STATEMENT OF MICHELLE MOORE
OF THE U.S. GREEN BUILDING COUNCIL

BEFORE
THE HOUSE SELECT COMMITTEE ON ENERGY INDEPENDENCE AND GLOBAL WARMING

ON
BUILDING GREEN, SAVING GREEN: CONSTRUCTING SUSTAINABLE AND ENERGY-EFFICIENT BUILDINGS

MAY 12, 2008

I would like to begin by expressing our appreciation for the opportunity to speak to you about green buildings and about the role that the U.S. Green Building Council (USBGC) and its LEED Green Building Rating System have played in catalyzing market transformation in the building sector. On behalf of our more than 15,000 organizational members and more than 70 local Chapters, we commend Chairman Markey and Ranking Member Sensenbrenner for convening this important hearing.

My name is Michelle Moore, and it is my honor to represent USGBC as its Senior Vice President of Policy and Public Affairs.

The Impact of the Built Environment

Buildings are an essential part of the solution to the energy, resource, and climate issues our country is facing.

Buildings in America typically have a lifespan of 50 to 100 years, throughout which they continually consume energy, water, and natural resources. Buildings are responsible for 39% of U.S. CO_2 emissions per year.[1] If the U.S. built half of its new commercial buildings to use 50% less energy, it would save more than 6 million metric tons of CO_2 annually for the entire life of the buildings—the equivalent of taking more than 1 million cars off the road every year.

In addition, buildings annually account for 39% of U.S. primary energy use;[2] use 12.2% of all potable water or 15 trillion gallons per year;[3] and consume 40% of raw materials globally (3 billion tons annually).[4] The EPA estimates that 136 million tons of building-related construction and demolition debris are generated in the U.S. in a single year.[5] (By way of comparison, the U.S. creates 209.7 million tons of municipal solid waste per year.[6])

Moreover, Americans spend 90% of their time indoors.[7] Buildings have a profound, if little understood, impact on our health and well-being as individuals.

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[1] *EIA Annual Energy Review 2005. U.S. Energy Information Administration, U.S. Department of Energy.*
[2] *2003 U.S. DOE Buildings Energy Data Book.*
[3] *U.S. Geological Service, 1995 data.*
[4] *Lenssen and Roodman, 1995, "Worldwatch Paper 124: A Building Revolution: How Ecology and Health Concerns are Transforming Construction," Worldwatch Institute.*
[5] *U.S. EPA Characterization of Construction and Demolition Debris in the United States, 1997 Update.*
[6] *U.S. EPA Characterization of Municipal Solid Waste in the United States, 1997 Update. Report No. EPA530-R-98-007.*
[7] U.S. Environmental Protection Agency.

By addressing the whole building, from construction materials to cleaning supplies, green buildings generate opportunities to reduce emissions and environmental impact throughout the supply chain and the complete building lifecycle. For instance, 65% of the credits in the LEED Rating System reduce the CO_2 footprint of the building. Green buildings create powerful opportunities to mitigate climate change, enabling:

- reduced energy consumption through the use of energy-efficient heating and cooling systems, renewable power, and building commissioning

- reduced water consumption through the use of low-flow fixtures and appliances, and the on-site treatment of storm water

- reduced waste and improved environmental performance through the use of salvaged, recycled, and local materials, and through the development of plans for managing construction waste

- reduced emissions and environmental impact by promoting the location of facilities near public transportation, the use of hybrid or electric cars, and the use of alternative means of transportation, such as bicycles and walking

The Green Building Movement and the Marketplace

The building design and construction industry – which represents 14.2% of U.S. GDP[8] and generates 9 million American jobs[9] – has been voluntarily leading a green revolution that has begun to visibly transform our cities and towns.

McGraw-Hill projects that, by 2010, the market for green building products and services in the residential and commercial construction sectors will top $58 billion,[10] representing 770% growth over just five years.

