CRITICAL ISSUES SERIES

ENERGY EFFICIENCY IN THE COMMERCIAL REAL ESTATE INDUSTRY

Emerging Best Practice for Underwriting Commercially-Attractive Energy Efficiency Loans

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Introduction

The commercial real estate (CRE) market in the U.S., consisting of approximately 4.8 million office, retail, service, lodging, multifamily, warehouse and storage buildings, represents a significant opportunity for building owners to reduce energy use and monetize their energy savings. Moreover, it is now evident to CRE owners and lenders that building energy performance can impact property value. As a result, less energy efficient buildings are at a growing competitive disadvantage and in danger of accelerated obsolescence. In property transaction due diligence, for example, knowledgeable buyers now consider sub-par building energy performance no different than any other property deficiency such as a damaged roof or an air conditioning system at the end of its useful life.(1)

These market developments have stimulated a growing number of retrofit projects designed to increase energy efficiency. To the extent that energy efficiency investment has been made in the CRE market, it is most likely associated with lower cost improvements having relatively short payback periods (less than 2-3 years) and involving low technology risk. As a result, the CRE industry now has the opportunity to move from this initial phase of low cost, short payback energy efficiency improvements to the multifaceted second phase of implementing deep energy retrofits (defined as resulting in at least a 30% reduction in whole building energy use) where the capital need is much more intensive and the payback period often longer.

In view of scarce internal funding and the desire to preserve capital in an uncertain economy, CRE owners have taken a measured approach toward the opportunity to monetize potential energy savings. There are two principal reasons for this pragmatic approach to capturing these savings. The first is associated with the current behavior of the CRE market itself and the second is associated with the availability of commercially-attractive financing.

Over the last four years, commercial real estate has been a victim of the country's most severe recession since the Great Depression and the accompanying economic uncertainty. Vacancy rates escalated and rent growth has been virtually non-existent. As late as last summer when the CRE market appeared to be gaining some traction, along comes an onslaught of more disappointing economic news and job growth setbacks, including downward revision of the gross domestic product (GDP), fiscal chaos in Europe, debt ceiling gridlock, a downgrade of U.S. debt, and significant volatility in the investment market. A double dip recession seemed just over the horizon. These economic headwinds resulted in further CRE market stagnation and the modus operandi again became "preserve capital to the maximum extent possible." Capital expenditure (CapEx) budgets plummeted, operating budgets were meticulously scrutinized and equipment replacement or upgrades were often put on hold. Where possible, even maintenance was being deferred.

To make matters worse, given that almost 75% of CRE was constructed prior to 1990, and that many of these buildings still rely on original mechanical and electrical equipment often near the end of its useful life, this has resulted in substantial pent-up demand for equipment upgrades and replacement.

Fortunately, to-date during 2012 the economic climate has shown signs of improvement and the country may now hopefully be on the road to a sustained recovery. Assuming this to be true, the floodgates holding back the substantial pent-up demand for equipment replacement and upgrading may finally be at the cusp of opening. This dynamic will represent a significant opportunity for replacing or upgrading dated energy-consuming equipment with much more efficient units. The end-result of this powerful business driving force will likely be rapid acceleration of the deep energy efficiency retrofit market.

The execution challenge associated with these deeper, more capital-intensive energy efficiency retrofit improvements is complicated when internal financing is limited or not available. While some financing for energy efficiency upgrades has been available to CRE owners, the availability of "commercially-attractive" financing often has not. Fortunately, this is changing and market ready, commercially-attractive financing mechanisms have arisen to meet the need.

This paper will review these market ready, commercially-attractive financing mechanisms and the emerging best practice needed to facilitate proper underwriting of energy efficiency loans. The net result will be energy efficiency lending finally becoming a mainstream financial asset class with a high degree of standardization, predictability and scale.

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Keys to Energy Efficiency Investment

There are four requisites for CRE building owners contemplating external financing for an energy efficiency investment. First, such external financing must be easily accessible and available with "commercially-attractive" terms. Secondly, the investment must be based on a reliable and fully transparent methodology to project future energy savings with a high degree of confidence. Thirdly, actual energy savings performance after improvements are made must be measurable and verifiable in a reliable, consistent and fully transparent manner. Lastly, the risk of underperformance must be low. The first and fourth requisites focus more on the financing structure, while the remaining two requisites focus more on the technical underwriting.

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Commercially-Attractive Financing

While financing is commonly available from multiple sources to support energy efficiency investment, finding "commercially-attractive" terms has often been problematic. "Commercially-attractive" terms can mean many things, but for the purposes of this paper it will be "ideally" defined as financing:

- without any capital expense;
- that does not add debt to the property;
- that covers 100% of the project cost, including all upfront [hard and soft] costs, such that there is no "out-of-pocket" owner expense;
- structured such that payments can be treated as an operating expense;
- structured such that payments (along with the energy savings) can be passed along to tenants (in a multi-tenant building); and
- available at relatively low cost (interest rate) and payable over an extended period of time (10 years or longer), such that monthly energy savings can more than offset the monthly payment necessary to capture these savings, thereby enabling projects to achieve cash flow positive status immediately.

There are a number of financing mechanisms that can meet the "commercially-attractive" financing criteria. These can be extracted from Table 1[3] and include:

- PACE tax-lien financing
- Energy Service Company (ESCO) direct financing
- ESCO third party financing using the PACE structure
- Energy service agreement providers using private party financing
- Energy service agreement providers using PACE financing
- Bank debt provided through a PACE structure

Property Assessed Clean Energy (PACE) Tax-Lien Financing

PACE tax-lien financing programs allow local governments, when authorized by state law, to fund energy improvements on commercial and industrial properties via an additional assessment on the property tax bill. Similar to a sewer tax assessment, loans under a PACE program, are secured by a lien on the owner's property and re-paid through an assessment on the owner's property tax bill. This structure results in a lower cost of capital payable over a long term (typically 10-20 years). PACE financing transfers with sale of the building so that future owners or tenants assume the payments, along with the continued cash flow positive energy savings benefit. Mortgage holder's consent is often required in many states before applications can be approved and assessments placed.

