BetterBricks Building Operations Initiative

Market Progress Evaluation Report #2

PREPARED BY

Tecmarket Work

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Executive Summary

This second Market Progress Evaluation Report (MPER #2) documents the progress of the BetterBricks Building Operations Initiative between January and December 2007. The Building Operations Initiative focuses on improving regional building performance by facilitating market adoption of improved operations and maintenance strategies by market actors on both the demand and supply sides of the market. Technical and business development support is targeted at mechanical and controls contractor service providers. The Initiative also provides technical assistance to the BetterBricks Hospitals and Real Estate vertical market efforts. It is currently funded through 2008 as part of BetterBricks.

Summary of Accomplishments

The Northwest Energy Efficiency Alliance's BetterBricks Building Operations Initiative officially began in January 2006. After two years of planning, development, outreach and implementation activities, the Initiative has prepared a foundation for significant progress in the next few years. The two key accomplishments this year were the development and initial launch of the Building Operations website and the expansion of Firm Focus relationships beyond the three long-time supporters to six unique partners.

The Building Operations portion of the BetterBricks website was launched in December 2007 and represents a comprehensive on-line resource for service providers and building owners and operators that is unique to the field. The core materials are designed to make the business case to executives and customers and provide detailed diagnostic tools with which technicians can take action.

The number and diversity of working relationships with service providers in the region has doubled from three to six Firm Focus partners, and existing partners have continued to gain experience and demonstrate the benefits of their program-influenced business approaches by capturing new work, and expanding their service offerings. The expansion of Firm Focus partnerships was enabled by an increased role in these relationships for the Business Advisor. BetterBricks continues to do a good job of working with firms "where they are at" and together, are identifying opportunities for changes in business practices that are consistent with their corporate culture and the objectives of the Initiative. Changes in practices have included the adoption of new benchmarking and diagnostic tools and identifying more effective approaches for selling services via targeted proposal writing and client presentations. The flexibility of meeting firms "where they are at" is of key importance to the Firm Focus service providers, and inspires their continued commitment to working with BetterBricks.

Related Initiative activities continue to support the Initiative's objectives of building a foundation of awareness and a pool of projects from which to demonstrate the energy savings and other benefits of adopting improved building operations and maintenance practices. In 2007, Building Operations technical advisors were involved in at least fourteen projects in the hospital vertical market helping hospital staff and managers identify energy savings opportunities and develop long-term plans. BetterBricks education and training staff organized or participated in more than twenty Building

Operations-related events focused on building awareness and skills for better building operations and maintenance among facility managers and building owners. BetterBricks marketing staff developed two specific marketing pieces to articulate the benefits of adopting and promoting improved building operations and maintenance practices for both the building owner and operator and the service provider involved in the project.

Conclusions and Recommendations

The Building Operations Initiative is engaged in several activities that are directly addressing the short-term goals of increasing awareness of the business opportunities and customer benefits, promoting the adoption of successful business practices for delivering building performance services, and building the technical capacity of service provider and in-house facility staff. Awareness of the opportunities was high among service contractors interviewed for the 2006 baseline and since that time the market environment, including messages coming from a wide range of trade associations and the general media, has shifted in favor of improving building performance.

The strategy of targeting the largest mechanical contracting firms in Oregon and Washington has ensured that the Initiative is working toward its second goal by being directly engaged with mechanical contractors earning roughly one-third of the total revenues in the region[1]. Engagement with these service providers is also contributing to progress on the third short-term goal of developing staff capacity in a large share of the building operations service market, but activities aimed at building capacity of service providers outside of the Firm Focus relationships is not yet occurring. The further goal of building capacity among in-house staff for those organizations that do much of their own operations and maintenance work will be addressed through education and training outreach activities. To date, the program has made a few limited efforts in this market but a complete strategy has yet to be articulated. The website is another key activity for building capacity in the market by providing technical resources to facility managers and service providers. While anecdotal evidence gathered for this MPER suggest adequate progress on each of these short-term goals, empirical evidence of market penetration and achievement of goals will be collected and assessed in more detail in the next MPER.

These program activities are in line with activities cited in the program theory and logic which assume that market awareness, coupled with the adoption of successful business practices, and enhanced capacity on both sides of the market will lead to a greater provision of building operations services grounded in improved operations and maintenance practices. The Initiative has effectively developed a variety of fronts, on the demand and supply side, from which to demonstrate the opportunity and value of improved approaches to building operations and maintenance. With six Firm Focus firms working on projects and changing their business strategies, Building Operations has an opportunity to demonstrate concrete benefits to the supply side of the market. The ability to get other firms to adopt these practices, as assumed in the logic model, is yet to be seen and will be tested in the next MPER.

[1] Northwest Construction – Top Specialty Contractors in the Pacific Northwest – Based on total revenue in the tri-state region in 2006. Most of this is attributable to earnings from McKinstry and MacDonald Miller.

The website provides another unique opportunity to build capacity and the range of tools available to service providers and in-house facility staff, but is also untested. The Initiative is relying heavily on Firm Focus efforts for building capacity in the market among service providers. Technical assistance to other service providers via target market projects, education and training events for service providers and the website resources are the other methods identified in the logic model for building capacity on the supply side of the market. These alternate venues for developing capacity on the supply side have either not been tested (website), not been pursued (education and training) or have not yet been shown to be effective (technical advisors engaging non-Firm Focus firms on vertical market projects). Without these alternate approaches, the affect of the Initiative may be limited if other service providers choose not to follow the model of success demonstrated by the Firm Focus firms.

The Initiative has made significant progress through the above activities in terms of defining its message, positioning itself in the market to demonstrate benefits and developing important tools.

Conclusion 1: The website has significant potential as a resource for both sides of the market, but is largely untested in terms of interest, accessibility, and applicability. Processing feedback from a variety of stakeholders will be important to keeping the site relevant and ensuring that it lives up to its potential to influence the market. The logic model does not consider the long-term future of the website including who will be responsible for maintaining the site and keeping it relevant.

> ***Recommendation 1:*** *Develop a formal process to gather, consider, and respond to feedback from a variety of stakeholders. Use this information to continue to and update content and modify design as necessary. Add plans for the future of the website in the long-term outcomes of the logic model.*

Conclusion 2: In cases where service providers do not currently possess the appropriate skills and tools to modify their approach to building operations and maintenance, Building Operations technical advisors are not yet able to effectively build capacity with them "on the job". Opportunity may still exist to engage these types of service providers as projects move into the more mechanical aspects of the implementation phase. If not, program staff will have to reconsider this opportunity for capacity building as non-viable and find other ways to support non-Firm Focus service providers who may not be poised to enter this market as aggressively as others.

> ***Recommendation 2:*** *Work with technical advisors to identify ways to engage existing service providers who do not currently have the necessary capacity in the implementation phase of the projects. Reconsider the barriers and activities needed to support and engage non-Firm Focus service providers to build capacity in the market.*

Conclusion 3: Education and training to date has been focused on building owners, operators and facility managers which is important and appropriate for stimulating

demand for services in the market. However, education and training for professionals on the supply side could help support the program goal of building overall capacity in the market outside of the Firm Focus strategy. Venturing to this side of the market does present some risk, since new material may need to be developed and tested, and the relationships with trade associations and allies on the supply side of the market are not as strong.

> ***Recommendation 3:*** *Work closely with education and training staff to discuss opportunities and challenges for expanding education and training efforts to the supply side of the market.*

1. Introduction

The Northwest Energy Efficiency Alliance (NEEA) is a non-profit corporation supported by the Bonneville Power Administration, electric utilities, public benefits administrators, state governments, public interest groups and energy efficiency industry representatives. These entities work together to make affordable, energy-efficient products and services available in the marketplace.[2]

This second Market Progress Evaluation Report (MPER #2) documents the progress of the BetterBricks Building Operations Initiative. The current Initiative was approved by the Board and has been active since January 1, 2006. This MPER covers progress since January 2007.

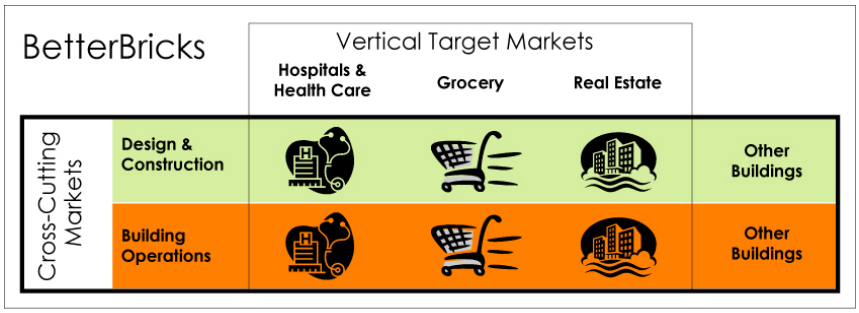
BetterBricks comprises all of NEEA's commercial sector activities. It seeks to:

> *Make energy efficiency an integral part of business decision-making. Within targeted vertical markets, change energy-related business practices to achieve energy efficiency in design and construction, and in building and facility operations. Create natural market demand for related trade ally products and services*[3]*.*

The changes in business practices will result in facilities that achieve reductions in energy-related capital and operating costs, as well as potential non-energy benefits, such as occupant comfort and productivity, and an alignment of design and construction projects with industry best practices.

BetterBricks currently addresses three "vertical" markets (hospitals and health care, groceries, and commercial real estate) and two "cross-cutting" markets (design and construction, and building operations). As shown in Figure 1, the vertical and cross-cutting markets overlap, representing the relationship between the supply (cross-cutting) and demand (vertical) sides of a given market.

Figure 1: BetterBricks



[2] See the website at www.nwalliance.org.
[3] Northwest Energy Efficiency Alliance. 2006. *Commercial Sector Initiative 2006-2008 Project Description (July 5, 2005).* Portland, OR: Northwest Energy Efficiency Alliance, p. 6. See: http://www.nwalliance.org/proposals/rfps/CSIProjectDescriptionForRFP.pdf.

Initiative Description

The current Building Operations Initiative builds on NEEA's original Building Performance Services Test experience.[4] The Initiative focuses on encouraging and promoting two technical areas for improved building performance, described as follows on the BetterBricks Building Operations website:

> Better Building Operating Performance will result from two types of service activities, Enhanced O&M and Building Tune-up. Better performance leads to a reduction in operating cost through improved reliability, occupant satisfaction and reduced energy use.
>
> Enhanced O&M are routine actions and practices, implemented by trained staff or service technicians, that improve the energy-efficient operation of building systems and sustain the performance over time. Elements of Enhanced O&M may include:
>
> - Reporting and tracking of building energy use,
> - Improving system documentation,
> - Monitoring of key indicators of equipment and system performance,
> - Modifying PM routines to maintain 'tuned' performance,
> - Developing staff technical expertise, and
> - Analyzing root causes of problems
>
> A Building Tune-up is a periodic process intended to fix problems and to identify the most cost-effective operational improvements. Implemented every 2-3 years, a tune-up typically requires a more systematic approach and the broader skill set of an engineering professional. Elements of a Building Tune-up may include:
>
> - Systematic problem diagnosis and repair,
> - Specific operational changes,
> - Control optimization,
> - Equipment scheduling, and
> - Identification of key performance indicators.

