Sustainable Business Practices of Commercial Retrofit Companies in Pierce County

Research Report

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Abstract

The primary focus of this study is to understand the sustainability initiatives implemented by companies involved in commercial retrofit projects in Pierce County. The study contains an extensive review of existing literature and data sources related to sustainability within this sector. Interviews were conducted to collect data about industry trends and advancing sustainability within the sector.

The study begins by presenting the context for sustainability-related definitions. The business case for sustainability and how it impacts the commercial retrofit sector is discussed next, followed by a description of the sustainability initiatives implemented within commercial retrofit organizations and their projects. The interview findings form the core of the report's conclusions, which were derived from employer input on the following subjects: organizational commitment to sustainability, current sustainability activities, incentives and barriers for sustainability, and the benefits of operating sustainably.

Finally, based on the conclusions that more Return On Investment (ROI) data is needed and that training is essential but problematic in this sector, the following potential action steps are put forward for consideration:

Education and Training:

- Convene education partners, training providers and industry representatives in Pierce County to focus on the following: identify specific training needs and gaps; catalog existing training programs; discuss training delivery options; and identify next steps.
- Provide guidance and coordination to education and training providers as they develop training to meet the needs identified by the industry partners.

ROI Methods, Data and Tools:

- Conduct a national review of effective strategies and tools for determining ROI that are currently being used or that are under development.
- Identify the metrics that are being used to determine ROI on sustainably built projects in the public sector. Since publicly funded buildings have required a LEED Silver standard for several years, it is likely that they have more data collected and that data will be made available to researchers since the data is not proprietary.
- Use the identified metrics to develop a tool that can be used to determine the ROI on building retrofits and related projects. This uniform measurement tool could be a specific deliverable from the SEES Leadership committee to the community.

Introduction

This research project investigates the use of sustainable business practices by design and construction firms who offer commercial retrofit services in Pierce County. The study was commissioned by the Pierce County Sustainable Economy and Environment Study (SEES) Leadership group, and funded by Workforce Central, which is the Washington State Workforce Development Council for Pierce County.

The goal of the research was to understand how businesses that support green and sustainable building construction are adopting sustainable practices within their own organizations, and to identify the incentives and barriers to the application of sustainable practices among these companies. This report provides a focused snapshot of one specialized sector of the construction industry that serves as a pilot case for use by SEES leadership and other stakeholders to promote sustainable business practices in Pierce County.

The Context for Sustainability

What is Sustainability? Conceptually, the term "sustainable" seems straightforward. In practice, however, the term is enormously complex, and there are many different definitions in use today. The United Nations published *Our Common Future* (aka The Brundtland Report) in 1987 which became the cornerstone document of the sustainability movement, and that definition of sustainable development is:

> Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.[1]

An extension of this definition later appeared in the 2000 Earth Charter report, which describes three pillars of sustainability.[2] Collectively, the pillars are often described as the core targets of sustainability needed to achieve a "Triple Bottom Line."

> The three pillars of sustainability include the environment, social equity, and the economy. A strong resilient economy depends upon a vibrant and equitable society which in turn relies on a vigorous flourishing environment. The balance of the three pillars leads to prosperity and peace for future generations.

While there are overt and sometimes subtle differences between these definitions, there is a common theme: the shift toward more efficient, fair and conscientious use of resources.

[1] See: Bruntland, G. (ed.), (1987), *Our common future: The world commission on environment and development*, Oxford, Oxford University Press.

[2] For more information about the Earth Charter, see: http://www.earthcharterinaction.org/content/

Business Sustainability

There is a compelling business case for sustainability: Recent research is finding a strong correlation between businesses that exercise sustainability leadership and positive financial indicators, such as return-on-investment and earnings per share. Corporate commitment to sustainability is having a positive impact on business success.[3]

Most businesses have taken at least some action to improve sustainability. These actions may be as simple as implementing a recycling program, promoting employee ride-sharing programs, or conserving energy and reducing environmental impacts via new production processes. Some companies have developed "Corporate Sustainability Plans" (an evolution of the ethics-focused term Corporate Social Responsibility) in an attempt to augment long-term shareholder value, as companies embrace new markets and product opportunities, implement organizational improvements, and work to manage the social, environmental and economic risks associated with pursuit of the triple bottom line.

An Evolutionary Process

A recent global analysis on sustainable manufacturing and eco-innovation by the Organization for Economic Cooperation and Development (OECD) concluded that while many companies are engaged in sustainability activities, most corporate sustainability efforts fall far short of addressing concerns such as global shortages of natural resources, climate change or energy security.[4] Other industry observers assert that only companies that make sustainability a priority will achieve a competitive advantage, and that means re-thinking business models as well as changes to products, technologies and processes.[5]

The OECD report describes how three main facets of eco-innovation (targets, mechanisms, and impacts) together form the basis for a model that describes the levels and ways in which organizations can pursue goals that result in increasingly beneficial outcomes for the environment (see Figure 1).

The model is instructive because the same factors can logically be applied to organizations that are intent on pursuing any combination of environmental, social and economic goals. It also recognizes that technological changes are associated with the majority of sustainability initiatives which, in the case of commercial building retrofits, is usually tied to specific products or improvements to work processes. Changes in other business functions and structures such as marketing, infrastructure, or the design of organizations themselves, tend not to be as heavily tied to technology changes. Functional and structural changes are typically more complicated and difficult to implement however, and are therefore not as common. This model

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[3] See: Nidumolu, R., Prahalad, C, & Rangaswami, M. (2009). *Why sustainability is now the key driver of innovation*. Harvard Business Review (September). See also: Oekom Research, Sustainability and Business Success, 6/2005 http://www.oekom-research.com/index_en.php?content=studien. See also: *Measuring business success from sustainability certification*. United Nations-Global Impact and Rainforest Alliance, 2007: http://www.unglobalcompact.org/docs/news_events/8.1/UN_Rainforest_alliance.pdf

[4] OECD Policy Brief, June 2009, "Sustainable Manufacturing and Eco-innovation: Towards a Green Economy" http://www.oecd.org/dataoecd/34/27/42944011.pdf

[5] See: Nidumolu, R., Prahalad, C, & Rangaswami, M. (September, 2009). *Why Sustainability is Now the Key Driver of Innovation*. Harvard Business Review.

underscores the idea that getting started with even very small steps is an important way to begin building momentum. Moving an organization towards sustainability is a process, an evolution that takes time.

