NYC Office Building – Executive Summary

DOE Better Buildings Case Competition: Team Endotherm

The Family Trust has requested an investment strategy that maximizes profitability via energy efficiency. The trust does not plan to sell the building in the near future, and therefore should seek a stable long-term income from the property. This can be achieved by:

- Reducing the building's operating costs and increasing its asset value.
- Maintaining a strong relationship with the law firm.
- Maximizing potential income from smaller tenants.

Our strategy maximizes energy efficiency, while strengthening tenant relationships, improving the building's market position, and integrating compliance with NYC's Greener Greater Buildings Plan legislation. Careful phasing is crucial to achieving all this with minimal cost and hassle. Thus, we recommend the following approach:

Step 1. Engage Law Firm. The law firm brings prestige and stable income. The firm's lease renewal in 2015 presents a natural time to discuss changing goals for the building. During renegotiation, the Trust should commit to pursuing Energy Star and LEED EBOM, eliminating the 12% submeter markup, and implementing cost-saving retrofits. In exchange, the firm should agree to change their capital expense clause to "extent of savings," and ensure that their next office space renovation achieves compliance with GGBP lighting requirements.

Step 2. Implement Retrofit. The firm should then install the 19 energy conservation measures identified in the audit. With ConEd incentives, the up-front cost will be $180,400, for annual savings of $37,700, with a payback of 4.8 years. The Trust will receive all savings until their costs are paid back, after which point the tenants will receive a portion of the savings via lower shares of base building costs. The net present value of savings increases asset value by $500,000.

Step 3. Align Small Tenants. The small tenants should be moved onto sub-meters and modified gross leases, either at the time of retrofit or as leases roll over. This locks in the Trust's base building expenses, as tenants will pay their proportional share of future cost increases. This also establishes a financial incentive for tenants to operate their own spaces efficiently.

Step 4. Go For Green. Once all stakeholders' interests are aligned toward efficiency, achieving Energy Star and LEED EBOM Silver is achievable. The retrofit will increase the building's Portfolio Manager score to 69, and tenant lighting upgrades can provide the remaining 6 points. The post-retrofit building already qualifies for 30 LEED points, and can achieve the additional

10 needed for LEED certification at no cost. An additional 10 points, needed for Silver certification, can be achieved at a moderate cost and should be pursued if important to the firm.

I. Current Conditions and Investment Context

A. Investment Strategy

Our investment strategy will maximize the return on investment in efficiency and align the tenants as partners in the process of achieving the most efficient building possible. As the Family Trust plans to hold the building for the foreseeable future, the main goals should be the long term stability and operating profitability of the building. Unlike a Real Estate Investment Trust (REIT), the Trust does not seek to make quick improvements and monetize them through selling the building in the next few years. Therefore, the main goals for the building should be:

- *Reduce operating costs and increase asset value.* Investments in energy efficiency decrease energy costs, improving net operating income. Public reporting of benchmarking scores may also begin to influence the attractiveness and valuation of buildings. Both of these factors ultimately influence the asset value of the building.

- *Maintain a strong relationship with the law firm.* The building is in the advantageous position of hosting a major law firm's headquarter. Retaining this tenant and keeping them satisfied is crucial to the building's stability. The law firm has expressed interest in being in a "green" building. The building can also deliver value by providing a pleasant work environment, while simultaneously controlling operating costs.

- *Maximize potential revenues from smaller tenants.* When leases are designed properly, tenants are incentivized to conserve electricity, and both the owner and tenants benefit. It may also be possible to attain higher rents because of a green building label.

The Chelsea Building's relationship with its tenants is vital to achieving a stable and profitable building. But the dynamics of the relationship and lease structures with the law firm and the small tenants are very different. As such, a separate strategy is needed for each. However, it is possible to make changes to the building in a manner that is mutually beneficial. This can only be done through a careful and strategic implementation timeline.

The timeline for implementation must coordinate investments with strategic changes in tenant relationships as well as Greener Greater Building Plan compliance. Starting in 2011, and then every year thereafter, each large building must be benchmarked, and the results reported publicly. An energy audit and retro-commissioning study of the base building system must be submitted beginning in 2013, and every 10 years thereafter (already complete). Finally, by 2025, all non-residential buildings must upgrade their lighting in alignment with the ECC standards and all commercial tenants greater than 10,000 square feet must be sub-metered (NYC, 2009).

