

# The Hidden Potential of Tenant Spaces:

## Energy Performance Optimization in Commercial Office Real Estate

BY WENDY FOK

In commercial office properties around the world, money is evaporating into thin air. While it comes as no surprise that one of the most effective strategies to reduce operational costs and energy waste is to improve energy efficiency in buildings and across real estate portfolios, often overlooked is the potential of energy savings within the leased tenant space.

Even as green building goes mainstream, today's advanced workplace technology, lighting, heating, cooling and ventilation equipment installed to support daily business are using more energy resources across both existing and new buildings stock. The "[Global Real Estate Sustainability Benchmark 2012 Survey](#)" of 36,000 global properties noted that coverage of energy data is still limited, with more than half of the respondents reporting that they collected energy use data for less than 10 percent of their respective portfolios, and fewer than eight percent of respondents reporting that they measure tenant energy use across all of their buildings.

An enormous opportunity exists for real estate owners and tenants to work collaboratively to capture measurable financial benefits from improving a building's overall energy performance. The 12 billion square feet (1.1 billion square meters) of commercial office space in the U.S. consumes more than \$20 billion in energy use – tenant spaces are responsible for more than half of that energy bill. Overcoming existing challenges and motivating the private market to act on the opportunities in energy improvement projects require three key components:

1. Data proving the payback of energy investments
2. Project execution expertise
3. First cost funding

After all, it is private sector action that will help spur and inform public energy policies gaining adoption at local, state and federal levels, which together can drive significant energy use reductions across the built environment.

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**Market Innovation** (CMI) is actively addressing current energy-efficiency market barriers by carrying out a range of projects that fortify the link between building energy efficiency and the bottom line in commercial real estate. One such effort NRDC is piloting is the “High Performance Tenant Demonstration Project,” which aims to accelerate and scale demand for superior energy performance in the commercial office real estate market by demonstrating the economic benefits.

Through a set of energy-performance measures that help optimize tenant energy performance, the process targets 30-50 percent energy use savings compared to a standard code compliant build-out, with a payback period of three to five years on modest incremental costs.

This project highlights the energy-performance value proposition to owners, tenants, brokers, architects, engineers and other project professionals during the standard build-out process to enable decision makers to justify implementation of energy-performance measures. Though the new project was only first announced in September 2011 at the **Clinton Global Initiative** (CGI) Annual Meeting and featured once again in a CGI video report in 2012, it is already revealing new pathways to better building performance and charting a promising roadmap for energy improvements that could change the way commercial real estate professionals do business.

Through funding support from **Goldman Sachs** and **The Rockefeller Foundation**, CMI’s internal real estate and energy experts engage directly on tenant build-out projects. The first set of tenant projects include leading international companies **LFUSA** and **Coty** in the Empire State Building, **Bloomberg LP**’s Park Avenue offices and **Reed Smith**’s Philadelphia law offices. CMI’s project portfolio continues to expand, currently impacting more

than 1.2 million square feet (111,484 square meters) directly, with a potential to replicate tenant best practices and standards across each tenant’s office portfolio and millions of additional square feet globally through market outreach.

The energy optimization process and project results are helping define complementary tenant engagement initiatives, best practices and recognition programs, including **Real**

**Estate Roundtable’s** tenant recognition initiative with the **Department of Energy** and the **Environmental Protection Agency**, Chicago’s “**Commercial Buildings Initiative**,” New York City’s “**Mayoral Challenge to Commercial Tenants**” and New York State’s “**Build Smart NY**” program.

### The Big Idea: Lease Cycle Energy Optimization

There is a tenant energy opportunity available every time a tenant seeks and builds out a new space that lives throughout the entire lease cycle. Building owners and property managers seeking to gain operational and cost savings can work in lockstep with the tenant pre-lease, design/construction and post-occupancy phases to capture the shared financial benefits and competitive advantages that accrue from installing high-performance tenant spaces in a high-performance building.

To highlight the energy-efficiency value proposition, building owners and tenants must openly encourage

project teams to prioritize energy performance and demand measurable data-driven results, effective technical solutions and an integrated process. Energy discussions with design, operations and project management teams representing both the owner and tenant prioritize energy use reduction early in the planning and design phases.

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A value analysis comprised of predictive modeling, financial analysis and a recommendation summary, timed with the standard design phases, allows decision makers to understand benefits of measures. This analysis should outline tiers of good, better and best sets of energy measures to facilitate the decision-making process to select the most sensible package for the business and design priorities.

After construction is complete and the space is occupied, measurement and verification of the actual energy performance of the tenant's new space provides data to facility operations comparing the actual outcome to the design intent and enables action upon any inconsistencies to streamline the ongoing energy management within the tenant's space. A building energy management system and a building-wide tenant energy management platform will provide a streamlined communication platform between the building and tenant spaces.

#### Making the Case: Tenant Energy Savings Add Up

LFUSA (a subsidiary of **Li & Fung Limited**) at the Empire State Building is a clear demonstration of how a tenant can put the "Lease Cycle Energy Optimization Process" into action by thinking collectively and early about energy performance. By reducing passive and equipment loads, installing more efficient equipment and managing occupant behavior, LFUSA designed a set of sensible energy-performance measures that will work together to maximize energy savings. This three-pronged approach is the same strategy that has been successful for whole-building-deep energy retrofits.

**Table 1:** Lease cycle energy optimization process

The time frame for each lease cycle phase will vary. A general estimate for pre-lease is one year or less, design and construction one to two years, and tenant lease terms ranging between five and 15 years. The value proposition to the tenant and building owner increases as the lease term increases.

