



# **ENERGY EFFICIENCY IN COMMERCIAL REAL ESTATE**

**OVERCOMING BARRIERS TO INVESTMENT IN BOSTON**











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A Better City is a diverse group of business leaders united around a common goal—to enhance Boston and the region's economic health, competitiveness, vibrancy, sustainability and quality of life. By amplifying the voice of the business community through collaboration and consensus across a broad range of stakeholders, A Better City develops solutions and influences policy in three critical areas central to the Boston region's economic competitiveness and growth: transportation and infrastructure, land use and development, and energy and environment.



The Boston Green Ribbon Commission is a group of business, institutional and civic leaders in Boston working to develop shared strategies for fighting climate change in coordination with the city's Climate Action Plan.

To view a hyperlinked version of this report online, go to [www.abettercity.org/docs-new/Energy\\_Efficiency\\_in\\_Commercial\\_Real\\_Estate.pdf](http://www.abettercity.org/docs-new/Energy_Efficiency_in_Commercial_Real_Estate.pdf).

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# ENERGY EFFICIENCY IN COMMERCIAL REAL ESTATE

## SUMMARY

Commercial real estate (CRE) properties in Boston<sup>1</sup> present a significant opportunity for energy efficiency investment, but these investments are constrained by financial and non-financial barriers. According to a recent state analysis, CRE buildings participated in efficiency programs at lower rates than other building classes. This paper synthesizes research on energy efficiency barriers and explores how these barriers may impact CRE properties in Boston based on factors such as ownership strategy, lease type, and building classification. (See Table 1, p. 11). The paper then identifies potential solution sets and programs which can overcome some of these barriers. (See Table 2, p. 15). Understanding these inter-relationships can:

- Help optimize energy efficiency investments across building classes in Boston
- Assist policymakers and program managers in designing programs and incentives
- Inform landlords and tenants and foster collaboration on efficiency strategies or pursuit of existing financing and program options

## INTRODUCTION AND CONTEXT

Boston's strategies for reducing its greenhouse gas emissions are guided by its Climate Action Plan. This action-oriented document lays out strategies and tactics sector-by-sector to achieve an aggressive target of a 25% reduction in greenhouse gas (GHG) emissions by 2020. In its 2014 Climate Action Plan, the City defined strategies for meeting a longer-term goal of an 80% reduction by 2050. At present, large buildings and institutions account for approximately 52.2% of the city's emissions.<sup>2</sup> Boston has committed to a 12.5% greenhouse gas reduction from large buildings and institutions by 2020.<sup>3</sup>

Organizations such as A Better City, a membership organization of companies with major Boston-based building portfolios, and the Boston Green Ribbon Commission, a coalition of private and institutional leaders, have worked to engage large buildings and



institutions to assist Boston in achieving its climate targets through programs such as the Challenge for Sustainability and sector-based working groups. Achieving both the 2020 and 2050 targets necessitates efficiency investments by large buildings and institutions.

One of Boston's key climate action strategies for large buildings and institutions is the development and implementation of a Building Energy Reporting and Disclosure Ordinance (BERDO). This ordinance requires energy and water usage disclosure for buildings above 50,000 square feet within the City. The first set of reporting data was made available to the public in 2015. The results indicated that CRE properties were second only to healthcare facilities in terms of energy usage and GHG emissions, accounting for 29% of reported emissions to the City of Boston, with the vast majority coming specifically from office properties (see Figure 1, p. 6). CRE properties in Boston have an exceptionally wide range of energy use intensities compared to other building types.<sup>4</sup> The factors that influence this range of energy use intensity include physical factors such as building age and size, but also a complex mix of institutional, financial, and contractual factors that are prevalent within the CRE industry.

## “COMMERCIAL REAL ESTATE PROPERTIES ARE A KEY AREA FOR THE CITY OF BOSTON TO ACHIEVE ITS CITYWIDE EMISSIONS REDUCTIONS TARGETS.”

CRE properties are a key area for the City of Boston to achieve its citywide emissions reductions targets and the factors that enable or constrain energy efficiency investment are therefore emerging as a policy priority.

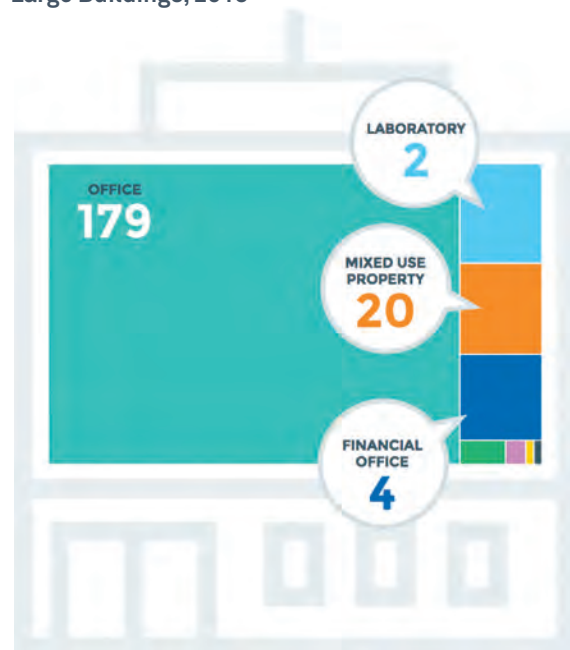
Concurrent with Boston’s focus on GHG reductions through increased energy efficiency, the investor-owned electricity and gas utilities in Massachusetts are implementing energy efficiency programs to achieve energy savings targets for the 2016–2018 planning cycle. The utilities have developed a suite of nationally recognized programs for both residential and commercial and industrial (C&I) accounts. In terms of the amount of savings generated by the electricity and gas efficiency programs, the residential and C&I sectors are roughly even.<sup>5</sup> At the same time, however, C&I accounts have received approximately 40% of the total amount spent by the utilities.<sup>6</sup> There remains significant opportunity to increase the amount of utility investment in C&I energy efficiency. Within C&I, there are also sharp differences between the types of properties that take advantage of energy efficiency programs. According to a recent statewide study, for example, CRE buildings were found to participate at approximately half the rate of non-CRE buildings in the efficiency programs.<sup>7</sup> This difference can partially be attributed to the heterogeneity of the CRE sector, which complicates program design. Differences between properties can come from, for example, split landlord-tenant incentives, lease lengths, and asset ownership strategy.

