institute for building efficiency
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ACHIEVING SCALE WITH ENERGY EFFICIENCY

Dialogue Summary

A conversation on opportunities and challenges to wider adoption of energy efficiency, hosted by the Institute for Building Efficiency and the Institute for Market Transformation, the U.S. hub of the Global Building Performance Network.

GBPN
Global Buildings Performance Network

Johnson Controls

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FINANCING, GOVERNMENT POLICIES AND ORGANIZATIONAL PRACTICES TO ADVANCE ENERGY EFFICIENCY ADOPTION – ROUNDTABLE DIALOGUE SUMMARY

While there is strong interest in building energy efficiency in the U.S. and an understanding of the benefits that efficiency offers to building owners and tenants, achieving scale remains the elusive goal for the energy efficiency market. The Johnson Controls Institute for Building Efficiency (IBE) and the U.S. hub of the Global Buildings Performance Network (GBPN) – the Institute for Market Transformation (IMT) – convened a Roundtable Dialogue in Washington, D.C., to discuss the U.S. results of two research studies on opportunities and challenges to wider adoption of energy efficiency:

- The IBE's annual Energy Efficiency Indicator survey of global building executives.
- The GBPN's Economist Intelligence Unit (EIU) briefing paper on the challenges of scaling up energy efficiency investments in the United States.

The Roundtable Dialogue focused on four key themes:

- **Financing** challenges and opportunities
- **Government policies** that can drive wider adoption of energy efficiency
- **Organizational practices** that foster good energy management
- **Co-benefits –** the benefits of energy efficiency beyond cost savings

The roundtable was made up of experts from local and federal governments, the private sector, and non-government organizations (NGOs). Participants were:

Alex Dews - Philadelphia Mayor's Office of Sustainability

Amanda Hurley - Institute for Market Transformation

Brad Dockser - Green Generation Solutions, LLC

Brendan Shane – District of Columbia, District Department of the Environment

Cliff Majersik - Institute for Market Transformation

Chris Pyke – U.S. Green Building Council

Clay Nesler – Johnson Controls

Davor Kapelina – AtSite

Jayson Antonoff – Global Buildings Performance Network

Jean Lupinacci – U.S. EPA

Jeff Erikson – SustainAbility

Jennifer Layke – Institute for Building Efficiency

Jeramy Lemieux – Johnson Controls

Jim Landau –Benthall Kennedy

John Christmas – Hannon Armstrong

Lisa Jacobson – Business Council for Sustainable Energy

Maria Vargas – U.S. Department of Energy

Melissa Donnelly – Institute for Building Efficiency

Molly Simpson – Urban Land Institute

Philip Henderson – Natural Resources Defense Council

Robin Snyder – U.S. General Services Administration

Scott DiBiasio – Appraisal Institute

Todd Sims – Institute for Market Transformation

FINANCING CHALLENGES AND OPPORTUNITIES

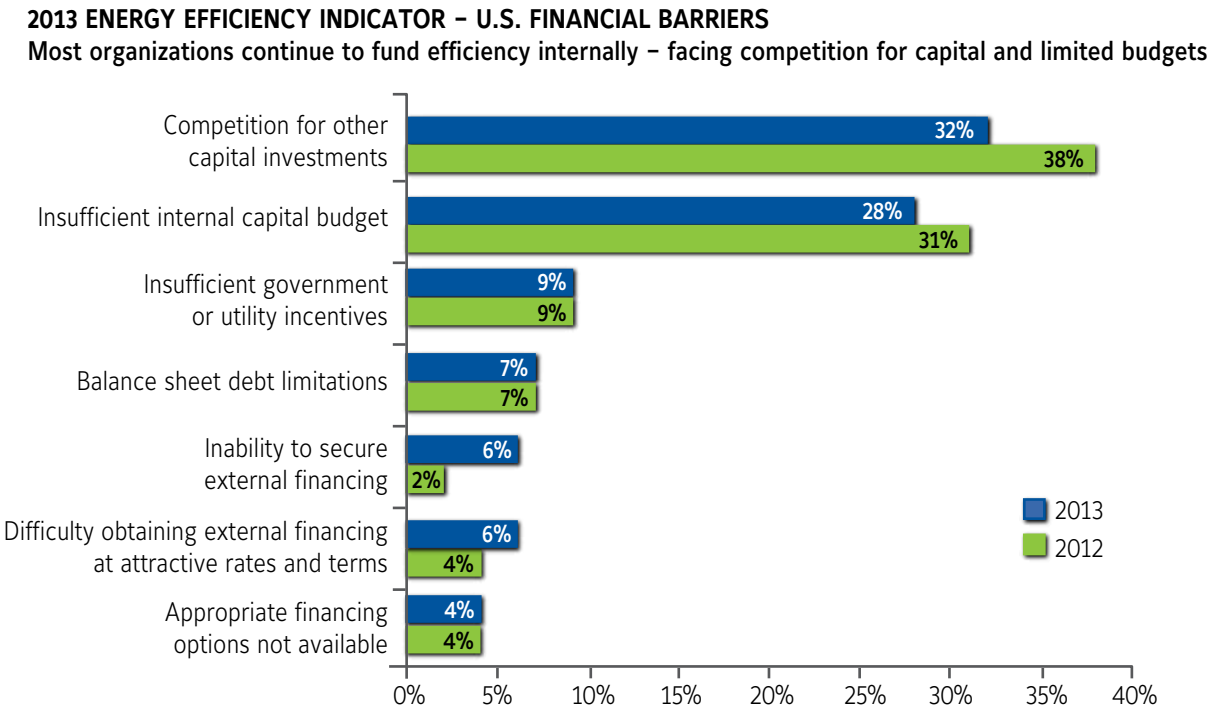
The IBE's 2013 Energy Efficiency Indicator survey revealed that investment in energy efficiency remained flat in the U.S. over the last two years. Year after year, respondents cite "lack of funding to pay for improvements" as their top barrier to pursuing energy efficiency. The questions posed during the roundtable were:

- What makes funding such a great obstacle?
- Is access to capital the challenge, or are companies just not making energy efficiency a priority when making budget decisions?
- Are organizations finding innovative approaches to overcoming internal capital constraints?

Examples of funding efficiency through external sourcing can be found from existing market sectors such as the municipalities, universities, schools and hospitals (MUSH) sector. This sector has established transaction paths and funding approaches that are streamlined and accepted. Generally, this takes the form of performance contracts, where efficiency measures are bundled and funded using external capital and the energy savings are guaranteed – essentially allowing the projects to pay for themselves over time. In addition, Property Assessed Clean Energy (PACE) financing may allow the commercial market in cities to create a more streamlined finance vehicle and overcome credit rating restrictions and balance sheet treatment concerns, thus helping bridge the capital/operational budgeting gap and spur interest in making energy technology and efficiency investments in commercial buildings.

Davor Kapelina from AtSite commented that even when the economics of energy efficiency make sense and the return on investment is good, organizations rank other investments higher in priority than energy efficiency improvements. Several participants concurred, noting that building owners often do have money to invest; they just need to place a higher priority on investments in efficiency. Thirty-two percent of executives surveyed in the Energy Efficiency Indicator said the top financial barrier they face is competition from other capital investment projects.

Figure 1: What is the top financial barrier to pursuing energy efficiency for your company/organization?



This point moved the discussion to what policies and organizational practices could help ensure that energy efficiency becomes a priority in budget decisions.

The Economist Intelligence Unit (EIU) paper highlighted that internal return on investment requirements, budget resources, and implementation approaches continue to challenge a market that is educated and engaged on the merit of energy improvements. One solution suggested to overcome budget constraints was for organizations to adopt a continuous management approach where they plan out and commit to a