Early stage commercial PACE programs in Sonoma County (CA) and Boulder County (CO) funded projects with, in the case of Sonoma, existing county treasury funds, and, in the case of Boulder, municipal bonds of the county. Funding from existing reserves is an appealing option for a number of reasons: funds are available when projects need them, and an interest rate can be applied to the project that is attractive to both the property owner and the government doing the lending. Unlike Sonoma County, however, most local governments are unlikely to have substantial reserves from which to lend. Boulder County, on the other hand, established a pool of projects, and when there was an aggregate demand that could support the efficient sale of bonds, all projects were funded simultaneously. However, without a fairly steady stream of projects, building owners will likely have to wait longer than they would prefer to have projects funded.

Other funding models are being explored by emerging PACE programs. One, a "warehouse" model involves an investor (such as a large money center bank) providing a line of credit for the cities and counties to use in funding the PACE program. In such cases, the bank envisions warehousing the loans until a critical mass is reached at which time bonds or other securities can be issued in order to replenish the line of credit. As part of the process, the warehouse lender needs to include the cost associated with hedging interest rate risk before critical mass is reached. As such, good project flow is crucial in that it allows critical mass to be reached quickly and will minimize hedging costs.

The second is the "bond" PACE model that involves the issuance of bonds to create a local or state fund that the local government will then make available to the PACE program. Once the bonds are sold and the PACE program funded, the "bond" model is similar to the "warehouse" model.

Recently launched PACE programs in San Francisco and Los Angeles are using what is being referred to as an "open market" model (or also referred to as a "private placement" or "owner arranged" model) where financing is provided by private investors, which could be banks or pools of funding raised from private investors. This is expected to be a very attractive model in the CRE market. The municipality acts as a conduit for private investment. Individual property owners arrange their own financing directly with the project lender leveraging the enforceability of the tax lien on the property as security. This enables building owners to negotiate rates, terms, conditions, and schedules that best suit their specific project needs, rather than waiting to lock in a rate through a bond. The owner-negotiated terms are then reflected in a loan agreement directly with the lender. Financing is repaid as a line item on the owner's property tax bill. The repayment obligation transfers with ownership. This PACE model opens a wider channel of capital inflow compared to pooled bond models.

In the CRE industry, where there are a significant number of triple-net-lease tenant-occupied properties, a significant advantage to these PACE assessments is that they normally qualify as operating expenses under existing leases and, therefore, are eligible "expense pass-throughs" to tenants. Under typical triple-net lease agreements where tenants are responsible for utility costs, the pass-through of the PACE assessment as a tax reimbursement allows owners to implement projects and equitably share project costs with the tenants who in return reap the benefit of lower energy cost.

The security of the tax lien also provides a solution to the inability of many commercial building owners, who often lack investment-grade credit ratings, to secure any type of third party financing for energy retrofits. The lien is attached to the property and transfers with ownership. Repayment security is through the senior lien position of the assessment rather than through the borrower's credit. This allows owners to undertake deeper retrofits with greater energy savings and longer payback periods, even if the owner only plans to hold the property for a few years.

The process of owner-arranged PACE financing begins when the building owner engages an energy service company (ESCO) to audit the property and develop a retrofit plan. The owner then submits the plan to the municipality for approval, in some cases along with a lien consent letter from the mortgagee. Once the municipality notifies the owner of approval, the owner can negotiate financing from lenders on advantageous terms due to the security of the lien, which will be placed on the property when funding is provided. The owner will then typically enter into an energy savings performance contract with the ESCO, and the lender pays the ESCO to perform the installation. The municipality assigns the assessment collection rights to the lender, and the building owner pays the assessment according to the agreed upon schedule. The ESCO provides operation and maintenance (O&M) and energy savings measurement and verification (M&V) for a service fee and pays the owner if verified savings fall short of the energy savings guarantee.

Typical PACE tax-lien financing structures make it possible to have the reduced monthly energy bill (reflecting the energy savings) more than offset the additional charge (for loan repayment) on the monthly property tax bill enabling immediate positive cash flow. To date, 28 states and the District of Columbia have passed enabling legislation enacting PACE programs. More than a dozen commercial PACE programs are actually in operation or are well along in the development process.

PACE Advantages for the CRE Industry

The CRE industry will find PACE programs attractive for a number of reasons.

1. For multi-tenant, investment property, costs (and associated savings) can be passed to tenants under existing leases.
2. The loan is secured by the tax lien on the property rather than the borrower's credit.
3. Building turnover is irrelevant since PACE financing transfers with the sale of the building and future owners assume the payments (and benefit from the savings).
4. 100% of the project cost can be financed.
5. There is no additional debt on the building.
6. The PACE structure will result in positive cash flow immediately since the savings will more than offset the costs.

Underwriting Criteria for PACE Financing

In the final analysis, whether a project can utilize PACE financing depends on the property owner's ability to pay assessments as evidenced by the financial strength of the project. The "ideal" PACE project satisfies the following underwriting criteria:

1. The project should involve high-value improvements involving significant energy efficiency gains.
2. The value of the real estate relative to project financing - the ultimate security for an assessment-backed obligation – needs to be carefully examined to determine whether an energy efficiency project is financially viable. Existing debt on the property, together with the PACE assessment obligation, should be significantly less than the value of the property. If the mortgage and other debts on the property exceed the property value, there is an increased risk of default and such projects will not qualify. There is a preference that the existing loan-to-value ratio associated with the property should not exceed 85% before improvements. There is also a preference that the maximum lien-to-property value ratio be 15% to ensure that any delinquent, uncured PACE assessment that is payable senior to the mortgage upon default is nominal in value compared to the outstanding mortgage.
3. The property should have clear title with no encumbrances. Property taxes should be current. There should be no recent bankruptcies, no outstanding liens on the property, or notices of default or evidence of debt delinquency. The property owner should be current on mortgage payments and there should be no easements or subordination agreements that would conflict with the PACE assessment.
4. The project should pay for itself, i.e., the projected monthly energy savings should be greater than the expected monthly cost of the PACE assessment over the term of the PACE loan.
5. The project should have a useful life longer than the term of the projected financing.
6. Credit enhancements such as availability of a state loan loss reserve fund, or a letter of credit, or the use of energy savings insurance, or the availability of federal or state loan guarantees, will make the credit profile more attractive and enable more attractive financing terms.