Speaking as a professional who has worked in the building sector for more than a decade, the building industry itself is a somewhat unlikely candidate to be among the leading pioneers – if not *the* leader – of a green economy. The building industry is probably the second oldest industry in the world, and it's one of its largest and most conservative. Moreover, the complexities of its supply chain and project timelines, and the lifecycle of a building once

[8] *2006 DOE Buildings Energy Data Book.*
[9] Real Estate Roundtable.
[10] *McGraw-Hill Construction Analytics, SmartMarket Trends Report 2008.*

completed, create extraordinary challenges to driving sustained innovation towards a holistically-defined goal: sustainability.

While holding up the health and well-being of our natural environment is a goal unto itself that's been beautifully expressed by the likes of Walt Whitman in his words, and by President Theodore Roosevelt in his conservationist policies, since the early days of our Republic – it was just a little more than 10 years ago that a small group of leaders raised the challenge of sustainability specifically in the context of the built environment.

To name a few:

- Ray Anderson, the founder of Interface Inc. (a carpet company!), put forth the mission of becoming the world's first sustainable corporation. As someone who knows far too much about carpet, having worked for Interface myself, it's no easy task to undertake the work of closing the loop of a project that comes out of a carrel of crude oil. But that's exactly what Interface has undertaken to do.
- Paul Hawken, in Natural Capitalism: Creating the Next Industrial Revolution, showed us that capitalism can save the world by authoring the definitive work on how to profitably marry social and environmental goals with economic success; and drew a roadmap to sustained growth and innovation for those who've chosen to follow his advice.
- William McDonough pioneered sustainable design in architecture, and challenged us to think in terms of "cradle to cradle" instead of "cradle to grave" in the field of industrial design so that one processes waste could become "food" for another.
- Bob Berkebile together with his colleagues on the AIA Committee for the Environment, indelibly placed sustainability on our Nation's design agenda.

At the time, apart from conferences and other events that convened these thinkers and the several collaborations that they undertook together, there were precious few opportunities for the ideas and practices they were developing to take hold in the marketplace at large.

Taken from the perspective of a "technology adoption curve," green building innovation was happening on the bleeding edge, but the experience of the mainstream with it was limited to the occasional magazine article.

Enter David Gottfried, a real estate developer from Washington DC, who had the foresight and vision to convene the green building movement under one big tent: the U.S. Green Building Council.

The Origins of USGBC

The U.S. Green Building Council was founded 15 years ago this year in order to lead the market transformation of the building industry toward sustainability.

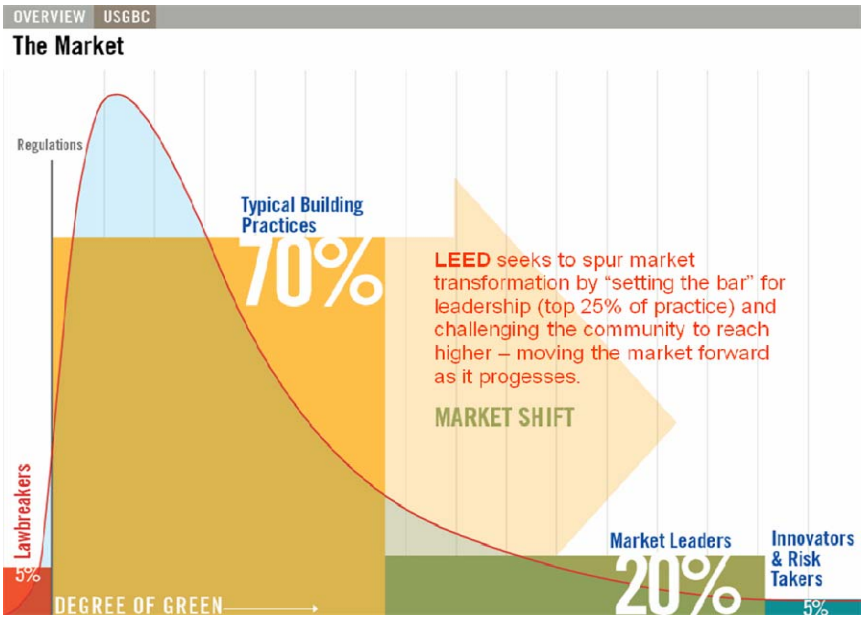
A membership organization dedicated to consensus from its very beginnings, David Gottfried and co-founders Rick Fedrizzi – then of UTC Carrier Corporation – and Mike Italiano – a DC environmental attorney – focused USGBC's first efforts on recruiting the leading innovators from every sector of the building community to join USGBC. Convening representatives from product manufacturers, architectural firms, engineers, general contractors, building owners and developers, universities, governmental agencies, school districts, financial institutions, insurance companies, environmental nonprofits and others was an essential first step towards creating a leadership organization that could reasonably undertake to fulfill the mission of market transformation towards sustainability.

