Motivating the Real Drivers for Change in the New Construction Market: Lessons Learned From an Efficiency Program

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ABSTRACT

High performance buildings require change in the way business is done. Change is driven by leadership. While there are many market actors in the commercial new construction market, architects may have the greatest potential to lead and accelerate market transformation toward high performance buildings. However, the three distinct business models that exist within the architectural profession and their respective project delivery methods pose a significant set of challenges and opportunities in the movement toward the leadership paradigm and the development of a market-based approach to energy efficiency.

A statewide energy efficiency utility now has six years of experience in implementing a commercial new construction market transformation strategy. This strategy has focused explicitly on working through architects, and promoting and supporting their leadership role. The utility has successfully developed and implemented a unique set of strategies and programs to respond to the nuances of the distinct architectural business and project delivery models. More than 40% of all Vermont architects have now participated in projects with the efficiency utility. Whereas six years ago, recruiting new construction projects was largely a proactive requirement of the efficiency program's administrator, architects now are increasingly bringing projects to the program. Their level of familiarity, comfort, and expertise with energy efficiency technology and designs has risen markedly.

This paper discusses the efficiency utility's approach and strategies, its success in helping raise the bar on high performance building design, and in building a base of leaders to champion energy efficiency practices.

Introduction

In the past decade, high performance buildings have gained momentum that has been driven mainly by their marketability. Concerns about the rising prices of energy and acceptance of popular rating systems such as Leadership in Energy and Environmental Design (LEED™) have played their part in increasing awareness in high performance. The concept has thus progressed from the realm of innovators and early adopters and are rapidly penetrating large-scale projects, particularly in the highly visible market of celebrity building projects.

However, penetration in the bulk of the market and particularly among smaller projects is very limited. The hard-to-reach small and medium commercial new construction market, characterized by building projects less than 100,000 sq.ft. constitutes a significant part of both the Vermont and national markets. Data from the Energy Information Administration (EIA) indicate that this sector makes up 98% of buildings and 65% of total existing floor space in the United States (EIA 2003). Thus, it has immense potential for energy efficiency, but can be very challenging to reach, due to the diversity and quantity of market actors. While there are many

diverse market actors in the commercial new construction market, architects might have the greatest potential to lead and accelerate the market transformation process.

Beginning in 2000, Efficiency Vermont, a statewide energy efficiency utility, provided market-based demand side management (DSM) services in the commercial new construction market. Efficiency Vermont's delivery focuses explicitly on architects as the first-level leaders to deliver high performance buildings and to champion energy efficiency. To be successful, self-driven, and sustainable, this approach has relied on a strategy of building upon and positively impacting the business and leadership structures that already exist in the marketplace. The experience gained from this approach indicates several market dynamics that can serve as the real drivers of change in the market.

Why Pursue Architects?

Many utility DSM programs focus on technology and incentives to effect change in the new construction market. However, several studies conducted nationally and an analyses of Efficiency Vermont's projects indicate that high performance buildings in the small and medium commercial market can be achieved for less than 5% of the incremental cost of a conventional building (Kleinman and Veda 2004, City of New York 2002). The technology for high performance buildings is also readily available. To be cost effective, high performance buildings have to depend heavily on their overall comprehensive design and operation, and substantial reduction in the building's energy demand. The real barriers are the comprehensive integration and application of technology in the design and construction processes.

Design and construction processes are complex and typically include professionals and clients from diverse backgrounds. Influencing the process varies among projects, and is dependent on project size, type, scope, location, the respective outlook and experience of the client and design professional, budget, schedule, energy codes, and other factors. Of all the design professionals in the new construction market, Architects have a significant effect on the new construction design process, and have the capacity to lead and steer the process. They play leadership roles on their projects, function as the clients' representatives, manage the clients' resources and expectations, and have tremendous influence on design and delivery. A survey of 140 commercial owners randomly selected from the construction permits submitted to Vermont's Department of Labor and Industry (now the Department of Labor) in the last 3 years indicated that architects were involved in 54% of the projects, followed by mechanical engineers in 25%, and electrical engineers in 22%. Further, owners cited architects as having the greatest influence on design and equipment selection decisions. According to the survey, 21% of the architects were asked by their owners to consider energy costs as a criterion for design. And 71% of the architects reported that they had initiated high efficiency equipment options to their clients on 70% of the projects. (VT DPS 2005)

Green and high performance buildings are gaining acceptance as measurable and marketable metrics of quality in buildings. Architects have a vested interest in improving the quality of the built environment, and therefore are motivated to lead the movement toward high performance. Based on a list of LEED™ accredited professionals published by the United States Green Buildings Council (USGBC), architects comprise the highest share (more than 40%) of the total 19 user groups (USGBC 2006). Architects are continuously striving to enhance their reputations to differentiate their firms from their competition. All these reasons make it favorable

to target architects as the change agents for long-term market transformation. An investment in their education builds knowledge equity in the marketplace and has significant long-term payoff.