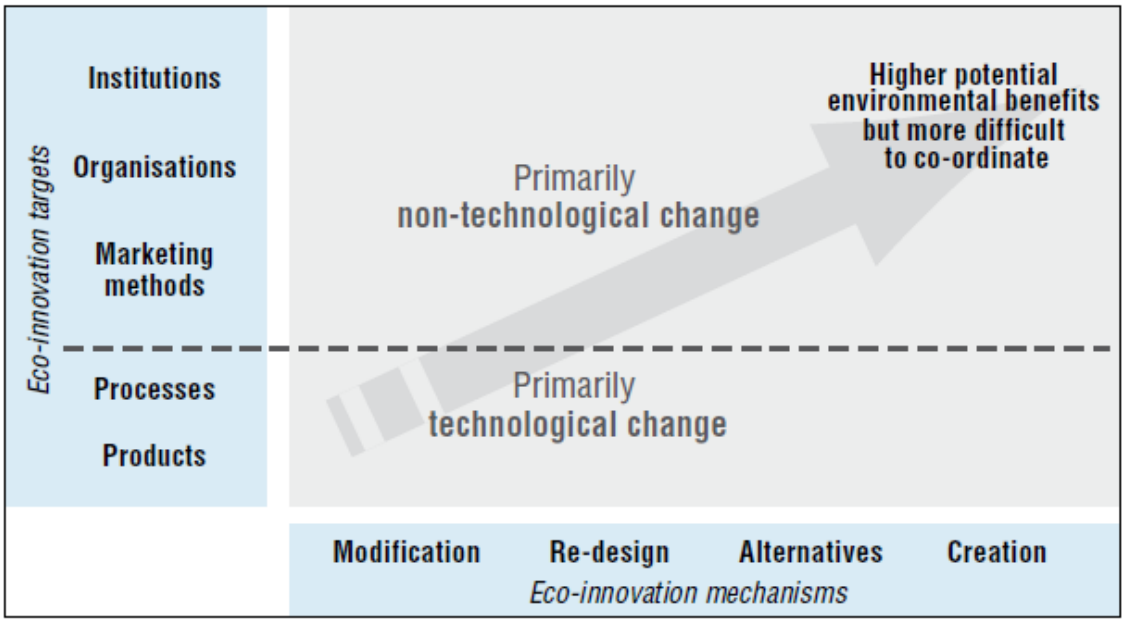

Figure 1 OECD "Eco-innovation Mechanisms"

Sustainability in the Commercial Retrofit Industry

An analysis of the commercial retrofit sector in Pierce County provides a window for understanding how organizations that provide services to enhance the sustainability of commercial buildings are also beginning to adopt sustainable principles and internal practices themselves.

There are many examples to draw from, as Washington State is a recognized leader in sustainable building and construction. On a per capita basis, the state has more green buildings of any state except Oregon that meet the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) standard.[6] The state also has deep historical roots in environmental protection and energy efficiency that provide a regulatory and policy foundation for sustainable business practices.[7] The fact that state law requires that all major public

[6] See Washington State Department of Ecology: http://www.ecy.wa.gov/pubs/0701039.pdf. Also: http://www.forbes.com/2007/10/16/environment-energy-vermont-biz-beltway-cx_bw_mm_1017greenstates_slide_4.html?thisSpeed=15000

[7] See: Hardcastle, A. (2010). *Green jobs in Washington State: Progress, opportunities and challenges.* Olympia, WA: Washington State University Extension Energy Program.

buildings must be built to meet LEED-Silver standards has also helped propel sustainable design and construction in Washington.[8] Most design and construction firms support new building and retrofit projects, and although some firms specialize in sustainability, most implement both traditional and sustainable projects.

Commercial retrofit projects represent a special class of activity for designers and builders, as the primary goals are usually to replace or upgrade various existing building structures, components and systems to optimize energy use and building performance. Although the costs associated with retrofitting these buildings can vary by local market, the availability of experienced vendors and project scale, a growing body of research suggests that the investment outcomes and other benefits of sustainably-focused commercial retrofits generate positive economic outcomes for clients.[9]

The initial investment associated with retrofits can be high, and these costs are a major concern of building owners and operators. But some studies suggest that in addition to energy efficiency, other tangible factors such as reduced operating costs, occupancy and rental rates, lease structures and sales prices, are all positively affected by sustainable building characteristics.[10] Increased employee productivity is another benefit of sustainability retrofits, and some studies concluded that these benefits are actually higher than benefits due to energy savings.[11] Presumably, human productivity gains are due to improved air quality, more natural light, and optimal space configurations that may help to reduce absenteeism or other negative health effects that could reduce worker productivity. Some of these studies were not longitudinal or systematic, and they do not account for temporary productivity gains that could be associated with changes in the workplace often referred to as the 'Hawthorne effect.'(The Hawthorne effect — an increase in worker productivity produced by the psychological stimulus of being singled out and made to feel important.)

Illustrating Client Benefits—Courthouse Renovation: One example that illustrates the savings that can be realized from a sustainable retrofit project is the renovation of the Thurston county courthouse by McKinstry, a Seattle-based engineering firm. As part of the early planning process, McKinstry was able to provide a specific projection of the savings that would be

[8] See Chapter 39.35D of the Revised Code of Washington: http://apps.leg.wa.gov/rcw/default.aspx?cite=39.35D&full=true All major facility projects of public agencies receiving any funding in a state capital budget, or projects financed through a financing contract as defined in RCW 39.94.020, must be designed, constructed, and certified to at least the LEED silver standard.

[9] Miller, N., Spivey, J., & Florance, A. (2008). *Does green pay off? Journal of Real Estate Portfolfio Management*, 14. See also: Eichholtz, P., N. Kok, and J. Quigley (2010). *Doing well by doing good? Green office buildings.* European Centre for Corporate Engagement, Maastricht University, Netherlands. Also: Fuerst, F. and P. McAllister (2009). *An Investigation of the Effect of Eco-Labeling on Office Occupancy Rates.* Journal of Sustainable Real Estate, 1, 49–64.

[10] Miller, N., Spivey, J., & Florance, A. (2008). *Does green pay off?*

[11] Kats, G. (2003). *The costs and benefits of green.* Report to California's Sustainable Building Task Force, Capital E Analytics (October). Also: Miller, N., Pogue, D., Gough, Q., & Davis, S. (2009). *Green Buildings and Productivity. Journal of Sustainable Real Estate*, Vol. 1 (No. 1), 65-89.

realized over time on the project, using calculations based on data from similar projects. The savings came in three main areas: projected energy savings, operations savings, and from rebates and incentives offered by the local utilities company. These three areas of savings resulted in a 20% reduction in total project costs. Additionally, by comparing various cost-benefit scenarios and improvement measures, McKinstry was able to forecast that reducing the building's energy needs will continue to benefit the bottom line, the people working in the building, and the surrounding environment long after the initial project is paid for.