Aligning relationships with tenants and achieving GGBP compliance will move the building significantly towards achieving a green label such as LEED or Energy Star. Cost-effective improvements to the base building alone will move the building from a Portfolio Manager score of 62 to 69. It will be difficult to achieve a higher score without doing work in tenant spaces. However, the required lighting upgrades in tenant spaces—coupled with sub-metering and lease

changes that incentivize efficiency—can likely drive enough additional efficiency to achieve a Portfolio Manager Score of 75, sufficient for an Energy Star rating. LEED Certified can then be achieved at almost no cost, and Silver can be attained with moderate additional costs.

Our specific recommendations for actions regarding tenant relationships and leases, GGBP compliance, and attaining Energy Star are straightforward. But they must be carefully phased and coordinated in order to maximize returns to the Trust. Below we detail the implementation strategy in four phases: engage the law firm, optimize base building efficiency, realign tenants, and go for green. These steps can be easily implemented over the next ten years, or can be completed in a shorter time frame with some additional effort.

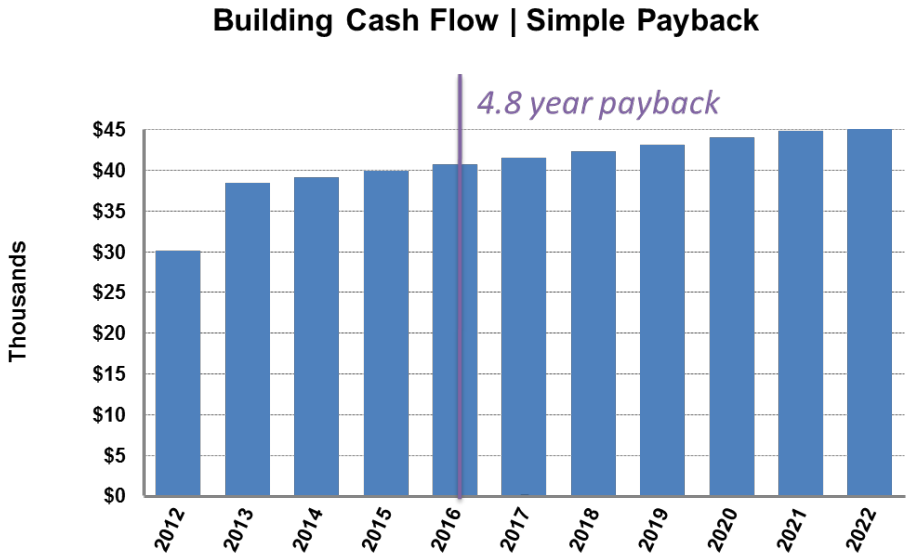
B. Technical Potential for Efficiency

Prior to approaching the investment strategy for the building, we examine the current physical conditions and opportunities for efficiency. From a purely technical perspective, it is possible to cost-effectively reduce energy consumption by 6% and operating costs by 3.3%. Considering these recommendations apart from the implementation complexities of a multiple stakeholder environment, every recommendation is cost effective and has an efficient payback. The building currently has an Energy Star score of 62, and implementing all suggested upgrades would enable the building to qualify for LEED Certification, corresponding to an Energy Star score of 69.

The building is 300,000 square feet, twelve stories high, and was originally built in 1963. In 2004, the building's interior and exterior were renovated and its mechanicals upgraded. However, this renovation was not performed with an energy efficiency goal in mind. A 4-pipe hot/chilled water system powered by steam boilers is the primary mode of heating and cooling in the building. The cooling plant, located in the basement, subsists of three BAC cooling towers. The building has an advanced energy management system that remotely controls and optimizes building performance. Current building lighting is primarily dimmable incandescent (85%) with a small fraction provided by fluorescent (10%) and metal halid (5%). Tenant spaces are primarily T8 and T5 fluorescents, and workstations include adjustable task lighting. The building has an EUI of 104kBtu/ft^2 and costs $3.77/ft2 to operate, where $3.55 of this total is electricity and $0.22 steam.