TENANT		
PRE-LEASE	DESIGN/CONSTRUCTION	POST-OCCUPANCY
<ul style="list-style-type: none"> <li>Select an office space in a high-performance building</li> </ul>	<ul style="list-style-type: none"> <li>Put together a project team</li> <li>Define energy goals and EPMs</li> <li>Model projected energy use</li> <li>Review costs and incentives</li> <li>Perform value analysis</li> <li>Review EPM budget and make decisions</li> <li>Build out space</li> </ul>	<ul style="list-style-type: none"> <li>Measurement and verification, operations and maintenance</li> <li>Communicate results</li> </ul>
BUILDING OWNER		
<ul style="list-style-type: none"> <li>Develop an energy-performance marketing/fact sheet</li> </ul>	<ul style="list-style-type: none"> <li>Provide energy design contact to review design criteria and facilitate energy optimization</li> <li>Pre-build a high-performance office space</li> <li>Provide access to an energy model</li> </ul>	<ul style="list-style-type: none"> <li>Sub-meter tenant spaces</li> <li>Provide an energy management dashboard</li> <li>Host tenant energy best practice workshops</li> <li>Schedule an annual energy meeting with each tenant</li> </ul>



LFUSA has a strong commitment to sustainability and in 2011 decided to lease more than 400,000 square feet (37,161 square meters) of expansion space at the Empire State Building, a recently repositioned Class-A high-performance building. The building is undertaking a base-building efficiency retrofit strategy that will reduce energy use by 38 percent and save \$4.4 million a year. Six of the eight measures in the building's overall retrofit plan impact tenant spaces, demonstrating that the building owner recognized the importance of engaging tenants during the planning of the building retrofit and in its overall long-term energy management strategy.

In alignment with the building owner's tenant energy lease guidelines and design reviews, CMI worked with LFUSA to analyze the financial benefits of various sets of energy performance measures. Energy-performance measures include a mix of short and medium payback measures: high-efficiency lighting, daylight dimming controls, plug load switch control and cooling/ventilation optimization. Measures such as high-efficiency lighting and plug load shut-off strategies are relatively simple and cost-effective solutions that make sense to consider on most commercial office tenant projects.

LFUSA executive leadership supported energy reduction goals and openly encouraged the design team to consider the value analysis provided by CMI to achieve greater efficiency beyond lease requirements. In addition to the projected savings from the package of proposed measures, the tenant's independent decision to install an innovative passive optical network reduces the cooling required in computer network equipment rooms and overall network energy use. The result is a project that performs more than 30 percent above code requirements and has a very strong payback of 3.4 years, with an estimated \$1.8 million in energy savings over the 15-year lease term, a strong annualized return of 29 percent and lease term ROI of more than 200 percent.

### The New Competitive Advantage: Tenant Energy Performance

The demand for greater energy efficiency in buildings is stronger than ever. According to *The Economics of Green Buildings* (Eichholtz, Kok and Quigley), energy-efficient green buildings identified by Energy Star and/or LEED certification command rent premiums of approximately 2.5 percent and sales price premiums averaging 13.3 percent. High-quality, sophisticated tenants increasingly demand that base-building central systems be highly energy efficient and often prefer a net lease structure with actual energy use and energy-efficiency investments within the leased premises determining their own utility costs. The transparency of metered energy use and accountability through data reporting will likely increase through tenant demand and private real estate market action, yet it is also set to become more widely adopted through public frameworks – energy disclosure regulations gaining momentum in cities, forthcoming updates to energy codes and next-generation energy performance recognition programs.

To stay ahead of the competition and achieve optimal energy performance and enhance net operating income, real estate

**Table 2: Phase 1 build-out (three floors)**

Lease Premises	137,400 sq. ft.
Modeled Energy Reduction	28%
Total Electricity Savings over Lease Term	3,273,780 kWh
Incremental Implementation Cost (w/o incentives)	\$164,370
State Incentives (net of review and filing costs)	\$36,940
Energy Modeling Soft Cost	\$6,600
Adjusted Incremental Implementation Cost	\$134,030 (\$0.98/ft <sup>2</sup> )
Total Electricity Cost Savings over Lease Term	\$566,495
Present Value of Electricity Cost Savings over Lease Term	\$392,002
Net Present Value of Project Investment	\$257,972
Return on Investment (ROI) over Lease Term	192%
Annual Rate of Return	27%
Payback Period	3.5 years

**Table 3: Total build-out (nine floors)**

Lease Premises	412,200 sq. ft.
Modeled Energy Reduction	31%
Total Electricity Savings over Lease Term	10,519,320 kWh
Incremental Implementation Cost (w/o incentives)	\$511,110
State Incentives (net of review and filing costs)	\$124,876
Energy Modeling Soft Cost	\$19,800
Adjusted Incremental Implementation Cost	\$406,034 (\$0.99/ft <sup>2</sup> )
Total Electricity Cost Savings over Lease Term	\$1,813,733
Present Value of Electricity Cost Savings over Lease Term	\$1,255,062
Net Present Value of Project Investment	\$849,028
Return on Investment (ROI) over Lease Term	209%
Annual Rate of Return	29%
Payback Period	3.4 years

owners and managers need to define a comprehensive energy strategy that includes tenants and occupants. In doing so, there is a potential to capture billions of dollars of energy savings. On top of the cost benefits, the quality of the workplace and whole building is better – more comfortable, efficient and sustainable. Improving energy performance is quite simply a valuable proposition for everyone involved.

### About the Author



Wendy Fok is the Project Director of the **Natural Resources Defense Council's** Center for Market Innovation High Performance Tenant Demonstration Project. She can be reached at [wfok@nrdc.org](mailto:wfok@nrdc.org). To learn more about the High Performance Tenant Demonstration Project and for tenant energy guides and tools, go to: <http://www.nrdc.org/business/CGI/>.

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