

Office Leases & Landlord Investment in Energy Efficiency

by

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B.S., Construction Management (2002)

Wentworth Institute of Technology

Submitted to the Department of Architecture  
in Partial Fulfillment of the Requirements for the Degree of  
Master of Science in Real Estate Development

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## **ABSTRACT**

What is the relationship between the structure of leases in the Boston office rental market and how much landlords invest in energy efficient building systems for their existing buildings? I am drawn to this question because it seems to me that there is technology available that would allow the operation of for-rent office buildings to be more efficient in their consumption of energy than they currently are. I investigate this question with the hope that by characterizing the problem, we can start to solve it. To this end, I interview 35 players in the real estate market in Boston in order to determine the relationship between leases and landlord investment in energy efficiency, and if there is any way to increase such investment.

The most significant finding of this study is that the lease does not determine the way the market works, rather the market determines the way the leases are written. The result at this time for the Boston market is that leases simply do not incentivize the landlords to make investments in energy efficiency because the tenants do not want to pay for the landlords to do it. The landlords are unable to make significant profit from these upgrades due to existing recapture clauses and operating expense allocation in existing leases, and the payback period on many of these investments does not satisfy the investment horizon of many commercial landlords. They lack pressure and motivation from their tenants, as evidenced by the tenants' refusal to pay higher rents for more efficient buildings. Finally, there is no perception of a premium, in the form of a lower cap rate, paid by the capital markets at the time of sale.

This is a very complex issue, with no single, clear resolution. There have been many suggestions as to how this problem may be solved, ranging from a complete change in lease structure, to government intervention through efficiency mandates or taxes, to a laissez faire stance that will allow the market to take care of the problem. I think that none of these in isolation will solve the problem, but that a combination of them all may ameliorate many of the issues. Perhaps the best combination would be to mandate performance or to tax excessive consumption while at the same time developing leases that better address how to share costs and benefits. By doing this, we will set appropriate minimum goals, and provide suitable tools to achieve them. Without both of those pieces, it seems unlikely that much progress will be made.

Thesis Supervisor: Lynn M. Fisher

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## **BIOGRAPHICAL NOTE**

I am a native of the Boston, MA area, and hold a Bachelor of Science degree in Construction Management from the Wentworth Institute of Technology in Boston. I have been in the construction and project management field for more than 10 years, working for both contractors and real estate service firms in Florida and Massachusetts. For the last year, I have been pursuing my Master of Science degree in Real Estate Development at the Center for Real Estate at the Massachusetts Institute of Technology in Cambridge, MA.

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- The faculty and staff of the Center for Real Estate at MIT for guiding me through this process and keeping me on track throughout.
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## **CHAPTER 1 – INTRODUCTION**

What is the relationship between the structure of leases in the Boston office rental market and how much landlords invest in energy efficient building systems for their existing buildings? That is the question at the heart of this thesis. It is not meant to be a thesis about energy technology per se, but the motivations and incentives behind investing in it.

I am drawn to this question because it seems to me that there is technology available that would allow the operation of for-rent office buildings to be more efficient in their consumption of energy than they currently are. There are technologies that seem to pay for themselves, in terms of gross dollars spent for purchase and installation compared to gross dollars saved in operation. Further, the investment recapture seems to happen in relatively short periods of time. Yet landlords seem to be slow to invest in energy efficient upgrades to their buildings' systems. Is this because they do not know about these technologies? Is it because they do not want to save money? Is it because there is an incentive problem? I propose that it is the last of these potential theories that causes the lack of investment.

I investigate this question with the hope that by characterizing the problem, we can start to solve it. To this end, I interview 35 players in the real estate market in Boston in order to determine the relationship between leases and landlord investment in energy efficiency, and if there is any way to increase such investment. Chapter 2 outlines the scope of the study and defines what types of buildings, energy consumption and upgrades are being considered. Chapter 3 reviews and analyzes the existing literature related to the question at hand. Chapter 4 outlines the data required and the method I use to collect that data. Chapter 5 delves into the interviewees' perceptions of investment in energy efficiency currently made by owner-occupiers compared to the investment made by commercial landlords, and their differing motivations. Chapter 6 summarizes the historical and current structure of leases in Boston. Chapter 7 reports the interviewees' thoughts on the landlords' motivation to investment in energy efficiency, as well as the inferences I have drawn from those findings. Chapter 8 describes the interviewee's reactions to proposed changes in the existing structure, as well as my thoughts on what might succeed in changing the status quo. Chapter 9 summarizes the findings and concludes the report.

## **CHAPTER 2 – SCOPE OF STUDY**

### **Product Type**

There are many different types of buildings and leases, but I have chosen to focus on the following types: existing, multi-tenant office buildings in the Boston market, in both downtown and suburban locations, and of varying quality in both Class A and Class B. Existing, multi-tenant buildings represent the vast majority of the building stock, and therefore offers a representative sample group. Also, by investigating only existing buildings, I have ruled out new developments that are forced by code to be more energy efficient. Excluding uses other than general office creates a homogenous tenant base with similar usage characteristics and lease structures. A single city was selected to constrain the general form of the lease and the market conditions. Boston, specifically, was chosen for two reasons: my existing contact base and physical location facilitated setting up interviews here, and the average age for office buildings in Boston is 25 years, old enough for the existing building systems to be candidates for replacement. By keeping the location and quality factors broad, I was exposed to a wider variety of interviewees, thereby allowing me to view many facets of the same situation. For further clarification of terms relevant to these classifications, see Appendix A for Building Terminology and Appendix B for Lease Terminology.

### **Energy Consumption**

I have chosen to focus on energy consumption as a subset of the larger category of sustainability issues. Sustainability is the latest buzz word in the industry, and receives much attention in the media. But many aspects of sustainability are difficult to measure. Energy efficiency on the other hand, is relatively straight forward to measure: Does the investment save money in operations?

Energy consumption in a building can be separated into two categories: direct consumption by occupiers and the consumption by the building systems. While this thesis will focus on the consumption by building systems, it is important to distinguish between the two.

#### *Direct Consumption*

More specifically, direct consumption is the consumption of energy within the leased space, solely at the tenant's discretion. It is often paid directly to the utility company by the tenant, or is separately metered and is a pass-through expense based on actual consumption. Examples would include the electricity consumed by lighting within the tenant space or by the tenant's office equipment. I will not focus on this portion of energy consumption within a building, because the action reducing the consumption is performed by the same party that will realize the benefit, therefore removing the incentive issue.

#### *Building System Consumption*

On the other hand, building system consumption is the consumption of energy by the systems within the building that serve many or all of the tenants of the building. Examples include the operation of the central HVAC systems (chillers, cooling towers, furnaces, etc.), hot water heaters for the core bathrooms, common area lighting, life safety systems, elevators, exterior and site lighting. These systems are installed, operated and maintained by the landlord. The cost of installing or replacing these

systems is typically not billable to the tenant, but is required by the lease to be provided by the landlord at the landlord's cost. The energy consumption of these systems is not easily parsed out to individual tenants through an actual consumption method, because of their common-use nature. Therefore, the costs of operating these systems are typically meted out pro rata, that is, based on square footage occupied by each tenant as a portion of the square footage of the entire building.

### **Building Systems Upgrades**

Through my research, I have identified a hierarchy of upgrades that could be considered by landlords to increase energy efficiency of their buildings. They are listed below in ascending rank of ease and cost of implementation. This order also considers that as you implement the earlier steps, the later steps become more effective in saving energy by taking advantage of the earlier steps.

#### *Recommissioning*

Recommissioning consists of periodically inspecting and testing the building equipment, systems and maintenance in order to ensure that they are meeting the design goals and operating as efficiently as possible. By optimizing the way the existing systems operate, their efficiency can often be increased without substantial capital investment in new equipment. This could include rebalancing HVAC systems, cleaning or changing filters, maintaining motors, and updating operating schedules to account for changes in environmental factors such as seasonal changes in temperature or hours of daylight.

#### *Lighting Upgrades*

Lighting Upgrades entail replacing common area, exterior, site, and life safety lighting with more efficient equipment to minimize consumption of energy by these systems, while still providing the same or better lighting level.

#### *Controls Upgrades*

Another potential upgrade is to improve the controls of the lighting and HVAC systems so that they are more efficient in their consumption of energy. Examples include motion sensors on lights in the bathrooms, programmable HVAC controls, or more sensitive environmental monitors.

#### *Supplemental Load Reduction*

Reducing the need for heating and cooling can come from two main sources. First, equipment within the building that produces less heat needs less cooling. Second, building modifications such as additional exterior insulation, reflective roofs, and window films can reduce heat transfer, also reducing the need for cooling and heating.

#### *Distribution Improvements*

Further, upgrades to the distribution system can be made to minimize the loss or waste of energy in distributing heating, cooling and water throughout the building. First, insulation can be used to reduce heat transfer during distribution. Second, more efficient pumps and fans can be installed to distribute the water and air through the building.

### *Plant Improvements*

The most costly and inconvenient, but potentially the most effective category of building system upgrades is plant improvements. These investments consist of replacing boilers, cooling towers, chillers, etc. By implementing these improvements last, they can be appropriately sized to account for the reduction in demand created by the previous upgrades.

## CHAPTER 3 – REVIEW OF LITERATURE

Nothing in the existing literature addresses the specific topic of the lease structure's effect on commercial landlord investment in energy efficiency for existing buildings. Below is a summary of some relevant and related studies pertaining to this subject, as well as a description of the manner in which they fall short of answering the question at hand.

### **General Incentive & Motivation**

I looked to the literature of general business to develop some guidelines about incentive and motivation problems that occur during any transaction or negotiation. They fall into four general categories: free rider problems, transaction costs, costly information, and agency problems. These four problems are all found in the negotiation of a lease as it pertains to energy efficiency, but the literature is not specific to this scenario.

Brickley, Smith, and Zimmerman (2000) discuss an issue of motivation they term the "free-rider" problem. This occurs when there are multiple partners in an effort that has costs and benefits. They postulate that each party in such a situation has an incentive to shirk their duties. "Individuals gain the full benefit of their shirking but bear only part of the cost." (p.244). In real estate, this can be applied to paying for an energy efficiency upgrade. If there is the potential for a savings by reduced energy consumption, each potential beneficiary would rather let someone else make the investment and still reap the benefit. Since each party is waiting for another to make the investment, it never gets done. Part of this problem is that once the investment is made, there is no feasible way to exclude the other beneficiaries from receiving the benefit because of the common nature of building systems. "Free-rider problems are common in most group activities and, if left unchecked, greatly reduce the output of teams." (p.244). This plays into decisions of investing in efficiency because the nature of shared benefits reduces individuals desire to contribute to creating those benefits.

Brickley et al. (2000) also found that there are transaction costs associated with every negotiation. They discuss the fact that sometimes contracts (specifically in our case, leases), can "...resolve incentive problems at low cost." (p. 248), but that "...contracts in practice are not costless to negotiate, write, administer, or enforce" (p. 248) and that the "legal fees alone can be substantial for writing and enforcing contracts..." (p. 248). We can apply these theories to whether the savings created by efficiency upgrades are perceived to have a higher value than the cost of creating new contracts, or of re-negotiating existing leases, to deal with the distribution of costs and benefits. Also, as the number of leases within a building increases, the overall transaction costs are expected to increase because the number of separate negotiations likewise increases.

Another one of the problems Brickley et al. (2000) recognized in negotiating a lease is that there is costly information required when writing contracts. Often there is asymmetrical information available to the parties, that is, one party knows much more about the topic at hand than the other. This might be represented by the landlord having a much better understanding of the building's current operation and the potential for improvements in energy efficiency that the tenant does. Additionally, because of the lack of perfect information, it is often hard to write a perfect contract to address the unknowns. In our

situation, this might be that because the potential upgrades, and their costs and benefits, are unknown, it may be difficult to address it properly in a lease now.

