

US EPA ARCHIVE DOCUMENT

Market Barriers to Green Development May 22, 2007 Workshop Summary

Prepared by: The Delta Institute and US Environmental Protection Agency, Region 5.

Project Background

In 2006, the U.S. Environmental Protection Agency, Region 5 assembled a steering committee to develop a process to identify and address the market barriers to green development practices. The steering committee included: Mike Ohm, Bell, Boyd & Lloyd; Michael Davidson, the Campaign for Sensible Growth; Donna Ducharme and Elise Zelechowski, The Delta Institute; Kevin O'Brien, Great Lakes Environmental Finance Center; Eugene Goldfarb, Great Lakes Environmental Planning; Scott Goldstein, Metropolitan Planning Council; Megan Dobratz and Shelley Schreffler, Minnesota Environmental Initiative; Evans Paull of the Northeast/Midwest Institute; Chris Choi, Bob Newport, and Jim Van der Kloot, U.S. EPA; Dr. John Braden, University of Illinois at Champaign/Urbana; and Dr. Rachel Weber, University of Illinois at Chicago.

The steering committee developed a process which involves the following steps:

- 1) Bring together a group of people who are directly involved in development in order to draw upon their experience to identify the key market barriers to green development projects;
- 2) Summarize the results of the first workshop;
- 3) Identify and engage individuals with experience in and influence to effect changes in policy, programs, and market practices that would encourage green development; and
- 4) Develop and implement specific policies, programs, and market practices, such as incentives, policy changes, tools, etc. This will be a six-month process, beginning in the Fall of 2007.

This document summarizes the first workshop, highlights the findings, and describes the next steps in this process.

Executive Summary

On May 22, 2007, the first of two sessions on the market barriers to green development was held in downtown Chicago. The goal for the first workshop was to identify and describe the most significant market impediments to green development practices. In order to achieve this goal, we brought together a small, select group of experts who are familiar with both conventional and green development projects. The participants included architects, attorneys, appraisers, developers, equity providers, owner/operators, and others who are directly involved in real estate development decisions. A list of workshop participants can be found in Appendix A.

The workshop was kicked off by Joe Dufficy, Section Chief for Brownfields in U.S. EPA, Region 5. Mr. Dufficy spoke about how market resistance to green development practices are reminiscent of the difficulties advocates of brownfield redevelopment had during the early 1990s. Jim Van der Kloot, Land Revitalization Coordinator for U.S. EPA, Region 5, gave introductions and provided an overview of the day's activities. To facilitate discussion and highlight the costs and savings of building green, Dr. Rachel Weber from the University of Illinois at Chicago provided a comparison of green and conventional pro forma methodology. Following Dr. Weber's presentation, participants were divided into four working groups, each focusing on a particular development sector: residential, commercial-retail, commercial-office, and industrial.

Each group was staffed with a facilitator and a graduate student that took notes. The facilitators were Bill Abolt (Shaw Environmental), Michael Berkshire (City of Chicago), Jon DeVries (Roosevelt University), and John Magill (Ohio Department of Development). The graduate students, all from the University of Illinois at Chicago, included Meg Haller, David Morley, Brita Pagels, and Tom Whalen. Case studies of actual completed and ongoing projects were presented by a participant in each group and highlighted the choices that were made by the developer. This helped jump start the conversation about how real estate professionals determine whether or not going green is financially, architecturally, and politically feasible.

Following the break out session, Dr. Chris DeSousa from the University of Wisconsin, Milwaukee, and Dr. John Braden from the University of Illinois, Champaign-Urbana discussed the community and societal benefits of green development practices. David Reynolds of EarthTech wrapped up the day with discussion about the type of changes that can be made to stimulate green development.

A copy of the agenda can be found in Appendix B.

In the weeks following the workshop, the findings were analyzed and summarized by Chris Choi, Jim Van der Kloot, Rachel Weber, and Elise Zelechowski. The results of this analysis are presented below.