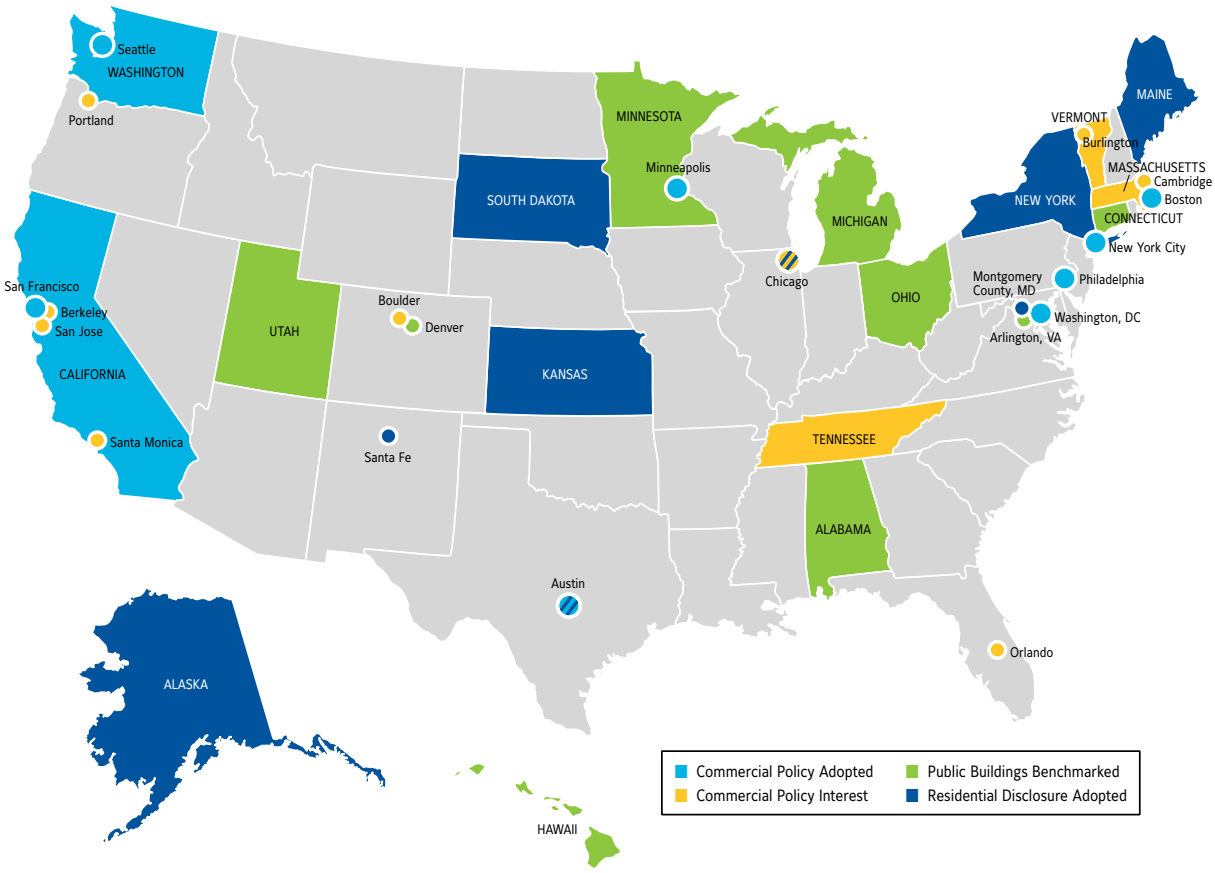
process that will maintain energy management efforts and support projects and investments over time. For example, building owners develop business plans but lack energy plans, and therefore they have no visibility into how these investments could support their business objectives. This solution ties back to the 2013 EEI survey results, which showed that organizations with public energy reduction goals are implementing more energy management practices and are investing more than organizations without goals. With a goal set and a management strategy in place, organizations are more likely to commit to energy improvements over time and build energy efficiency into their budgets as a priority. "When you have the commitment and goals, that moves things from project-based, which is often hard to get funding for, to a continuous management approach," said Jean Lupinacci of the U.S. EPA.

GOVERNMENT POLICIES TO DRIVE EFFICIENCY

How can policy help address funding and other barriers to energy efficiency in the market? The EIU paper points out that many policies focus on new buildings. Meanwhile, there is a need for good policies on existing buildings to meet the full potential of savings available and to manage the existing built environment. Philadelphia was highlighted as an example during the discussion. The city bundled together in one program low-cost finance, low-cost audits, and technical assistance so that building owners could leverage all assistance available at once and in a more streamlined way. By addressing those barriers in a coordinated effort, the city gets better uptake on energy efficiency. Philadelphia also has public and short-term goals that are all tied to the mayoral cycle, so there is a sense of urgency to achieve them. Entities outside the public building space are also adopting the city's goals and want to know how they can help contribute to them. With bundled policies and goals set, energy efficiency in the built environment can be accelerated.

The discussion continued on policy, specifically on energy performance benchmarking policies that have been mandated in several cities around the country. The EIU study suggests that the leadership cities are demonstrating with energy efficiency policy is having a positive effect on the market. However, the lack of federal or regional leadership (e.g., guidelines and goals) has led to a patchwork of regulations, creating inefficiencies for the private sector through higher transaction and compliance costs and the inability to achieve economies of scale. Greater consistency in the policies that affect existing buildings (e.g., benchmarking and disclosure) and how they are applied (e.g., energy codes) will encourage more investment in energy efficiency. Twenty-seven percent of respondents in the EIU paper viewed policy uncertainty as a barrier, suggesting a need for clarity around regulatory expectations, now and in the foreseeable future.

