

The Impact of the Daylighting Collaborative on Two Firms: Hoffman Corporation and Pella Corporation

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ABSTRACT

The Daylighting Collaborative is a market transformation program designed to increase the usage of cooling load avoidance daylighting in commercial buildings. The program targets a broad array of market players including architects and engineers, building equipment manufacturers, and builders. This paper describes the impact of the program on Hoffman Corporation, a commercial design-build firm; the Pella Corporation, a window manufacturer; and Ver Halen, Inc, one of Pella's distributors. The paper looks at market transformation from the perspective of these businesses and describes how they find out about the program, how they participate in program, how they make decisions that change their business operations, and how they view their ongoing partnership with the Daylighting Collaborative and each other. Key issues for these businesses are firm strategic direction, corporate philosophy, customer service, products, market differentiation, and pricing. Hoffman Corporation's strategy is to use Cool Daylighting to help provide sustainable buildings that are consistent with a LEED™ Silver rating. Pella's strategy is to increase its presence in the commercial building market by increasing its product offerings to meet Daylighting Collaborative specifications as part of its commitment to sustainability. The paper concludes with some general lessons for market transformation programs that intend to influence or collaborate with private businesses.

Introduction

Market transformation is, if anything, about change. And preferably, long lasting, if not permanent, change. This paper describes change within two firms that have been and are continuing to be impacted by the Daylighting Collaborative, a market transformation program that was established for just this purpose. In addition to considering change in these two firms, the paper also presents some broader evidence of change in the Wisconsin commercial building market. The reason for considering market trends is to establish whether the behaviors of the two firms that are the case studies for this paper are typical or anomalies in the market place.

In addition to exploring the types of change in the case study firms, the paper describes the reasons for the change, the barriers faced, and the mechanisms by which change is being accomplished. It is important to emphasize that fundamental change takes a long time to accomplish. It is our contention that market transformation programs typically require from seven to fifteen years. Thus, it comes as no surprise that the changes we explore are continuing and sequential. Some of the changes are underway in the firms, while other changes are just beginning or anticipated. To provide a timeline, the Daylighting

Collaborative was established at the Energy Center of Wisconsin in September 1998 and offered the first of its formal trainings in June 1999. Thus, changes are being considered within the context of a three and half year old program.

An integrated design approach such as cooling avoidance daylighting or Cool Daylighting advocated by the Daylighting Collaborative encompasses many facets such as form, orientation, glazing aperture and characteristics, complementary electric lighting, and HVAC designed to match reduced thermal loads. These changes in building design and the multiple links of the market supply chain for commercial buildings including architects and engineers, manufacturers, distributors, contractors, and design-build firms make the task of measuring change complex. As a result, measuring change in response to this type of program is more difficult than for programs focused on the introduction and purchase of a single item (for example, the horizontal-axis washing machine, the target of a large market transformation program).

In this paper we briefly summarize the Daylighting Collaborative to provide a context for evaluating change at a design-build firm, the Hoffman Corporation, and at a window manufacturer, the Pella Corporation, and its distributor in Wisconsin, Ver Halen Corporation. Hoffman Corporation's response to the Daylighting Collaborative is described, followed by an analysis of the changes at Pella and Ver Halen. Wisconsin commercial building activity is analyzed to gain some perspective on whether the changes at these firms are typical or whether these firms might be considered early adopters in the conventional sequence of early adopters, early majority, late majority, and laggards (Johnson and Nadel 2000). The paper concludes with some lessons learned for the design and management of market transformation programs.

Energy Efficiency Programs: Theory Versus Reality

To realize change in a marketplace, program designers must become intimately aware of the market: who are you trying to affect, what are their daily concerns and interests, what has caused them to adopt change previously? The program designers have usually already identified a "problem" that needs to be addressed, but is it viewed as a problem by those you are trying to convince to change behavior? An effective program must not only identify an issue to be addressed but provide practical solutions with definable, doable steps to reach the solution *and a reason to make the change in the first place*. It must be the stakeholders' decision to make the change because they see a *value* in making the change.