ESCO Financing

An ESCO represents a one-stop shop for project development and installation. Many large ESCOs with significant financial resources (such as Johnson Controls, Honeywell, Siemens, Eaton, Schneider Electric, Chevron Energy, Trane, Ameresco, etc.) also provide project financing. Projects are typically large-scale with the contract period covering a 5-10 year period or longer.

Various types of energy savings performance contracts (ESPCs) exist, including "shared savings" contracts, "paid from savings" contracts,

and "guaranteed savings" contracts. Under typical ESCO contracts, newly installed equipment is financed, owned and maintained by the ESCO. Ownership transfers to the building owner at the end of the ESPC period. It may be accomplished by either a purchase at fair market value or the building owner may simply assume ownership of the equipment that has been paid for during the ESPC term. The majority of ESPCs are financed through savings generated by reduced energy consumption.

With the "shared savings" contract, the dollar value of the measured energy savings is divided between the building owner and ESCO. If no energy cost savings are realized, the owner continues to pay the energy bill, but does not incur any expense to the ESCO for that period. In the "paid from savings" contracts, the building owner pays the ESCO a predetermined amount each period (for example, an amount equal to 80% of the expected energy bill had the improvements not been made). Under "guaranteed savings" contracts, the ESCO guarantees that energy cost savings will exceed an agreed upon minimum dollar value. To ensure a positive cash flow to the owner during the ESPC term, the guaranteed minimum savings typically equals the financing payment for the same period. ESCO pricing often includes a fee that covers on-going monitoring, measurement and verification costs and a premium for assuming underperformance risk.

To-date, the majority of ESCO work has been performed in the Municipal, University, Schools and Hospital (MUSH) market, principally because the ESCO business model is based on large, long-term ESPC contracts and significant government funding is available. It requires clients like MUSH owners who typically have very large energy efficiency retrofit projects (for example, involving multiple buildings on a university campus) and are committed to operate their properties for relatively long time spans.

ESCO Financing Using the PACE Structure

ESCOs generally either provide their own financing or bring in a third party financing source. Operating under a PACE structure, however, allows the ESCOs to offer their services to a project that had obtained "commercially-attractive" financing. Thus, for ESCOs who prefer not to provide their own financing, the availability of a PACE funding structure eliminates the need to locate interested third party funding sources. The lender(s) already in the PACE program would simply pay the ECSO upon completion of installation and verification of the energy savings. The ESCO would, of course, still be at risk if the verified savings fall short of the energy savings guarantee.

While ESCOs have made some progress in the owner-occupied segment of the CRE industry, this has not been the case in the multiple tenant segment (or the traditional CRE investment sector), where building turnover is much more frequent and often opportunistic, i.e., on average every 4–7 years. However, use of the PACE financing structure would allow ESCOs to expand into the much larger multi-tenant building sector. With the lien attached to the property and not the property owner, ESCOs can undertake in both of these CRE sectors deeper retrofits with greater energy savings and longer payback periods, even if the owner only plans to hold the property for a few years. This will result in a significantly broader target market for ESCOs.

Energy Service Agreements

A number of innovative managed energy services agreement (ESA) structures are now being offered by third parties who develop projects, arrange or provide the capital, and manage the installed equipment. These typically are pay-for-performance solutions where energy efficiency is essentially being sold as a service. Energy efficiency service providers are compensated only if energy savings are realized. Building owners have no upfront cost, no capital requirement, and 100% of the project cost is financed. The ESA provider assumes ownership and maintenance responsibility for project assets over the lifetime of the project. Payments to the energy efficiency service provider are viewed as a "pass-through" operating expense (to building tenants).

There are a growing number of energy efficiency service firms offering pay-for-performance financing solutions under ESAs, including SClenergy/Transcend Equity Development (founded in 2002, Dallas, TX), Metrus Energy (founded in 2009, San Francisco, CA) and GreenCity Finance (founded in 1990, Indianapolis, IN).

Under the Transcend model, building owners pay Transcend a service fee based on historical energy costs. Transcend, in turn, pays the utility bill and earns its fee from savings generated by the efficiency improvements. The Transcend fee becomes an operating expense (pass-through to tenants) that replaces the utility bill and the building owner incurs no debt. At the end of the ESA term (typically 5-10 years), title associated with the improvements passes to the owner. If the building is sold, the contract can be assigned to the new owner (or terminated if preferred). Transcend will typically enter contracts where they envision at least a 25% savings on the current utility bill. The company's ideal customer has a minimum aggregate space of 250,000 square feet, associated with one or more buildings. This is a relatively large building or complex.

Under the Metrus model, in contrast, building owners maintain responsibility for payment of their reduced utility bills (which directly benefits tenants in a multi-tenant property) and pay Metrus's fee (which is a pass-through operating expense paid by the tenant) out of the delivered energy savings. The Metrus fee is structured as a per-unit-saved payment (i.e., a price per avoided kilowatt hour of electricity and/or avoided therm of natural gas), where the price for energy unit savings is set at a level below the prevailing utility price per unit of energy consumption. This arrangement establishes energy efficiency as a resource and is akin to a solar power purchase agreement, where the customer has no project performance or technology risk and pays only for realized, measured and verified energy savings. Metrus retains ownership of all project-related assets for the duration of the ESA term. At the end of the contract period, clients can purchase the equipment for fair market value. Metrus works with ESCO partners and typically prefers clients to have approximately $1 million or more in combined electricity and natural gas costs annually. Their energy efficiency projects typically have a payback period in the 3-7 year range. Metrus' business model also can include energy savings insurance. To-date, Metrus has focused principally on owner-occupied buildings.

GreenCity Financing provides a proprietary off-balance-sheet-financing model that shares energy savings with the building owner. The investment is maintained as an operating expense and paid for out of the energy savings. This model assumes no out-of-pocket costs to the building owner and the risk of performance failure is assumed by GreenCity.

Energy Services Agreements using the PACE Structure

ESA providers typically incorporate third party financing through relationships with multiple financing sources. Operation within a PACE structure would likely bring more commercially-attractive financing terms (longer duration loans at more attractive rates) and eliminate any need to locate interested third party funding sources. Moreover, use of the PACE financing structure would allow an ESA provider to pursue deeper energy retrofits within a much larger market, i.e., the many commercial buildings where owners lack investment-grade credit ratings. With the lien attached to the property and not the property owner, ESA providers can undertake deeper retrofits with greater energy savings and longer payback periods, even if the owner only plans to hold the property for a few years. This will result in a significantly broader target market for ESA providers.