Figure 2: Regulatory uncertainty



SOURCE: INSTITUTE FOR MARKET TRANSFORMATION

The roundtable also questioned whether benchmarking mandates are enough to move the market forward: What else needs to be done? "We are in the first phase of benchmarking," said Chris Pyke of the USGBC. "As an initial engagement tool, benchmarking it is great, but we need to keep doing more. The value of policy is process." The information generated from benchmarking mandates needs to be actionable. If no one looks at or understands the data, the policy will fall short of its potential. Pyke noted that benchmarking requirements need to be paired with an integrated policy mix to drive efficiency throughout all aspects of an asset's lifecycle – planning, design, engineering, and operations. For example, a green building policy for new construction needs to be mirrored with operational benchmarking and programs to encourage retrofits.

ORGANIZATIONAL PRACTICES

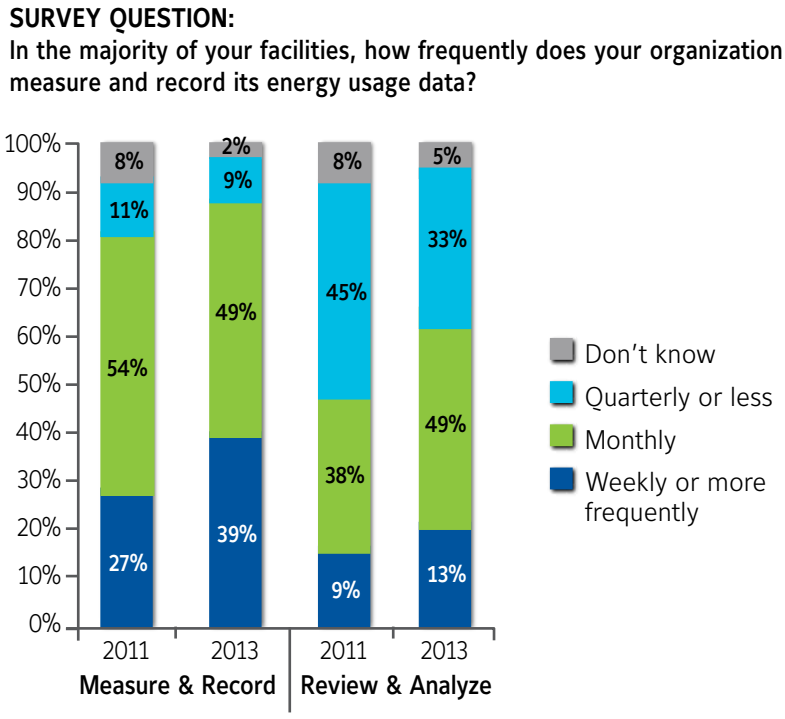
The discussion on organizational practices focused on energy management and data. Data is consistently a theme in energy management today as more and more data becomes available and requires analysis to drive action. Questions discussed in the roundtable included:

- What data are people using?
- What goals are they trying to achieve?
- What data do they need to reach those goals?

Participants remarked that first of all, organizations should not just focus on how to get more data. They should also be asking: "How can we use the data we are collecting?"

The amount of data being produced on 15-minute intervals from one meter in a building can be overwhelming – approximately 100,000 data points per year. Data standardization is needed to convert the points collected into real information that decision-makers can use to inform building energy management. The 2013 EEI survey results again showed a disconnect between the data collected and the data analyzed. More organizations are measuring energy use more frequently, but are analyzing and reviewing the data less often as a driver for decision-making. There is a treasure trove of opportunity in data, but organizations whose core competency is not data analytics usually will not know how to manage and use the data they are collecting.

Figure 3: Energy data availability increasing – analysis not keeping pace



SOURCE: IBE ENERGY EFFICIENCY INDICATOR

The group pointed out that there is a huge difference in the availability and analysis of data between Class A buildings and the rest of commercial buildings, and that the spread is getting bigger each day as technology enables Class A spaces to do more and more management. The market has to be segmented into different types of buildings before there can be a detailed discussion about how data can be used effectively to advance building efficiency. Simple improvements in the collection and use of data in less technologically advanced buildings may enable huge leaps in efficiency.

The data discussion also highlighted the need to focus on the right metrics when analyzing data. For example, with increasing occupant density, office buildings may actually be using more energy per square foot; this is a good thing, as it shows that the buildings are being more fully utilized – but the metric for energy efficiency may need to be adjusted from energy per square foot to energy intensity per square foot normalized to occupancy levels.