While proponents of energy efficiency see the benefit, we are often guilty of trying to convince our identified stakeholders that they should change for our reasons. The ultimate failure of a program can be predetermined by this single, major oversight: properly communicating the benefit to the stakeholder. We know what is in it for us (the energy professional) – increased energy efficiency and reliability, reduced peak loads, less need for additional generation, but we often fail to translate these benefits into language our stakeholders can understand. In addition, we often ignore other non-energy benefits that may be more important to our target audience. Our goals sound may sound laudable to our stakeholders, if they can make the translation, but what does it mean to them? Translating our goals into business terms is key.

The Daylighting Collaborative

The goals, structure, and programmatic design of the Energy Center of Wisconsin's Daylighting Collaborative revolve around this concept of market transformation. Market transformation is still in a relative infancy regarding program theory as noted in a previous paper on the Daylighting Collaborative (Hanson et al. 2000) and by other experts on market transformation theory (Johnson & Nadel 2000; York & Paulos 1999). As a result, the program relies on regular market assessment and evaluation to review services provided against those needed by target audiences – a continual learning process.

The program is developed around a central premise: “The central challenge of daylighting in commercial buildings is to bring natural light into buildings without bringing in unwanted incident solar heat gain and glare, and without increasing construction cost. The technological innovation in response to this challenge is the adoption of advanced glass (spectrally neutral with high shading coefficients), innovative low connected load electrical lighting design, appropriate architectural forms with exterior shading, and down-sized HVAC systems matched to load (Hanson et al. 2000).”

The program goal of the Collaborative is to change behaviors in the mass market. Therefore, the program theory based on a market transformation approach varied from traditional energy efficiency programs: “the use of traditional design assistance and financial incentives were rejected (Hanson et al. 2000).” In order to take daylighting into mainstream commercial building design and construction, the program created consumer friendly program elements and promoted change in small, easily attainable steps. Within this context, the Collaborative developed multiple program elements and strategies that are flexible and reach multiple points of the market chain. The typical commercial energy service market chain consists of equipment manufacturers, distributors, architect/engineer, contractor/installer, buyer/building owner/public official (Guild 1999).

The various program elements and messages were developed after an extensive market assessment study (Pigg 1997). This allowed the program to key in on the needs identified by our target audiences themselves. The program focused on narrow target audiences due to the limited funding available for the program. The result was an effort that looked at the building as a whole and used a message that would touch on all interests (human, environmental and economic), but at the same time provide very specific services to overcome identified barriers of the specific audience. The Daylighting Collaborative appears to have been effective in the first three years of the program, although monitoring and verification are continuing and complete verification and tracking of impact remains elusive. The program designers are seeking an epidemic of changed behavior adopting cooling avoidance daylighting. While its difficult to measure program impact, much can be learned by looking in detail at specific firms such as Hoffman Corporation and Pella Corporation/VerHalen, Inc.

Change at Hoffman Corporation

Founded by Fred Hoffman, the company began as a general contractor, but over its 109 year history has evolved into a leading design and construction management, or design-build firm. It focuses on education, senior living, and a variety of other commercial buildings such as health clinics and office buildings. Hoffman Corporation is now in its fourth

generation as a family-owned, privately held corporation, with more than 130 employees at offices in Appleton and Madison, Wisconsin and McHenry, Illinois. The firm's mission statement reads, "We make a positive impact on people's lives and their environment by providing creative ideas and responsible solutions."

The firm began its evolution in the direction of sustainable or green architecture in 1998. The initiative was sparked by interest of individual staff members in green architecture. These interests found receptivity in the corporate leadership in part due to emerging market demand as well as personal interest. By 1999 Hoffman Corporation had embarked on the design of a new headquarters building that would include green design. The headquarters was to be a symbol of its commitment to green and serve as a green laboratory for the local and Wisconsin community. The firm brought in a group of energetic interns to help explore the field of green design. Among the organizations that they contacted was the newly created Wisconsin Green Building Alliance.

