What leading organisations are doing today to drive greater energy efficiency, and why it matters for tomorrow

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Maria Tikoff Vargas *is Director of the Better Buildings Challenge at the US Department of Energy (DOE). The goal of the Better Buildings Challenge is to make American buildings 20 per cent more efficient in the next decade. Through this leadership initiative, more than 200 chief executive officers, university presidents, and state and local leaders have committed to upgrading buildings across their portfolio and are providing their energy savings data and innovative strategies as models for others to follow. Ms Vargas also serves as a Senior Program Advisor in the Office of Energy Efficiency and Renewable Energy at the DOE. Prior to her work at the DOE, Ms Vargas was Brand Manager for the ENERGY STAR® programme for more than 15 years while at the US Environmental Protection Agency. She also served as Co-director of the ENERGY STAR® Buildings and Green Lights Partnership. Ms Vargas has been involved in policy work on the issues of ozone depletion, global climate change, and related environmental and energy issues since 1985.*

Abstract

Launched in 2011, Better Buildings is a broad initiative to reduce energy intensity in the commercial, residential and industrial sectors by 20 per cent over ten years. Corporate leadership, innovative state and local policies, workforce development as well as effective use of tax incentives, innovative financing and efforts to deliver better information to the marketplace are all key pillars of the Better Buildings initiative. This paper explains the key role that private sector (corporate) partners play, by contributing to the programme's overall energy savings, and by sharing innovative solutions to common barriers. Several such barriers are introduced, as are a series of proven strategies employed by programme partners to address them. These solutions and others are actively promoted and also available on the programme's website for other organisations to implement for themselves. Through Better Buildings, the US Department of Energy (DOE) is working to dramatically accelerate energy savings through innovation, leadership, partnerships and demonstrated best practices.

Keywords: energy, efficiency, corporate leadership, building, energy savings, strategy, solution, barrier

BETTER BUILDINGS: A NATIONAL LEADERSHIP INITIATIVE

Better Buildings is a multi-strategy initiative driving greater energy efficiency in the USA's buildings. Through Better Buildings, a diverse set of organisations are partnering with the US Department of Energy (DOE) to demonstrate cost-effective and innovative energy efficiency practices, policies and

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technologies (Figure 1). As partners, these organisations are committed to saving energy and money, and in doing so are creating new American clean-energy jobs and contributing to the reduction of carbon dioxide emissions. The Better Buildings Challenge is a cornerstone of the initiative. Through the Better Buildings Challenge, leading corporate chief executive officers (CEOs), university presidents, utility executives, building owners, and state and local officials make substantial commitments to improve the energy efficiency of their entire portfolio of buildings, facilities, homes and plants. Partners commit to improving the energy intensity of their building portfolios by at least 20 per cent over ten years, sharing their strategies and results with the market. The strategies adopted and shared by the Better Buildings Challenge partners exemplify why these organisations are leaders:

- they are well managed and can adapt to new opportunities to meet ambitious goals;
- they empower employees to seize opportunities to drive change, fostering a culture of continuous improvement; and
- they are willing to share their successes and challenges, paving the path forward for others.

BETTER BUILDINGS CHALLENGE PARTNERS: OVERALL RESULTS TO DATE

As the Better Buildings Challenge enters its fourth year, the success demonstrated by its partners continues to grow, in terms of portfolio-wide energy savings results, as well as proven solutions to overcome energy efficiency barriers. On average, partners in the Better Buildings Challenge are improving the energy intensity, or energy performance, of their portfolios by more than 2.5 per cent per year and are on track to meet their energy intensity goals of 20 per cent energy savings by 2020. To date, the partners have saved 36 trillion British thermal units (Btus) or US$300m since the Better Buildings Challenge was launched. There are more than 250 partners that have stepped up to the challenge, representing 3.5 billion square feet of building space, from diverse sectors including commercial building owners, multi-family residential building owners/managers, schools, hotels, hospitals, retailers, manufacturers, utilities, and local and state governments. A number of these partners and allies are making tremendous progress in achieving their energy savings goals. As illustrated in Figure 2, in the past three years, the partners have:

Figure 1 Better Buildings Partnering with the US Department of Energy

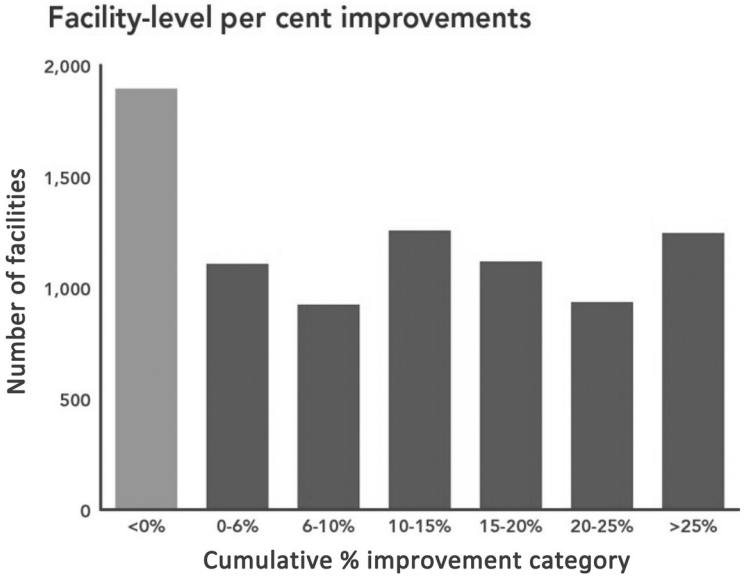

Figure 2 Facility-level percentage improvements in energy intensity

- shared energy performance results for more than 9,000 facilities;
- improved energy intensity by more than 2.5 per cent per year since baseline;
- achieved 20 per cent improvement at more than 2,100 facilities; and
- achieved 10 per cent improvement at more than 4,500 facilities.

The partners are actively managing energy data across their entire portfolio of buildings, which is integral to identifying performance issues and reducing utility bills. By transparently sharing information on the energy intensity of their portfolios to document progress towards their commitment, Better Buildings Challenge partners show what is possible through portfolio-wide energy management, and link their strategies to results. More than 80 showcase projects and 50 implementation models have been completed and shared with the energy efficiency community at large. These solutions highlight innovative, ambitious and realistic strategies for realising energy savings across key sectors. In the corporate sector, implementation models or partner playbooks help to solve an array of common barriers, such as financing, technical expertise, data access or obtaining leadership buy-in.

A few partners, including Legrand, Cummins, Best Buy and University of California at Irvine, have met their energy intensity reduction goals. These partners are six years ahead of schedule and plan to or have already set new goals. An additional 20 organisations are achieving 10 per cent or greater savings across their portfolios, including Briggs & Stratton, 3M, Lend Lease, Macy's, Kohl's and Staples. Four financial allies also exceeded their commitments to fund energy efficiency projects. In addition, more than US$2bn of committed financing has been extended by financial allies to energy efficiency improvements across a variety of financial instruments. What has become clear in the first few years of the Better Buildings Challenge programme is that, regardless of size, sector or ownership, leading organisations share many of the same practices and strategies that make them successful in driving change across their organisation. The five habits that successful organisations use are shown in Figure 3.