To help overcome these barriers, the Boston Green Ribbon Commission’s Commercial Real Estate Working Group,<sup>8</sup> represented by A Better City and Meister Consultants Group, participated in a working group convened by the State to develop

a Commercial Real Estate Roadmap with the utilities.<sup>9</sup> The state-level Commercial Real Estate Working Group was convened at the request of the Energy Efficiency Advisory Council (EEAC), which is a stakeholder working group to provide feedback on progress towards utility energy efficiency targets. The roadmap was designed to develop energy efficiency program options tailored to the commercial sector. It was integrated into the utility three-year plans, which outline utilities’ strategies to achieve efficiency targets. The roadmap called for the development of turn-key efficiency packages, tenant-focused strategies and increased availability of energy monitoring and dashboarding. In order to most effectively develop these and other CRE programs, **this briefing document seeks to inform CRE efficiency program developers, tenants, and landlords on strategies and potential gaps to increasing efficiency gains and GHG reductions from CRE properties.** This document contains:

- An overview of the most common barriers to energy efficiency investment in CRE
- A summary of the key characteristics and differentiators of CRE properties that may impact energy efficiency investment decisions
- An analysis of energy efficiency opportunities and challenges based on these characteristics

**FIGURE 1: Commercial Real Estate Greenhouse Gas Emissions from Energy and Water Use in Boston’s Large Buildings, 2013**





- An overview of innovative energy efficiency strategies and programs available in Boston, or developed in other markets across the country, for the CRE sector

## BARRIERS TO EFFICIENCY IN COMMERCIAL REAL ESTATE BUILDINGS

Analyses of buildings in the CRE sector have revealed a number of barriers to investment based on utility surveys, research by the American Council on an Energy Efficient Economy (ACEEE), and the findings of the State's Commercial Real Estate Working Group. **A summary of four of the main barriers identified through these studies includes:**

### SPLIT INCENTIVES

Many CRE properties are multi-tenant spaces. As such, tenants rent property from landlords under a leasing agreement. These agreements can vary in their length and terms. Leases for tenant space can come in two primary forms. A net or triple net lease (described further below) calls for tenants to pay for utilities, and thus building owners may have less of an incentive to invest in efficiency in tenant space. Under a gross lease, the landlord or owner pays all

utility bills, and thus tenants may not be incentivized to use energy efficiently unless this is reflected via their rents. Given these challenges, it can be difficult to make whole-building efficiency investments since incentives are split between the tenants and the building owners.

### FINANCING BARRIERS

Financing barriers to energy efficiency investments include high upfront capital costs, debt aversion, high development costs, and longer payback periods.<sup>10</sup> Property owners and tenants seeking to borrow money to finance energy efficiency upgrades may also be constrained by insufficient credit or collateral. To some extent, credit and collateral constraints may be overcome by making the energy efficiency projects themselves bankable through the use of

**“FINANCING BARRIERS TO ENERGY EFFICIENCY INVESTMENTS INCLUDE HIGH UPFRONT CAPITAL COSTS, DEBT AVERSION, HIGH DEVELOPMENT COSTS, AND LONGER PAYBACK PERIODS.”**





third-party performance guarantees (see ESCO and ESA discussions, p. 12).<sup>11</sup> The type and prevalence of financing barriers may also vary by building class. Class A buildings in Boston, which are described further below, are more likely to have pursued efficiency investments. ACEEE research finds that Class A buildings are typically able to self-finance energy efficiency projects using capital improvement budgets or have other financial avenues they can pursue.<sup>12</sup> Class B and C buildings, by contrast, tend to be more financially constrained and less able to pursue investments.<sup>13</sup>

#### **PERFORMANCE UNCERTAINTY**

Building owners and their staff may not fully understand energy efficiency opportunities, and tend to be risk averse. Building owners may be reluctant to invest in emerging efficiency technologies or technologies they have not previously used within their properties due to uncertainty about payback and performance.

