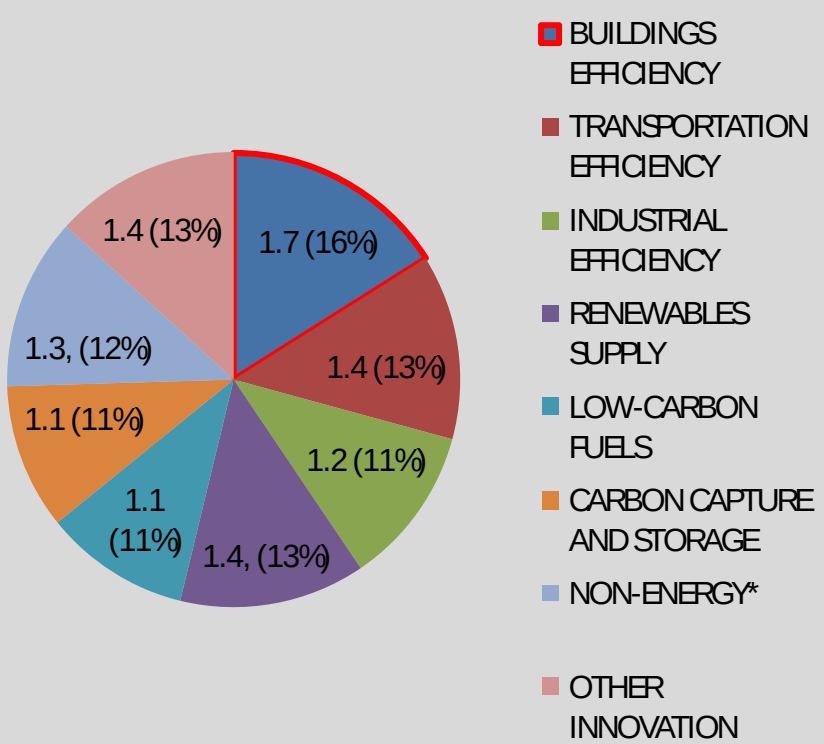
INNOVATIVE APPROACHES TO ENERGY EFFICIENCY INVESTMENT IN LARGE BUILDINGS

EqRM Equilibrium Resource Management Corporation

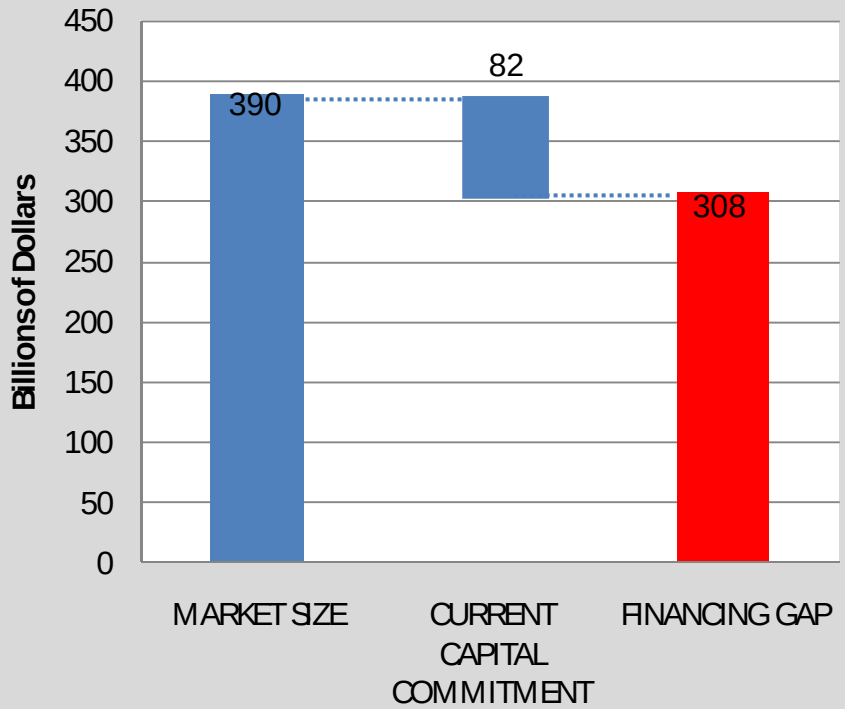
"UNLOCKING" ENERGY EFFICIENCY IN BUILDINGS PRESENTS A TREMENDOUS OPPORTUNITY – ADDITIONAL CAPITAL IS CRITICAL