Brickley et al. (2000) further documented that a major informational problem exists after the contract is written. When a contract is written, “one party, the principal, engages another party, the agent, to perform some service on the principal’s behalf.” (p. 248). This could be the tenant engaging the landlord to provide it with office space. But there are “agency problems... After the contract is set, agents have incentives to take actions that increase their well-being at the expense of the principals.” (p. 248). This problem suggests that the landlord may manage the building in a way that benefits the landlord, at the expense of the tenant. In particular, the landlord might not make upgrades that would save the tenant operating expenses because the contract in place does not provide appropriate incentives to do so.

### **Real Estate**

The existing literature focused on real estate addresses both energy efficiency and motivation in leases, but only fleetingly refers the interplay of the two. It does recognize the agency problem, but fails to address some of the deeper issues of transaction costs, asymmetric information and free-rider problems we saw above.

### **Energy Efficiency**

#### *Investment in Energy Efficiency: Owner-Occupied vs. For Lease*

Carmichael, Fluhrer and Bonnet (2008) address the propensity for owner-occupiers to invest in energy efficiency upgrades. They state “In owner-occupied facilities, it is easy to justify the incorporation of high-performance building features because commonly recognized hard and soft benefits (cost savings, productivity gains, improved occupant health, etc.) are directly recovered by the investment entity” (p. 1). They go on to say “Thus far, government-, institution- and corporate-owned and operated buildings have led the movement while commercial multi-tenant office and retail facilities have been slow to follow. Although there are structural hurdles generated by existing leasing structures, the industry’s misperception of the processes to realize the benefits of high performance multi-tenant spaces is the primary reason for the lack of multi-tenant high performance buildings.” (p. 1). Although this suggests that the motivations of owners-occupiers as compared to landlords may be important, the authors dismiss the possibility that leases themselves are at fault, and in general they focus on new development rather than existing buildings.

I performed a search of the literature to compare owner- or “master lessee”- occupied real and commercial landlord investment in sustainability or energy efficiency. I was able to find a considerable amount of information on the former because of their interest in self promoting that investment, while being able to find little on the latter because of the notoriously tight-lipped nature of landlords regarding their business practices. For example, Citi (2007) indicates that the Citi company has earmarked \$50 Billion for sustainability, with \$10 Billion specifically for “its own real estate portfolio, procurement and energy use...” (p. 1), over the next 10 years. That is an average of one billion dollars per year by one firm. In all of my searching, I was unable to find any commercial landlord that made a

commitment of more than a few tens of millions of dollars to sustainability, and I find it unlikely that there is a commitment of that nature by any commercial landlord.

## **Leases**

### *Incentives and Motivation*

Whitson (2008) notes that a net lease removes most of the incentive for a landlord to invest in energy efficiency. He recommends going to a full service gross lease or to modified gross lease to encourage more investment. I agree with his recommendation that going to a full service gross lease would encourage more investment. I think that his modified gross lease recommendation would not encourage the kind of investment he envisions, however, as evidenced by the way the market works in Boston. I further think that his article lacks any analysis of whether it is feasible to implement another lease structure, or how to going about effecting that change from the outside. In fact, a gross lease creates new incentive problems because tenants, who do not directly bear the costs of their energy usage, will tend to overuse energy. Therefore, the landlords, anticipating this problem, will charge higher rents. Although the article has some good recommendations and evidence, I do not think it fully addresses the market forces shaping lease structure.

Wheaton (2000) examines ways to align landlord and tenant interests. Although he examines retail percentage rents which are decidedly different from multi-tenant office rents, the alignment of interest issue is applicable. In his paper, the goal is to optimize the mix of tenants so that all tenants make more money. By giving the landlord a share of each tenant's profit, the landlord wants every tenant to do as well as possible, and therefore the landlord has incentives to create the optimal mix. The goal of my question is to align interests between the landlord and the tenant so that the optimal investment in energy efficiency can be made. By making the building more efficient, less energy should be consumed, and the total cost of running the building should be reduced. If the tenant has incentives to pay for the investment by saving money on operating expenses, and the landlord can be induced to do the work by keeping some of the profits, and there is enough value in the investment to do both, then there is a possibility for a win-win situation.

Williams (2008) discusses the barriers to implementing energy efficiency in rental housing. While the product type is different, many of the barriers, as well as potential solutions, are the same. She describes the agency problem discussed above as a problem of split incentives. The split incentive issue arises where the agent has insufficient incentive to do what is in the best interest of principal, and the principal has insufficient incentive to force the agent to do it.

Williams (2008) outlines three methods of solving this split incentive problem. Her first method is through "working around the split incentive problem". This involves government regulations setting efficiency standards that everyone must comply with, regardless of their incentive structure. The second is using incentives, whether material (rebates or loans), moral (appealing to ones sense of reason or responsibility), or coercive (fines or punishment). These are the proverbial "carrots" or "sticks" from outside sources to get the individuals to act appropriately. The third method is aligning incentives. This would consist of changing the contracts between the parties (the lease) to align their

interests. She perceives “enormous promise” in “green leases” that alter the way costs and benefits are shared between the tenants, thereby making it beneficial to both. While there are many similarities, the product type and nature of the leases are different that what this thesis investigates.

In our example, the landlord gains little benefit from saving the tenant money and the tenants has proportionally larger sums of money to worry about in its day-to-day business. The individual players do not assign much importance to the efficiency of the building, but the aggregate amount of all of this inefficiency makes a large difference to society at large when looked at from the total amount of energy “wasted” by buildings that are inefficient.

Brooks (2008) discusses “green leases” for offices in depth. He and his lease structure, however, seem to focus on landlords and/or tenants who want to make a commitment to sustainability even if it costs more. He focuses on things such as what the target should be in terms of how much energy the tenant and landlord will “partner up on” to save. He describes a situation where one or both of the parties to the contract want to commit to doing something that might not make pure financial sense. Much of this is outside of my scope, as I am focused only on energy efficiency upgrades that make financial sense at a life-cycle cost level in order to assess the puzzle about why even these deals are not getting done.

Carmichael, Fluhrer and Bonnet (2008) point out that even “gross” leases do not necessarily incentivize landlords to invest in energy efficiency. They opine that “...gross leases would appear to incentivize the building owner to invest in efficiency, as any savings in this instance accrue back to the owner. Yet, in reality, as most gross leases “true-up” operating costs annually over the base year, there is less difference between net and gross leases than most acknowledge, and the financial benefits associated with energy and water efficiency affect both parties.” (p. 2). While the notion of “gross” leases is relevant for this thesis, their article is focused on new leases for new development.

There are organizations that are promoting new lease structures to address some of these issues. Real Property Association of Canada (2008) proposes a model “green lease” structure. It creates a net lease, where the tenants are directly responsible for the operating costs of the building. It also gives the landlord wide latitude to do almost anything to the building, including “...providing, installing, modifying and upgrading energy and water conservation equipment and systems...” and “...making alterations, replacements or additions to the Building intended to reduce Operating Costs, utility consumption, and/or greenhouse gas emissions, improve the operation of the Building and the systems, facilities and equipment serving the Building, or maintaining their operation...”. While this structure would go a long way to increase the energy efficiency of buildings, it does not address the topic of this thesis directly. There is no requirement that there be a financial benefit to the tenant; it is essentially created to encourage sustainable buildings. Again, I merely want to get the benefits and costs to the appropriate parties to encourage those upgrades that make financial sense on a stand alone basis.

### *Renegotiation of Terms*

Fisher and Ciochetti (2007) discuss the selection of lease term length by tenants and landlords. They focus on two major determining factors: the high cost of renegotiating a lease when it expires as compared to the inflexibility of a long lease term. They go on to say that the more investment the



landlords and tenants make in this lease, the longer the term each will likely prefer. The question as it relates to energy efficiency is whether investment in upgrades by both parties flies in the face of other term determining factors. That is, other than the investment in upgrades, would each party prefer shorter lease terms than are required to make the investment worthwhile?

## CHAPTER 4 – REQUIRED DATA & METHODOLOGY

Two components of information are used to complete this investigation. The first consists of characterizing the current industry standard lease structures and various parties' thoughts about its influence on the investment in energy efficiency by landlords. The second part gauges the same parties' reactions to potential changes to the standard lease structure. The required data was gathered through interviews with 35 players in the Boston real estate market.

### *Tenant Demand for Energy Efficiency*

Tenants recently in the market were interviewed to see what role energy efficiency, and the landlord's effect on it, played in their decision of where to lease space. I wanted to understand if they felt like there was a difference in buildings or landlords in terms of what their energy consumption costs would be, and how much they would vary or increase in the future. I also tried to determine, in retrospect, if they feel like their landlord has any incentive to reduce the tenant's energy costs, or if the landlord's sole motivation is to keep their own capital costs down in absolute terms.

### *Investment in Energy Efficiency*

In order to determine the current level of investment by commercial landlords in energy efficiency, landlords were interviewed to determine which upgrades they are currently performing, if there are further upgrades they would like to perform, and if there are, what is hindering them from doing so. Data was also collected from property managers, construction managers and engineers to try to determine what energy efficient upgrades landlords are performing, and what upgrades are known energy savers but that landlords are nonetheless not performing.

As a baseline for comparison, interviewees were asked what the investment in energy efficiency in owner-occupied buildings is like. This allows for a comparison to for-rent buildings to see if there is a discrepancy. This also helps isolate the effect of the lease structure on investment.

### *Current Standard Lease Structure*

The current industry standard lease structure was identified, specifically as it relates to the capital costs of energy efficiency upgrades and the distribution of operating expenses. This was determined through interviews with attorneys, brokers and landlords in the Boston office market.

### *Effect of the Lease on Investment in Energy Efficiency*

All of the parties interviewed were asked to consider whether the standard lease structure affects landlords' investment in energy efficiency, and if so, how?

### *Changes or Improvements*

In order to reach the desired goal of identifying ways to encourage greater investment in energy efficiency by landlords, alternate lease structures were investigated and vetted with all of the parties that were interviewed. In order to do so, I provided several examples of methods of shifting the motivations within the lease contract, and gauged their reactions to those methods. I tried to find out if they thought there was an improvement in the alignment of interests, and asked if there are any barriers to implementing such a structure.

## **Interviewee Selection**

The interviewees were selected because of their intimate knowledge in one or more of the aspects of for-rent office leases in the Boston area. Excluding the tenants, they are all experienced practitioners of a commercial real estate related profession. The tenants are all recent consumers of the leasing process, and therefore the contracting for energy consumption cost process. Many are my personal contacts developed over the years working in the area, some are alumni of this program, and others are guest instructors or other supporters of this program.

The mix of interviewees was intended to gain an in-depth representation of the way landlords look at the decision of whether, when, and how much to invest in energy efficiency. This was accomplished by interviewing many landlords, as well as other parties with insight into the landlords' investment process. I interviewed 35 individuals, comprised of:

- 12 Commercial Landlords
- 5 Real Estate Attorneys
- 5 Real Estate Brokers
- 5 Contractors / Construction Managers
- 3 Building Systems Engineers
- 3 Tenants
- 1 Property Management Service Provider
- 1 Owner-Occupier

The landlords, tenants, and owner-occupiers were able to speak directly to their own experience, pertaining to both their internal decision making process as well as their perception of the "other side" in their negotiations and dealings regarding energy efficiency. The attorneys, brokers, contractors, engineers and property managers were able to condense their wide and varied experience with multiple landlords, tenants and owner-occupiers, and relay both individual stories and trends of behavior.

## **Interview Questions**

I provided the interviewees with questions prior to the interviews in order to stimulate their thinking. These can be found in their entirety in Appendix C. The questions were deliberately crafted to stimulate thought, but not to lead the interviewees in any particular direction. The intent was to get unbiased thinking from a wide variety of observers. Most of the interviews, however, covered much more ground than the facts requested by the provided questions. Their responses to the provided questions led me to ask additional questions, and brought us down different paths of discussion. Also, many of the interviewees came in to the interview with very well developed lines of thought on the topic that they were able to share with me.

