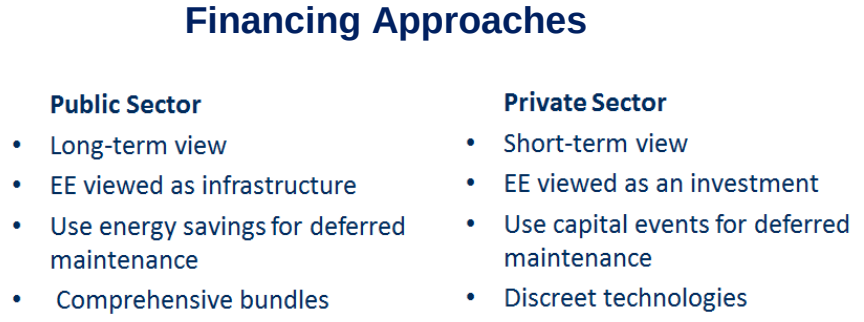

Figure 1: Public sector and private sector financing approaches, shared by Joel Freehling at Finance Platform

Private Retrofit Financing

New financing models are emerging in the private sector that are removing barriers to energy efficiency retrofits by creating incentives for both owners and occupants, enabling lending on more favorable terms. Private financing models vary from performance contracting to infrastructure programs in which an energy service company takes responsibility for the building capital and operating budgets, in a system known as Energy Service Companies (ESCOs).

Joel Freehling discussed the private financing mechanisms that Shaw Environmental and Infrastructure Group (CB & I) facilitates with commercial banks, development financial institutions, and bi-lateral aid agencies. Freehling said that energy efficiency is being addressed as utility provider programs are evolving to be more performance based, sector-focused, and targeted at growth areas of design assistance and new construction. Additionally, as ESCOs are growing, they're becoming more attuned to the private sector and focusing on operational savings.

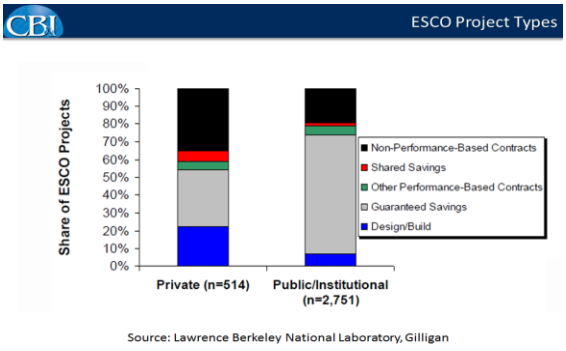

Figure 2: Joel Freehling shared ESCO Project Types based on funding

Deane Evans addressed opportunistic retrofitting, or installing energy efficiency (EE) improvements when a property is in need of repair or reconstruction, so the efficiency components can be included for relatively low incremental cost. Tenant improvements have often been overlooked in the EE market, but there is a growing recognition that for relatively little cost, the tenant improvement process presents significant savings opportunities. The major barrier has been the "Split Incentive" problem, where the benefits of a retrofit would not benefit the person who paid for the transaction. The solution can be realized when the owners' cost recovery is based on predicted savings, meanwhile protecting the tenant against underperformance. The Energy Aligned Clause[1] provides a 20% performance buffer for predicted savings in any given year by limiting owners' capital expense pass-through to 80%. Leading organizations working in this area are the US Department of Energy, the Natural Resources Defense Council, and the New Buildings Institute.

[1] The Energy Aligned Clause was developed by the New York City Mayor's Office of Long-Term Planning and Sustainability, as a model for leasing language intended to provide a solution to the 'split-incentive' problem which arises when a building owner pays for upgrades and improvements, but only the tenants benefit financially. Embedded within the EAC are gains for building owners, tenants, and the environment.

Public-Private Partnership Retrofit Financing

As a public-private partnership, the NJ PACE program combines the strengths of private capital and innovation with the reliability of property-secured municipal financing.

Jonathan Cloud helps municipal officials, funders, and the general public understand and implement the features of NJ PACE, a low-cost, secure, no liability, "cash flow positive" loan from a public-private partnership model. This financial model provides uniform documentation and administration procedures, as well as open-market platforms for discussion, but it is the partnerships amongst industry, government, finance, and the business community that are necessary for the success of NJ PACE. The ways in which NJ PACE is able to address financing barriers are by creating no upfront investment costs or liabilities, and offering a lower-cost loan which is "cash flow positive" from the beginning.