The Architect-Focused Market-Based Approach

Efficiency Vermont's market-based DSM service delivery evolved as a means to create a logical and simple way for market actors and clients to integrate the utility's energy efficiency programs in their projects. Each project is assigned to a project manager, who serves as a conduit for technical and financial resources from the utility to the project. At the discretion of the lead architect, project managers work directly with the design and construction management teams; attend design team and job site meetings at various stages; and assist with goal setting, energy and financial calculations, research for energy efficiency strategies or equipment selection, and site inspections. Project managers are also responsible for documenting energy efficiency features and estimating financial incentives. The design teams have a single point of contact, which makes it easy for them to integrate the utility within their team structure. The project managers are updated with the latest technical knowledge and market intelligence, and are thus an effective information resource. They are also part of several market teams, such as the new construction team or the schools team, within the utility, where they share their knowledge and experience. The market teams include market managers, technical analysts, project managers, and marketing and business development managers. The built-in diversity within the teams makes it easy to disseminate information and coordinate activities among departments. This delivery model allows the utility to understand and adapt its approaches in a way that would best influence the project and the market.

Working closely with design teams on new construction projects gave Efficiency Vermont's project managers an opportunity to realize that, even though each architectural firm and project were unique, there was an underlying similarity in the way energy efficiency was perceived and incorporated in the firm's work. The utility's New Construction team and Design Professional team tried to identify similarities and differences that characterized various design firms and their projects. The authors not only are project managers who work extensively on new construction projects, but also are lead members of the two teams. The architectural services are classified into three fundamental business models, each characterized by the core value that the firm brings to the table: idea-centric firms (innovative ideas), service-centric firms (exceptional service) and delivery-centric firms (strong product delivery) (Coxe 1987). Each model exhibits distinct characteristics and attracts different types of clients and projects. It also influences project team make-up, since architectural firms recruit employees and consultants whose education, training, strengths, experience and perception suit their business model. On any project, the relationship between players and their motivations, ideas of risk, and perception of reward are dictated by two main factors: the basic requirements of the client, and the core values and business model of the architectural firm.

Adapting the utility's approach to suit each model proving to be a key factor in achieving success in the new construction market, as was illustrated by Efficiency Vermont's results in its "Comprehensive Track" initiative. The initiative identified, supported, and recognized projects that incorporated extensive energy efficiency and high-performance features. Projects in the initiative represented all three models and achieved comparable levels of energy efficiency and high performance building ratings. The services of Efficiency Vermont were packaged differently to respond to the drivers and barriers in each of the three models. Table 1 illustrates

the distribution of the three models in the Comprehensive Track initiative and the average annual total electric and fossil fuel savings in kBtu / sq.ft.

Table 1. Distribution of Projects and Overall Energy Savings per Project, Based on Size and Business Models of Architectural Firms

Firm / Project Type	Efficiency Vermont Comprehensive Track Projects			
	Small	Medium	Large	Average Savings
N= 41	10,000 to 25,000	25,000 to 100,000	100,000 & higher	(kBtu / sq.ft.)
Idea-Centric	17%	22%	44%	37.4
Service-Centric	52%	56%	56%	29.2
Delivery-Centric	30%	22%	0%	26.5

Source: Efficiency Vermont, Comprehensive Track projects. 2005

The following section details the patterns observed and lessons learned through the implementation of the "Comprehensive Track" initiative and the specific strategies that worked to promote and incorporate energy efficiency in each of the three business models.