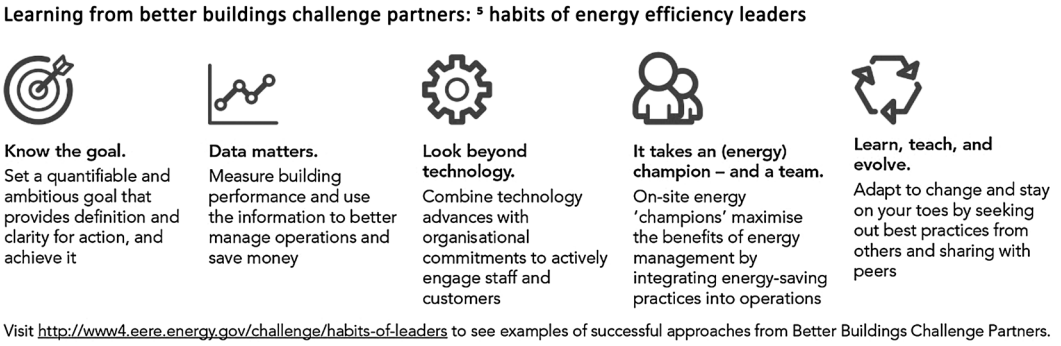

Figure 3 Five habits of energy efficiency leaders

As more partners join, and solutions are developed, the programme is exploring opportunities to expand into other sectors with strong energy savings potential. Doing so will lead to even more successful energy efficiency strategies, developed by the partners, which can be leveraged by other organisations in the market.

LEADING THE WAY: CORPORATE PARTNERS SHARING SUCCESSFUL APPROACHES

Nearly one-third of all partners in the Better Buildings Challenge are corporate entities that must contend with the growing complexity of improving customer experience and driving shareholder value while managing energy consumption and costs and providing a good work environment for employees (Figure 4). Regardless of their property type or ownership/lease structure, these partners have identified energy efficiency as one way in which to save money and improve profitability, while also meeting larger sustainability goals that have become increasingly prevalent. Corporations with long-term energy and sustainability goals and organisation-wide plans to reach their goals, driven from the C-suite and boardroom, can be seen as stronger firms in the eyes of investors. They also develop the type of successful strategy to reach their goals from which other organisations can learn.

OVERCOMING COMMON BARRIERS

Through the Better Buildings Challenge, the partners have identified a series of common barriers to overcome while implementing successful energy management programmes within their organisations. Below are a few examples of these barriers and the innovative and successful strategies companies have used to overcome them and drive change throughout their organisations — with profound results. In some cases, different organisations have created different solutions to the same barrier, responding to the unique needs of their circumstances. These solutions are described in full on the Better Buildings website, which includes detailed guidance, tools and resources to allow other organisations to replicate these successful approaches.[1]

Barrier: Unable to access internal capital for energy efficiency projects

Energy efficiency investments are typically evaluated on the basis of simple payback or return on investment, but also must compete with other projects that have the potential to increase business, raise output capacity, improve corporate infrastructure, or comply with environmental, health and safety requirements. As a result, energy efficiency projects often lose out to other projects higher on the priority scale.

Figure 4 Sample of the corporate partners in the Better Buildings Challenge
Note: For a full list of partners, see: https://www4.eere.energy.gov/challenge/home

Innovative solution: 3M capital fund

3M created a special pool of capital to fund cost-saving energy efficiency projects that provided positive returns, but otherwise failed to meet the company's investment criteria. In each of its first two years, 3M committed US$1m to the set-aside fund. The fund has been heavily utilised and has already dedicated US$1.5m to 69 projects — representing US$580,000 or 56 billion Btus in annual energy savings. The set-aside fund was set up in 2010 in response to concerns raised by 3M's energy champions that worthwhile energy efficiency projects were often losing out to other projects higher on the priority scale, while cost-effective energy saving projects were being left on the table. Many of these projects were proposed by employees, and 3M's energy champions did not want them to get discouraged and cease identifying and proposing new projects. 3M's management agreed to set aside US$1m to fund projects that pay for themselves through energy savings in less than four years, and require less than US$50,000 upfront after rebates and incentives.

For organisations interested in replicating 3M's approach, the Better Buildings Challenge website provides information on the project submission form used to recommend projects for funding, together with the energy cost-reduction projects database that 3M uses to track and implement recommended projects.[2]

Barrier: Energy efficiency is not an organisational priority

Setting a goal to improve energy performance is important within an organisation, but it is only effective if there is support from management to take the steps to achieve the goal. In most companies, energy efficiency projects must compete for management attention with projects that increase production, improve safety, address regulatory compliance and enhance profitability.