May 22, 2007 Workshop Analysis and Summary

Although many of the barriers identified during the first workshop can be attributed to multiple failings within the market to support green development, we found that the overriding reasons for most barriers fell into one of five major categories:

1. Knowledge gaps in quantifying the costs and benefits of green development: Lack of performance information on green building features is a primary concern for many developers and their project financiers. Conflicting results or the lack of one reliable specific authority on performance often weaken the credibility of any existing studies.
2. Communication shortfall: Information about the benefits of green development is seldom conveyed to tenants or buyers. Those who are in the best position to communicate the value in green buildings (including brokers, appraisers, property search specialists, and others who are involved in bridging the transaction of property from developers to occupants) do not have the incentives or tools to provide this information to their clients.
3. Ownership structure and operating cost responsibility: The actions that developers, building owners, and tenants take directly affect operating costs. However, leases are often structured to discourage transparency about the costs and benefits of building innovations and often do not fairly calibrate costs with benefits of such investments.
4. Financing issues: Equity and secondary markets have guidelines that dictate the types of projects that are acceptable. Green development projects often do not fit neatly into standardized underwriting rules, which make it more difficult for them to obtain financial backing.
5. Risks and process issues: Building codes and development processes that are designed for conventional projects are not necessarily compatible with green developments. This adds the extra burdens of time, costs, and risks along the whole project process.

The following section provides greater detail on each category as well as the actual barriers that were cited.

1. Knowledge gaps in green development quantification

One of the major barriers that participants cited is the need for reliable performance, cost, and benefit information of green features. Without this information, it is difficult to justify the occasionally higher upfront costs for a green development project. Quantification of energy savings, building longevity, and the public health benefits of green developments over those that are conventionally built is required if green development is to move from a being a niche market to the norm for construction projects in the U.S.

There are many agencies, locally and nationally, who are putting forth efforts to quantify the performance, cost, and benefits of green building. We do not want to duplicate the ongoing research other organizations are conducting. However, by holding focused discussions with relevant stakeholders, we will be able to drill down to the types of data that is demanded in the marketplace. This puts us in a unique position to help guide the ongoing quantification efforts of partner agencies (including the City of Chicago and the US Green Building Council) so that they are accessible to those who will use the results of this research.

Barriers cited during first workshop:

Barrier	Sector
There is a lack of knowledge in the construction industry of green materials, what is available, how it performs, and how it should be used/installed (e.g., improper installation of permeable paving material is common).	Retail
There is little information on the soft costs of green construction. This makes it difficult to receive financing from equity providers.	Retail
Appraisals generally do not account for green features in a development and may not account for the "higher" values they have in the market. Right now, there is no mechanism for them to evaluate such features and they do not have the proper training to make such judgments.	Retail
Loans for new technologies may be view as being riskier to lenders, especially if there is no statistics on cost savings.	Retail
There is little information on the public health benefits (lower absentee rate, increased productivity, etc.) that green developments offer over conventional developments.	Retail
There is no uniform (industry accepted) tool for pricing out different development scenarios with different green technology strategies – information is not always readily available. Developers have difficulty identifying the most cost effective strategies to implement.	Office
Not all contractors are knowledgeable about green technology or have the capacity to implement green strategies. Developers pay a premium for specialized contractors or local experts.	Office
Construction costs for green technologies vary by location and over time. Contractors don't have a standard cost list. Consequently, they incur more risk or are forced to charge higher prices to cover their risk.	Office
LEED doesn't look at the lifecycle costs and benefits of green developments.	Office
Green technology may be less stable or proven. If something goes wrong, builders are on the hook, not the manufacturers. Builders cannot afford to have recalls on products. 70% of new construction is production building – can't afford to have recalls on green technologies.	Residential
Residents are often unaware of how to "care for" green features and so may not risk buying it.	Residential
Need comparison of costs to build green and better information on what is available (incentives or techniques) to save on building green – a databank	Industrial
Industrial tenants will not pay additional rent if they do not have an understanding of the long-term benefits and tangible evidence that green features will lower their operating costs.	Industrial

