Removing Market Barriers to Green Development

Chris Choi
U.S. EPA, Region 5, Chicago

June 5, 2008
Impacts of the built environment

Buildings are responsible for:

- Nearly 40% of US energy use; much higher if we account for transportation;
- About 40% of US carbon dioxide emissions, the primary greenhouse gas (GHG), along with other GHG and air pollutant emissions;
- Indoor environments where Americans spend nearly 90% of their time, and which can present threats to human health and productivity;
- Construction and demolition debris constituting nearly half of all non-industrial solid waste in the U.S.;
- More than 12% of the total water consumed in the US per day;
- A major portion of urban runoff that is among the leading sources of water quality impairment. [1]

Why build green?

- Green building is an important tool that can help address all of these problems:
  - Climate change
  - Energy usage and management
  - Depletion of fresh water and other natural resources
Why build green?

...and **GAIN** environmental, social, and economic benefits!

- Reduce energy and electricity usage
- Improve transportation options (walking, biking, public transport)
- Reduce sprawl
- Better usage of limited natural resources
- Better indoor air quality
- Fewer sick days and lower absenteeism
- Higher rental rates and resale value
- Lower vacancy rates
- Green collar economy & jobs
How do we define “green building”?

Green building uses environmentally preferable practices:

- Materials
- Indoor Air
- Energy
- Water management
- Reuse and waste minimization
- Site and Location
- Construction
- Renovation & Retrofit
- Maintenance & Operation
Green development also includes:

- The impact buildings have and the resources they use are not limited to the site only. Site techniques should be combined with community strategies:
  - Smart Growth
  - Low Impact Development
  - Complete streets
  - New Urbanism
  - Green Infrastructure
  - Infill Development
  - Transit oriented development (TOD)
Green approaches in the land revitalization process

When planning for cleanup and reuse of a property, involve the public to ensure specific needs and all the impacts to the community are clearly understood and addressed. Opportunities to conserve resources, reduce impacts to the community, and reduce impacts on human health and the environment include, but are not limited to:

- Reuse/recycle deconstruction and demolition materials
- Reuse materials on site whenever possible
- Consider future site use and reuse existing infrastructure
- Use clean diesel and low sulfur fuels in equipment and noise controls for power generation
- Retain native vegetation and soils, wherever possible

- Power machinery and equipment using clean fuels
- Use renewable energy sources, such as solar, wind, and methane to power remediation activities
- Improve energy efficiency of chosen remediation strategies, as appropriate
- Consider remediation approaches that reduce resource use and impact on air, water, adjacent lands, and public health
- Incorporate remediation activities that sequester carbon, where applicable, such as planting native grasses and using soil amendments

- Use Energy Star, LEED, and GreenScapes principles in both new and existing buildings
- Reduce environmental impact by reusing existing structures and recycling industrial materials
- Use natural systems to manage stormwater, like green roofs, landscaped swales, and wetlands
- Incorporate Smart Growth principles that promote more balanced land uses, walkable neighborhoods, and open space
- Create ecological enhancements to promote biodiversity and provide wildlife habitat

- Reduce use of toxic materials in manufacturing, maintenance, and use of buildings and land
- Minimize waste generation, manage waste properly, and recycle materials used/generated
- Monitor engineering and institutional controls on site
- Reduce water use by incorporating water efficient systems and use native vegetation to limit irrigation
- Promote energy efficiency and use of renewable energy
- Take appropriate steps to prevent (re)contamination

When planning for cleanup and reuse of a property, involve the public to ensure specific needs and all the impacts to the community are clearly understood and addressed. Opportunities to conserve resources, reduce impacts to the community, and reduce impacts on human health and the environment include, but are not limited to:

- Reuse/recycle deconstruction and demolition materials
- Reuse materials on site whenever possible
- Consider future site use and reuse existing infrastructure
- Use clean diesel and low sulfur fuels in equipment and noise controls for power generation
- Retain native vegetation and soils, wherever possible

- Power machinery and equipment using clean fuels
- Use renewable energy sources, such as solar, wind, and methane to power remediation activities
- Improve energy efficiency of chosen remediation strategies, as appropriate
- Consider remediation approaches that reduce resource use and impact on air, water, adjacent lands, and public health
- Incorporate remediation activities that sequester carbon, where applicable, such as planting native grasses and using soil amendments

- Use Energy Star, LEED, and GreenScapes principles in both new and existing buildings
- Reduce environmental impact by reusing existing structures and recycling industrial materials
- Use natural systems to manage stormwater, like green roofs, landscaped swales, and wetlands
- Incorporate Smart Growth principles that promote more balanced land uses, walkable neighborhoods, and open space
- Create ecological enhancements to promote biodiversity and provide wildlife habitat

- Reduce use of toxic materials in manufacturing, maintenance, and use of buildings and land
- Minimize waste generation, manage waste properly, and recycle materials used/generated
- Monitor engineering and institutional controls on site
- Reduce water use by incorporating water efficient systems and use native vegetation to limit irrigation
- Promote energy efficiency and use of renewable energy
- Take appropriate steps to prevent (re)contamination
Current state of building

- U.S. green construction in 2006:
  - ~ 6% of commercial
  - < 5% of residential
- Adoption has mostly been on the local level
- Some progress, but still the exception vs. norm
So why isn’t everyone on board?