There are a number of reasons why lenders are seriously considering the benefits that will accrue to them by participating in PACE programs."

Bank Financing Within PACE Programs

Under the "open market" PACE model, financing can be provided by private investors, such as banks, who have traditionally provided debt financing. The problem with traditional debt financing has been that it has been relatively expensive, highly dependent on the borrower's creditworthiness, unable to fund 100% of a project's total cost, and rarely available for much longer than approximately 5 years. However, when working within a PACE program, reliance shifts from the borrower to the property. Moreover, the nature of tax lien financing can result in a credit enhancement that reduces risk and therefore should lower the cost of capital.

Consent of the Existing Mortgage Lender

Since the lien associated with a PACE loan occupies a priority position, the mortgage holder's consent is typically required before PACE applications can be approved and the assessment placed. Commercial mortgages almost always give an existing lender the right to approve an additional senior or subordinate debt, and even voluntary tax assessments in some cases. Lenders also typically have the right to approve any structural changes to a building or its operating equipment since the building in its entirety represents the lender's collateral.

Much has been said in the development of PACE programs about potential bank resistance to the priority position of the PACE loan. However, a broad range of commercial PACE projects have already received consent thus far from a mix of national, regional, and local mortgage lenders. Moreover, there are a number of reasons why lenders benefit by participating in PACE programs.

1. With existing building owner customers who own property that can readily be made more energy efficient, it is an opportunity for banks to increase business with these customers. Building owners find the increased cash flow, the accompanying increase in building valuation, and the improved competitive position the building has in the market very attractive. For the bank, it is also an opportunity to identify and solicit new customers from other institutions that do not participate in the PACE program.
2. Much of the energy efficiency work will likely be associated with replacing energy-consuming systems that have exceeded their useful life, work that has been delayed principally due to the recession. By providing loans to these existing customers, banks will be protecting their collateral and helping the property avoid obsolescence.
3. In case of default, non-acceleration clauses associated with typical PACE programs require that only the low monthly payments be paid by the foreclosing bank, a fact that significantly reduces the financial impact on the lender of the PACE's priority lien in the event of a default.
4. A secondary market (securitization) for PACE loans is already being discussed. The ability to package loans and sell them on the secondary market would be attractive to banks who could then re-lend the replenished capital as it sees fit, a process that can positively impact a bank's profitability.
5. Federal energy efficiency loan guarantees and/or state energy efficiency loan loss reserves (that may be associated with the PACE program) can provide credit enhancement and reduce default concern.
6. Emerging energy savings insurance, which is able to guarantee the energy savings (from which the lender is recovering both capital and interest), can also provide a credit enhancement.
7. PACE programs can support a bank's commitment to sustainability, creating an opportunity for excellent public relations in the community and within the customer base.

To-date, lenders have had a difficult time getting their hands around energy savings because energy savings cannot be measured directly. Energy savings are based on what is not going to happen in the future, rather than what will happen. Moreover, cash flow from future energy savings is not a familiar form of revenue or collateral that has been used to secure bank lending. There has also been a general lack of confidence in energy savings projections because of the embedded bias to present projects as compelling investment opportunities.

Another challenge lenders have faced is associated with the relationship between a building's energy performance and its value. To-date, there

is insufficient data on how building valuation is impacted by energy efficiency improvements. Appraisers have not focused on a property's energy efficiency and therefore it is not reflected in their valuation. This void creates uncertainty and adds to the potential risk associated with energy efficiency investment.

Notwithstanding, lenders are beginning to recognize that energy efficiency loans can help preserve the value of an existing customer's building by avoiding obsolescence. In fact, the obsolescence issue, directly related to the value of the collateral, is an important consideration to lenders. It is something they understand, and may even be a more important consideration today than operational savings.

Furthermore, the emergence of standardized measurement and performance protocols that can successfully identify energy savings with a high degree of confidence[4] are poised to provide lenders with a clear understanding of the proposed benefits or lack thereof. By building these new protocols into the loan documentation and the underwriting process, lenders are becoming more comfortable with the way energy savings and risks can now be quantified. In the final analysis, a better understanding by lenders of energy efficiency investment, along with recent developments and tools to improve underwriting, will enable energy efficiency financing to become a mainstream financial asset class with a high degree of standardization, predictability and scale. Combined with the positive reinforcement this can provide to rating agencies and investors, it should also go a long way toward moving the CRE industry to large scale adoption of energy efficiency investment.

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Credit Enhancements

Default Protection

President Obama's "Better Building Initiative," announced in February 2011, calls for a federal loan guarantee program (run through U.S. DOE) to encourage private lenders to embrace energy efficiency retrofit financing. This proposed government guarantee for qualified energy efficiency loans is a contractual obligation between the government, private creditors and a borrower that covers the borrower's debt obligation in the event of default. The legislative proposals under consideration for a federal credit risk loan guarantee program would lower interest rates and give risk-averse institutional lenders security in their investment. If loan guarantees are combined with ESPCs, where the ESCO takes on the technical and performance risk (possibly backed even further by energy savings insurance), the loan guarantee covers the relatively small risk of owner default. The proposal has been embraced by the CRE industry and spearheaded by the U.S. Green Building Council, the Natural Resources Defense Council and The Real Estate Roundtable.

Regardless of whether PACE financing is available, establishing a federal or local loan guarantee program to cover credit risk can leverage public funding and ramp-up large scale private investment in the CRE sector.

Federal, state or local governments can also leverage significant private investment by establishing (or seeding) loan loss reserve funds. This credit-enhancing mechanism would cover bridge payments to lenders with a default on their hands. In PACE programs with non-acceleration clauses, because only delinquent property tax payments (typically 1-2 years) need to be cured upon default, the bulk of the assessment survives bankruptcy, and the remaining balance and future payments would be assumed by the new property purchaser. Sources of reserve funding are most commonly being developed at the state level. For example, in April 2010, California passed legislation establishing a statewide PACE Reserve Program. This state-financed loss reserve was created with $30 million from the Renewable Resources Trust Fund.