U.S. ABATEMENT THROUGH 2050: BUILDINGS EFFICIENCY REPRESENTS 16% OF THE OPPORTUNITY



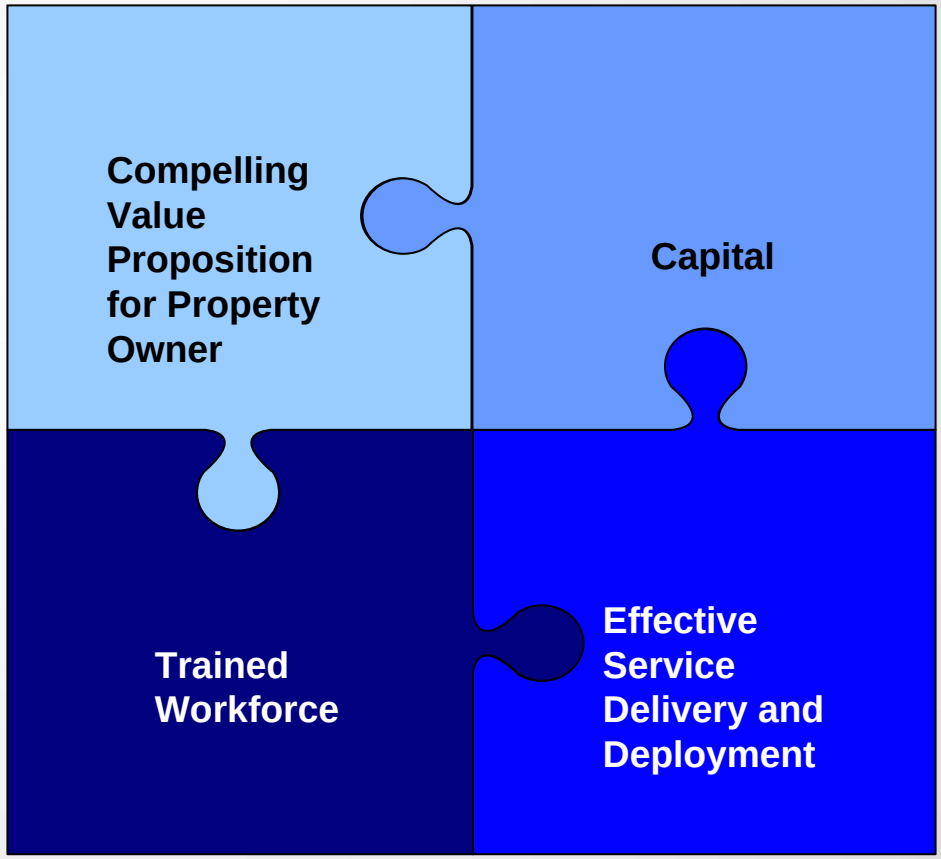
* Non-fossil fuel-related measures

FINANCING GAP BASED ON MCKINSEY ASSESSMENT OF POTENTIAL ENERGY EFFICIENCY BUILDING RETROFIT SPENDING THROUGH 2020



Courtesy of NRDC

ENERGY EFFICIENCY MARKETS DO NOT EXIST IN MOST BUILDING SEGMENTS TODAY - FOUR COMPONENTS ARE NEEDED



Courtesy of NRDC

Availability of investment capital is a necessary pre-condition, but not a sufficient solution.

