Local Governments' Role in Energy Project Financing

A Guide to Financing Tools for the Commercial Real Estate Sector

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About IMT: The Institute for Market Transformation (IMT) is a Washington, DC-based nonprofit organization dedicated to promoting energy efficiency, green building, and environmental protection in the United States and abroad. Much of IMT's work addresses market failures that inhibit investment in energy efficiency. For more information, visit imt.org.

About CoLab: The Community Innovators Lab (CoLab) is a center for planning and development within the MIT Department of Urban Studies and Planning (DUSP). CoLab's Green Economic Development Initiative (GEDI) supports economic development organizations pursuing the triple bottom line priorities of environmental sustainability, social justice and economic opportunity.

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Cover Image: Minneapolis, MN, provides loans for energy improvements to local businesses. See page 23 for additional details.

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Overview

DRIVEN BY A NEED TO FOSTER ECONOMIC development, create jobs, and address environmental concerns, cities are increasingly recognizing the need to encourage investment in building performance with creative financing mechanisms. Making the largest impact possible with limited funds can be challenging. However, cities now have an abundance of governmental and private sector tools available to finance these investments. In every city, there are market leaders—institutions or property owners able to access conventional finance or "self-fund" to meet efficiency goals—as well as various other property owners with a more pressing need for financial assistance. This guide aims to help cities weigh various energy efficiency finance strategies and choose policies best tailored to the individual needs of each local market.

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1 The Need for Energy Project Financing

REALIZING THE FULL ECONOMIC AND ENVIRONMENTAL BENEFITS of building energy upgrades will require innovative project financing mechanisms deployed on large scales. While not every project requires third party financing (some owners can pay for upgrades via their own cash reserves), new financing mechanisms are the key to enabling many owners to pursue more comprehensive projects.

Local governments have an important role to play in supporting emerging markets for energy upgrade financing. This guide is intended to help local governments navigate financing options, as they work to assist commercial and multifamily buildings pursuing deeper energy upgrade opportunities. This guide:

- Describes the types of challenges that exist for financing energy upgrade projects—it notes important financing gaps in the commercial energy upgrade market. It also notes principles that local governments should consider as they seek to improve the availability of upgrade financing.
- Describes various upgrade financing mechanisms. Chapter 2 reviews more "market based" tools; local governments can support the use of such tools via education, credit enhancements, and partial funding. Chapter 3 describes mechanisms that generally require more active government support.

What do we mean by "Energy Upgrade"?

We use "energy upgrades" to refer to any building improvement requiring capital funding that improves the energy performance of the building—this could include energy efficiency measures, integration of renewable energy generation, technologies to implement demand response and connections to energy infrastructure such as microgrids and district energy. We do not seek to cover mechanisms to finance district-scale energy infrastructure (microgrids and district energy systems; "virtual microgrids"; etc.); a variety of other financing mechanisms can be used to implement such district infrastructure.

Increasingly, energy upgrades are being coupled with ongoing energy management services that provide continuous operational improvements. Many energy service providers will roll the costs of management of buildings' energy systems into upgrade financing repayments. This document does not seek to describe the various third-party energy management service structures that may accompany upgrade project financing.

Extent of Investment Needed to Achieve All Cost-Effective Energy Management Opportunities

Numerous studies have noted the tremendous potential for energy efficiency in existing US commercial buildings, and the broader US economy. Estimates by Deutsche Bank Climate Change Advisors and the Rockefeller Group suggest that roughly $72 billion will need to be deployed to achieve all profitable efficiency in existing buildings.

This investment requirement dwarfs current spending on energy efficiency—Rockefeller and Deutsche Bank estimate that in 2012, roughly $1.5 billion was spent in dedicated project financing for commercial building energy retrofits with turnkey project management by a service provider (RF & DBCCA, 2012).

Moreover, many projects only pursue energy management measures with relatively short "pay back periods"; many building owners note that they will only consider energy management measures with a 2-3 year payback period. Deeper energy management measures, which can reap further savings and higher net-present value projects, are "left on the table".

Thus, while not all projects are implemented with third party financing, having more financing options available can enable deeper energy management and more rapid uptake of efficiency.

Barriers to Energy Upgrades & Project Financing

There are a variety of barriers to energy project financing in commercial properties. These barriers prevent many building owners from financing their energy upgrade projects from more traditional sources, such as cash reserves or business loans. Ideally, upgraded financing mechanisms will be able to mitigate these barriers.

Knowledge, time, and motivation to pursue energy project financing

Minimizing their buildings' energy costs is rarely building owners' and tenants' top priority, despite the significant potential to improve these stakeholders' bottom lines. These stakeholders focus most of their attention on their core business. Many do not fully understand the array of financing mechanisms available to them. Nor do they necessarily have trusted parties to whom they can turn for information about energy project financing. Smaller properties and those without professional management especially face knowledge and capacity barriers to pursuing and financing energy projects. Moreover, many energy service providers and contractors do not fully understand the array of financing mechanisms available to fund their projects. Thus, there is a need to improve trust and understanding in unfamiliar financing tools for all these parties.

Split incentives between the building owner and tenants

Investments in energy efficiency in many buildings are stymied by split incentives: Owners are expected to finance and make payments for energy services for the property, but tenants reap the benefits of lower utility bills.

The nature of the split-incentive problem varies with the different leases used in commercial real estate. While leases are structured in a variety of ways, three broad categories can be defined:[1]

1. **Gross leases.** Where building owners pay utilities, property taxes, and other operating expenses, and charge tenants one base lump-sum rent. In this case, there is no split-incentive for financing owners' projects, as building owners always have incentive to reduce buildings energy use and operating cost (though tenants will have no financial incentive to conserve energy and other utilities).

2. **Triple net leases.** All operating costs are passed through to tenants. In this case owners have limited immediate financial incentive to reduce buildings energy use (though the building owner does have long-term incentive to improve the operating costs, allowing them to reduce tenants net costs, and charge higher rents). Building owners are frequently reluctant to finance upgrades, *unless they can pass the costs of upgrades—specifically "capital expenses," or CapEx—through to tenants.*

3. **Modified gross leases.** Building owners pay a base percentage of operating costs, typically the operating costs of the first year a lease starts. Subsequently, a tenant pays for all escalations in operating costs. Again, under this scenario, the owner will have less incentive to engage in energy projects unless it can pass through financing repayments to tenants; otherwise, tenants will receive the benefits of lower operating costs and not owners.

In the cases of triple net leases, energy project financing can be more readily realized if the costs of projects can be readily passed through to tenants under existing lease terms. Alternately, efforts can be made to establish "green leases" with tenants and have tenants adopt (some of) the incremental costs of upgrades.

Ownership hold barriers

Many building owners face "hold barriers"—they are hesitant to invest in longer payback efficiency measures when they may sell the building at some point in the future. This is especially true of properties owned by "investment" real estate firms, where turnover is frequently in the range of 4-7 years. This turnover potential limits the maximum financial payback period a building owner will consider for energy upgrade projects. Many MIT GEDI interviewees cited this hold barrier as perhaps the greatest impediment to deep energy upgrade projects. Indeed, the Lawrence Berkeley

1. This discussion refers to the treatment of "base building" utility costs, which are utilities billed to the building owner. In many buildings, some energy loads are sub-metered. Tenants may pay for electricity use in their space, while building owners pay for HVAC and common area lighting. Building owners have the same incentives to invest in tenant-paid utility saving measures as they do under a triple net lease framework; they will want a means to pass through costs, or else tenants must strongly demand these savings.

National Lab's survey of the energy service company (ESCO) industry found that the median simple payback period for ESCO projects in the private sector was 3.2 years in 2008, compared to 10.5 years in the public sector (Larsen, Goldman, & Satchwell, 2012). At such limited payback periods, much cost-effective efficiency is left "on the table". Thus, a mechanism to pass financing repayments to future owners is needed.

Capital and operational budgeting barriers

Many properties suffer a staff breakdown in communication and financial planning between facilities management and ownership. Facilities management staff will often be empowered under their operating budgets to undertake projects with a 1–2 year simple payback. Beyond this threshold, however, they need to coordinate with senior financial management in the building ownership group. These senior financial managers have limited time to focus on energy management, as it is often not considered their firms' core business. Likewise, facilities management staff may lack the financial literacy to present a compelling case to senior management for upgrades. Again, this severely limits the financial payback period that may be viable for a project.

(Perceived) need for off-balance sheet financing

Many properties, particularly Limited Liability Companies (LLCs) established to own individual properties as investments, are highly leveraged; thus, they have little capacity to take on additional debt. Ideally, building valuation systems would recognize the full value of energy upgrades through better appraisal of high-performance buildings, and thus building assets would be valued higher, while compensating for the added debt liabilities on balance sheets. However, in practice, building valuation systems consistently do not properly account for the added value realized by energy upgrades and strong energy management. Moreover, most mortgage covenants prohibit commercial building owners from assuming other debt, or liens on their property or equipment, without a mortgage lender's permission. For these reasons, many commercial properties desire "off-balance" sheet financing, which does not appear on firms' balance sheets as debt.

The types of financing mechanisms that can meet this off-balance sheet criteria are in flux. Currently, the US Financial Accounting Standards Board (FASB) allows equipment "operating leases" and other financing structures to be treated as off-balance sheet. However, FASB is harmonizing its standards with the International Accounting Standards Board (IASB). It is strongly anticipated that by 2016/17, any lease will be considered on-balance sheet. However, while the treatment of other financing mechanisms remains in doubt, property assessed repayments and service repayments may be able to be structured to remain off-balance sheet. City-initiated programs such as Property Assessed Clean Energy (PACE) or On Bill Programs are two such examples.

Financing thresholds that are too large for smaller buildings & smaller projects

Marketing and negotiating services and financing agreements with clients is typically a time intensive process for ESCOs, engineering firms, contractors, and financiers. Thus, they typically are only willing to engage in financing relatively large projects. Prominent ESCOs in different regions of the country reported to MIT GEDI that they require a minimum project size range from $150 thousand to $1 million to provide financing. Many smaller energy upgrade projects are not large enough to meet that threshold. To overcome this barrier however, it may be possible to aggregate multiple projects in a pool to achieve the scale necessary for cost-effectiveness.

Utility & regulator buy-in

Utilities frequently play a central role in marketing and administering energy efficiency programs, and brokering projects to be financed. However, many states' utility regulations do not reward utilities for facilitating the adoption of all available energy efficiency resources.[2] Indeed, the utility industry has voiced concern that its business model may be threatened by the growing adoption of efficiency and distributed generation, which reduces their revenue and limits opportunities for long-term expansion (Kind, 2013). Thus, financing mechanisms that rely on utility cooperation and entrepreneurship (such as on-bill financing schemes) may in some cases be hindered by reticent utilities and regulators. Some analysts go further, suggesting that financing strategies will have the greatest traction and scalability when they reward utilities, ideally by allowing them to invest in projects via Power Purchase Agreements from which they can make a profit (PGL and NBI, 2013).

2. The National Action Plan for Energy Efficiency notes principles for states to align utility incentives with greater adoption of energy efficiency (NAPEE).

Principles for Supporting Markets for Energy Financing

Local, state, and federal government, and other intermediaries, all have important roles to play in establishing novel energy project financing mechanisms in the marketplace, and enabling greater uptake of these mechanisms. The following paragraphs note important considerations to most effectively enable energy upgrades.

Identify important building segments and the barriers they face

Local governments must understand their local building market, and the particular barriers to energy upgrades and better energy management these properties face. Interviews with real estate and energy industry stakeholders, and analysis of building square footage and energy use data, can identify the key segments that local governments should serve, and inform the choice of the most appropriate financing mechanism(s) to pursue.

