GREENING OUR SCHOOLS

A **STATE LEGISLATOR'S GUIDE** TO BEST POLICY PRACTICES

ACKNOWLEDGMENTS:
The U.S. Green Building Council (USGBC) wishes to thank the state legislators from across the country who have embraced the promise and potential of green schools through the 50 for 50 Green Schools Caucus Initiative. We are grateful for their dedication and advocacy in support of our shared vision of every child being educated in a green school within a generation.

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ABOUT USGBC
The U.S. Green Building Council (USGBC) is a Washington, D.C.-based 501(c)(3) nonprofit organization committed to a prosperous and sustainable future for our nation through cost-efficient and energy-saving green buildings. USGBC works toward its mission of market transformation through its LEED® green building certification program[1], robust educational offerings, a nationwide network of chapters and affiliates, the annual Greenbuild International Conference & Expo, and advocacy in support of public policy that encourages and enables green buildings and communities.

DISCLAIMER
Please note: This guide is provided as a research and reference tool. The legal issues involved in the advocacy matters discussed in this guide are complex. This guide and the information available through it do not, and are not intended to, constitute legal advice. Should you require legal advice, you should consult your own attorney.

1 LEED® is a registered trademark of the U.S. Green Building Council, Inc.

Every story
about a green school
is a story about the
improved health,
education and
environment of
our kids, our teachers
and our communities.

FOUNDING CAUCUS MEMBERS SEPTEMBER 2008

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State Representative, Illinois

The Honorable Mary Brandenburg
State Representative, Florida

The Honorable Patricia Haddad
State Representative, Massachusetts

The Honorable Mimi Stewart
State Representative, New Mexico

The Honorable Ken Plum
Delegate, Virginia

The Honorable Jeremy Kalin
State Representative, Minnesota

USGBC WOULD LIKE TO THANK

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The Honorable Jules Kopel Bailey
State Representative, Oregon

The Honorable David Baria
State Senator, Mississippi

The Honorable Mary Brandenburg
State Representative, Florida

The Honorable Maralyn Chase
State Representative, Washington

The Honorable Jim DeCesare
State Representative, Kentucky

The Honorable John Doll
State Senator, Minnesota

The Honorable Ken Haar
State Senator, Nebraska

The Honorable Robin Hamilton
State Representative, Montana

The Honorable Betsy Hands
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The Honorable Sue Hecht
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The Honorable Jeremy Kalin
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AN INTRODUCTION FROM RICK FEDRIZZI

As the husband of a Syracuse, N.Y., public school teacher and the father of two, there are fewer issues to which I am more committed than providing our children with a world-class education. And as the President, CEO & Founding Chair of the U.S. Green Building Council, no building sector speaks to that responsibility more than our nation's schools.

After all, a staggering 20percent of America is in a school each day — teachers, administrators, staff, and most importantly, children. These are the very ones future generations will look to for leadership in times of both change and challenge.

Right now in every state across this country, we are failing to meet our responsibility. School buildings are in a shameful state of neglect and disrepair. One just has to look to a Government Accountability Office (GAO) study that found that 25,000 schools were in need of extensive repair and replacement. And even worse, 15,000 schools are circulating air that has been deemed unfit to breathe. **Our kids deserve better.**

That's why we have established the Center for Green Schools at the U.S. Green Building Council. The Center is a newly created initiative designed to raise the volume on our efforts to drive wholesale change in how we design, construct and operate our schools so that they enhance the learning experience for students, not compromise it. Through the Center, we're building upon our previous leadership on green schools that has seen the creation of green schools caucuses in the U.S. Congress and and our 50 for 50 Initiative with state legislatures nationwide; the Mayors' Alliance for Green Schools; and the Coalition for Green Schools that comprises organizations such as the National PTA, National School Boards Association, NEA and AFT (the nation's major teachers unions), and the Council for Educational Facility Planners, which collectively represent more than 10 million members.

As a state legislator, you can help drive the positive change we need.

And the change begins with your active support and promotion of green schools. Green schools improve the education and health of our children in real and consequential ways. Every day I see it as I travel across the country and hear personal stories from students, teachers and parents alike. And as our country steers through an economic recovery that has forced drastic cuts to state and local government budgets, a green school will save your local school district an average of $100,000 a year in operational costs — money that can be redirected to where it matters most: the classroom.

Last fall during the USGBC Green Schools State Legislative Summit, I watched with great excitement as more than 30 legislators from all across this country engaged each other in developing the green schools policies that are presented in this guide. Throughout the process, they discussed their ideas for legislation, best practices and advocacy strategies, potential challenges and the ways to overcome them, and messages and communications strategies that resonated with colleagues and constituents alike.