The second question USGBC faced was "what is a green building?" And thus was created the LEED Green Building Rating System.

The Development of LEED

LEED was developed by USGBC in order to provide a measurable consensus definition of **l**eadership in **e**nergy and **e**nvironmental **d**esign to the building community. It is the organization's chief tool towards its mission of market transformation: LEED seeks to set a high bar, challenges market leaders to meet it, builds momentum for best practices, and moves the whole of the market forward as those best practices are mainstreamed by market forces.

Back to the technology adoption curve analogy, technologies and best practices are developed and scaled up by market leaders seeking LEED certification. As the technologies reach scale, and as best practices are propagated through the building industry's rich commitment to continuing education, prices drop and ideas enter the mainstream.



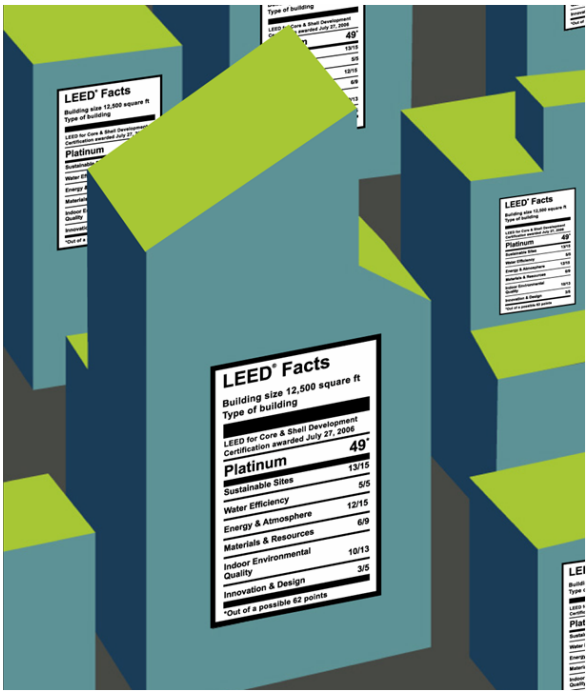
Openness, Transparency, Consensus

LEED is developed through consensus by balanced and diverse volunteer committees composed of elected leaders from among USGBC's membership. USGBC is an ANSI-accredited standards developer, and LEED is an exemplar of participatory democracy at work.

The key elements of the process, which USGBC has refined over more than a decade of leadership experience, include a balanced and transparent committee structure; Technical Advisory Groups to ensure scientific consistency and rigor; opportunities for stakeholder comment and review; member ballot of new rating systems and substantive improvements to existing rating systems; and a fair and open appeals process. Details about the LEED development process are publicly available on the USGBC Web site, www.usgbc.org, in the "LEED Foundations Documents," which describe with great specificity the consensus process.

Third-Party Certification

"If you can't measure it, you can't manage it."



USGBC is dedicated to third-party certification and as such requires technically rigorous documentation that includes information such as project drawings and renderings, product manufacturer specifications, energy calculations, and actual utility bills.

When a project commits to use LEED, the project team "registers" online with USGBC, a step which gives them access to a comprehensive online system that guides them through the certification process. The result is like a nutrition label for use by building owners and occupants.

All certification submittals are audited by third-party reviewers. The certification process – from the submittal of documentation through the final certification – takes 30-90 days.

Continuous Improvement

USGBC's mission is market transformation to sustainability, and LEED is a tool for market transformation, with that LEED must be continuously improved – seeking to make obsolete its greatest triumphs.