Leverage private capital when feasible

A primary goal for any financing program should be to leverage limited public funds by recruiting private capital to participate in financing energy upgrades into the future. This can be achieved by offering credit enhancements (such as taking a junior position in blended project financing, interest rate buy-downs, loan loss reserves, loan guarantees, etc.) to private lenders. It may also take the form of simply assisting contractors and lenders in marketing their services and aggregating projects. Facilitating private capital's introduction to energy service markets will often provide greater opportunities for scaling up the volume of energy management projects in a region. Many local governments may be unable or unwilling to devote sufficient amounts of their scarce capital to serve the energy upgrade private space.

However, for some types of projects, the use of public capital to fill intractable financing gaps will be required. Additionally, some local governments, and other public or non-profit institutions, may perceive such lending as a potential revenue source. For example, cities can also deploy novel tax-based strategies, including those traditionally aimed at encouraging economic development, such as Tax Increment Financing (TIF).

Combine with a seamless customer experience and strong program administration

While financing is an important ingredient to enable upgrades, simply making financing available may not be enough to spur demand. To successfully grow markets for energy upgrades, it is also necessary that building owners, tenants, and managers are sufficiently motivated and educated about upgrades and financing options; reasonable consumer protections, quality assurance, and review of technical and financial underwriting of projects are provided; and sufficient contractors and a well-trained workforce are available to implement projects. Local government should coordinate with various stakeholders (rate-payer funded efficiency program administrators, contractors, non-profits, etc.) to ensure these essential conditions are met, and work to improve the programs that mediate many upgrade markets.

Often, a successful program can be housed within an trusted organization that is already in place. In Cleveland, and throughout Northeast Ohio, the local Chamber of Commerce works with the Council of Smaller Enterprises (COSE) to administer utility incentives, connect businesses to ESAs, and has partnered with a local bank to roll out its own loan program.

2 Market-Based Energy Efficiency Finance Tools

IN RECENT YEARS, MARKET PARTICIPANTS HAVE DEVELOPED A variety of energy project financing tools. These tools can address the barriers to efficiency noted in Chapter 1. These mechanisms may be deployed successfully with little to no intervention by government – though, as Chapter 3 will make clear, public-sector intervention can support the uptake of such mechanisms in a variety of ways. These tools support energy upgrades in different sectors. This list is not intended to be comprehensive, but rather to provide an introduction to prominent emerging financing mechanisms.

The following subsections outline these financing tools that can support energy upgrades in commercial buildings, noting their benefits and limitations. Chapter 3 outlines how local government, utilities, and other organizations can support penetration of these mechanisms into local markets, and other financing tools local governments can help mediate to enable investments in energy upgrades.

2.1 Equipment Lease Financing

Under an equipment lease, a **lessor** will own the energy efficiency equipment in a building, and the **lessee** (typically the owner or tenant) will make periodic payments to them. The lessee benefits from using this energy savings equipment. Many equipment leases will include clauses allowing the lessee to acquire the equipment at the end of the lease term.

Energy equipment manufacturers may provide lease financing. Likewise, equipment lease companies may have relationships with contractors and/or equipment manufacturers. These equipment lease companies will agree to purchase and lease equipment for projects matching certain conditions – such as the credit of the lessee, the technology being implemented, or other methods.

Some equipment lease companies have automated credit scoring protocols which allow them to engage in quite small equipment lease projects. For instance, the equipment lease company TIP Capital reports that it will lease energy upgrade equipment with capital costs as low as $3,000. Effectively, such small levels of financing would allow virtually any commercial building energy upgrade project to be financed.

Under current FASB rules, depending on their repayment terms and how ownership of the equipment is ultimately transferred to the lessee, leases are considered either:

- "Capital leases"—The lease is considered debt, and the lessee must report this liability on their balance sheet.
- "Operating leases"—Lease payments are considered operating expenses, and the lessor holds the liability on their balance sheet.

Thus, leases can currently be structured to be considered "off-balance sheet" for property owners and tenants who do not want to assume further debt. However, as noted in Chapter 1, FASB is aligning its accounting principles with IASB. It is expected that in the future, FASB will eliminate the off-balance sheet treatment of operating leases.

Advantages and limitations of leases

Lease structures have some advantages:

- **Many building owners are familiar with lease structures, and are comfortable using them to finance equipment.** Many businesses have experience using leases; in contrast, more novel energy financing mechanisms may be unfamiliar and met with skepticism.
- **Some lease companies will serve small projects.** Some emerging energy upgrade equipment leases have proven to serve very small projects, providing financing options for smaller buildings.

Limitations of leases include:

- **Difficulty in transferring leases to future lessees.**
- **Difficulty in passing leases to tenants.**
- **FASB will likely eliminate operating leases' off-balance sheet treatment.**

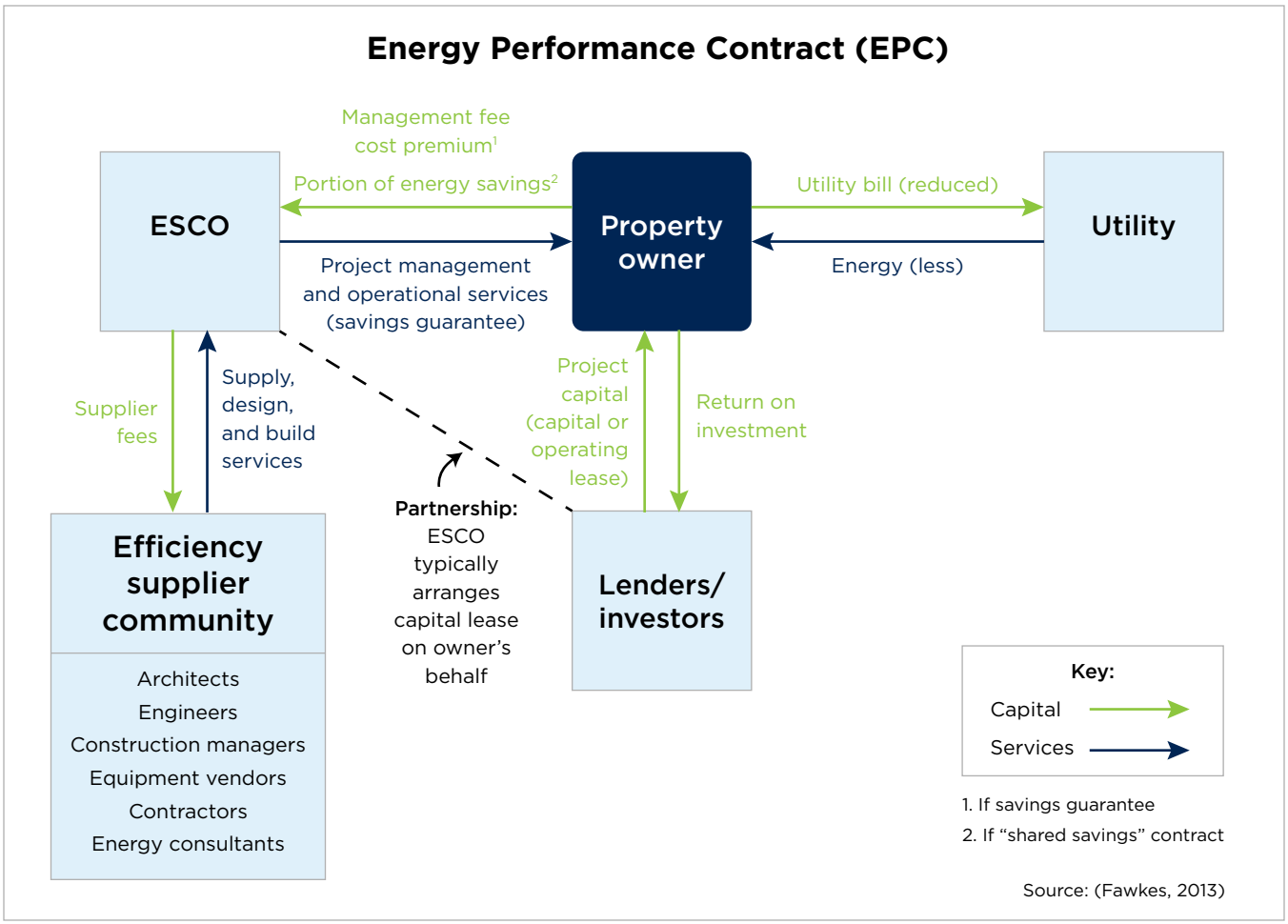
2.2 Energy Performance Contracting (EPCs) With Building-Owner Borrowing

Energy Performance Contracts (EPCs) are used by Energy Service Companies (ESCOs) to provide turnkey energy improvements. The ESCO typically provides design, build, commissioning, and frequently operations services for a client building.

ESCOs will frequently partner with lending institutions that can provide building owners with financing—typically loans or leases. Alternately, owners may source financing from other sources, or use their cash reserves. The capital costs of equipment and the ESCO's design and project management fees are paid out of this financing.

ESCOs frequently provide a customer some form of guarantee of energy savings for a project. The EPC may guarantee a level of energy or dollar savings, below a "baseline" building energy use projection.[3] The performance

3. The Efficiency Valuation Organization publishes the International Performance Measurement and Verification Protocol (IPMVP), which provides criteria for establishing such a baseline and measuring performance relative to it; the ASTM E 2797-11 Building Energy Performance Assessment Standards, provides prescriptive guidelines for meeting the IPMVP.



guarantee comes at a cost premium, which the ESCO will integrate into its fee; it is attractive to clients because it reduces the risk that their project will not provide sufficient returns and/or will not be "cash-flow positive". In the case that an ESCO only guarantees a set level of energy savings, it has incentive to achieve the guaranteed level of savings, but no incentive to achieve deeper savings. Many EPCs are structured as "shared savings" arrangements, wherein ESCOs receive an agreed upon percentage of the savings customers achieve. In this case, ESCOs have an incentive to pursue energy savings above and beyond their guarantee.

Many ESCOs are associated with Original Equipment Manufacturers (OEMs), and have an incentive to specify the installation of equipment from these OEMs instead of other (perhaps better performing) solutions. Also, given their use of performance guarantees, ESCOs have incentive to specify low-risk, but perhaps not innovative strategies. There is some perception in the industry that ESCOs may sometimes pursue more capital-intensive, higher-cost options, and/or pursue only measures with quick paybacks. Such practices may be most profitable for ESCOs, but will not realize all cost-effective efficiency, nor realize the highest net-present value for their clients.