## CHAPTER 5 – INVESTMENT IN ENERGY EFFICIENCY

A first indicator that landlords may under-invest in energy efficiency is observed by comparing the behavior of commercial landlords to that of owner-occupiers. In the latter case, there are no agency issues because user and the owner are the same. Commercial landlords and owner-occupiers of real estate invest differently in energy efficiency for their buildings, and in this section I describe the types of building system upgrades undertaken by owner-occupiers and by commercial landlords. In summary, owner-occupiers are making considerably more investment in energy efficiency than commercial landlords.

### Owner-Occupiers

All interviewees who offered an opinion concurred that groups that either owned or master-leased an entire building or campus for their sole occupancy invest considerably more in energy efficient upgrades to their buildings than do commercial landlords of multi-tenant buildings. While many of them offered anecdotal evidence that this is indeed the case, there was no common theme of “typical” owner-occupier investment. The interviewees’ descriptions of what owner-occupiers were doing ran the full gamut of potential upgrades, depending on the building and owner. However, the level of investment that owner-occupiers are making is much larger than that of the commercial landlords. Interviewees described full building system replacements and zero net energy goals undertaken by owner-occupiers that dwarfed the commercial landlords’ typical investment in light fixture replacement and fan upgrades.

There were two main perceived drivers behind this difference in investment level: single entity analysis and “triple bottom line” accounting. The nature of the leases reflect the fact that neither of these are truly possible in a for-rent office building.

#### *Single Entity Analysis*

When analyzing the benefit of any investment, considering only one entity’s interests makes the analysis considerably simpler. There is no issue with split incentives, since the party making the decision to invest is protecting only its own interests. The investment is also direct; there is no accounting to do regarding the pass through of expenses or benefits because one party spends all of the money and receives all of the benefit. Since there is only one party to the decision, it reduces the need to get multiple groups to agree that any particular investment is the right thing to do, thereby reducing decisional friction and easing the decision making process. This leaves these organizations with the straightforward decision of whether an energy efficiency upgrade has a net benefit compared to maintaining status quo.

#### *The “Triple Bottom Line”*

“The triple bottom line (or “TBL”, “3BL”, or “People, Planet, Profit”) captures an expanded spectrum of values and criteria for measuring organizational (and societal) success; economic, environmental and social... In practical terms, triple bottom line accounting means expanding the traditional reporting framework to take into account environmental and social performance in addition to financial performance.” (Triple bottom line, 2008)

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“Is the money the reason that these companies invest in energy efficiency? The dollars saved in operations may not be as much as you think. The real benefit is in productivity, recruiting and retaining talent, telling the story of the company’s commitment to sustainability, and growing the top line rather than shrinking the middle line.”

– *Anonymous Interviewee*

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Organizations that own their real estate or master lease an entire building or campus are likely to be larger organizations that have internal mandates to achieve goals other than absolute monetary profit when it comes to their real estate interests. I have already addressed the economic issues above, and below I will address the remaining TBL criteria: environmental and social.

Energy efficient upgrades will help satisfy an organization’s commitment to helping the environment. This commitment has little or nothing to do with the financial feasibility of the upgrade, but instead is assigned some other value under TBL accounting. An upgrade that does not pay for itself under the economic criteria may get a boost because of its benefit to the environment, and therefore be implemented.

Likewise, an organization’s commitment to energy efficiency will help satisfy its commitment to increasing social benefits. By becoming a leader in energy efficiency, they are able to claim “good corporate citizen” status. In fact, not profiting from the upgrade may even increase the “credit” they get in this category, showing their commitment even to the point of losing money.

### **Commercial Landlords**

Below I will discuss the types of upgrades that are actively pursued by commercial landlords, upgrades that are performed when the opportunity presents itself, and upgrades that are known to save operating expenses but are not currently feasible from the perspective of commercial landlords for some reason.

#### *Active Investment*

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“All of the low hanging fruit has been done. It takes 20% of the effort to do the first 80% of the changes, and 80% of the effort to do the remaining 20% of the changes.”

– *Anonymous interviewee*

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Currently, the most commonly performed upgrades consist of easy to implement measures, known industry wide as “low hanging fruit”. These are upgrades that are fairly standard across many buildings and therefore require little customized research or planning in order to implement. They are typically low cost, or are substantially reimbursed by the utility companies, governmental agencies, or non-profit groups. They also typically cause minimal disturbance to the occupants of a building, and do not require the shutdown of building wide systems during normal business hours to complete their installation.

Most of the low hanging fruit would fall into the first through third categories described in Chapter 1 as “Building Systems Upgrades”, namely recommissioning, lighting upgrades and control upgrades. The first and easiest is recommissioning and rebalancing, which over the last few decades has become part

of almost every building's regular maintenance program. The second is lighting upgrades, which can often be accomplished at almost zero net cost to a landlord after the aforementioned rebates. Control upgrades are typically incorporated into every renovation, and controls are often replaced building-wide in a phased program of upgrades. Improvements in distribution are achieved by replacing fans and pumps with more efficient models to save energy. This will also help reduce the supplemental heat load in the building, because selecting equipment that operates efficiently will reduce the heat generated and therefore decrease the amount of cooling required. These upgrades are relatively easy for a landlord to implement at whatever pace is feasible or convenient, and will require little or no additional capital to implement because they generally fall under a building's general maintenance budget.

There are several measures that landlords pursue that are not included in the building systems upgrade list, but would fall under the low hanging fruit category. While they do reduce the energy cost passed on to the tenant they do not actually increase the energy efficiency of the building. The first is negotiated utility purchasing. Buildings, landlords, or consortiums of landlords, now have the ability to bargain with the suppliers of natural gas and electricity to lower their unit price, and therefore lower their consumption cost. The second is to carefully "manage" the output of central building systems. This is a careful balancing act designed to keep operating costs down while still meeting the needs of the building. This may include altering the output temperature of the chiller water or base building air output (depending on the type of HVAC system in the building), as well as altering the levels at which the base building systems run in order to properly match the occupancy of the building in the evenings or early mornings. This differs from rebalancing and recommissioning (which are ensuring that the system is operating as designed), because this "management" changes the operating parameters of the system in order to reduce the cost of operating it. Again, these measures cost little or nothing to implement, but can save money on operating costs.

#### *Opportunistic Investment*

In addition to the above upgrades which are actively sought out by landlords, there are other upgrades which landlords will implement only when an opportunity presents itself. These upgrades usually, except for one or a few factors, make sense to do from a financial standpoint. These are considered by many to be the industry-standard "best practices", and to have a lifecycle cost payback that makes them financially feasible, but have some barrier to their implementation. As soon as that barrier is removed, the upgrade makes sense to implement.

These upgrades are often replacements of existing equipment that has failed or outlived its useful life, and the landlord is already faced with doing some sort of repair or replacement anyway. They would be cost prohibitive to do strictly for the energy saving capability of such an upgrade, but make financial sense when comparing only the incremental cost of the upgrade over a traditional replacement to the life cycle energy cost saved by the upgrade. A typical example is the replacement of a piece of mechanical equipment like a chiller or cooling tower. When faced with replacing a portion of the HVAC system because it is physically broken or can no longer meet the performance required by the marketplace, a more efficient system is often only marginally more expensive than a less efficient system. Another typical example would be a roof replacement. When an older style, black tar and ballast roof has failed, it can often be replaced by a modern roof system for a marginal cost increase

over the tar and ballast technology. This will often include additional rigid insulation and a reflective, white membrane roof. This both decreases the heat from the sun absorbed by the roof itself because of the reflective quality of the membrane, and reduces the transfer of heat through the building envelope because of the additional insulation. So, as soon as there is uncontrollable cost to be incurred anyway, the marginal increase for the more efficient system often makes sense.

These upgrades may also include items which make financial sense when looked at in isolation, but have exogenous barriers to their implementation. An example would be the replacement of equipment or the installation of insulation on ducts or pipes that are buried behind walls or ceilings. A landlord may take the opportunity when a full floor is under renovation to insulate all of the ductwork or piping, or to install an individual air-handling unit on that floor. The investment itself makes financial sense, but when the cost of demolition and reconstruction associated with gaining access to the equipment, ductwork or piping is factored in, it is no longer cost effective. As soon as that extra cost barrier is removed, it makes sense to do the work.

### *Infeasible Upgrades*

There are upgrades that could be done to a building that would definitely save energy over the technology that is in place, yet are not being implemented by landlords. Many are associated with the building envelope: insulated windows, exterior insulation, and green roofs. Others are associated with replacing building systems with more efficient or more appropriately sized systems. The reason why these are infeasible will be discussed in depth in Chapter 7.

## **CHAPTER 6 – LEASES**

Leases in the Boston office market have evolved over many years. While for a long time they were a relatively simple gross lease, they have changed to reflect the ever more complex nature of society. They have become lengthy documents that spell out each party's rights and responsibilities, as well as their financial obligations and remedies.

### **History of Leases in Boston**

Starting as far back as any of the interviewees could remember, office leases in Boston were originally full service gross leases. This meant that the tenant paid a fixed rent payment to the landlord, and the landlord paid all of the taxes, insurances, and operating expenses of the building. There were often provisions for rent increases over time to account for rising costs due to inflation, but the specified increase were fixed in the lease. Effectively, the costs of running the building were invisible to the tenant. In fact, even the landlord made little distinction between what was the cost of running the building's common areas and what was the tenants' consumption, as there was only one master electric meter on the building.

At some point, the landlords began to buy the electricity from Boston Edison at wholesale prices, based on the master meter reading, and sell it to the tenants at retail prices, based on their individual consumption as measured by individual meters. Boston Edison fought this because, as the utility, it felt it was the only entity entitled to make a profit on the production and sale of electricity. Legislation was passed that precluded landlords from charging their tenants fees based on individual electrical consumption. As a result, the full service gross lease persisted, mostly due to the stability of energy prices, but there was no longer an incentive to sub-meter consumption.

In the 1960s and 1970s, a confluence of factors changed the way landlords looked at the finances of running a commercial office building. There was high general inflation, the Arab Oil Crisis caused fuel and energy prices to rise exponentially, interest rates rose, and real estate prices and rents rose sharply. All of these factors combined to cause the income stream for commercial real estate to become much more volatile than in the past. Landlords looked for a way to smooth their cash flows, and consequently looked to lay off much of these market driven risks on to the tenants of their buildings. The first step was to try to tie the rent escalations to an inflation based index, such as CPI. However, the energy and operating costs increases soon started to outpace the escalations in general inflation. This caused the landlords to try to contractually "net out" as much of the costs of running a building as possible through their leases, and to be reimbursed from the tenants for many of these expenses. These full service gross leases evolved into what is known today as a "modified" gross lease.

### **Current Structure - Modified Gross Lease**

The current industry standard lease in the Boston office leasing market is the modified gross lease. In summary, the tenant pays a "base rent" per square foot. This base rent includes the tenant's pro rata share of the taxes, insurances, and operating expenses during the "base year". For every subsequent year the tenant pays the base rent plus its pro rata share of any increases in the taxes, insurance and operating expenses over the base year amount.



In the following section I will review the portions of such a lease that affect a landlord's decision on whether, when and how much to invest in energy efficiency. Particularly pertinent is the manner in which operating expense savings are distributed. In summary, savings accrue first to each tenant until the current year's operating expenses are lower than each respective tenant's base year, and then it accrues to the landlord. Likely the most important characteristic is the manner in which capital investments by the landlord are recouped from the tenants. In general, the landlord is able to amortize the cost over the useful life of the upgrade, and collect the cost from the tenants as an operating expense escalation.

### *Inherited Leases*

A common concern cited by many landlords and property managers is inherited leases. The nature of modern real estate markets lends itself to the sale of buildings every few years. Therefore, when landlords buy a building, there are sitting tenants and leases written by prior landlords. The new landlord must now step into the shoes of the old landlord in the context of those leases. Leases cannot be changed without consent from both sides. Prior to a sale, landlords have incentive to get a building leased up to demonstrate low vacancy, but they may not necessarily be concerned with the long term effect of the leases terms or the concessions granted. This sometimes ties a landlord's hands as to what it can do and what it can get reimbursed for.

