

Zero Energy Commercial Building Codes Consortium Finance & Valuation Working Group

Editor's Note: This document contains undocumented references and citations of other author's works. All sources are listed in the bibliography.

“The issue of energy efficiency reminds me of 30 years ago when somebody asked me to give the definition of affordable housing and there were 35 different definitions.”

- Large Real Estate Portfolio Owner at ULI Policy Forum on Energy Finance in Real Estate.

I. Report Objectives

The objectives of the Finance and Valuation portion of the *Analysis of Cost and Non-Cost Barriers* report are to identify and characterize the market barriers and transformation strategies associated with the finance and valuation leading to net-zero-energy commercial buildings. This chapter assesses existing policies and programs implemented to date, identify the characteristics and strategies of successful program implementation and make recommendations on what promising solutions and approaches may warrant additional resources or complementary policies.

II. Finance and Valuation Issues Regarding “Zero Net Energy” Commercial Building Goals

a. What Are Commercial Buildings?

Commercial buildings are defined by the Energy Information Administration (EIA) to include all buildings in which at least half of the floor space is used for a purpose that is non-residential, non-industrial or non-agricultural. This broad “catch-all” definition in turn includes a wide variety of building types such as education, healthcare, correctional institutions, industrial and hospitality-related facilities.¹ Public buildings *are* included, but multifamily residential buildings are *not*. Public, private and nonprofit institutional office buildings are included, as are all buildings associated with retail and other forms of commerce.

This definition differs from the colloquial use of the term “commercial buildings” and the term “commercial real estate” which is used in private real estate markets. This industry-based definition typically refers to the following: commercial (privately-owned) office buildings, privately-owned retail buildings and shopping malls, and multifamily residential buildings as well as commercial warehouse facilities and all of the building types associated with the hospitality market.

¹ <http://www.eia.doe.gov/emeu/cbecs/>

The EIA definition of Commercial Buildings is used throughout this chapter, which effectively eliminates multifamily residential but includes all public and nonprofit sector buildings.

b. A Kaleidoscope of Market-based Challenges.

Unlike the engineering challenges associated with a building technology, or clean/renewable energy solutions which can be deployed across a diverse range of building types, finance activities within the commercial building sector must address a diversity of submarkets, each with its own ownership, investment and finance ecosystem as well as a wide range of cost-sharing structures for energy use among owners and occupants. Taken together, the clusters of finance activities span from pure public sector economies to pure private sector economies, with a full range of public/private and institutional nonprofit activities in between.

Strategies to develop finance and valuation tools which effectively incorporate energy-related value and drive broader market transformation towards net-zero-energy outcomes vary widely and depend upon the legal, business and professional practices of individual niche markets. This reality of a balkanized marketplace makes any single, sweeping discourse around finance and valuation particularly confusing to market actors, who are likely specialized in one of the several submarket categories.

c. The Critical Role of Finance as the “Great Integrator.”

Finance is the science of funds management², which includes saving and lending money and includes concepts of time, value and risk and how they are interrelated and integrated into individual financial decisions and broader financial strategies. Core finance questions which are pertinent to an efficient marketplace of energy in real estate include:

- i. Who is making the finance decision?
- ii. Within what market context is the decision being made?
- iii. What is the quality and transparency of available information regarding energy variables in the given transaction?
- iv. What are the distinguishing characteristics and perceptions of equity, debt, value and risk in any given transaction?
- v. How does an energy objective relate to other sustainability and livability objectives?

² Gove, P. et al. 1961. Finance. Webster’s Third New International Dictionary of the English Language Unabridged. Springfield, Massachusetts, G.&C. Merriam Company.

- vi. How does an energy objective relate to the enhancement of value of the underlying real estate asset?