An audit and retro-commissioning analysis were recently completed to support this investment strategy and comply with the GGBP requirements. The study, performed with LEED EBOM in mind, and concerning only base building components, identified 19 energy conservation measures. The total recommended investment is $197,000 with an annualized savings of $37,653 leading to simple payback of 5.3 years. Con Edison offers richer incentives for these improvements than NYSERDA. The project is eligible for $17,400 in ConEd incentives or

approximately 9% of the capital cost. This reduces the upfront investment to **$179,600** and the simple payback down to **4.8 years**.

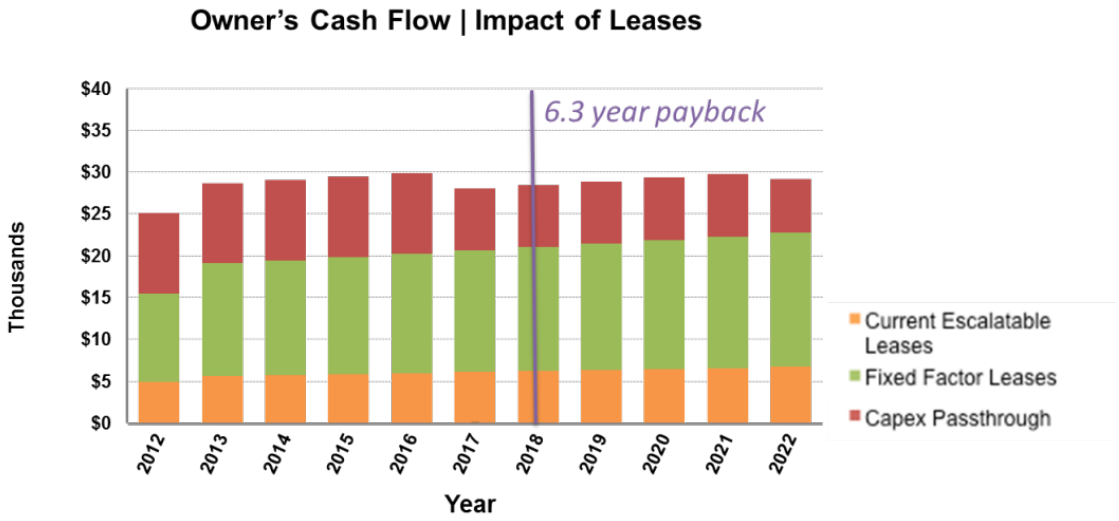


Eighty percent of the upgrade cost is needed for switching the current steam boiler to hot water. Other significant investments include installing a VFD on the CHW pump; better controls (supply air temperature reset on return/outside air temperature and variable bypass on the CHW); retrofitting lobby lighting to CFL's; retrofitting fitness center and elevator lighting; and upgrading the motors in the CHW/CW to more newer, more efficient parts.

C. Impact of Tenant Leases

The savings identified in the audit cannot be fully achieved given the current tenants' leases. Lease structures determine how operating costs are allocated between an owner and tenant, often creating a "split incentive" for one party or the other. Currently, the small tenants have all electricity costs included in their rent. Therefore, they have no incentive to operate their space efficiently, but the owner receives all of the savings from improvements throughout the building.

By contrast, the law firm pays for electricity costs in their own space, and for their share of any increases in base building electricity costs. As a result, the law firm receives savings from reductions in base building expenses even though the owner must bear all the costs. Therefore, while the changes recommended by the audit are cost-effective and logical, the payback period is skewed. The impact of the law firm's lease on the projected cash flow from savings is shown below:



Given the impact of the split incentive, the Trust only would receive approximately $29,000 of the $38,000 total savings estimated in the audit, increasing the owner's payback to **6.3 years**. Assuming that 70% of base building operating costs are eligible for pass-through, the owner retains approximately $5,000 in base building savings. The owner also retains about $9,000 in savings that would be attributable to the spaces occupied by the small tenants with electric rent inclusion. Finally, the owner is able to pass-through $9,000 of its capital costs to the law firm, based on Generally Accepted Accounting Principles, which are tied to the useful life of the measures. The law firm will capture the remaining $9,000 annually, or 23% of the savings, in the form of lower operating expense pass-through.

However, it is possible to align the lease structure so that the owner achieves the optimal 4.8 year payback and both parties are incentivized to operate the building efficiently going forward. The law firm's lease structure must be adjusted before making investments in the base building. The law firm must become a partner in efficiency. We will discuss this further below.