Since its initial public launch in 2001, LEED has completed a series of improvement cycles that have included technical innovation such as:

- Progressively strengthened energy efficiency requirements.
- More stringent water efficiency requirements.
- An online system for documentation and submittals towards certification.
- New rating systems to address existing building operation and maintenance, K-12 schools, healthcare facilities, retail facilities, commercial interior projects, core and shell developments, and homes.

- A rating system in pilot to address neighborhood-scale developments, which is being created in partnership with NRDC and the Congress for the New Urbanism.

The next major update of LEED is currently in development and will be released for its first "public comment" period on May 19, 2008. Proposed enhancements to LEED include:

- Improved energy and CO2 emissions reduction performance: increased "weightings" on energy, transit-oriented location, and water efficiency.
- Environmental performance of building materials: LCA (life cycle assessment) methodology for materials and resources credits.
- Regionally-specific credits: Buildings need to respond to different bioregional environments, so LEED is introducing specific "credits" to differentiate building performance requirements in diverse locations.

R&D

Underpinning LEED's continuous improvement process are hundreds of volunteer leaders representing thought leadership from across the building industry. These volunteer leaders give of their time an expertise on consensus committees that drive the technical development of the rating system forward.

USGBC also undertakes an intensive R&D effort to drive LEED's technical development forward. Examples of R&D projects undertaken in the past year include:

- A USGBC/CTG Energetics study on sources of building CO2 emissions, metrics and measurement, and mitigation strategies utilizing LEED.
- A Yale School of Forestry study on forest certification systems.
- A New Buildings Institute study on energy efficiency performance in LEED certified buildings.

How LEED Works

LEED is a voluntary third party certification system for green building, and was developed to promote leadership in the building industry by providing an objective, verifiable definition of "green." LEED is a flexible tool that can be applied to any building type and any building lifecycle phase, including new commercial construction; existing building operations and maintenance; interior renovations; speculative development; commercial interiors; homes; neighborhoods; schools; health care facilities; labs; and retail establishments.

LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas, with an additional category to recognize innovation: sustainable site development, water savings, energy efficiency, materials and resources and indoor environmental quality. Each category includes certain minimum requirements ("prerequisites") that all projects must meet, followed by additional credits that are earned by incorporating green design and construction techniques. Four progressive levels of LEED certification – Certified, Silver, Gold and Platinum – are awarded based on the number of credits achieved. USGBC provides independent, third-party verification to ensure a building meets these high performance standards.

Originally developed for new commercial construction projects, LEED has been expanded in recent years to respond to market demand for additional tools to address different building types and lifecycle phases. USGBC released rating systems for the operations and maintenance and commercial interiors markets in 2006, for the schools sector in 2007, and for the residential market earlier this year. These programs are already gaining traction in the market. About 500 builders representing 10,000 homes participated in the pilot test of LEED for Homes, and more than 650 homes have been certified to date.

Moreover, USGBC is now pilot-testing and nearing completion of rating systems for neighborhood developments, healthcare facilities, retail spaces, labs, and campuses.

In 2006, the U.S. General Services Administration (GSA) submitted a report to Congress evaluating the applicability, stability, objectivity, and availability of five different sustainable building rating systems.[11] Based on this study, GSA concluded that LEED is the "most appropriate and credible" of the available rating systems for evaluating GSA projects.[12] GSA currently requires its new buildings and substantial renovations to achieve LEED certification.[13]

Why LEED Works

From USGBC's perspective, LEED is working for the following reasons:

[11] Pacific Northwest National Laboratory (operated for the U.S. Department of Energy by Battelle), *Sustainable Building Rating Systems Summary (*July 2006), completed for General Services Administration under Contract DE-AC05-76RL061830, *available at https://www.usgbc.org/ShowFile.aspx?DocumentID=1915.*

[12] Letter dated Sept. 15, 2006 from GSA Administrator Lurita Doan to Sen. Christopher Bond, Chairman, Subcommittee on Transportation, Treasury, the Judiciary, HUD, and Related Agencies, Committee on Appropriations (accompanying report), *available at https://www.usgbc.org/ShowFile.aspx?DocumentID=1916.* .