#### **INSTITUTIONAL BARRIERS**

In all building types, institutional barriers may also prevent investments in energy efficiency, even where

access to financing is not a barrier. Executive leadership may not have enough information or confidence in energy efficiency projects to make an investment, or may not see it as a core issue or priority.<sup>14</sup> Even where executive leadership supports such investments, other staff, including building managers, IT, and maintenance staff need the capacity, staff time, and incentive to pursue projects.<sup>15</sup> The State Commercial Real Estate Working Group study also finds that time and/or a lack of resources are barriers to energy efficiency investment. The Environmental Defense Fund's Virtuous Cycle project examines this issue in further depth, and suggests that both management and staff must prioritize efficiency investments in order to institutionalize continuous efficiency improvements.<sup>16</sup>

The following sections will contextualize these barriers within the structure and language of the CRE sector. Specifically, the next section introduces the common building classification system used within the CRE sector, provides an overview of lease types, and details ownership structures. Each of these variables impacts the ability and interest of a building owner or tenant to invest in energy efficiency.



## COMMERCIAL REAL ESTATE PRIMER

### BUILDING CLASSIFICATIONS

While no regulatory body or standard exists to classify commercial buildings, a three category classification system is used within the industry. The Building Owners and Managers Association (BOMA) considers rents, building finishes, location, accessibility, building systems, amenities, efficiency, and market perception to define building classifications. In metropolitan areas, the three classifications are defined as:

**Class A:** Most prestigious buildings competing for premier office users with rents above average for the area. Buildings have high quality standard finishes, state of the art systems, exceptional accessibility and a definite market presence.

**Class B:** Buildings competing for a wide range of users with rents in the average range for the area. Building finishes are fair to good for the area, systems are adequate, and prices tend to be lower than Class A buildings.

**Class C:** Buildings competing for tenants requiring functional space at rents below the average for the area.<sup>17</sup>

Boston's CRE market contains a full range of property types within these three classifications. Class A properties in Boston comprise just over half the CRE square feet in Boston. They are more likely to be owned by large national or international investment trusts and will invest substantial resources in property upkeep. A previous study for the Green Ribbon Commission found that nearly 50% of Boston's large Class A building space qualified for either LEED or ENERGYSTAR certification, indicating that many Class A buildings are or have engaged in improving their energy performance.<sup>18</sup> Similarly, ACEEE research finds that Class A buildings have self-financed energy efficiency projects using capital improvement budgets or have other financial avenues they can pursue.<sup>19</sup> For Class A buildings that have not engaged in energy efficiency improvements, financing may not be the key barrier as much as institutional barriers.

Together Class B and C buildings comprise a large number of buildings in the city—well over 1,000—and have a lower average building size than Class A buildings. They often have fewer resources to devote to energy efficiency and may be owned by smaller investment companies or other disaggregated owners.

Class B and C buildings account for a diverse building stock and are much less likely to be ENERGYSTAR or LEED certified than Class A buildings in Boston. The Green Ribbon Commission's prior study found that approximately 5% of Class B commercial office space has a LEED or Energy Star certification. Interviews conducted for the Green Ribbon Commission found that their building owners and property managers have not generally taken advantage of energy retrofit opportunities that could be cost effective, and that their tenants may not be willing to pay a premium to invest in energy efficiency improvements.<sup>20</sup> They also are more likely to face credit constraints or to be capital constrained or debt averse.<sup>21</sup> Class B and C buildings may benefit more from specialized financial products for energy efficiency upgrades, particularly products that can address risk aversion and the performance uncertainty of energy efficiency savings.





## LEASE TYPES AND OWNERSHIP STRATEGY

Lease types influence incentives for investment in energy efficiency in the CRE sector. A commercial lease is a contract for the rental of a property that is developed between a landlord and the business using the property. Businesses often prefer leases since they require less capital than purchasing a property and allow for greater flexibility. Within the CRE sector, buildings are typically owner occupied, leased and managed by the owner, or leased and managed by a property management company.

**Split incentives** are a commonly identified challenge connected to lease structure, where the benefits of energy efficiency investments, in particular via lower utility bills, may not directly benefit the party making those investments.<sup>22</sup>

There are four overarching owner-lessor models that can impact who benefits from energy efficiency investments:

### Owner-Occupied Spaces

In an owner-occupied space, the builder owner pays utility bills and controls upkeep activities. They will likely be incentivized to pursue energy efficiency upgrades, provided they have a longer-term investment horizon.<sup>23</sup> Owner-occupants tend to be less sensitive to split incentives even if there are tenants in their building. Owner occupancy may also coincide with a longer-term lease strategy, such as a ground lease, which is discussed below.

### Net or Triple Net Lease<sup>24</sup>

In these two lease types, tenants pay utilities and thus building owners have less of an incentive to pursue efficiency investments than in owner-occupied arrangements as they are not responsible for utility bills and investments may not lead to higher rents. If the tenant pays for the upgrades, they will want to recoup the payback from their investment and therefore may be hesitant to invest in projects with long-term payback periods. One survey of Massachusetts CRE buildings found that just over half of leases had triple net leases and another 14% had net leases.<sup>25</sup> Another recent survey<sup>26</sup> found that triple net and net leases in Greater Boston typically include specific sharing allocations for energy improvements or more general clauses that allow landlords to recover common area building upgrade costs (which could include energy upgrades) from tenants. As a result, landlords and tenants are more likely to make energy efficiency investments under triple net and net leases than under prorated or gross leases (discussed below).

### Prorated Lease

Under a prorated lease, tenants pay a fixed monthly charge based on the projected utility costs and common area expenses. The charges are typically assessed proportional to the share of the building space occupied by the tenant. At the end of the year, the projected and actual charges are compared and the tenant is either credited for excess payments or charged an additional fee for underpayment of actual costs.