Energy Savings Underperformance Risk Protection

Energy savings insurance (ESI) policies can provide a backstop for energy savings guarantees provided by ESCOs. In exchange for a premium, the insurer agrees to pay over the term of the policy contract any shortfall in energy savings below a pre-agreed baseline, less a deductible. Pricing is usually expressed as a percentage of energy savings over the term of the contract. A percentage in the 3%-5% range, with a 10% deductible, would not be unusual. The premium is paid once, in the first year of operation. However, depending on the project's financing structure, the up-front ESI premium may be rolled into the financing to enable payment over time.[6]

There are a number of benefits associated with ESI. These include:

1. ESI transfers performance risk from the balance sheet of the entity (ESCO) implementing the energy savings project.
2. ESI forces the criteria for defining baseline energy use levels and projecting savings from energy efficiency improvements to be totally transparent and explicit.
3. ESI can result in higher project confidence among building owners desiring to make significant energy efficiency improvements and lenders financing these improvements.
4. ESI can help avoid disputes with ESCOs over energy savings.
5. ESI, as a credit enhancement, can lower the cost of financing.
6. The ESI insurer can provide third-party review of engineering and design specifications and third-party involvement in ongoing energy savings measurement and verification, thereby increasing the building owner's confidence level to invest.

A number of insurance companies are now exploring the ESI concept and market opportunity. One company, Hannover Re, a leading international reinsurance company working with Energi Insurance Services (Peabody, MA) recently launched an ESI product for ESCOs

known as the "Energy Savings Warranty." The PACE Commercial Consortium (PCC), created by Carbon War Room, has chosen to incorporate this "Energy Savings Warranty" into their program to reduce the risk. It is expected that other insurers will follow as the market expands and emerging long-term energy retrofit financing programs such as PACE programs take root.

Energy Efficiency Loan Underwriting

No matter what type of financing is ultimately selected to fund an energy efficiency project, it will have to be underwritten. Deep energy retrofits in existing buildings commonly require analysis of the whole building and application of multiple energy conservation measures (ECMs). Underwriting energy efficiency loans for commercial whole building retrofits that involve multiple (and often interacting) ECMs can now be accomplished in a technically sound, consistent, practical and fully transparent manner using an emerging best practice. This technical underwriting process can now provide underwriters with the confidence they need to underwrite energy efficiency investments.

There are three primary industry standards or protocols that are working in combination to accomplish this new high quality underwriting:

1. The ASTM E2797-11 Building Energy Performance Assessment (BEPA) Standard[7] published in February 2011 that focuses on energy data collection and analysis to provide a standardized baseline;
2. The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Level II and Level III Energy Audit Guidelines[8] to determine the optimized bundle of ECMs and the associated key financial metrics; and
3. The International Performance Measurement and Verification Protocol (IPMVP) guidance document to measure and verify energy savings using the whole-building Option C method.[9]

Baseline Energy Use and ECM Determination

The ASTM BEPA Standard ensures that building energy data collection and analysis provides a firm foundation to establish baseline energy use. Until recently, no consistent standardized methodology existed in energy auditing for the collection and analysis of building energy use data to establish this baseline.

While it may seem relatively straightforward to simply collect utility data, the devil is in the details. For example, prior to the ASTM BEPA Standard, there was no standard time period over which building energy use data had to be collected and energy professionals commonly used anywhere from one to three years. The ASTM BEPA Standard established three years as the time period over which energy use data should be collected, or back to the building's last major renovation if completed in less than three years, with a minimum of one year if reliability criteria can be met. Furthermore, if a building had undergone a major renovation, there was no standard as to how this should be considered, if at all. There was not even a standard definition as to what constituted a major renovation. The ASTM Standard defines a major renovation as one which either involves expansion (or reduction) of a building's gross floor area by 10% or more, or that impacts total building energy use by more than 10%.

Finally, there were no standards on how weather conditions should be analyzed and taken into consideration, how building operating hours should be factored into the analysis, or how building occupancy should be considered. The ASTM BEPA Standard prescriptively addresses each of these issues with the result that use of the ASTM BEPA methodology tightens many of the loose ends in the energy audit guidelines.

The ASHRAE Level II or Level III energy audit then builds on the solid baseline foundation created by the use of ASTM BEPA Standard methodology, identifies energy use by major building component or function, and determines the optimized bundle of recommended ECMs that provide a compelling investment opportunity

Energy Savings Projections

A key to making energy efficiency investment is the ability to project energy savings with a high degree of confidence. To accomplish this, the ASTM BEPA Standard is used in conjunction with the ASHRAE Level II or Level III energy audit results. The projected energy savings after the ECMs are installed is determined by the difference between what the projected energy use would be without the ECMs installed and what the projected energy use would be assuming the ECMs are installed. The former can be determined from the building energy use equations (associated with electricity and fuel) developed using ASTM BEPA methodology using the mean values for the independent variables (historic weather, occupancy, operating hours, etc.) in the equations. The latter is determined by the energy professional conducting the energy audit. For each recommended ECM, the energy savings are projected (including accounting for potential interactive effects) and then deducted from the projected energy use that would have existed assuming the ECMs had not been installed.

To reflect uncertainty in the analysis, it is common to express energy savings in conjunction with confidence and precision levels. Confidence level is the probability that the savings will fall within the precision range (or the range in which the true value is expected to occur). For commercial buildings, error is inherent in the baseline energy use equations (developed from regression analysis) for a number of reasons:

1. Rarely is it possible to identify every independent variable impacting a building's energy use, particularly those activities associated with human activity, i.e., occupant behavior (such as the open window in conditioned space or the electric heater in a workspace).
2. Some baseline energy use data rely on delivery invoices rather than meters, e.g., fuel oil delivered for heating,

which when averaged over the use time frame may not coincide precisely with actual use.