Idea-centric Firms / Projects

The clients and projects that constitute this market are driven by uniqueness and aim for identity through showcase projects. The design firms that serve this market are usually celebrity or progressive architects and consultants who value innovation and creativity as their best assets. They continually push the boundaries of design and technology and are striving to win awards and other forms of recognition. Their clients are very selective in deciding which architectural firm to use and the firms in turn are selective in their choice of projects and consultants. Projects in this market usually do not have strong budgetary constraints and boast of integrated design teams with experts from various disciplines. These projects also have a high marketability and image value to owners and consultants. Celebrity projects in most valuable real estate locations, corporate headquarters, top government projects, etc typically fall in this category

Characteristics of Idea-centric Firms / Projects

- Drivers: Innovation, marketability, high levels of performance and sustainability goals, including LEED™ with silver or better ratings or other comparable metrics
- Barriers: Aesthetics
- Integrated design: Very high-level, extremely competent design team and consultants. The use of energy simulation, lighting modeling, and commissioning to optimize design are common
- Renewable / on-site generation: Generally included in the portfolio of measures
- Technology: Prefer latest and cutting edge technology and view it as an opportunity rather than a risk
- Incremental costs: Typically higher than average high performance buildings; higher design and documentation costs.

Incorporating Energy Efficiency in Idea-centric Firms / Projects

- Incentives: Provide comprehensive project incentive, including incentives for design, documentation, commissioning, energy modeling and special incentives for promoting latest technologies.
- Technical assistance: Minimal. Provide assistance with research on new technologies and on-site assistance including blower door testing.
- Tools and resources: Provide special equipment like infra red cameras, etc for testing.
- Marketing support: Design competitions, case studies and walk through, press releases.

Service-centric Firms / Projects

These clients look for exceptional service with quality, value, and customized solutions to fit their needs. Their design firms invest time and resources during design phases to develop custom solutions, and are typically engaged throughout the design and construction processes. Most firms in this market rely on consultants with whom they have long-standing relationships. The projects are funded sufficiently to support value-added design services, and often bring in detailed value engineering at construction stages to control costs. Projects like schools, owner-occupied buildings, and hospitals often fall under this category.

Characteristics of Service-centric Firms / Projects

- Drivers: Value-added service, project-specific solutions; energy and maintenance cost savings; non-energy benefits, including comfort and productivity; high-performance goals like 30% better than baseline, and formal or informal scoring of LEED™ or other comparable metrics
- Barriers: Construction costs, technical capability and experience of design team, client goals, and design fees
- Integrated design: Varies depending on design team and consultants, occasional use of energy and lighting modeling and commissioning based on value and incentives, involvement by efficiency utility might be high
- Renewable / on-site generation: Included only if found cost effective, or if special resources like waste heat are already available
- Technology: Prefer well-tested and durable technologies; view latest technology as risky
- Incremental costs: Typically average for high-performance buildings, measures evaluated according to cost-benefit ratio or life cycle costs; value engineering is common

Incorporating Energy Efficiency in Service-centric Firms / Projects

- Incentives: Provide custom and prescriptive incentives for energy efficiency measures, as well as, design incentives for increased engagement in integrated design; Low-interest financing is another effective and attractive option to pay for the initial incremental costs.
- Technical assistance: Heavy involvement by the project manager; provide assistance with energy efficiency goal-setting and measure recommendations, review of drawings and submittals, detailed evaluation and calculation of energy and cost savings, documentation

of measures and savings, assistance in product research and on-site assistance, including, blower door testing.

- Tools and resources: Architect's High Performance Design Guide (Karmel 2004) and prescriptive energy efficiency standards such as, Energy Benchmarks for High Performance Buildings (Johnson 2005) and Advanced Energy Design Guide: Small Office Buildings (ASHRAE 2005), Benefits of High Performance - Building Owner's Guide (Karmel 2006).
- Marketing support: Help promote non-energy benefits to clients, provide third party review to foster client's confidence, promote successful projects through case studies, and targeted client presentations.

Delivery-centric Firms / Projects

The clients that constitute this market sector look for efficiency and cost-effectiveness. Buildings are viewed more as a product and the main focus is to reduce design processes and variables at the individual project level. Design budgets are typically very small and several projects might go through a fast-track design / build process. The design professionals might work for the contractor or construction manager, and the designs are based on standard pre-developed templates and specification sets that do not differ significantly between projects. Most buildings may be sold or rented, and therefore, their ultimate user is typically not involved in the design stages. This market is dominated by low-bid procurement practices. Price and schedule play a significant factor in the selection of design and contracting firms. Shell and core type projects, retail, fast food, hotel, and gas station chains fall under this category.