Advantages and limitations of the ESCO/EPC Model

Government buildings and institutional owner-occupied properties comprise the large majority of ESCO clients, and for the MUSH sector this model is often an attractive option. However, the ESCO/EPC model is limited when applied to commercial properties, particularly those with tenants, due to a number of barriers:

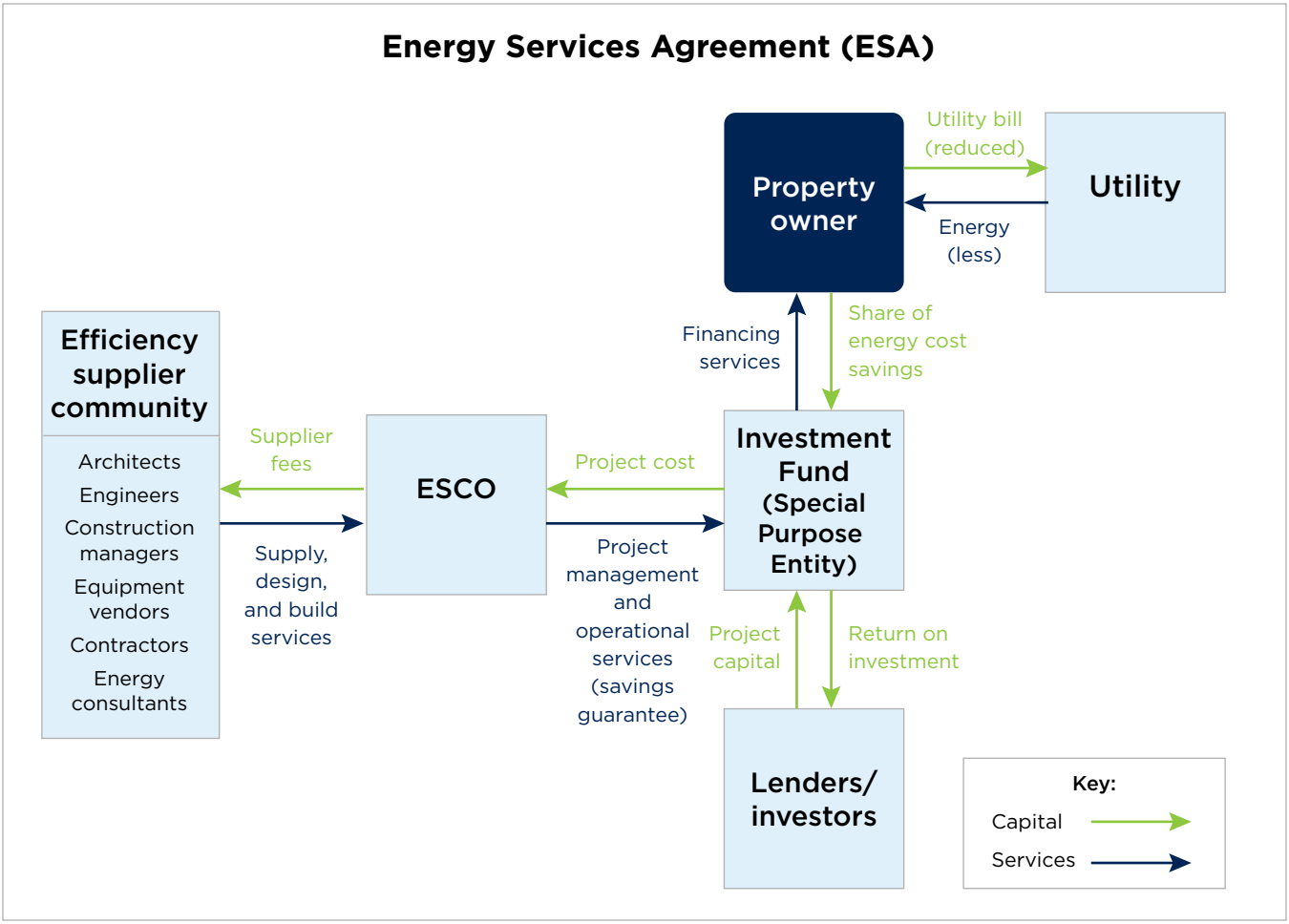
- **EPCs do not overcome the hold barrier.** Building owners are hesitant to take on long-term financing when they might sell in the future, as potential buyers may be concerned about becoming the counter-party in the EPC.
- **EPCs do not overcome the split incentive.** Owners financing payments cannot readily pass costs through to tenants under the structure of most commercial leases.
- **EPCs have limited prospects to achieve "off-balance sheet" status.** While some ESCO/EPC models currently use operations lease financing to achieve off-balance sheet treatment, in the coming years FASB will likely eliminate off-balance sheet leasing.

2.3 Energy Service Agreements (ESAs)

Energy Service Agreements (ESAs) are structured to overcome some of the aforementioned barriers to EPCs with owner-arranged financing. An ESA will establish a "special purpose entity" (SPE) to own the equipment. The ESA-providing firm will manage ESCO procurement, and their design-build services. Either the ESCO or the ESA may manage the building equipment. Like an EPC, the ESA model may provide a performance guarantee to the customer, or the ESCO managing. The ESA SPE may then contract with customers as a service agreement, or lease. Some industry analysts note that ESAs may be structured so that the service agreement will not be considered debt under future iterations of FASB (Kim, et al., 2012), though FASB's ultimate treatment of such service agreements cannot be known at this time.

Some ESA firms are compensated based on the extent of the volume of power saved, measured against a dynamic projected baseline; thus it has incentive to operate projects as efficiently as possible. Because the ESA SPE owns the equipment, it does not have the incentive that an ESCO might to pursue higher capital costs. Rather, it will aim to minimize capital costs, and maximize energy savings. For these reasons, the ESA mechanism is viewed as a promising tool to unlocking energy efficiency in the commercial upgrade sector. Nevertheless, ESA developers have incentive to charge customers as close to their original spending on energy, as customers will bear, so as to maximize their profit margins.

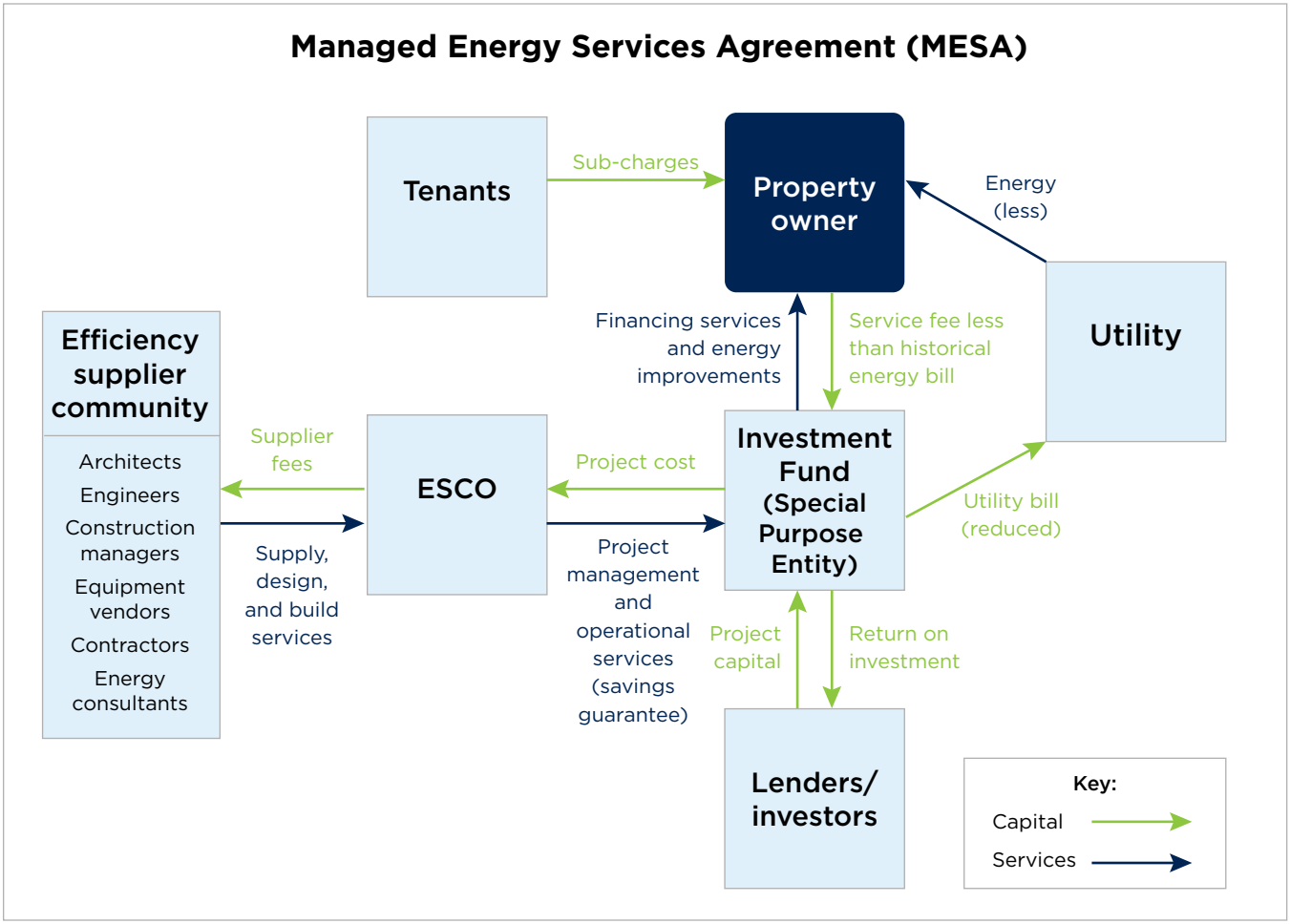
Depending on the terms of an existing lease, the ESAs' service charges may or may not be passed through to a tenant (Buonicore, 2012). Thus, it may or may not overcome split incentives.



ESA with on-utility-bill repayment

A variation on the ESA model (or an EPC) includes financing repayment through an owners' utility bill. An ESA with On-Bill Repayment (OBR) requires a willing utility/regulator, and thus may be difficult to implement in all jurisdictions. Where applicable, however, it can provide greater security to investors, as in many cases customers may have energy supplies suspended if they do not pay their bill in full. Even in cases where the utility will not terminate customers' energy supply when they pay only for energy, and not energy financing repayments, recent experiences with on-bill repayment programs indicate that it is a relatively secure form of lending, which can improve access to credit.

Such a structure has the advantage that it reduces split-incentives between landlords and tenants, by allowing building owners to continue to pass-through to tenants the financing payment for energy improvements, in the same way that energy payments were treated under the original lease.



2.4 The Managed Energy Service Agreement (MESA)

Other so-called Managed Energy Service Agreements (MESA) are structured so that the MESA firm assumes responsibility for paying customers' utility bills. The customer pays the MESA firm an annual service fee, generally an amount a little less than historical consumption. The MESA developer thus assumes the utility rate risk.

Similarly to the ESA with OBR, the MESA overcomes the split-incentive as it replicates a utility bill, and can be passed through to tenants in the same manner prescribed in the existing lease. Additionally, if the MESA developer assumes the right to discontinue customers' utilities, it may allow projects to access less costly credit.

Advantages and limitations of ESA and MESA

Thus, the ESA and MESA models hold advantages over the EPC/ESCO model. They:

- **Incentivize the pursuit of deeper, more innovative energy efficiency strategies by project developers.** Project developers have

incentive both to contain capital costs and realize as much efficiency as possible through good operations.

- **Overcome split incentives, especially MESA and ESA with OBR.** Owners' service payments may be more readily passed through to tenants under existing lease terms. Under the MESA and ESA with OBR models especially, payments are structured to replicate the utility bill.
- **Have greater potential to be structured to achieve off-balance sheet status.** While the implications of impending FASB rulings are unclear, some analysts suggest that ESA service payments may be structured to count as operating expenses.

Nevertheless, there are some limitations these models, notably they:

- **Have limited ability to address "hold" barriers.** ESAs and MESAs both are challenged to overcome the hold barrier, as owners may be hesitant to enter into a service agreement that future owners must either buy-out or adopt themselves. For this reason, ESAs and MESA may not well serve real estate investors considering selling their property.