III. Commercial Building Finance and Valuation Overview

- a. Given the diversity of the commercial building submarkets, there is a range of finance and appraisal innovations currently being explored, innovated and implemented. A few qualifying questions can help differentiate and give market context to the discussion of any energy finance initiative:
 - i. Is the finance mechanism a public, private or a blend? Or does it fall outside conventional finance mechanisms (e.g. Municipal Bonding, Commercial Bank Lending, or Utility-based Lending)?
 - ii. Is the finance approach designed to isolate the discrete value associated with energy in a building or buildings (e.g. Energy Service Company Agreements, Utility On-Bill Financing, Public Energy Efficiency Retrofit Revolving Loan Funds)?
 - iii. Is the finance approach designed to integrate the value associated with reduced energy use or enhanced energy production into the overall value of the underlying real estate asset (Enhanced Due-Diligence in Real Estate Construction Finance/Re-finance)?
 - iv. What is the nature of building and energy performance information being used to underwrite the finance transaction (Conventional appraisal, Voluntary Certification, Benchmarking, Continuous Commissioning, etc.)?

IV. Emerging Trends in Finance Markets

- a. Private Commercial Building Owners Focus on No-Cost/ Low-Cost Actions in Existing Buildings to Reduce Operating Costs.
 - i. Emphasis on Existing Assets - With the economic downturn shifting business attention to the management of existing real estate assets and away from bringing new real estate product to the marketplace, private owners of real estate have demonstrated heightened emphasis on maximizing building operation and management activities.
 - ii. Investing in “Behavior” as a “No-Cost” Action – The emphasis on reducing operating costs has heightened the attention on inducing high-performance behavior in both the operation of existing buildings as well as

the management of building occupants. (See Owners & Tenants Working Paper for additional discussion.)

- iii. “Low-Cost” Investments from Operating Budgets - Several in-depth studies have documented that typical energy efficiency improvements are being paid for out of conventionally allocated building operating budgets with a typical finance term ranging in 2- to 3-year (or shorter) period. These investments are typically not financed through a dedicated finance vehicle but are treated as ongoing Operations and Maintenance projects funded out of Operating Budgets.

b. Public Sector Subsidies Place Bias on Renewable Energy over Energy Efficiency Investments in Commercial Buildings.

- i. Public sector incentives have been created at all levels of government, ranging from Federal and State tax credits to tax rebates, all the way down to utility-hosted energy efficiency programs and even municipal zoning bonus densities granted in the development entitlement process. (See Voluntary Programs Working Paper for additional discussion.)
- ii. Most market subsidies are intended to lower the initial cost of energy investments in buildings. However, tax credit and depreciation benefits currently given to renewable energy projects are not extended to energy efficiency, illustrating an ongoing bias favoring clean energy supply over reducing energy demand. Energy efficiency investments for non-residential projects do not receive the 30% investment tax credit that solar PV and other forms of renewable energy do.
- iii. Under the federal Modified Accelerated Cost-Recovery System (MACRS), businesses may recover investments in certain property through depreciation deductions. The MACRS establishes a set of class lives for various types of property, ranging from three to 50 years, over which the property may be depreciated. A number of renewable energy technologies are classified as five-year property (26 USC § 168(e)(3)(B)(vi)) under the MACRS, which refers to 26 USC § 48(a)(3)(A), often known as the energy investment tax credit or ITC to define eligible property. Such property currently includes: a variety of solar-electric and solar thermal technologies, fuel cells and microturbines, geothermal electric, small wind (100 kW or less) and CHP.

c. Energy Service Providers Thrive in the “MUSH” Sub-market

- i. The “MUSH” market, i.e. commercial buildings owned by municipalities, universities, schools and healthcare, can be broadly characterized as large-scale owner-occupied buildings in the public and nonprofit sectors. The MUSH market has engaged large energy services provider companies

(“ESCOs”) to pursue longer-term investments in energy retrofits. About 84% of ESCO revenues are focused on institutional-type customers and gross volume continues to grow – currently at \$4 billion annually.