ARRIERS THAT LIMIT INVESTMENT AND FINANCING TODAY

- Property owners are often **unwilling to commit capital** to non-core investments; structural and economic disincentives compound the challenge.
- Common **contractual terms** constrain both borrowers and lenders, if debt financing is an option.
- **Information limitations** reduce demand for and supply of financing by increasing (perceived) risk for property owners and investors.
- Investors perceive a **lack of investment opportunities** at scale with attractive returns, strong risk management and sufficient volume.

BARRIERS THAT LIMIT INVESTMENT AND FINANCING TODAY (detail)

Barriers	Description
Property owners are often **unwilling to commit capital** to non-core investments; structural and economic disincentives compound the challenge.	• 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. • 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. • The structure of many leases results in split incentives, making projects unattractive. • Transaction costs are high or perceived as high. • Energy cost savings may have limited impact on overall financial position.
Common **contractual terms** constrain both borrowers and lenders, if debt financing is an option.	• Conventional loans are unattractive to many borrowers; terms may be short, rates high and security requirements not feasible. • Pre-existing mortgage liens may render an efficiency loan subordinate to a significant amount of existing debt; existing mortgages often restrict additional debt financing. • Securing actionable liens against equipment can be problematic. • Real estate ownership vehicles often limit access to the business balance sheet. • Term limits often reduce scope of measures, thereby reducing efficiency gains, rendering projects less attractive and reducing financial impact.
Information limitations reduce demand for and supply of financing by increasing (perceived) risk for property owners and investors.	• Lack of transparent data on financial savings from efficiency measures make it difficult for owners to “pull the trigger” and lenders to underwrite loans. • Efficiency is not incorporated in most real estate valuation, limiting the value proposition for both property investors and lenders. • Limited track record on investment performance results in relatively high lender risk premiums.
Investors perceive a **lack of investment opportunities** at scale with attractive returns, strong risk management and sufficient volume.	• Volume of potential investable transactions is uncertain. • Many property owners and projects are not independently of investment grade quality, so traditional finance products do not offer appropriate risk / return profile. • Underwriting protocols and standardization of financing products are lacking. • Variations in energy consumption patterns introduce unfamiliar risks. • Currently very limited secondary market, so no liquidity.

CURRENT FINANCING OPTIONS FOR LARGE BUILDINGS ARE LIMITED

Financing Option	Description	Sectors	Experience	Limitations
Tax-exempt financing / performance contracting	Financing based primarily on borrower credit plus ESCO guarantee. Tax-exempt financing for municipal borrowers.	Federal buildings, "MUSH" market, public housing.	Applicability primarily for public sector borrowers, generally limited to investment grade credits.	On-balance sheet; impacts borrowing capacity; difficult to apply to privately held property.
Private conventional loans (no subsidy)	Conventional business loan or line of credit can be used to finance efficiency measures. Loans to businesses may be secured by lien on equipment and personal guarantees . This is on-balance sheet debt.	Theoretically available across sectors, however, limited applicability to many real estate ownership structures. Possibly an option (though not particularly attractive) for top-tier property owners and affluent single family homeowners.	Many borrowers have little or no interest in financing efficiency retrofits in this format, and lenders may have difficulty with underwriting.	Taking on debt for energy efficiency is often a non-starter; on-balance sheet debt is not attractive. Terms are short, interest rates high, and availability limited. Many property owners are debt-averse or constrained; those who are not often prefer to reserve borrowing capacity for essential projects.