Limited market size

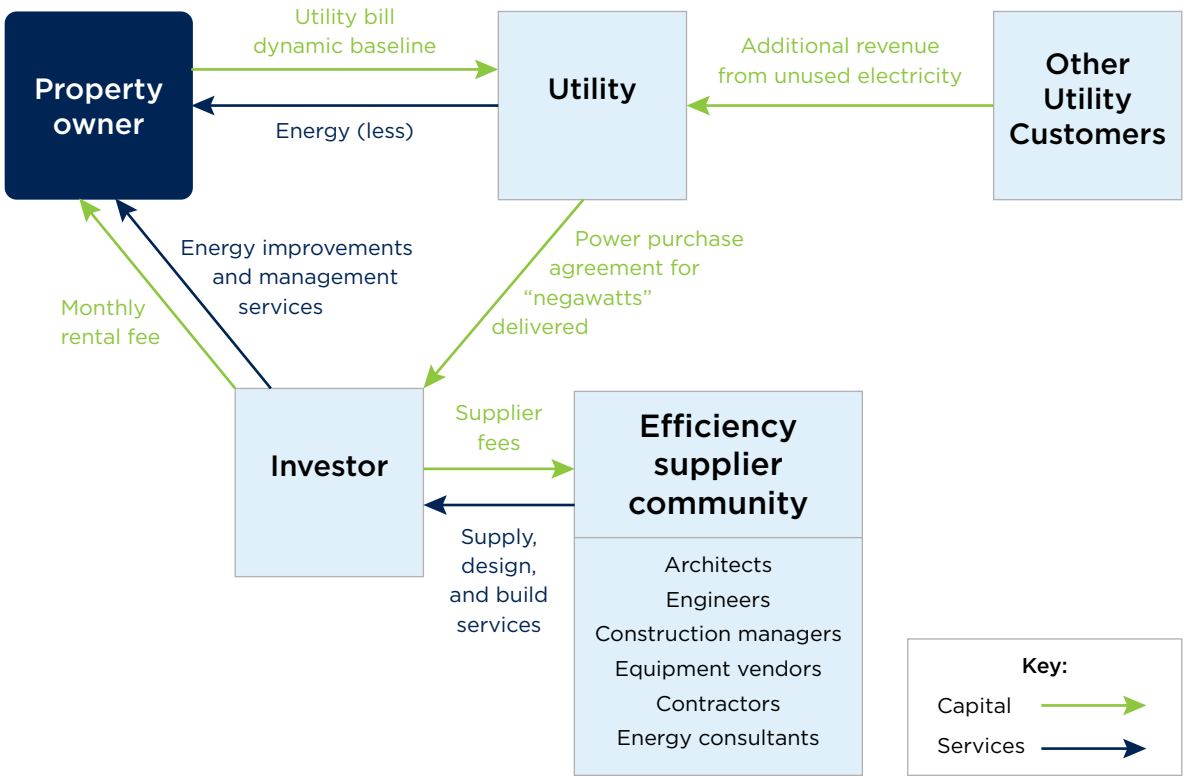
Markets for ESA/MESA are nascent. In 2012, one analysis estimated that approximately 100 projects had been completed in the USA, with a pipeline of deals sized at $500 million in aggregate (RF & DBCCA, 2012).

2.5 Metered Energy Efficiency Transaction Structure (MEETS)

The Metered Energy Efficiency Transaction Structure (MEETS) is a very new model pioneered by the firm EnergyRM. It has been implemented in only one project, a twenty-year power purchase agreement by the municipally-owned utility Seattle City Light for efficiency realized in the Bullitt Center building.

Under a MEETS, a developer will invest in energy efficiency measures in a building, and assume responsibility for energy management in the building. The MEETS uses a proprietary metering system to document energy savings below a dynamic baseline; each year in the future, energy savings below this baseline are measured. The utility (with regulatory approval) agrees to pay the developer for these "negawatts" achieved below the projected dynamic baseline. The developer owns the installed equipment. The developer pays the building owner a fee, or "rent", for the opportunity to install the efficiency measures and for the right to operate the building in a certain way; this fee is similar to the rent a farmer might receive from a developer for a renewable energy project on the property. The building owner and tenants continue to pay the utility for energy consumed.

Metered Energy Efficiency Transaction Structure (MEETS)



While it is largely untested, the MEETS has a number of potential advantages:

- **Potential for lower cost capital.** The utility, not the building owner, serves as the counter-party to the investment agreement. As large, regulated entities, utilities are more likely to be able to make their Power Purchase Agreement (PPA) payments than building owners would make debt-service and or ESA operational service agreement payments. Thus, MEETS may be able to attract lower cost capital.

- **Eliminates the split incentive.** Building owners and tenants continue to pay utilities as before.

- **Owners do not enter into debt.** While the MEETS structure's treatment under future FASB rules has not been definitively established, it would appear that this structure would not be considered owners' debt and would not appear on owners' balance sheets.

- **Provides an incentive to utilities to proactively sell energy efficiency.** Currently, where utilities are not "decoupled", they may lose profits

when their energy efficiency investments exceed regulated minimums. Even in jurisdictions with decoupling, utilities face a long-term financial disincentive to implement as much efficiency as possible, as this cuts into their regulated "rate-base". Under the MEETS arrangement, utilities can reduce the costs of acquiring energy, while continuing to deliver metered energy consumption (though this delivered energy is not real but rather based on a "dynamic baseline" consumption); thus, their profit margins will not be eroded. However, presumably their rate-base infrastructure will not grow as quickly with greater efficiency deployed, and some may still face long-run disincentives to realize all cost effective efficiency.

The MEETS structure faces some important barriers, however. These include:

- **Uncertainties about the metering system.** Investors, utilities, and regulators must be satisfied with the accuracy of the metered savings below the dynamic baseline.
- **Energy costs utilities will cover.** MEETS requires a significant change to utilities' regulated business model. Utilities and regulators' uncertainties about the veracity of the dynamic baseline will impact the cost of energy via the PPA they will be willing to purchase. Moreover, the amount regulators and utilities will be willing to spend on energy resources will likely not exceed the amount spent on new generation and capacity-related savings; customers pay for both the cost of generation, as well as volumetric charges to cover the costs of transmission, distribution, and customer services. Thus, the full payment per unit of energy that utilities will make is less than customers'.
- **Treatment of two fuel efficiency measures.** Utilities will have difficulty purchasing efficiency for fuels they do not provide.
- **Performance risk.** Investors must be willing to assume the performance risk of the project, investing in projects that might not achieve the depth of efficiency below the baseline, or pay premiums for performance guarantees. Additionally, there is the risk that building owners will not be satisfied with energy management activities, and seek to terminate the energy management contract with the firm. In this case, the developer would be able to pull equipment from the building; however, the claim to this equipment is unlikely to make the developer whole (Hofmeister, 2013).

2.6 Fannie Mae's Green Financing Loans[4]

Fannie Mae has two Multifamily Green Financing Mortgage loan products, Green Preservation Plus (formerly known as Green Refinance Plus) and the recently launched Green Rewards, as well as a pricing discount for properties with a Green Building Certification. These initiatives are

4. This section was updated after this paper's original publication date with Fannie Mae guidance in 2015.

designed to provide financing to support the investment in energy and water efficiency improvements in multifamily properties. Fannie Mae is a government-sponsored enterprise and the organization delegates lending to private, third party lenders.

Under Green Preservation Plus—which closed its first deal in April 2012— borrowers wishing to purchase or refinance existing Multifamily Affordable Housing (MAH) properties will benefit from stretches in traditional lending ratios to encourage green renovations. For applicants, the Loan to Value (LTV) maximum may go up to 85 percent of the asset value. This means that building owners may be able to put 5 percent less equity down. Additionally, the debt service coverage ratio (DSCR), which represents a ratio of a property's net operating income (NOI) to its total debt obligations, may go as low as 1.15. Eligible properties must be at least 10 years old and meet Fannie Mae MAH income and rent restrictions.

In addition, Fannie Mae now offers Green Rewards, a financing option available for conventional, affordable, and co-op properties nationwide. Green Rewards incentivizes investment in multifamily building efficiency by providing up to an additional 5% in loan proceeds and lowering the interest rate by 10 basis points. Green Rewards is a product feature that can be applied to any Fannie Mae loan. It allows for a maximum LTV of 80 percent and a minimum DSCR of 1.25 for conventional properties and 1.20 for MAH properties.

Both Green Preservation Plus and Green Rewards require a third-party appraisal, Phase 1 Environmental Assessment, Property Conditions Assessment (PCA) and High Performance Building (HPB) Report for participating properties. A traditional PCA—a standard requirement in commercial real estate due diligence—assesses expected capital costs that will be required during the mortgage term, such as new windows or HVAC equipment. This allows the owner to plan for future expenses and assures lenders that adequate financial reserves will be available to pay for the improvements.

The PCA and HPB Report go a step farther by integrating an ASHRAE Level II Energy Audit into the traditional PCA structure. For each building component the owner is expected to replace during the mortgage term, the PCA with HPB Report presents multiple products to the owner, including conventional and green options. The report details the cost and payback of potential investments with a variety of metrics.

Fannie Mae Multifamily is also offering 10 basis points off the all-in interest rate for properties with a current Green Building Certification. Recognized certifications as of July 2015 are:

- EarthCraft, Greater Atlanta Home Builders Association & Southface
- ENERGY STAR® Multifamily High Rise Program (New Construction), EPA

- ENERGY STAR® for Existing Multifamily Housing, EPA
- Green Communities, Enterprise Community Partners
- Green Globes, Green Building Initiative
- GreenPoint, Build It Green
- LEED, US Green Building Council
- National Green Building Standard (NGBS), Home Innovation Research Labs

Loans with a Green Building Certified-property are not required to order the HPB Report component, only the standard third-party reports.

Finally, for Green Preservation Plus and Green Rewards loans and those loans receiving a decrease in the all-in interest rate for having a Green Building Certification, owners must track their properties' energy and water performance in ENERGY STAR's Portfolio Manager and report performance on an annual basis. Properties eligible to receive the ENERGY STAR Score must include it in their PCA.

Green Preservation Plus and Green Rewards are promising loans not only to owners, but also to local jurisdictions prioritizing revitalization of their multifamily buildings stock. Additional information on these offerings is available at www.fanniemaegreeninitiative.com.

3 Financing Options for Local Government

AS A COMPLEMENT TO PRIVATE SECTOR OFFERINGS, LOCAL governments are also deploying financing strategies to encourage owners to undertake efficiency improvements. Many of these efforts build on private sector offerings, leveraging limited public finds to spur demand and recruit private capital for local finance needs. Other strategies address intractable finance gaps by relying on economic development capabilities of local governments. These tools include: the ability to raise upfront investment capital through bonding authority, changes to tax policy, and the organizing power to bring together local stakeholders to achieve scale. The models below summarize various such mechanisms, noting how they function, advantages, and limitations.

Funding-Based Strategies

3.1 Energy Efficiency Investment Corporation (EEIC)

An Energy Efficiency Investment Corporation (EEIC) is an organization capitalized with funds that are used to invest in local efficiency projects. This model is similar to industrial loan corporations, which have traditionally offered loans and tax credits to companies undertaking facility improvements.

EEICs will frequently partner with other institutions and can be structured to have discretion in the types of projects they support, allowing them to structure investments in the way that makes the most sense for specific projects. For example, an EEIC can provide a credit enhancement to enable other private lenders to finance a project, buy-down the finance costs of a loan extended by another lender, or make a direct loan to the building owner for a portion of the total project cost. This flexibility allows participation in a range of financing vehicles, including conventional loans and mortgages, energy service agreements, and power purchase agreements. An EEIC is designed to be self-sustaining, with funds flowing back to the bank from borrowers. In all cases, the goal of the EEIC is to maximize the leverage of private financing for every dollar of internal funds.

A chief benefit of this model is that it brings together both efficiency expertise and financing capabilities under one roof. This combination

can allow the institution to cultivate projects with local building owners, lead other private capital providers to strong efficiency projects, and help other financial institutions gain comfort with the investment analysis of efficiency projects.

Funding

An EEIC requires a significant investment of upfront capital in order to pay for staff and to extend loans. The funding required to charter an EEIC's work can come from a variety of sources. To date, cities have assembled public funding from federal, state, city, and philanthropic sources. Additional options might include a portion of utility systems benefits charges collected by utilities, or funds raised by an economic development authority with the ability to issue bonds to raise funds.