### Gross Lease

In a lease where the building owner pays the utilities (and the tenant generally pays a flat fee independent of usage), the owner will see the benefits of energy efficiency upgrades, but will need to access and temporarily disrupt the tenant space to make upgrades. Tenants are not incentivized to be energy efficient with this type of lease. Approximately a quarter of leases in the Commonwealth are gross leases,<sup>27</sup> whereas the share in Greater Boston has been estimated to be lower.<sup>28</sup>

Leases may be over the **long term or shorter term**.

In Massachusetts, nearly half of CRE leases are considered long term, lasting eight years or more.<sup>29</sup> Long-term leases can be structured as ground leases. Also known as land leases, a **ground lease** is a lease on the land and separates the ownership of the building from the land. They often last for up to 99 years, and that longer time horizon gives the owner of a building a strong incentive to invest in energy efficiency. In contrast, short-term leases (less than seven years) can provide less incentive for investing in energy efficiency, particularly for tenants, who may not be in a space for long enough to realize any savings benefit from investment. In Massachusetts, survey data showed that just over a quarter of commercial leases are between four and seven years long and approximately 20% are between one and three years.<sup>30</sup> The Massachusetts market also has approximately a 50-50 split between tenant and owner responsibility for utilities.<sup>31</sup>

Beyond the lease structure, the **ownership strategy** of the building owner will also impact their likelihood to invest in energy efficiency upgrades. Some building owners will buy, renovate and resell while others will buy and hold assets. Buildings can also be owner occupied. “Buy and hold” and “renovate and resell” strategies can make it easier to realize the longer-term financial payoffs of investing in energy efficiency.



## OVERVIEW OF IMPLICATIONS FOR ENERGY EFFICIENCY INVESTMENTS

Table 1 summarizes the different commercial real estate sector characteristics described above for building types, lease structure, and ownership and lease strategy described above and compares them to the common barriers to energy efficiency

investment identified in previous studies. The low, medium, high headings in the table indicate the strength of the barriers.

In general, **owners and tenants are more incentivized to pay for energy efficiency investments in areas in which they are directly impacted by energy usage.** Investment incentives are also impacted by the amount of time tenants or owners

**TABLE 1: Barriers to Efficiency by Commercial Real Estate Property Characteristics**

BUILDING TYPE	BARRIERS TO ENERGY EFFICIENCY INVESTMENTS	DIFFICULTY LEVEL TO OVERCOME BARRIER
Class A	<ul style="list-style-type: none"> <li>• Split incentive</li> <li>• Performance uncertainty</li> <li>• Institutional</li> </ul>	<p><b>LOW</b></p> <p>Many Class A buildings in Boston are already pursuing energy efficiency investments. Owner likely to pursue upgrades if efficiency is deemed valuable by market and building occupants. High likelihood of ENERGYSTAR or LEED certification in Boston.</p>
Class B and C	<ul style="list-style-type: none"> <li>• Financing</li> <li>• Split incentive</li> <li>• Performance uncertainty</li> <li>• Institutional</li> </ul>	<p><b>MEDIUM TO HIGH</b></p> <p>Solutions will require financing options and overcoming institutional barriers. Quick payback projects, and common-area upgrades expected under most common Boston-area lease scenario (triple net).<sup>32</sup></p>
LEASE STRUCTURE	BARRIERS TO ENERGY EFFICIENCY INVESTMENTS	DIFFICULTY LEVEL TO OVERCOME BARRIER
Owner occupied	<ul style="list-style-type: none"> <li>• Financing (depending on class)</li> </ul>	<p><b>LOW</b></p> <p>Depending on building class, more likely to pursue efficiency investments, especially with a longer hold strategy.</p>
Owner pays utilities	<ul style="list-style-type: none"> <li>• Financing (if Class B or C)</li> <li>• Performance uncertainty</li> <li>• Institutional</li> </ul>	<p><b>LOW TO MEDIUM</b></p> <p>Owner incentivized to make investments in common-area and tenant spaces if investment horizon is long enough.</p>
Tenant pays utilities	<ul style="list-style-type: none"> <li>• Split incentive</li> </ul>	<p><b>MEDIUM</b></p> <p>Will depend on lease length. Tenants likely to pursue investments in their spaces, but may be sensitive to payback based on lease terms. Owner likely to pursue common area upgrades.</p>
OWNERSHIP AND LEASE STRATEGY	BARRIERS TO ENERGY EFFICIENCY INVESTMENTS	DIFFICULTY LEVEL TO OVERCOME BARRIER
Long-term lease and ground lease	<ul style="list-style-type: none"> <li>• Split incentive</li> <li>• Institutional</li> </ul>	<p><b>LOW</b></p> <p>Owners and tenants more likely to accept longer payback projects.</p>
Buy and hold	<ul style="list-style-type: none"> <li>• Financing (if Class B or C)</li> <li>• Institutional barriers</li> </ul>	<p><b>LOW TO MEDIUM</b></p> <p>Owners using this strategy will be more incentivized to act on longer-payback investments, such as HVAC upgrades or windows.</p>
Short-term lease	<ul style="list-style-type: none"> <li>• Split incentive</li> <li>• Performance uncertainty</li> <li>• Institutional</li> </ul>	<p><b>MEDIUM</b></p> <p>Tenants incentivized to complete no-regrets efficiency actions during fit-outs.</p>
Short-term resale	<ul style="list-style-type: none"> <li>• Financing (if Class B or C)</li> <li>• Performance uncertainty</li> <li>• Institutional</li> </ul>	<p><b>MEDIUM</b></p> <p>Owner likely to pursue projects with a short time horizon for payback, such as lighting upgrades.</p>



intend to occupy or own space. In Massachusetts, tenants' expected payback periods for investments average 2.8 years, while property managers' targeted payback averages 3.7 years.<sup>33</sup>