In summary, much of the newest research suggests that the overall economic, employee health and environmental benefits associated with sustainably designed commercial retrofits likely outweigh the associated upfront investment costs. While clients interested in funding commercial retrofits continue to pay close attention to project costs, there is a growing interest in projects that can simultaneously reduce costs and improve the long-term bottom line through sustainable designs that maximize energy efficiency and enhance the physical work environment for employees. By design, sustainable retrofit projects also help reduce negative environmental effects by reducing waste due to less-efficient building materials and practices, and by enhancing operational efficiency. Thus, sustainable retrofit projects have become increasingly popular among clients because the benefits associated with sustainable designs 'pencil out'. They are proving to be cost-effective as well as responsive to a growing awareness among companies about the environmental impacts and risks associated with regulatory issues and public perception.

Adopting Sustainable Practices in Pierce County

Washington State's longstanding emphasis on balancing environmental protection with the economic development needs of the state has shaped how commercial retrofit employers view new business opportunities in the state. In some respects, these historical roots imply that Washington's commercial retrofit contractors may be well-positioned to take advantage of the growing emphasis by building owners and the public on the value of sustainable retrofit projects; many companies have already moved in this direction, albeit in varying degrees, due to the state's regulatory structure, and the availability of improved materials and construction technologies. Thus, for many companies the shift toward sustainable building is a natural extension of work they are already doing.

Although it seems inevitable that the current political environment and growing consumer demand will create new opportunities for firms to capture the sustainable building market, it is less clear how much the design firms and contractors who provide sustainable commercial retrofit services are adopting sustainable business practices as a core value of their own

business. What internal changes are being implemented by these companies, and how extensive are these efforts? How do these companies describe the payoff associated with operating more sustainably?

As noted earlier, while many businesses sponsor internal programs aimed at enhancing sustainability, such as recycling, broader policy or structural changes can be difficult to implement as they can face stiff internal resistance and require additional resources. This research, which focuses on commercial retrofit firms in Pierce County, begins to answer these questions and suggests areas for further inquiry.

Research Methods

An extensive background review of written reports, industry research, and other technical documents was conducted to identify sustainability trends, indicators and initiatives in industry, and specifically in the commercial construction sector. Existing state labor market data and other economic and industry data were also reviewed to provide context for the study design and report. Those findings are integrated into the body of the report, primarily in the introduction and conclusion sections.

In-person and telephone interviews were conducted with employers who were recommended either by the SEES Steering Committee or by others in the commercial real estate field (see Appendix A). Participants were generally acknowledged by their peers to be implementing sustainable business practices. Each participant was provided a list of questions in advance, and participated in an interview with the authors that typically ranged from 45-90 minutes

Companies to be interviewed comprised a select group; they were selected using the following criteria:

- They are firms located in Pierce County and/or are involved in commercial retrofit projects in Pierce County.
- They are implementing sustainable business practices internally.

Interviews were facilitated by the authors, and included a general introduction to the project and an overview of sustainability definitions and practices to provide context for the participants. Specific questions and discussion topics introduced during the interviews included the following:

- Describing sustainability initiatives within each company.
- Level of organizational commitment to sustainable business principles and practices.
- The most significant barriers, incentives, or opportunities that impact an organization's emphasis on sustainability.
- How companies are responding internally to new requirements or expectations related to sustainability.
- What benefits the organization attributes to operating sustainably.

Data collection also included input from participants about additional topics and issues related to sustainability, and this input provided additional context and new insights about the study model, including new clues about how industry sustainability initiatives are regarded and implemented.

Following the interviews, additional information was collected from participants, conference presenters and from other industry representatives identified by participants and sponsors as knowledgeable about sustainability initiatives. The draft report was circulated for review by all participants and sponsors. Modifications were made to correct for factual errors or omissions, and new information suggested or provided by reviewers was added to the report, where appropriate.

Results/Findings

The findings reflect the major themes identified during the analysis of the initial interview data and through follow-up conversations with interviewees. The findings are generally organized to follow the interview protocol described above.

Many Reasons for Implementing Sustainability Initiatives

Companies reported focusing on sustainable business practices for several reasons: First, participants reported that they anticipate the market is increasingly moving in this direction. Most employers reported an increased demand from their clients who want the savings associated with sustainable retrofit projects, and to be more environmentally responsible. Second, all employers reported that sustainable retrofit projects are helping clients reduce maintenance and operations costs, and these benefits are spurring clients' interest in retrofit projects. Third, most employers were quick to point out that government building projects require it: All publicly funded buildings in Washington State must be built to the LEED Silver standard (there are some exceptions for schools).

Finally, several participants noted that offering sustainable components in a bid process can help move that bid to the top position, since many clients are beginning to see both the financial value and positive environmental effects of sustainable projects, which is increasingly viewed as a competitive advantage. Marketing a firm as green or sustainable can be an effective strategy for attracting new clients, but incorporating sustainability as strategy for new business development means that firms must also deliver on the promise. As one participant put it:

> "We sell our commitment to sustainability to our clients, and we think that will make us more competitive. If a client likes our green approach, it results in ours being the winning bid and being recommended to other clients. One additional project a year would make it all worthwhile."

Companies that embrace sustainability as a broader strategy for growth, and who deliver results for clients, may have an edge over companies that do not. As one participant predicted, "Early adopters will have a significant competitive advantage."

Market Drivers and Incentives: The growing interest by clients in sustainable retrofit projects was commonly cited by employers as a key driver for adopting sustainable practices internally. In some cases retrofit companies seized the growing demand for sustainable retrofits as an opportunity to capture additional market share, while also establishing a new vision for their organization that embraces the longer-term objectives of economic and environmental sustainability. One participating organization, for instance, created a 2020 vision in the year 2000. At that time, they determined that environmental concerns were "mission-critical". As one participant stated, "Business has to accept responsibility for the environment. We need to use methods that help avoid harm to the environment; we need a long-term perspective." All participants cited rebate programs such as those offered by local utilities and nationally by Energy Star as effective ways to help clients realize savings on their retrofit projects. Employers reported that these rebates are serving as powerful incentives for clients to request more sustainable products and services for their project than they have in the past.