Greening Our Schools: A State Legislator's Guide to Best Policy Practices is the direct result of that dialogue, along with a collection of the lessons learned by state legislators along the way. For that, they have our thanks and appreciation. Working together, we will ensure that every child is educated in a green school within a generation.

With respect for your public service,

Rick Fedrizzi

"Every story about a green school is a story about the improved health, education and environment of our kids, our teachers and our communities."

Rick Fedrizzi
President, CEO &
Founding Chair, USGBC

BEING A FORCE FOR CHANGE: GREENING OUR SCHOOLS

As a state legislator, you make consequential decisions every day that impact the quality of your state's public education system — and more importantly, the education of the students going through it.

Whether it is determining critical budget appropriations, developing student and teacher performance requirements, or establishing standards for the new construction and renovation of schools, state legislators are in a powerful position to be agents of positive change who can transform our schools into first-class institutions that are conducive to learning while saving energy, resources and money at the same time.

And there's a lot to gain in the process. With the cost of public education often representing state and local governments' largest investment in our country's future, ensuring that schools are healthy learning environments that maximize student and teacher performance while reducing costs presents an opportunity for legislators to meet the expectations of their constituents and build a lasting legacy for future generations.

Greening our nation's schools may seem like a daunting task, especially in a challenging economy, but state legislators can make significant inroads through legislative initiatives that are cost effective and produce quantifiable results.

State legislators can establish green construction standards for new schools and renovations. With careful planning, these schools do not need to cost more than conventionally constructed schools (in fact, they can cost less!). They also generate substantial long-term savings in operational and maintenance costs. Other legislative opportunities include stipulating that retrofits to

"The promise and potential of green schools should be realized by every community across this country. The sooner we as legislators become advocates for change, the sooner our schools — and our taxpayers — will reap the rewards."

State Representative
Rafael Anchia
Texas

existing schools include energy-efficient upgrades to reduce utility costs, adopting sustainable operations and maintenance procedures, implementing green cleaning policies, encouraging recycling programs, and promoting curricula that prepare students for the green economy.

To assist state legislators in their advocacy to advance green schools, the U.S. Green Building Council (USGBC) developed *Greening Our Schools: A State Legislators Guide to Best Policy Practices*. This one-stop resource includes a broad sampling of best policy practices, the need-to-know details on successful green school initiatives, and a comprehensive communications and messaging guide. Additional resources include a glossary of key terms, a sample green schools resolution, project profiles and fact sheets.

By using this guide and working with like-minded allies, state legislators can ensure that children are taught in healthy learning environments that conserve resources and promote environmental stewardship for years to come.

WHY GREEN SCHOOLS ARE SO IMPORTANT 1

Approximately 20 percent of our national population—60 million people—go to school every day as students, teachers, staff or administrators. Building and renovating schools to meet their needs is an important responsibility, one that also represents the largest construction sector in the United States—a total of $80 billion from 2006 to 2008. By promoting the design and construction of new green schools and by greening the approximately 99,000 existing public schools, state legislators can make a tremendous impact on improving student performance and health, while decreasing operational costs and protecting the environment.

What is a Green School?

green school (grEn skül) **n.** a school building or facility that creates a healthy environment that is conducive to learning while saving energy, resources and money.

Green schools are more than buildings. They are places where children learn the wonders of the world and teachers prepare the next generation of leaders and citizens. These schools are built and operated to be full of clean air and sunlight and to be free of toxic materials and harmful chemicals.

Green schools are energy efficient, helping to lower utility costs and reduce waste. They conserve resources and preserve the surrounding habitats. Green schools showcase a community's commitment to its children and their future, who, in turn, learn from an early age the importance and benefits of acting as responsible stewards of their communities and the larger world.

Designing a green school uses the integrated design process to engage stakeholders—a process that welcomes many voices to the table, from architects and administrators to engineers and teachers. Encouraging participation and input from stakeholders helps project teams identify potential problems and inefficiencies early in the process and address them quickly and cost effectively. As a result of the integrated design approach, green schools can be built for the same cost—and in some cases, for even lower costs—than conventional schools.

Green Schools do not have to be New Schools.
There are approximately 99,000 public schools across the country. As the economy forces school districts to slow or even halt capital improvement plans, many are focusing on what can be done

to improve the efficiency and environmental quality of existing facilities. As with new green construction, implementing green strategies into existing school buildings can be cost effective. Schools can develop a plan to introduce and upgrade new building systems, technologies and policies over time, focusing first on high-impact strategies that yield immediate savings or have a significant impact on student health and wellness.