**Given the prevalence of longer-term leases in Massachusetts, opportunities remain for encouraging long-term savings measures and in-depth efficiency projects through creative financing and incentive programs which overcome split incentives. CRE buildings, however, will need help overcoming institutional barriers and tools to overcome financing barriers such as debt aversion.**

## POTENTIAL STRATEGIES TO SUPPORT ENERGY EFFICIENCY INVESTMENTS

In recent years, many unique financing options and programs have emerged to address the four major barriers limiting commercial energy efficiency. Massachusetts contains leading utility and third-party programs which have begun to demonstrate the potential of commercial energy efficiency investments. For example, Eversource has developed a pilot program for multi-tenant properties, which provides additional incentives for common-area upgrades for property owners based on tenant participation in efficiency programs. This program creatively leverages its design to overcome split incentives prevalent in the CRE industry.

However, market inertia and institutional barriers remain, particularly in the case of Class B and C buildings, which warrant special attention, and where efficiency investments, ENERGYSTAR, and LEED certification are less prevalent. Existing strategies from other U.S. cities could be deployed more strategically to target certain CRE sector-specific barriers, but are not yet available in metro Boston. **These strategies and programs for energy efficiency in the CRE sector are outlined in detail below:**

### ENERGY SERVICE COMPANY (ESCO)

ESCOs are energy efficiency project developers who can engage in energy performance contracting. Under a performance contract, the ESCO provides a guarantee that energy conservation measures will generate the savings projected. Lenders are then able to use underwriting criteria that acknowledge the guaranteed cash flows from the energy efficiency measures to secure loans. ESCOs can therefore structure energy efficiency projects to be bankable on their own, which means that energy efficiency projects can be financed without having to add

debt to (or refinance) existing mortgages. Although this model can introduce additional flexibility for CRE energy efficiency, ESCOs have been most commonly used by the public sector in Massachusetts and nationwide. The City of Boston's [Renew Boston Trust](#) is working to develop a commercial-sector program on a 2- to 3-year timeline.

### ENERGY SERVICES AGREEMENT (ESA)

Energy services agreements allow third-party service providers to make efficiency upgrades and then pay utility bills directly on an owner's behalf in exchange for a monthly fee that repays the cost of the upgrades.<sup>34</sup> Upgrade costs can then be passed on to tenants by owners. The [Commonwealth of Massachusetts](#) presently offers guidance on constructing ESA RFPs under state procurement guidelines for public facilities. ESAs are a growing private- and public-sector offering, with innovative examples recently completed in cities such as New York City<sup>35</sup> and Chicago.<sup>36</sup> Although build/own/operate models such as ESAs are emerging as a viable and innovative option for structuring and securing energy efficiency financing, they can also be costly to organize and may be most suitable for special cases or large projects.

### EDUCATION AND OUTREACH

Building owners and their staff may not fully understand energy efficiency opportunities, and tend to be risk averse. Education and outreach from trusted third parties can assist in overcoming institutional barriers for all building classes. Specifically, programs such as the Environmental Defense Fund's [Virtuous Cycle](#) and [Investor Confidence Project](#) and A Better City's [Challenge for Sustainability](#) seek to address capacity barriers through staff, senior leadership engagement, and key financial stakeholders for change management. Eversource and National Grid also offer technical assistance and support towards efficiency goals for their larger customers through account executives and MOUs. These programs could potentially expand to work with smaller customers, including more Class B and C building owners or managers.

### GREEN LEASING

Green leasing, or energy-aligned leasing, enables sustainability priorities to be formalized in legal or building documents. Clauses can address split incentives between landlords and tenants relative cost recovery of efficiency investments, and sustainability certifications. Boston Properties also requires tenant energy use disclosure. In 2015, Boston Properties was named a national Green Lease Leader for enabling and encouraging efficiency



investments in multi-tenant spaces through its standard lease documents.<sup>37</sup> A Better City conducted research and held local forums regarding green leasing, and a guidance document is [available](#).

### ON-BILL FINANCING

In some states, low-interest loans are available for small business customers to pursue energy efficiency projects. These have zero to limited upfront costs, and loan repayment occurs through utility bills. States which offer on-bill financing include [New York](#), [California](#), [Connecticut](#), and [Massachusetts](#) (residential and small commercial), though Boston-area utilities do not currently offer this option.

### PACE

Commercial Property-Assessed Clean Energy (C-PACE) loans allows for long-term, low-interest financing of energy investments with repayments occurring through a special property tax assessment. Due to the property tax assessment, the loan stays with the commercial property even through changes in ownership. This can enable large energy efficiency investments to be financed with no money down. Connecticut has established a [C-PACE program](#), as its enabling legislation allows for a PACE program to be created at the state level after an enabling local ordinance. The program is administered by the CT Green Bank. The current Massachusetts legislation is set up differently and requires an

enabling local ordinance and local administration; this can be a significant time investment. As such, there has been limited PACE activity in Massachusetts to date.