- ii. The ESCO market has grown at about 20% compounded annually for about a decade and is projected to rise to 26% annually due to federal government efforts to green its own building stock using ARRA funds. This work remains primarily focused on energy efficiency improvements to buildings with only 15% of revenues associated with implementing new renewable energy projects.
- iii. Private commercial and industrial revenues for ESCOs accounted only for 7% of energy services market activity in 2008. Several major initiatives have sought to address the market barriers preventing ESCO penetration into the private commercial office sector, such as BOMA’s standardized ESCO agreement and Property-Assessed Clean Energy (PACE) finance initiatives at the state and local government level.

d. Utilities Explore “On-bill Finance” and “On-bill Recovery” Programs

- i. On-bill Finance (“OBF”) and On-bill Recovery (“OBR”) utilize the seller/buyer relationship between utilities and customers to finance energy efficiency improvements. Some utilities have established mechanisms to add investment payments from customers as part of their monthly bill, but these programs have raised a series of concerns.
 - a. Altering the billing system to allow for on-bill financing may be a difficult shift in business model for some utilities.
 - b. Repayment allocation becomes an issue when customers only partially pay bills. If a third-party source of capital is used for the OBR program, the gas or electric charge will usually be paid first, thus increasing the risk to the lender.
 - c. OBF for dedicated improvements that produce a demand reduction in non-utility fuels are confusing for both utility and customer, especially in single-utility (stand-alone gas or electric) relationships.
 - d. OBF programs are difficult to sustain if the utility is not completely committed to program challenges. Utilities typically insist that concerns be thoroughly addressed before they are required by regulatory bodies to commence OBF programs.

e. State/Local Government Ramp-Up Revolving Loan Funds

- i. Initiatives at the state and local level have created Revolving Loan funds with representative examples in Pennsylvania and soon in New York City. Many states have capitalized these funds through the DOE EECBG grants distributed through the ARRA program. These funds are generally

oriented to small business and other niche segments of the market that do not have the capacity or creditworthiness to qualify for a commercial lending vehicle and comply with regulatory actions.

- f. Local Governments Explore “Property-Assessed Clean Energy ” Finance Programs
 - i. The establishment of “PACE” programs has been one of the most innovative recent attempts to work around longstanding market barriers in the private real estate sector. In 2010, DOE’s competitive grant cycle under the EECBG program encouraged applicants to establish PACE programs.
 - ii. A number of states, counties and municipalities have passed enabling legislation, and a small number have stood-up lending programs which seek to issue public bonds which are secured by a property tax lien on individual private real estate assets. Owners voluntarily accept this lien in order to receive dedicated capital from the lead public entity. In turn, this money is dedicated to energy-efficiency investments in the asset. The most notable examples of functioning programs are Sonoma County, California; Boulder, Colorado; Palm Desert, California; and Babylon, New York.
 - iii. While 23 states and the District of Columbia have passed enabling legislation to pursue PACE programs, many have targeted the residential markets. Recently, Fannie Mae and Freddie Mac have stated they will not buy any mortgage for a property with a PACE lien in a priority position over the first or second mortgage, effectively bringing PACE programs oriented to the residential markets to a halt.
 - iv. There are a number of municipalities who continue to develop and refine their PACE programs with the intent to focus on the commercial sector and with the requirement that lender consent be obtained to place the tax lien. Additional variations include “Owner-Initiated” models which allow single owners of large real estate portfolios to work with the local jurisdiction on a single bond issuance or district-based assessments similar to conventional Tax Increment Finance (TIF) mechanisms.
- g. Managed Energy Services Agreements (MESA)
 - i. A variety of market approaches, in various stages of implementation, seek to structure an off-balance-sheet investment in building equipment by means of a third-party agreement. This third party may bring capital to an asset in exchange for long-term guaranteed cost savings, or alternatively may seek to act as intermediary between utility and customer to deliver clean energy supply. Emerging examples of these activities include:

- a. Equipment Leasing – Born out of both the energy services industry and the need for public utilities to establish progress towards a Renewable Portfolio Standard (RPS), intermediary entities finance, install and lease renewable energy equipment (Solar PV) to a property owner, delivering clean energy to the utility under a Power Purchase Agreement (PPA).
 - b. Comprehensive Managed Energy Agreements – If energy efficiency were to be included in utility Renewable Portfolio Standards (RPS) and given the same subsidy framework as renewable energy investments, or if separate clean energy portfolio standards were to be adopted.
 - c. Group Power Purchase Agreements (PPA) - Represents a potential market opportunity for real estate owners (demand) to negotiate with utilities (supply) on an at-scale dimension. Several large-scale demand response initiatives are underway (notably in the Chicago Loop) which seek to leverage the concentration of existing commercial office buildings and build upon a series of existing business relationships which allow dynamic pricing to alter both the supply and demand variables of an energy efficiency investment.
- h. Voluntary Industry-based Initiatives Address Building Performance Data Gaps
 - i. Collaborative, industry-based initiatives have formed to address recurring barriers in appraising the market value of energy efficiency investments. While large real estate portfolio owners have been doing this on an internal basis for some time, new consortia seek to institute broader performance and investment metrics. These efforts are greatly informed by the EPA Energy Star program but seek to move beyond benchmarks of relative performance. Significant examples include:
 - a. Energy efficiency reporting initiatives within public pension funds such as CALPERS or TIAA-CRE;
 - b. Regional utility-based initiatives such as “Better Bricks” initiative of the Northwest Energy Efficiency Alliance;
 - c. An innovative association of financial institutions entitled “Greenprint”, including Allianz, Deutsche Bank, Prudential Realty, Hines, Jones Lang LaSalle and others, whose purpose is to better benchmark existing performance of individual assets on an absolute performance basis.
 - ii. These reporting and benchmarking initiatives are already having anecdotal impacts on conventional commercial real estate lending practices, including a variety of internal assessments regarding due diligence procedures.

V. Gaps and Barriers

- a. “First Cost” Hurdle to Energy Efficiency Improvements Elevates Importance of Access to Capital Across all Submarkets
 - i. The need to move investments from the operating budget (1-3-year term) to capital budgets (15-, 20-, 25-year term) in order to reach deeper savings which are well documented to be feasible today with existing technologies.
 - ii. Competing uses of capital across the spectrum of an owner’s real estate portfolio. Property owners are often unwilling to commit capital to “non-core” investments; structural and economic disincentives compound the challenge.
 - a. Efficiency is rarely viewed as a core investment; equity is scarce or better invested elsewhere; borrowing to fund the investment carries risk and balance sheet implications.
 - b. Holding periods may be shorter than payback periods –short holding periods render longer term projects uneconomic unless the value can be translated into exit price.
 - c. The structure of many leases results in split incentives, making projects unattractive.
 - d. Transaction costs are high or perceived as high.
 - e. Energy cost savings may have limited impact on overall financial position in an asset.
 - iii. Common contractual terms constrain both borrowers and lenders if debt financing is an option.
 - a. Conventional loans are unattractive to many borrowers; terms may be short, rates high and security requirements not feasible.
 - b. Pre-existing mortgage liens may render an efficiency loan subordinate to a significant amount of existing debt; existing mortgages often restrict additional debt financing.
 - c. Securing actionable liens against equipment can be problematic.
 - d. Real estate ownership vehicles often limit access to the business balance sheet.
 - e. Term limits often reduce scope of measures, thereby reducing efficiency gains, rendering projects less attractive and reducing financial impact.
 - iv. Information limitations reduce demand for and supply of financing by increasing (perceived) risk for property owners, financial institutions and investors.
 - a. Lack of transparent data on financial savings from efficiency measures make it difficult for owners to “pull the trigger” and lenders to underwrite loans.