Methodology: This analysis was conducted using NYSERDA's Lease Analysis Model, developed by HR&A Advisors. The base case assumes that the law firm renews its lease as-is in 2015, and that the currently vacant space is given electric rent inclusion like the other small tenants. This model also assumes that measures are installed over the first 6 months of 2012, and have appropriate useful lives (5, 10 or 15 years). In addition, we assume that energy prices increase by 3% per year, which increases savings as well. These assumptions create some variation in the annual savings and capital expense pass-through.

II. INVESTMENT PLAN

Step 1. Engage the Law Firm

A prestigious law firm headquarter occupies 195,000 square feet, or 65% of the building. The Chelsea Building benefits from the brand and visibility of the law firm, and the stable income stream that it provides. Retaining the law firm and keeping them happy is crucial to keeping the building's position as an investment-grade Class A property.

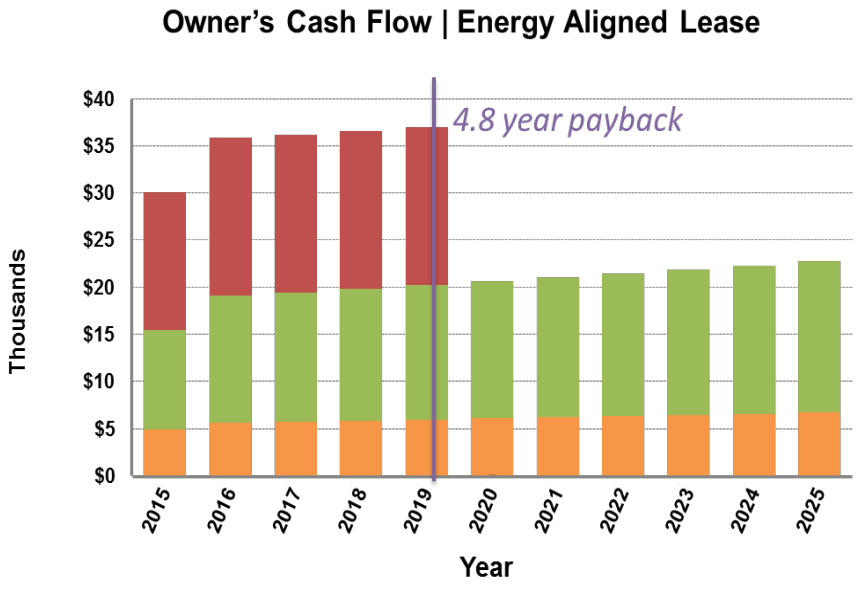
The law firm's lease is up for renewal in 2015, which is a typical time to renegotiate key provisions of the financial relationship between owner and tenant, and to plan investments for the building and tenant space. New York City is still recovering from a historic peak in vacancy of 13% during the 2009 economic crisis (Real Deal, 2010). Therefore, it is a "tenant's market" and there is a danger of losing the law firm to a more competitive offer from elsewhere. The law firm has expressed interest in being in a building with a "green" label, and this could be an important way to strengthen the relationship and encourage them to stay in the Chelsea Building.

The owner should use the lease renewal process as an opportunity to partner with the law firm to achieve efficiency. First, their legal agreement must align both parties' financial incentives towards efficiency. Beyond this, the owner and law firm can each make specific contributions to create additional value for both parties.

There are currently two problems with the law firm's lease that create disincentives for efficiency: its operating expense clause and the sub-meter markup. The law firm has a modified gross lease, which means they are responsible for a proportionate share of increases in base building costs after the year they moved in. As a result, the law firm will receive a portion of the energy savings from base building improvements. This creates a disincentive for the owner, as shown in the previous graph.

The owner's "split incentive" can actually be solved by changing the law firm's capital expense clause from Generally Accepted Accounting Principles (GAAP) to **"extent of savings."** Under GAAP, the owner can pass through the costs of capital improvements (energy and otherwise) proportionally to the tenants based on a proportion of the equipment's useful life. For example, many of the measures in the retrofit recommendations have useful lives of 10 or 15 years, even though the energy savings cover costs in less than 5 years.