### *Average Lease Term*

The average lease term for office leases in Boston is between 5 – 7 years, although there is some variation. Smaller tenants may negotiate leases as short as three years. Larger or anchor tenants may sign leases for as long as 15 – 20 years. Typically, the shorter the term, the higher the rent is because of the transactional costs (leasing commission, tenant improvements and the landlord's administrative efforts) and the income is guaranteed for a shorter time.

### *Base Rent*

Base rent is set in the marketplace by supply and demand. It has little to do with the actual costs of operating the building, but rather more to do with what prospective tenants are willing to pay for a building with the features of the subject building. There may be contractually spelled out "step-ups" in base rent over time in order to cover inflationary cost increases.

### *Net Rent*

The difference between the tenant's share of taxes, insurance, and operating expense and the base rent is know as net rent. It is what the landlord gets to "keep" after the costs of operating the building are met. A portion of this is used to meet the organizational needs of the landlord, such as corporate employee salaries, home office rent and expenses, etc. Another portion is used to cover the cost of acquiring and financing the ownership of the building. Some is set aside to make capital investments in the building itself (which will be described in more detail later), for tenant improvements and to pay leasing commissions. The remainder is the profit or return to the landlord, and "drops to the bottom line."

### *Taxes & Insurance*

Taxes cover all mandated payments by various governmental agencies related to the particular building. It is primarily made up of property taxes and special assessments. Property tax is a payment to the local government based on the value of the building as assessed by the local assessor's office. Special assessments are fees assessed to the building by the local municipality for costs such as street, transit, lighting, or traffic improvements in the vicinity of the building which will benefit the occupants and owners of the building.

Insurance is the cost of keeping all of the required insurance policies up to date. Various types of insurance are typically required by the lenders and the tenants, and they protect everyone's assets in case of a flood, fire, or other disaster.

Taxes and insurances are variable costs, and the rate at which they vary are not within the control of the landlord. As such, the landlords have successfully put the risk of increases in these costs onto the tenants. The landlords do, however, try to lobby on behalf of the tenants to keep these low in order to remain competitive in the marketplace, as well as to try to increase their net rent.

### *Operating Expenses & Common Area Maintenance (CAM) Charges*

Operating Expenses and CAM includes all of the costs required to operate the specific building, exclusive of taxes and insurances. This would include costs such as cleaning, security, trash removal, snow removal, landscaping, parking area maintenance, etc. It also includes day-to-day maintenance costs of building systems, and the energy consumption of the common areas and building systems and management fees for running the building.

Landlords want the definition of operating expenses found in their leases to be as inclusive as possible, so that as costs rise, so does the amount they are able to recoup from the tenants. To this end, when crafting the language in the lease as to what is considered operating expenses, they will say it includes everything related to owning and operating the building, with a list of specific "carve outs" or exclusions, rather than including specific items. This language tends to be very favorable to the landlords' goal of passing through as much of the cost as possible.

Tenants, on the other hand, want operating expenses to be as narrowly focused as possible, so that they are not subsidizing the landlord's or other tenants' expenses. Everything in a lease is negotiable, and the larger the tenant, the more negotiating power they have with a landlord. To this end, many tenants now directly pay their energy consumption costs to the utility based on a sub-meter for their space. This does not change the lease structure; it merely moves the electrical consumption within the tenant space to a separate contract with the utility. They also have the right to audit the landlords' books to make sure that they are being treated fairly; in fact third party auditing services are available, with the provider's fee based on a percentage of the savings found. Many more tenants are taking advantage of audits as operating expenses continue to increase.

### *Base Year & Escalations*

Escalations are additional rent payments made to the landlord based on increases in the operating expense over a "base year" level of expense. Each year, for each tenant, the landlord calculates the

difference between the current year's operating expenses and that tenant's base year. If the current year's operating expenses are more than the base year's, that tenant pays its pro rata share of that difference.

Therefore, the base year is the foundation for figuring out what the total amount paid to the landlord by the tenant will be each year. The base year is meant to represent the operating costs for the building the year the lease commences, so that subsequent overages can be determined. Typically if a lease commences in Q1 or Q2 the lease will define that year as a base year. If it commences in Q3 or Q4, the following year is often designated as their base year. If the base year is based on a year for which the lease was only in effect for a partial year, the tenant does not pay any overages for that year. In this negotiation, the tenant wants the base year level of operating expense to be as high as possible. Since the base rent is set by the market, the higher base year operating expenses potentially translates into lower overages in later years. Conversely, the landlord wants the base year to be as low as possible in order to be more likely to be able to collect higher overages.

Getting a fair and accurate picture of what the operating expenses ought to be is less straightforward than it may seem. Some operating expenses vary with occupancy. In order to equalize operating expenses across varying levels of occupancy, the operating expenses are "grossed up" to some negotiated average level of occupancy, often around 95%. This makes the comparison of yearly variation in operating expenses more fair. Imagine a small tenant moving into a mostly unoccupied building. The operating expenses at the time of its occupancy would be fairly low. As the building filled up, the operating expenses would increase. When it came time to reconcile the expenses at the end of each year the operating expenses would be higher than when they moved in and so the tenant would be paying large overages for its entire tenancy. Likewise, property taxes vary with occupancy because the assessment is based on value, value is based on revenue, and revenue is largely based on occupancy level. So there will often be an agreement to gross up the taxes to a fully occupied value. This grossing up process allows the comparison of apples to apples across a constantly changing occupancy level.

### *Capital Expenses*

Capital expenses are costs incurred by the landlord to increase or preserve the value of the building itself. Increasing the value could include additions of new space or renovations of common areas. Preservation of value could include replacement of building components that are essential to the operation of the building for its stated purpose, such as replacing building systems, replacing the roof, repairing structural deficiencies, etc. These are considered to be the landlord's responsibility financially, because as owners they retain control and reap the long term benefit of these investments. However, these investments may also create a benefit for the existing tenants.

### *Recouping Capital Investments*

Of paramount importance are the lease provisions that allow for a landlord to pass through to the tenant some expenses that may seem at first inspection to be capital expenditures. Essentially every lease allow a landlord to amortize the cost of an energy efficiency upgrade over its useful life and pass it back to the tenants through operating cost escalations. There are, however, subtle variations on how and when this can be done that will be explained in the following section.

The first factor is whether the investment creates a savings in operating expense for the tenants, rather than a benefit for the landlord. The obvious intent of this type of provision is to allow landlords to make investments in the building that will save the tenants operating expenses, but prevent the landlord from spending the tenants' money frivolously. This is a negotiable point in leases, and therefore there is a wide variety of wording contained in leases regarding these criteria. Some leases contain language that there must only be intent to create a savings in order for the landlord to be able to pass through the costs. At the other end of the spectrum, some leases read that there must be a documented savings in order for the landlord to be able to pass through the cost. The tenants' goal in this negotiation is to enable the landlord to save the tenant money, while preventing overspending, but also to define the burden of proof regarding savings so as to encourage investment.

One area lacking clarity and generalizability is *how much* of the expense can be passed back to the tenant if there is benefit to the tenant and to the landlord. One example is replacing a failed piece of HVAC equipment. The landlord is required to replace the equipment because it is needed to perform the building's stated function for which the tenant pays the base rent. But by the nature of technological improvements, the new piece of equipment should be more efficient and reduce operating costs. So how much of the cost can be charged back? Difficulty arises here because it is nearly impossible to write a lease that can cover every potential future upgrade. Therefore, this becomes an ex post negotiation between the tenant and landlord. The general consensus is that good judgment, in tandem with lawyers' legal input and accountants' input on what GAAP says, will find the appropriate compromise. After all, the lease allows tenants to audit the books on the expenditures too, and landlords do not want to get into costly disputes over the details with each tenant.

The next consideration is *how* to pass the cost back to the tenant. All leases provide for some form of amortization over time. The industry standard is to amortize cost pass-throughs over the useful life of the equipment. Some leases allow for an acceleration of the amortization if the savings are great enough to pay back the investment faster than the useful life of the equipment. Most versions preclude the landlord from passing the cost back to the tenant at any rate faster than the savings are created.

The lease also needs to consider how the improvement is being financed. Some leases allow for the landlord to include an imputed interest charge to cover either financing costs or its own cost of capital. It is often limited to either the actual interest paid if the landlord financed the project, or to prime plus a negotiated percentage if the landlord uses its own capital. As with the actual cost of the project, it is often stipulated that the addition of this interest cost cannot cause the total pass through to exceed the benefit created by the investment.

## CHAPTER 7 – MOTIVATION & INCENTIVE

There are a variety of reasons for which landlords might forego these upgrades. Sometimes these are overlooked because of financial considerations. These often involve a major upfront cash outlay, and there is a lack of willingness by landlords to “front” that cash to gain the long term benefit. Other times, these are not implemented because of operational issues in the day-to-day management of their implementation. These large, building-wide changes often cause major disruptions to the entire building for extended periods of time, which do not go over well with tenants. Finally, some of these are overlooked for marketability reasons. Even though a smaller system is more efficient to run than an oversized system, a landlord wants to be able to tell a potential tenant that the building has the capability to handle future growth or increased demand on the building systems, especially HVAC and electrical capacity.

Landlords are in the business of making money. As such, most of their actions are motivated by whether that action is profitable. In my discussions with market participants, I found that landlords are not motivated under the current lease structure to make substantial investment in energy efficiency for several reasons. The first reason is that the tenants in the marketplace do not require it or reward it. The second is that, while they are not necessarily penalized for making the investment, they often do not expect to realize the full benefit of the investment during their ownership. The third is that, to date, there has been no demonstrated benefit of such investment on sale price. Finally, there are ownership and organizational factors that have nothing to do with the direct operation of the real estate, but that affect how these decisions are made. These factors combine to dampen the incentives of landlords to make substantial investments in energy efficiency. My interviews brought to light the following forces that guide the individual clauses related to efficiency in the leases.

### **Space Market Forces**

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“It isn’t the lease that disincentivizes the landlord, but the market, and the lease supports the market’s desires”

– *Anonymous Interviewee*

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In order to make their properties to be as profitable as possible, commercial landlords are concerned with NOI. NOI is driven by market rent, which, according to many of the interviewees, is the most volatile element of a property level cash flow analysis. No matter how well a landlord runs its property, the majority of what the landlord stands to earn from that property is based on what the market is willing to pay for rent. Tenants are willing to pay for some building attributes, but, in general, they are unwilling to pay for energy efficiency in and of itself. On the other hand, landlords do want to keep operating cost down because every dollar the landlord saves in operating expense can either be put in the landlord’s pocket or be used to attract a tenant with lower rent. However, dollars to be spent on energy efficiency in order to save operating expenses must be weighed against dollars to be spent on other ways to raise rents.

## Tenant Demand

From interviews with landlords and tenants recently in the market, I found that the typical tenant does not place very much value on the energy efficiency of a building. There are several reasons for this. First, a typical tenant has an inadequate amount of time to devote to evaluating leasing criteria in general. In addition, the magnitude of the potential savings from a more efficient building is relatively small compared to their overall operating budget. Third is the fact that the tenants' don't think that an investment in energy efficiency matches their time horizon, that it takes too long to pay itself back compared to the lease term. Finally is the relative importance of other building factors compared to energy efficiency. However, as outlined at the end of this section, the apparently weak emphasis on energy efficiency may be changing, as we appear to be at the junction of several major shifts in attitude, perception, and market prices for energy.

### *Tenant's Perception of Landlord Investment*

Tenants, in general, seem to know very little about their landlords' policy on, or investment in, energy efficiency in their buildings. Most do not seem to know if their landlord is doing anything to reduce their buildings' consumption of energy. They do not seem to know if their landlord is doing anything to reduce the operating costs that gets passed on to the tenants. They also do not seem to have a burning desire to find out. Although when asked if they would like their operating costs to go down or the buildings' energy efficiency to go up, they say yes, it seems that tenants are not concerned enough to make inquiries of the landlord as to what the landlord does on that front. While one tenant told me that they had a complete audit of the building done when they moved in, their main line of business is related to commercial real. As compared to other tenants interviewed, they were atypical of the general tenant's mindset on this matter.