URRENT FINANCING OPTIONS FOR LARGE BUILDINGS ARE LIMITED

Financing Option	Description	Sectors	Experience	Limitations
Conventional loans with subsidy	Conventional loan w/interest rate buy down, based primarily on borrower credit or business cash flow. Available in certain jurisdictions.	Depends on jurisdiction, but generally greater availability to multifamily and small businesses.	Mixed; some success in certain jurisdictions (e.g., NY) but subsidy generally not deep enough to drive scale. Though rate is reduced, fundamental unattractiveness of borrowing to fund efficiency remains.	Underwriting is eased due to reduced rate. However, may not be the most cost-effective form of subsidy. Ongoing availability of subsidy often uncertain. Loan terms limit applicability.
Self-financing	Owner pays for measures out of operating cash or capital improvement budget.	Available to cash-rich owners (major corporations, large private real estate investors, affluent individuals). Often used for owner occupied facilities, “flagship” properties, or to meet sustainability goals.	Generally speaking, uptake is slow and limited. Returns may be good, but less than what is available through “core” investments; holding periods insufficient; split incentives can interfere; lack of expertise or risk appetite for the investment is common.	Over time, better valuation of efficient real estate may improve the value proposition of this option, but today only a small % of the market can or will self-finance. Will tend towards investment in shorter payback measures; deep retrofits will be scarce.

NEW AND DEVELOPING INNOVATIONS FOR LARGE BUILDINGS

Financing Option	Description	Sectors	Examples	Pros & Cons
Property Assessed Clean Energy – PACE	Property owner agrees to a periodic property assessment, which amortizes the cost of improvements at an implicit interest rate over a period of years (10-20). Participation is voluntary. Project costs have been funded through issuance of either revenue or moral obligation bonds, or using public capital.	16 states have passed legislation; all allow for improvements on residential property, some include commercial / industrial. Principal focus of program development to date has been in residential and light commercial sectors. At least one mall roof and industrial projects have been completed in Sonoma.	Most advanced programs are in Sonoma County, CA, Boulder, CO and Palm Desert, CA. San Francisco recently announced a program. Numerous communities have programs under development; many (but not all) with a residential focus.	A creative repayment mechanisms that attaches to the property, provides new lenders strong security, permits long amortization and is readily financeable. Mortgage consent is likely required, "savings" risk remains with property owner, balance sheet treatment unclear.
Benefit Assessment or Municipal Service Charge	Functions much like PACE; however, is not property tax based. Can be levied for a "benefit" or a service, as opposed to a fixed amortization that equates to a finance charge. May offer flexibility in respect of enabling legislation.	Broad sector applicability in theory; has not been deployed to facilitate energy efficiency installations in large buildings at this time.	LIGH program established by the Town of Babylon is a good example; has been applied to homes to date; commercial applications are under consideration. Currently funded with solid waste fund.	A creative repayment mechanism that attaches to the property and facilitates financing; but does not represent a complete solution to large-scale building retrofits; "savings" risk remains with property owner.

NEW AND DEVELOPING INNOVATIONS FOR LARGE BUILDINGS

Financing Option	Description	Sectors	Examples	Pros & Cons
On-Bill Financing or Tariffed Installation (not new, but renewed focus underway)	Unsecured financing is originated by or through utility to fund efficiency measures, repayment on utility bill; obligation may or may not remain with the meter.	Broad applicability in theory; however, principal focus to date has been smaller scale projects. Typical loan sizes in the small to mid-range.	Examples include SDG&E, National Grid, Efficiency Vermont. Used in some states; good success in CA; otherwise penetration limited. New program under development in NY. Increased funding in CA.	Utility payment history generally used as credit assessment; can run with meter. Utility engagement limited to date; savings risk remains with property owner.
Mortgage Finance Products	Concept is to fund efficiency at mortgage origination or refinancing. However mortgage lending has historically not incorporated efficiency in underwriting or valuation. Lack of data and underwriting protocols remains a barrier.	Efficient mortgage products have been developed for residential properties and have funded new properties (but very limited penetration). Theoretically applicable to other sectors, particularly at the point of refinancing.	Community Preservation Corporation (CPC) in NY has announced a new efficiency program (coordinated with FHLMC). Other multifamily lenders are engaged in similar efforts. DB Foundation is spearheading a data tracking initiative with the objective of shifting current u/w practices, particularly in multifamily sector.	Mortgage lenders are a good source of long-term capital; existing secondary market implies good liquidity for lender. Best applicability to new properties and substantial rehabs. Underwriting protocols must be developed; project risk remains with borrowers; may be challenging to fund deep retrofits.