3. Utility invoices may include estimates for a specific period.
4. Electric meters may be misread.

The uncertainty (or error) associated with the building energy use equations can be determined from the difference between the monthly actual energy use and the calculated monthly energy use over the 36 months in which energy use data was collected for the baseline. These errors can then be statistically analyzed and the standard deviation determined. Once a confidence level, and therefore a precision, is specified, the tolerance around a calculated energy use value can be established. For example, if a 95% confidence level is specified, this corresponds to 1.96 standard deviations. Hence, the projected energy use range (upper and lower) at the specified confidence level around each calculated value can be determined. The end result is a projected (calculated) energy use range for each month in the desired reporting period, assuming the ECMs had not been installed. Uncertainty can also be included around the expected performance of each ECM scheduled to be installed, i.e., related to the auditor's confidence level around the projected energy savings for each of the ECMs. Uncertainty is factored into the underwriting analysis to provide further confidence in the evaluation of projected energy savings.[4] (refer to Figure 1)

Measurement and Verification

The final step in the analysis is measurement and verification (M&V) of the energy savings with a high degree of confidence after the ECMs are installed. To accomplish this, the industry relies on the International Performance Measurement and Verification Protocol (IPMVP) guidance document. The ASTM BEPA Standard can again be used in conjunction with the IPMVP protocol to facilitate cost effective performance verification after ECMs are installed. The measured and verified energy savings in the desired reporting period (e.g., 12 months after the ECMs have been installed) is determined from the difference between the actual monthly energy use in the reporting period and the projected monthly energy use in this same reporting period assuming the ECMs had not been installed. The former is a measured value. The latter can be determined using the building energy use equations developed in the ASTM BEPA methodology, only this time incorporating the actual monthly values for the independent variables (historic weather, occupancy, operating hours, etc.) in the equation. As before, uncertainty analysis can again be included. ASTM BEPA methodology complements the IPMVP and adds value by providing the necessary depth and prescriptiveness to the pre-ECM and post-ECM evaluation process. (refer to Figure 2).

Emerging Best Practice for Energy Efficiency Project Financing

In order to implement a successful energy efficiency retrofit project and obtain financing under the most attractive terms, a "best practice" consisting of the following steps is emerging in the CRE market.

Upfront

1. Conduct an ASHRAE Level II or III energy audit incorporating ASTM BEPA methodology to identify baseline performance and energy savings opportunities.
2. Identify applicable government/utility grants, rebates and incentives.
3. Select energy conservation measures (ECMs) meeting criteria (ROI, payback time, etc.).
4. Determine total project cost and payback time.
5. Identify projected energy savings at the selected confidence level using ASTM BEPA methodology and the IPMVP framework.

Financing

6. Establish the amount of financing needed and the preferred payback period.
7. Obtain the cost of energy savings insurance and a commitment letter from the carrier.
8. Solicit interest from lending sources by providing a full documentation package, including the ASHRAE Level II or III energy audit report incorporating the ASTM BEPA, and the M&V plan, to support the energy savings projections at the required confidence level.
9. Secure financing under preferred terms.

Implementation

10. ECM engineering and design.
11. ECM installation.
12. ECM commissioning.

Performance M&V

13. ECM performance measurement and verification (M&V) relying on the M&V plan and ASTM BEPA methodology within the IPMVP framework.
14. Conduct annual M&V and provide documentation to the lender, insurer and any other stakeholders.

This emerging best practice for underwriting supports financing for energy efficiency retrofit projects.

Case Studies

The Los Angeles Commercial Building Performance Partnership

The Los Angeles Commercial Building Performance Partnership (LACBPP) program was developed by the City of Los Angeles and the Clinton Climate Initiative and offers capital providers the opportunity to make financially attractive investments in energy efficiency projects in the CRE market. LACBPP has been designed to connect building owners with a range of investors interested in funding an energy efficiency project through a variety of structures, from energy service agreements and equipment leases to innovative PACE financing options.

The innovative PACE financing option is an "open market" model where the city acts as a conduit for private investment (including traditional debt lenders) in energy efficiency retrofit projects. Building owners negotiate financing terms with investors of their own choice. Owner-negotiated terms are then reflected in a loan agreement funded through issuance of a bond by LA County. The bond is sold to the investor that underwrote the deal in a private placement. The existing mortgagee may also underwrite and purchase the bond. Repayment is secured through a contractual assessment in first position on the building's property tax bill (this is subject to the mortgage holder's consent to the PACE assessment). The program offers 100% financing on the total project, at lower interest rates and with longer term financing to allow projects to be cash flow positive from day one. Moreover, since property taxes are an operating expense, the transaction may be considered "off balance sheet." The PACE assessment transfers with the real estate in the event the building is sold in the future.

To prepare a project for investment, the LACBPP model relies on the emerging best practice, including the ASTM BEPA for data collection and analysis, an ASHRAE Level II energy audit to determine ECMs and the IPMVP for energy savings measurement and verification.

The Sustento Group provides program oversight. Willdan is the program manager. Advanced Energy Innovations (AEI) serves as the third-party technical peer reviewer. Sustainable Real Estate Solutions (SRS) provides the technical and financial underwriting software platform used by all parties to ensure underwriting best practice compliance and reporting. Seven energy auditing and engineering firms have been pre-qualified to conduct the technical underwriting scope of work.

PACE Commercial Consortium

The PACE Commercial Consortium uses a "warehouse" PACE model. The consortium was formed by Richard Branson's non-profit Carbon War Room and is the largest single private-sector investment to-date in the commercial property energy retrofit market. The Consortium will provide up to $650 million for retrofit projects in Miami-Dade County, Florida ($550 million) and Sacramento, California ($100 million).

The PACE Commercial Consortium model relies on the emerging best practice, including the ASTM BEPA for data collection and analysis, an ASHRAE Level II energy audit and the IPMVP for energy savings measurement and verification. Energy savings insurance is also included.

The Consortium is managed by Santa Rosa, California-based Ygrene Energy Fund. Short-term loans will be provided by Barclays Capital. Loans will be warehoused until critical mass is reached at which time they will be bundled into long term bonds (resembling those routinely issued by governmental taxing districts) to be marketed by Barclays. Project management and engineering for the Consortium is handled by Lockheed Martin (the ESCO) and the energy savings insurance will be provided by Energi Insurance Services. Sustainable Real Estate Solutions (SRS) provides the technical and financial underwriting software platform used by the parties to ensure underwriting best practice compliance and reporting.