Innovative solution: Alcoa's compensation structure

Alcoa has addressed this barrier to energy efficiency by using its leadership performance pay programme to link energy performance

to the company's incentive compensation structure for business executives. By providing financial rewards to business leaders who set aggressive energy reduction goals and achieve targets, Alcoa is making energy efficiency a higher priority within its business units. The incentives ensure that energy initiatives receive adequate attention from senior leaders as they juggle other critical business priorities. Alcoa estimates that the number of energy cost-reduction activities has increased by about 50 per cent since 2009 — the year before energy efficiency targets were explicitly linked to incentive payments. At Alcoa, performance-based incentive pay is determined based on overall company performance and individual performance, with company performance based on a combination of financial and non-financial goals. In 2010, Alcoa's CEO classified energy efficiency, as well as other sustainability metrics, as one of the non-financial goals for use in calculating variable compensation. In 2011, up to 20 per cent of Alcoa's variable compensation was tied to achieving significant aspects of sustainability targets. These financial incentives help Alcoa to promote a culture of energy efficiency throughout the organisation.[3]

Barrier: Lease structures fail to give owners incentives for energy efficiency improvements

Under most net leases, energy costs are paid directly by tenants, and building owners are not driven to invest in efficient building systems. Conversely, in many gross leases, building owners pay energy expenses and tenants have little incentive to save energy in their leased space. This dynamic is commonly referred to as the 'split incentive' barrier to energy efficiency.

Innovative solution: Tower includes efficiency improvements in its standard lease

One solution to this barrier is to develop 'green' or 'energy aligned' leases to align financial and energy incentives for landlords and tenants. The Tower Companies ('Tower') employed this strategy to help tenants save money and fight climate change through their leases. Tower owns and manages over 3 million square feet of commercial and residential building space in the Washington DC area and, like most landlords, does not have control over energy and water usage in tenant office spaces. Since Tower introduced the first green lease in 2009, 100 per cent of all new and renewed office leases have included the green lease clauses, representing nearly 30 per cent of the square footage of the Tower building portfolio and over 60 signed leases and lease extensions. Of these 60 leases, 80 per cent involved construction renovations requiring implementation of the green lease. Tower influences energy usage through requirements on the design of tenant space. The terms of Tower's green leases require low or no-cost items, such as reviewing lighting design and efficiency, which take time and careful planning but do not increase build-out costs for tenants. Tower leverages existing green building and energy efficiency programmes to help tenants improve building operations, by aligning clauses in the leases with credits from the Leadership in Energy and Environmental Design (LEED) rating system or ENERGY STAR® portfolio manager benchmarking requirements. When a tenant wants to certify their space, Tower provides documentation and support to assist them. Sample documentation used to assist building owners, as well as Tower's green lease language, are available on the Better Buildings Challenge website.[4]

Barrier: Hard to track and improve facility-level energy performance across a large portfolio

A common barrier among corporate real estate operators is the difficulty associated with managing energy across a large portfolio, which may be geographically diverse or composed of multiple building types. Challenges include understanding how

energy is used, identifying savings opportunities at the property level, or ensuring that properties are operated and maintained in a way that maximises energy efficiency.

Innovative solution 1: Macy's real-time energy management system

In 2009, Macy's centralised the control of operating parameters across multiple divisions of the company, including creation of a central energy management (CEM) team and implementation of a comprehensive energy management strategy. One of the tools Macy's developed was a centralised real-time energy management system, which provides a far more detailed view of energy use at each store than monthly utility bills. Through careful analysis of real-time usage information and close collaboration with field staff at individual facilities, Macy's achieves, on average, about 2–3 per cent energy savings a year from the energy information system. Macy's real-time tool accesses building automation data from each store and displays energy load curves by location at 15-minute intervals. The load curves can reveal very granular performance and operational issues at each store, such as display lights and escalators not turned off at night or malfunctioning variable frequency drives (VFDs). The CEM team develops weekly reports for field staff and holds weekly energy calls with the field engineers for each region to coordinate resolution of the issues identified through the load curve analysis. Operational problems that might never be discovered through monthly utility bill reviews can be resolved almost immediately. Additionally, once anomalies are discovered at one location, it is easier to recognise and resolve similar problems in other locations, meaning that savings can multiply.[5]