The first contact with the Daylighting Collaborative occurred in June of 1999 when five Hoffman Corporation employees attended the first full technical training offered by the Collaborative. The training had such a profound effect on those attending that the building design was redone for a second time to include Cool Daylighting principles. Hoffman designers attending the training recognized the value of the Cool Daylighting approach to providing a desirable indoor environment and energy efficiency. Cool Daylighting was considered a central element in achieving green design. The headquarters building was completed in December 1999 within only six months of the Cool Daylighting training. Although it did not strictly adhere to the basic design advocated by the Daylighting Collaborative, it was offered by Hoffman and accepted as a case study by the Collaborative. The building is shown in Figure 1 in a Pella Corporation advertisement. Hoffman Corporation has provided numerous tours and training events for the Daylighting Collaborative, the Wisconsin Focus on Energy Program (the state's public benefits program), the Wisconsin Green Building Alliance, and various other groups.

Figure 1. Pella Corporation Advertisement with Hoffman Corporation in Architectural Record, February 2002

PROJECT: HEADQUARTERS FOR DESIGN FIRM FOCUSED ON GREEN ARCHITECTURE.

LOCATION: APPLETON, WISCONSIN.

DESIGN BRIEF: A BUILDING THAT OPTIMIZES TO CLIENTS THE BENEFITS AND BEAUTY OF SUSTAINABLE DESIGN.

CHALLENGE: OPTIMIZE ENERGY EFFICIENCY AND USER COMFORT WITH THE USE OF COOL DAYLIGHTING, USING ENHANCED DISTRIBUTION OF DAYLIGHT THROUGHOUT WORK AREA, TO REDUCE HVAC AND ELECTRICAL REQUIREMENTS.

PELLA PROCESS: THE PELLA COMMERCIAL TEAM WORKED WITH THE ARCHITECT TO MEET ENERGY CONSERVATION AND LIGHT TRANSMISSION REQUIREMENTS WITH FEATURES LIKE TRIPLE GLAZING WITH INTEGRAL BLENDS AND LOW E GLASS. ALSO, PELLA SUPPLIED OPERABLE METAL CLAD WOOD WINDOWS THAT MET TWO IMPORTANT CRITERIA: WOOD IS ONE OF THE FEW ENTIRELY SUSTAINABLE BUILDING MATERIALS, AND THE METAL CLADDING WAS COMPATIBLE WITH THE HARD-EDGED ARTICULATION OF MUNTINS USED IN THE TREATMENT OF OTHER EXTERIOR ELEMENTS.

PELLA COMMERCIAL SUPPORT: FROM CONCEPTION THROUGH INSTALLATION, PELLA RESPONDS TO ALL THE SPECIFIC NEEDS OF YOUR PROJECT, NO MATTER HOW SIMPLE OR ELABORATE, FROM PROVIDING CUSTOM SOLUTIONS, TO MEETING TIGHT SCHEDULES, PELLA COMMERCIAL REPRESENTATIVES WILL HELP ENSURE YOU MEET ALL YOUR TECHNICAL AND DESIGN CHALLENGES.

CALL YOUR REPRESENTATIVE AT 1-800-84-PELLA AND SEE WHAT KIND OF INNOVATIVE SOLUTIONS PELLA HAS FOR YOUR NEXT DESIGN.

JUST BECAUSE A BUILDING DOESN'T NEGATIVELY IMPACT THE ENVIRONMENT DOESN'T MEAN IT CAN'T POSITIVELY IMPACT THOSE WHO ENCOUNTER IT.

ARCHITECTURAL SERVICES
 INSTALLATION SHOP DRAWINGS FOR
HOFFMAN CORPORATION OFFICE BUILDING
 LOCATION: APPLETON, WI
 DRAWING: HOFFMAN CORPORATION
 DRAWN BY: VES MUELLER, INC.
 CHECKED BY: JESSIE DANIELS, INC.
 DATE: 1/2002
 SCALE: NOT TO SCALE
 SHEET NO. 1 OF 1
 ELEVATIONS

Source: Pella Corporation as published in Architectural Record, February 2002.