Employers also noted that client attitudes about the goals of retrofit projects are shifting, which influences how retrofit companies see their role in providing value-added options to their clients that go beyond cost savings. Many participants said that it used to be that clients were only concerned about up-front costs. Now they are requesting that both sustainability goals and cost savings should be the targets of retrofit projects. According to participants, clients recognizing and considering long term savings is a growing trend that has helped spur more sustainable projects, which has helped cushion the collapse in demand for new construction. These employers also reported, however, that most client decisions about sustainable retrofit options continue to be fiscally-driven. For example, clients are asking for projects that will save energy because they recognize that energy costs are bound to go up over the next few years. Thus, decisions about retrofit projects are driven first by what clients believe will help sustain their business interests. At the same time, however, clients want to be made aware of retrofit options that will result in a variety of sustainable outcomes, and the potential for long-term benefits.

The national economic recession was underscored by deep reductions in new construction, and employers said that the retrofit market was not immune to business declines. As one participant reported, "The current economy is tough, revenues are down over the last few years and project delivery methods have shifted." Interview participants did report that the last quarter of 2010 seemed to show a slight improvement in the industry. Another bright note is that companies involved in commercial construction say that since the economic recession

they have experienced a general shift by many clients in favor of retrofits rather than the more-expensive option of new construction, especially in the last two years. This shift has led to some increased demand for contracts and for workers experienced in retrofit projects, but there is also more competition for what retrofit work is available; companies reported that there is increased competition for all projects. For example, one participant noted that prior to 2008, 85-90% of their projects were "negotiated" (vs. competitive) and came mostly from repeat customers. Now, there is increased pressure to reduce fees so clients are getting bids from multiple companies. Only 50% of their current projects are now negotiated; staff members now spend more time working on the bidding process than ever before. This is expensive because it draws staff time away from construction projects and into the bidding process.

Several employers remarked that the private retrofit market has been slower to adapt to this new way of thinking about and calculating project costs than government, due chiefly to regulation. Participants said that by requiring that state-funded buildings be LEED Silver certified, the government is really in the forefront on investing in sustainable buildings. One participant noted that state and local governments represent a significant client base for many commercial retrofit companies, making them influential in driving sustainable practices among the companies themselves. This employer said that the LEED Silver standard required of public projects has become the de facto standard for most private-sector projects as well, in part because most retrofit companies serve both markets, and because the costs associated with achieving the Silver standard have declined. However, as noted earlier, while clients are requesting sustainable products and services in their retrofit projects, cost continues to be their primary consideration. In the cases where a project can be both cost effective and generate outcomes that promote sustainability, clients are very satisfied.

Sustainability Takes Leadership

Whether or not an organization had a sustainability value statement as part of their formal policies—and only a few actually did—each organization interviewed had a "sustainability champion" on staff who is moving sustainability initiatives forward. Without exception, these champions had personal passion for sustainability and see their work as having a broad impact on the world. In some cases the champion was a highly-placed manager or executive who could direct policies and financial resources to support sustainable business operations and internal expectations. In other cases, the champion might be an influential middle-manager, engineer or other insider who commanded the respect of company leadership and their peers. In all cases, these champions put their energy and focus on driving sustainable action throughout the company. As one of these champions said, "They call me the 'Grandfather of Tacoma Sustainability' and 'Tacoma's Extremist Architect'. I don't mind those names. I believe in this stuff. I have the passion and the energy for it."

Commercial Retrofit Work is Changing

Participants report that the increased focus on sustainability is changing the structure of retrofit work. In 2008, the American Institute of Architects endorsed a template for a new kind of construction contract called Integrated Project Development (IPD)[12]. IPDs are three way contracts between the building owner, the architect and the contractor. This differs from the more traditional Design-Build approach because all parties take equal risk and share rewards on the project. These shared goals are resulting in reduced project times to completion and decreased project costs. One employer noted that savings realized by using an IPD allow contractors to build in more sustainable features than might otherwise be affordable. Increasing the amount of sustainable content in commercial projects has also reinforced the use of sustainable business practices among retrofit companies themselves.

What's Old is New: Innovative new materials, advanced technologies and efficient work processes have enabled retrofit companies to offer solutions that can significantly enhance financial and environmental outcomes for their clients, and some of these technologies also help retrofit companies operate more sustainably. But many of today's sustainability strategies and practices mimic nature's systems and are based on old, traditional methods. As one participant noted, "What is old, is new again." Other building industry representatives have noted that vegetative roofs, daylight harvesting, and using the earth and plants to treat water are all new takes on time tested practices that have been used around the world.[13] Vegetative, or green, roofs mimic nature's water cycle. One participant reported that in some seasons, green roofs can capture up to 75% of the rain water that falls. Excess water is then used in one of several ways: to irrigate the plants on the roof; in the building's operations to flush the toilets; or it becomes part of the water cycle by evaporating back into the atmosphere. In a building retrofit project, for instance, water that formerly would have run off of a roof or parking surface and entered into the water treatment system is now being cycled back into the system without any need for treatment. Green roofs have been used in England and European countries for hundreds of years because of these very benefits.

Regional land developers are now starting to use bio retention areas to capture rain and run-off water. When they are designed and implemented correctly, bio retention areas can eliminate the need for pipe systems and water treatment. This system uses the earth's natural ability to filter and clean water. Increasing the number and effectiveness of these systems is key to the success of improving the water quality of Puget Sound and is a core goal of many environmental initiatives. Bio retention areas work to manage both the quality and quantity of water which several participants noted is of particular interest to building professionals in

[12] Integrated Project Development guidelines: http://www.aia.org/contractdocs/AIAS077630

[13] Wright, Yancy, Director, Sellen Sustainability, Keynote address at Technology Transfer Workshop at Renton Technical College, January 31, 2011.

Pierce County. Two housing developments in Pierce County are being built with this type of decentralized water treatment system in place: Cascadia in Sumner and Falling Water in Puyallup.

Benefits of Sustainability Initiatives Still in Early Stage

While the companies interviewed for this study had a variety of sustainability initiatives in the works, and all were engaged in related retrofit projects, most were in the early or developmental phases of implementation in their own companies. For instance, all participants had an internal recycling effort, and each firm was implementing an internal initiative aimed at reducing resource and energy use within their own operations. Most participants reported that they are encouraging the movement of sustainable practices down their supply chains, and one employer said that they encourage and rely on subcontractors to know specifics about energy saving appliances and rebates, in part because they are in a better position to track the rules and changes that affect their products and systems than are most general contractors.