- I can’t find information and resources to build green
- Commissioning is too expensive and the paperwork too complex
- Where can I find a green contractors?
- Banks won’t finance these buildings!
- It costs too much to build green!
- How do I know the technologies really work?
- Green building is for hippies, greenies, fringe folks...not me.
A market approach...

- In late 2006/early 2007 U.S. EPA region 5 formed a steering committee to outline project and methodology.
- Goal was to review and work with the market to achieve environmental benefits through green building.

How do we do this?

- Help market to recognize the value of green development practices.
- Implement changes which will:
  - Remove barriers to green practices.
  - Create tools, products, and incentives which will help green developments be more profitable.
Our methodology

- Identifying
- Strategizing
- Researching
- Communicating

- Identify the most significant market impediments to green development practices
- Develop strategies to eliminate / minimize targeted market barriers
- Research and implement strategies to remove market barriers
- Communicate findings and successes through white papers, reports, additional research, and outreach
Methodology: identifying barriers

- Held first workshop in May 2007
  - 50 participants all involved in the development field to identify market barriers
- Drafted document listing all market barriers identified by participants
- Categorized barriers to move project forward
Methodology: strategizing solutions

Categorized barrier types:

- Quantification knowledge gaps
- Communication shortfall
- Ownership structure & operating costs responsibility
- Risk, process & code issues
- Public finance
- Private finance

2nd workshop in October 2007 (65 participants)

Workshop kicked off 6-month research and implementation period
Methodology: research and implement

- Series of meetings with participants, outside experts, and stakeholders
- Partnership with the Delta Institute (through the Northeast-Midwest Institute)
- Graduate interns conducted research and drafted write-up
- Project forum with library and to share ideas
- Kicking off projects
Methodology: communicate

- Wrapping up research phase
- Focus shifting to individual projects
- White paper will be published in the Northeast-Midwest Journal
- Results will be used for outreach and initiating new projects
What did we find?

- Not only a matter of supply and demand for green buildings
- Current development process inadvertently makes green development more challenging at every step
- Big gap in communication and education
- Demand for quantitative information
- Related processes, such as financing, budgeting, and reward system may not necessarily align with green building benefits
Some barriers identified in first workshop

- **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 authority** on performance often weaken the credibility of existing studies

- **Information seldom conveyed to tenants or buyers** on the benefits of green development

- **No incentives or tools provided** to those who are in the best position to communicate the value in green buildings (brokers, appraisers, property search specialists) to their clients
Some barriers identified in first workshop

- **Structured ownership transactions and leasing agreements** may remove the incentives to invest in green infrastructure or conserve energy usage.

- **Strict guidelines** from equity and secondary markets often do not accommodate green developments.

- **Industry and government standards** used in project evaluation may need to be revisited as they can unintentionally impede green development.

- **Development process does not accommodate green features** (including design, contractor, financing, and approvals) in many markets.

- **Green development pioneers may have additional risks**
Despite these barriers...

- In some markets, new construction and retrofits of green buildings are being built; others starting to come on board
- Support from local community encourages green building practices & promotes overall sustainable development

**Our job is to facilitate ways to speed this up...**to bridge the gaps and change the processes to support this emerging business.
Ways to support green building...

- Integrated design: involving all parties up front
- Quantification needs
- Process changes and help
- Education to consumers, brokers, municipalities, investors, company budget personnel
Ways to support green building...

- Proper valuation of real estate
- Incentives and ordinances
- Financial products and tools
Projects underway

- Taking a small step approach...market cannot change overnight, but playing field for green development needs to at least be level first

- Appraisal Institute
  - Key to financing, valuation
  - Courses, certification system

- Quantification study with USGBC Chicago
  - Study to provide in depth performance numbers for public and private buildings in metro Chicago
  - Possible expansion to provide cross-geographic information for Minnesota and Wisconsin
Projects underway

- BOMA
  - Include green building information into current operating information survey

- Milwaukee LISC
  - Develop a green incentive that may be national model
Projects needed to support green

- Internal accounting / budgeting
- Communication strategy
- Financial tools, products to bridge integrated design
- Training for operation & maintenance
- Adoption of green codes
- Quantification studies
- Training for contractors
- Training for municipalities
Questions? Ideas? Comments?