### *Focus on Real Estate Evaluation*

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"Tenants just want to be told by their advisors that they are getting a "market deal" so that they can't be embarrassed at the board meeting"

– *Anonymous Interviewee*

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For most tenants, the real estate they occupy is merely a vehicle to enable the performance of their main line of business, whatever that is. So unless the tenant occupies a lot of space (greater than several hundred thousand square feet), they typically do not have professionals within their organization focused solely on their real estate needs. This means that the evaluation of their real estate is competing for the attention of one or several executive level people who also have a "full-time job" outside of evaluating real estate. It is therefore easy to imagine that space does not receive as thorough an evaluation as possible internally. Many prospective tenants rely very heavily on their brokers and attorneys in this process to tell them what makes sense.

### *Base Rent vs. Total Occupancy Cost*

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“CFOs want to be able to go to the cocktail party and brag about the low rent they were able to negotiate. But they don’t really understand the true cost of that space.”

– *Anonymous interviewee*

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Because of the many factors that go into determining the total annual occupancy cost (some of which are variable or undefined at the time of signing a lease), it becomes very complicated for most people to understand what it will actually cost them to occupy their space for a given period of time. Therefore, many tenants come to use the base rent as their main tool for comparison between potential spaces to lease. It is a single number that is easy to comprehend, and can easily be used to do a quick comparison with a competitor. Often a tenant’s broker will do a more in depth analysis of what the total occupancy cost of a building is expected to be. But at best that analysis is based on information supplied by a landlord in a competitive bidding situation, and at worst is based on industry averages, thereby defeating the comparative analysis one would hope to gain from such an exercise. Interviewees stressed that there just is not enough time to do a thorough analysis of the true potential cost of occupancy at each building.

### *Magnitude of Savings*

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“Energy consumption becomes the tail trying to wag the dog”

– *Anonymous interviewee*

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The absolute value of the savings in operating expenses between a very energy efficient building and a typical building is fairly insignificant in the overall operating budget of many typical tenants. The consensus among the landlords and property managers interviewed was that operating expenses for a typical, downtown office tower averages \$10 - \$14 per square foot annually. Of that amount, the energy portion of operating expenses (excluding electrical consumption within the tenant’s premises, for which the tenants are often separately billed by the utility) is only \$2 - \$4 per square foot annually. For a tenant that occupies a full floor in a typical downtown office tower (approximately 25,000 square feet) that equates to \$50,000 to \$100,000 per year. Therefore, the potential savings of moving from the least efficient buildings to the most efficient buildings could only be approximately \$50,000. This pales in comparison to the overall operating budget of a company that would occupy an entire floor of an office tower, and therefore may receive less attention.

### *Tenant’s Time Horizon*

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“They have less focus on long term costs, and therefore are attracted to buildings that operate that way.”

– *Anonymous Interviewee*

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Another issue that was raised by interviewees is that the nature of the businesses that occupy multi-tenant office buildings in Boston give them a relatively short time horizon compared to the life of a building or its systems. Most businesses in this type of space face uncertainty about their business’s

needs for space. Therefore, they do not value completely these investments in building systems that last for 20 or more years. They feel that their contribution today will benefit other organizations later, and therefore they do not want to participate in the creation of the benefit. The short nature of a lease term compared to the life of equipment works against the landlords' ability to spend money on efficiency.

#### *Priority of Other Building Characteristics*

There are many factors that may be more important than energy efficiency to tenants because they affect their day to day operation of the business markedly. Many times there is a limited selection of buildings or spaces that meet these more important criteria, thereby reducing the importance of energy efficiency in selecting a space to occupy.

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*"Location, Location, Location"*

*– Traditional Real Estate Maxim*

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For some office tenants, an address with prestige is important. For others, it is adjacency to their customers. Yet others need to provide a convenient commute for the CEO. Some need to be near public transportation. Every organization has an ideal location, and often it is the most important criteria in selecting an office space.

A close second cited by interviewees is the views and other amenities available in or near the potential sites. For some, a view of the harbor from their conference room is important. For others it is the 24-hour gym in the basement. Some want to go to the lobby and grab their Starbucks™ without going outside in the winter. Others want a very dignified lobby to impress their high-class clients. As with the location, tenants perceive that these factors are an extension of who and what their organization is.

Another frequently cited concern is the compatibility of the layout with the way in which the tenant will use the space. Traditionally (although there are major changes in the way everyone is using space), a law firm would look for the availability of lots of window offices, while a back-of-house administrative user would look for wide open floor plans for their "cube farm". Some buildings work better for some uses than others, and you can waste a lot of space (and therefore rent dollars) if the building does not match well with your needs.

Most office tenants will tell you that their largest cost is their employees, and that one of their largest challenges is attracting and retaining the best talent in their field. Along with the growing awareness of sustainability and indoor environment, especially among the emerging future leaders of these firms, come questions about what these firms' policies on sustainability are. A sustainably designed and constructed work space, with the associated high quality indoor environment, is a growing draw for the next wave of talent. While the energy efficiency of the building is tangentially related to the questions of sustainable design and construction for a particular office space (a relationship we will discuss later), the employees are not necessarily focused on a building's energy efficiency, per se. Therefore, the employers are not necessarily focused on energy efficiency either, and factors such as the amount of natural light or fresh air may trump energy efficiency when it comes to attracting talent.



After attracting the best talent, office tenants' next biggest concern might be keeping that talent as comfortable and productive as possible. The capacity to effectively heat, cool and ventilate the space is paramount, as typically the largest volume of complaints that office managers and, in turn, building managers receive is hot and cold calls from the employees. After capacity the largest concern is the level of individual control. The smaller the zones of control are (i.e., the more thermostats there are), the closer to keeping everyone happy you can get. Many tenants also need the ability to get after hours HVAC at a reasonable cost because of their frequent use of it. Therefore, when considering the way the building systems function in the selection of a space, the capacity, controllability, and flexibility of the system may outweigh its energy efficiency per se, although these concerns are not necessarily mutually exclusive.

Every tenant I interviewed told me that if they were looking for space right now they would focus much more on efficiency than they did in the past. Mostly they attributed this to a growing awareness in the popular culture of the skyrocketing costs of fuel. Additionally, one interviewee has seen increases over the last 6-9 months in the energy costs being passed through to them. Also, because the interviewees can feel it when they are shelling out money at the gas pump, energy cost has become more real to them when they think about it on a larger scale, such as a building's consumption.

Every interviewee has pointed to an overall greater awareness of sustainability in society. Many think that independent of the cost savings associated with saving energy, consumers of commercial real estate will be looking to do their part in reducing energy consumption, and looking to landlords to enable that by implementing energy savings measures. Many of the tenants' clients are asking about each organization's policy on sustainability. Many real estate professionals are getting LEED accredited. They all feel that this heightened awareness will help improve the impetus for energy efficiency.

### **Landlord Reaction**

Although tenants may not care about energy efficiency in and of itself, landlords must address it in order to remain competitive, for several reasons. First is the paramount concern of every landlord: keeping the building filled with profitable leases now. Second is protecting the ability to make a profit in the future. This consists of two parts: keeping the operating expenses down so that if market rents go down they can still make a profit, and preventing their building from becoming functionally obsolete, and therefore less competitive.

### *Tenant Retention*

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"You do it because you are worried about future vacancy"

– *Anonymous Interviewee*

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Landlords want to retain tenants because it saves them money. When a lease rolls over, it is in the landlord's interest to negotiate a market rate renewal with the existing tenant. It saves on leasing commissions, tenant improvement costs, and vacancy losses. Keeping the tenants happy with the way the building operates and keeping the escalations down is a way to keep your existing tenants.

Some operating expenses are fixed regardless of the occupancy level. The tenants that are in place pay a base rent that includes the operating expenses for a grossed up base year. So, when the building is partially vacant, the landlord picks up the portion of the fixed operating expenses that does not have a tenant to pay for it. So landlords have some incentives to keep operating costs down, and keeping the building systems efficient is one way to do that.

### *Landlord Reputation*

The real estate community in Boston is a small circle. Landlords need to protect their reputation as a good operator of buildings, otherwise the word will get around and their buildings will be discounted in the tenant's search process. If the landlord is constantly giving their tenants large overage bills because of inefficient buildings, then that information will eventually get out onto the "street". Landlords want to be thought of as the best operator in town, and feel that will increase their ability to rent their space at a premium. However, this is a balancing act because as one landlord pointed out:

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"If I tell a tenant that my opex is the lowest in town but my rent is the same as market, they will think I have a higher margin and more room to negotiate."

– *Anonymous Interviewee*

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### *Functional Obsolescence*

In order for a landlord to be able to continue to gather the rents it is accustomed to, it must prevent its building from becoming functionally obsolete. To do so, the landlord must continue to invest in the building so that it stays on par with the buildings it competes with.

According to the interviewees, the main reason tenants move, other than an incompatible amount of available space, is because the HVAC system in the building does not perform up to the tenant's expectations. An investment in tenant retention, such as upgrading the HVAC system, will also incidentally become an investment in energy efficiency. As explained earlier, replacing an older system with a newer one almost automatically improves the energy efficiency of the building. If you replace a failing piece of equipment with a non-energy efficient piece of equipment you cannot charge it back to the tenants. If you replace a failing piece of equipment with an energy efficient piece of equipment, you can often recoup the entire cost, depending on the language of the lease. Is that not motivation to use energy efficient equipment?

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"Energy efficiency is going to get dragged along with LEED"

– *Anonymous Interviewee*

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There are increasing requirements for buildings to comply with LEED requirements. The City of Boston, under Article 80, now requires that any new building or renovation over 50,000 square feet must be LEED "certifiable". According to the interviews, while tenants might not be specifically asking about energy efficiency, they are increasingly asking for LEED buildings and build-outs. Inherent in the requirements to become LEED certifiable are energy efficiency requirements. The need to comply with LEED will necessitate investment in energy efficiency in order to remain competitive. In fact, there are some landlords who see the writing on the wall and are investing substantially now in energy efficiency,

as a component of a larger green initiative, so that they may be the leaders in an emerging field when it goes “mainstream”. They are making a bet on being the leader when it becomes required by the market.

#### *“Tough” Markets & Timing of Investment*

Many of the interviewees identified that their attitude toward investing in energy efficiency changes based on market conditions. The two main factors that causes this difference are the occupancy level of their building and the market rent.

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“If you can save the tenant \$1 in energy, you can charge them an additional \$1 in rent, keep the \$1 and still have the tenant’s occupancy cost stay the same. That is more marketable than a promise of an energy efficient building.”

– *Anonymous Interviewee*

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Because the landlord only “keeps” the difference between what it collects and what it spends, the pressure to reduce what it spends is much greater when market rents are low. In times when market rents are lower, reduced operating costs are very important in order to maintain a profit. An energy efficient building will reduce the operating expenses and will allow the landlord to charge less and still maintain a profit. Similarly, in a market where landlords are competing for tenants, a lower operating cost allows the landlord to lower the rent and lure a tenant to their building.

When a landlord has high vacancy in its building, it costs the landlord more money to run it. When the building is full, the rent the landlord is collecting will “cover” the operating costs. Therefore, a landlord may have more incentive to invest in energy efficiency if it anticipates a forthcoming period of high or extended vacancy. When the building is full, there is less incentive to reduce operating expense, because someone else is paying it as well as any increase that may be coming.

### **Property Level Factors**

The way landlords make money from running their properties is dictated by the leases. There are several factors related to operations that disincentivize landlords from making investments in efficiency. These factors are reflected in the way leases are written to protect each party from their concerns. Tenants want to make sure that landlords make investments that will benefit the tenant, not the landlord, and so many of the clauses in the leases reflect that.