[13] U.S. General Services Administration, Sustainable Design Program, *available at* http://www.gsa.gov/Portal/gsa/ep/channelView.do?pageTypeId=8195&channelPage=%252Fep%252Fchannel%252FgsaOverview.jsp&channelId=-12894

- **Immediate and Measurable:** LEED requires measurable results, and it gives any user the tools they need to begin making better building decisions tomorrow.
- **The Business Case:** USGBC has, from the beginning, focused on building the business case to demonstrate beyond the shadow of a doubt that doing Good makes economic sense. Sustainability is a three-legged stool by definition – environment, equity, and economy – so it stands to reason.
- **Transparent and Inclusive:** USGBC makes decisions about the technical development of the rating system by engaging the best minds in the green building community through volunteer committees, and engages the whole of the community through an open and transparent consensus process.
- **Independent:** USGBC as an organization is 97% earned income driven. Our financial and governance models ensure that no single interest can dominate the process.
- **Educational Capacity:** USGBC doesn't just administer LEED. USGBC trains more than 50,000 professionals and emerging green builders per year on how to build green.
- **Continuous Improvement:** We embrace both evolutionary and revolutionary change in green building practices.

Costs and Benefits of LEED

In a follow-up study released in July 2007 updating its 2004 analysis of the cost of green building, Davis Langdon concluded that "there is no significant difference in average costs for green buildings as compared to non-green buildings."[14] An earlier study conducted by Capital E in 2003 found that the cost premium for using LEED on a project averages about 2%.[15] The report estimated that the financial benefits of green buildings are ten times greater than this average cost premium.[16]

Harvard Business Review cites the DPR building in Sacramento, California as having invested 1.4% upfront additional costs to implement green measures. The project is expected to more than make up the investment by generating over $400,000 in operations savings.

Moreover, LEED buildings are becoming prized assets in the real estate community. A recent study by the CoStar Group of more than 1,300 LEED and Energy Star buildings in the group's commercial property database

[14] Davis Langdon, *Cost of Green Revisited: Reexamining the Feasibility and Cost Impact of Sustainable Design in the Light of Increased Market Adoption* (July 2007), *available at http://www.davislangdon.com/upload/images/publications/USA/The%20Cost%20of%20Green%20Revisited.pdf; see also Costing Green: A Comprehensive Cost Database and Budget Methodology* (July 2004), *available at http://www.usgbc.org/Docs/Resources/Cost_of_Green_Full.pdf.*

[15] Greg Kats, Capital E, *The Costs and Financial Benefits of Green Buildings: A Report to California's Sustainable Building Task Force* (October 2003), *available at https://www.usgbc.org/ShowFile.aspx?DocumentID=1992.*

[16] *Id.*

reported that LEED buildings command rent premiums of $11.24 per square foot more than their non-LEED peers and have occupancy rates that are 3.8 percent higher.[17] The study further reports that LEED buildings command a sales premium of an impressive $171 more per square foot.[18]

In the residential marketplace, LEED for Homes just debuted nationally in December 2007, so there is not yet sufficient operating data on green homes to make a comprehensive assessment of first costs and operating savings. Anecdotal evidence and case histories suggest additional first costs beginning at about $1000 depending on geographic market, home size, and level of LEED (Certified, Silver, Gold or Platinum).

Please see the attached "Project Profiles" for additional examples.

Market Adoption of LEED

More than 3.6 billion square feet of commercial real estate is currently registered or certified under the LEED Green Building Rating System, inclusive of more than 11,000 individual building projects, and more than 12,000 housing units are registered or certified under the system.

In addition, USGBC is currently working with 26 market leaders as a part of a comprehensive pilot to incorporate green building practices across entire building portfolios. Pilot participants include American University, Bank of America, California State University – Los Angeles, Cushman & Wakefield, Emory University, HSBC, N.A., PNC Bank, State of CA – Dept. of General Services, Syracuse University, Thomas Properties Group, Transwestern, UC – Merced, UC – Santa Barbara, University of Florida, and USAA Real Estate Company.

It's incredibly important to understand, however, that 3.6 billion square feet represents about one out of every ten new buildings. So it's a good start, but it's not enough to turn the tide on the built environment's CO2 emissions footprint – not yet.