The Influence of the Daylighting Collaborative on Corporate Strategy

As a design-build firm, Hoffman is primarily focused on serving customers' needs through providing buildings and making a profit in doing so. Without the revenues and profits, there are no services, jobs, and innovation. In the eighteen months following the completion of the headquarters, Hoffman Corporation struggled to define what sustainable architecture meant, how it could better meet the needs of its customers, and be profitable.

In June of 2001, a key conceptual breakthrough occurred and became the focus of Hoffman Corporation's strategy to better fulfill its mission, differentiate itself in its markets, and increase revenues and profits. The strategy has three central tenets:

1. Use the U.S. Green Building Council's LEED™ rating system to define sustainable design.

2. Use Cool Daylighting integrated design as a central organizing approach.
3. Provide such a sustainable building at no added first cost.

These three tenets led to the adoption of the LEED™ Silver rating level and the incorporation of daylighting in all projects. An interesting feature of this strategy is that two multifaceted market transformation programs are simultaneously changing Hoffman. Both programs provide highly defined and doable procedures for achieving certain outcomes, and both programs provide a certain level of instant market recognition in at least portions of Hoffman's market.

Change Is Hard to Do

Having decided to change corporate strategy at Hoffman, the challenge was to make the fundamental operational changes to implement the new strategy. The changes were described in a Sustainable Business Plan. Among the foremost barriers to sustainable development with a daylighting approach is risk. Why should a profitable and growing firm alter its business? Why adopt a design approach that most of Hoffman's clients are not aware of? Why go through the work of changing design, construction, and marketing language? For example, the daylighting design uses a lower visual transmittance glazing than is typical for Hoffman's market. It also uses direct/indirect lighting with higher ceilings that are not typical. The LEED™ silver rating results in Hoffman, and its outside consultants and contractors, using materials with substantial recycled content, locally manufactured products, construction waste management, and strict site protection practices to name a few. These and numerous other measures threaten higher cost and require some new practices.

The decision process leading to the adoption of the new strategy incorporating daylighting and sustainable design involved a considerable amount of deliberation and some testing over the course of six months, and some testing continues. Hoffman is in close contact with the Daylighting Collaborative on a regular basis. The Collaborative provides continuing opportunities for training and project support and receives real-time input regarding barriers/issues in the market place from Hoffman. Two key initial tests were the application of the approach to two projects that were underway at that time. One was a small blood clinic that was being redesigned for an international client that wanted twenty more built around the United States and the other involved a \$15 million project at a religious order in Pennsylvania. These sites, the experience with Hoffman's 36,000 square foot headquarters building (\$3.3 million), and other project experiences provided credible evidence that incorporating daylighting and sustainable design was not that great a step for the firm, and therefore doable with acceptable risk.

Hoffman is now incorporating the sustainable design and Cool Daylighting within its TPM (Total Project Management) process. It is currently applying the new strategy to 13 projects ranging from 13,000 to 180,000 square feet. As Hoffman undertakes this effort, the Daylighting Collaborative program elements that are helping Hoffman manage the risk of change are:

Training. The Cool Daylighting trainings are structured and focus on doable, well-defined steps. These training elements have been successful at Hoffman. It has been a challenge to disperse this training throughout the firm beyond the original group trained. To make this

affordable and flexible for about sixty internal design, construction management, and marketing staff, Hoffman developed a series of in-house training events for staff and Hoffman consultants. The Daylighting Collaborative, with Wisconsin Focus on Energy support, assisted with one of these internal training events in addition to providing support for in-house training.

Demonstrations. A building built to a LEED Silver level with Cool Daylighting is difficult to describe in a way that makes a client jump up and say they want one. Seeing is believing, and that has proven to be the case with Hoffman's clients. For example, the Green Lake School district has a 1950's daylit building that was state of the art when it was built. The skylights are now covered, most of the west windows bricked in, and the south windows with extensive exterior shading had most of their blinds closed on a recent visit. The school needed rehabilitation and an addition. The design team explained the Cool Daylighting approach, but the school district was skeptical of the glazing. The school district officials were taken to a nearby retrofit demonstration site of the Daylighting Collaborative at the Foster Elementary School in Appleton. The visit immediately removed doubts.