Characteristics of a Green School

- Conserves energy and natural resources
- Saves taxpayer money
- Improves indoor air quality
- Removes toxic materials from places where children learn and play
- Employs daylighting strategies and improves classroom acoustics
- Employs sustainable purchasing and green cleaning practices
- Improves environmental literacy in students
- Decreases the burden on municipal water and wastewater treatment
- Encourages waste management efforts to benefit the local community and region
- Conserves fresh drinking water and helps manage stormwater runoff
- Encourages recycling
- Promotes habitat protection
- Reduces demand on local landfills

Benefits of Green Schools

Green Schools Improve Student Health, Decreasing Absenteeism

By improving indoor air quality through the exclusion of toxic materials and improved ventilation, green schools can improve the health of students, faculty and staff and decrease absenteeism. More time in school translates into increased productivity and enhanced student performance. Improved attendance is of particular importance to schools in which federal funding is tied to Average Daily Attendance (ADA) rates.

Students in America miss approximately 14 million school days per year because of asthma, according to the U.S. Centers for Disease Control and Prevention. Controlling exposure to indoor environmental factors, such as carbon monoxide, dust, and pollen, could prevent more than 65 percent of asthma cases among elementary school-age children, reports the *American Journal of Respiratory and Critical Care Medicine.*

The American Federation of Teachers' 2008 *Building Minds Minding Buildings* report cites a GAO study showing 15,000 U.S. schools suffer from indoor air that is unfit to breathe.

Tarkington School of Excellence in Chicago, Illinois ©2005 James Steinkamp

Key components of a green school are improved indoor air and environmental quality. When toxic chemicals — often found in paint, flooring and furniture as well as conventional cleaning, pest management and snow removal products — are eliminated, students and staff report less eye, nose and throat irritation, and asthma-related incidents decline. Asthma is the leading cause of disease-related absenteeism in U.S. public schools.

Implementing a green cleaning policy is a high-impact, low-cost initiative that can play a key role in creating healthy and safe schools. There are an estimated 40 to 60 chemical injuries per year for every 1,000 school custodians — mostly chemical burns to the eyes and skin and damage to the respiratory system. These injuries cost about $25 million each year in workers' compensation and lost time.[1] Another study of nearly 2,000 confirmed cases of work-related asthma found nearly 12 percent of those cases were directly associated with exposure to cleaning products similar to those used in schools, hotels and other commercial facilities.

By requiring the use of green cleaning products and procedures, state legislators ensure safe and healthy work environments for both students and staff.

Tarkington School of Excellence in Chicago, Illinois — LEED Certified

How many eighth-graders will tell you, "I love my school"? When Christian Torres walked through the doors of the newly opened LEED Certified Tarkington School of Excellence on the South Side of Chicago four years ago, he had no idea the impact the school building would have on his health and future.

"Whether you're a Democrat or a Republican, building green is the fiscally smart choice."

State Representative
Jim DeCesare
Kentucky

"As a retired teacher in the Albuquerque school system, I know the effect that school buildings have on teachers and what a difference proper lighting, temperature and air quality can make. As a legislator, we have the responsibility to provide a school environment that is as conducive to teaching as it is to learning."

State Representative
Mimi Stewart
New Mexico

"When I first entered Tarkington I was a kid with breathing problems," says Christian, now in the eighth grade. "At my old school I had to use my inhaler two to three times a day to keep my breathing at a normal pace, but after my first year at Tarkington I rarely used my inhaler, even in situations where I was moving around a lot. Now I can breathe on my own without it."

Tarkington School of Excellence serves approximately 1,000 students from pre-K through eighth grade living in Chicago's 18th Ward. During the 2008-2009 school year, 90 percent of Tarkington students were eligible to receive free or reduced-cost lunch. In the first year of Tarkington's operation, standardized test scores improved by 36 percent. In the second year they improved by an additional 5 percent.

After attending Tarkington for four years, sustainability has become a part of Christian's values. In his future, Christian wants to pursue his interest in technology and work with computer systems. "I want to learn ways that I can make an impact on the earth and ways I can get people to help out as well."

Green Schools Help Improve Student Performance

Good teachers are the most important factor in improving student performance, but healthy and inviting schools contribute significantly. When working and learning in a high-performing acoustic environment, children and teachers are given the opportunity for effective communication. Optimizing classroom acoustics so children can hear is a primary foundation for learning, and helps preserve teacher health — the average teacher misses two days per year due to vocal strain. Furthermore, a school with clean indoor air, temperature control systems that create a comfortable classroom, and efficient use of day-lighting is a welcoming learning environment — an environment that lessens distractions, encourages participation, and instills a sense of pride and importance in students.