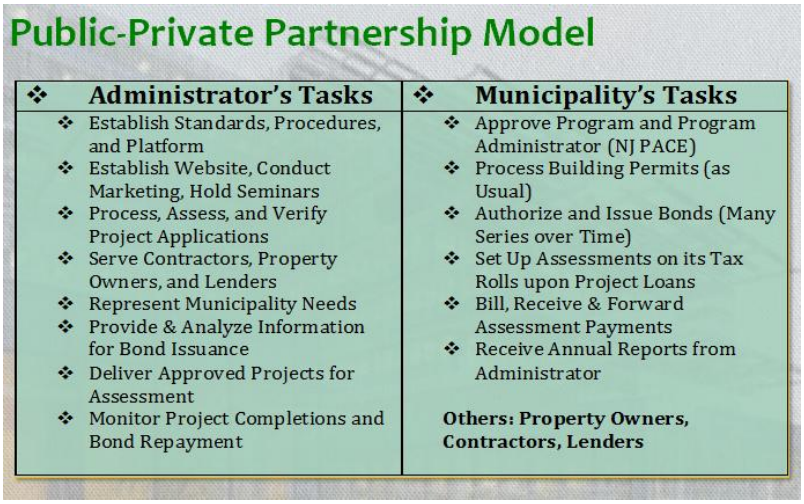

Figure 3: This Public-Private partnership model outlines the responsibilities of each party for retrofit financing in NJ PACE

Quasi-Governmental Retrofit Financing

A fourth approach to retrofit financing is the quasi-governmental model which leverages limited public sector funds with private sector capital and provides a one-stop-shop for clean energy financing. One form of such financing is the Energy Services Agreement (ESA), a contract that permits energy efficiency to be packaged as a service that building owners pay for through savings, requiring minimal upfront cost to the owner. Alternatively, building owners who have limited access to cost-effective private financing, can receive loans for AERs and related activities through governmental organizations.

Alexandra Lieberman supports the scaling up of commercially viable technologies and develops new renewable energy and EE financing programs in Connecticut in the nation's first full-scale clean energy

finance authority. Connecticut's "Green Bank" Clean Energy Finance and Investment Authority (CEFIA), was established in 2011 to attract private investors to deploy capital partners such as Wells Fargo, People's United Bank, Citi, Urban Atlantic, and others, in EE measures. CEFIA leverages public and private funds to drive investment and scale clean energy deployment, offering incentives and innovative low-cost financing to encourage homeowners, companies, municipalities, and other institutions to support energy efficiency. The energy challenges in Connecticut are unique: the state has the highest cost for electricity in the continental 48 states, the building stock is old and energy inefficient, and there is a need for cleaner, cheaper energy on a more reliable grid. The CEFIA program allows contractors to engage with utilities in developing incentivized scopes of work through owners' C-PACE programs. After a third party review of technical and financial details, C-PACE will work with the municipality to place a lien on the property while offering 100% of the upfront financing for the owner. Once the work is completed, the owner will remit payment to the municipality, which in turn repays CEFIA for the transaction. Half of CEFIA's C-PACE applications are from office buildings, and the remaining is split between industrial, multi-family, retail, and non-profit.