- b. Efficiency is not incorporated in most real estate valuation, limiting the value proposition for both property investors and lenders.
 - c. Limited track record on investment performance results in relatively high lender risk premiums.
 - v. Financial Institutions and Investors perceive a lack of investment opportunities at scale with attractive returns, strong risk management and sufficient volume.
 - a. Volume of potential investable transactions is uncertain.
 - b. Many property owners and projects are not independently of investment grade quality, so traditional finance products do not offer appropriate risk / return profile.
 - c. Underwriting protocols and standardization of financing products are lacking.
 - d. Variations in energy consumption patterns introduce unfamiliar risks.
 - e. Currently very limited secondary market, so no liquidity.
- b. Additional Barriers to Achieving Scale
 - i. Industry awareness of the importance and vast market potential of energy efficiency is at an all-time high, yet the current economic climate creates significant challenges related to financing options, including:
 - a. Access to commercial debt, which although potentially easier for energy efficiency compared to other business areas remains challenging due to a reluctance or inability of financial institutions to put capital to work, and of energy users and their lenders to increase debt and payment obligations.
 - b. Current condition of commercial real estate market, with many properties substantially overleveraged – presents both an obstacle and an opportunity: to include efficiency retrofit measures in restructuring and workout situations.
 - c. If you measure, manage and finance it as energy, you unlock the ability to deploy it at scale.
 - ii. All financing options assume the existence of state- or federally-funded EE programs, including:
 - a. Ability to leverage cash incentives or rebates offered for selected EE measures and technologies as well as the provision of technical assistance to help identify and develop project opportunities.
 - b. Providers of private capital need to increasingly work with utilities and policy-makers to meet the country’s growing energy and environmental challenges.

VI. Recommendations for Further Action

- a. Drive more information into all segments of the marketplace.
 - i. Increase awareness of language and terminology across all market participants.
 - ii. Embrace the complexity of the “capital stack” of any given project and acknowledge the diversity of the risk/value balance across market sectors.
 - iii. Embrace the context of diverse and competing sustainability factors and exercise great caution when pursuing a unilateral “value engineering” focus on energy as isolated outcome.
 - iv. Empower all DOE research and innovation initiatives to identify, quantify and value the impacts on project risk, with the objective of reducing uncertainty in the financial underwriting process.
- b. Structure education initiatives around “new” information.
 - i. Embrace diverse stakeholder groups that are part of the project finance supply chain.
 - ii. Understand that innovation in finance practices is not reliant on individual new tools or mechanisms but rather on deeper saturation of knowledge which can be used to better define value within the context of ongoing transactions.
- c. Financing alone cannot lead to the realization of established energy and energy efficiency goals.
 - i. Regulate utilities in a manner which provides a level playing field for market-based innovation and solutions.
 - ii. Establish appropriate minimum codes and standards.
 - iii. Revise tax incentives and depreciation rules to place energy efficiency on par with renewable energy (e.g., accelerated depreciation, ITC inclusion and property tax exemptions).
 - iv. Adopt “decoupling plus” regulatory regimes for utilities that not only break the link between electricity sales and profits but also set earning incentives and penalties related to meeting EE targets.
- d. Credit enhancement improves pricing of capital, mitigates investment risk that is difficult to quantify or price and can facilitate access to additional pools of investment capital. Layers of credit enhancement may be added.
- e. Establish revolving loan funds. Use public funds to lend in sectors that provide a public good but that cannot be effectively funded with private capital. Capital that would otherwise be granted is repaid and reused.
- f. Broaden local finance mechanisms to embrace energy efficiency, including the many conventional urban development vehicles used by municipal government to effectuate public infrastructure investment in concert with economic development.
 - i. More clearly justify energy efficiency as a local public benefit.

- ii. Methodically establish the creation of dedicated secondary markets.
 - iii. Further refine property-based clean energy assessment strategies.
 - iv. District-based Tax-Increment Finance (TIF) might be used in conjunction with district-based Demand Response initiatives.
 - v. Address community concerns around debt ceilings, administrative capacity and impacts on credit ratings.
- g. Increase sophistication and transparency of energy efficiency benchmarking data;
- i. Explore mandated building performance benchmarking.
 - a. Ex. NYC's Greener, Greater Buildings Legislation
 - ii. Develop or approve protocols for benchmarking and compliance options.
 - iii. Quantify magnitude of building investment needed to meet long-term EE goals, and identify business-types expected to benefit from EE investments.
 - iv. Identify tools, instruments, and information necessary to attract capital to EE.
 - v. Explore changes to standard lease terms to address perceived tenant/owner split incentive issues.
 - vi. Promote more detailed, real-time measurement of building energy usage.

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