### **Operations**

#### *Change in Day-to-Day Operations*

Landlords have streamlined their operations to maximize operational efficiency based on how their buildings run now. Several interviewees pointed out that any change in that system will require developing new operations protocol, and is perceived to cause operational inefficiency. There is a learning curve associated with implementing new technology, and without perceiving a benefit to them, they do not want to make any changes.

### *Tenant Disruption*

Several interviewees pointed out that replacing major building systems is a monumental task. It may require considerable disruption to the tenants, which is often unacceptable. The tenants cannot operate without heating or cooling, and so replacing these systems may be either impossible or prohibitively expensive to do while maintaining uninterrupted services to the tenants.

### *Nature of Multiple Tenancy*

The fact that there is more than one tenant in the buildings in question has an effect on the way landlords make investments. Interviews revealed that both the tenant and the landlord have trouble because of this.

Landlord's main issue is caused by difficulty with allocation of benefit and cost to the tenants. While the landlord is allowed to pass the cost of many upgrades through to a tenant, they must figure out how to pass that cost through to each. There are many factors that go into the distribution of the cost. When tenants are presented with these additional costs, they are likely to question them. This leads to substantial amounts of administrative time and cost, and potential for dispute or litigation. The potential for ill will exists, even though the tenants may benefit later from the cost. Several landlords said that if their buildings were owner-occupied or leased to single tenants, there would be more upgrades that would be done because the landlord could ask the single tenant if they wanted to participate.

Because tenants are one of many, they are likely to question how much any investment in the building will benefit them rather than the landlord or the other tenants. This is in part related to the "free-rider" mentality identified in the literature review section. Several of the tenant interviewees felt that unless they paid close attention to the operating expenses, and these passthroughs specifically, they may be taken advantage of. Because of the complex accounting that goes along with the distribution of these costs, they feel that there is opportunity for "double dipping" by the landlord.

### **Capital and Expenses**

Landlords are typically looking for "smooth" cash flows, without big positive or negative swings from year to year. Because of that, landlords and their property managers have to manage their capital expenditures and operating expenses carefully. This incentive therefore affects the way they spend their money on upgrades to their buildings.

### *Rebates*

Utility companies, government agencies, and other non-profits often offer rebates to organizations that implement energy saving upgrades. This can, of course, motivate an organization to make such an investment. However, the rebate usually only comes after the upgrade has been completed and tested. Therefore, the capital to do the work must be provided by the landlord. Landlords typically prefer not to have to come up with large amounts of capital, and so the rebates may provide less motivation than for those organizations that are better capitalized.

### *Best Use of Capital*

Landlords are always looking to make the most profitable use of their available capital. Because of the way that they are allowed to recoup their investment in energy efficiency, they do not always make much of a profit from doing so. Often, they are essentially allowed to break even on these investments, which is not necessarily attractive in an investment analysis. Unless they see that the investment will increase either their cash flow or the value to tenants or in the asset market, they are unlikely to make an investment.

### *Tenant Consumption*

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“The residential market has studied and proven that if the tenants pay their own utilities, they are more responsible with their consumption”

– *Anonymous Interviewee*

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Paying for consumption directly motivates tenants to lower their consumption. Because they often pay their electric bills directly, tenants are often willing to invest in energy efficiency within their own space. Tenants are less happy investing in the building systems’ upgrades because they do not directly pay the bills. Likewise, in New England, there has been a disincentive to the landlord to upgrade the building systems because of the decoupling of the tenants’ electrical costs from the rest of the operating expenses.

### **Asset Market Forces**

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“Cash flow and appreciation are the two components of a project that make money. Those in it for cash flow are likely to invest, those for appreciation, not so much.”

– *Anonymous Interviewee*

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The second way landlords make money through real estate is appreciation in value of the asset at the time of sale. The landlords interviewed do not currently perceive that energy efficient upgrades will increase the value of their building for several reasons. This becomes a vicious cycle, as the lack of perceived value reduces investment, and the lack of investment reduces value created. Because there is little value perceived, the leases are not structured to encourage investment. Because leases are not structured to encourage investment, little value is created.

### **Decreased Due Diligence Periods**

Repeatedly, the landlords interviewed said that when underwriting a potential purchase, they do not have time to analyze the efficiency of the building. Due to the pervasive shortening of the due diligence periods during a sale, they say they barely have time to get through all of the leases before offers are due. Likewise, they indicated that potential purchasers do not ask about the efficiency when underwriting bids, for the same reason.

## Cap Rates

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“There is no noticeable change in cap rate for an energy efficient building. Buyers will only pay more if there is an increase in NOI.”

– *Anonymous Interviewee*

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Landlords may realize some of the value of energy efficient upgrades if it increases NOI by lowering the operating expenses. They do not, however, see that there is fundamental change in the way the building is valued, such as through a change in cap rate. They may look at the efficiency of the building, but only consider it a “bonus on the NOI side” and are not willing to pay more purchase dollars per dollar of future income.

## **Organizational**

There are factors influencing energy efficiency upgrades that have little to do with the actual operation of the property, but are either a direct result of the lease, or are a cause of the way leases are structured. If landlords have a desire to operate in particular manner, they will have the leases reflect that and reward it.

## **Length of Hold Period**

The length of time that a landlord plans to hold a building affects the way they invest in energy efficiency. The owner’s investment criteria drive their decisions, and the lease is a tool to that end.

## *Nature of Business*

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“Flippers of property want to improve cash flows and capitalize it. They are only interested in spending the money to get the building leased at the highest rents possible.”

– *Anonymous Interviewee*

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The type of business the landlord is in affects investment. Landlords who are in the business of buying, improving or retenanting, and then selling are likely to focus on keeping first costs down. However, as one interviewee said, “Our favorite hold period is forever”, and they do invest more in energy efficiency. As a long term holder, their number one priority is cash flow, and therefore energy efficiency is more important to them. But as they noted, much of their competition are “merchant builders” or “flippers”.

## *Investment Horizon*

Even among those “long term holders”, ownership of real estate assets has changed from a 10 or more year hold to a 5 -8 year hold. This is caused by the way that landlords get their financing, and from the increased use of “real estate funds” with a finite life as an investment vehicle for multiple investors. Funds need to get their money out in order to pay investors, so it leads to quicker sales. One landlord did note that this was not an issue for them because they will often sell a building from one of their funds to another, but that seemed to be the exception rather than the rule.

## **Public vs. Private**

Real estate is owned by entities that either get their money through private arrangements, or are REITs that get their money from public markets. The nature of their source of capital affects their investment. While private owners have more latitude with when their profits come, REITs have to answer to Wall Street analysts. They have to report quarterly what their profits are, and have to keep their quarterly distributions stable. This three month timeframe does not match well with the amount of time required for a payback on energy upgrades, unless the REIT is large and has reserves for this type of investment.

## **Size of Organization**

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“The concern for energy efficiency will be led by very large landlords and small, entrepreneurial landlords. The large landlords have money to hold themselves out as good corporate citizens, and the entrepreneurial firms are able to make commitments to these measures without oversight by the public and the board of directors. Mid-size landlords will be hindered by the lack of private control and large corporate budgets.”

– *Anonymous Interviewee*

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The size of the landlord will affect the way they invest. Large owners tend to have more capital available to them for sizable investments. This is especially true of class A owners, who tend to be larger and better capitalized than Class B owners. Class B owners tend to have less manpower to devote to such initiatives, whereas landlords with large engineering staffs tend to devote more attention to energy efficiency.

## **Internal Dynamics**

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“Stimulus from management has been missing for many years”

– *Anonymous Interviewee*

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The priorities of various employees or departments within the landlord’s organization often clash with each other, hampering investment. Many interviewees indicated that the push for sustainability is either from the top down or bottom up, but not from middle management.

One interviewee told me of an incident where the engineering group had identified a program that could reduce the consumption of the building as a whole, but which was met with resistance, or at least a laissez faire attitude, from management. At one point he wanted to get the tenants involved in the Energy Star lighting program and his boss said “Why do I care if the tenants save energy?” His response was that Energy Star measures all of the electricity that comes into the building (including the tenant consumption), converts it to BTUs, divides by the sf (with certain adjustments) and gives a rating. With the improvements on base building systems only, he was coming up short of where he needed to be in order to get the rating. Eventually, he was able to get the program implemented, but this example highlights the motivation, or lack thereof, created by the organizational disconnects that are reflected in the existing lease structure.

Another example of competing interests is the way that employees are compensated for doing their jobs. One interviewee indicated that building engineers do not want to spend capital on upgrades because their bonuses are in part determined by their ability to keep operating costs down. Leasing brokers, on the other hand, want to have the buildings be competitive with others in the marketplace, because their compensation is based on getting tenants moved in. Therefore, they want the upgrades done regardless of cost so that they can market the building in the most positive light. So their personal stake in how the transactions occur plays a role outside of the right thing for the organization as a whole.

### **Author's Inferences**

After listening to the interviewees and analyzing the facts I have reported above, I have come to several personal conclusions on how leases and investment are interrelated.

#### *Reflection of Desires*

The key here is that the leases are not developed in a vacuum. They develop to reflect the desires of each party to the contract. Although it is found that the lease structure disincentivizes landlords from investing in efficiency, this structure has developed to encourage what the parties want.

#### *Do Operating Expense Savings = Revenue for the Landlord?*

Because of the way leases are structured, it is not clear that each dollar saved in operating expenses goes straight into the landlord's pocket. Consider a landlord who is analyzing an upgrade to her building. Within this building, suppose there is one lease that is several years into its term. The savings created by the upgrade may go to reduce what the tenant will have to pay as escalations over the base year's operating expenses. Only after the operating expenses have been reduced to the level of the base year for any particular lease will the landlord receive any of the savings. So in this scenario, the older the leases in the building, the less benefit from operating expense savings there are to the landlord. Perhaps developing a weighted average base year for the building would help landlords determine who will reap the benefit of an upgrade. For example, for each lease, take the base year operating expense and multiply it times the number of square feet leased in that lease. Do that for each lease, and sum the totals. Then divide by the number of leased square feet. That will give the average base year operating expense. Then take the current year's expected operating expense and subtract the expected savings created by the upgrade in this year. If what's left is greater than the average base year operating expense there will be no actual savings created for the landlord, merely a reduction in escalations for the tenant. If what is left is less than the average base year operating expense, then the landlord will earn a direct return on his investment.

#### *Timing of Investment Highlights Incentives.*

In terms of saving operating expenses profitably for the landlord, the timing of the investment seems to be crucial. It seems a landlord will want to make investments when most of the building is full but has just turned over and it is easier to get below the average base year. If the landlord makes investments while the building is empty, the incoming base years will be set based on the efficient system's operating cost, which will be low, and the landlord will not pocket any savings. If the landlord makes investments when the building has leases which are older, the base years will be lower and it will be



difficult to get back below them. Therefore, I find that the landlord will invest more when the landlord profits more. This leads me to believe that with the right incentives built into the leases, landlords would continually be looking for ways to lower the overall cost of running the building.

#### *Are the Tenants Fooling Themselves?*

I keep thinking of an analogy to buying a car, where the dealer wants to know what is most important to you: price or payment? If you want a low payment; no problem, just make more of them. If you want a low price; no problem, just pay a higher interest rate. But they get the same amount of money in the end. What is more important to the tenant: base rent or occupancy cost? It likely depends on a business's internal systems and decision making processes. Obviously, base rent represents only a part of the true long term cost of occupying a space. But if the tenant feels like it is getting a deal that meets its needs, it will be happy. However, I feel that the tenant could lower its total occupancy cost if the landlord had incentives to keep the total occupancy cost down.

#### *Rising Energy Costs*

There is one factor that may, in the future, add to a landlord's ability to make efficiency upgrades. Energy costs are skyrocketing. Energy prices used to be fairly stable in the amount they would rise over time and so it made the analysis of the benefit of saving energy fairly straightforward. As the energy markets become more volatile, more effort may be put into finding ways to save energy. Tenants may be more amenable to changing their in-place leases to allow landlords to make these upgrades.