Please see the attached document, "LEED Facts," for further details.

Governmental Adoption of LEED

Governments at all levels have been highly influential in the growth of green building, both by requiring LEED for their own buildings and by creating incentives for LEED for the private sector. From the Department of Energy's

[17] CoStar Group, *http://www.costar.com/partners/costar-green-study.pdf.*
[18] *Id.*

support for the initial development of LEED, to the Energy Independence and Security Act of 2007 (EISA), to the many cities and states that have adopted LEED, the public sector has demonstrated considerable vision and leadership in the transformation of the built environment. Currently, 12 federal agencies or departments, 28 states, 120+ local governments,12 public school jurisdictions and 36 higher education institutions have made policy commitments to use or encourage LEED.

The U.S. Department of Energy enabled the initial development of LEED with a $500,000 grant in 1997, and has also provided USGBC with $130,000 in grants to support the early formation of the Greenbuild International Conference and Expo. Staff from the national laboratories, FEMP and other agency programs have actively shared their expertise to develop and refine LEED. USGBC has also collaborated with DOE's Office of Energy Efficiency and Renewable Energy, and BuildingGreen on the High Performance Buildings Database.

The U.S. General Services Administration—which is the nation's largest landlord—requires its new buildings and major renovation projects to achieve LEED certification. GSA submitted a report by request of Congress that found that LEED "continues to be the most appropriate and credible sustainable building rating system available for evaluation of GSA projects."[19] In particular, GSA noted that LEED "[i]s applicable to all GSA project types; [t]racks the quantifiable aspects of sustainable design and building performance; [i]s verified by trained professionals; [h]as a well-defined system for incorporating updates; and [i]s the most widely used rating system in the U.S. market."[20]

USGBC commends the federal government for its leadership in advancing green building through its inclusion of several new initiatives in EISA, including:

- the Office of Federal High Performance Green Buildings within GSA and the Office of High Performance Green Commercial Buildings in DOE to coordinate green building research, information dissemination and other activities;

[19] Letter dated Sept. 15, 2006 from GSA Administrator Lurita Doan to Sen. Christopher Bond, Chairman, Subcommittee on Transportation, Treasury, the Judiciary, HUD, and Related Agencies, Committee on Appropriations (accompanying report), *available at https://www.usgbc.org/ShowFile.aspx?DocumentID=1916; see also* Pacific Northwest National Laboratory (operated for the U.S. Department of Energy by Battelle), *Sustainable Building Rating Systems Summary (*July 2006), completed for General Services Administration under Contract DE-AC05-76RL061830, *available at https://www.usgbc.org/ShowFile.aspx?DocumentID=1915.*

[20] Letter dated Sept. 15, 2006 from GSA Administrator Lurita Doan to Sen. Christopher Bond, Chairman, Subcommittee on Transportation, Treasury, the Judiciary, HUD, and Related Agencies, Committee on Appropriations (accompanying report), *available at https://www.usgbc.org/ShowFile.aspx?DocumentID=1916.*

- the recently authorized energy efficiency and conservation block grant program to support states and local governments in reducing greenhouse gas emissions, reducing energy use, and improving energy efficiency; and

- the authorization of funding for a grant program for school environmental health programs and a study of indoor environmental quality in K-12 schools.

We support the robust funding of these initiatives as a means of spurring market transformation and encourage the federal government to continue its work to lead by example in the greening of the built environment.

Please see the attached "LEED Initiatives in Government" for further details.

Congressional Leadership: Green High Performance Schools

In the U.S., more than 55 million students and more than 5 million faculty, staff, and administrators spend their days in school buildings. These buildings represent the largest construction sector in the U.S.—$80 billion in 2006-2008[21] –which means that greening school buildings is a significant opportunity to make a major impact on human, environmental, and economic health.