Limitations of EEICs

Creating an EEIC demands a significant commitment from a city government. A city must charter a sophisticated stand-alone entity to make loans, hire staff, and raise capital to create a self-funding organization to issue loans. Another challenge is that the EEIC must set their interest rate high enough to provide a return to fund EEIC overhead and operations, while not being too high as to deter participation by potential borrowers.

Leading Example: NYCEEC

The EEIC model is exemplified by the New York City Energy Efficiency Corporation (NYCEEC). New York City launched NYCEEC in 2011, using $37.5 million of initial seed capital provided by federal block grants under the American Recovery and Reinvestment Act, as well as funding from the City and private foundations. NYCEEC has developed several financing products, including direct project finance loans, credit enhancement facilities, and energy service agreement financing. To date, NYCEEC has financed $50 million in clean energy projects, with 46 percent of that total used for Energy Services Agreements, 34 percent for equipment loans, and 20 percent for green mortgages. Broken down by property type, 60 percent of the $50 million has been allocated to commercial and industrial projects, 23 percent to affordable multifamily, and 17 percent to market rate multifamily.

3.2 Energy Efficiency Loan Program

An energy efficiency loan program offers loans to local building owners to implement efficiency projects. Typically, the available loan has standard size limits and defined borrower eligibility terms, such as owner-occupied homes and businesses. In contrast to an EEIC, the manager of the loan program does not perform risk assessment and detailed analysis of proposed improvements. As a consequence, overhead costs are also lower, as these loans can be disbursed through existing city departments (an originating entity) that administer loan programs such as a City or State treasury department.

Funding

A loan program will require a reliable and regular source of capital to fund loans. Loan programs often use a "revolving" loan structure to manage funds. In this structure, after the initial capital is disbursed in loans, new loans can only be made as earlier loan principal is paid back into the fund. The fund can be grown by including finance charges, although many loan programs charge near-zero interest rates and some forgive a portion of the loan amount. Available sources of funds include initial capitalization from federal, state, city and philanthropic sources; a regular stream of funds from utility systems benefits charges, or other customer funds available for investing in efficiency; and local general obligation bonds.

Limitations of loan programs

Many loan programs may be able to leverage public funds by recruiting additional private sector capital. Such leverage will be most powerful when the public funds take a junior position to private loans, which insulates the bank from potential losses.

Origination costs are a potential limitation of these programs, as these costs can be relatively high for many small loans. As a result, many local lenders may be less interested in smaller loans or will need additional subsidy. Additionally, although a loan program can be secured by real estate, many public loan programs for efficiency improvements are not guaranteed, thus making them a harder sell to lenders and investors—and requiring higher borrowing costs.

Loan programs are also unlikely to overcome the hold barrier, split-incentive, and off-balance sheet preferences of many property owners.

Leading Example: Minneapolis' Energy Efficiency Business Loan Program

The Energy Efficiency Business Loan Program in Minneapolis provides a good example. The program is operated by the City of Minneapolis Office of Economic Planning and Development. It offers loans no larger than $75,000 for local businesses to conduct selected code-compliant energy improvements. The revolving loan fund was capitalized with funds from the Recovery Act.[5] Interest rates are fixed at zero percent and the loan term can last up to 10 years, or 6 months beyond the expected payback term for improvements. Projects are also eligible for rebates offered by the local utility. Another example is the Philadelphia Energy Works Loan Fund. This is an example of an existing institution, the Philadelphia Industrial Loan Corporation, given expanded authority to include building efficiency projects.[6]

5. City of Minneapolis, Minnesota, Energy Efficiency Business Loan Program, October 26, 2011, http://www.minneapolismn.gov/cped/ba/cped_energy_efficiency_loan_program (accessed April 12, 2013).

6. See http://www.pidc-pa.org/userfiles/file/Energy%2Works%20Loan%20Fund(1).pdf

Credit Enhancements

3.3 Loan Loss Reserves, Interest Rate Buy Downs, Loan Guarantees

A credit enhancement is a general term for funds or assurance provided to a lender, which adds security to a loan. In contrast to a direct loan program, a credit enhancement is specifically designed to leverage private lending. The issuer of the credit enhancement (in this case a city) typically provides a lender with a promise to cover certain losses in the event a borrower defaults. As a result of the credit enhancement, private lenders are able to lower borrowing costs (such as the interest rate) below the rate that would otherwise apply to borrowers and projects that might otherwise be too risky or priced out. A credit enhancement can thus be used to reach a larger group, and magnify an investment to create five or ten times the total amount of capital lent for efficiency measures, compared to a direct loan program.

Credit enhancements can be conveyed in a variety of forms, including:

- **Loan loss reserves.** A loan loss reserve specifies that a certain amount of capital (e.g., 10 percent of the balance of a pool of loans) is held in escrow by the local government to be available to private lenders (up to the predetermined portion of their loan portfolio) to repay them in case of default on their loans. Alternately, funds could be advanced to the lender upfront and held for a designated period. In this scenario, unused funds would be returned.

- **Interest rate buy-downs.** In contrast to a loan loss reserve, an interest rate buy-down delivers a lump sum, up-front payment to a lender at the beginning of a loan term as additional security. The buy-down, unlike a loan loss reserve, is retained by the lender at the end of the loan term.

- **Loan guarantees.** Loan guarantees are often rendered by a creditworthy institution—such as the federal, state or local government. A guarantee may be the strongest of all three types, but also requires the institution extending the guarantee to record the potential loss as an expense.

Funding

As with other models, a credit enhancement program will require a source of funding to support the guarantee that is extended to lenders. Grant, ratepayer, bond, and philanthropic funds could be used to capitalize these efforts. In the case of a loan guarantee, one option is to implement through an institution with a very strong credit rating, such as a city or state treasury department or a state housing finance agency. For any credit enhancement program to succeed, a partnership with a financial institution (such as a national or regional bank, or a CDFI) is required. A credit enhancement

program will require a trusted institution to manage and extend the credit enhancement for eligible projects, and typically it can be operated by an existing entity with treasury back-office experience, such as a state treasury department or other loan authority.

Leading Example: Michigan Saves Business Energy Financing Program

Implemented by the Michigan Public Service Commission through a not-for-profit entity, Michigan Saves was formed to operate certain efficiency programs. It was capitalized with an $8 million grant from the Public Service Commission (based upon utility customer funds) and a $35 million grant from the U.S. Department of Energy (from Recovery Act grant funding). The program partnered with a leasing company and a lender to provide both with insurance against borrower defaults. As a result, customers implementing efficiency improvements have access to better rates for financing the improvements.

Facilitating Innovative Repayment Strategies

3.4 PACE

Property Assessed Clean Energy (PACE) financing involves building owners voluntarily taking on financing, which is repaid via an assessment on their property tax bill. In states with enabling legislation, local governments can establish a PACE financing district and a program to coordinate the implementation of that financing. To date, the PACE commercial market is estimated to include over 300 projects and approximately $120 million in financing. There are 14 states with active commercial PACE programs (PACENow, 2015).

Funding

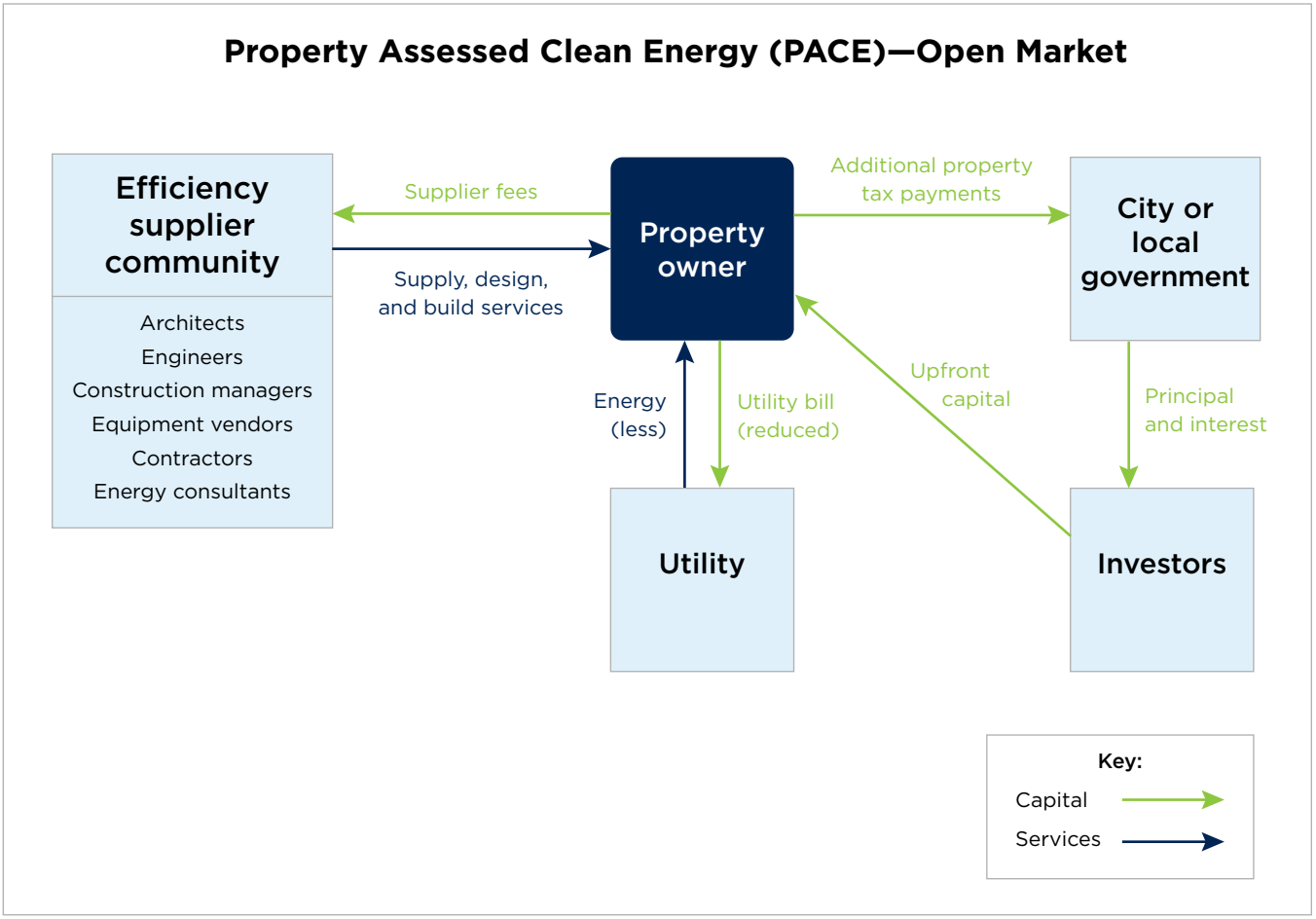
Broadly, there are two models for how PACE programs can provide project financing:

- **Open Market.** Increasingly, PACE programs are structured to be "Open Market," allowing multiple private financiers to compete in providing financing; under such Open Market models, municipalities are responsible for collecting PACE assessment payments, and remitting these funds to the financier. In the case of Open Market program structure, a program administrator will typically provide additional oversight and/or baseline criteria of the projects' financial and technical underwriting, to ensure quality control and consumer protections.

- **Closed Market.** Alternatively, "Closed" programs involve the program either securing a line of credit or using public funds to provide project financing. Municipalities may then issue a non-recourse revenue bond against the PACE repayments as "takeout" financing. Some programs offer hybrid models, allowing open market lending, while also offering public financing for projects meeting certain criteria.