Characteristics of Delivery-centric Firms / Projects

- Drivers: Superior product, higher resale or rental value, repeatability, simplicity, fast-track design / build processes
- Barriers: Cost, schedule, design fees and processes, low-bid environment; owner typically is not the occupant
- Integrated design: Minimal at the individual project level, departmentalized, incorporated at creation of standard template of designs and specifications; depends on selection of products and subcontractors
- Renewable / on-site generation: Rare; if offered, it is typically an add-on option
- Technology: Prefer alternatives that are off-the-shelf, low risk, and easy to install and maintain
- Incremental costs: Average or low, based on off-the-shelf efficiency products and systems

Incorporating Energy Efficiency in Delivery-centric Firms / Projects

- Incentives: Offer prescriptive incentives for typical measures that are repeatable and applicable to multiple projects; provide as much information as possible as early in the process as possible; explore options for low interest financing.

- Technical assistance: Provide assistance with product research, selection, and incorporation into standard designs and specifications, review subcontractor submittals, and provide site education to supervisors on details and methods for proper installation.
- Tools and resources: Prescriptive guides helpful in developing standard templates and specifications.
- Marketing support: Commercial advertisements in local business magazines and newspapers.

Lessons Learned from Project-Level Delivery Strategies

Build Relationships with Architects

The relationship between the Efficiency Vermont project manager and the architect is important, particularly in the first few projects when the architect is evaluating the value and the risks the efficiency utility adds to their business. The level of trust and value that the project manager builds at this stage determines whether Efficiency Vermont will be invited early in the planning process for future projects. Once trust is established, project managers can introduce increasingly higher levels of high performance strategies, and newer and more complex technologies and applications on subsequent projects. This helps architects incrementally increase their knowledge base and the level of energy efficiency on their projects. Based on the Department of Labor survey mentioned earlier in this paper, a total of 45 percent of the 35 architects who participated in Efficiency Vermont programs reported that over the past two years, the level of energy efficiency measures included in their projects had increased and that Efficiency Vermont played a role in that change (VT DPS 2005). This process also reduces the effort of Efficiency Vermont's project managers, while increasing the savings per project. The relationship between the architect and the project manager serves as a source for repeat business, thereby reducing the marketing and business development efforts of the efficiency utility.

Create Flexibility and Adaptability

The delivery of Efficiency Vermont's DSM services is adjusted to fit the core values, business models, and the respective drivers for clients and design teams under each model. Incentives and technical services are creatively packaged and the incentive per project is constantly evaluated at the market level to ensure equity among projects.

Facilitate Comprehensiveness and Integrated Design

Comprehensive and integrated design is key to success at the project level and thus to market transformation. The approach to project design varies among the three models. In idea-centric firms, the design process is integrated and usually accomplished by knowledgeable design teams and consultants. In service-centric firms, design is an iterative process and the firms generally need assistance throughout the design process. In delivery-centric firms, designs are standardized and minimal design decisions are made at the individual project level.

The effectiveness of integrated design depends on making the right decisions at the right time. By working closely with project teams, Efficiency Vermont project managers have access to the principals, designers, employees and consultants who actually perform the design and

engineering services. The project managers serve as resources to design professionals and bring up design issues that impact the energy performance of the building at the right stages.

According to the Department of Labor survey, Efficiency Vermont participated actively in design decisions in nearly all new construction projects it supported. Architects who involved Efficiency Vermont in their projects indicated that it played a strong role in influencing the overall design. Efficiency Vermont influenced shell and lighting design to a large extent and HVAC system design to a smaller yet significant extent (VT DPS 2005).

Reduce the Burden of Proof on Design Team or Owner

Most projects do not have budgets to support energy efficiency documentation. Some projects in the idea-centric model or projects that go through the LEED™ process, where documentation has a very high marketable value, are exceptions to this rule. The incentives offered by the efficiency utility are typically less than 1% of the total project costs. Documentation costs might be higher than the total project incremental costs and the incentives offered by the utility. This does not justify spending resources on documentation. Efficiency Vermont project managers provide documentation, thus reducing such costs for the design team or owner. Incentive contracts are derived from regular bid set of drawings and specifications, thus minimizing disruptions to the design professionals' flow of work. Architects and engineers can focus on critical design processes and decisions instead of documentation needs. Efficiency Vermont project managers receive ongoing training; calculation tools are constantly updated; and the incentive determination and review processes are standardized to reduce the time spent on documentation by Efficiency Vermont.

