



**STATEMENT OF BRENDAN OWENS  
OF THE U.S. GREEN BUILDING COUNCIL**

**BEFORE  
THE SENATE COMMITTEE ON RULES AND ADMINISTRATION**

**ON  
IMPROVING ENERGY EFFICIENCY, INCREASING THE USE OF  
RENEWABLE SOURCES OF ENERGY, AND REDUCING THE CARBON  
FOOTPRINT OF THE CAPITOL COMPLEX**

**JUNE 18, 2008**

## **Executive Summary**

Buildings are responsible for 39% of U.S. CO<sub>2</sub> emissions per year. In addition, buildings annually account for 39% of U.S. primary energy use; use 12.2% of all potable water or 15 trillion gallons per year; and consume 40% of raw materials globally. *Green* buildings create opportunities to mitigate these environmental impacts and also to generate financial savings. As an integral part of the physical and cultural fabric of communities, historic buildings play a critical role in this green revolution, inspiring civic engagement, enabling dense development near public transportation, and attracting integrated public services, among other amenities.

### ***The Role of Existing Buildings***

Through its LEED rating system, the U.S. Green Building Council (USGBC)--a national nonprofit organization of 15,700 member organizations dedicated to transforming the built environment to sustainability--is engaged in improving the environmental and operational performance of both new buildings as well as existing facilities. LEED is a voluntary, third-party certification system for green buildings that was developed to provide the building community with a measurable consensus definition of **l**eadership in **e**nergy and **e**nvironmental **d**esign. Originally launched in 2001 for new commercial projects, LEED now includes rating systems for operations and maintenance, commercial interiors, schools, and residences, with additional systems in the pilot stage.

LEED for Existing Buildings: Operations & Maintenance (O & M) provides building owners and managers with a set of sustainable guidelines that address all aspects of building operations, highlighting opportunities to use less energy, water and natural resources; improve the indoor environment; and uncover operating inefficiencies. A key aspect of the program is the owner's development of an integrated plan for reporting, inspecting, and reviewing building operations and maintenance practices to ensure optimal performance throughout the building's life.

Government projects throughout the country, including Colorado's initiatives to green its Capitol complex, are now demonstrating the intrinsic linkages between historic preservation and sustainability. Through an initiative involving more than \$23 million in system upgrades and retrofits to 18 state buildings, four of which are involved in LEED, Colorado expects to achieve guaranteed utility budget savings of more than \$1 million annually. Colorado project staff report that while some measures may present financial and other challenges to historic projects, LEED certification is a very attainable goal for historic structures.

The federal Capitol complex, which includes many treasured buildings and serves as the heart of the federal government, puts Congress in a position to demonstrate leadership in improving energy efficiency and reducing greenhouse gas emissions. LEED for Existing Buildings: O & M provides a meaningful framework for identifying areas of concentration that have the potential to yield notable improvements to overall environmental impact, while at the same time creating significant financial savings. While USGBC is unable to make specific recommendations for improvements to the Capitol complex without further study of building plans and components, we would be honored to convene a forum of policymakers, architects, designers, and facility managers with authority over the Capitol complex to identify and generate next steps for improving the energy efficiency and environmental performance of these facilities.

On behalf of the U.S. Green Building Council's (USGBC) 15,700 organizational members and 77 local chapters, I would like to thank Chairman Feinstein and Ranking Member Bennett for the opportunity to testify about the role that green building can play in improving the energy efficiency and sustainability of the Capitol complex. My name is Brendan Owens, and I am a Vice President with the U.S. Green Building Council.

## **Introduction**

The U.S. Green Building Council is a national nonprofit organization working to address current climate and energy challenges by advancing more environmentally responsible, healthy and profitable buildings.

Green buildings are an essential element of a climate change mitigation strategy: they reduce greenhouse gas emissions and owners' utility bills, and they have a positive and increasingly well-understood impact on health and well-being. While new buildings offer the potential to integrate innovative green technologies and practices from the start, existing buildings offer an unparalleled opportunity to transform the built environment on a massive scale. As an integral part of the physical and cultural fabric of communities, historic buildings play a critical role in this green revolution, inspiring civic engagement, enabling dense development near public transportation, and attracting integrated public services, among other amenities.

We commend the Committee for its leadership in convening this important hearing to explore opportunities for reducing the environmental impact of the Capitol Complex, which includes several of the nation's most beloved and widely recognized structures.