Innovative solution 2: Cummins' Energy Champion programme

As part of its environmental sustainability mission, Cummins committed to reducing energy intensity by 25 per cent and greenhouse-gas (GHG) emissions by 27 per cent across its global facilities and operations from 2005 to 2015. To help achieve these goals, Cummins established an Energy Champion programme to drive continuous improvement in energy performance at the plant level. The programme trains facility energy leaders in energy management best practices and provides appropriate tools, methods and support to ensure effective energy management expertise and employee engagement at the company's top energy consuming facilities. Cummins' global energy scorecard tracks site conformance to the Energy Champion programme's objectives. Sites are scored on:

- having a trained Energy Champion on site;
- having implemented a site energy team;
- having a current energy balance; and
- conducting energy treasure hunts at least twice annually.

These elements are audited and reviewed through the Cummins Enterprise-wide Environmental Management System. Over 100 staff were trained in the USA and UK throughout 2010, and an additional 89 were trained in 2013, including staff from the US, UK, Indian, Mexican, German and Romanian sites. The initial launch helped to reduce energy consumption by 5–10 per cent at participating sites through a combination of facility and equipment upgrades, enhanced management practices, and low-cost and no-cost improvements identified through efforts such as energy treasure hunts, compressed leak audits, Kaizen and Six Sigma projects. It also helped Cummins to exceed the energy efficiency goal it first set with the DOE, by achieving a 34 per cent reduction in energy intensity from a 2005 baseline across 104 facilities, including 19 manufacturing plants.[6]

Innovative solution 3: Staples eco-treasure hunts

With over 580 ENERGY STAR® certified buildings, Staples has a successful track record of energy efficiency improvements in its retail store portfolio. As its online business has

grown, Staples has broadened its energy approach to focus on fulfilment centres, where millions of online orders are packaged each day. Building on a concept first introduced to the company by General Electric (GE), Staples developed a programme to conduct 'eco-treasure hunts' at several of its fulfilment centres in order to discover energy and water efficiency opportunities. The eco-treasure hunt is an intensive three-day energy and water audit and recommissioning exercise. Staples' corporate energy management team, facility staff and a multi-disciplinary team of experts in equipment and systems come together to uncover and prioritise the most effective energy and water-saving opportunities at the target facility. The eco-treasure hunts are also an opportunity to provide energy education to employees, and to develop best practices, which can be rolled out to other fulfilment centres across the country. Energy use at the fulfilment centre is tracked closely prior to, during and after the eco-treasure hunts. Because data loggers and sub-meters are installed prior to the three-day hunts, Staples is able to closely measure and analyse energy use for the entire fulfilment centre as well as the systems within it. So far, energy reductions have met or exceeded Staples' 20 per cent reduction goal for most of the 11 eco-treasure hunts conducted to date. For organisations interested in replicating Staples' approach, planning tools, presentations and videos are available on the Better Buildings Challenge website.[7]

Innovative solution 4: HEI has integrated energy efficiency into standard operating procedures

HEI owns and manages hotels across the USA, with a portfolio of brands including Hilton, Hyatt, Marriott, Starwood and Crowne Plaza. Although water and air temperature set-points for various space types in a hotel are often specified by individual brands or by health regulations, HEI realised that certifying key set-points more precisely within these ranges, based on the particular operation of the equipment in a specific property, could yield energy and cost-savings. The company developed an energy set-point (ESP) program standard operating procedure (SOP), which establishes a uniform process for establishing, maintaining and re-evaluating set-points for each property. The Chief Engineer is responsible for inspecting the set-points on a monthly basis and recording any deviations from the approved settings. In addition, the Chief Engineer is responsible for reviewing the set-points every 12 months and determining whether adjustments should be made to improve efficiency or shift seasons. Set-points for all properties are maintained on HEI's 'Hive' intranet site. The monthly set-point checklist is housed on HEI's 'Energy Looking Glass Dashboard', which is HEI's tool to track and manage property energy consumption. Set-point checklists and posters used by HEI are available on the Better Buildings programme website to help other organisations replicate this successful approach.[8] In tandem with other energy conservation measures at newly acquired properties where ESP was implemented, this approach has captured savings of at least 5 per cent compared to the previous year. Savings well above 5 per cent have occurred in some properties; for example, the recently acquired Le Meridien Dallas Stoneleigh realised over 15 per cent in operational energy savings year over year, a large portion of which was attributed to the ESP program by those at the property.