Most importantly, children in green schools are healthier and more productive. Design features--including attention to acoustical and visual quality, daylighting, and color--have a profound impact on children's ability to learn. Green schools also have superior indoor air quality and thermal comfort, and expose children to fewer chemicals and environmental toxins—which has been linked to lower asthma rates, fewer allergies, and reduced sick days.[22]

Green schools cost less to operate and greatly reduce water and energy use, which generates significant financial savings. According to a recent study by Capital E, if all new school construction and school renovations went green starting today, energy savings alone would total $20 billion over the next 10 years. On average, a green school saves $100,000 per year—enough to hire two new teachers, buy 250 new computers, or purchase 5000 new textbooks. The minimal increase in upfront costs—on average less than $3 per square foot–is paid back in the first year of operations based on energy savings alone.

[21] Christopher Klein, ed., The 2005-2008 K-12 School Market for Design and Construction Firms.

[22] *See* Gregory Kats, Capital E, *Greening America's Schools: Costs and Benefits (2006), available at http://www.usgbc.org/ShowFile.aspx?DocumentID=2908.*

USGBC applauds the commitment of the House of Representatives to supporting this critical work and commends Representatives Hooley, Matheson and McCaul for their leadership in forming the Green Schools Caucus. To date, the Caucus has more than 30 members who are committed to advancing the mission of green schools.

We are similarly encouraged by the House Education and Labor Committee's recent passage of H.R. 3021--the 21st Century High-Performing Public School Facilities Act. This bill, which represents a significant investment in green school construction, enables improvements that maximize taxpayer dollars, decrease demand on municipal infrastructure, protect the environment, and put money back into the classrooms.

A Green Building Research Agenda

In a March 2007 report, USGBC found that research related to high-performance green building practices and technologies amounts to only 0.2% of all federally funded research.[23] At an average of $193 million per year from 2002 to 2005, research spending is equal to just 0.02% of the estimated value of annual U.S. building construction.[24] These funding levels are not commensurate with the level of impact that the built environment has on our nation's economy, environment and quality of life.

USGBC supports the direction of critical research funding to principal program areas, including: Life Cycle Assessment of Construction Materials; Building Envelope and HVAC Strategies; Lighting Quality; Transportation-Related Impacts of Buildings; Performance Metrics and Evaluation; Information Technology and Design Process Innovation; Indoor Environmental Quality; and Potable Water Use Reduction in Buildings.[25]

Market Transformation = Education

LEED is one of many tools and programs USGBC has created to advance its mission of market transformation.

Chief among these are our educational programs. USGBC has trained more than 80,000 professionals through its green building workshops, and has attracted more than 66,000 attendees from around the globe to its annual Greenbuild conference.

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[23] U.S. Green Building Council, *Green Building Research Funding: An Assessment of Current Activity in the United States* (March 2007), *available at http://www.usgbc.org/ShowFile.aspx?DocumentID=2465.*

[24] *Id.*

[25] *See* U.S. Green Building Council Research Committee, *A National Green Building Research Agenda* (Nov. 2007; revised Feb. 2008), *available at http://www.usgbc.org/ShowFile.aspx?DocumentID=3402.*

Educational programs are delivered locally through USGBC's more than 70 Chapters and Affiliates (one in a community near you), through the Web, and at conferences and events all over the world.

The difference between catastrophe and hope is education, and USGBC will continue to dedicate itself to working independently and in partnership with peers and colleagues throughout the industry to advance the practice of green building.

About USGBC

The U.S. Green Building Council (USGBC) is a 501c3 nonprofit membership organization with a vision of sustainable buildings and communities within a generation. Our more than 15,000 member organizations and 91,000 active volunteers include leading corporations and real estate developers, architects, engineers, builders, schools and universities, nonprofits, trade associations and government agencies at the federal, state and local levels.

The organization is governed by a diverse, 31-member Board of Directors that is elected by the USGBC membership. Volunteer committees representing users, service providers, manufacturers, and other stakeholders steward and develop all USGBC programs, including the LEED rating system, through well-documented consensus processes. More than seventy local USGBC Chapters and Affiliates throughout the U.S. provide educational programming to local communities.

A staff of more than 135 professionals administers an extensive roster of educational and informational programs that support the LEED Rating System in addition to broad-based support of green building. USGBC's LEED Professional Accreditation program, workshops, green building publications, and the annual Greenbuild conference provide green building education for professionals and consumers worldwide.