PACE programs have also remained controversial following guidance from Fannie Mae and the Small Business Administration on the necessity of getting consent from senior lien holders before structuring a PACE program. They warned that failure to do so might impair the future transfer of property owners' titles. Whether from residential or commercial mortgage holders, consent has been sometimes difficult or impossible to obtain and so-called "forced consent" is the subject of ongoing litigation by the federal government.<sup>38</sup>

### REBATES

Rebates and grants are offered in Massachusetts to help reduce upfront costs of energy efficiency investments. Rebates for technologies can help demonstrate to building owners the value of efficiency investments for new and emerging technologies at lowered financial risk to themselves. These are available under [MassSave](#).

**“REBATES FOR TECHNOLOGIES CAN HELP DEMONSTRATE TO BUILDING OWNERS THE VALUE OF EFFICIENCY INVESTMENTS FOR NEW AND EMERGING TECHNOLOGIES AT LOWERED FINANCIAL RISK.”**







**“UTILITIES IN MASSACHUSETTS HAVE BEGUN TO DEVELOP PROGRAMS TARGETED AT EFFICIENCY IN TENANT SPACES, PROVIDING INCENTIVES ON INVESTMENTS AT THE TIME OF FIT-OUT.”**

### GREEN BANKS

Some states, such as New York and Connecticut, have developed green banks that finance clean energy projects. Green banks have been able to leverage public-sector funds to catalyze private-sector investment. Connecticut Green Bank programs have achieved public to private leverage ratios as high as 1:10. Green banks manage PACE financing, clean energy and efficiency loan and lease programs, and market development funding in other states.<sup>39</sup>

### TENANT FIT-OUT PROGRAMS

Utilities in Massachusetts have begun to develop programs targeted at efficiency in tenant spaces, providing incentives on investments at the time of fit-out. The [Sustainable Office Design](#) program in Massachusetts is targeted for new tenant fit-outs, and provides financial incentives to tenants or property managers and architects for lighting and controls. Additionally, the [Tenant Energy Efficiency](#)

[Program](#) pilot program is targeted for existing tenant space for lighting upgrades. Boston-area tenants can receive a free energy audit, and landlords are eligible for a series of incentives options if many tenants in their building participate in the program. Tenants participating in these programs may also be eligible for the new [TENANTSTAR](#) program, an energy disclosure program analogous to ENERGYSTAR for buildings.

With the range of new tenant-focused programs, there is an opportunity to engage large tenants within Boston about energy efficiency investments. **Historically, tenant outreach has been conducted on a building-by-building basis. Given the increasing number of large corporations with energy and sustainability targets, however, there is an opportunity to approach national retail chains (e.g. coffee shops) about making energy efficiency investments for their entire portfolio of leased space citywide.**

Table 2 summarizes the energy efficiency programs described above and the barriers they can help address. A further table follows in the Appendix (p. 16) which maps these strategies to the CRE characteristics presented in the previous table.



**TABLE 2: Energy Efficiency Strategies and Barriers Matrix**

STRATEGIES	SPLIT INCENTIVES	FINANCING BARRIERS	UNCERTAINTY ABOUT PROJECT PERFORMANCE	INSTITUTIONAL BARRIERS
Energy performance contracting (ESCOs)		●	●	
Energy services agreement	●	●	●	
Education and outreach	●			●
Green leasing	●			●
PACE		●		
On-bill financing	●		●	● (utility seen as trusted partner)
Rebates	●	●	●	
Tenant fit-out incentives	●		●	●

## CONCLUSION

As discussed above, products and programs in Massachusetts have been developed to serve CRE energy efficiency, and further program enhancements are forthcoming. However, given the diversity of buildings and management strategies in the CRE sector, a broad portfolio of solutions must be accessible to achieve emissions reductions across Boston’s building stock.

As the State moves into a new efficiency planning cycle and Boston aims for its 2020 and 2050 climate targets, energy efficiency program planners, tenants, and landlords should consider the underlying CRE structure, barriers associated with these characteristics, and tailored programmatic strategies for overcoming those barriers when considering and designing efficiency investments. These factors should be considered when designing efficiency programs for commercial customers as part of the CRE Roadmap implementation and by individual tenants and property owners interested in collaborating on efficiency opportunities. This could enable further investments across the CRE sector but in particular Class B and C buildings, which have traditionally trailed Class A buildings in efficiency investments.

A Better City is working collaboratively with Eversource and the City of Boston to continue to grow and foster tenant participation in energy efficiency programs. This process can deliver energy efficiency savings to utility customers and improve BERDO performance across building classes. In 2016, A Better City’s work will include focus groups, a tenant efficiency guidebook and workshops with property owners to utilize upcoming online utility tools to increase efficiency program participation. A Better City will also continue to be engaged with the work of the Energy Efficiency Advisory Council at the state-level. Analogous partnerships and creative approaches to fostering energy efficiency throughout property types will be needed across the City to achieve 2020 climate targets.

By developing a network of strategies, energy efficiency opportunities and savings will become more achievable in the commercial sector, paving the way for achievement of the City of Boston’s and Commonwealth’s ambitious building energy efficiency and GHG emission reduction goals.