In many jurisdictions, PACE projects do not need to be bonded. The financing can simply be passed through the property tax assessment and remitted to the investor. Thus, PACE can serve as repayment mechanisms for business loans, energy service agreements, and other financing mechanisms. The figure on the next page illustrates this Open Market structure.

In either model, local governments and/or financing authorities can issue bonds to finance projects. The figure on page 28 shows the financing structure for a bonded, Closed Market project. Bonds may be for individual projects. Alternately, bonds may be "warehoused", aggregating multiple projects into one bond issuance. Warehoused bonds can support smaller energy upgrade projects, reducing transaction costs by financing multiple

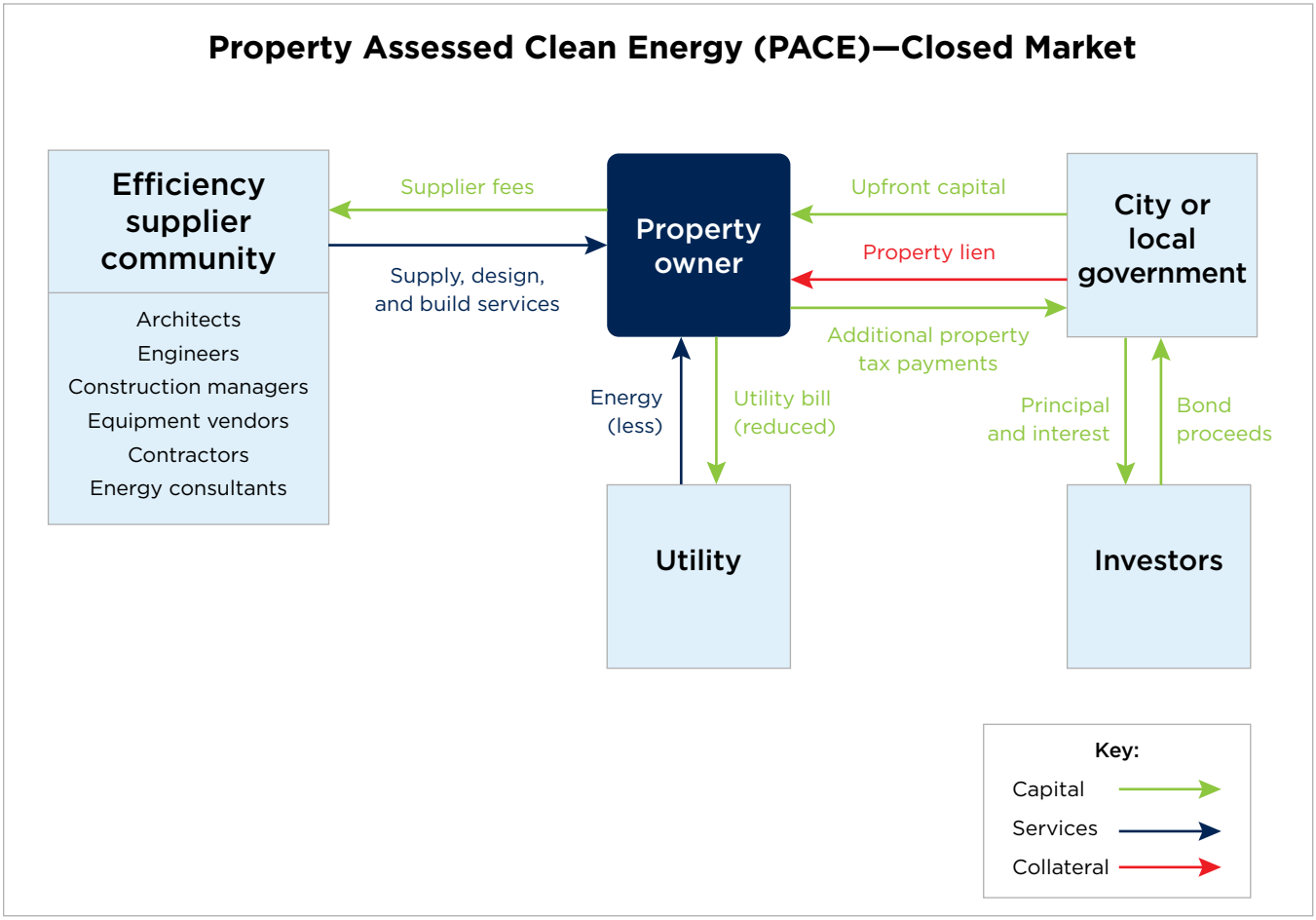


projects under one bond issuance. However, waiting for sufficient projects to be aggregated can delay projects. PACE program administrators can establish a line of credit or some other funding which can finance energy upgrades, with bonding used as take-out financing.

Program administration options

Typically, local governments that offer PACE financing will institute a program to manage how buildings can use PACE. Administrators of these programs will typically perform the following duties:

- Design of the program, coordinating with local government and state authorities.
- Liaise with customers, financiers and contractors, providing program guidelines for participating financiers and contractors.
- Provide oversight of technical and financial underwriting.
- Facilitate obtaining mortgage lender consent for energy upgrades.
- Provide outreach and marketing to property owners.



Programs can be administered in a variety of different ways:

- Each local government can administer their own program.
- The State can designate a program administrator, typically either a government agency or their contractor. Such structures can realize greater economies of scale, and reduce market confusion.
- Local governments can partner to form a public body via a voluntary inter-local government agreement. The Florida Green Finance Authority is one such body, which administers programs in select local governments.
- A non-governmental organization can administer the program on behalf of local governments. Again, if all local governments in a state contract with the same program administrator, this can reduce market confusion and realize economies of scale.

Advantages and limitations of PACE

Advantages:

- Allows for lenders to offer better interest rates and longer repayment terms (up to 20 years) than is otherwise available. As PACE financing is repaid

on the property tax bill, it offers strong security, senior to other debts. This enables deeper energy efficiency and greater savings for projects.

- May be structured to be "off-balance sheet". Recent analysis indicates that PACE repayments may not be considered debt under FASB rules. The current year's assessment would be considered a liability, but future payments may not be entered as long-term debt as assessments are considered yearly obligations (Managan & Klimovich, 2013).
- Overcomes the split-incentive problem between building owners and tenants for some lease structures. PACE allows financing repayments to be passed through to tenants under most triple net leases and modified gross leases, so that tenants share in the costs of energy improvements as well as the savings.
- Significantly reduces hold barriers, as the PACE assessment passes with the property to future owners.

Limitations:

- There is some confusion over whether or not PACE solves the split-incentive problem by moving the costs associated with energy-savings improvements to the property tax bill. Under many common lease structures, tenants are responsible for operating costs such as property taxes but not capital costs such as roof replacements. PACE shifts the accounting process for capital expenditures but does not change the fact that many tenants are not obligated to help pay for any capital improvements. Therefore a landlord whose leases do not contain cost recovery language could be opening themselves to legal challenges from tenants by charging for capital improvements via property tax recovery. PACE is ideal for some owners and tenants, including owner occupants or where tenants have agreed to share costs of capital improvement that are energy-related.

Leading Example: Set the PACE St. Louis

Set the PACE St. Louis launched in mid-2013, offering PACE financing for residential and commercial properties in the city. As of fall 2013, the project has received 50 proposals, totaling $7.4 million in potential retrofits, with funds provided by a warehouse line of funding from PNC Bank. For additional data, see the program's comprehensive website: setthepacestlouis.com.

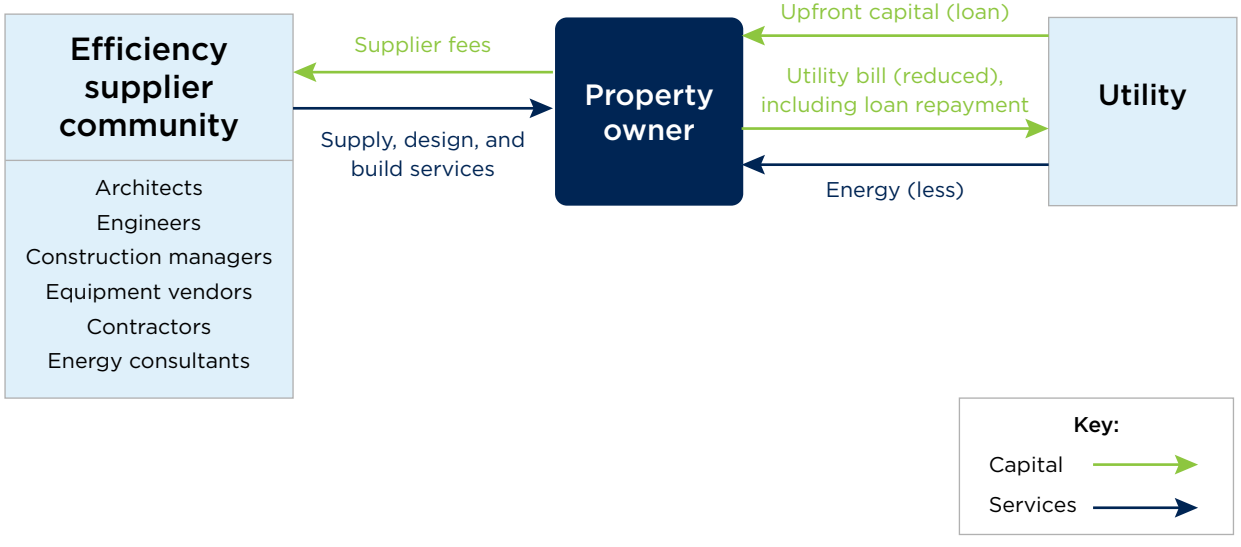
3.5 On-Bill Repayment (OBR) and Financing (OBF)

