U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

# Energy Efficiency in Separate Tenant Spaces – A Feasibility Study

EXECUTIVE SUMMARY

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# Executive Summary

Commercial buildings account for 20% of energy used in the United States economy,[1] with leased spaces representing approximately 50% of all commercial building energy use.[2] Increasingly, market pressures such as rising energy costs, new requirements to publicly disclose energy usage, and increased attention on energy efficiency as a means to combat climate change are motivating tenants, building owners, and other commercial building stakeholders to explore new ways to reduce energy consumption.

Traditionally, efforts to encourage energy efficiency in commercial buildings have focused on building owners rather than tenants. While building owners generally have control over building systems and operations, tenants play a critical role in achieving lasting reductions in energy intensity. In recognition of this collaborative role, the Energy Efficiency Improvement Act of 2015 mandated the development of a voluntary tenant space recognition system similar to the successful ENERGY STAR® buildings program. Additionally, the legislation mandated a feasibility analysis, presented here, regarding the implementation of tenant-specific energy efficiency measures. In response, this paper presents best practices, resources, and policies that could serve as the backbone for future tenant energy efficiency programs.

The energy consumption at a representative large, multi-tenant building can be partitioned into energy attributable to common areas (such as atriums, lobbies and garages), shared mechanical systems (such as central heating, fans, and cooling towers), and tenant spaces. In a typical arrangement, certain segments are clearly controlled by the owner, such as the garage lighting. Other segments are clearly controlled by the tenant, such as plug loads in tenant spaces. However, ultimate responsibility for managing the energy consumed in a multi-tenant space is often balanced between tenants and owners. Circumstances differ based on lease structure, but in a typical arrangement, neither owner nor tenant has complete control.[3] Instead, the energy usage and associated emissions are under the joint control of the owner and tenant, and the significant reductions in energy consumption require collaboration between the two parties.

Achieving greater levels of energy efficiency in tenant spaces is feasible through the use of technologies that exist in the market today. However, historic challenges have prevented wide-spread adoption of separate space efficiency measures. First, the timing and process of leasing - characterized by infrequent design windows, multiple stakeholders, design and budget constraints, and the dynamics of fluctuating negotiating leverage between owners and tenants - have largely prevented rapid advancement of energy efficiency in separate tenant spaces. Second, many owners, tenants, and brokers remain unaware or uninterested in the financial benefits and opportunities afforded by energy efficiency within leased spaces. Third, the majority of tenants in the market are small, disparate, and hard to reach with overarching energy efficiency strategies. Fourth, owners and tenants are hesitant to invest in tenant space energy efficiency measures due to the "split-incentive" problem. This "split-incentive" refers to the financial disconnect of investments in energy efficiency that can result from how costs and benefits of energy efficiency are allocated to different parties. And fifth, the inability to collect tenant-specific energy data from whole building consumption, in order to validate the benefits of energy efficiency investments, limits owners and tenant insight into the value of energy efficiency, further dampening interest.

1 U.S. Energy Information Administration. (2006). 2003 CBECS Detailed Tables – Table C4A: Expenditures for Sum of Major Fuels for All Buildings. https://www.eia.gov/consumption/commercial/data/archive/cbecs/cbecs2003/detailed_tables_2003/2003set14/2003html/c4a.html

2 NRDC. (2013). High Performance Tenant Demonstration Project. http://www.josre.org/wp-content/uploads/2013/02/CMI-PPT-on-Tenant-Energy-Performance.pdf

3 As an example, while the owner may select and maintain the central heating system, the tenant may have control over the thermostat controlling the leased space and the adjoining common corridor. Together, the choices made by the owner and tenant determine the energy consumption at the building.

Increased education and awareness materials, collection of tenant-specific energy consumption data, and a re-alignment of leasing cost structures targeted toward building owners, tenants, and brokers, may help overcome these challenges and encourage widespread uptake of tenant space energy efficiency measures. This paper highlights a variety of potential ways to address these needs including:

**Submetering of tenant spaces –** Metering tenant-specific energy use offers the ability to separate out individual tenant-level energy usage from common area usage. This "submetering" helps ensure that each tenant pays for their own energy consumption, and receives the full benefit of energy cost reductions on their part.