Although there is evidence that these companies are forging new sustainability strategies, internalizing sustainable business practices and engaging their industry partners, efforts to connect sustainable practices with improved return-on-investment (ROI) for clients or internal operations appears to be limited. While firms routinely cited outcomes such as cost savings tied to specific enhancements, systematically collecting and comparing data to determine ROI can be time consuming and complicated. Indeed, several participants indicated that the data collection required in order to develop specific return-on-investment (ROI) information for projects they were leading will take at least one to two more years to gather.

The development of sustainable business practices among these firms has accelerated in recent years, due in part to client expectations and the availability of existing certification systems, such as LEED. Many participants reported that LEED has provided an important framework for retrofit companies and a reference point for the use of sustainable practices internally. Indeed, the LEED certification system was the most commonly cited strategy for increasing an organization's sustainability, and most organizations said they encourage staff to become LEED accredited; some of these organizations cover the cost of the certification process for employees. One participating contractor is seeking the Green Contractor Certification that is offered by the Association of Building Contractors[14]. This certification requires the organization to have met the sustainability criteria outlined for both job sites and the home office, which may also help promote internalizing sustainable business practices.

Another common technique reported by participants was Life Cycle Analysis (LCA), which is a process that contractors are using in their proposals with clients to enable them to consider the

[14] Green Contractor Certification details: http://www.greenconstructionatwork.com

long term pay off of investing upfront in sustainable products and systems in their retrofit project.[15] One participant reported that they generated 3-4 different options for a client, using LCA to demonstrate how higher-cost retrofits actually generated a better benefit in the long run, in part by using a brick exterior and metal roof—and the client chose the premium option when they saw that 'least-cost' resulted over the life cycle of the project. He added that some clients still want the cheapest retrofits, even in light of LCA showing long-term benefits, but at least they are able to show the estimated ROI for each option.

Sustainability Costs are Coming Down

Several participants noted that costs for building sustainably are often not as high as they are perceived to be by clients. Just as new processes and technologies enable retrofit companies to do more, they can also help bring the costs down. Participating contractors reported that LEED Silver has become almost the new baseline for construction and that LEED Silver does not require any additional expenditure to achieve. Two participants made the following estimates: it takes an estimated 3% above conventional construction costs to build to LEED Gold, and Platinum is estimated to require an 8% premium. In the case of the Pacific Plaza Project in Tacoma, which was Pierce County's first LEED Platinum retrofit project, the additional expenses resulted in the building being leased at a higher rate per square foot than other buildings in the market. However, the efficiencies built into the building resulted in enough savings that from the tenants' point of view, the lease in this LEED Platinum building would be at least the same, if not less, than the total cost of other options in the market but in a much higher quality space. One participant reported that the owner of Pacific Plaza is fond of touting the positive effects of sustainably-built structures on employee productivity; the owner says that Pacific Plaza leases are essentially "free" if the building delivers up to a 5% increase in employee productivity as a recent national study indicates. The Pacific Plaza owner says, "A great building pays for itself in employee savings." According to another participant, healthier buildings save a tenant $300 per square foot, per employee, from increased employee productivity.[16]

Cost of Training Can Be a Barrier to Sustainability

All interview participants noted that training for staff can be a significant barrier to becoming more sustainable as an organization. Although employers said they thought that it was important that staff develop the knowledge and skills needed to implement sustainable practices, training employees in sustainable principles and techniques is time intensive and expensive. One reason cited by participants is that most of the available training requires so much time off of the worksite. Most participants noted that they are already operating with

[15] For a summary of LCA in the building industry see: Nebel, B. (2006) *Life cycle assessment and the building and construction industry*, Auckland, New Zealand: Beacon Pathway Ltd. See also: National Institute of Standards and Technologies, *Building for Environmental and Economic Sustainability (BEES)*, at: http://www.nist.gov/el/economics/BEESSoftware.cfm

[16] Anderson, Dale, *By the Numbers: Creating Real Sustainability Savings,* Business Examiner, January 31, 2011.

very lean staffing and that allowing employees to attend training at the level needed for them to enable the effective use of sustainable techniques in their jobs is expensive to implement.

Participants also reported that many professional employees are already fully-engaged in developing or executing projects, and there is no time for additional training to learn new methods and techniques. One employer described how the stress associated with meeting existing project schedules can compel employees to rely on the strategies they learned at the beginning of their career, rather than trying to learn new skills. Thus, while the lack of training results in employees not having the skills they need to do their work in a more sustainable way, the costs associated with training—primarily time away from work to participate—and meeting existing workload requirements can be a deterrent to learning and applying sustainable business practices in the workplace.

Regulation as a Sustainability Driver

Throughout the interviews, regulation did not emerge as a definitive barrier to sustainability. In fact, when it did surface, regulation was more often viewed as a catalyst for sustainable business practices. One employer described how Pierce County has a permitting check list that prioritizes projects that are implemented using sustainable practices such as bio retention areas. State funded building projects require that their buildings be built to the LEED Silver standards. Participants noted that this requirement has resulted in LEED Silver criteria becoming a de facto baseline for most private sector construction projects as well. Rather than suggesting that existing regulations should be somehow reduced or even rescinded to give the industry more flexibility, interviewees more often said that more regulation may be what is needed to move sustainability forward. To some extent the general support for existing regulations among these employers may be expected, as study participants were known to have invested in sustainable business practices and therefore comprise a select group. Nevertheless, most participants viewed the regulatory structure and standards that support sustainable practices as evidence of a desirable evolution of the industry. One participant said that sustainability requirements are similar to the safety requirements put in place in the past, which were resisted but over time proved to be beneficial to employees and companies alike. As he put it:

> "20 years ago when more rigorous safety standards were imposed, a lot of companies screamed it would break them, but now they're more safe and efficient, and in the long run you have a safer, healthier workforce, and it's seen as a cost savings. The sustainability movement needs the same driver, it needs requirements…it *will* cost some up front."

Example of a Regional Best Practice

Pierce County has developed some very innovative partnerships, employers and retrofit projects. One in particular , the Pacific Plaza parking garage in downtown Tacoma, was noted by several participants as a project that underscores how teamwork, a focus on sustainable outcomes—and an unanticipated opportunity—resulted in a notable example of a sustainable retrofit in the region. Pacific Plaza is the first new Class-A commercial building built in Downtown Tacoma in the past eight years. It is an award winning, public/private venture that incorporated vision, leadership, and deliberate planning that resulted in a project with many sustainable attributes and results.