2. Communication shortfall

Participants from the first workshop offered a range of thoughts that point to misconceptions and uncertainty about green development and failures in the communication chain regarding the benefits associated with such projects. Developers cite a lack of demand from consumers for such features. Consumers, especially in the residential sector, typically place higher value on other amenities such as space or finishes, may do so because they lack an awareness of what alternatives exist or the range of benefits that could be realized from green properties. Those who oversee the exchange of property from developer to occupants – brokers, appraisers, property search specialists – rarely possess the data, tools, or knowledge necessary to convey this information.

Changing market demand for green development projects will be a significant endeavor, but there are steps that can be undertaken to begin closing the communication gaps that are contributing to misconceptions.

Barriers cited during first workshop:

Barrier	Sector
There is a lack of demand for green features in the marketplace.	Retail
Brokers control the information flow in the commercial real estate market, and most brokers do not communicate the benefits of green buildings.	Office
Consumers may equate green construction with low-quality construction (flimsy materials, weak appliances).	Office
Developers are not seeing great demand for green buildings	Office
Grants to help offset costs are not well publicized. For example, the Illinois Clean Energy Foundation and the Kresge Foundation offer grants to help with soft costs associated with green design.	Office
Consumers are not demanding green developments. Amenities such as extra bedrooms, garage space, etc. are what draw buyers, not green features.	Residential
Housing size (square footage) is the general indicator for appraised value – green amenities really do not enter the equation.	Residential
Belief that green construction is more expensive (2-3% on the front end).	Residential
Trade associations and publications do not promote green techniques – this type of marketing is common in Europe.	Industrial
Many construction firms are not aware of how to install/build green features	Industrial
There is a concern that the process to get LEED certification favors point accumulation over focusing on features that provides the most environmental benefits at the lowest cost. This creates the perception that certification is pursued for image rather than environmental reasons.	Industrial
Lack of transparency in transactions makes research on costs and benefits difficult.	Industrial

3. Ownership structure and operating cost responsibility

Ownership and standard lease structures determine who captures the benefits from green design, primarily in terms of associated cost savings. Unfortunately, the beneficiaries of cost savings are often not the decision makers in charge of design, improvement, and development decisions. Under typical short-term lease structures, there is little motivation for the developer to build or install energy efficient, transit friendly, or storm water management procedures, many of which will only have benefits over the longer-terms.

Barriers cited during first workshop:

Barrier	Sector
Short-term leases with tenants are a disincentive for developers to invest in green elements and for tenants to demand it.	Retail
Most developers intend to sell the property after construction – they are not concerned about the savings in long term operating and maintenance costs.	Retail
Owner/operator doesn't necessarily care about long-term investments in green design if tenants generally pay for building improvement (net leases).	Retail
Tenants may not care to invest in green design elements if they will not benefit from the improvements directly (or if their lease structure does not separate out operating costs).	Retail
Smaller and suburban office buildings are generally built with short project lives. They often don't have the resources to invest in green features or the luxury of waiting for tenants who demand these features.	Office
Most commercial leases are net leases (lessee pays all operating and maintenance cost), so developers generally do not have a motivation to add green features if it will increase the cost of construction, especially for speculative projects.	Office
Mass-market retailers/stores are becoming more a part of the urban landscape. Many of their store designs come from corporate headquarters, which may not promote green design.	Office
Suburban leases are typically 3-5 years in length – they generally don't care about longer-term investments.	Office
Homebuilders that specialize in speculative developments will not incorporate any green features unless consumers or localities demand it.	Residential
Tenants will not pay extra rent for green buildings if they do not see an immediate benefit.	Industrial

4. Funding issues

When evaluating projects, equity and secondary markets often use criteria that are geared more toward conventional developments rather than green developments. For example time horizons are usually not long enough to capture the benefits that accrue over time from upfront investments. Also, it may be difficult to "package" or sell mortgages for non-conventional projects for the secondary markets. Market conditions often make green development projects more challenging from a risk and return point of view.