Conclusion

There are a number of financing options available that can provide commercially-attractive funding for energy efficiency retrofit projects in the CRE market. These include PACE tax lien financing, ESCO direct financing or third party financing using the PACE structure, ESA provider financing through private parties or using PACE financing, and bank (private investment) financing through a PACE financing structure. Each of these financing mechanisms has a structure that can enable positive cash flow from day one.

Most of the activity today is in the MUSH and owner-occupied segment of the CRE industry. However, as PACE programs are developed and expand nationally, deeper energy retrofits will be possible in these industry segments, and the much larger multiple-tenant sector of the CRE industry will become a growing target market. Moreover, as the economy improves, the release of pent-up demand to replace outdated, aged energy-consuming equipment in CRE buildings will also contribute to energy efficiency project market demand.

The key to providing financing is an ability to underwrite loans in a standardized, technically sound, consistent and fully transparent manner. A best practice has emerged which relies on an ASHRAE Level II or Level III energy audit and the IPMVP framework for M&V, both supported by ASTM BEPA methodology. The underwriting best practice can provide lenders with confidence in the energy savings projections prior to the installation of the ECMs and confidence that the energy savings can reliably be measured and verified after the ECMs are installed. The best practice has already been incorporated into the Los Angeles Commercial Building Performance Partnership (LACBPP) Program and the PACE Commercial Consortium.

The emergence of this best practice is finally enabling building energy efficiency financing to become a mainstream financial asset class with a high degree of standardization, predictability and scale. It is expected that this best practice will go a long way toward accelerating large-scale adoption of energy efficiency investment in the CRE market.

"A best practice has emerged which relies on an ASHRAE Level II or Level III energy audit and the IPMVP framework for M&V, both supported by ASTM BEPA methodology. Underwriting energy efficiency loans for commercial whole building retrofits that involve multiple ECMs can now be accomplished in a technically sound, consistent, practical and fully transparent manner."

References

1. Buonicore, A.J., "Using the New ASTM BEPA Standard in the Property Transaction Market," Building Energy Performance Assessment News, Critical Issues Series, Paper No. 11-001, August 2, 2011. (www.bepanews.com)
2. Buonicore, A.J., "The Formidable Challenge of Building Energy Performance Benchmarking," Building Energy Performance Assessment News, Critical Issues Series, Paper No. 10-001, April 5, 2010. (www.bepanews.com)
3. Buonicore, A.J., "Energy Efficiency Retrofit Financing Options for the Commercial Real Estate Market," Building Energy Performance Assessment News, Critical Issues Series, Paper No. 12-001, February 15, 2012. (www.bepanews.com)
4. Buonicore, A.J. and Halpin, C.F., "M&V in Energy Performance Contracting Using ASTM BEPA Methodology," Building Energy Performance Assessment News, Critical Issues Series, Paper No. 11-004, December 13, 2011. (www.bepanews.com)
5. New Buildings Institute, "Deep Energy Savings in Existing Buildings: Summit Summary," February 2012 (data extracted from U.S. Energy Information Administration, 2003).
6. Buonicore, A.J., "Energy Savings Insurance and the New ASTM BEPA Standard," Building Energy Performance Assessment News, Critical Issues Series, Paper No. 11-003, November 15, 2011. (www.bepanews.com)
7. ASTM Standard Practice E 2797-11, Building Energy Performance Assessment, published by ASTM, Conshohocken, PA, February 2011.
8. ASHRAE, Procedures for Commercial Building Energy Audits, 2nd Edition, 2011.Efficiency Valuation Organization, "International Performance Measurement and Verification Protocol, Concepts and Options for Determining Energy and Water Savings," Volume 1, EVO 10000 – 1:2010, September 2010.
9. Efficiency Valuation Organization, "International Performance Measurement and Verification Protocol, Concepts and Options for Determining Energy and Water Savings," Volume 1, EVO 10000 – 1:2010, September 2010.

Author Biography

Anthony J Buonicore, P.E.

Anthony Buonicore is a past president and Fellow Member of the Air & Waste Management Association, a Diplomat in the American Academy of Environmental Engineers, a Qualified Environmental Professional and a licensed professional engineer. He is a member of the ASTM Property Environmental Due Diligence committee, former chairman of its ASTM Phase I Task Group, and currently chairs the ASTM Task Group that developed the U.S. standard for vapor intrusion screening for properties involved in real estate transactions. In addition, Mr. Buonicore is chairman of the ASTM Task Group responsible for developing the new Building Energy Performance Assessment and Disclosure Standard.

Mr. Buonicore has been a leader in the energy-environmental industry since the early 1970s, serving as General Chairman of the American Institute of Chemical Engineers' First National Conference on Energy and the Environment in 1973 and as founder and first chairman of the Air Pollution Control Association's Energy-Environmental Interactions Technical Committee in 1974. He pioneered the use of refuse-derived fuel pellets (a bio-fuel) mixed with coal in stoker-fired boilers and has written extensively on energy and environmental issues.

As a Managing Director of Buonicore Partners, LLC, Mr. Buonicore is responsible for management of the firm's commercial real estate holdings and all due diligence activities associated with property acquisition. He holds both a bachelor's and a master's degree in chemical engineering.

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Table 1. Comparison of Financial Options

EE Retrofit Financing Options	No Capital Expense	No Upfront Investment for Audit	100% Project Financing	No Debt on Property	100% Write-off of Annual Payments	Lower Cost of Capital	Longer Term Financing	Cash Flow Positive
Traditional								
Internal			N/A	√	*	N/A	N/A	N/A
Bank Debt					*			?
*thru/PACE***	√		√	√	√	√	√	√
Lease	√		√	√	?		?	?
Non-Traditional								
ESCO	√	√	√	?	?	?	?	?
w/PACE	√	√	√	√	√	√	√	√
ESA	√	√	√	√	√	?	?	√
w/PACE	√	√	√	√	√	√	√	√
Government Loan						√		?
PACE	√		√	√	√	√	√	√
On-bill Utility	√		√	√	√	√		?

** Accelerated depreciation of capital investment*
*** "Owner-arranged financing" PACE Model*
√ indicates this funding criterion can be met
? indicates this funding criterion may or may not be met depending on the specifics, e.g., an operating lease expense can be written-off each year, while a capital lease expense may not
A blank space indicates that this funding criterion is not met.