Design assistance. Design assistance has not worked at Hoffman in all cases. The essential barrier is that the design schedules are typically so rapid that it often cannot wait for design assistance. Design assistance has to be extremely rapid (within a few days) and interactive. This need is partially being met within Hoffman by support across design teams from in-house resources to complement the outside design assistance from the Daylighting Collaborative and the Wisconsin Focus on Energy Program.

Marketing and information dissemination. The Daylighting Collaborative has had a notable impact on customer interest by introducing Cool Daylighting to the Wisconsin market place. It has continued that effort through the placement of articles in important professional magazines and conference sponsorship/participation such as the Wisconsin Green Building Alliance annual conference. The challenge for Hoffman is to take advantage of this market preparation and now include the Cool Daylighting as part of its marketing. These messages are being formulated in early 2002.

Change is now firmly underway at Hoffman Corporation as it adopts a sustainable approach including Cool Daylighting. As it looks to the future, it is yet to be determined how successful Hoffman is differentiating itself from its competition to both win new projects and potentially increase its design and construction management fees and thereby increase profits. The ongoing partnerships with the Daylighting Collaborative, the U.S. Green Building Council, and some of Hoffman's key suppliers, such as Pella Corporation continue to evolve as staff gain more knowledge and needs change.

Change at Pella Corporation and Ver Halen, Inc.

History and Philosophy

Pella Corporation is the second largest manufacturer of windows and doors in the United States. Founded in 1925, the company is headquartered in Pella, Iowa and has manufacturing facilities across the state as well as in Gettysburg, Pennsylvania. In addition

to manufacturing wood windows and doors, Pella Corporation has diversified its overall product offering in recent years.

Pella markets their products with a branding strategy aimed at specific target categories spanning both residential and commercial markets. There are four distinct series of Pella window and door products, each differentiated by price points, features and flexibility. Pella distributes its products through several channels to support their branding strategy.

Pella has long been a proponent of sustainable practices in both their manufacturing processes and finished products. Shortly after Pete Kuyper founded Pella Corporation in 1925, he formulated 12 General Objectives that would guide all the company's business decisions. One of these objectives states: **"We recognize that we must always be stewards of our natural resources and the environment. Day in and day out, we will use the earth's resources wisely, always aware of and accountable for the environmental effects of our actions."** Gary Christensen, the current President of Pella Corporation affirms Pella's environmental commitment, **"For Pella, being environmentally responsible isn't simply a philosophy of the month or the latest marketing strategy. It's how we've been doing business as long as we've been in business...."**

The largest distribution channel for Pella Corporation is the Pella Direct Sales Network (PDSN). The PDSN is comprised of 84 distinct distributors, or branches, that are given exclusive territories in which to sell Pella products. Ver Halen Incorporated is one of the five largest sales volume branches in the PDSN. Ver Halen is a privately held firm founded in 1911 in Milwaukee as a commercial interior contractor. Through the years, Ver Halen has grown and diversified its business including when Ver Halen joined the Pella Direct Sales Network in 1929. Today, Ver Halen serves 2/3 of the state of Wisconsin as well as the majority of the Upper Peninsula of Michigan. In 2001, gross sales had grown to approximately \$60 million from \$8 million in 1980.

Ver Halen's core business philosophy is driven by a vision statement founded on five basic interrelated parts: customer satisfaction, employee satisfaction, innovation, financial strength and social responsibility. Of these, innovation and social responsibility are key to Ver Halen's embrace of daylighting and green building technology. The vision statement on innovation reads: **"To embrace change in a proactive manner allowing the company to take advantage and develop new opportunities using technology as a competitive edge."** The social responsibility vision statement says: **"The company is operated in a way that recognizes its role in the communities in which it is a part and is respected for its contribution."**

It is important to note that while these tenets can stand on their own merit, if they do not lead to increased customer and employee satisfaction with sound financial growth, the philosophies are doomed to fail. Ver Halen must create revenue and profits while keeping in mind its responsibility to employees, customers and communities.