Lessons Learned from Market-Level Delivery Strategies

Educate for Market Transformation

The ability to interface with project architects and design professionals on a project level offers an opportunity to provide continuous learning and effective training to market actors. The inability to translate knowledge acquired at conferences and trainings to actual changes at project level is a big barrier to market transformation. Efficiency Vermont project managers employ the "learning-by-doing" strategy to train design professionals. The learning happens "on demand" and is in response to specific project needs. Such incremental learning is important for managing perceived risks associated with high performance buildings. This is especially true when starting out a new relationship with a design firm. Introducing too many new measures or technologies at the beginning may lead the design firm to perceive higher risks and not participate in the program. Five specific strategies that have been successfully implemented by Efficiency Vermont are:

High Performance Design Guide (AIA Vermont). This was developed as a reference manual for architects and describes the integrated design process and best practice methods to include energy efficiency at various stages of the design process. More than 2,500 copies have been distributed since 2004. The Guide has been most effective in improving the design process of service-centric firms.

Energy benchmark for high performance buildings (New Building Institute). This is a technical reference guide that contains a set of prescriptive standards and specifications for achieving high performance in the small and medium commercial market. This document is of great value for both the service- and delivery-centric firms and serves as an easy checklist for achieving high performance buildings. It serves as a medium for coordinating goals among Efficiency Vermont's project managers, owners, and design team members.

Better Buildings by Design conference. Efficiency Vermont has hosted an annual two-day Better Buildings by Design conference in Burlington for the past six years. Initially, most of the attendees were licensed professionals who needed continuing education credits and used the conference as a platform for networking. The participation from architectural design professionals leveled off in 2003 and 2004, with limited participation from non-licensed and junior staff. In 2005 and 2006, attractive promotional rates were offered for first-timers and multiple registrations from individual firms; and participation doubled in those two years. The sessions contain varying levels of technical content to address the new-knowledge needs of the audience with varying levels of experience with high performance design.

Benefits of High Performance – Building Owner's Guide. This document highlights the financial benefits of high performance buildings and helps architects effectively sell the value of efficiency to their clients. The document contains one case study each of service- and delivery-centric projects.

Commissioning for better buildings in Vermont. Currently the market for this service in Vermont is very limited and is typically seen only in LEED™ or school buildings where they are mandatory requirements. The guide presents information and benefits of commissioning and is currently being distributed to all architectural and engineering firms.

Sell Value and Celebrate Success

Lack of ways to measure and market energy efficiency and high performance makes it difficult to promote these concepts. The small commercial market lacks simple and affordable third party certifications to prove and market their performance. Efficiency Vermont has been working aggressively to fill this gap and create public awareness and value. Efficiency Vermont created the Comprehensive Track initiative to identify top projects that included a comprehensive list of energy efficiency measures for all three business models. Efficiency Vermont promotes successful projects that incorporate high levels of efficiency and integrated design, through press releases, case studies, website postings, and open houses. This helps design firms attach independent third-party recognition to their projects and differentiate their firm in the marketplace. This leads to increased peer pressure and healthy competition among firms and an incentive to participate to stay competitive. Efficiency Vermont organizes walk-through and panel discussions of successful completed projects in conjunction with design professional organizations including AIA, ASHRAE and CSI to disseminate information to targeted audiences. The following recognitions systems have been set up by Efficiency Vermont to celebrate successful projects:

Design competition. This poster contest is organized as part of the annual Better Buildings by Design conference to celebrate Vermont's energy-conscious buildings. Initially, the judging criteria focused exclusively on cutting-edge energy efficiency features and performance as a percentage higher than baseline. This attracted only the idea-centric projects and resulted in fewer than 3 entries per year. Two years ago, the criteria were modified to include site- and client-specific contexts, programmatic challenges, and sustainability metrics. Subcategories were added to include markets that had limited idea-centric projects and more service- and delivery-centric projects. The participation increased dramatically to 6 projects in 2005 and 14 projects in 2006. More than half of the projects came from the service-centric model. The number of idea-centric projects has remained the same. The number of delivery-centric projects equaled the number of idea-centric projects. Entrants receive extensive press coverage and marketing.