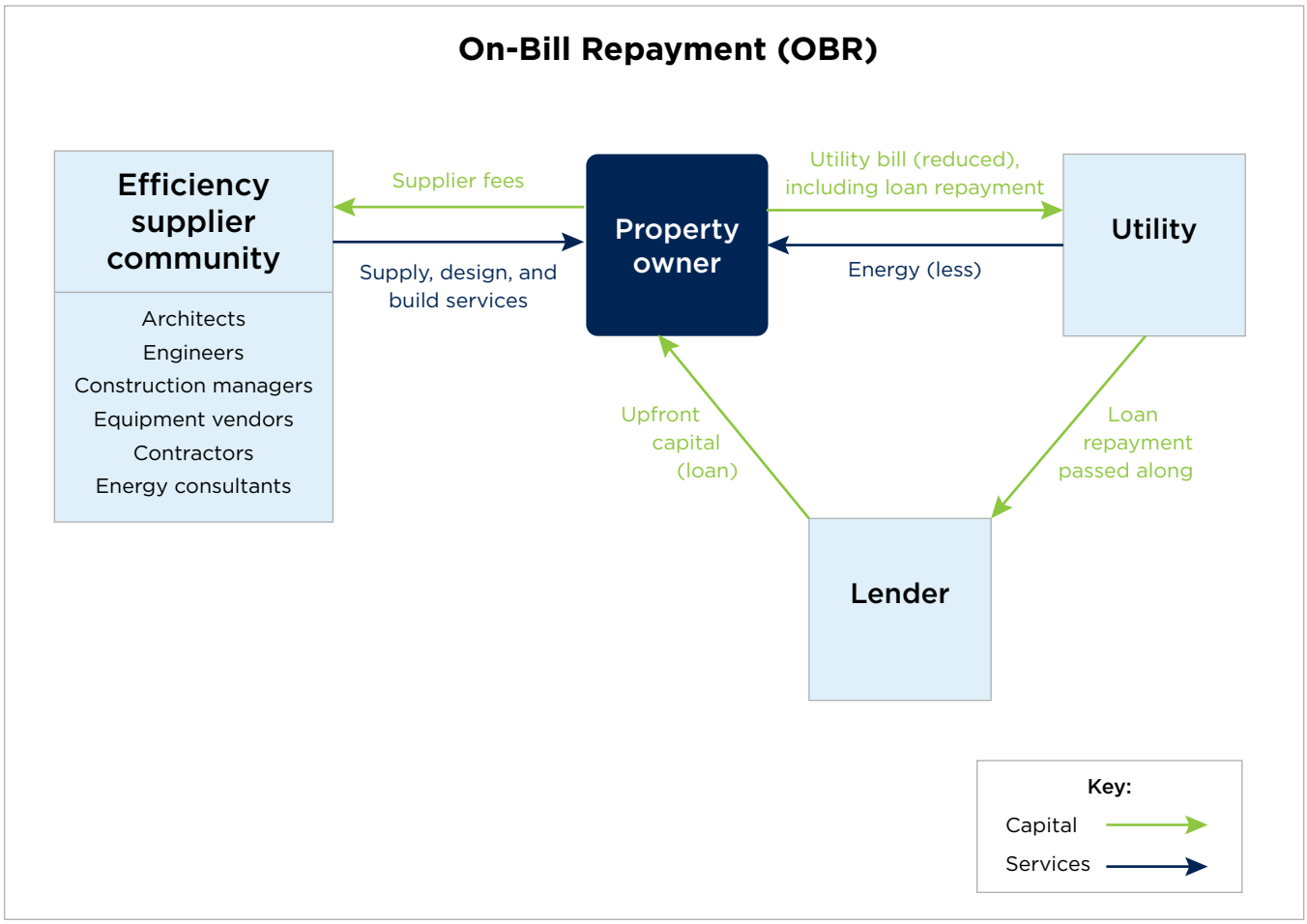
On-bill programs are characterized by a utility or lender extending financing to a utility customer (such as an owner-occupant), and the utility then collecting regular monthly loan payments to repay their investment or that of a third party. One of the benefits of these programs is the potential to reach a broad set of customers, including tenants with multi-year leases, city-owned properties, schools, and others. This is because these entities often have substantially greater latitude to incur financing if the repayment is part of the utility bill.

Funding

In most on-bill programs today, funding for the loans is provided by utility customer funds, such as a utility systems benefits charge. When funds are provided by the utility, the repayment structure is termed On-Bill Financing (OBF). Several states appear to be exploring whether a private financial institution would extend loans to customers then rely on the utility's bill presentment function for repayment, a variant that is known commonly as On-Bill Repayment (OBR). In both cases, a city can act in a variety of roles: removing legislative hurdles, assembling stakeholders, providing financing, and/or considering a contribution to credit enhancements for any potential loan losses. As these programs develop, a utility could potentially extend the loans then immediately turn to sell the loans to an investor, such as a bank, recouping its funds and facilitating additional lending.

On-Bill Financing (OBF)





Considerations for on-bill finance

A good relationship between a state or city and a local utility that has strong incentives to invest in efficiency is crucial for program establishment and success. An on-bill program is only realistic with the cooperation of the utility and the utility regulator, even if loans are funded by external sources via OBR.

Additionally, a source of funds for the loans is required, and may include: a utility systems benefits charge, funds from a city or state treasury, a lender interested in making loans, or an investor ready to purchase the loans.

Leading Example: California

California's four large investor-owned utilities all operate on-bill financing programs. The programs offer building owners and tenants loans of up to $100,000 for projects that meet certain eligibility requirements, with higher amounts for local government buildings. In 2013 and 2014, the four utilities collectively expected to provide over $100 million in on-bill loans to commercial customers for efficiency projects. The loan funds come from customer-funded utility systems benefits charges and are repaid to the utility at zero finance charges—no interest or fees. From 2011 to 2013, over 1,300 loans were made to commercial customers with utilities reporting very few major delinquencies or defaults (less than one percent).

Tax-Based Financing Mechanisms

3.6 Tax Increment Financing (TIF)

Tax Increment Financing (TIF) is a financing model used by many U.S. cities to fund infrastructure projects and economic development. Among other uses, this model can also be used to create economic development through loans to property owners to implement efficiency-related improvements to their property. In return the building owner agrees to a higher tax assessment based on the increased property value that occurs as a result of the project. Many cities implement a TIF by designating a specific area – like a downtown area – so that owners of buildings located in those areas would be eligible for the financing. The terms of TIF eligibility may be defined in state law, and as such it may not be feasible for cities without enabling legislation.

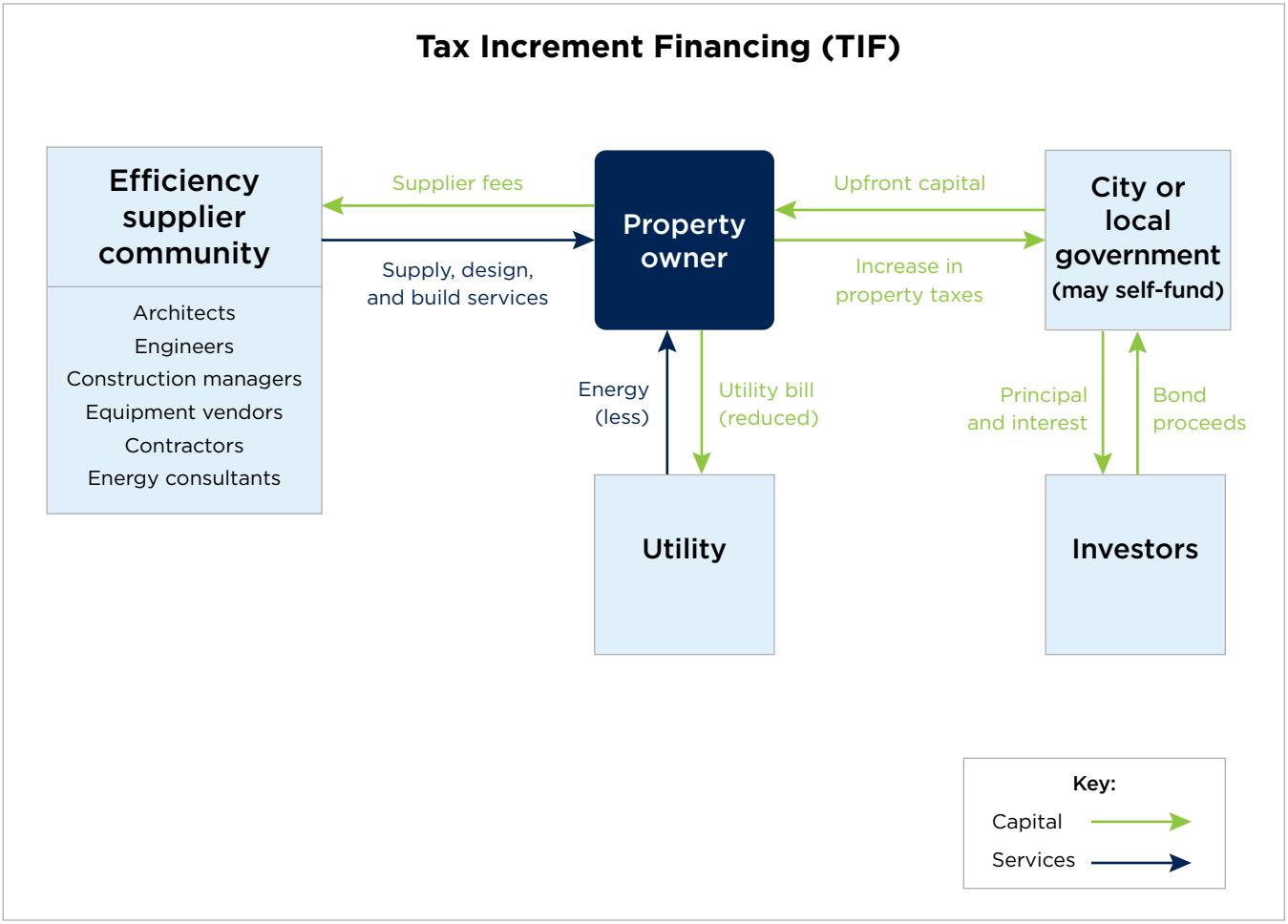
Funding

TIF financing can be deployed through three primary vehicles 1) pay-as-you-go spending tied to rising tax revenues 2) bond financing via issuance of bonds against anticipated incremental tax revenue and 3) credit enhancements allocated to private owners or developers to fund projects. Cities have found that the completion of a project on one property often results in an increase in the value of surrounding real estate and overall economic activity, which generates further tax revenue in addition to the repaid loan.

Examples

Cities have shown a great degree of creativity in the use of TIFs and are increasingly deploying TIF financing to fund energy efficiency efforts. In Chicago, the city's Small Business Improvement Fund uses TIF districts to provide grants to small commercial and industrial businesses to be used for permanent building improvements, including energy efficiency investments. Within two years of the program's creation, it provided $800,000 in funding 20 energy efficiency-related projects and helped leverage an equal amount of private funds.[7] In Atlanta, Ga. a TIF was recently used to fund energy audits of buildings and subsequent financing for efficiency-related improvements in buildings judged to have compelling paybacks.[8] Consistent with the use of TIF districts to finance infrastructure, this strategy might be used to make investments at the district level, such as combined heat and power systems or other green infrastructure.

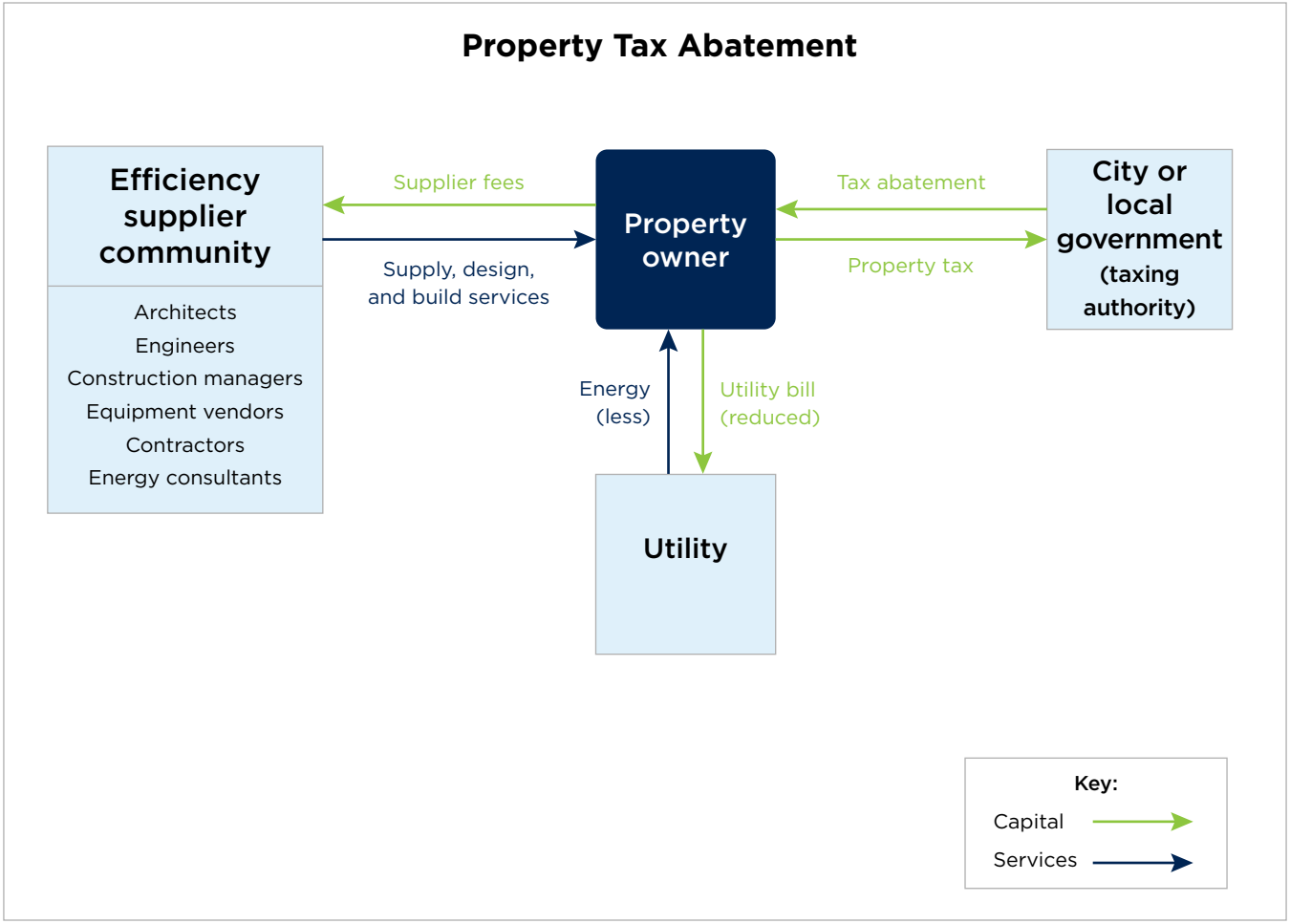
7. http://nreionline.com/government/press-release-downtown-atlanta-building-gets-funding-energy-efficient-upgrades
8. http://aceee.org/sector/local-policy/case-studies/chicago-small-business-improvement-fu