The project was an adaptive reuse of a 1960's 5-story parking garage into a high-end mixed-use office building. During the interview, one participating contractor painted a verbal "Before Photo" of the building:

> "It was a hazard to the city, it was the eyesore of downtown…the structure was failing; the reinforcing tendons (of the structure) were literally shooting out into the street."

Completed in July 2009, the retrofit resulted in 68,000 square feet of commercial space, 34,000 square feet of retail ready space along Pacific Avenue, and a net increase of 102 parking stalls. Design features such as a 29,000 square foot green roof, an 180,000 gallon cistern transformed from the Turkish bath found in the basement of a long-ago demolished building on the site, a state-of-the-art mechanical system and extensive use of natural daylight enabled Pacific Plaza to become Pierce County's first LEED Platinum building. This successful result of the Public-Private Partnership between the City of Tacoma and Pacific Plaza Development creates a new paradigm for development standards within Tacoma's urban core.

The building was designed to use 28 percent less energy than average. Other green achievements include the reuse of 78 percent of the existing structure. For example, rather than removing the cistern and creating more waste, it was repurposed for use in the new building. Nearly all of the construction and demolition waste — 98 percent — was diverted from the landfill, and 36 percent of the materials used were recycled.[17]

The Pacific Plaza project has been recognized with five prestigious awards already, and one participant reported that additional awards are likely pending for 2011:

- The National Association of Industrial and Office Properties (NAIOP) awarded Pacific Plaza the 2010 National Sustainable Retrofit Project of the Year award, and the 2010 Adaptive Reuse of the Year award.
- Absher Construction was awarded the State of Washington Green Building award for this project from the Association of General Contractors.

[1717] Pacific Plaza project description: http://www.cityoftacoma.org/Page.aspx?nid=905

- The project also received the Ghillarducci Award in recognition for successful new development & renovation by the Tacoma-Pierce County Chamber.
- The City of Tacoma awarded the project the Commercial Revitalization Award in 2010.

Conclusions

The findings from this study of commercial retrofit employers suggest that shifting market trends and evolving customer demand for sustainable retrofit projects means that the knowledge and application of sustainable technologies and business practices will become increasingly essential for the future of the commercial retrofit industry in Pierce County. At the same time, client expectations and a growing recognition among these firms about the importance of supporting sustainable principles and practices are also spurring the use of sustainable practices internally.

It is important to note that none of the companies that participated in this project have yet made the significant structural or organizational changes that might represent an ideal, fully-developed sustainable organization, as illustrated earlier in Figure 1. But the bulk of the evidence from this study shows that each has taken important developmental steps towards sustainability, such as crafting a new vision for the organization, sponsoring internal recycling, implementing waste reduction programs in the office and on the worksite, and by investing in education and training to enable employees to learn and apply sustainability principles and techniques in their jobs and in the workplace. On a cautionary note, however, these firms were identified by their peers and other industry observers as being leaders in developing and using sustainable practices; this study does not account for the many firms in Pierce County for whom sustainability is not currently a deliberate business strategy or organizational goal.

Some of the central conclusions of this study are summarized below:

Sustainability is good for business. The ability of commercial retrofit companies to provide sustainable product and service options to clients is clearly valued as a marketing strategy, and as important for new business development. Companies report that they anticipate that the market for sustainable projects will grow, and having the ability to demonstrate the projected benefits of different sustainable options helps meet a client's interest in understanding the potential cost-savings and broader benefits of a project before they invest. But firms that market and promote sustainable options must also be prepared to deliver on the promise; the ability to complete a project successfully and to demonstrate outcomes.

It may well be those companies and their suppliers/subcontractors who embrace and use sustainable concepts internally are more likely to recognize the cost-benefit of these practices than companies who simply provide the service. At the very least it would provide an

additional 'marker' that these firms can present to clients as evidence of their commitment to sustainability.

Client expectations are changing the industry. While cost continues to be at the forefront of their minds, employers report that clients are more frequently requesting projects that have sustainable components and features. Indeed, for the firms included in this study the growing emphasis on client expectations for both cost efficiency and sustainability were viewed as a long-term trend, not as merely a short-term anomaly. Although clients typically focus on project costs, the economic recession has created conditions that add to the challenges faced by contractors and architects. As one participant stated, "Our clients want us to build sustainably but for less money. That means we need to be smart and innovative in our work." The weak economy may also be contributing to client decisions to retrofit an existing structure rather than to build anew. Regardless of the reasons driving new expectations, to the extent that clients are requiring that retrofit projects include a larger proportion of sustainable content, the firms that provide these products and services will need to adapt or they will be limited in their ability to compete with firms that are responsive.

Commercial retrofit market is expanding. It is estimated that 75% of existing buildings nationwide will be replaced or renovated in the next 25 years.[18] According to one estimate, the current market for commercial retrofits in the U.S. is about $6 billion per year; another projection is that the market potential will grow to $180-190 billion over the next 10 years, or roughly $18 billion annually.[19]

The Pierce County Economic Index reports that the outlook for commercial and industrial real estate in 2011 is cautiously optimistic, but there are some overarching reasons why growth in the retrofit market—and with it an increased emphasis on sustainability—seems likely.[20] First, Washington utilities continue to offer a range of financial incentives and tools to stimulate new projects, and these incentives have helped drive up demand in the Puget Sound region.[21]

Second, recent federal investments in energy efficiency have, for the short term, boosted the availability of funds for commercial retrofit projects. Washington State has succeeded in competing for a significant amount of federal stimulus funds for energy efficiency projects that target retrofit projects. In 2009 and 2010, for example, the Puget Sound Region received $117.7

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[18] Anderson, Dale, *By the Numbers: Creating Real Sustainability Savings,* Business Examiner, January 31, 2011.

[19] Frost and Sullivan (2008). North American Energy Management Services - Investment Analysis. Report # N337-F1; see also: Hodum, R (2010). *Efficiency boom: How commercial retrofits can power America's economic recovery*, progressive policy institute (November): http://www.progressivefix.com/wp-content/uploads/2010/11/11.2010PPI_Memo-Hodum-Efficiency_Boom.pdf; see also:, Commercial market size estimate, Pace Now, http://pacenow.org/documents/Market%20Sizing%20Reference%20for%20NCEP%20PACE%20Mtg_2009May14.pdf

[20] Goodman, D. and Mann, B. (2011) *Pierce County Economic Index*

[21] *Energy efficiency supply chain study* (2010). Seattle, Berk & Associates, for the Workforce Development Council of Seattle-King County (October).

million for green building and energy efficiency related activities. Retrofit firms who have the skills and tools to build sustainably are well positioned to compete for these projects.