## **The Impact of the Built Environment**

On the aggregate, buildings are responsible for 39% of U.S. CO<sub>2</sub> emissions per year.<sup>1</sup> In addition, buildings annually account for 39% of U.S. primary energy use;<sup>2</sup> use 12.2% of all potable water or 15 trillion gallons per year;<sup>3</sup> and consume 40% of raw materials globally (3 billion tons annually).<sup>4</sup> The EPA estimates that 136 million tons of building-related construction and demolition debris are generated in the U.S. in a single year.<sup>5</sup> (By way of comparison, the U.S. creates 209.7 million tons of municipal solid waste per year.<sup>6</sup>) It is clear that we must act quickly to reduce the impact of the built environment on our planet.

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<sup>1</sup> *EIA Annual Energy Review 2005. U.S. Energy Information Administration, U.S. Department of Energy.*

<sup>2</sup> *2003 U.S. DOE Buildings Energy Data Book.*

<sup>3</sup> *U.S. Geological Service, 1995 data.*

<sup>4</sup> *Lenssen and Roodman, 1995, "Worldwatch Paper 124: A Building Revolution: How Ecology and Health Concerns are Transforming Construction," Worldwatch Institute.*

<sup>5</sup> *U.S. EPA Characterization of Construction and Demolition Debris in the United States, 1997 Update.*

<sup>6</sup> *U.S. EPA Characterization of Municipal Solid Waste in the United States, 1997 Update. Report No. EPA530-R-98-007.*

Policymakers and building owners alike are now embracing green building as one of the most effective strategies for meeting the challenges of energy consumption and climate change. By addressing the whole building, from construction materials to cleaning supplies, green building generates opportunities to reduce emissions and environmental impact throughout the supply chain and the complete building lifecycle, targeting:

- 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 the development of plans for managing construction waste, and
- 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

Importantly, the technology to make substantial reductions in energy use and CO<sub>2</sub> emissions in buildings already exists; modest investments in energy-saving and other climate-friendly technologies can yield buildings and communities that are significantly less carbon intensive, and are also more profitable and healthy places to live and work. In its December 2007 report evaluating potential solutions for reducing greenhouse gas emissions, McKinsey & Company highlighted improvements to the energy efficiency of buildings and appliances as a “negative-cost” option, suggesting that investments of this kind would yield positive financial returns over the course of their life cycle.<sup>7</sup>

## **The Role of Existing Buildings**

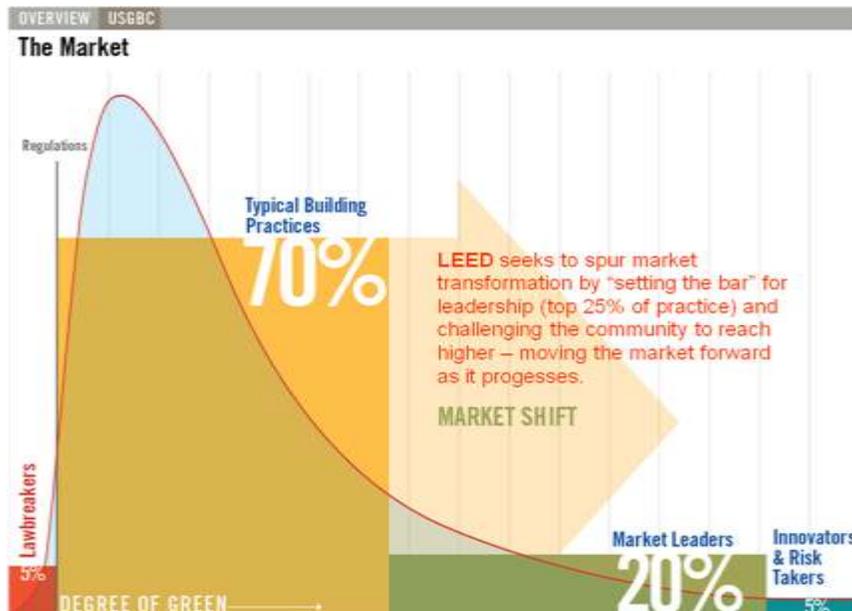
Existing buildings can play an important role in reducing greenhouse gas emissions and improving energy efficiency. Through its LEED (Leadership in Energy and Environmental Design) rating system, USGBC is engaged in improving the environmental and operational performance of both new green commercial buildings as well as existing facilities.