The Initiative encourages service providers and building owners and operators to adopt these practices as a means of becoming a more competitive market player. For service providers they highlight the opportunities to:

- Better address client needs,
- Expand services,
- Recruit new clients,
- Generate equipment replacement opportunities
- Strengthen cash flow by offering on-going services, and
- Position your company as environmentally responsible

[4] See http://www.nwalliance.org/research/reports/144.pdf for more detail about Building Operations pre-cursor "Building Performance Services Test"

For facility managers, building owners and operators, these practices are promoted as " . . . the most economical way to achieve reliability, safety, comfort, and energy efficiency in your buildings." Fixes are low-cost or even no-cost and

- Many can be implemented by in-house staff
- Payback periods of 0–18 months are typical
- Unbudgeted costs from early equipment failure can be avoided
- Increased system capacity may help avoid the need for new or added equipment

The Initiative is focused on the service provider (supply) side of the market, specifically mechanical and controls contractors, who have a large share of the O&M market and typically hold contracts for the larger commercial buildings targeted by the Initiative (>100,000 sq ft). Market research used to develop BPS found that the market did not have a clear path by which to provide *commissioning-like* services for existing buildings (Dethman and Associates, 2005, 11). There was a lack of qualified service providers, and a lack of awareness among owners and operators of the opportunities that may exist through improved operations and maintenance. These market conditions are still largely true today. Consequently, the new Building Operations Initiative continues its focus on service providers as a major change agent for building operations service delivery.

Roles and Responsibilities

NEEA's Building Operations **Initiative Manager** is responsible for all day-to-day activities. She is responsible for hiring technical advisors and business advisors to develop and implement the Initiative. This year she spent about 60 percent of her time on vertical market and Firm Focus relationships; the remaining 40 percent was spent coordinating and developing tools and materials for the website. She was able to spend more time this year on developing web materials as a result of expanding the role of the key technical advisor and the business advisor.

Technical Advisors play a key advisory role in developing the Initiative tools and materials that are now presented on the website. As implementers, they provide technical assistance on projects. Technical assistance has included directly assisting in BetterBricks vertical market projects in collaboration with the Hospital Initiative's Market Specialists as well as working with Firm Focus partners on specific projects. Building Operations currently has 6 contractors available for these duties. One technical advisor is taking the lead on providing oversight and guidance for technical support on vertical market projects. He is also playing a key role in supporting existing Firm Focus relationships (new and old) in collaboration with the Business Advisor.

Business Advisors are responsible for coordinating the Firm Focus activity. They promote the business case for changing business practices, and provide business planning assistance to these service providers. They also assist the technical advisors with efforts in the vertical markets. The Initiative is supported by one key business advisor whose responsibilities have expanded significantly over the last year. In addition to managing multiple Firm Focus relationships he is also supporting other activities including developing marketing materials and investigating education and training opportunities. The addition of the business advisor this year has allowed for significant expansion of the

Building Operations Firm Focus efforts and helped communicate the purpose of the Initiative both internally (to BetterBricks marketing and education and training staff) and externally (to Firm Focus partners).

Firm Focus partners are service providers that have made a formal agreement with the Building Operations Initiative to work together to develop their service offerings and capacity to include more building performance services and to effectively deliver these services to the market.

The Initiative is supported by a **Marketing** team and an **Education & Training** team. The Marketing team's activities falls into three main categories: developing the BetterBricks.com website which has a dedicated building operations page, developing materials for use by Firm Focus firms, and disseminating success stories and lessons learned throughout the building operations market to speed market transformation. The Education & Training team promotes and develops curricula and delivers them both to technical and business-related audiences within the building operations market. They also identify opportunities for disseminating materials via booths, speakers, or topics at trade events.

Initiative Theory

The four hypotheses and associated long-term goals, as laid out in the 2005 project description approved by the Board of Directors, are noted in Table 1. The objectives and short term goals are shown in the logic model.

Table 1. Building Operations Market Transformation Initiative Hypotheses and Long-Term Goals

HYPOTHESIS	LONG-TERM GOALS
If owners/property managers (and their agents) are aware of the opportunity to improve building operating performance and how they relate to their business interests, then they will demand improved building operating performance.	Owners and property managers demand improved building operating performance.
If service providers (i.e. mechanical contractors, control companies, equipment manufacturers and commissioning agents) are aware of the business opportunity, and how it relates to their clients business interests, then they will promote building operating performance to their clients.	Contractors, control companies, equipment manufacturers and commissioning agents promote building operating performance to their clients.
If service providers are encouraged by their clients to offer products and services that enhance building operating performance, then they will do so.	Service providers offer products and services that enhance building operating performance.
If service providers gain further experience with best practices that enhance building operating performance, then capabilities will increase and these best practices will become common practice.	Service providers capabilities are increased and best practices are common practice.

Logic Model

The logic model presented and explained in the first MPER was developed by TecMarket Works with input from the Building Operations staff and advisors. Several shortcomings of that model were identified in MPER #1 and a more comprehensive model of the program was developed by program staff and advisors over the summer of 2007. The model presented in

Figure 2 identifies the key market barriers and opportunities, Initiative strategies to address those barriers, and short and long term activities and expected outcomes. The organization of the model is different, but the basic theory, concept, and strategies of the Initiative remain the same. The overall direction of the Initiative is consistent with the theory and the specific strategies and approaches have been adapted to address the diversity that exists within the market and other challenges of implementing such strategies. Phase 1 activities are those anticipated for the Building Operations Initiative from 2005-2010. The full logic model, including the long-term outcomes, is included as Appendix B.

While the initiatives current activities do reflect the logic model, the following issues should be considered in future updates to the logic model:

- Phase I Activities: Develop Products: *Support Service Delivery*: Materials defining services and a service delivery path have been presented on the website, but potential service packages and technical assistance have not been pursued outside of the Firm Focus relationships as this group of activities implies.
- Phase I Activities: *Develop and offer education and training:* The target market is not specified in the logic model. Clarify if this applies to both service providers and building owners/operators and facility managers.
- Phase I Outputs: *Education and Training:* The target market is not specified in the logic model. Clarify if this applies to both service providers and building owners/operators and facility managers.

Figure 2. BetterBricks Building Operations Logic Model

Phase I Activities	Phase I Outputs	Phase I Outcomes – Short Term
In order to achieve the objective we will conduct the following activities.	*We expect that if completed or underway these activities will produce the following evidence:*	*We expect that if completed or ongoing these activities will lead to the following changes by 2010*
Objective: *Develop an approach improve building operating performance and build service provider capabilities to supply appropriate services.* ***Develop products*** *to provide a path to better building operations* <u>Support service delivery</u> • Define services and a service delivery path • Identify potential service packages • Provide technical assistance <u>Create a building operation website</u> • Showcase value proposition for owners and the business case for service providers • Provide guidance on building operating performance evaluation, procurement and implementation • Provide access to tools and technology information ***Build market awareness by providing information, tools training and support to owners, facility managers and staff*** • Presentations and interaction at events • One-on-one interaction • Success stories, articles and awards • Website tools and information • Improve credibility of service providers ▪ Partner with utilities ▪ Highlight project success ***Implement Firm Focus Strategy*** • Select and recruit qualified service providers • Provide technical advisory, business planning and marketing assistance • Selectively provide project cost-share	*Building operations products* • Definitions of building tune-up and enhanced O&M • Value propositions for owner/operator and service providers • Example business models • Financial calculator • Sample work products ▪ RFP for services ▪ Scoping report ▪ Tune-up report • Technical guidance ▪ Enhanced O&M guidelines ▪ How-to find common opportunities ▪ Master problem list ***Building operations website*** • Access to tools and sample products • Case studies, articles • Downloadable guides ***Marketing content and activities*** • Sponsorship and presentations at events • Awards • Articles • Website promotion • Success stories ***Service provider activities*** • Firm Focus presentations and letters of agreement • Activity Plans developed and being implemented at selected firms: ▪ Business planning ▪ Technical assistance ▪ Professional development ▪ Product and service development • Technical assistance to other service providers involved in target market projects ***Education and training*** • Brown bags • Training modules	• NW service provider decision makers representing 50% of market share are aware of the business opportunity and customer benefits from improving building operating performance. • Service providers representing a significant percentage of the building operations market adopt business approaches that promote building operating performance. ▪ 25% of healthcare market share ▪ 10% of targeted real estate market share • A significant percentage of service providers have staff capability to tune building energy systems and provide enhanced operations and maintenance (O&M) services. ▪ Service providers representing 25% of healthcare market share ▪ Service providers representing 10% of targeted real estate market share • A significant percentage of in-house facility staff is capable of providing or obtaining building energy system tune-ups and enhanced O&M services. ▪ 25% within hospitals and healthcare ▪ 10% within targeted real estate

Phase I Activities	Phase I Outputs	Phase I Outcomes – Short Term
• Assist with professional development and training • Provide Product and service development support ***Develop and offer education and training*** • Present education on important topics • Influence and leverage curriculum and trainings by associations and trade allies • Influence conference and association meeting agendas ***Influence and leverage building operations Initiatives on a national level*** • Actively participate in ASHRAE's building performance related technical committees • Increase regional awareness of national Initiatives • Assess, promote and provide access to the latest tools and technologies	• Joint presentations ***National Outreach*** • BetterBricks building ops concepts part of ASHRAE educational materials, guidelines and special publications • BetterBricks website contains information on and links to the best building operations tools and technologies.	

2. Evaluation Methodology

Evaluation of the Building Operations Initiative employs a multi-faceted approach, with a large dependence on interviews with key Initiative players. For this second MPER, assessment of progress is based on activities identified in the logic model and progress toward expected outputs, not expected outcomes because it was too early to detect measureable changes in behaviors among both non-participants and participants. In-depth interviews with staff, advisors and market partners provide an opportunity to identify improvements in the implementation of the Initiative and recognize accomplishments. The tasks covered in each MPER are displayed in Table 2 and Table 3.

The data analysis methods used in this study include analyzing in-depth interviews with key service providers about market conditions, and with the Initiative manager and contractors about Initiative activities. The information collected during the interviews is reviewed to ensure:

- The Initiative is operating in a manner consistent with its current theory,
- The efforts outlined in the Initiative's work plan are being conducted,
- Progress is made with respect to the Initiative's activity indicators, short-term objectives and long-term market transformation goals.