3.7 Property Tax Abatement

Tax abatements are another commonly used tax-based policy tool which cities use to pursue public goals, usually linked to economic development. In general, abatements are usually defined as an incentive rather than a finance model. For example, property tax abatement for owner-occupants would be understood as an incentive for homeownership.

Recently, select cities have created policies that tie tax abatement to observed energy performance. By creating tax abatements that align with owners' bottom line and encourage spending, the building owners are incentivized to undertake changes that lead to better performance. For owners, the incentive may shift payback calculations and encourage them to self-finance improvements (or engage a third-party) and may also encourage occupant behavior changes. As a strategy, this tax abatement resembles a finance mechanism, due to the waived stream of tax revenue and the value conveyed to the owner. Compared to a finance policy like PACE, energy efficiency performance-linked abatement works in reverse: Under PACE an owner receives capital upgrades but pays more taxes over time, while through an abatement the owner self-funds and pays less taxes.



Funding

By nature of lowering the tax rate for qualifying properties, tax abatements lower municipal revenue. This potential loss of revenue is a key reason why tax abatements are often used to incentivize new development, as in these cases cities forgo revenue that is not yet on the tax roll. Losing a portion of existing revenue, by contrast, requires modeling to determine anticipated program costs. Cities would need to model possibilities for an abatement program, including the possibility of making the program revenue-neutral by raising the baseline tax rate.

Advantages and limitations of tax abatements

Abatements have some advantages:

- **Leverage new benchmarking policies to determine tax abatement.** With benchmarking policies providing annual reporting of energy use in many cities, a program would be able to link the tax reduction to verifiable energy savings—incentivizing owners to save energy and providing cities (and perhaps other partners, such as utilities) proof that the policy is working.

- **Administrative costs can be lowered through reliance on existing "tax and revenue" department staff.** Cities have experience assessing abatements and will not necessarily need to create a new program.

Limitations of abatements include:

- **Cities would need to determine abatement levels and the method of assessment.** Tax abatements tied to a benchmarking score would need to be carefully structured to meet local goals. As a tax incentive, the policy could be tied to: A targeted energy use score in Portfolio Manager (i.e. a score of 75 or above) or an improvement from the building's current baseline score (i.e. a 20 point score gain). Consideration of abatement sunset (when additional improvement would be required to maintain tax status) and multiple tiers (corresponding to different levels of performance) could also be considered.

Leading Example: Virginia Beach

In one recent example, a group of Virginia cities, including Virginia Beach, has begun a program giving tax abatements to residential and commercial buildings with performance 30 percent above the current statewide code. For these properties, annual tax on property improvements (not on land) is lowered from 95 cents to 80 cents on every $100 in building value.

4 Summary of Financing Mechanisms

Energy Project Financing Mechanism		Lower financing costs (realized through stronger security)	Longer term financing feasible (10-20 years)	100% project financing of efficiency measures	"Off-balance sheet" No debt on property	Overcomes "split-incentive barrier"[1]	Overcomes "hold barrier"[2]
Traditional Financing	**Internal**	N/A	N/A	N/A	Yes	No	No
	Bank Debt	No	No	No	No	No	No
	Fannie Mae Green Refi Plus	Yes. Fannie Mae lowers lending rations (LTV, DSCR) for borrower.	Yes	Yes	No	N/A	No
Market Based Energy Efficiency Finance Tools	**Equipment Lease**	No	No	Yes	Unlikely – pending FASB	No	No
	Energy Performance Contract	No	Yes, but rarely	Yes	Unlikely – pending FASB	No	No
	Energy Service Agreement	No. However, off balance sheet treatment could leave cash & credit available for other uses.	No	Yes	Likely – pending FASB	Yes – contingent on agreement structure	No. New owner must agree to service agreement.
	Managed Energy Service Agreement	No. However, off balance sheet treatment could leave cash & credit available for other uses.	No	Yes	Likely – pending FASB	Yes – contingent on agreement structure	No. New owner must agree to service agreement.
	Metered Energy Efficiency Transaction Structure	Yes. Utility counter-party realizes added security.	Yes	Yes	Likely – pending FASB	N/A – owner is paid a nominal "lease" for allowing EE to be sourced from its property. Utility is the counter-party.	No. New owner must agree to service agreement.

1. Costs can be passed through to tenants without re-negotiating lease

2. Financing may be readily passed through to future owners without negotiation

Energy Project Financing Mechanism			Lower financing costs (realized through stronger security)	Longer term financing feasible (10-20 years)	100% project financing of efficiency measures	"Off-balance sheet" No debt on property	Overcomes "split-incentive barrier"[1]	Overcomes "hold barrier"[2]
Financing Options for Local Government	Funding-Based Strategies	**Energy Efficiency Investment Corporation (EEIC)**	Yes. Credit enchancement can lower rates from primary lender.	Yes	Yes	No	No	Varies depending on model undertaken
		Energy Efficiency Loan Program	Yes. Loan program can lower rates from primary lender.	Yes, but not typical	Yes, depending on scope	No	No	No
	Credit Enhancements	**Interest Rate Buy-downs**	Yes. Loan program can lower rates from primary lender.	Yes	Yes	No	No	No
		Loan Loss Reserves	Yes. Loan program can lower rates from primary lender.	No	Yes	No	No	No
		Loan Guarantees	Yes. Loan program can lower rates from primary lender.	No	Yes	No	No	No
	Facilitating Innovative Repayment Strategies	**PACE Repayment** (Bank debt, EPCs, ESAs, MESA, may all be repaid via PACE)	Yes. Senior lien is a strong security, presumably lowering financing costs.	Yes	Yes	Likely – pending FASB	Potentially – if linked to secondary finance mechanism like MESA or ESA	Yes. Financing payments pass automatically to new owner with property taxes.
		On-Bill Repayment (Bank debt, EPCs, ESAs, MESA, may all be repaid via OBR)	Yes. Shut-off provision enhances security.	Typically not. On bill tarrifs may facilitate longer terms	Yes	Depends on financing mechanism	Potentially – if linked to secondary finance mechanism like MESA or ESA	Yes, if an on-bill tariff. No, if an on-bill loan.
	Tax-Based Financing Mechanisms	**Tax Increment Financing**	Yes, if TIF loan lowers rates from primary lender	Yes, if loan from primary lender extends to this term	Yes, depending on TIF activity	Yes	No	No, if loan
		Property Tax Abatement	No. Owner to self fund or use other finance model.	N/A	N/A	N/A	No	Yes

1. Costs can be passed through to tenants without re-negotiating lease

2. Financing may be readily passed through to future owners without negotiation

Case Studies

Type of Financing	Private Sector			Public Sector
	Residential	**Commercial**	**Industrial**	**MUSH Market**
Revolving Loan Funds	Mass Saves HEAT Loan Program Nebraska Dollar and Energy Savings Loans	Tennessee Pathways Lending Program Virginia Commonwealth Energy Fund	Ohio Energy Efficiency Loan Fund for Manufacturers	Texas LoanSTAR Fund
Credit Enhance-ments	Michigan Saves Home Energy Loan Program	Alabama SAVES Michigan Saves Business Energy Financing		
On-Bill	Green Jobs, Green New York On-Bill Recovery S. Carolina Help My House Pilot	Efficiency Kansas On-Bill Financing Program		
PACE	Vermont Residential PACE Program	Florida PACE Funding Agency		
Bond Financing	St. Louis County SAVES	Oregon State Energy Loan Program		New Mexico Clean Energy Revenue Bond Program Wisconsin Energy Efficiency Revenue Bond Program
Secondary Market	Pennsylvania Keystone HELP Program	Edina Emerald Energy Program		Citigroup Warehouse Funding Facility with Green Campus Partners
ESPC		Colorado Private Sector Energy Savings Perfomance Contracting Pilot		Minnesota Guaranteed Energy Savings Program ESPC for Water/ Wastewater Treatment Facilities
Green Banks	Connecticut Clean Energy Financing and Investment Authority			Green Bank of Kentucky

Note: Some programs may fall under multiple categories or sectors. Source: NASEO

Works Cited

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Buonicore, A. (2012). *Emerging Best Practice for Underwriting Commercially-Attractive Energy Efficiency Loans.* BEPAnews.

Fawkes, S. (2013, May 29). *Energy Efficiency Finance and Off Balance Sheet Treatment.* Retrieved June 25, 2013, from Slideshare: http://www.slideshare.net/guidofawkes/energy-efficiency-financing-and-off-balance-sheet-treatment

Hofmeister, S. (2013, 7 13). *Is EnergyRM's Metered Energy Efficiency Transaction Structure A Game Changer.* Retrieved from EDF Blog: http://blogs.edf.org/energyexchange/2013/07/08/is-energyrms-metered-energy-efficiency-transaction-structure-a-game-changer/#more-4465

Kim, C., O'Connor, R., Bodden, K., Hochman, S., Liang, W., Pauker, S., et al. (2012). *Innovations and Opportunities in Energy Efficiency Finance.* Wilson Sonsini Goodrich & Rosati.

Kind, P. (2013). *Disruptive Challenges: Financial Implication and Strategic Responses to a Changing Retail Electric Business.* Edisno Electric Institute.

Larsen, P., Goldman, C., & Satchwell, A. (2012). *Evolution of the U.S. Energy Service Company Industry: Market Size and Project Performance from 1990–2008.* Berkeley: Ernest Orland Lawrence Berkeley National Laboratory.

Managan, K., & Klimovich, K. (2013). *Setting the PACE: Financing Commercial Retrofits.* Institute for Building Efficiency, Johnson Controls.

PACENow. (2013). *Annual Report*. PACENow.

PGL and NBI. (2013). *Realizing the Energy Efficiency Potential of Small Buildings*. Preservation Green Lab of the National Trust for Historic Preservation and New Buildings Institute.

RF & DBCCA. (2012). *United States Building Energy Efficiency Retrofits: Market Sizing and Financial Models*. Rockefeller Foundation and Deutchsche Bank Climate Change Advisors.

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