At the state level, the Department of Commerce and the Office of Superintendent of Public Instruction received a total of $100 million of state funding for energy efficient school retrofits.[22] And, there continues to be political support for energy efficiency retrofits, although the state's fiscal crisis has precluded financial support for new projects. On the heels of the federal funds, bills and a bond initiative aimed at directing additional state funding for retrofits for schools and other public buildings were introduced during the last legislative session, but the bond initiative was rejected by voters.[23]

Nationally, there is a continued conversation about the need for more investment in commercial retrofit projects: On February 3, 2011, President Obama announced his new Better Buildings Initiative. The goal is to make the countries' commercial building space 20% more efficient by the year 2020. It is predicted that this would result in a $40 billion dollars of savings annually. Finally even though the region's low energy costs and a relatively moderate climate may moderate demand for building retrofits in the Puget Sound region somewhat, energy demand and the cost of energy are both expected to rise over the long term.[24] Thus, while the building industry as a whole remains depressed, there are signs that the economy is improving. And while the conditions needed to support additional growth in commercial retrofit projects appears to be more stable than for new construction, it seems likely that regional businesses that employ sustainable business practices may be in a stronger position to endure and respond more readily to new business opportunities; indeed, there is some evidence that sustainable businesses are weathering the economic recession better than most.[25]

More ROI data is needed. There is a need for specific data about maintenance and operations savings that are the result of a sustainable retrofit project. Despite repeated requests for data showing ROI, it was not made available. While one potential reason is that this information is proprietary and companies are reluctant to release information regarding financial costs, estimates and outcomes, another viable explanation is that systematic data regarding the actual ROI of specific projects does not yet exist. In this study, most participants indicated that their data collection was for a period of less than one year. Most participants indicated that at least one full year, if not two years, of data needs to be collected before specific savings can be calculated. Industry observers indicate that the public sector appears to be further along in implementing sustainable building practices.

Although the scope of this study was limited, the technical and process issues surrounding the definition, measurement and analyses of project data to estimate and confirm ROI is complex,

[22] Commerce website showing state investments: http://www.commerce.wa.gov/site/1335/default.aspx
[23] Referendum 52 (2010)
[24] See: Northwest Power and Conservation Council Sixth Power Plan: http://www.nwcouncil.org/energy/powerplan/6/default.htm
[25] Schrag, Paul "Be Green: It Really is Easier than You Think" Business Examiner, January 31, 2011.

but it is also central to the ability of commercial retrofit firms and their partners to demonstrate the various outcomes that are tied to the sustainable options that their clients invest in. As a next step, if public-sector project data is more readily accessible than data maintained by private firms or clients, it may be useful to conduct a targeted study to examine the process used to estimate and confirm ROI outcomes for sustainably-designed projects, and to investigate the extent to which those technologies are being diffused among private-sector firms.

Potential Next Steps:

- Conduct a national review of strategies and tools for determining ROI that are currently being used or that are under development.
- Identify the metrics that are being used to determine ROI on sustainably built projects in the public sector. Since publicly funded buildings have required a LEED Silver standard for several years, it is likely that they have more data collected and that data will be made available to researchers since the data is not proprietary.
- Use the identified metrics to develop a tool that others can use to determine the ROI on their buildings and projects. This uniform measurement tool could be a specific deliverable from the SEES Leadership group to the community.

Education and training is essential but problematic. The participants in this study generally supported the provision of education and training needed to enable employees to acquire and apply sustainability skills in their jobs. Often, however, between the pressures of meeting existing work requirements and the costs associated with sending employees to workshops or off the work-site for training, several employers expressed their frustration about their ability to offer more training. As one study participant noted: "Most professionals don't have time to get out for training so they keep doing what they already know how to do in the ways they already know how to do it."

This problem of balancing the demands of existing work with the need to gain new skills is paradoxical: the expanded focus on sustainability that these companies are attempting to drive into the culture of their organizations, typically through the leadership of key executives or other influential staff members, may be limited if employees are unable to acquire a deeper knowledge about sustainability and the tools and practices needed to support this emerging vision. By extension it seems reasonable to conclude that this condition is slowing down momentum and constraining the ability of these companies to integrate sustainable business practices within their own organizations.

The problem of balancing workload with the need for upgrade training is not new; these pressures are evident in all industries and workplaces. And, it seems likely that the economic

recession has exacerbated this imbalance; several employers described how cutbacks and other efforts to reduce costs have led to an "all hands on deck" environment where everyone is working harder. But these problems are not intractable, especially as they relate to the provision of workforce education.

As a next step, a targeted conversation between the participants and key regional education and training providers may help to reveal the various options and new solutions available to employers that can better meet their needs. Technology-enabled education delivery options may help to reduce the costs associated with off-site training. Online delivery and other hybrid online-laboratory training options have become increasingly popular among employers precisely because they enable employees to remain on-site, learn about specific topics and techniques that are most useful to them in their jobs, and to learn as time allows, rather than on a fixed schedule.

Potential Action Plan:

- Convene education partners, training providers and industry representatives in Pierce County to focus on the following: identify specific training needs; catalog existing training programs and potential gaps; discuss formats for delivering training; and identify next steps.
- Provide guidance and coordination to education and training providers as they develop training to meet the needs identified by the industry partners.

In summary, the findings of this study underscore the notion that sustainability is an on-going process, not an end state. The firms included in this study represent a select group of employers who are working to expand their ability to offer sustainably designed options for clients, while also attempting to drive sustainable principles into their own organizations. As one employer noted, this can be a tall order that requires strong and persistent leadership: "Sustainability takes a leader, takes a champion, takes time and takes effort". Certainly leadership is a necessary condition for driving a culture of sustainability throughout an organization, and the evidence from this study suggests that progress has been made within these Pierce County firms. The findings suggest that these companies are attuned to the market potential for sustainable retrofit projects and they are adapting to client interest in sustainable options. For Pierce County employers, the business prospects for the retrofit industry appears promising, especially for firms that are responsive to client's interest in sustainable projects.