Industry and government standards used in project evaluation, especially as they relate to factors such as cost escalation assumptions, can determine whether projects are financially feasible. Many of these accepted assumptions need to be revisited to ensure that they are not unintentionally impeding green development.

Barriers cited during first workshop:

Barrier	Sector
Upfront capital costs are often not offset by longer term lower operating and maintenance costs for project financing.	Retail
Lack of proven benefits of green developments makes it harder to meet higher funding needs.	Retail
Lenders are reluctant to look at longer payback periods if green features, which may cost more, become obsolete more quickly.	Retail
The longer time horizon required for LEED certification is viewed as an increase in risk by equity providers.	Office
It is challenging to meet the necessary IRR using LEED.	Industrial
Green technologies are seen as higher risks, and therefore higher interest rates are often charged.	Residential
Higher upfront cost of green development make it less affordable for homeowners (higher mortgage needs).	Residential
Lack of post construction data over time makes it difficult for equity financiers to fold in this information when making capital decisions.	Industrial
Institutions making initial loans for development projects often seek to package loans for sale in secondary markets. It may be more challenging to pool and sell loans for non-conventional projects.	Retail
Tax credits are difficult to obtain and are not matched to the time horizon that green features generally require (i.e., it is hard to rely on rebates for solar energy when it may go away in a couple of years).	Residential
Current mortgage underwriting favors inefficient homes.	Residential
The Illinois Housing Authority only allows a 3% modifier for energy costs over 30 years. This can greatly affect the payback period required for green developments and thus, affect the viability of projects.	Residential / Office

5. Risks and process issues

The lack of expertise and resources for green building in many communities often creates an environment that lengthens development timeframes. In the public sector, approvals and permitting processes, which are not equipped to handle green construction, may cause delays. Building codes that were written for conventional developments often appear redundant for more environmentally friendly systems. However, when actors have fears about legal liability, they often default to rules that are in place rather than adjusting them to meet the different requirements of green systems. In the private sector, the difficulty in identifying appropriate architects, construction firms, attorneys, construction materials, and other sources can also lengthen the project schedule. Delays often lead to greater risks and higher costs,

which many developers would rather avoid given tight budgets and timeframes. However, experienced developers also mentioned that upfront collaboration between the architect, developer, contractor, and the owner/tenant minimized complications.

Barriers cited during first workshop:

Barrier	Sector
Government bureaucracy increases costs and delays projects. An example was cited where science and business models do not line up – drainage pipe size cannot be decreased even if natural stormwater systems are incorporated. Planning department and sewage department disagrees on standards.	Retail
Alderman may be more concerned about job creation and economic development than green design, which can conflict with design and development process (and ultimately makes development time longer).	Retail
Lack of knowledge on green construction materials and installation processes creates a liability for architects if a LEED designed building does not become LEED certified due to wrong construction choices.	Retail
Outside of sophisticated urban markets like Chicago, design costs are much higher. Developers pay a premium for these “specialized” services.	Office
Seeking LEED certification increases soft costs during predevelopment. A lot of consultants are needed to ensure compliance.	Office
Infrastructure and land are the primary costs for large residential builders – not materials. Because of this, they tend to build in outlying areas, thereby inducing sprawl.	Residential
Existing federal / state funding do not mandate developments to incorporate green features.	Residential
Local governments not knowledgeable enough to be making green decisions	Residential
Developers are motivated to make easy transactions – they can do so by avoiding green features.	Residential
Architects may not want to “waste” time educating clients about green	Residential
Timing and collaboration of green development projects need to be improved. Several issues came up: 1)Clients who wants to incorporate green features in the middle of the process, 2)design, permitting, and construction usually took longer to complete, 3)Collaboration involved more people and therefore made it a longer process.	Industrial
Government requires compliance with existing ordinances and regulations even though green features might eliminate/minimize need to comply with conventional standards; this is especially true with stormwater management issues.	Industrial
Inexperienced firms often wanted to charge a premium – incorporating “learning curve” costs.	Industrial
LEED consultant adds to the soft costs of a project.	Industrial
Misdirected/misunderstood laws and ordinances – specifically, Chicago requires bike racks, yet still need to comply with parking requirements.	Industrial