NREL portal. Efficiency Vermont partnered with the National Renewable Energy Laboratory (NREL) and the U.S. Department of Energy (DOE) to create a web portal for case studies of top Vermont projects. This portal is linked to the national database of high performance buildings and gives Vermont projects national exposure and exclusive local advantage. The independent third-party evaluation provided by DOE / NREL establishes that the projects are credible examples of high performance design. The data are presented in a consistent manner and are linked with key words to make it easy to navigate the site. All top projects from the design competition are planned for uploads.

Target and Educate Large Owner Groups

Efficiency Vermont's market-based approach depends heavily on market teams that focus specifically on targeted client / owner groups that are constantly building and renovating, such as schools, colleges and universities, state governments, and the ski industry. Each assigned Efficiency Vermont project manager serves as the main and single point of contact for the owner. This helps Efficiency Vermont understand the owner's business processes, motivations, and barriers and to develop specific strategies to motivate the owners to invest in energy efficiency. An analysis of 2003-2004 Vermont's Department of Labor and Industry's database indicated that 45% of the total permitted construction activity, accounting for $337 million, was generated by the top 15 owner organizations (VT DPS 2005). Forging long-term relationships with this group and educating them about energy efficiency contributes significantly to market transformation. Further, Efficiency Vermont actively participates in special initiatives, such as the development of standards for high performance schools and state buildings. According to the Department of Labor survey, owners confirmed that they valued the technical services offered by the efficiency utility. In fact, technical services were mentioned twice as often as financial incentives as the most valuable service offered by the utility. The survey also indicated that the experience with the new construction program motivated half of the owners to participate in other Efficiency Vermont programs.

Results for Efficiency Vermont Services

This section highlights some of metrics that illustrate the success of Efficiency Vermont's architect-focused market-based approach in the new construction market. The data presented in Table 2 are based on a survey and detailed interviews from a sample of 35 Vermont architects

who have participated in Efficiency Vermont's new construction program. The survey and interviews were commissioned by the Vermont Department of Public Service in 2005 as part of the evaluation of Efficiency Vermont's commercial sector programs.

Table 2. Changes in Architects' Market Indicators between 2002 and 2005

Market Indicator	2002 Value	2005 Value
Use of Efficiency Vermont services	47%	94%
Awareness of VT State energy code/guidelines	<5%	23%
Optimizing daylight penetration	63%	54%
Use of 3rd party commissioning at least 1 project a year	23%	57%
Use of computer models to simulate whole-building energy use	3%	26%
Use of computer models to simulate building heating and cooling loads	23%	49%
Use of computer models to simulate lighting	43%	37%

Conclusions

The market sector of small and medium commercial projects might seem daunting, large, and diverse. However, it exhibits clear patterns which can be utilized to deliver effective market-based programs. Architects command a significant portion of the decisions made in this market and can therefore serve as great allies and agents for market transformation. Hard-to-reach, small architectural firms (fewer than 25 employees) comprise 95% of all the architectural firms, both nationally and in Vermont (America's List 2006). Smaller firms are better able than larger firms to adjust and adapt to change, but they also suffer from stiffer competition and limited resources (AIA 2002). Understanding and supporting the existing leadership structures and business models in this market sector are critical to increasing energy efficiency. Demand side management programs are in a unique position to serve as a catalyst for market transformation. To be successful, the DSM services must be responsive to the unique drivers and barriers to each of the different architectural business models. By aligning DSM programs to best serve the existing business models, utilities can provide a competitive advantage to participating firms, and therefore have greater influence on the architectural firm's dynamics and design process.

Program-based approaches promoting only efficient technologies and offering incentives to offset the resulting incremental costs might have limited market transformation effects when compared to the market-based approach. The program-based approach has fewer mechanisms to promote integrated design, effective and continuous learning, and hands-on training. They also increase the burden of proof on the design team and the owner, which can negatively impact their experience and participation with the DSM programs. Therefore, program-based approaches might not be able to motivate the real drivers or overcome the barriers that naturally exist in the small and medium commercial projects. Market-based approaches are an investment in long-term market transformation. The impact, results and spillover from the market-based approach can have far reaching effects and can develop a culture of progressive mindset that is needed to accelerate the movement toward high performance buildings.

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