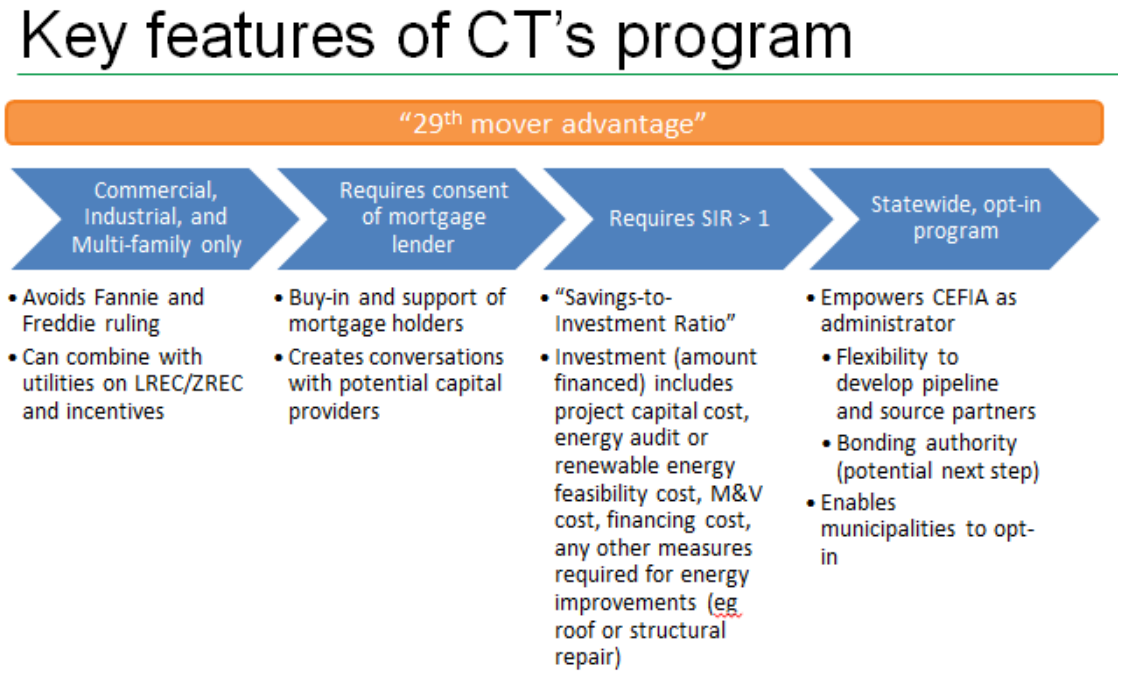

Figure 4: Outline of Connecticut CEFIA's "Green Bank" financial program

Jay Merves explained NYCEEC in his Keynote as the first quasi-governmental independent non-profit financing entity offering products to support energy efficiency (EE) retrofit financing for private building owners. Any building that is not owned by the city, state, or federal governments is eligible; however, all work must be coordinated under legislation from the Department of Energy and New York City. The NYCEEC provides first-loss credit enhancements based off of energy savings projections to assist financial lenders. NYCEEC remains credible by working with the "best in class" such as Rockefeller, Deutsche Bank, and the NRDC, offering products and services prioritized according to EE impact, ability to execute, income generation, and scalability.

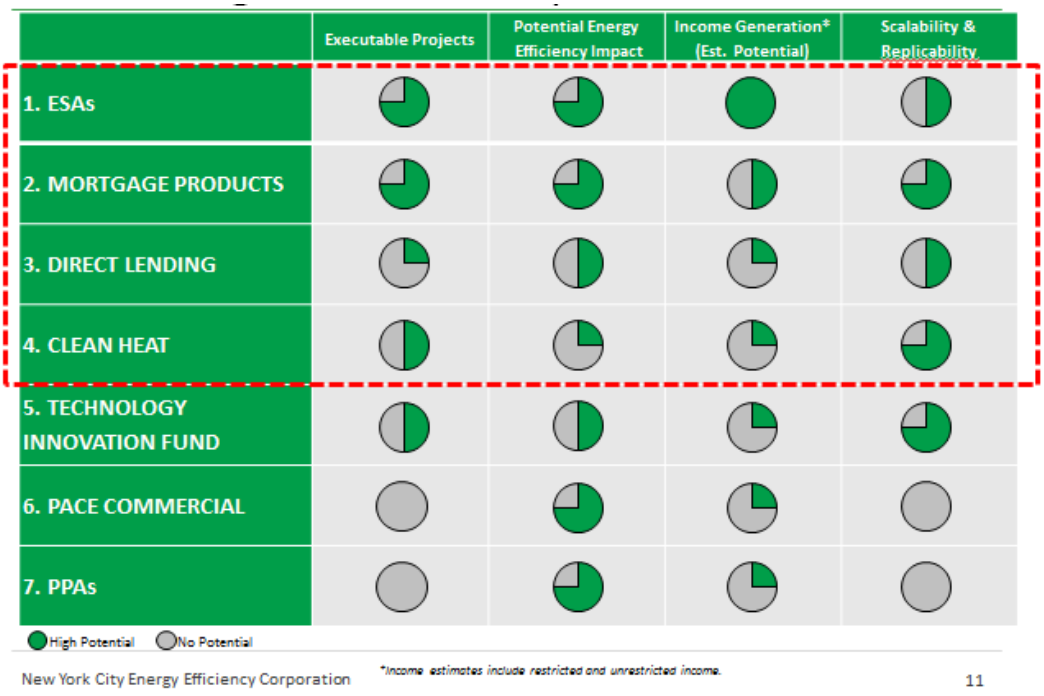

Figure 5: NYCEEC evaluation of seven utilized financial products

Non-Profit Retrofit Financing

Non-Profit financing organizations work with a diverse network of investors and business partners to promote private initiatives and capital for the public good.