Figure 1. Presentation of Projected Energy Savings Before Installation of ECMs.

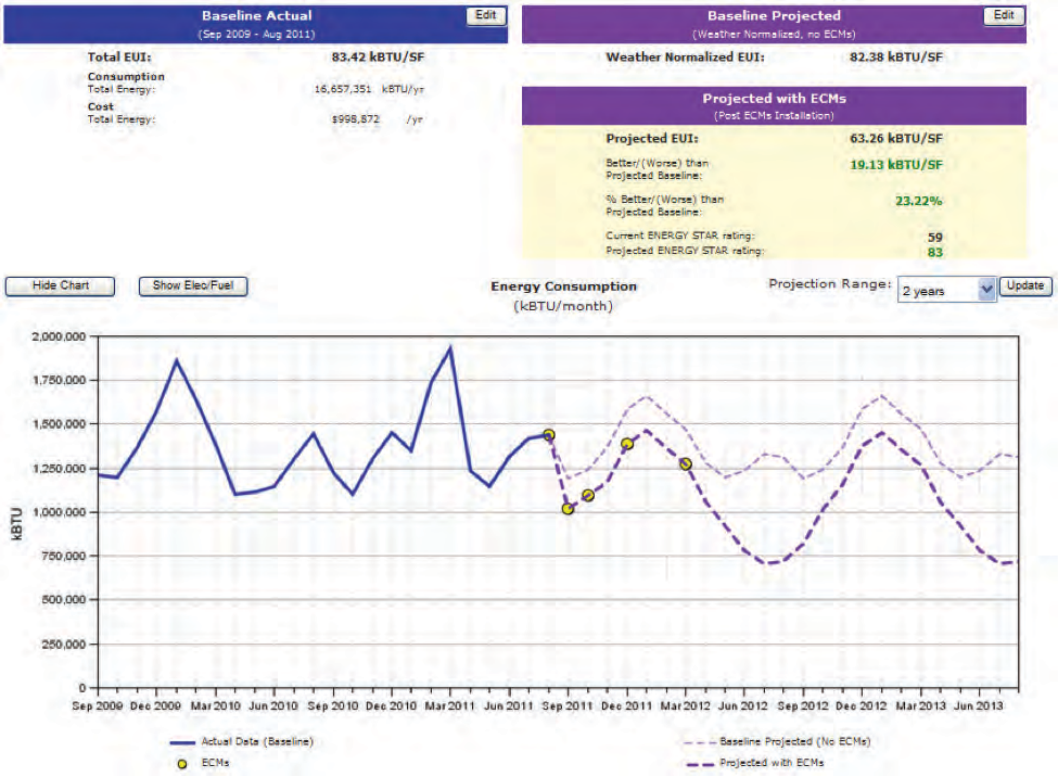
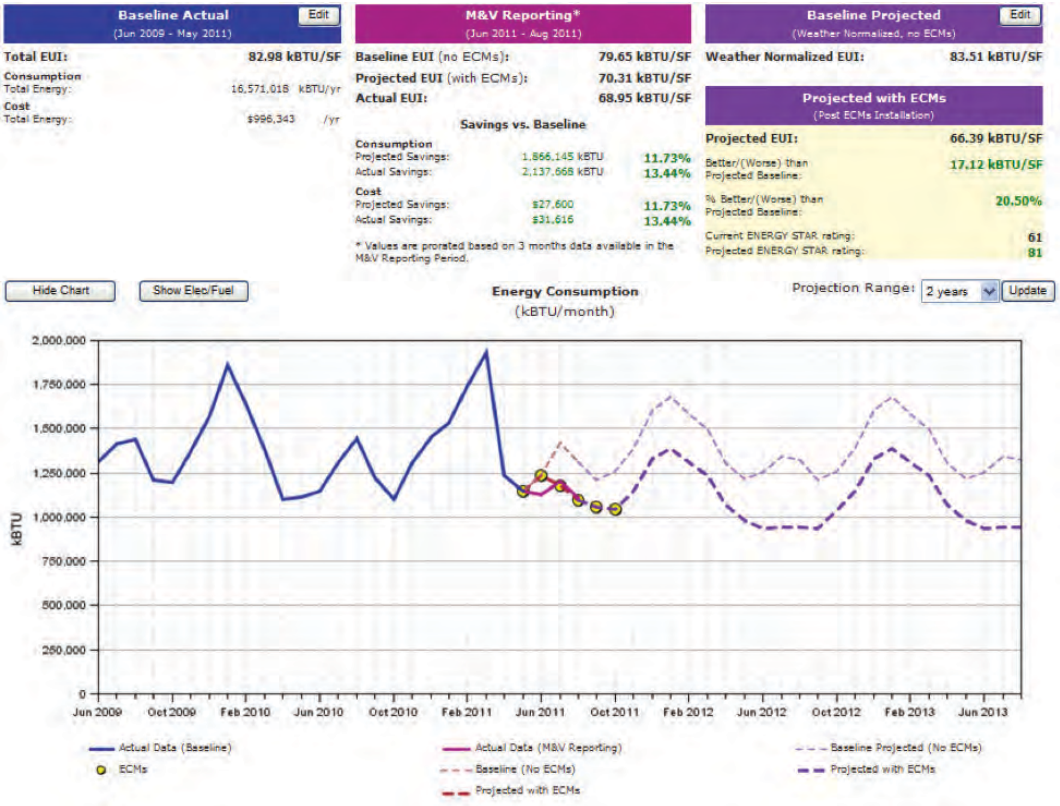


Figure 2. Presentation of Actual Energy Savings After Installation of ECMs.



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Founded in 2007, Buonicore Partners (BP) sought to identify investment opportunities in the fast growing building energy efficiency market. The following year, BP launched the daily news service, Building Energy Performance Assessment News, which has since become the leading source for building energy efficiency information in the commercial real estate industry.

With almost a century of combined experience in the energy and environmental markets, from company start-up to financing to operational improvement to revenue enhancement to M&A, the partners in BP now offer this expertise on a consultancy basis. BP services are uniquely designed to assist businesses that serve, or plan to serve, the building energy efficiency market, develop the expertise, tools and strategies for current and future success in this fast growing industry.

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