## CHAPTER 8 – CHANGES & IMPROVEMENTS

I asked all of the interviewees to consider whether there was a change possible in the way leases are written that would encourage more investment. I asked them to consider a full service gross lease where all operating expenses are included in the base rent. I also asked them to consider keeping the existing structure of the existing leases in general, but to include a cost sharing provision similar in concept to that in a GMP construction contract. This clause would stipulate that if management took proactive steps to decrease operating expenses through energy upgrades, instead of having those savings credited to the general operating expense pool, they would be considered separately. The savings would first be credited toward the cost of the project, and then any excess savings, instead of being credited to the general operating expense escalations, would be split between the tenant and the landlord at some specified rate. This would prevent the savings created by energy efficiency from being confounded with the other operating expenses which may continue to rise with general inflation. I also asked them to suggest any creative methods they could think of to stimulate investment through the lease structure.

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“What you want is utopian. It would only work if you were a dictator and could set the rules, but the market will never accept it.”

– *Anonymous Interviewee*

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All of the landlords and attorneys that deal with these documents on a day-to-day basis said that unless the demand from the tenants changed, the documents will continue to reflect what they want. They feel that the current structure, while it may not encourage higher levels of investment in energy efficiency, closely represents the desires of both sides when it comes to leasing office space. The tenants indicated that they were not interested in contributing to the improvement of the landlords’ physical plant, and therefore did not want to alter their commitment to pay for base building equipment. The consensus was that if something was going to change, it would have to come from the government in the form of laws or taxes. There are just too many competing demands in the leasing process to properly address this issue on a deal-by-deal basis.

### Lease Structure

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“The change in lease structure would be too complicated – Keep It Simple Stupid!”

– *Anonymous Interviewee*

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Each interviewee with an opinion agreed that changing the lease structure would be difficult. Anything new would not be customary and would be difficult for the community to accept. No one wants to be the first one to implement a change. The tenants’ advisor will be leery of telling their clients to do something unproven and to become the test case. The landlords do not want to become the first to do it for fear that deals will go to a landlord with a more comfortable and familiar structure. It would increase the legal fees for the first many times it was implemented because you would lose the accumulated knowledge through experience with the tried and true structures. Furthermore, with existing buildings, it would become difficult to make practical in a building full of existing leases.

### *Landlord Position*

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“I want my rents as “net” as possible.”

– *Anonymous Interviewee*

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The landlords were unilaterally against any sort of cost savings provisions or moving to a full service gross lease. As one put it, they do not want anyone “near my [the landlord’s] pocket” dictating their profits to them. They want to lock in their income as much as possible, and pass through changes in operating expenses to the tenants. Changing the structure to one that would motivate them to increase investment would, by definition, increase risk to them. They feel that they have all of the capital tied up in the building, and that if they find a savings in operating expenses, they should be able to keep it. They did not believe that creating a cost sharing provision would give them a piece of a much larger pie, even if it was a smaller percentage piece. They felt that the market was a much stronger and more effective mechanism for indicating what tenants wanted in terms of energy efficiency. That is, we should leave the existing lease structures as is and let the market rent tenants are willing to pay for various buildings tell us what the tenants want in a building.

### *Tenant Position*

The tenants did not show a great interest in changing the lease structure either. They indicated that they thought that if the landlord had to price in the risks associated with all of the increases, they would end up paying a premium associated with that risk and it would cost them more. As with the landlords, they did not believe that if the landlords were given incentives to save energy, the total cost would go down and thereby save the tenants money. As stated above, tenants do not want to take the risk to be the first one to do this for fear that they will get bitten. If they do what is status quo and move along like everyone else, no one can blame them. If they take a risk and fail, they stand to be punished in some manner.

### **Governmental Intervention**

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“If the body populi thinks this is the right thing, it would need to be done through codes or laws.

But then you would have right-wingers saying that it is an anti-business infringement on free trade.”

– *Anonymous Interviewee*

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There was almost universal agreement that the only way to force the energy efficiency idea onto commercial landlords is through government action, either through mandates or taxes. This will then cause the leases to change to reflect the environment they are written in.

### *Efficiency Mandates*

One common suggestion was that the government could mandate energy efficiency levels that have to be met in every building. Then these requirements would be handled as any other law is handled through the leases. The landlord must comply with the law and the cost is passed on to the tenants as dictated in the lease. They felt this would be more effective than a voluntary change in lease structure.

The interviewees made several comparisons to existing laws that were successful in meeting the goals of the respective legislation. One landlord referenced the Americans with Disabilities Act (ADA). It was the morally right thing to do, and most tenants would have told you that they thought everybody should be able to access their work place regardless of their disabilities. But they may not have been willing to pay for it or change their lease to enable it. But since it became law, all landlords now comply with it. One attorney referred to the Corporate Average Fuel Economy (CAFE) regulations that set the minimum fuel economy that automobiles must be manufactured to meet, and the Gas Guzzler Tax that penalizes car manufacturers that do not comply. Car companies did not care how much gas you burned, and neither did the consumer, until the government stepped in. Now all cars meet the minimum standard.

### *Energy Taxes*

Several interviewees suggested taxing high energy consumption. Most of their ideas were built on the cap and tax model. Under their theories, buildings would be allowed a certain amount of energy, usually measured in some unit per square foot, and for any amount over that allowance, the landlord would be taxed. Again, they theorize that this would be a stronger incentive to lower energy consumption than a change in the lease structure.

### *Mandatory Lease Structure*

Several interviewees concurred that a change in the lease structure could increase investment in energy efficiency, but realized that it would not be accepted through market forces. They suggested that governments could insist on certain requirements in leases that would encourage such investment. They thought that there were applicable analogues in the way that some states outlaw submetering of electricity and billing back based on usage. The analogy is not in the subject matter, rather just the fact that states can find a way to legislate lease matters.

## **Author's Inferences**

The revelations of the interviewees have led me to several conclusions about how landlords can be best motivated to invest in energy efficiency.

### *Identifying the Actual Problem*

The real problem is that current industry standard leases do not incentivize landlords to make investments in energy efficiency. While I agree that legislation or code changes would cause landlords to invest in energy efficiency, I feel that there is one major drawback. They will only invest to the level required by the law or code. I feel that while this would be an improvement, it would not realize the full potential benefit possible to the tenants and society at large. It does not solve the real problem of motivation. I believe that creating a structure of incentives within leases can create a win-win situation for everybody. If everybody stands to save money or make a profit, it will be easier to get each party to participate. Putting the capitalistic nature of the organizations involved to work will create an on-going devotion to reducing the consumption of energy by buildings, because in the end, it will lower the total cost of operation. If the government is going to have an effect here, it should be through motivating people to solve the actual problem by creating incentives to use a more appropriate lease structure.

### *Analogies to Guaranteed Maximum Price*

I still believe that there are analogies to the Guaranteed Maximum Price form of construction contracts. The fixed price contract was the method of choice for almost all of history. Both sides thought that rigid adherence to very detailed documents gave them the best negotiating position and protected their interests. However, savvy consumers realized over time that those inflexible contracts might not be the best contract type for complex projects with constantly changing parameters. When contracts were developed to incentivize everyone to save money and split the savings, both sides felt they were part of an open process and that it was a win-win. The risks were put in the hands of the party best equipped to handle them, and therefore the overall costs were reduced because risk was priced in at a lower rate. I do not think many groups want to go back to the adversarial methods because they now see the benefit of motivating the parties properly through contracts. But it took a long time for their use to become industry standard. I believe that with some change in thinking, the same type of incentive-based contract can and will be used in real estate leases.

### *Overcoming Resistance to Change*

From my interviews, it seems that the biggest problem in changing the status quo is overcoming the fear of the unknown. If the parties involved could become comfortable that they can benefit from a change, there would likely be less resistance.

Perhaps a “learn by doing” approach would help relieve this resistance. Kahn (2008) explores this approach regarding solar panel technology. He says, “Let me return to endogenous technological innovation. Intuitively, if the people of Berkeley all install solar panels do firms in this industry enjoy large learning by doing effects? Does their cost of production decline as a function of cumulative experience? Why does this matter? If learning by doing effects are large, then we can be optimistic that a big green demand push today (either due to government subsidies or population expressed environmentalism) will help to lower the price and raise the quality of future green products. Just as the Pentium computer is better than the old 386 PC, learning by doing would mean that future solar panels will be of higher quality than products today because the producers gained experience. The devil here is how you measure these learning gains.” If the cost of change can be overcome by the benefit in a relatively short time, we need only to find the catalyst to make the first changes. But how do we find such a catalyst? I think there will need to be a change in desire from the tenants; a realization that if the total cost of operating a building goes down, their total occupancy cost will go down. Landlords need to get onboard with the concept that they will not be giving control of their profit to the tenants, but rather creating additional profit opportunities. There will also need to be leadership within the industry that can show that leases can be structured in a manner that will protect each party’s interest, while simultaneously opening up opportunity for improving energy efficiency and therefore decreasing overall operating costs.

## CHAPTER 9 – CONCLUSIONS

The most significant finding of this study is that the lease does not determine the way the market works, rather the market determines the way the leases are written. The leases are merely reacting to each party's demands or desires when drafting these leases, but these desires often do not deviate from market standards. The result at this time for the Boston market is that leases simply do not incentivize the landlords to make investments in energy efficiency because the tenants do not want to pay for the landlords to do it.

Commercial landlords therefore invest less in these upgrades than owner-occupiers for several reasons. The first is that the financial analysis is simpler for owner-occupiers because of the fact that there is only one entity involved, and all costs and benefits are realized by the same party. Also, the owner-occupiers invest for reasons other than the straight cost savings benefit of the upgrades, such as their commitment to the environment and social improvement. The commercial landlords are unable to make significant profit from these upgrades due to existing recapture clauses and operating expense allocation in existing leases, and the payback period on many of these investments does not satisfy the investment horizon of many commercial landlords. They lack pressure and motivation from their tenants, as evidenced by the tenants' refusal to pay higher rents for more efficient buildings. Finally, there is no perception of a premium, in the form of a lower cap rate, paid by the capital markets at the time of sale.

This is a very complex issue, with no single, clear resolution. There have been many suggestions as to how this problem may be solved, ranging from a complete change in lease structure, to government intervention through efficiency mandates or taxes, to a laissez faire stance that will allow the market to take care of the problem. I think that none of these in isolation will solve the problem, but that a combination of them all may ameliorate many of the issues.

The existing lease structure removes the landlords' incentive to invest in energy efficiency through both the way operating savings are allocated and in the way the investment is recouped. Even though the landlord can recoup its investment over time, the typical lease structure does not allow for much profit on that investment. Furthermore, when the operational savings are realized, they go first to offset the overall pool of operating costs. Only when the total operating costs approach the weighted average base year operating expense level will the landlord start to realize any benefit. This dilutes the benefit created by the upgrade by commingling it with the other expenses.

It has been suggested that a completely new form of lease is required in order to address the problem. Some have recommended a return to the full service gross lease. This, however, alters the way in which all of the operating expenses are allocated, and puts all of the risks on the landlord. Landlords do not want to take on this risk as it makes their cash flows more volatile. Tenants do not like this because they know they will be paying a premium to the landlord to cover all of those risks, thereby increasing rent. Leases have evolved into this modified gross form over time to reflect both the landlords' and tenants' goals, and there is little desire on either side to go back. Some have developed an entirely new "green lease" that has been constructed to address all of these issues. However, this would have an extremely

high transaction cost to implement, as it is not understood by any of the parties and has not been tested over time. I propose a modification to the existing lease structure as the best way to minimize transaction costs and to isolate the financial effect of energy efficiency upgrades. It would consist of isolating and tracking the energy consumption of the base building systems separately from the rest of the operating expenses. Any savings created by the implementation of an upgrade would first go to payback the investment by the landlord. Any additional savings would then be split at some predetermined ratio between the landlord and tenant. This would allow the landlord to make a profit sooner than under the existing structure, thereby making it more feasible within shorter investment horizons. It would also incentivize the landlord to perform upgrades that it wouldn't otherwise do, so that the tenant would see more savings. This would open up new revenue potential for landlords, and would also lower the total operating costs of the buildings, and therefore tenants' total occupancy costs.