Table 2. BetterBricks Building Operations Initiative Evaluation Tasks

	MPER #1	MPER #2	MPER #3
Component	Mar '07	April '08	Q1 '09
Market Characterization	X	X	X
Assess Logic Model	X	X	X
Assess Market Progress	X	X	X
Assess Progress Towards Goals		X	X
Process Evaluation	X	X	X
Estimate/Validate Savings Impact			X
ACE Model Review			X

Table 3. Building Operations Initiative Evaluation Activities and Contacts

		MPER #1	MPER #2	MPER #3
Activities	**Data Sources**	Mar '07	April '08	Q1 '09
Literature review	Industry journals	X	X	X
Interviews	Initiative Staff	X	N=1	X
	Firm Focus staff		N=5	X
	Business Advisors		N=1	X
	Technical Advisors	X	N=6	X
	Utilities		N=32	X

		MPER #1	MPER #2	MPER #3
Interviews (cont.)	BetterBricks E&T Manager	X	N=1	X
	BetterBricks Marketing Manager	X	N=1	X
	P&S developers		N=6	
	Targeted audiences/product users			X
Document review	BetterBricks documents	X	X	X
	Proposals for services, policies/procedures	X	X	X
	Session evaluation forms		X	X
	Tools and materials		X	X
	Marketing products		X	X
	Logic models	X	X	X
Theory review	All progress indicators	X	X	X
Baseline Surveys	Facility managers / Directors		N=52	
	Service Providers	X	N=2*	X
Database review	Tracking System, project documents		X	X

**Two new Firm Focus firms completed the baseline survey in December 2007. Results will be aggregated with the results from baseline surveys conducted in 2006 for analysis that will be presented in MPER #3.*

3. Market Characterization

This section of the report provides an overview of the size of the market targeted by the Initiative and industry trends and concerns that may or may not be directly related to energy or energy efficiency but that could have an influence on the Initiative's progress. The sources of material reviewed for this section are shown in Appendix A.

Market Profile

The basic profile of the O&M services market has not changed since publication of the first MPER. The major mechanical contractors in the region (WA, OR, AK) providing operations and maintenance services has changed little over last year when comparing 2005 to 2006 rankings (by revenue) for the major mechanical and specialty contractors in the Northwest[5]. Total 2006 revenue (including design and construction activities) from the top 22 firms was $808 million. Three firms in Washington held 50 percent of the mechanical contracting revenue for 2006. These were McKinstry Co. of Seattle, JH Kelly, LLC of Longview, and MacDonald Miller Facility Solutions of Seattle. An active construction market in Seattle has reinforced the already strong position of these mechanical contractors in the region (Northwest Construction, 2007). The dominant building controls firms in the region continue to be Johnson Controls, Siemens, Control Contractors, Inc., Clima-Tech, Alerton, Trane, and Carrier (Blakey, 2006). They continue to hold the majority of the market for controls O&M services for the Portland market according to market experts. (Vanderford, 2006)

Similar summaries of market share for specialty contractors in Idaho and Montana were not available. Contracting services in these states represent a significantly smaller portion of the total contracting activity in the region than that of Oregon and Washington. More detail on Idaho's market profile will be include in the next MPER informed by interviews with contractors in that state.

Industry Trends and Concerns

To identify industry trends and concerns, the evaluators looked at a variety of professional organization publications, conferences, and other materials. We also asked about industry trends in our interviews with service providers, BetterBricks staff and their advisors.

Demand Side

Market and industry trends and concerns for facility managers that extend beyond energy savings are well summarized in findings of the Forecasting Report (2007) developed and regularly renewed by IFMA (International Facility Management Association). The top three concerns were:

1. **Linking facility management to strategy**: Link the role of the facility to an organization's core business strategies.

[5] Alaska is included as part of the Pacific Northwest in the dataset that contained this data but is not part of the Initiatives target market.

2. **Emergency preparedness** (up from #4 in the 2005 forecast). Advanced planning and preparation are important in minimizing disruption and speeding the recovery process, but may be costly.

3. **Change management**: Change is coming from multiple angles: Aging work force, regulations, operational processes, and digital and technological revolutions.

The remaining concerns were: 4. Sustainability (up from #6); 5. Emerging technology; 6. Globalization; 7. Broadening diversity in the workforce; and 8. Aging buildings.

Facility managers' concerns were also the focus of a study sponsored by Johnson Controls in the spring of 2007 to inform development of an Energy Efficiency Indicator service product (Cramer-Krasselt, 2007). The background research, which includes a sample of IFMA members, provides a national perspective of key trends and motivators of facility managers and decision makers (n=1,249) across the country. The key findings from this study relevant to the Building Operations Initiative were the following:

- Almost 60% of decision makers plan to make capital expenditures to improve energy efficiency and just over 60% expect to make improvements from operating expenditures.
- 79% of decision makers for energy-related issues believe that electricity and natural gas prices will increase significantly (6-20%) in the coming year, and on average believe an investment in energy efficiency will result in an 8 % reduction in consumption.
- **The majority (61%) do not believe investing in energy efficiency will result in a reduction in the dollar amount paid for energy per square foot of space.**
    - Decision makers expect their investments to maintain the energy cost per square foot, or for the cost per square foot to continue to increase despite energy efficiency investments.
- The importance of energy management is growing, but has not translated into a higher tolerance for a longer return on investment (2-5 years is the accepted range).
- Education of staff and other facility users; adjusting HVAC controls to reduce the time it runs, and switching to energy efficient lighting are the key measures companies are already implementing to improve their efficiency.

Two of the major trade associations have adopted building performance challenges or strongly encouraged commitments from their members to improve efficiency in facilities across the country. These challenges are calling for benchmarking, education and training, minimum savings targets and even a call for "market transformation." In October, IFMA joined the ENERGY STAR Program as a partner committing to setting a goal for members to improve efficiency in their facilities by 10 percent or more and proposing additional education and training (IFMA, 2007). In 2007 BOMA launched its "Market Transformation 7-point Challenge" which is a call for members to reduce building energy consumption by 30 percent by 2012 by implementing no-cost or low-cost operations and management practices (BOMA, 2007). The details of these plans and the prescribed actions are very much in line with the practices and standards promoted by

BetterBricks, and help create a more favorable environment in which to make the case for improved building performance.

The Building Operator and Managers Association (BOMA) is also taking advantage of the increasing importance of energy management to building operators to promote a wide range of materials, direction and support services. BOMA's Building Energy Efficiency Program (BEEP) conferences, courses and e-seminar training continue to be a national force. BetterBricks has been significantly involved in promoting the BEEP series in the Northwest.

BOMA also recently signed a memorandum of intent to work in close collaboration with the US Green Building Council to "to work cooperatively to promote energy efficiency and . . . building operations and maintenance practices to the BOMA community . . . who collectively represent 9 billion square feet of commercial real estate." (BOMA, 2007)

Each person interviewed for this study noted LEED-Existing Buildings (EB) as a significant market factor. The LEED-EB Rating System version 2.0 was revised with a LEED-EB: Operations and Maintenance component. Among the key changes was "greater emphasis on operations and maintenance". (US Green Buildings, 2007) Concern was noted by one interviewee for this evaluation that the changes 'water down' the rating system just at the time when more people are aware, interested and concerned enough to take action. Other service providers were concerned that customers are frequently "turned off" when they realize the breadth of the non-energy efficiency requirements.

Supply Side

ASHRAE is also demonstrating leadership on improving building performance. In January 2008 they updated Standard 90.1, *Energy Standard for Buildings Except Low-Rise Residential Buildings*, which provides minimum requirements for the energy-efficient design of buildings except low-rise residential buildings (ASHRAE, 2008). They also recently launched a new quarterly publication entitled *High Performing Buildings.* In September 2007 ASHRAE President Kent Peterson launched a blog titled "Green Bits" (Peterson, 2007). While, the blog is not specific to energy efficiency or even green issues, the title chosen demonstrates a sea change in the market perception of going "green". This year's 2008 Air Conditioning Heating and Refrigeration (AHR) Expo, sponsored by ASHRAE, also had a heavy focus on green and sustainable technologies and practices.

This fall the Mechanical Service Contractors of America (MCAA) hosted a three-day conference focused on business planning for a market sensitive to climate change and water scarcity. In the conference invitation letter for: *Catching the Next Wave: Seizing the Green Opportunities that Lie Ahead*, the president of MCAA noted the challenges of building technical capacity and changing business practices to take advantage of this new market opportunity. Experts from McKinstry, a BetterBricks Firm Focus partner, presented the topics of "*What Do You Need to Do Green Business?"* and "*What are the Emerging Markets?"* once again demonstrating their market leadership. (MCCA, 2007)

In it the winter 2007 edition of iHomes&Buildings, CABA (Continental Automated Buildings Association) announced the release of an on-line tool called the Building Intelligence Quotient (BiQ) that has the ability to assess the status of a wide range of intelligent building technology. In addition to the tool, a follow-up validation procedure including a professional site visit is planned. A training and certification program will be developed to help develop necessary skills for the site visits. CABA is hopeful that the validation scores derived through use of the on-line tool will build a pool of data on intelligent buildings. Other organizations endorsing the tool, including LonMark International, are hopeful that the tool, and associated verification, training and certification work will continue to enhance the market opportunities for their members. (Katz, 2007).

4. Initiative Activities

This section of the report reviews the current status of the Initiative elements based on interviews with BetterBricks staff and advisors and Firm Focus partners.

Core Activities

Service Provider Firm Focus Firms

The Firm Focus effort of the Initiative is intended to bring influential O&M service providers into a formal relationship with the Initiative in order to develop and enhance their current service offerings with the help of the Initiative's technical and business advisors. There are also opportunities for firms to be connected with projects in the BetterBricks vertical markets through this relationship. Building Operations is currently engaged with the Portland and/or Seattle offices of six major mechanical or control contractors; twice as many as were involved last year at this time. No firm focus relationships have been established in Idaho or Montana, though they have been sought out. To date, firms that have been identified as potential candidates in these states have either not possessed the minimum set of skills and / or the necessary enthusiasm for the initiative to invest the necessary time and effort to develop these skills and change their approach to the market.

While each memorandum of understanding with a firm focus partner is customized to the firm's needs and the Building Operations vision for the type of assistance they can provide they all share a common set of components:

Firm Focus Commitments	BetterBricks Building Ops Commitments
1) Assign and empower a manager in the firm to be the primary contact responsible for this strategic business relationship;	1) Technical assistance on mutually selected projects including support with analytical tools and techniques, project reviews and diagnostic cost sharing;
2) Review new projects with NEEA consultants to identify significant efficiency opportunities and determine building performance services potential;	2) Business planning and marketing assistance such as market assessment support, case studies/project profiles and public relations;
3) Encourage staff participation in educational and professional development opportunities:	3) Professional development activities including in-house educational programs and support for external educational opportunities;
4) Collaborate with NEEA consultants when appropriate on product and service development priorities;	4) Product and service development, including technical assistance and cost sharing on high priority development items.
5) Conduct business planning and marketing activities to further integrate building performance services into the firm's service offerings.	