Finally, the data discussion focused on the need to translate data in different ways for different audiences. Data isn't information – it has to be translated into relevant information. Consistent, relevant information is essential because if stakeholders in the buildings market are confused by what the data is showing them, then they are less likely to act. How can data be used to communicate with a given stakeholder and make the case for supporting energy efficiency? For example, an engineer may not be interested in building valuation as it relates to energy performance, but a CFO would be. While the CFO may not be focused on the brand value that energy management can generate, the marketing executive would be. And the marketing executive may not be concerned with how energy management affects employee retention, but the HR executive would be. Co-benefits of energy efficiency beyond cost-savings, including valuation, increased brand value, and employee comfort and retention, bring more stakeholders into the conversation and could help improve the priority energy efficiency holds in an organization. This point led into a conversation on the co-benefits of energy efficiency and how the market values them.

CO-BENEFITS OF ENERGY EFFICIENCY

The discussion of co-benefits centered on a theme that "Consumers buy on emotion, justify with facts," as stated by Maria Vargas from the U.S. DOE. The facts justify increased investment in energy efficiency. The financial benefits of the energy savings alone are well proven. But, for some reason, many financially sound investments in energy efficiency are simply not made today because the emotional drivers aren't in place. Co-benefits, or benefits beyond energy savings, provide some potential emotional drivers for increasing investment in energy efficiency.

The co-benefits are many; some have clearly measurable financial benefits, while others are harder to measure. Co-benefits with a clearly measurable financial benefit will be of great interest to financial decision-makers, such as CFOs. The co-benefits that are harder to measure may not be of great interest to that audience. Brad Dockser from Green Generation Solutions, LLC, warned, "Beware of the squishy." But the squishier co-benefits that are harder to measure may be the very ones that will capture the emotions and hearts of other decision-makers. The CEO, occupants, the facility manager and many others are likely to buy energy efficiency on emotion, as long as the financial numbers firmly back up the decision. Co-benefits may be the key to unlock those emotions.

The benefits of energy efficiency with firmly measurable financial impact are the energy savings and the avoided operations and maintenance (O&M) costs. These figures can be clearly stated in terms of return on investment (ROI). The CFO may decide to invest in a project entirely based upon these numbers. All other decision-makers will need to justify their decisions with these numbers as well. While both energy and O&M savings can be readily calculated, roundtable participants noted that O&M is often in a different part of the budget from the energy spend. This means it may be a challenge to get the savings numbers for a project in front of the person who holds both of those purse strings. Such organizational barriers can usually be overcome with the right outreach to appropriate decision-makers within an organization.

Co-benefits of energy efficiency that are harder to quantify include quality of a building, sustainability, worker productivity, health, and decreased absenteeism. Participants noted in particular that greenness can actually at times be perceived as more costly, even though in the case of energy efficiency the green building conserves resources and usually costs less over its life. In addition, participants noted that a more efficient, optimized building will make building engineers far more productive, because instead of spending all day answering complaints and service calls, they will be able to think about bigger strategies for the building. Finally, some broader public benefits of energy efficient buildings were noted, including improvements in public health, reduced pressure on the electrical grid, and the ability of "green" communities to attract new businesses. Since these co-benefits accrue to society at large, they are typically not valued by individual investors. There is not yet a widely agreed upon methodology for quantifying the economic, societal, environmental and energy security/energy system benefits of energy efficiency. This means the real benefits of building renovations are being undervalued.

To identify which co-benefits best appeal to the emotions of building efficiency investors, the group suggested doing an analysis of the features on which people base the selection of buildings (comfort, good looks, and others), and see which correlate most strongly with energy efficiency. There is also a need to develop consistent data and clear messages to describe these co-benefits: "The more confused the market is, the less likely they are to act," said Maria Vargas.

The IBE survey found that while cost savings remain the key driver for energy efficiency, the market is considering co-benefit drivers as well.