NEW AND DEVELOPING INNOVATIONS FOR LARGE BUILDINGS

Financing Option	Description	Sectors	Examples	Pros & Cons
Managed Energy Services Agreement (Transcend Equity)	No owner capital; no increase in tenant operating expense; TE pays building utility costs (historical + adjustments). Funded w/ third-party capital.	Principal focus to date has been commercial real estate. Designed to mitigate split incentive for leased real estate.	MESA has been deployed in several commercial buildings, with at least one REIT customer.	No impact on borrower's balance sheet; addresses split incentive; strong payment mechanism (utility bill).
Energy Services Agreement (Metrus Energy)	No owner capital; payments based on energy savings, thus equivalent to utility bill; promotes aggregated measures. Funded w/ third-party capital.	Principal focus is on industrial and commercial sectors.	First ESA announced by Metrus Energy in early 2010 for industrial facility.	No impact on borrower's balance sheet; pricing fixed w/ escalator so reduces operating expenses; strong repayment mechanism.
Energy Efficiency Power Purchase Agreement (Equilibrium RM)	No owner capital; building owner is paid for acting as project host; EqRM manages and maintains equipment; payment under PPA is for efficiency as energy, like utility bill. Funded w/ third party capital.	Institutional buildings and multifamily are initial focus. Class A commercial buildings and light commercial aggregates also feasible. Long term transactions preferred.	Initial projects under development.	No impact on owner balance sheet; M&V and O&M ensure persistence; strong repayment mechanism. Monetizes full value of efficiency as a utility resource thereby improving owner economics and enhancing ability to attract investors.

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POLICY MECHANISMS HAVE A ROLE

- **Credit enhancement** improves pricing of capital; mitigates against investment risk that is difficult to quantify or price; can facilitate access to additional pools of investment capital.
  - Title XVII potential developments
  - CEDA
  - opportunities at the state level

- **Revolving loan funds** use public funds to lend in sectors that provide a public good and cannot effectively be funded with private capital. Capital that would otherwise be granted is repaid and reused.
  - can “leverage” private capital by using public capital as reserve and issuing debt, up to 3:1
  - Toronto Atmospheric Fund is a good example of creative use of this mechanism

- **Municipal financing** can be used for green community programs, including private projects.
  - QECBs and Recovery Zone EDB
  - tax-exempt private activity bonds
  - communities may have concerns about debt ceilings/impact on ratings (depending on structure)

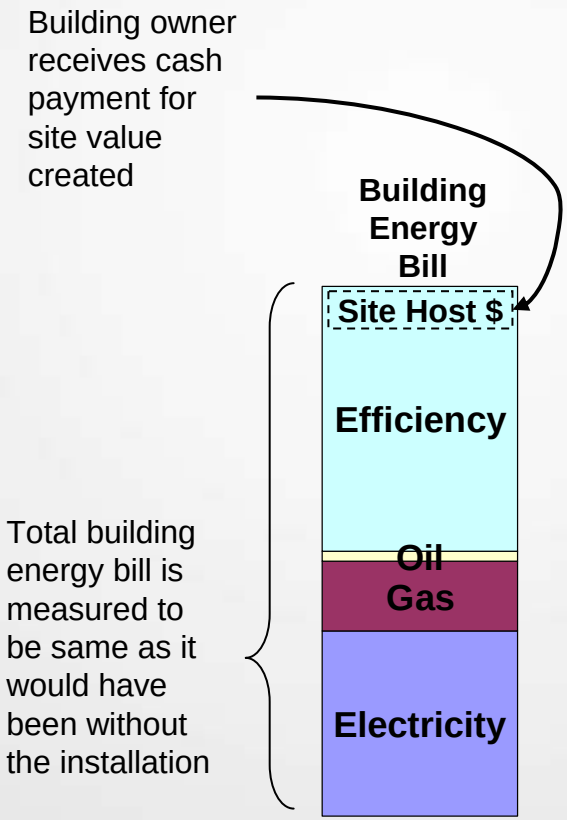
- **Additional mechanisms** include:
  - utility regulation
  - Incentives, subsidies, tax credits
  - accelerated depreciation
  - benchmarking and labeling
  - codes and standards
  - mandates