The adoption continuum

The ultimate goal of the Firm Focus approach is to move firms along a continuum of understanding toward self-sufficiency in presenting and selling building services which include the core elements promoted by the Initiative.

Table 4. Continuum of Adoption[6]

Stage	May 2006	December 2007
Engaged (*Discussions initiated with management staff)*		Siemens(WA)
Committed ***(****Memorandum of agreement signed and planning underway)*	McKinstry (WA), Siemens (OR), Control Contractors, Inc. (OR)	Merit Mechanical (WA), Sunset Mechanical (WA), MacDonald Miller (WA)
Practicing ***(****Firms have implemented at least one project and are gaining experience through additional projects)*		McKinstry (WA), Siemens (OR), Control Contractors, Inc. (OR)
Sustaining ***(****Capturing projects on their own and implementing without direct initiative involvement)*		

The three long-standing partners of Building Operations have reached the point where they are identifying opportunities with clients, recruiting new clients with their acquired skills, developing strong proposals for services and practicing what they have learned on BetterBricks and other projects in the field. While there is still some variation within these three firms as to their capabilities to package and successfully sell these services, they are all demonstrating a strong commitment to the concept and are starting to demonstrate concrete benefits to their firm and to their customers in the field. Cost sharing, professional development, and product and service development are areas of

[6] "BetterBricks Status Report" October 2007. A presentation by Skip Schick; Updated for December based on evaluation interviews with BetterBricks staff, advisors, and Firm Focus partners.

BetterBricks support they still rely on to grow this part of their business and demonstrate benefits to their executives and to their customers. These firms have been working with Building Operations Initiative and the pre-cursor Building Performance Services Test for about five years.

The three new firms, signing on in the August of 2007, were quick to enter relationships with BetterBricks and effectively skipped the "engaged" portion of the continuum, moving directly to the "committed" field. They may also move more quickly to the "Practicing" phase because advisors and staff have clearer expectations for the relationship, are better able to articulate their goals, and, based on past Initiative experience, can now identify opportunities for these firms to demonstrate success to their clients and executives. More generally, these firms are also entering this relationship at a time when the market situation is much more conducive to selling the types of services promoted by BetterBricks.

Key areas of support

BetterBricks Building Operations supports firm focus firms in four core areas: technical advice, business planning and marketing, project cost share, professional development and training, and product and service development. Each partner is unique in the type of support that they need and in their relationship with the Initiative. This flexibility was cited by all parties as one of the keys to the success in these relationships. Specific activities and the support provided in these four core areas are summarized in the following paragraphs.

Technical advisor support Three of the six partners noted that the energy assessment activities provided by the BetterBricks technical advisors are critical to their relationship. These are firms that do not have in-house engineering staff. One partner noted that they anticipate adding staff with these qualifications in the future if this part of their practice continues to grow. For now, it is more effective to contract the work through BetterBricks advisors. Partners with in-house engineering staff are not as reliant on the technical advisory support for completing the assessments, but are still utilizing them to review the projects to minimize lost opportunities, and provide a "second pair of eyes".

Business planning and marketing assistance from BetterBricks is important to all of the firms, but the nature of the assistance has varied between firms. Those firms that have been part of case study development or profile articles are anticipating benefits of demonstrating their specific contributions to the market, but are still uncertain of the outcome of those efforts. For firms still working to develop their specific service offerings, third-party endorsement was cited as one of the ways they are anticipating marketing the change in their service offerings to their clients. Sales staff is becoming increasingly confident in making the value proposition on their own, but support from BetterBricks has been critical in this evolution and continues to be a valuable aid. The continued encouragement and enthusiasm from BetterBricks staff and advisors was also cited by partners as an important part of their commitment to continuing the evolutionary process.

Project cost share is still an important priority for firms' relationships with BetterBricks. Cost sharing is something tangible that they can offer their customers as they make the broader case for these services. It demonstrates third-party support, softens the sell, and allows partners and clients room to experiment and gain experience with new services. It has also given key supporters within partnering organizations an opportunity to demonstrate the value internally to executive staff.

Partners are well aware of the market transformation goals of the Initiative and anticipate that the cost share dollars will be reduced over time. They believe BetterBricks uses fair and strategic approaches to deciding incentives on a case-by-case basis to move the market forward. The consistency of their funding was also noted as an asset, i.e. the project has never "run out of money" and abandoned enthusiastic participants (which partners said had happened in other incentive programs). None of the partners cited the cost sharing as the primary goal or priority of the relationship, but rather cited it as a second or third tier priority.

Professional development and training has not been a strong priority for many of the Firm Focus partners with the exception of those that are investing in training on new technical products and services (discussed in the next paragraph). The largest service providers feel that their staff is capable of providing the services needed in the market. These partners noted that educating field and sales staff about what should be included in services is a more important professional development need than training staff in how to perform the services.

Product and service development has been an important area for several of the Firm Focus partners, especially those that do not have internal engineering staff, and partners just entering the field of energy assessment. BetterBricks has sought out, tested, endorsed and supported several specific field assessment tools that are being used and marketed through Firm Focus partners. Air Advice, an air quality monitoring system that can be used to identify significant operational problems, is being actively used by one partner and two others are in the early assessment phases. BetterBricks assisted by identifying this software as a potentially useful tool, and after sharing the initial cost the partner purchased two additional units on their own. Energy Expert, an energy benchmarking and monitoring software tool, is another product that is being tested by this firm and may be tested and used by other Firm Focus partners.

Other tools being considered by firms are AirCarePlus, a tool for assessing performance of packaged rooftop HVAC units, and a new field diagnostic tool *FDSI-Service Assistant*. BetterBricks hosted training for these partners in using these and other tools including Energy Star Portfolio Manager to enable them to begin to provide benchmarking services. Familiarity with this benchmarking software may allow partners to offer ENERGY STAR building rating, or LEED-EB certification in the future.

Changes in Business Practices and Reasons
Firm Focus partners, advisors and staff cited several ways that business practices have changed within the Firm Focus firms. These are anecdotal, and will be evaluated in a more systematic way with a review of the baseline study group in the up-coming year.

Client work products are the primary area where Firm Focus partners noted a change in their business practices. Firm Focus partners are changing the way they put together proposals, and the types of detail and information they provide in those proposals to lead to follow on work. Incorporating more diagnostic, benchmarking and standardized reporting into proposals has been another means to add value to their assessment activities.

Marketing materials or approaches, or staffing to meet demand for these services have not changed significantly for these Firm Focus firms because, for most of them, it is still not making up the majority of their work load.

The major pressures cited by the Firm Focus partners for changing their business practices, were increasing energy prices, increased market awareness about energy efficiency opportunities, and the threats posed by global climate change. Service providers are working to adapt their approach to what their customers want, and the commitment they are willing to make. The challenge is still how to present these services and make them viable in the market.

Challenges and opportunities for improvement
The challenges identified by the Firm Focus partners and advisors included: (1) communication challenges with BetterBricks staff and advisors as the Initiative continues to grow, (2) demonstrating the benefits to the broader market through the case studies and the firm profile pieces, (3) the addition of new Firm Focus partners, and (4) experimentation with new forms of marketing collateral, technical products and services.

Firm Focus partners and advisors were all in agreement that the demands on their time are significant given the enthusiasm for these types of services and the expansion of the Firm Focus partners and other projects. There have been some issues of turning materials around on both sides and availability of staff but the situation is not yet urgent.

Firm Focus partners noted a few specific areas for improving support from BetterBricks:

- Provide more marketing materials to make the case for the services to clients.
- Generate a greater presence at local industry conferences
- Provide a clearer sense of resources and direction of effort from year to year to allow Firm Focus partners to strategize to target buildings and funding for projects.
- Ensure stability and longevity of support for new tools, products and service offerings.

Advisors, management and partners were in agreement that momentum for Firm Focus relationships will rely on getting tangible results in terms of successful projects or

adoption of new tools that can demonstrate the value of the BetterBricks relationship both internally (to get greater buy-in) and externally to expand and improve the value of their service offerings.

Technical Assistance

The BetterBricks Building Operations Initiative currently has contracts for technical advisory services in place with six firms. Technical advisors provide technical advice on specific vertical market projects, develop technical materials for the web-based tool kit, support technical aspects of Firm Focus activities (training and product testing) and serve as a liaison with regional utilities.

Three technical advisors are involved with specific work in the Hospitals and Real Estate vertical markets. Most work is still in the hospital vertical market. Only preliminary contributions have been made in the real estate market.

Hospitals: Technical advisors identified fourteen hospital projects with which they have been involved at various levels over the past year. These projects are in various stages of the assessment process, however, only one (Legacy Health) has moved beyond the assessment phase into an implementation phase. A large portion of the other projects are primed to move into the implementation phase and this transition was identified as a critical turning point for the Initiative by all technical advisors and program staff. Several instances of "spillover" work (in which clients were pleased with the assessments and wanted to replicate the work in their other facilities) were also identified by the technical advisors; these included nine new buildings in one health system and expanding the assessment to other facilities in two other major health systems. This spillover represents a significant validation of the market transformation hypothesis.

Technical advisors and market specialists are continuing to work together and have made significant progress in developing a "team concept." A meeting of contractors held last winter helped to identify all of the players, and clarify roles and responsibilities. The experience of working together has revealed the strengths and weaknesses of the individuals involved and how best to work together. In each project and with each player variations on the roles take place, and communication is critical and improving. Market specialists vary widely in their technical capabilities, but so far there is no evidence that this has any effect on the ability to get a project engaged and completed, but it is important that they are engaged throughout the process not just at the front end. The technical advisors continue to rely on the market specialists to manage the relationships with the executive contacts at the hospitals and have overall been pleased with their ability to lay the foundation for the technical work that needs to be done, and help make the case for implementing the recommendations.

Technical advisors continue to struggle to get existing contractors involved in work at the project level, and most of the vertical market projects do not include a Firm Focus Partner. The high variability in skills among existing service providers is the primary hindrance to their involvement and it is particularly acute in markets "east of the Cascades" where the type of preliminary assessment recommended by the Initiative is

less likely to be within the capabilities of the existing service providers.[7] It may be easier to pull service providers into the implementation phases of the work once opportunities are identified and operations and maintenance tasks are clarified. It is also difficult to generate the necessary buy-in from company executives to change business practices when technical advisors are usually engaged with field technicians and sales staff. It was also noted that the role of service providers is more limited in Montana and Idaho, and to meet capacity building objectives the focus of support may need to shift toward education and training of facility staff.

The key barriers noted by technical advisors in providing services and fulfilling their roles and responsibilities were: delays in moving to the implementation phase due to indecision or a slow approval process on the client's part; engaging local service providers especially in regions where there is a dearth of qualified providers; following BetterBricks' expectations for providing services. It is tempting for advisors, as engineers, to dive into the adjustments and upgrades, but the process of getting buy-in and understanding on the part of the facility manager is important to meet other Initiative objectives like long-term commitment and capacity building. At the same time it can be challenging to keep the client's enthusiasm up when the assessment process takes time. These barriers are being addressed, and advisors appreciate the flexibility offered by BetterBricks staff in handling each case, as they attempt to strike a balance.