# APPENDIX

## CHART OUTLINING, BARRIERS, SECTOR TYPES AND SOLUTIONS

BUILDING TYPE	BARRIERS TO ENERGY EFFICIENCY INVESTMENTS	DIFFICULTY LEVEL TO OVERCOME BARRIER	RELEVANT STRATEGIES
Class A	<ul style="list-style-type: none"> <li>• Split incentive</li> <li>• Performance uncertainty</li> <li>• Institutional</li> </ul>	<p><b>LOW</b></p> <p>Many Class A buildings in Boston are already pursuing energy efficiency investments. Owner likely to pursue upgrades if efficiency is deemed valuable by market and building occupants. High likelihood of ENERGYSTAR or LEED certification in Boston.</p>	<ul style="list-style-type: none"> <li>• Green leasing</li> <li>• ESCOs and ESAs</li> <li>• Tenant incentives</li> </ul>
Class B and C	<ul style="list-style-type: none"> <li>• Financing</li> <li>• Split incentive</li> <li>• Performance uncertainty</li> <li>• Institutional</li> </ul>	<p><b>MEDIUM TO HIGH</b></p> <p>Solutions will require financing options and overcoming institutional barriers. Quick payback projects, and common-area upgrades expected under most common Boston-area lease scenario (triple net).<sup>32</sup></p>	<ul style="list-style-type: none"> <li>• Rebates</li> <li>• Tenant fit-out incentives</li> <li>• Education and outreach</li> <li>• On-bill financing</li> <li>• PACE financing</li> </ul>
LEASE STRUCTURE	BARRIERS TO ENERGY EFFICIENCY INVESTMENTS	DIFFICULTY LEVEL TO OVERCOME BARRIER	RELEVANT STRATEGIES
Owner occupied	<ul style="list-style-type: none"> <li>• Financing (depending on class)</li> </ul>	<p><b>LOW</b></p> <p>Depending on building class, more likely to pursue efficiency investments, especially with a longer hold strategy.</p>	<ul style="list-style-type: none"> <li>• PACE</li> <li>• On-bill financing</li> <li>• ESCOs</li> <li>• ESAs</li> </ul>
Owner pays utilities	<ul style="list-style-type: none"> <li>• Financing (if Class B or C)</li> <li>• Performance uncertainty</li> <li>• Institutional</li> </ul>	<p><b>LOW TO MEDIUM</b></p> <p>Owner incentivized to make investments in common-area and tenant spaces if investment horizon is long enough.</p>	<ul style="list-style-type: none"> <li>• Green leasing</li> <li>• PACE</li> <li>• On-bill financing</li> <li>• Rebates</li> </ul>
Tenant pays utilities	<ul style="list-style-type: none"> <li>• Split incentive</li> </ul>	<p><b>MEDIUM</b></p> <p>Will depend on lease length. Tenants likely to pursue investments in their spaces, but may be sensitive to payback based on lease-terms. Owner likely to pursue common area upgrades.</p>	<ul style="list-style-type: none"> <li>• Tenant efficiency programs</li> <li>• Green leasing</li> </ul>



OWNERSHIP AND LEASE STRATEGY	BARRIERS TO ENERGY EFFICIENCY INVESTMENTS	DIFFICULTY LEVEL TO OVERCOME BARRIER	RELEVANT STRATEGIES
Long-term lease and ground lease	<ul style="list-style-type: none"> <li>• Split incentive</li> <li>• Institutional</li> </ul>	<p><b>LOW</b></p> <p>Owners and tenants more likely to accept longer payback projects</p>	<ul style="list-style-type: none"> <li>• Green leasing</li> <li>• Education and outreach</li> </ul>
Buy and hold	<ul style="list-style-type: none"> <li>• Financing (if Class B or C)</li> <li>• Institutional barriers</li> </ul>	<p><b>LOW TO MEDIUM</b></p> <p>Owners using this strategy will be more incentivized to act on longer-payback investments, such as HVAC upgrades or windows.</p>	<ul style="list-style-type: none"> <li>• Education and outreach</li> <li>• ESCOs and ESAs</li> <li>• PACE</li> </ul>
Short-term lease	<ul style="list-style-type: none"> <li>• Split incentive</li> <li>• Performance uncertainty</li> <li>• Institutional</li> </ul>	<p><b>MEDIUM</b></p> <p>Tenants incentivized to complete no-regrets efficiency actions during fit-outs.</p>	<ul style="list-style-type: none"> <li>• Rebates</li> <li>• Tenant efficiency programs</li> <li>• Education and outreach</li> <li>• PACE</li> </ul>
Short-term resale	<ul style="list-style-type: none"> <li>• Financing (if Class B or C)</li> <li>• Performance uncertainty</li> <li>• Institutional</li> </ul>	<p><b>MEDIUM</b></p> <p>Owner likely to pursue projects with a short time horizon for payback, such as lighting upgrades.</p>	<ul style="list-style-type: none"> <li>• Rebates</li> <li>• Tenant efficiency programs</li> <li>• Education and outreach</li> <li>• PACE</li> </ul>