The absence of a rent premium for more efficient buildings comes from a demand-side failure. Tenants simply do not place value on energy efficiency, and are therefore unwilling to pay more rent for it. This is likely caused by an asymmetrical information problem. The tenants do not have sufficient understanding of the way the upgrades will benefit them, and feel that they will be making an investment in a building that will benefit the landlord. Furthermore, the cost of becoming informed is too high compared to the benefit they stand to receive. They do not want to spend the time and effort to understand the way the lease works when the potential benefit to them is a small fraction of their overall operating budget.

Some have proposed that the only way to overcome the demand-side failure is to insert the demand artificially through government intervention. While I think that taxing energy consumption, implementing mandatory minimum efficiency levels, or mandating a different lease structure might increase investment somewhat, I do not think it solves the underlying problem. I think government might serve a more useful role in developing leases that encourage investment by landlords and using those leases for their own real estate needs. This "learning by doing" approach would help show the tenants that there is, in fact, a benefit to the tenant in using this type of lease, and help overcome the costly information problem outlined above. Government should also create incentives for landlords and tenants participating in leases that create the proper motivation.

The perceived absence of a cap rate premium upon sale is purely a function of the capital markets. Even though an upgrade may, in some cases, increase NOI and therefore increase sales price, it is not an increase in purchase dollars per dollar of NOI. Landlords must weigh that against investing in other upgrades, such as a lobby renovation or addition of amenities, which may change the cap rate because it increases the desirability of the building and therefore stability of the cash flow.

No one, to my knowledge, has proposed a way to change the assignment of a cap rate based on energy efficiency upgrades. I think that this is an example of where a laissez faire attitude is appropriate, because, with time, a more efficient building will become more valuable. I believe that as energy costs continue in their volatility, the capital markets will begin to perceive a more efficient building as a way to stabilize cash flows because the less energy a building consumes, the less variation in cash flow there will be with a change in energy cost. This will make a more efficient building more desirable than a less

efficient building with the same NOI, and increase what the capital markets are willing to pay for the efficient building.

The bottom line is, summarily changing the lease structure will not increase investment in energy efficiency. We must first address the understanding of the issue in the market place. We have a long way to go to convince everybody involved of the potential benefit of such a change. We need to look to the success of ground breaking contractual changes, such as those found in the construction industry, to motivate the players to get on board. It will have to start with the innovative thinking of industry leaders and government officials to show the way to the rest of the industry. Perhaps the best combination would be to mandate performance or to tax excessive consumption while at the same time developing leases that better address how to share costs and benefits. By doing this, we will set appropriate minimum goals, and provide suitable tools to achieve them. Without both of those pieces, it seems unlikely that much progress will be made.



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## **APPENDIX A - BUILDING TERMINOLOGY**

### *Existing Inventory*

Buildings that have received a certificate of occupancy and are able to be occupied by tenants. It does not include space in buildings that are either planned, under construction or under renovation. (CoStar, 2005)

### *Multi-Tenant*

Buildings that house more than one tenant at a given time. Usually, multi-tenant buildings were designed and built to accommodate many different floor plans and designs for different tenant needs. (CoStar, 2005)

### *Office Building*

A type of commercial building used exclusively or primarily for office use (business), as opposed to manufacturing, warehousing, or other uses. Office buildings may sometimes have other associated uses within part of the building, i.e., retail, sales, financial, or restaurant, usually on the ground floor. (CoStar, 2005)

### *Boston Market*

I will be looking at the office buildings within the "I-95 Belt". This includes Boston and the surrounding suburbs out to and including developments immediately bordering the circumferential ring created by Interstate 95.

### *Central Business District*

The designations of Central Business District (CBD) and Suburban refer to a particular geographic area within a metropolitan statistical area (MSA) describing the level of real estate development found there. The CBD is characterized by a high density, well organized core within the largest city of a given MSA. (CoStar, 2005)

### *Suburban*

The Suburban and Central Business District (CBD) designations refer to a particular geographic area within a metropolitan statistical area (MSA). Suburban is defined as including all office inventory not located in the CBD. (CoStar, 2005)

### *Class A*

A classification used to describe buildings that generally qualify as extremely desirable investment-grade properties and command the highest rents or sale prices compared to other buildings in the same market. Such buildings are well located and provide efficient tenant layouts as well as high quality, and in some buildings, one-of-a-kind floor plans. They can be an architectural or historical landmark designed by prominent architects. These buildings contain a modern mechanical system, and have above-average maintenance and management as well as the best quality materials and workmanship in their trim and interior fittings. They are generally the most attractive and eagerly sought by investors willing to pay a premium for quality. (CoStar, 2005)

### *Class B*

A classification used to describe buildings that generally qualify as a more speculative investment, and as such, command lower rents or sale prices compared to Class A properties. Such buildings offer utilitarian space without special attractions, and have ordinary design, if new or fairly new; good to excellent design if an older non-landmark building. These buildings typically have average to good maintenance, management and tenants. They are less appealing to tenants than Class A properties, and may be deficient in a number of respects including floor plans, condition and facilities. They lack prestige and must depend chiefly on a lower price to attract tenants and investors. (CoStar, 2005)

## **APPENDIX B - LEASE TERMINOLOGY**

### *Base Amount*

A specific dollar amount defined within a lease in which certain rent escalations and additional expense reimbursements to the landlord may be calculated. Actual tenant expenses may be higher or lower than the Base Amount. The Base Amount is usually based on the landlord's estimate of tenant expenses for the year (calendar or fiscal) the lease commences. (Synonyms: Expense Stop, Base Stop Amount) (NAIOP, 2004)

### *Base Year*

A specific year defined within a lease against which certain rent escalations and additional expense reimbursements to the landlord may be calculated. Tenant expenses may be higher or lower during the subsequent year(s) when compared to the Base Year. Typically, the Base Year is the year the lease commences. It can be a calendar year or a defined fiscal year. (Synonym: Comparison Year) (NAIOP, 2004)

### *Capital Expenditure*

The cost of an improvement made to extend the useful life of a property or to add to its value, such as adding a room. The cost of repairing a property is not a capital expenditure. Capital expenditures are appreciated over their useful life; repairs are subtracted from income for the current year. (REIClub.com, 2008)

### *Common Area*

That portion of a property which is available for use by all tenants or their invitees, over which the landlord retains control and liability and which is not available for lease. Examples include: hallways, restrooms, parking lots, sidewalks, plazas, recreation areas, mail rooms, vending rooms, association expenses, janitorial closets, mechanical rooms, electrical rooms, and elevator lobbies. (NAIOP, 2004)

### *Common Area Maintenance Expenses*

Common Area Maintenance Expenses (CAM Expenses) are that portion of operating expenses incurred by the landlord to maintain the common areas. CAM Expenses are a subset of operating expenses and may be recovered from tenants separately or as part of a formula in which all operating expenses are passed on to the tenants. (NAIOP, 2004)

### *Direct Expenses*

Direct expenses are that portion of operating expenses specifically relating to the tenant's leased space. Examples include cleaning of a tenant's space and utilities provided to the tenant's space. (NAIOP, 2004)

### *Effective Rental Rate*

A financial analysis tool for comparing alternative leasing transactions. Generally, the effective rental rate is the equivalent constant rent per period that equals the present value of the net cash flows over the lease term. The present value is typically discounted as a cost of capital rate or a property discount rate. The calculation of an effective rental rate will vary depending on whether it is based on the

tenant's or landlord's perspective. Effective rental rate differs from net rental rate as it is not limited to expenses and incorporates cash flows related to capital items such as tenant improvements and leasing commissions. (NAIOP, 2004)

#### *Escalation Clause*

An escalation clause is a clause in the lease that provides for the periodic adjustment of rent based on some event or index, e.g., a provision to increase rent resulting from increased operating expenses. Escalation payments are frequently based on changes in a local wage rate or index such as the Consumer Price Index (CPI) (Synonym: Expense Recovery Clause) (NAIOP, 2004)

#### *Gross Lease*

A lease in which the landlord receives stipulated rent and is obligated to pay all or most of the property's operating expenses and real estate taxes. Disclosure of the specified costs of operation is required. (Synonym: Full Service Lease) (NAIOP, 2004)

#### *Modified Lease*

A lease in which the landlord receives a stipulated rent and the payment of the property's operating expenses are divided between the lessor and lessee via specified terms in the lease; also called Modified Gross, Net-Net (Double Net), Net-Net-Net (Triple Net), etc., depending on the degree to which the tenant or landlord are responsible for operating costs. (NAIOP, 2004)

#### *Net Lease*

A lease in which the tenant pays all property operating expenses, in addition to the stipulated rent. Disclosure of the specific expenses to be paid directly by the tenant is required. (NAIOP, 2004)

#### *Operating Expenses*

Operating expenses are those recurring expenses that are essential to the continuous operation and maintenance of a property. Operating expenses may be further divided between common area maintenance expenses (CAM Expenses) and direct expenses directly related to the tenant's leased space (sometimes called "direct expenses"). Operating expenses do not include real estate taxes, insurance, mortgage payments, capital expenditures and depreciation. (NAIOP, 2004)

#### *Tenant Expenses*

Tenant Expenses are comprised of operating expenses, taxes, and insurance. (NAIOP, 2004)

## APPENDIX C - INTERVIEW QUESTIONS

Below are the actual questions sent to each type of interviewee.

### *Landlord*

- 1) How are your leases structured regarding operating expenses? Are there any typical provisions in your leases regarding the future capital costs for energy upgrades?
- 2) In general, how would you rate your buildings in terms of how close to “state of the art” they are in energy efficiency?
- 3) Do you feel that your buildings’ energy efficiency affects lease negotiation? In what ways?
- 4) During the leasing process, what information do prospective tenants require from you about historic operating expenses?
- 5) What types of energy upgrades do you currently invest in? Why?
- 6) Are there upgrades that you know would save energy, but for some reason are not doing? Why are you not doing them?

### *Tenant*

- 1) How energy efficient do you think your building is? Do you think there is room for improvement?
- 2) How important was the energy efficiency of the building in your selection of a space to lease? Did you compare historic operating costs of potential buildings?
- 3) Do you feel your landlord is minimizing your operating costs when making decisions on how to operate the building?
- 4) Do you feel that your actions affect the operating cost that you pay? The landlords’ actions?

### *Attorney*

- 1) What general type of leases is used in office buildings in Boston?
- 2) Under this lease structure, who pays the energy costs of operating the base building systems? How is it determined how much they pay?
- 3) Under this lease structure, how are the capital expenditures related to improving the energy efficiency of the building appropriated?
- 4) Do leases specifically address landlords’ investment in energy upgrades?
- 5) Do leases specifically address tenants’ energy consumption?
- 6) How does the “roll” of leases affect the way operating expenses are divided up among tenants?

### *Broker*

- 1) Do your tenants consider operating expenses when selecting a site? How important is it to them?
- 2) How are the leases structured regarding operating expenses? Are there any typical provisions in the leases regarding the future capital costs for energy upgrades?
- 3) What are the main negotiating points regarding operating costs while doing a deal? Do you consistently see the same sticking points in negotiations?
- 4) Do different landlords look for different things when negotiating these leases? Do you know why?
- 5) Do different tenants look for different things when negotiating the leases? Do you know why?

*Property Manager, Engineer, Construction Manager*

- 1) In general, how would you rate buildings in Boston in terms of how close to “state of the art” they are in energy efficiency?
- 2) What types of upgrades do landlords currently invest in?
- 3) Are there are upgrades that you know would save energy, but for some reason landlords are not doing? If so, do you know why they do not do them?
- 4) Are some landlords more proactive than others in upgrading their buildings? Do you know why?
- 5) Do you see a different level of investment in energy efficiency by owner-occupiers than by landlords of for lease buildings? If so, do you know why?
- 6) Under what circumstances do landlords decide to invest in upgrades? When do they hold off?