Technical advisors noted that their services are being recognized for the value they present to the clients and the information they provide is critical for saving energy. Technical advisors see their primary contribution right now as identifying opportunities and helping the clients lay out concrete steps and building a plan for how the savings can be achieved. The next challenge is getting them to be standard practice.

Support Activities

Tools and Materials Development

One of the biggest accomplishments in 2007 was the development of the tools and materials for the website which went live in December 2007. (See http://betterbricks.com/subHomePage.aspx?ID=6.) The Initiative manager estimated that roughly 40 percent of her time in the past year was dedicated to this effort. The website was launched after a full year of program activity, and took an exceptionally long time to develop because the scope of the effort was much larger and complex than originally anticipated.

A team of four technical advisors, marketing staff, and web designers worked to create a website that has the potential to make a unique contribution to the market. They contend that there is no other site that contains this breadth and depth of diagnostic, and trouble-shooting technical material. The site caters to a range of audiences with material targeted to executive decision-makers to technicians. The site may be used as a training tool,

[7] There are two examples in WA and OR where a highly skilled non-firm focus service provider is engaged in the assessment and the technical advisors anticipate they will easily be able do the implementation work.

providing enough detail for a trainer or a building operator to demonstrate a trend log or develop sample energy benchmarks, and replicate on-the-job. Proactive managers or service technicians can download materials and carry them through a building to trouble shoot specific symptoms and trouble areas.

While the site shows a lot of promise, staff and advisors are also aware that it is largely untested and several challenges remain. Four key challenges were identified by staff and advisors:

1) *Getting people to the site*. Anecdotal experience from a technical advisor is that a significant pool of facility managers and staff have jobs that do not require a computer and/or access to the internet. This concern warrants quick explorations either by the initiative staff or by the evaluation contractor as the implications for the use and usefulness of the website for facility managers could be significant.

2) *Navigating the site*. The depth and breadth of materials available on the site is a benefit but developers noted concern that there is a potential for frustrating users if they have a hard time finding what they need, at the time they need it. This issue should also be the subject of future user studies.

3) *Obtaining and responding to feedback*. Feedback from stakeholders and users on both navigability and technical content is essential to the continued development of the website. Building Operations is taking on a significant challenge in defining standard practices for an emerging discipline (building tune-up and retro-commissioning activities). A formal process to gather on-going feedback and update content is not clearly defined at this time.

4) *Maintaining the site.* Keeping the wide array of materials up to date and relevant will be a significant task for the Building Operations team. A long-term strategy for maintaining the site beyond the life of BetterBricks has not yet been articulated in the logic model.

Further evaluation review of the website will be conducted in the up-coming year.

Education and Training

The education and training team puts together events and activities that are reviewed and approved by the Initiative manager and are highly complementary to the Building Operations goals of promoting awareness in the market especially among building owners operators and facility managers. These are the primary sources of creating "market pull" outside of the vertical market efforts. Education and training efforts are always conducted through a partner and BOMA and IFMA are two important allies in these efforts.

Building Operations advisors and Firm Focus contacts were involved in presenting materials in all three states where BOMA BEEP training were given. These sessions gave exposure to Building Operations advisors and allies as local experts in the field. There were also multiple (17) Lighting Design Lab training events held over the last year which

support the Building Operations objectives by outlining first steps for facility manager and building operators and owners to take action toward energy efficiency through lighting changes. The education and training team is promoting BetterBricks concepts at trade events by providing speakers, hosting booths or tables, and providing input on topics.

The education and training team is also hosting independent events, such as the Powerful Business conference series, and the Secret Life of Buildings. Materials for these conference/workshops were developed by BetterBricks and promote the key concepts of identifying opportunities for improved operations in a building, and making the business case for improving building operations.

Education and training is currently focused on the building operator and facility manger; there is little focus on the service provider audience outside of the Firm Focus relationships. Several service providers can be found on the attendee lists at BOMA BEEP training series which may suggest a gap in the training available to them, or just an interest in what their clients are hearing in the market. The education and training team and building operations team are considering outreach for service provider professionals, but will require close collaboration with organizations new to BetterBricks to identify appropriate materials and delivery strategies. While the long standing Firm Focus firms cited less of a need for technical training and found the marketing support of greater value, some of the new and smaller firms have demonstrated significant interest in developing technical skills with new diagnostic tools. Exposure to these types of diagnostic and benchmarking tools and associated skills could potentially be the focus of education and training efforts targeted to service providers outside of Firm Focus relationships.

Marketing

The BetterBricks Awards continue to be an important marketing tool. The awards recognize building owners, operators, managers, and developers, among others, in supporting, using, and designing energy-efficient, sustainable, high performance buildings in the Northwest. The awards have attracted the attention of local news organizations and award winners have also run their own congratulatory ads and used it in co-branding their services. BetterBricks managers have returned to a single award for service providers and/or building operators and facility managers due to the on-going challenge of finding viable service provider candidates for its own award category. In 2007 all three of the winners in this category were facility managers and building operators.

One of two key marketing pieces is a business profile that was developed around the success and activities of Firm Focus partner McKinstry-Seattle. The article is on the website but has not been otherwise distributed. The other major piece of marketing material, which is still in review, was developed around the success of Kaiser medical group in Portland. Another Firm Focus partner, Control Contractors, Inc. was one of the major players in that project. This case study has several objectives; plans for distribution have not been finalized:

- Demonstrating to upper Kaiser management the benefits of improved operations and maintenance implemented by the building staff;
- Allowing Control Contractors, Inc. to demonstrate their capabilities to provide these services in the market;
- Providing BetterBricks with a piece that makes the case for service providers and building owners to enhance building operations services.

Marketing has taken on the new role of helping the business advisor and the Firm Focus partners in developing collateral marketing materials to (1) demonstrate third-party endorsement, (2) specify what the partnering firm can do for clients, and (3) refer the customer back to the provider for more detailed information. Firm Focus partners requested materials to clearly articulate the new type of services they are able to provide to their clients as a result of their alliance with BetterBricks.

The marketing team will focus on spreading the word about successful firms and projects through structured "media plans" slated for completion in early 2008. With the website as a reference point, they feel more confident going to the market with these messages, and they have made significant progress in understanding the need for combining technical detail with "catchy" messaging. This understanding has been in large part thanks to the involvement of a business advisor with sales experience in addition to technical understanding, but will be an on-going challenge given the nature of the material.

Utility Coordination

Utilities have been more involved with the Initiative and project work this year, but collaboration has been limited to a handful of utilities that assisted in the selection process of the three new Firm Focus candidates, and co-sponsored BOMA BEEP training sessions. They are also expected to be a key source of feedback on the web-based tool kit. In terms of projects, one advisor noted that the utilities are involved in roughly 2/3 of projects in one way or another, either attending assessment walk-throughs or helping to identify retrofit opportunities. One utility in the Puget Sound Region has a program that provides a portion of the salary for a resource conservation manager. At least three hospitals that are partnering with BetterBricks now have a resource conservation manager on staff that is or will be an integral part of implementing the recommendations from the assessment. Only isolated instances of communication trouble or significant barriers with cooperation have been reported by BetterBricks advisors and staff, which have effectively handled these issues on a case-by-case basis.

One sign of success of the Building Operations Initiative is that utilities are taking an interest in what BetterBricks is trying to accomplish and are themselves developing programs that complement what the Initiative is trying to do, but their core contribution is still providing incentive dollars to overcome first cost barriers.

5. Utility Survey Results

This chapter presents the building operations-related results of a telephone survey conducted to determine the level of awareness of and perceptions about BetterBricks among utilities and other energy-related organizations in the Pacific Northwest. Thirty-eight surveys were completed, which represents the full range of public and private utilities, as well as the Bonneville Power Administration and the Energy Trust of Oregon, Inc., a public benefits administrator. Given an original sample frame of 85 names, this number of completes provides 10% precision of sample estimates, with 90% confidence. Table 5 shows the final disposition of contact attempts.

Table 5. Final Disposition of Call Attempts

Disposition	Subdisposition	Subcount	Count
Completed			**38**
Did not pass screen			**1**
Refused	**Hard refusal**	1	**8**
	Suggested other contact	7	
Not available during survey period			**2**
Left company			**4**
Wrong number			**1**
Quota reached before contact made			**31**
Total			**85**

Building operations results

Most utility contacts included in this survey did not have significant exposure to building operations activities nor have they accompanied technical advisors during their on site visits. While 63 percent of utility contacts had some type of interaction with technical advisors or market specialists via the hospitals market, only 10 percent (4) of these had ever accompanied a technical advisor while assessing a facility. Those who had joined were satisfied or very satisfied with their technical knowledge and the resulting recommendations.

Seventy-nine percent of these utility contacts claimed to currently encourage operations and maintenance practices that improve energy efficiency of existing buildings. Several types of efforts were cited in an open response, and are listed below in order of decreasing frequency:

- **Audits** where the utility is providing an assessment of the facility and providing recommendations to improve performance were the most commonly cited. (8)
- **Training** several utilities cited their support of Building Operator Certification and the Building Operator and Maintenance (BOMA-BEEP) training as important contributions to encouraging operations and maintenance practices. (8)
- Several cited **generic support** from account managers in talking to customers, but did not identify specific activities or actions. (8)

- **Incentives** for commissioning, retro-commissioning or maintenance were cited by several of the utilities as a means to support and encourage improved operations and maintenance. (7)
- Best practice **materials**/trouble shooting materials were also noted as a means of sharing information with customers about how they can improve the efficiency of their buildings. (6)

The fact that utilities are offering these types of program components helps to support the Building Operation Initiative's awareness and market intervention activities. It also suggests that utilities are becoming more aware of the value of improving building performance as a source of energy savings. However, they are not adopting a comprehensive building performance approach like that of the Initiative where all of these program elements are incorporated in some form. Only three of the utilities noted that they offered more than one of the Building Operations program elements in their suite of program strategies.

Only seven respondents noted that they had direct interaction with building operations technical advisors. Four of them felt that coordination and the communication with the Building Operations team was satisfactory or 'very well done". Only two of these remembered going on a site visit, but noted that their experience was satisfactory in terms of the technical advisor's knowledge and the recommendations that were offered. The remaining three had no specific comments about the quality of coordination and communication with Building Operations staff and none of these seven respondents offered recommendations for approving the implementation approach.