Roger Clark discussed the Sustainable Development Fund (SDF) of The Reinvestment Fund (TRF) - a private, nonprofit community development financial institution of 800 investors which was founded in 1985. The TRF works with the Pennsylvania Green Energy Loan Fund, EnergyWorks Loan Fund, and other energy lending agencies such as Bank of America to support clean energy through loans and equity

investments on EE projects. Successes of TRF to date include supporting seven of the first eight utility-scale wind farms in Pennsylvania and launching the state model for solar PV markets in Southeastern Pennsylvania with 232 solar photo-voltaic installations.

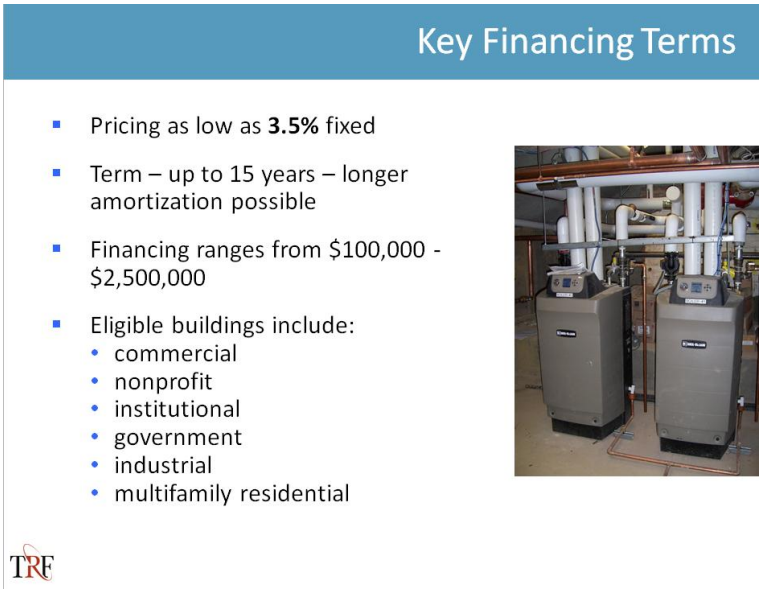

Figure 6: The non-profit The Reinvestment Fund's low-interest financing terms for energy efficiency loans

Facilitated Platform Participant Insights

After the panelists' presentations, Platform were asked to individually brainstorm missing barriers on note-pads which were added to posters in the front of the room. Participants voted on the barrier clusters and prioritized the rankings of importance, which were then enhanced with another ten barriers from a divided-group brainstorming session. A trained facilitator from EEB Hub management generated discussion amongst the small groups in order to recognize the barriers which the EEB Hub is able or unable to address, and develop action plans for selected barriers, identifying the time frame and party best responsible for such activities.

Platform participants recognized that the EEB Hub can substantially help to address barriers around the uncertainties of payback while eliminating confusion with the financing process, and believe that the EEB Hub can provide education to stakeholders on environmental impacts of energy efficiency. Barriers that the EEB Hub cannot address, according to the Platform participants, are long- vs. short-term investment horizons and impact on returns, non-finance-able measures, subordinated mortgages, price and priority of energy to stakeholders, shifting references to life cycle costs instead of first costs, and transactional costs. These insights were shared with the entire Finance Platform meeting, will be researched by EEB Hub investigators, and will be discussed at the upcoming Finance Platform convening in October 2013.

Figure 7: Platform participant sharing the outcome from small-group, facilitated discussion.

As a result of the group activity, Finance Platform participants concluded:

- Participants addressed 13 barriers different from the three offered by the EEB Hub that, if addressed, could make a significant impact in increasing investment in building energy retrofits.
- The EEB Hub should focus on engaging key stakeholders, reducing complexity, reducing the uncertainty around financial benefits, and increasing building owner/operator motivation to drive the pursuit of building energy efficiency.
- The EEB Hub should not put effort into addressing the transaction and up-front costs for small commercial buildings, transitioning the industry away from first costs to life cycle costs, or clarifying the short-term benefits of building energy efficiency projects.

Specific recommendations to address these barriers included:

- Create communication tools to enable brokers and LEED service providers to educate property owners on asset appreciation.
- Assess if any training is necessary to enable all buildings to develop long-term energy upgrade plans.
- Create an EEB Hub "tenant engagement plan" to drive building energy efficiency.
- Create a "government engagement plan" to capture ongoing EEB Hub initiatives at the local, state, and federal levels and create additional compelling ways to engage government.