Changing the capital expense clause to "extent of savings" allows the owner to retain any savings that would have gone to the tenant until their costs are paid back. After this, the tenant receives a share of the savings in a lower operating cost base. The modified gross operating expense clause stays in place, so that everyone is paying their proportional share otherwise.With a capital expense pass-through to the "extent of savings," the owner's income from the investment would be as follows:



A new Energy Aligned Lease, being promoted by the NYC Mayor's Office of Long Term Planning and Sustainability, recommends the pass through be set to 80% of projected savings, to provide a performance buffer in case full savings are not realized (NYC OLTPS, 2012). The choice between 80% or 100% should not be a make or break issue, given that operating expenses are probably only a few percent of the law firm's budget. The Energy Aligned Lease has been implemented by Silverstein Properties in 7 World Trade Center and in spaces that the city leases.

Note that "extent of savings" agreements can also be completed as an amendment to the lease for a one-time investment. However, amendments are relatively untested, so we hesitate to recommend it for a law firm. Therefore, this should only be pursued if the law firm wishes to achieve a green label in a shorter timeframe. Resigning the lease early would achieve the same.

In regards to energy consumption in the law firm's office space, the firm is sub-metered but the owner charges a **12% markup** on electricity costs. In this way, the owner actually makes a volumetric profit from the law firm's consumption, and has a disincentive to supporting increased efficiency in the law firm's space. The 12% markup is the maximum allowable under NYC law and is likely higher than comparable buildings. Removing or reducing this clause provides a fair "give" to the law firm if they are being asked to sign an "Energy Aligned Lease."

A partnership with the law firm to "go for green" together should include commitments from each party. The owner commits to pursue Energy Star and LEED Silver on behalf of the building and eliminates the 12% markup on the law firm's submeter. In addition, they complete retrofits that improve law firm's space (fitness center lighting) and reduce long-term costs.

In return, the law firm commits to participating in the Energy Star and LEED processes and agrees to change their capital expense clause to 80-100% of projected savings. In addition, they agree to upgrade their own lighting to code for GGBP compliance. They are likely to renovate their space at some point over the next decade (probably shortly after renewing their lease). Most new lighting is already to code, so this entails no incremental cost to the law firm. Moreover, the firm may be able to use 179D tax incentive for commercial building efficiency (if it is renewed).

Step 2. Complete Retrofit

Investments in base building should be completed after realigning law firm relationship. After Con Edison incentives, the up-front cost will be approximately $180,400 to achieve annual savings of $37,700, leading to simple payback of 4.8 years. The scale of this project requires no creative financing. This is an established family trust, making a small $180,000 investment. They likely either have an adequate capital budget, or can access financing at competitive rates.

Install the retrofit before changing any of the small tenant leases. As discussed further below, the current arrangement with small tenants is beneficial to the Trust because all savings accrue to them. This means the Trust should sign a lease for the currently vacant space with an electric rent inclusion clause, if the lease signing occurs before the retrofit investment.

Step 3. Re-Align Small Tenants

The small tenants in the Chelsea building have full service leases that include electricity in the rent, giving them no incentive to operate their space efficiently. The owner is responsible for all costs related to these tenants, but is unable to control usage in their spaces. In fact, the building is probably losing money on this arrangement, because the tenants are paying between $2.75-3.15 in fixed fees for utilities, but the average cost per square foot is $3.77.

Nevertheless, this arrangement is advantageous to the Trust when considering the base building retrofit, because the owner receives all the savings from efficiency investments throughout the building. Once they install improvements, the operating expenses "reset" to a lower base. Therefore, as soon as possible after the retrofit, the tenants should be moved on to sub-meters and modified gross leases so that they will pay a share of the future cost increases.

Sub-metering will be required by 2025 for GGBP compliance, but there are financial advantages to doing it as closely following the retrofit as possible. Sub-metering immediately after retrofit locks in savings for the owner because the tenants will pay any increases in electricity costs. This strategy made the Empire State Building retrofit feasible, as many of their tenants had electric rent inclusion. Alternatively, the changes can be made or over the course of five years as tenants' leases turn over, which sacrifices some profit but avoids any hassle. Once all tenants are on sub-meters and modified gross leases, the owner's portion of operating expenses is completely stabilized, and the tenants are incentivized to operate their space efficiently.