The seven respondents who had contact with technical advisors were also asked if they understood the objectives of the Building Operations program. Two said were a "little familiar" with the program's objectives and five said were "very familiar". When asked to describe the Initiative two demonstrated clear understanding and experience with the Initiative:

- *Tune-ups are a sub-component of Firm Focused and target-market-Initiatives and are related to SEMP . . . NEEA is working with facility staff and management and scoping a subsequent engineering process depending on the scale of the project.*
- *A focus on building tune-up to achieve operational savings in energy use. BetterBricks has tried to identify some market leaders in that area - namely McKinstry a mechanical systems firm - as a market leader; someone who can develop sustainable business doing building performance. The idea is to create a sustained transformed market.*

Others could articulate some concepts of retro-commissioning and building operations improvements, but did not demonstrate a clear understanding of the Initiative.

- *It looks at buildings and gives them no-cost; low-cost adjustments and savings. It also provides training for O&M staff.*
- *Making the building that you operate perform the way it was intended.*

- *It's taking the maintenance practices from a reliability perspective and adding an energy perspective.*
- *It is a tune-up of the facility to optimize the energy use and performance of HVAC and other systems.*

Three of seven respondents felt that Building Operations will "moderately" help their customers operate their buildings more efficiently. Two thought it wouldn't help at all, indicating that the organizations are not together in their thinking about the Initiative's benefits. Some reasons cited included:

- *It's a matter of scale; the very nature of the objectives of BetterBricks the scale is relatively limited. It's a resource constraint thing.*
- *It isn't BB's fault or the fault of their approach, the utility hasn't worked with BetterBricks on this.*
- *There is not a high degree of awareness, it could help but I'm not aware of it being utilized.*
- *The change of culture takes time.*

Based on this survey, utilities appear to be aware of opportunities for energy savings from improving building operations and maintenance practices, but they are not offering programs that include comprehensive building operations and maintenance program elements. The Initiative's efforts in this regard have not yet been widely recognized by the utilities for the potential the approach may represent for wider market adoption of best practices promoted both by the utilities and BetterBricks.

6. Hospital Facility Manager Baseline Study

Research into Action fielded a facility manager baseline in the fall of 2007. Telephone surveys were completed with 52 facility managers. These managers were chosen at random from a population of 238 hospitals in the Pacific Northwest that are not directly working with BetterBricks. The sample was drawn from "non-participant" facility managers to better understand the background and existing practices of facility managers that have not been directly influenced by the program, but may have had exposure to education and outreach through trade organizations or peer networks. The current practices of this group help illustrate the broader market influence of the initiative as the message is disseminated through the market. It also serves as a point of comparison for the actions and activities of facility manager working directly with the initiative. The resulting sample consisted of facility managers at hospitals that are much smaller than those working with the Initiative.

Survey research is unable to delve deeply into reported behaviors and to ascertain exactly what actions are occurring and with what degree of thoroughness. Thus, the evaluation team urges caution in interpreting the following findings.

Keeping those caveats in mind, about half of interviewed facility managers reported energy management is included in the job descriptions for themselves or their staffs, and three quarters indicated they or their staffs had attended training in energy management in the past three years. Roughly two fifths of the facility managers reported their facilities had set explicit goals for energy management at some level and one fifth reported their hospitals currently are in the process of developing energy management goals at the strategic level. About one third of facility managers characterized their management's commitment to energy management as "high" or "very high." [8]

Building Operations Results

Several questions related directly to the Building Operations Initiative were included in the survey. These questions were to gauge understanding and commitment to preventative maintenance and enhanced operations activities among facility managers. We were also interested in their reliance on external contractors for these activities.

A series of questions regarding on-going operations and maintenance tasks was asked of the facility managers. The tasks included in the series of questions were if they:

- track and trend electricity consumption
- log and trend data on equipment operating characteristics, such as temperature, pressures, and motor loads, to assess degradation in equipment performance
- check if filters, strainers, and flow control devices are clean
- ensure economizer linkages and controls are working properly

Facility staff claimed to perform each of these tasks on a "fairly regular schedule" (Table 6). However, the actual regularity of performing each task (Table 7) was not as

[8] BetterBricks Hospitals MPER #3 by Marjorie McRae, Research into Action

consistent, suggesting a fairly wide interpretation of 'best practices' or preference for completing these tasks. Regularly scheduled operations and maintenance is the preferred strategy for maintaining optimal building performance, and the majority of facility managers are on a regular schedule for most tasks. The frequency of performing these tasks varies, but the most common responses are consistent with the best practices for similar tasks promoted by Building Operations via the website. With the exception of the economizer, responses are concentrated around the recommended frequency suggesting agreement and comprehension among the respondents of recommended schedules. For economizers a daily check on the air handling system is recommended, with an annual inspection to ensure dampers are cycling fully opened to fully closed.

Table 6. Regularity of Performing On-going O&M Tasks

	Electricity Consumption		Log and Trend Equip Operations		Filters, Strainers, Flow Control devices		Economizer	
Response:	N	Valid %	N	Valid %	N	Valid %	N	Valid %
When there is a problem	6	12%	5	10%	2	4%	9	20%
Sporadically	7	14%	6	12%	3	6%	3	7%
On a fairly regular schedule	**33**	**66%**	**34**	**67%**	**46**	**90%**	**32**	**70%**
Never	4	8%	6	12%	0	0%	2	4%
Total	50	100%	51	100%	51	100%	46	100%

Table 7. Reported Schedule for Performing On-going O&M Tasks

	Electricity Consumption		Log and Trend Equip Operations		Filters, Strainers, Flow Control devices		Economizer	
	N	Valid %	N	Valid %	N	Valid %	N	Valid %
Continuously or Daily	6	15%	**18**	**45%**	7	14%	**8**	**23%**
Weekly	2	5%	0	0%	1	2%	3	9%
Monthly	**19**	**48%**	8	20%	**22**	**45%**	4	11%
Quarterly	6	15%	7	18%	12	24%	6	17%
A few times a year	3	8%	2	5%	1	2%	4	11%
Yearly	2	5%	1	3%	2	4%	6	17%
Other	2	5%	4	10%	4	8%	4	11%
Total	40	100%	40	100%	49	100%	35	100%

For all of the on-going maintenance tasks identified in the survey, a strong majority of the facility managers rely on their own staff to perform these tasks (Table 8). Hospitals typically support more in-house maintenance staff than other types of facilities.

Table 8. Responsibility: Performing On-going O&M Tasks

	Electricity Consumption		Log and Trend Equip Operations		Filters, Strainers, Flow Control devices		Economizer check	
	N	Valid %	N	Valid %	N	Valid %	N	Valid %
Staff	**38**	**86%**	**42**	**93%**	**50**	**98%**	**32**	**74%**
Contractors	6	14%	3	7%	1	2%	11	26%
Total	44	100%	45	100%	51	100%	43	100%

A series of questions regarding more advanced operations and maintenance tasks and energy efficiency upgrades was asked of the facility managers to gauge their awareness of these specific service tasks and if they would call on service providers to complete them or were capable to address them with internal staff.

This set of questions partially informs market progress indicator 4.a.: "Facility managers identify staff with specific skills to provide "enhanced" O&M and building tune-up services or can articulate the specific services they want included when they seek out service providers." While specific skills of staff were not called out, their understanding of specific tasks and their ability to complete the task or call on a contractor to complete the task gives a first look at the capability level of these facility managers. More detailed, direct analysis of specific skills identified as critical by the initiative will be pursued in the next MPER.

Facility managers were first asked if they were familiar with the following tasks:

- Replacing any remaining T12, non-LED, and mercury vapor lamps with ENERGY-EFFICIENCY lights
- Ensuring cooling system set points and reset schedules are at optimal levels—for parameters such as for discharge air, duct pressure, chilled water, and condenser water.
- Selective re-balancing & testing airside HVAC, including min ventilation flow rates & min terminal unit flow
- Upgrading pneumatic controls to direct digital controls (DDC).
- Installing variable frequency drives (VFDs) on motors and constant volume fan systems.
- Benchmarking facilities for energy use.

If they were familiar with the task, they were asked 1) if they had done it or not; 2) if it had been completed by internal staff or an external contractor; and 3) if there were remaining opportunities for performing the task. Results of these questions are presented in Table 9, and summarized in the following paragraphs.

Most respondents were familiar with these practices and had started to implement them with internal staff to some extent. Over 90 percent of respondents were at least familiar with these practices, with the exception of installing variable frequency drives (VFD) and benchmarking facilities for energy use. Fifteen percent were unfamiliar with VFD and 32 percent of respondents were still unfamiliar with benchmarking facilities for energy use. Of those that were familiar with benchmarking only 32 percent had done it, and most relied on internal staff. For those that had done Selective re-balancing and testing of

airside HVAC, upgrading pneumatic controls and installing variable frequency drives, these tasks were largely completed by service contractors.

The only two activities that were deemed "fully completed" by a majority of respondents was ensuring cooling system set points and reset schedules are at optimal levels, and selective rebalancing and testing of airside HVAC.

Facility managers were asked about computerized maintenance systems and the presence of energy management systems. Sixty-nine percent of respondents noted that they do have a Computerized Maintenance Management System and most use it for routine operations and maintenance scheduling. About a third of these respondents integrate key performance indicators into the system. However, the majority (63 percent) of facility managers do not have an energy management system.

In summary the facility manager study revealed that hospital facility managers that have not been directly engaged in the Initiative's activities are very much aware and claim to be implementing ongoing good operations and maintenance practices, but may not fully understand all that can be done. The on-going efforts of the Initiative to promote best practices through education and training and provide access to resources and tools via the website should continue to enhance facility managers understanding of what can be done and move the market forward. Facility managers are also mostly aware of the enhanced or improved types of operations and maintenance activities that they could be pursuing and have started on those to a large extent given their existing skills. Hospital facility managers are not relying significantly on outside contractors for on-going maintenance and for the enhanced practices they are mostly looking for outside assistance for equipment replacement-oriented projects. This reliance on in-house staff suggests that the Initiative needs to continue to target education, training to facility staff as a means of reaching smaller hospitals and building capacity for staff in this market segment.

Table 9. Knowledge, Plans and Responsibility for advanced O&M activities and energy efficiency improvements

	Lighting Retrofit		Review cooling system set points		Testing HVAC		Upgrading to direct digital controls (DDC).		Installing variable frequency drives (VFDs)		Benchmarking energy use	
	N	Valid %	N	Valid %	N	Valid %	N	Valid %	N	Valid %	N	Valid %
Familiar	1	2%	6	12%	10	20%	10	20%	9	17%	**16**	**32%**
Seriously Considering (NO)	1	100%	4	67%	9	90%	5	56%	6	67%	8	53%
Seriously Considering (YES)	-	-	2	33%	1	10%	4	44%	3	33%	7	47%
Staff	-	-	-	-	-		1	25%	1	33%	5	83%
Contractor	-	-	2	100%	1		3	75%	2	67%	1	17%
Planning	2	4%	1	2%	2	4%	7	14%	2	4%	2	4%
Staff	1	50%	1	-	-		-		1	50%	1	50%
Contractor	1	50%	0	100%	2		7	100	1	50%	1	50%
Done it	**48**	**92%**	**40**	**77%**	**35**	**69%**	**30**	**59%**	**33**	**63%**	**16**	**32%**
Staff	**34**	**65%**	**23**	**61%**	15	45%	6	21%	6	18%	**9**	**60%**
Contractor	13	25%	15	40%	**18**	**54%**	**23**	**79%**	**26**	**81%**	6	40%
Partially	**30**	**58%**	12	31%	17	49%	**26**	**87%**	**24**	**72%**	**12**	**75%**
Fully	18	35%	**27**	**69%**	**18**	**51%**	4	13%	9	27%	4	25%
Unfamiliar	1	2%	4	8%	4	8%	4	8%	8	15%	**16**	**32%**
Total	52	100%	51	100%	51	100%	51	100%	52	100%	50	100%

7. Assessment of Accomplishments

In this chapter we provide an assessment of accomplishments for the Building Operations Initiative as of December 2007.