CHANGING LANDSCAPE AND LOOKING FORWARD: WHY LEADERSHIP IN ENERGY EFFICIENCY MATTERS TODAY AND TOMORROW

Leadership in energy efficiency, as demonstrated by the Better Buildings Challenge partners, can position organisations for greater success in the market. There are difficult issues that all organisations face — whether

perennial or emerging — which make becoming more energy efficient now a strategic advantage for tomorrow. These key issues include the following.

Climate change

At the beginning of November 2014, the Intergovernmental Panel on Climate Change (IPCC) issued the *Fifth Assessment Synthesis Report*, which affirms that climate change is happening, will have substantial effects on our health and our economy, and swift action must be taken by governments, businesses and communities to create positive change.[9] Climate change mitigation will continue to have a growing influence on policy and business decisions. Specifically, policymakers and others will be increasing their efforts to take carbon out of the energy system. The cheapest and quickest way of cutting carbon emissions is to reduce the amount of energy used in the first place through energy efficiency.

Sustainability and resiliency

By incorporating environmental and social considerations into decision making, sustainability offers a reliable strategy to combat the political, economic and environmental effects of climate change. Sustainability and resiliency are meant to reduce the risk to an organisation by insulating it from changes in market preferences, natural disasters, technological obsolescence and other influencers; allowing it to survive and thrive well into the future. Energy efficiency is a key component of any sustainability strategy. It helps to insulate an organisation from energy cost spikes and changes in market preferences towards companies that promote sustainable practices.

Employee recruitment and retention

Energy efficiency can be leveraged to attract and retain top talent for which sustainability is an important issue. Studies suggest that energy efficient workplaces are healthier and more productive. Additionally, employees enjoy working in spaces that are well lit, have good indoor air quality, and are comfortably heated and cooled. High-performing space serves as a tangible expression of an organisation's commitment to sustainability, a healthy work environment and the wellbeing of its employees.

Voluntary and mandatory reporting and disclosure

A growing number of state and local governments have adopted policies that require the benchmarking and disclosure of energy performance for commercial buildings. Performance data are often publically available, providing consumers, brokers, appraisers and other lenders with a clear demonstration of high and low performance in the market. As more policies are adopted across the country, energy efficient buildings will have a competitive advantage over those that underperform. Additionally, investors and other stakeholders are requesting that organisations disclose sustainability performance through platforms such as the *Carbon Disclosure Project* (CDP), United Nations *Principles for Responsible Property Investing* (PRI) and *Global Reporting Initiative* (GRI). Energy efficiency helps organisations to be highly rated in both voluntary and mandatory reporting schemes.

Customer retention and brand loyalty

Consumers are considering the environmental and social performance of the companies from which they purchase goods and services. A 2012 Nielsen survey found that 66 per cent of consumers prefer to buy products and services from companies that have implemented programmes that give back to society.[10] There is a clear trend towards consumer demand for sustainability and having a dedicated energy management programme is demonstrable evidence of an organisation's commitment to sustainability. As a result, energy efficiency can help to build strong brand loyalty and drive customer retention while also offering opportunities for cost-savings. Partners in the Better

Buildings Challenge are leading the way to greater energy efficiency. Their commitment to reducing energy intensity by 20 per cent over ten years and sharing their successful strategies is a strong signal to others that investing in greater energy efficiency is a sound business decision. The DOE will continue to publicise the innovative, replicable solutions being shared by its partners and encourage other organisations to implement them in their own organisations. By spurring new investment and savings in the USA's commercial buildings, multifamily housing and industrial plants, the initiative is creating new American clean-energy jobs and contributing to the reduction of carbon dioxide emissions — important actions today that will lead to a better tomorrow.

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