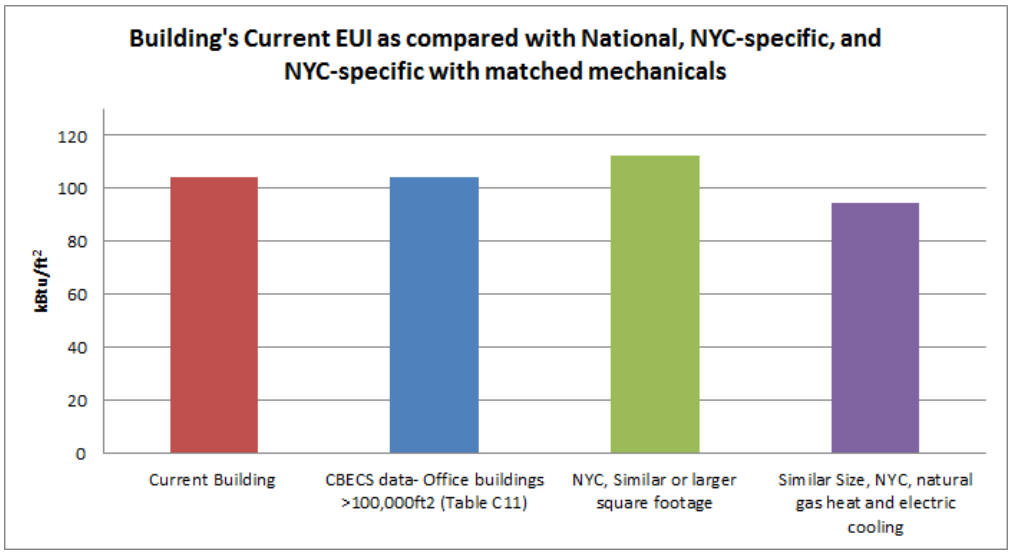
The existing small tenants likely care more about their organization's operating costs than being in a green building (since the building does not currently have a label). Therefore, a more ambitious strategy would be to *not* renew the tenant spaces on the second floor and combine them into a larger floor plate that might be attractive to a tenant looking for a green building, and willing to pay a higher rent. Consider this after the green label has been achieved.

Either way, lighting should be upgraded to meet GGBP requirements as "moments" of investment arise. New lighting is typically installed when a new tenant moves in, and otherwise will need to be upgraded within the next decade. NYC intentionally set the compliance year for lighting to 2025 to allow for this natural equipment replacement cycle. Complying with GGBP will have no incremental cost for new lighting. The investments may even be able to use the 179D tax incentive for commercial building energy efficiency (if it is renewed).

Step 4: Go for Green

Once everybody is on board, the Chelsea Building should go for both green labels. A series of papers on LEED and Energy Star by Eichholtz, Kok, and Quigley finds that rated buildings do in fact correlate with higher rent premiums and resale values. Moreover, rated buildings have less volatility during downturns in rental markets. In New York City, buildings that stand out and align with the mission of their tenants are those that will have the least number of vacancies.

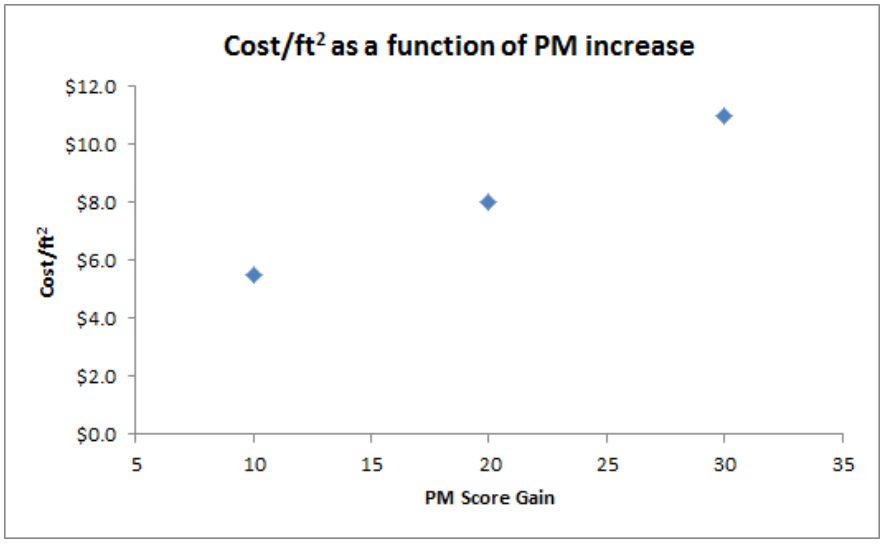
As the Chelsea Building stands, it performs better than only 12% of similar buildings (Energy Star score of 62), and it has a very average national and NYC-specific EUI. As such, if the cost-effective improvements recommended are implemented, this will rank the building much higher among its NYC peers, and it may ultimately be able to attain a rent premium.