Strategies for Encouraging More Green Development

As part of the first workshop agenda, the project team conducted an exercise to survey participants for strategies they thought would promote more green development. These strategies have been categorized into broader solution-based categories.

- A. Offering incentives
 - B. Revising government regulations
 - C. Creating new products, practices, or procedures to address green development
 - D. Addressing research information needs
 - E. Marketing and communicating green value
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- A. Offering incentives**
 - Use new market tax credits / green credits to encourage green development
 - B. Revising government regulations**
 - Create legislation to require specific minimum levels of energy efficiency in office buildings
 - Use a carbon market to price the true cost of sprawl
 - Tie new development plans to public transportation plans
 - Require new development plans to include a sustainability analysis for the permitting process
 - Create dedicated lanes for mass transit
 - Revise building codes so that they account for green design / technology
 - C. Creating new products, practices, or procedures to address green development**
 - Change the evaluation period for projects so that it can capture the full benefits of green developments
 - Require estimated operating cost data on real estate listings
 - Change how a mortgage decision is made and how mortgage limits are set by accommodating for the lower operating costs of green developments (include utilities in the calculation of PITI – property, interest, tax, insurance)
 - Account for estimated energy usage during home inspection process
 - D. Addressing research information needs**
 - Incorporate public health benefits into quantification measures
 - Improve the transparency of all operating and maintenance transactions so that stakeholders can be more educated about their true energy costs
 - Find a way to make photovoltaic cells more efficient and cheaper, and perhaps subsidize their installation
 - Account for indirect and offsite benefits of green developments
 - Document performance information data for use by appraisers, developers, and lenders

E. Marketing and communicating green value

- Change public perception and culture to understand that built green is built better
- Educate children / young people about sustainable development and incorporate it into the curriculum
- Motivate consumers to demand green and corporations will follow to address this need
- Encourage brokers to act as agents of change (for demand of green development)
- Create a uniform definition of “green” so that everyone knows what it means
- Connect better work environments and declining health care costs and market these benefits
- Educate independent home buyers on their responsibility to their environment and the benefits of green construction

Next Steps

The feedback received from the first workshop confirmed the beliefs of the project team and workshop organizers: the existing market favors conventional development practices and requires additional effort and upfront costs from developers and owners who wish to incorporate green features. Grouping the barriers identified during the first workshop into major categories, as spelled out above, allowed us to gain a better understanding of what areas need to be addressed in order to make green developments an attractive option. Based on this information, the project team will organize a second workshop to address these issues by discussing the barriers using the following set of questions as the framework:

- *Who are the stakeholders?*
- *Who makes the decisions?*
- *Is there a regulatory structure?*
- *Who controls the information flow?*
- *Who stands to profit from green investments?*
- *Who has no motivation to change?*
- *Who has negative motivation to change?*

Participants will be divided into six teams, each team aligned with the barrier categories (financing will be split into private and public financing). Working group members will be those who are effective at or empowered to generate changes in the market. During the workshop, each team will work towards formulating a series of concrete recommendations and to develop an implementation approach for these recommendations. Following this workshop, teams will meet or participate in a conference call 4-6 times over the working period to work on implementation issues. Calls and meetings will be staffed by facilitators and graduate students, who will scribe and provide research services between meetings. At the conclusion of the working period, we will reconvene and have all the teams report on their results. The results and findings will provide research information for a white paper that will be distributed nationally, with the intent to replicate or expand the strategies geographically.