Impact of Sustainable Building Practices on Ver Halen and Pella

Ver Halen has only recently begun to consciously embrace green practices in their business initiatives. The major awareness and incorporation of sustainable practices by Ver Halen began in 1999 when the Ver Halen Pella commercial sales team noticed an emerging movement in several Milwaukee architectural firms. Sensing a business opportunity, the Ver Halen sales team began to explore the fit of Pella products with this growing movement. In

late 1999, Ver Halen joined the Wisconsin Green Building Alliance (WGBA), an organization of professionals dedicated to the promotion of sustainable building practices in the state of Wisconsin. The team also attended training seminars on sustainable issues offered by AIA and the Daylighting Collaborative. It was at this time that Ver Halen began to work closely with Hoffman Corporation on the design and daylighting aspects of their new office headquarters shown in Figure 1. In working with Hoffman Corporation, the Ver Halen Pella Commercial sales team realized the potential benefit of partnering with organizations committed to daylighting and sustainable design.

Since working on the Hoffman building project, Ver Halen has sold close to \$1,000,000 of Pella windows to Hoffman Corporation as well as the opportunity to bid on other projects. To say that daylighting and sustainable design has had a significant impact on the direction of Ver Halen would be an understatement. Ver Halen and Pella see it as a market niche it can seize and be recognized as proactive leaders.

Barriers to Implementation

Although Ver Halen has been tremendously proactive in its effort to attract sustainable/daylighting business, several barriers have slowed its efforts in commercial buildings. Some of these barriers are more general in nature, while some are much more specific to the Cool Daylighting approach.

The major barrier is the difficulty of meeting specific daylighting performance criteria with Pella's current product offering. Part of the Cool Daylighting specifications calls for visual transmittance and SHGC (solar heat gain coefficient) for view and unshaded clerestory glazings that are not currently available from Pella as a standard offering. Table 1 summarizes the Cool Daylighting glazing specifications, the Pella glazings used in the Hoffman headquarters buildings, and a small sample of other glazings. As can be seen in comparing the Hoffman buildings specifications and the Cool Daylighting specifications, there is some discrepancy. Further, the consensus at Hoffman after two years of occupancy is that while the daylighting in Hoffman is working well, it would have been better to use the lower (Cool Daylighting) visual transmittance glazing for the view windows. Pella's current glazing offerings have been driven by its focus on residential markets that account for 89 percent of its revenue. Pella is in the decision process of adding glazing options at the Cool Daylighting view specification.

Table 1. Glazing Comparisons (All Gray, Center-Glass Measurement)

Glazing	Visual Transmittance	SHGC (Solar Heat Gain Coefficient)	Comments
Cool Daylighting-View*	0.18	<0.20	none
Cool Daylighting-Clerestory*	0.38	<0.34	none
Hoffman Bldg.-View	0.40	0.33	Pella
Hoffman Bldg-Clerestory	0.72	0.41	Pella InsulShield (clear)
Pella Smartsash III, gray	0.33	0.26	Low-E DGP
Viracon VE3-40	0.18	0.19	
Viracon VE3-85	0.38	0.32	
PPG Solarban 60	0.18	0.18	Optigray 23
INTERPANE Vari-tran	0.04	0.22	S. Silver Coating
Pella Smartsash II, Low-E	0.76	0.79	Clear Glass

Source: Hoffman Corporation compilation 2002 from product manufacturers

*Note: These are typical – final recommendations based on specific project design considerations

A second barrier facing both Pella and Ver Halen is the diversity of approaches in current daylighting practice. Although the method of cooling avoidance daylighting put forth by the Daylighting Collaborative is gaining in popularity, there are alternative approaches that advocate bringing more light into buildings using clear glass. At the other end of the spectrum, some of the major glass manufacturers such as PPG, Interpane, and Viracon offer glazings for large commercial buildings that go much further in reducing visual transmittance and SHGC as shown in Table 1. The dilemma for Pella is to decide where is the best place to position itself in product offerings to meet the emerging needs for daylighting. It is a crucial investment decision.