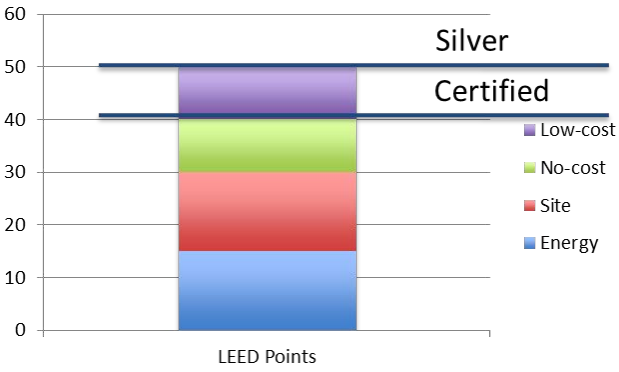
NYC comparison data provided by Connie Kontogiannis, Odyssey Energy Solutions

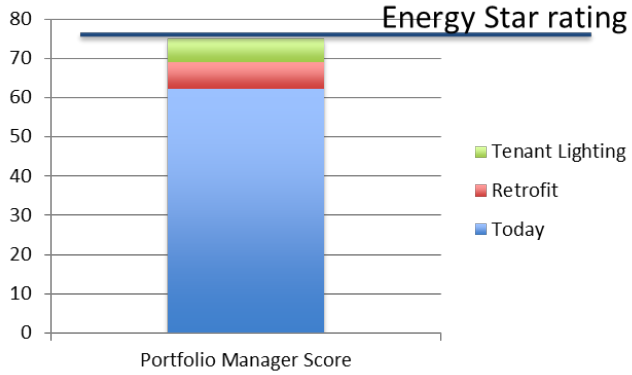
In addition, for the given improvement of Energy Star score (7 points moving from 62 to 69) the Trust will have paid a premium of only $0.65/ft^2 while in the average NYC high rise, this improvement costs approximately $5.00/ft^2.

NYC comparison data provided by Connie Kontogiannis, Odyssey Energy Solutions



According to our preliminary review of LEED EBOM credits, the building will likely qualify for 30 LEED points and move up 7 points in the PM score if the recommendations of the energy audit report are implemented. The building benefits greatly from its location, as we project that 15 LEED points can be earned because of occupants using public transportation or other alternative means of commuting.





If the building undertakes the necessary extra measures to increase the Energy Star score to 75, it can earn the LEED points associated with energy. Whole-building water metering, completion of the energy audit, and implementation of low-cost improvements, the building automation system, tracking and reporting of energy usage, low mercury content in lighting, high efficiency air filtration, and workstation lighting controls can simply and efficiently add LEED points.

Based on our understanding of the building, an additional 10 points can likely be achieved at little or no cost to the building owner. This means that the building can achieve 40 points and basic level Certification at low cost. Silver Certification, which requires the building to achieve 50 points, can likely be achieved at moderate cost. Gold and Platinum Certification would require significant costs to achieve.

With this knowledge at hand, we recommend that the building undergo additional upgrades only to reach an Energy Star score (PM score) of 75. With these upgrades, the building can then reach LEED Silver Certification at moderate additional cost. If and only if the anchor tenant is particularly invested in any level greater than Silver, should you assume the additional upgrades associated with Gold and Platinum certification.

III. Conclusion

Our proposed strategy will maximize the Trust's return on investment in efficiency and position the Chelsea Building competitively in the NYC market. We propose that the Chelsea Building *go for green* in a way that that is mutually beneficial to the owner and tenants. By following a careful and strategic implementation timeline, the building can achieve lower operating costs, strengthen is relationship with its anchor tenant, incentivize all actors to operate the building efficiently, and attain both Energy Star and LEED EBOM Silver. These factors will undoubtedly lead to a higher asset value and greater income for the Trust.