## ENDNOTES

- 1 For the purposes of its Building Energy Reporting and Disclosure Ordinance, the City of Boston includes offices, financial offices, mixed use properties, and laboratories in its definition of commercial real estate. This report also uses this definition, unless otherwise noted. Other large building types classified under BERDO, such as hospitals, higher education facilities, hotels, etc. are not grouped as commercial real estate.
- 2 For the purposes of its Climate Action Plan, the City of Boston includes commercial buildings, industrial facilities, universities and hospitals, cultural institutions, and civic facilities in the definition of large buildings and institutions. See Greenovate Boston. [2014 Climate Action Plan—Greenhouse Gases](#). 2015.
- 3 Greenovate Boston. [2014 Climate Action Plan—Large Buildings and Institutions](#).
- 4 City of Boston. [Energy and Water Use in Boston's Large Buildings, 2013](#). August 2015.
- 5 Data drawn from the MassSAVE program. See [MassSAVE](#).
- 6 Ibid.
- 7 DNV GL. [Massachusetts Commercial Real Estate Survey Analysis—Final Report](#). March 18, 2015. It is important to note that DNV GL defines commercial real estate as “buildings that were leased (in whole or in part) to tenants and managed by owners/landlords or by property managers.” Non-CRE buildings were defined as “owner-occupied buildings.” This definition of commercial real estate is different from the manner in which the City of Boston defines commercial real estate for the purposes of BERDO.
- 8 The Green Ribbon Commissions Commercial Real Estate Working Group is a group of leading Boston property owners who are working to help the city meet the aggressive GHG reduction goals in its Climate Action Plan.
- 9 State Commercial Real Estate Working Group. [Commercial Real Estate Working Group—Final Report](#). May 2015.
- 10 Environmental Defense Fund. [Show Me the Money: Energy Efficiency Financing Barriers and Opportunities](#). July 2011.
- 11 Milton Bevington and Christopher Seeley. [Making Energy Efficiency Bankable: Lessons Learned from a Global Market Transformation Effort](#). Proceedings of the ACEEE Summer Study on Energy Efficiency in Buildings. 2012.
- 12 American Council for an Energy-Efficient Economy. [Financing for Multi-Tenant Building Efficiency](#). August 2013.
- 13 Ibid.
- 14 UNEP Financing Initiative. [Commercial Real Estate: Unlocking the Energy Efficiency Investment Retrofit Opportunity](#). February 2014.
- 15 IEA-Renewable Energy Technology Deployment. [Tapping the Potential of Commercial Prosumers](#). January 2016.
- 16 Environmental Defense Fund Climate Corps. [The Virtuous Cycle of Strategic Energy Management](#). 2012.
- 17 Building Owners and Managers Association International. [Building Class Definitions](#). Accessed on December 29, 2015.
- 18 Prepared for the Green Ribbon Commission by the Waypoint Building Group. [Market Assessment of the Largest 55 Commercial Buildings in Boston](#). March 2012.
- 19 American Council for an Energy-Efficient Economy. [Financing for Multi-Tenant Building Efficiency](#). August 2013.
- 20 Prepared for the Green Ribbon Commission by the Waypoint Building Group. [Market Assessment of the Largest 55 Commercial Buildings in Boston](#). March 2012.
- 21 American Council for an Energy-Efficient Economy. [Financing for Multi-Tenant Building Efficiency](#). August 2013.
- 22 IEA-Renewable Energy Technology Deployment. [Tapping the Potential of Commercial Prosumers](#). January 2016.
- 23 American Council for an Energy-Efficient Economy. [Adapted from: Financing for Multi-Tenant Building Efficiency](#). August 2013.
- 24 In a net lease, building owners passthrough some of the building operating costs to tenants in addition to rent (usually property taxes). Triple net leases pass almost all of the costs to tenants.
- 25 State Commercial Real Estate Working Group. [Commercial Real Estate Working Group—Final Report](#). May 2015.
- 26 Opinion Dynamics. [Energy Efficiency Decision-Making in the Massachusetts Commercial Real Estate Market—Final](#). May, 2014.
- 27 Ibid.



## PHOTO CREDITS

- 28 The Opinion Dynamics study found that just 10% of the leases from the sample surveyed in Greater Boston were gross leases. The remainder were triple net (47%) and prorated (43%).
- 29 DNV GL. [Massachusetts Commercial Real Estate Survey Analysis—Final Report](#). March 18, 2015.
- 30 The remaining five percent of leases were month-to-month leases. Ibid.
- 31 DNV GL. [Massachusetts Commercial Real Estate Survey Analysis—Final Report](#). March 18, 2015.
- 32 State Commercial Real Estate Working Group. [Commercial Real Estate Working Group—Final Report](#). May 2015.
- 33 DNV GL. [Massachusetts Commercial Real Estate Survey Analysis—Final Report](#). March 18, 2015.
- 34 ESAs, together with variants such as managed energy services agreements (MESAs) are sometimes grouped together under the broader heading of managed utilities. See Bevington & Seeley (2012). See also Ecomotion. [Energy Service Agreements, A White Paper by Ted Flanigan](#). April 20, 2015.
- 35 NYCEEC. [125 Maiden Lane](#).
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- 37 Boston Properties. [Sustainability](#). 2016.
- 38 Federal Housing Finance Agency. [Statement of the Federal Housing Finance Agency on Certain Super-Priority Liens](#). December 22, 2014.
- 39 Belden, A., Clemmer, S. and Wright, K. [Financing Clean Energy—Cost-Effective Tools for State Compliance with the Clean Power Plan](#). Union of Concerned Scientists. July 2015.
- 40 State Commercial Real Estate Working Group. [Commercial Real Estate Working Group—Final Report](#). May 2015.

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