Opportunities and the Future

There have been a number of developments over the last several months that have helped to reinforce both Pella's and Ver Halen's commitment to finding daylighting solutions for sustainable design. One major development was the incorporation of sustainable design practices into the new corporate headquarters for Ver Halen in Green Bay. Ver Halen has renovated a former 135,000 square foot warehouse into a learning laboratory on green building. With the help of the Daylighting Collaborative, Cool Daylighting was incorporated into all parts of the building including the offices, showroom, manufacturing and warehouse spaces. Over time, Ver Halen can demonstrate the performance of various glazing and shade configurations and offer the opportunity to their customers to experience these options.

Pella, Ver Halen, Hoffman, and the Daylighting Collaborative have a continuing dialogue on Pella's product offerings and other daylighting activities. It is critical that this dialogue continues for the long term. This open exchange helps all the participants to understand and analyze the economic impact that daylighting solutions can have for their organizations. The exchange is providing input to Pella's goal to increase commercial business to 25% of overall sales in the coming years. Daylighting is viewed as an important opportunity area in this initiative. It is crucial, however, that Pella positions itself

advantageously by offering the correct products and options to meet the needs of the players in this niche. Until Pella can provide as a standard offering at least one more glazing option at the Cool Daylighting view glass in Table 1, Ver Halen can not even compete for more than half of Hoffman's projects because it cannot meet performance specifications.

By exploring and adopting these opportunities in daylighting, Pella and Ver Halen will better serve their customers and provide another significant revenue source to their organization.

Lessons Learned for Market Transformation Program Design

The combined experiences at Hoffman Corporation, Pella Corporation, and VerHalen, Inc. as well as information on other firms affirm a number of the basic tenets of the Daylighting Collaborative program. These include:

- **Multiple, coordinated program elements are important.** A combination of coordinated programs elements is important to program success. The mix of training and demonstration sites appears to have been essential in moving these and other firms to include daylighting.
- **Financial incentives not necessary.** Progress in these firms and others has been strong without the use of financial incentives. This has been important for containing program cost and should be considered by other programs.
- **Low first cost approaches.** The focus on a basic, no or low-cost approach was essential to Hoffman Corporation, especially in very competitive markets such as schools.

There are a number of new lessons that have been learned as well, some of which the current program is not currently able to address. These lessons include:

- **Transferring knowledge across a firm.** Architectural, engineering, design-build, and manufacturing firms typically do not have systematic mechanisms in place to disseminate information from those receiving training from market transformation programs to others in the firm. Training one or a few staff does not mean that other staff will be aware or knowledgeable of new design approaches and new technology. Market transformation programs must offer trainings, repeatedly over a long time period either by directly offering the training or providing materials for firms to provide in-house training.
- **People are afraid - Partial implementation of recommended strategies.** For market transformation programs dealing with more complex design and construction issues, it should be anticipated that program participants will do partial implementations due to lack of knowledge, avoidance of real or perceived risk, and the inevitable desire to innovate. In many cases, this can be healthy, but it does raise the difficulty that some of the added benefits may be compromised. In the case of daylighting applications, the somewhat common reluctance to downsize HVAC systems results in not being able to capture some potential reductions in first cost, and in some cases adds to utility demand charges, although not increasing overall energy use.