LEED is a voluntary, third-party certification system for green buildings that was developed by USGBC to provide the building community with a measurable consensus definition of leadership in energy and environmental design. First launched publicly in 2001, LEED seeks to set a high bar for environmental and energy

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<sup>7</sup> McKinsey & Company, *Reducing Greenhouse Gas Emissions: How Much at What Cost?*, available at [http://www.mckinsey.com/client-service/ccsi/pdf/US\\_ghg\\_final\\_report.pdf](http://www.mckinsey.com/client-service/ccsi/pdf/US_ghg_final_report.pdf).

performance, and challenges market leaders to meet it, building momentum for best practices and moving the whole market forward as these best practices enter the mainstream.



As USGBC's primary tool for advancing market transformation to sustainability, LEED must be continuously improved – seeking to make obsolete its greatest triumphs. Originally launched in 2001 for new commercial construction projects, LEED has completed a series of improvement cycles to respond to market demand and technical innovation. USGBC released rating systems for the operations and maintenance and commercial interiors markets in 2006, and for the schools and residential sectors in 2007. USGBC is also pilot-testing and nearing completion of rating systems for neighborhood developments, healthcare facilities, retail spaces, labs, and campuses.

Earlier this year, USGBC launched LEED for Existing Buildings: Operations and Maintenance, a revised and streamlined version of its rating system for existing facilities.

### ***LEED for Existing Buildings: Operations & Maintenance***

Inefficient buildings are costly for both the environment and building owners. LEED for Existing Buildings: Operations & Maintenance (O & M) provides building owners and managers with an outline for improving and operating their facilities in a sustainable and efficient manner over time. To facilitate this effort, the rating system provides a set of sustainable guidelines that address all aspects of building operations, highlighting opportunities to use less energy, water and natural resources; improve the indoor environment; and uncover operating inefficiencies. A key aspect of the program is the owner's development of an integrated plan for reporting, inspecting,

and reviewing building operations and maintenance practices to ensure optimal performance throughout the building's life.

To be awarded certification under LEED for Existing Buildings: O & M, a project must comply with certain minimum requirements (or "prerequisites") and earn a minimum point total, achieved through the owner's selection of additional optional credits. In contrast to the other LEED rating systems, which focus on the design and construction phases, LEED for Existing Buildings: O & M evaluates how buildings are operated on a day-to-day basis once completed and occupied. To this end, projects are required to submit actual performance data as part of the certification process to demonstrate that they are achieving the indicated performance measures. Once submitted, certification documentation is evaluated by third-party reviewers, and USGBC awards a project one of four progressive levels of LEED certification (Certified, Silver, Gold or Platinum) to reflect the number of credits achieved.

Please see the attached LEED for Existing Buildings: Operations & Maintenance checklist for additional specifics about rating system requirements and credits.

## **LEED and the Government Sector**

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. Currently, 12 federal agencies or departments, 28 states, 120+ local governments, 13 public school jurisdictions and 36 higher education institutions have made various policy commitments to use or encourage LEED.

In 2006, the U.S. General Services Administration (GSA)--the nation's largest civilian landlord--submitted a report to Congress evaluating the applicability, stability, objectivity, and availability of five different sustainable building rating systems.<sup>8</sup> Based on this study, GSA concluded that LEED "continues to be the most appropriate and credible sustainable building rating system available for evaluation of GSA projects."<sup>9</sup> 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.

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<sup>8</sup> 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>.

<sup>9</sup> 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>.

market.”<sup>10</sup> GSA currently requires its new construction projects and substantial renovations to achieve LEED certification.<sup>11</sup>

Government projects throughout the country, including Colorado’s initiatives to green its Capitol complex, are now demonstrating the intrinsic linkages between historic preservation and sustainability.

### ***Colorado State Capitol Complex***

Since 2003, Colorado has been engaged in a performance contracting project that leverages guaranteed utility savings from facility upgrades to finance facility improvements, including heating and cooling system upgrades, water conservation retrofits, lighting upgrades, and green purchasing programs, among other measures. The initiative involves more than \$23 million in upgrades to 18 state buildings, including the historic State Capitol Building. Colorado reports guaranteed utility budget savings of more than \$1 million each year from these projects.

The State Capitol Building, at 320,000 square feet in size and more than 100 years in age, is the fourth state facility in Colorado to apply for certification under LEED for Existing Buildings. The successes and challenges experienced by the Capitol project are instructive in evaluating potential improvements to the federal Capitol complex.

Staff attribute their success in implementing improvements to the Capitol complex in part to Governor Bill Ritter’s “Greening of State Government” Executive Order, which outlines sustainability goals to be achieved by 2012 and adds both “justification and accountability” to their sustainability initiatives. The project has also benefited from the participation and growing experience of Capitol operations and maintenance staff, who have implemented and gained an understanding of the value of high performance operations and maintenance practices. Staff also report that LEED for Existing Buildings, which requires projects to verify their energy use and the proper functioning of their equipment, has generated increased attention to the “measurement and verification” of utility savings in state facilities.