For many of the reasons described in this report, however, most firms have made fairly modest progress in adopting sustainable business practices within their own organizations. This finding probably reflects a developmental stage for these firms, with prospects for further growth in

the application of sustainable business practices. But it is important to note that the firms included in the study comprise a select group that are probably more advanced in the adoption of sustainable practices than their peers, and therefore the findings of this study also call for additional research to collect Return On Investment data when it becomes available and to find alternative ways to offer the training that will increase firms' ability to compete in the sustainable retrofit market of the future.

Appendix A

Interview Participants: Interview participants included company executives, engineers, project managers and other professional-level staffs who were knowledgeable about the firm's sustainability projects and internal initiatives. The firms who participated in the study include the following:

Absher Construction Company

LeROY Surveyors & Engineers

BCRA

Rushforth Construction Co.

McKinstry

City of Tacoma, Public Works Department

BLRB architects

Appendix B

Sample Sustainability Statement

STANDARD POLICIES AND PROCEDURES FOR SUSTAINABILITY AND ENERGY EFFICIENCY AND GREEN BUILDING PRACTICES

TABLE OF CONTENTS I.

I. Sustainability:
   a. _____ Co. Inc. is committed to minimizing the impact of the construction business on the environment and encouraging sustainable practices within the company.
   b. Recycling
      i. We will recycle the following frequently used materials in our office: plastics, glass, aluminum, paper, and cardboard. Paper recycling bins are located in each office and are placed next to all copiers. Co-mingled containers are located in the kitchen and co-mingled bins are located outside at the western corner at the back of the office. Pick up will be per the local waste management company's schedule.
      ii. _____will hire waste management companies to dispose of co-mingled debris as specified locations for all construction debris. Pick up will be per the local waste management company's schedule.
      iii. Used printer cartridges will be recycled in accordance with the manufacturer's recommendations. If return packaging is provided, this method will be used. If no return packaging is provided, a monthly pick up will be requested from the copier maintenance personnel.
      iv. Binders, folders, padded envelops, boxes, etc will be reused whenever possible. These items can be found in the supply storage room in the main office. Jobsites are to return all unused or reusable products to the main office for re-stocking.
      v. All used phones and electronics will be returned to the IT department to be recycled or donated to the local Office Depot or a local charity or may be offered to employees for their home use if management deems appropriate.
      vi. Used motor oil used in company vehicles will be recycled by the vendor currently being used for automotive repair. Other equipment requiring motor oil will be recycled
   c. Paper Usage
      i. _____employees shall make efforts to minimize the general use of office paper.

ii. Distribute, file, and archive documents electronically. Do not print and file documents or emails unless absolutely necessary for legal documentation.
iii. Copy both sides of the paper with the two sided copy feature when making copies for internal use whenever possible.
iv. Purchase recycled or managed growth forest paper such as that certified through the FSC (Forest Stewardship Council).
v. Attempt to work with local printing services that use recycled or managed growth paper and soy based inks.

d. Environment
i. Purchase office supplies from local companies whenever possible.
ii. Purchase and use washable, recyclable or biodegradable tableware in all offices. Order through main office if necessary.
iii. Purchase and use non-toxic biodegradable cleaning products in all offices.
iv. Clean or replace HVAC filters per recommended manufactures instructions.
v. Provide safe clean drinking water for all employees.
vi. Maintain a reasonably clean workspace for all employees. Offices will be cleaned once a week on a regularly scheduled basis to insure interior air quality, prevent fire hazards and maintain the health of all employees. Jobsite offices are an extension of the home office and should represent _____ in an appropriate manner.

II. Energy Efficiency

a. _____has an overall goal of conserving energy and promoting efficiency both within main offices and on individual jobsites.

b. Electricity Usage
i. Turn off all lights and electronics when not in use.
ii. Install compact fluorescent, LED or other long burning light bulbs throughout offices.
iii. Use “Energy Star” rated office equipment or equivalent for all new equipment or appliances leased or purchased.
iv. Reuse binders, folders, padded envelops, boxes, etc whenever possible. Collect and return these products to the main office for reuse when they become

c. Water Conservation
i. _____employees shall make efforts to minimize the general use of potable water.
ii. Install low flow or waterless fixtures and motion sensor faucets when replacing used ones in company bathroom facilities.
iii. Install aerators or flow restrictors on all office sinks.

d. HVAC Systems
i. Turn off or down all HVAC systems when offices are unoccupied.
ii. Purchase high efficiency HVAC equipment when replacing or upgrading existing systems.
iii. Inspect and clean air ducts and both supply and return grilles on a regular basis to minimize dust collection and mildew.

e. Transportation
i. Purchase or lease all future company vehicles with the lowest available emissions standards of vehicles within their particular class.

ii. Support and provide incentives for the practice of carpooling, biking or the use of public transportation when commuting to and from work when possible. Offer use of company owned vehicles on a reserve basis.

III. Green Building Practices

a. The policies and practices of _____ include incorporating into our projects recognized green building practices as set forth by the USGBC, ABC Green Contractors program and local state and federal legislation. This policy includes the following goals: divert 50% of construction waste from landfills, purchase 10% (by cost) of construction materials regionally and purchase 10% (by cost) of construction materials that include recycled materials.

b. Pre-Construction
   i. Include subcontractor "boilerplate" language in contracts regarding sustainable jobsite practices. Update current scopes to reflect the company policies and goals.
   ii. Include allowances for any necessary expenditure required to achieve the goals set forth above.
   iii. Assure that the education and training benchmarks set forth by the ABC Green Contractors program are achieved.

c. During Construction
   i. Post jobsite requirements outlining green initiatives at the jobsite and review company policy with subcontractors during pre-construction meetings.
   ii. Maintain all sites in accordance with local EPA regulations and LEED 2009 SS: Prerequisite 1 regarding construction activity pollution prevention.
   iii. Divert construction debris from disposal in landfills and incinerators. Provide separate containers onsite to recycle the following items: cardboard, metal, brick, acoustical tile, concrete, plastic, glass, gypsum wallboard, carpet and insulation.
   iv. Encourage onsite recycling of consumer products use by subcontractors by setting up basic collection facilities for plastic, glass and aluminum cans.
   v. Purchase contractor controlled construction materials that are manufactured within 500 miles of the main office whenever the option is available and cost effective.
   vi. Purchase contractor controlled construction materials that include recycled content whenever the option is available and cost effective.
   vii. Reuse contractor controlled construction materials whenever possible and cost effective. Store reusable materials at the warehouse facility for future use on other projects.

d. Post Construction
   i. Conduct a final review of the project with company green building representative to determine feasibility, cost impact/savings, vendor information subcontractor participation and necessary educational requirements related to green building and sustainability.