- **Show me the money - Profits will always be the main driver.** Firms consider changes in their design practices and/or products within the context of corporate mission and goals, including profits. Market transformation programs should anticipate these requirements, especially in regards to the assumption of risks to profitability. For example, Hoffman Corporation was attracted to the Daylighting Collaborative because it was a systematic design approach that supported an earlier corporate decision to support sustainable design. Daylighting in coordination with a LEED™ effort became the focus of how Hoffman could support its corporate mission and differentiate itself from its competitors in the market place. Pella is considering offering new glazing options to Daylighting Collaborative specifications as a means to develop a broader presence in the commercial buildings market, and in a way that differentiated itself from its competitors.
- **Seeing is believing.** The power of demonstration sites and case studies cannot be underestimated. Identifying facilities such as the Hoffman building, classrooms in the Appleton School District, VerHalen’s distribution center, Alliant Energy’s Corporate Headquarters in Madison that are open to the public is absolutely crucial in showing the general design community and building owners and developers that you can incorporate daylighting and energy efficiency into everyone of their projects.
- **Measurement and verification: The holy grail of market transformation programs.** How can you accurately track the effect your program is actually having in the market? How many buildings have you influenced? To what degree? Most firms designing and constructing commercial buildings do not systematically track the performance of their buildings after completion and warranty. Thus, they have difficulty in knowing the performance of their products over time and miss opportunities to improve their product offering. Market transformation programs should consider at the earliest stages how they can track the progress of their programs and their impact on target audiences. Programs should encourage firms to monitor their buildings and share that information with the program.
- **What do you measure success against?** Baselines – the key to showing successful change rather than just change, but every program uses a different one. Should it be local code, current practice, national averages or a special baseline for each effort? This is the largest problem when trying to measure if a program is successful in saving dollars, kW, kWh and therms.
- **All the different people!** The construction world is one of the largest, most disparate markets out there. There are architecture and engineering firms, lighting design firms, landscape design firms, and interior design firms. There are design/build firms, project management firms and owners reps. And what about the developers? We haven’t even talked about the decision –makers yet: owner occupied, facility managers, building operators and so on and on. Knowing your audience is only part of the issue – getting to them is the other. What may seem clear in your program plan (e.g. “...target audience is the design community...”) can get very complicated very quickly. And everyone needs to receive your message in a slightly different manner.
- **Speed of business.** If you are offering any type of assistance, you need to be able to respond at the speed of business. Too often programs are governed by state administrative rules, etc. If this is the case, do not offer services you will not be able to provide in a timely manner. Know your constraints and work within them.

The Daylighting Collaborative reacts to these lessons on a daily basis, trying to respond to the ever-changing needs of the target audiences. The Collaborative relies heavily on continuing evaluation and feedback received from firms like Hoffman, Pella and VerHalen to ensure services provided match the learning curve. And it does seem to be effective. Preliminary market tracking data indicates that the Daylighting Collaborative has influenced well over 4 million square feet of commercial construction in Wisconsin to date, involving a broad array of businesses in the commercial building supply chain (Daylighting Collaborative 2002).

Conclusion

The ultimate program success is demonstrating a value for businesses that allows them to make the decision to change on their own for their own reasons (and they may not even realize they helped improve our energy efficiency and reliability!). While some businesses may change for the overall good, the majority will do so to achieve their bottom line objective of increasing profits, while meeting other goals such as maintaining a market share, providing good service, and other business strategies.

The two businesses profiled in this paper come from very different places, but share some common goals. One is a family owned business that understands the value of being a member of the community and nonetheless, all decisions must ultimately be defensible against the profit ruler. The other is a major national manufacturer that is the economic engine of the community of Pella, Iowa, where expanding its market share and profits is the ultimate driver, while also meeting its commitment to the environment. Integral to this, it must closely coordinate with its locally owned distribution chain. These businesses are making daylighting part of their business strategy, not because it will reduce peak loads and increase efficiency, but because they see it as a way to build their businesses and increase their market share and profits. While they are early adopters of Cool Daylighting, they are among many firms now active in incorporating daylighting.

Market transformation is all about understanding the concerns of your customer and learning to speak their language. Don't talk transformation, diffusion theory, and market interventions to owners, architects and engineers. Their issues are market advantage, net operating income, increased profitability. Market transformation programs that can do this have the opportunity to achieve real changes in the market.

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