EQUILIBRIUM RESOURCE MANAGEMENT'S (EqRM) ENERGY EFFICIENCY POWER PURCHASE AGREEMENT

- **Utility eePPA^{tm} allows utilities to acquire energy efficiency as a utility-grade resource at utility-scale**
  - analogous to PPAs for other resources
  - EqRM commits to delivering a specific resource over a specific period
  - EqRM provides M&V (measurement and verification) based on a utility-grade standard (IPMVP)

- **Building owner eePPA provides "a no capital solution for a high-performance building"**
  - building owner commits to pay for energy supplied by efficiency, and receives a "site host" payment
  - EqRM pays for the efficiency generator to be installed
    - provides continuous commissioning
    - is responsible for capital maintenance

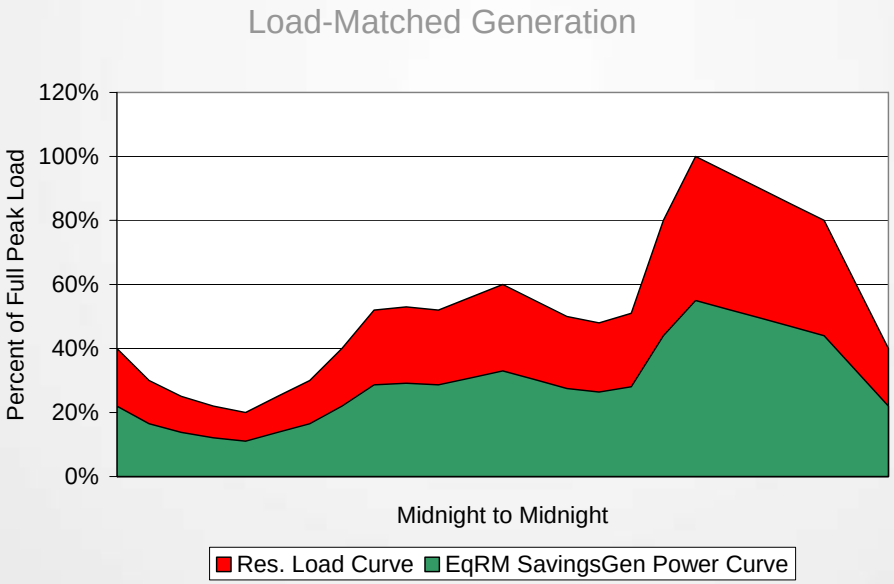
FOR BUILDING OWNERS, eePPA PROVIDES A NO-CAPITAL SOLUTION FOR A HIGH-PERFORMANCE, EFFICIENT BUILDING



Building owners pay for the efficiency energy they use -- and get operating and asset value

- **$$ as "site host"**
  - building owner receives a percentage of the value of efficiency generated
- **$$ in lower operating cost**
  - EqRM pays for capital maintenance of generators
  - EqRM pays to monitor, continuously commission
- **$$ in green building value**
  - higher net cash flow creates additional value
  - studies show market premium for rated buildings
- **And upside from demand response**

eePPA ALLOWS UTILITIES TO ACQUIRE ENERGY EFFICIENCY AS A MEASURABLE, VERIFIABLE, LOWEST-COST RESOURCE



- Utility-scale resource through aggregation of buildings
- Load matched -- highest output at peak demand
- Distributed -- no transmission or distribution build-out
- Zero carbon -- RPS and REC qualified in appropriate jurisdictions
- Long-term accountability and reliability at utility-grade standard

ENERGY EFFICIENCY IS ENERGY

A 500,000 sq ft building improved 50% adds **6.75 GWh annually** to the grid.

=

3 MW of wind generation adds **6.75 GWh annually** to the grid.

Image: Wikipedia

If you measure it, manage it and finance it as energy, you unlock the ability to deploy it at scale.

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