**Easy comparison of energy efficient technologies –** Technologies exist to increase the energy efficiency of tenant spaces. However, understanding the costs and benefits of utilizing such technologies is often complicated and time consuming, requiring tenants to understand not only the energy saving attributes of individual products, but also interactive effects between technologies. Improving the ability to readily compare packages of technologies through interactive tools or build-out guidance checklists is one potential way to increase the uptake of energy efficient technology in tenant spaces.

**Recognizing the business case for energy efficiency –** Many businesses recognize the ways in which energy efficiency can improve their bottom line. There are opportunities to help even more businesses see these benefits, including the role of energy efficiency in reducing total cost of occupancy, making spaces more comfortable and attractive, contributing to improved worker performance, and increasing asset value at time of sale. Even in lease structures with a split incentive for energy efficiency, building owners can benefit from increased energy efficiency through market differentiation – and in certain markets command higher rents and longer tenures. A growing body of research has shown that energy efficient buildings rent for an average premium of 2-6%,[4] can sell for a premium of as much as 16%,[5] attract high-quality tenants,[6] and have lower default rates for commercial mortgages.[7]

**Low-cost energy simulation models for tenant spaces –** Tenants can compare different energy efficiency measures through energy simulations and decide which options are most appropriate for the individual space. Energy modeling is most often used today in large spaces (greater than 20,000 square feet) where the return on investment from energy efficiency measures more than covers the upfront costs of modeling. Continued investments in both guidance and software to make advanced modeling more accessible and targeted at tenant spaces will help smaller tenant applications (less than 20,000 square feet) to use designs that benefit from energy modeling.

**Improving leasing language and broker engagement –** energy efficiency-aligned language can be added to traditional building leases to create "green leases" that mitigate the landlord-tenant split-incentive problem. To increase the use of green leases, which in turn can help tenants realize financial benefits, industry trade organizations can continue to highlight examples of successful green leases, collect and publish best practices, and create case studies that illustrate the benefits and market opportunity for green leasing strategies. Education that increases energy efficiency literacy among real estate brokers will help them to better respond to tenant requests for energy efficient spaces and leases.

4 Eichholtz, P., Kok, N., & Yonder, E. (2012). Portfolio greenness and the financial performance of REITs. Journal of International Money and Finance, 31(7), 1911-1929. http://www.fir-pri-awards.org/wp-content/uploads/Article-Eichhiltz-Kok-Yonder.pdf

5 Eichholtz, P., Kok, N., & Yonder, E . (2010). Doing Well by Doing Good? American Economic Review. http://urbanpolicy.berkeley.edu/pdf/AER_Revised_Proof_101910.pdf

6 Eichholtz, P., Kok, N., & Quigley, J. M. (2009). Why do companies rent green? Real property and corporate social responsibility. Real Property and Corporate Social Responsibility (August 20, 2009). Program on Housing and Urban Policy Working Paper, (W09-004). http://www.ucei.berkeley.edu/PDF/EPE_024.pdf.

7 An, X., & Pivo, G. Default Risk of Securitized Commercial Mortgages: Do Sustainability Property Features Matter? (2015). http://capla.arizona.edu/sites/default/files/faculty_papers/Default%20Risk%20of%20Securitized%20Commercial%20Mortgages%20and%20Sustainability%20Features%2C%202015.pdf

**Creation of a federal tenant space recognition system –** By allowing for direct peer-to-peer comparison of buildings based on energy or sustainability performance, recognition systems provide the market with greater insight to evaluate building performance. This can help owners, tenants, and brokers to broadcast the value of energy efficiency measures, and distinguish high-performance buildings from the rest of the market. Simplifying efficiency to an accessible metric can give market participants a "scorecard" to measure higher levels of performance, and often drives activity across the industry as a whole through competitive forces and peer comparison. There will be several possible ways to design a recognition program for leased spaces. Options range from recognition based on outcome-focused gross metrics like those used by the Australian government (energy use intensity), to detailed metrics focused on design and operational inputs like the government in Singapore (lighting level, temperature ranges) to energy simulation-based approaches or simpler checklist-based approaches. Further research is warranted to assess the metrics, structure, and market viability of a potential system to best support the U.S. market.

**For more information please see the full report available at buildingdata.energy.gov/cbrd/**

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