Figure 4: U.S. organizations seeing beyond cost savings

SURVEY QUESTION:
How significant an influence are the following factors in your organization's energy efficiency decisions? (Extremely significant)

Extremely Significant Drivers in U.S. Energy Efficiency	
Energy cost savings	46%
Government/utility incentives	21%
Increasing energy security	18%
Enhanced brand or public image	18%
Customer attraction/retention	17%
Increasing asset value of building	16%

SOURCE: IBE ENERGY EFFICIENCY INDICATOR SURVEY

CONCLUSION

The roundtable closed with summary comments on the thoughtful and engaging discussion that took place over the course of the afternoon. Roundtable participants noted that while some organizations have trouble accessing capital for energy efficiency, many do not. The challenge is to get the attention of decision-makers to make energy efficiency a priority and to create a strategic plan for continuous improvement. There is no silver bullet when it comes to policy on energy efficiency. Benchmarking and disclosure laws are important, but they need complementary policies to be effective in driving efficiency. Stakeholders also need to know what the data from benchmarking means and how to use it. The market needs to dispel the skepticism around co-benefits and quantify their value. The roundtable also concluded that more data is not equal to better information. It is important to understand what data is needed and communicate it to the right decision-makers. Finally, confusion in the market creates inaction. Messages need to be clear. Policies need to be concise and accessible. And to achieve scale, it is essential to get the market players who are not engaged in energy efficiency to realize the full potential of energy management in the built environment.

APPENDIX

The Research

IBE and GBPN presented their research findings to roundtable participants to frame the discussion on moving the energy efficiency market forward. The following section outlines the information that was presented.

IBE Energy Efficiency Indicator Survey

The Institute for Building Efficiency conducts an annual Energy Efficiency Indicator survey tracking the energy priorities, practices and investments of executive decision-makers responsible for buildings in markets around the world. In 2013, over 600 North American executives with energy responsibilities responded, sharing their perspectives on the energy technologies, management practices, and organizational approaches to improving the efficiency in their buildings and operations. The 2013 survey results highlight five key findings:

- Interest in energy efficiency is high: 39 percent of respondents said it was "extremely important" to their organizations. However investment in energy efficiency remained flat, pointing to a disconnect between interest and action on energy efficiency.
- Organizations with public energy reduction goals implemented 69 percent more energy efficiency measures than organizations without goals.
- Organizations with public energy goals and using external financing for energy efficiency projects were 1.7 times more likely to increase investments in the next year than organizations without goals and external financing.
- About half of the organizations responding to the survey planned to pursue green certification or net zero buildings in the future.
- Twenty percent preferred to lease space in a certified green building if cost neutral.

For more on this study, visit: http://www.institutebe.com/Energy-Efficiency-Indicator/2013-Energy-Efficiency-Indicator-Global-Results.aspx

GBPN ECONOMIST INTELLIGENCE UNIT BRIEFING PAPER

The Global Buildings Performance Network – in collaboration with its U.S. hub, the Institute for Market Transformation, and in partnership with the World Business Council for Sustainable Development – commissioned the Economist Intelligence Unit (EIU) to interview market leaders about their experiences and the challenges they see in scaling up energy efficiency investments in the United States. This work was a follow-up to a report produced by the EIU in 2012, *Energy Efficiency and Energy Savings: A View from the Building Sector,* which drew on a worldwide survey of 423 senior executives in the buildings sector. The new research resulted in four key findings:

- Regulatory uncertainty on energy efficiency policy is creating a suboptimal situation in which the majority of U.S. companies are managing energy efficiency at the facility level rather than portfolio-wide. Regulation also tends to focus on new builds instead of retrofits, although retrofits offer the most potential for energy efficiency gains.
- Innovative financing is needed to achieve greater scale for energy efficiency.
- Energy and financial data management is a challenge. Data needs to be standardized, transparent, and accessible to be actionable. Different users need different data to make energy and financial decisions.
- Co-benefits of energy efficiency, like higher occupancy rates and tenant retention, are being realized by organizations pursuing energy efficiency in buildings.

To read the complete paper visit: http://www.imt.org/resources/detail/achieving-scale-in-the-us

The Global Buildings Performance Network (GBPN) is a globally organized and regionally focused nonprofit network advancing building energy performance best practice policies to help decision-makers develop and implement policy packages that can deliver a Deep Path of energy consumption reductions and associated CO_2 emissions mitigation from buildings. It operates a Global Center in Paris and is officially represented by Hubs in China, Europe, India and the United States.

www.gbpn.org

The Institute for Building Efficiency is an initiative of Johnson Controls providing information and analysis of technologies, policies, and practices for efficient, high performance buildings and smart energy systems around the world. The Institute leverages the company's 125 years of global experience providing energy efficient solutions for buildings to support and complement the efforts of nonprofit organizations and industry associations. The Institute focuses on practical solutions that are innovative, cost-effective and scalable.

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