Market Progress Indicators

TecMarket Works, working in coordination with Initiative staff, developed a set of market progress indicators to measure progress toward market transformation goals. These metrics were used to develop the baseline evaluation of the service provider market in a study fielded in the fall of 2006. The indicators were reviewed and modified based on information gathered in the baseline study and a better understanding of the Initiative.

Table 10. Market Progress Indicators

Objective for 2010	Market Progress Indicator
1. Northwest service provider decision makers representing 50% of market share are aware of the business opportunity and customer benefits from improving building operating performance.	a. Majority of service providers can identify specific benefits of "enhanced" O&M and building tune-up to customers.
	b. Majority of service providers can identify specific benefits of "enhanced" O&M and building tune-up to their business.
2. Service providers representing a significant percentage of the building operations market adopt business approaches that promote building operating performance. [25% hospitals; 10% targeted office real estate market share]	a. Service providers can identify an increase in the provision of enhanced services, the portion of their client base buying these services, and have acquired new clients by promoting enhanced services.
	b. Service provider business/sales approaches and/or marketing materials demonstrate a concentrated effort to promote the "enhanced" building performance services encouraged by BetterBricks
3. A significant percentage of service providers have staff capability to tune building energy systems and provide enhanced O&M services. [25% hospitals; 10% targeted office real estate market share]	a. Service providers have access to equipment/tools and qualified staff to perform offer building performance services promoted by BetterBricks.
	b. Staff training (internal or external) includes building skills necessary to provide building performance services promoted by BetterBricks.
4. A significant percentage of in-house facility staff is capable of providing or obtaining building energy system tune-ups and enhanced O&M services. [25% hospitals; 10% targeted office real estate market share]	a. Facility managers identify staff with specific skills to provide "enhanced" O&M and building tune-up services or can articulate the specific services they want included when they seek out service providers.

It is premature to assess progress on these market progress indicators. The foundation for measuring the first three market progress indicators is the update to the 2006 service provider baseline study which will be conducted in the fall of 2008. The service provider baseline sample includes Firm Focus and non-Firm Focus mechanical and contracting firms in Washington, Oregon and Idaho. It represents the majority of market share in the

region, and will also capture the indirect influence of the initiative on the broader market after two years of activity. Results from that study and an assessment of progress based on these indicators will be presented in MPER 3.

As mentioned in Chapter 6, the facility manager baseline results partially inform market progress indicator 4.a. (See Table 9 above). More detailed analysis of this progress indicator should be conducted in MPER 3.

Review accomplishments on Phase I Activities and Phase I Outputs

The logic model provides a framework from which to compare the Initiative's intended activities and outputs with the actual activities and outputs. While indications of market progress are starting to emerge it is too early to measure market penetration or market effects. A systematic review of progress over the last two-year period and a comparison with the market progress indicators will be conducted in 2008. In this interim year, progress on planned activities and expected outputs provide an important check on the Initiative's progress and consistency with its original theory. Measuring initiative achievements compared to Phase I Outcomes or short term goals will be the focus of MPER 3.

Table 11 is segregated into three columns. The first is the projected activities as outlined in the logic model. The second is the evaluator's assessment of activities that have been conducted in 2007. The third represents actual outputs the Initiative achieved. The status of ouputs that have not been fully achieved are noted in the same column.

Table 11. Building Operations Progress on Phase I Activities and Outputs as of January 2008

Phase I Activities	Status as of MPER 2	Phase I Outputs Achieved
Develop products *to provide a path to better building operations.* • Support Service Delivery o *Define services and a service delivery path* o *Identify potential service packages* o *Provide technical assistance*	• Products to make the case for improving building performance and technical tools to support those activities have been developed by technical and business advisors as part of the website.	• All of the Phase I Output products identified in the logic model appear in the website and are accompanied by a host of additional materials and resources.
• Create a building operation website o *Showcase value proposition for owners and the business case for service providers* o *Provide guidance on building operating performance evaluation, procurement, and implementation* o *Provide access to tools and technology information*	• The website was launched in early December and materials are continuing to be developed and updated. • Planned (December 2007) outreach and testing of the site to get feedback from: • Utilities • Users • Working group	• The website, while still under construction, provides a wide range of resources for supporting service delivery, demonstrating the opportunities, and technical depth to get building operators and service providers started improving building performance. • Fielding this site is a major accomplishment, the next focus will be to get people to use it and maintain and update content.
Build market awareness *by providing information tools training and support to owners, facility managers, and staff.* • Presentations and interaction at events	• 17 events with the Lighting Design lab • 13 trade association/ trade ally events: providing topics, speakers or both that focus on building performance services	• Demand side of the market has a high level of awareness of opportunities for improving performance and have started to pursue basic improvements based on FM baseline results.
• Success stories, articles and awards	• Awards include both service providers and building owner/operators; all 2007awards to building owners and operators. • One case study and one article have been developed to highlight successful partners and projects.	• Awards have been effective at highlighting success and raising awareness. • Marketing Plans will be developed in early 2008. Need to disseminate information to target audiences via marketing.
• Website tools and information	• Website materials being updated.	• Website launched in December (see above)

Phase I Activities	Status as of MPER 2	Phase I Outputs Achieved
• Improve credibility of service providers o *Partner with utilities* o *Highlight project success*	• Improve credibility of service providers has happened at the project level, and through Firm Focus partnerships.	• At least 10 additional facilities being assessed as a result of spillover, because the client was pleased with the results from the initial work.
Implement Firm Focus Strategy • Select and recruit qualified service providers • Provide technical advisory, business planning, and marketing assistance	• 6 Letters of agreement and activity plans o 3 new / 3 continuing relationships o Provide diverse examples of opportunity o Represent states of OR and WA • Providing a range of services geared to the needs of the partnering firm.	• Each firm has an activity plan in place and is being implemented. • All of the key items in the activity plans are being addressed at varying degrees according to the needs of each partner. o Business planning o Technical assistance o Professional development o Product and service development
• Assist with professional development and training	• Professional development and training has been important to three firms others have not had enough time to put into it. o 2 Trainings on Energy Star Portfolio Manager and other tools.	• Firm Focus partners are gaining experience with new tools.
• Provide product and service development support	• Product and service development and support (particularly important for 3 firms): o Energy Expert Software o Air Advice o AirCare Plus o Field Diagnostic tool (FDSI – Service Assistant)	• Product support is increasing exposure in the market to both service providers and customers. o Adding value to services o Demonstrating expertise and credibility
• Selectively provide project cost-share	• Cost share on tools, cost share on energy assessment projects.	• Firms are gaining experience and practicing skills.
Develop and offer education and training • Present education on important topics	• Education and training staff is working in parallel with building operations staff. Work is complementary, but not highly coordinated. • Existing education and training (not in Firm Focus) focuses on the building operator/ owner/ facility manager, not service providers.	• Direct development of education and training materials (beyond the website) is not a focus of the Initiative right now. • Website materials may provide a foundation for training materials in the future once they have been tested.

Phase I Activities	Status as of MPER 2	Phase I Outputs Achieved
• Influence and leverage curriculum and trainings by associations and trade allies	• Exploring outreach to service provider market via labor unions and ongoing training requirements. • BOMA's "Market Transformation" message and challenge strongly reflects BetterBricks' on-going message	• Education and training outreach to service providers is untested, both materials and the venue. o Brown Bags (on hold) o Training modules (on hold) • Joint presentations (BOMA-BEEP).
• Influence conference and association meeting agendas	• Conference and meeting agendas picking up on opportunities market wide. • Direct influence: providing speakers and topics to associations and events	• Contributed to 13 trade events in 2007.
Influence and leverage building operations Initiative on a national level • Actively participate in ASHRAE's building performance related technical committees	• The Initiative manager is currently head of ASHRAE's building performance committees; specifically building commissioning and energy management	• ASHRAE Standard 90.1, *Energy Standard for Buildings Except Low-Rise Residential Buildings* – Update January 2008.
• Increase regional awareness of national Initiatives • Assess, promote and provide access to the latest tools and technologies	• The "Resources" section of the website is still under construction. • Links and brief presentation of EPA's Energy Star Labeled Buildings and US Green Building Council's Leadership in Energy and Environmental Design – Existing Buildings (LEED-EB) are on the website. • A wide range of tools are presented on the website.	• BetterBricks website is comprehensive, but still untested in terms of use and ability to raise awareness.

8. Conclusions and Recommendations

The Northwest Energy Alliance's BetterBricks Building Operations Initiative officially began in January 2006. After two years of planning, development, outreach and implementation activities the Initiative has prepared a foundation for significant progress in the next few years. A comprehensive on-line resource for service providers and building owners and operators was developed and launched this year. These core materials are designed to make the business case to executives and customers and provide detailed diagnostic materials with which technicians can take action. On-going work with hospitals has resulted in the completion of numerous assessments and these projects are now moving into the implementation phase. This transition presents new challenges but also offers new opportunity to demonstrate concrete benefits of adopting the practices promoted by the Initiative. The number and diversity of working relationships with service providers in the region has increased and existing partners have continued to gain experience and demonstrate the benefits of their program-influenced business approaches. The Initiative has effectively developed a variety of fronts to demonstrate the opportunity and value of improved approaches to building operations and maintenance within the market. Capitalizing on these opportunities to change the market is the on-going challenge.

The evaluation conducted for this MPER was focused on the activities and outputs of the Initiative over the course of 2007 as it was premature to evaluate progress on specific market indicators and market influence. The Initiative is still building the foundation for market influence through these activities. The changes in business practices and market penetration of best practices promoted by the Initiative need time to take hold in the market before it is appropriate to measure market transformation effects as defined in the short term goals.