Annotated Bibliography

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Thanks to Steering Committee Member Bell, Boyd & Lloyd, which hosted the May 22nd meeting and provided meals.

Appendix A

Participants

Bill Abolt, Shaw Environmental and Infrastructure (Facilitator)
Lee Anderson, Heitman Architects
Michael Berkshire, City of Chicago (Facilitator)
Perry Bigelow, Bigelow Homes
Laureen Blissard, USGBC Chicago Chapter
John Braden, University of Illinois, Urbana-Champaign (Presenter)
Rico Cedro, Krueck and Sexton
Chris Choi, US Environmental Protection Agency
Chris DeSousa, University of Wisconsin, Madison (Presenter)
Jon DeVries, Roosevelt University (Facilitator)
Kerry Dickson, Related Midwest
Joe Dufficy, US Environmental Protection Agency
Joel Freehling, Shorebank
Charles Goetze, Bank of America
Eugene Goldfarb, Great Lakes Environmental Planning
Dan Harmon, Turner Construction
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Robert Hogfoss, Hunton & Williams
Bruce Keyes, Foley & Lardner
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Wyllys Mann, Eastlake Management & Development
Steve Mansfield, Westrum Development
Torrence Moore, LaSalle Bank
Mike Murphy, Centerpoint Properties
Matt Neumann, Prologis
Bob Newport, US Environmental Protection Agency
Mike Ohm, Bell, Boyd & Lloyd
Evans Paull, Northeast Midwest Institute
Kevin Pierce, Shaw Environmental and Infrastructure
Matt Rebro, Pepper Construction
David Reynolds, Earth Tech (Presenter)
Chris Slattery, Delta Institute
Andy Stapleton, Mortenson Construction
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Gail Vermejan, NAI Hiffman
John Walters, Jones Lang LaSalle
Rachel Weber, University of Illinois at Chicago (Presenter)

Lee Winter, Gershman Brown
Melissa Woolsey, NAI Hiffman
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Working Group Graduate Students

Brita Pagels, University of Illinois at Chicago
Meg Haller, University of Illinois at Chicago
David Morley, University of Illinois at Chicago
Tom Whalen, University of Illinois at Chicago

Appendix B

Identifying the Market Barriers to Green Development

Tuesday, May 22, 2007

Location: Bell, Boyd & Lloyd LLP, 70 W. Madison, 2nd Floor Conference Center

Goal: *To identify and describe the most significant existing market impediments to green development practices.*

Concept: A small, focused group of experts who are familiar with both conventional and green development project financing will work together towards identifying the key market gaps in promotion of green development.

- 8:15 am **Welcome**
Joe Dufficy, USEPA, Region 5 Chief of Brownfields Section
- 8:30 am **Overview of Activities and Introductions**
Jim Van der Kloot, USEPA, Region 5 Land Revitalization Coordinator
- 8:40 am **Understanding the Costs and Costs Savings of Building Green**
Rachel Weber, University of Illinois at Chicago
Comparison of green and conventional pro forma methodology
- 9:20 am **Breakout Sessions – Project Barriers Analysis**
Conference participants will participate in one of four concurrent working groups that will focus on a specific type of development scenario:
- Industrial
 - Commercial - Retail
 - Commercial - Office
 - Residential
- 11:20 am **Report of findings from breakout groups**
- 12:00 pm **Lunch / Presentation**
Chris DeSousa, University of Wisconsin, Milwaukee
John Braden, University of Illinois, Urbana-Champaign
What are the community and societal benefits of green development practices?
- 1:00 pm **Discussion**
Led by Dave Reynolds, Earth Tech
How can we change how the market values green developments such that longer term operational benefits and community/societal benefits are reflected in the overall evaluation of a project's financial or market feasibility?
- 1:45pm **Closing Remarks and Adjourn**