Staff report that while certification under LEED for Existing Buildings is a very attainable goal for historic structures, it is not without some challenges. For example, the restoration of Capitol windows was identified as a conservation measure to be pursued, but was not cost effective, and thus, was not performed. Improvements to the facility’s insulation also proved financially infeasible due to the cost of restoring plaster and stone walls. Staff report that they hope to revisit these improvements when funding permits.

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<sup>10</sup> 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>.

<sup>11</sup> 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>.

### ***Howard M. Metzenbaum U.S. Courthouse***

Large-scale renovations of historic structures have also been certified under LEED for New Construction. Among these projects is the historic Howard M. Metzenbaum U.S. Courthouse in downtown Cleveland, Ohio. In 2005, GSA completed a \$44.6 million renovation of the 1910 facility, which spans more than 235,000 square feet. The Beaux-Arts style-building was awarded points for its sustainable site, owing to its location within ¼ mile of six bus lines, its abatement of hazardous materials throughout the building, and its development in an area with high density. Marrying sustainability and preservation, the project also diverted more than 50% of construction waste through a waste management plan, maintained more than 50% of the building's interior elements, and preserved more than 90% of the building's existing structural shell. Points were also awarded for the project's achievement of a 15% reduction in energy use below the baseline code referenced in LEED and its more than 32% reduction in water use, among other measures.

## **Opportunities for the Capitol Complex**

As the above case studies demonstrate, sustainable design and historic preservation principles are very much in harmony when considering opportunities to reduce the environmental impact of existing structures. The Capitol complex, which includes many treasured buildings and serves as the heart of the federal government, puts Congress in a position to demonstrate leadership in improving energy efficiency and reducing greenhouse gas emissions.

LEED for Existing Buildings: O & M provides a meaningful framework for identifying areas of concentration that have the potential to yield notable improvements to overall environmental impact, while at the same time creating significant financial savings. Through the development of an integrated plan that coordinates operations and maintenance activities for the years and decades ahead, the federal government can maximize cost savings and lead by example in addressing current and future climate and energy needs. While USGBC is unable to make specific recommendations for improvements to the Capitol complex without further study of building plans and components, we would be honored to convene a forum of policymakers, architects, designers, and facility managers with authority over the Capitol complex to identify and generate next steps for improving the energy efficiency and environmental performance of these facilities.

## **About the U.S. Green Building Council**

USGBC is a 501(c)(3) nonprofit membership organization working to transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible, healthy, and prosperous environment that improves the quality of life. Our 15,700 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 (Leadership in Energy and Environmental Design) rating system, through well-documented consensus processes.

A staff of more than 140 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. USGBC has trained more than 50,000 professionals through its green building workshops, and attracted more than 22,000 attendees from around the globe to its most recent Greenbuild conference.

Educational programs are delivered locally through USGBC's more than 70 Chapters and Affiliates, through the Web, and at conferences and events all over the world.

**Brendan Owens, LEED AP, P.E.**

Vice-President, LEED Technical Development

As the Vice President of LEED® Technical Development at the U.S. Green Building Council, Brendan Owens collaborates with volunteer technical committees to refine and evolve the USGBC's LEED Green Building Rating System. During his time at USGBC, Brendan has led development activities for LEED for New Construction, LEED for Existing Buildings, LEED for Core and Shell and several market specific LEED Application Guides including retail, healthcare facilities and laboratories. Brendan is currently focused on creating the framework for LEED Version 3, a system that promises to be technically more robust and easier to implement.

Brendan is a member of the ASHRAE/USGBC/IESNA committee developing Standard 189.1 – Standard for High-Performance Green Buildings and is a delegate to the United Nations Environmental Programme Sustainable Buildings & Construction Initiative (UNEP/SBCI) Think Tank on Benchmarking Sustainable Buildings. He represents USGBC on the steering committee for the Advanced Energy Design Guide series and the Green Guideline for Healthcare. Prior to joining USGBC, Brendan worked designing and implementing performance contract based energy conservation projects in existing buildings. Brendan also managed the energy conservation program for a 100+ building campus.

Brendan is a LEED Accredited Professional and a licensed Professional Engineer. He received his Bachelor's of Science in Engineering from Purdue University in West Lafayette, IN.