Website Development

The Building Operations portion of the BetterBricks website represents a significant accomplishment for the Initiative this year. With the work of several technical advisors, BetterBricks marketing, and Building Operations staff, and web specialists, they have pulled together a website that is unique resource for this field. It offers significant depth and breadth of technical diagnostic and trouble shooting materials; is designed to reach audiences ranging from field technicians to boardroom executives; and tackles issues from both the service supply and demand side perspectives. With all of its promise, there is still significant content under development and the site is largely untested in terms of interest, accessibility, and applicability. Soliciting and processing feedback from the various intended audiences will be important to keeping the site relevant and able to live up to its potential to influence the market. The long-term future (beyond Phase II) of the website, including who will be responsible for maintaining the site and keeping it relevant, is not included in the logic model.

> ***Recommendation:*** *Develop a formal process to gather, consider, and respond to feedback from a variety of target audiences. Use this information to continue to*

update content and modify design as necessary. Consider adding plans for the future of the website in the long term outcomes of the Initiative logic.

Firm Focus Relationships

The Firm Focus approach continues to provide an opportunity to expand capacity in the market and gain greater experience in implementing building performance services. In this year three new Firm Focus partners signed letters of agreement with BetterBricks building operations. These new firms add diversity (regionally and firm size) to the potential examples for success which will encourage greater emulation in the market. The expansion of firms was accompanied by an increased role in these relationships for the Business Advisor.

Three existing firms continue to be important players in the market and have continued to evolve their services through their relationship with BetterBricks. These firms continue to be enthusiastic partners. Two Firm Focus partners have identified a strong interest in their ideas and success from their regional and headquarter offices indicating that the new practices may be considered for implementation corporate-wide.

BetterBricks continues to do a good job of working with firms "where they are at", identifying opportunities for changes in business practices that are consistent with their corporate culture and the objectives of the Initiative. This flexibility is of key importance to the partnering service providers, and inspires their continued commitment in working with BetterBricks.

> ***Recommendation:*** *The Firm Focus relationships should continue to be an important focus of the initiative through the collaborative approach that has been adopted by the initiative.*

Firm Focus partners, staff and advisors noted challenges in turning around materials in a timely manner. This suggests that the Initiative is nearing or at a position of over-stretching their resources, potentially impacting the effectiveness of the program.

> ***Recommendation:*** *Recruiting additional Firm Focus firms, should only be done if it can be accompanied by an expansion of resources (staff) that can commit time to these firms.*

Technical Advisors and the Vertical Markets

Technical advisors continue to provide support to the Market Specialists in the Hospital's vertical market. They are continuing to build a sense of team work and continuing to improve communications with respect to the different projects. Two more technical advisors are planned to provide added support in this capacity during the upcoming year. This change should help the Initiative to keep up with the growing number of projects.

Many of the vertical market projects have gotten through the assessment phase (identifying opportunities) and are poised to move into the implementation phase (acting on the recommendations). This phase will present new challenges for the technical

advisors and test their ability to help facility managers and service providers effectively implement and sustain the energy saving practices over time in a way that leads to discernable benefits.

In cases where service providers do not currently possess the appropriate skills and tools to approach building operations and maintenance in a different way, Building Operations technical advisors are not yet able to effectively build capacity with them "on the job". An opportunity may exist, however, to engage these types of service providers as projects move into the more mechanical aspects of the implementation phase. If not, program staff will have to reconsider this opportunity for capacity building as not viable and find other ways to support non-Firm Focus service providers who may not be poised to enter this market as aggressively as others.

> ***Recommendation:*** *Work with technical advisors to identify ways to engage existing service providers that need to build capability during the implementation phase of the projects. Reconsider the barriers and activities needed to support and engage non-Firm Focus service providers to build capacity in the market.*

Education and Training

Education and training has been an important source of building awareness in the demand side of the market. Building owners and operators, and facility managers have been the target of most of these efforts. They have used existing materials, such as the BOMA-BEEP series, and adapted them to the local needs using BetterBricks speakers and other regional experts to present the materials.

The Initiative has not yet pursued training and education aimed at service providers outside of the Firm Focus relationships Education and training is identified in the logic model as means of raising awareness and building capacity for both the demand and supply sides of the market. Venturing to this side of the market for education and training activities and events does present some risk, since relationships with trade associations and allies are not as strong, however, it may be an important means of supporting capacity building objectives and demonstrating opportunities within the supply side of the market.

> ***Recommendation:*** *Work closely with education and training staff to discuss opportunities and challenges for expanding education and training efforts to the supply side of the market.*

Marketing

The completion of two marketing pieces, the development and launch of the website, and direct involvement in Firm Focus marketing efforts represents the first steps to fulfilling the market logic which relies heavily on the power of case studies and market stories to transform the market and lead to adoption of best practice. Marketing plans, slated for completion in the first quarter of 2008, will be an important road map for disseminating success stories and taking advantage of existing interest and market momentum in energy efficiency, and important consideration in the next MPER.

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Appendix B. Full BetterBricks Building Operations Logic Model

Situation	Phase I Activities	Phase I Outputs	Phase I Outcomes – Short Term	Phase II Activities	Outcomes – Longer Term	Impact
The context and need that gives rise to an Initiative, including opportunities and barriers	*In order to achieve the objective we will conduct the following activities.*	*We expect that if completed or underway these activities will produce the following evidence:*	*We expect that if completed or ongoing these activities will lead to the following changes by 2010*	*In order to address the situation we will conduct the following activities*	*We expect that if completed or ongoing these activities will lead to the following changes post 2010*	*Changes in the market resulting from the preceding outcomes*
Market Barriers: • Building owners, managers, and operators are generally unaware of the potential to improve operating performance. • Market fragmentation, with a lack of clearly defined products and services. • Lack of credibility of traditional service providers due to their historical focus on equipment sales. • Lack of tools to sort through the current building stock and prioritize which buildings are most likely to benefit and which are not. • Lack of clear process for	***Objective:*** *Develop an approach improve building operating performance and build service provider capabilities to supply appropriate services.* ***Develop products*** *to provide a path to better building operations* <u>Support service delivery</u> • Define services and a service delivery path • Identify potential service packages • Provide technical assistance <u>Create a building operation website</u> • Showcase value proposition for owners and the business case for	*Building operations products* • Definitions of building tune-up and enhanced O&M • Value propositions for owner/operator and service providers • Example business models • Financial calculator • Sample work products ▪ RFP for services ▪ Scoping report ▪ Tune-up report • Technical guidance ▪ Enhanced O&M guidelines ▪ How-to find common opportunities ▪ Master problem list ***Building operations website*** • Access to tools and	• NW service provider decision makers representing 50% of market share are aware of the business opportunity and customer benefits from improving building operating performance. • Service providers representing a significant percentage of the building operations market adopt business approaches that promote building operating performance. ▪ 25% of healthcare market share	***Objective:*** *Influence the broader market while continuing to build capability within targeted firms and within target markets.* ***Products*** • Conduct cost and savings analysis • Refine existing tools • Adapt tools to needs of other markets • Develop new tools according to market needs • Expand capability of website to respond to and interact with users ***Marketing***	• Market partners, including utilities, trade associations and trade allies regularly promote and support better building operation • Market penetration increases in target and other markets • New market actors and delivery channels emerge as evidenced by new services, tools, etc. developed	• Owners and property managers demand improved building operating performance • Contractors, control companies, equipment manufacturers and commissioning agents promote building operating performance to their clients. • Service providers offer products and services that enhance

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identifying specific opportunities within a building. • Lack of qualified service providers with demonstrated ability to capture the opportunities and secure the value through specific products and services. *Market Opportunities:* • There is acknowledgement of a significant opportunity to improve building operating efficiency. • Clearly defined and differentiated service activities that have viable market value can help encourage a market structure supporting better building operating performance. • Capability to perform these services can be built by developing support tools and technical skills, and by working with	service providers • Provide guidance on building operating performance evaluation, procurement and implementation • Provide access to tools and technology information ***Build market awareness by providing information, tools training and support to owners, facility managers and staff*** • Presentations and interaction at events • One-on-one interaction • Success stories, articles and awards • Website tools and information • Improve credibility of service providers ▪ Partner with utilities ▪ Highlight project success ***Implement Firm Focus Strategy*** • Select and recruit qualified service	sample products • Case studies, articles • Downloadable guides ***Marketing content and activities*** • Sponsorship and presentations at events • Awards • Articles • Website promotion • Success stories ***Service provider activities*** • Firm Focus presentations and letters of agreement • Activity Plans developed and being implemented at selected firms: ▪ Business planning ▪ Technical assistance ▪ Professional development ▪ Product and service development • Technical assistance to other service providers involved in target market projects ***Education and training***	▪ 10% of targeted real estate market share • A significant percentage of service providers have staff capability to tune building energy systems and provide enhanced operations and maintenance (O&M) services. • Service providers representing 25% of healthcare market share • Service providers representing 10% of targeted real estate market share • A significant percentage of in-house facility staff is capable of providing or obtaining building energy system tune-ups and enhanced O&M services. ▪ 25% within hospitals and	• Continue to recognize success through awards, articles, case studies • Reinforce utility partnerships with joint marketing opportunities • Enhance access to incentive programs ***Service provider support*** • Follow through on existing Firm Focus commitments • Provide limited consultation and direct business advisory assistance to other firms • Continue to provide business and technical advice as needed to target markets • Provide technical assistance to selected projects • Facilitate adoption of new building operation	independently of NEEA • There are numerous success studies with measurable results in the region	building operating performance • Service providers capabilities are increased and best practices are common practice.

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service providers and in-house facility staff. • Demand for services can be stimulated by working with building owners and managers to increase their awareness of the potential to improve building operating performance and its impact on their overall business objectives.	providers • Provide technical advisory, business planning and marketing assistance • Selectively provide project cost-share • Assist with professional development and training • Provide Product and service development support ***Develop and offer education and training*** • Present education on important topics • Influence and leverage curriculum and trainings by associations and trade allies • Influence conference and association meeting agendas ***Influence and leverage building operations Initiatives on a national level*** • Actively participate in ASHRAE's building performance related	• Brown bags • Training modules • Joint presentations ***National Outreach*** • BetterBricks building ops concepts part of ASHRAE educational materials, guidelines and special publications • BetterBricks website contains information on and links to the best building operations tools and technologies.	healthcare ▪ 10% within targeted real estate	technologies ***Education*** • Continue to assist with professional training development • Continue relationships with associations ▪ Influence curricula ▪ Provide speakers ***Continue National Outreach Activities***		

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	technical committees • Increase regional awareness of national Initiatives • Assess, promote and provide access to the latest tools and technologies					

Market Transformation Hypothesis • If owners/property managers (and their agents) are aware of the opportunity to improve building operating performance and how they relate to their business interests, then they will demand improved building operating performance. • If service providers (i.e. mechanical contractors, control companies, equipment manufacturers and commissioning agents) are aware of the business opportunity, and how it relates to their clients business interests, then they will promote building operating performance to their clients.	• If service providers are encouraged by their clients to offer products and services that enhance building operating performance, then they will do so. • If service providers gain further experience with best practices that enhance building operating performance, then capabilities will increase and these best practices will become common practice.