Green Schools Save Money

According to *Greening America's Schools: Costs and Benefits* by Greg Kats, green schools use 33 percent less energy and 32 percent less water than conventionally constructed schools, significantly reducing utility costs over the average 42-year lifecycle of a school. On average, green schools save $100,000 per year on operating costs — enough to hire at least one new teacher, buy 200 new computers, or purchase 5,000 textbooks.

Cost Savings for Two School Districts in Kentucky

Kenton County

Kenton County has saved more than $1 million in operational costs since the district's first high-performance school opened in 2005. These utility cost savings were so significant the district was able to maintain staffing and funding levels while other districts slashed budgets during the economic downturn.

Warren County

In 2003, Warren County Public Schools (WCPS) adopted an energy conservation and management program involving every building in the school system. As a result, WCPS has reduced energy consumption by more than 28 percent. [2]

The cost savings in green schools are generated from many sources, including energy-efficient heating and air conditioning systems, energy-efficient lighting and occupancy sensors, daylighting strategies, water-efficient fixtures and lower operations and maintenance expenses. The landscaping at green schools can minimize water use and decrease maintenance costs by using native, drought-resistant plants, rainwater harvesting and innovative irrigation systems.

*River Crest Elementary School in Hudson, WI was built for **$166/square foot—25 percent below the $233/square foot average** construction cost for elementary schools in the same region.*

"As the first K-12 LEED Gold elementary school in the State of Florida, Pine Jog Elementary near my home will continue to attract new economic development to Palm Beach County. It's a point of community pride that increases local property values, preserves our fragile environment and saves taxpayer dollars."

State Representative
Mary Brandenburg
Florida

Green Schools Increase Teacher Retention

Green schools improve more than just student performance. Teachers in green schools report they are more satisfied with their school environments than teachers in conventional schools, helping to improve teacher retention. They cite indoor air quality, access to daylight and views and better acoustics as reasons they prefer these high-performing schools. Increasing teacher retention helps to lower a school district's personnel replacement, recruitment and training costs.

Retaining Teachers Saves Money

A 2010 report by the National Commission on Teaching and America's Future (NCTAF) estimated that the nation's school districts spent at least $7.2 billion a year on teacher turnover.[3]

A recent report from the Education Commission of the States found that "roughly 50 percent of teachers leave their initial assignment — but not necessarily the profession itself — in the first five years of their career."[4]

In the four years since Great Seneca Creek Elementary School (LEED Gold) in Germantown, Md., opened as the first LEED-certified green school in the state, only one teacher made a lateral transfer to another school. In a recent survey, every member of the 100-person staff said they worked in a safe and healthy environment and that they would recommend the school to a friend for employment.

Green Schools Protect the Environment

Along with the environmental benefits generated from reduced energy and water usage, green schools lessen environmental impacts through responsible approaches to the building site and local ecosystems. This is achieved by recycling efforts during and after construction, native and adaptive landscaping, and practices that reduce the demand on municipal infrastructure. Green buildings are built with sustainably produced, recycled and recyclable materials and products. They also lessen the reliance on fossil fuels, thus decreasing carbon dioxide emissions and other forms of harmful pollution.

Green Schools Increase Property Values

According to the Turner Construction *2005 Survey of Green Buildings*, 87 percent of school executives who have invested in green buildings report improved community image as one of the

top benefits of green schools. Well-regarded schools increase property values, encourage business investment and job creation, and serve as the cornerstone of vibrant communities.

Quality Schools are a Deciding Factor for Many Home Buyers

According to the *2009 National Association of Realtors®' Profile of Home Buyers and Sellers*, the quality of the school district was a deciding factor for 27 percent of home buyers. [5]

In a difficult housing market, every advantage counts, and the statistic reinforces the value of building and operating schools that the community hails as models of student learning, environmental stewardship, and a good use of taxpayer dollars.

Green Schools Serve as a Teaching Tool

Teachers at green schools can use the building as the basis for project-based, experiential learning. Green schools provide a clear opportunity to connect students with curricula in environmental and science technology engineering and mathematics (STEM) education, and can serve as a tool for interactive lessons. For example, math students can track and chart utility cost savings, science students can analyze and compare the difference between eco-friendly and traditional cleaning products, and all students can learn first-hand about renewable energy and water conservation systems. These types of exercises provide students with the opportunity for hands-on learning, and demonstrate the interconnectedness of the built environment and natural systems.

Greening Schools Bring the Community Together

By inviting the community to be part of the collaborative process to green the school, as well as including them in on-going sustainability initiatives, a green school can become a source of civic pride. Local plant experts can be invited to conduct research with biology students on native plants and how they can save water, builders and facilities managers can help students in math class track the energy savings generated from the use of solar panels, and students can plan community-wide recycling programs based on the success of their own school's efforts. Students can become green ambassadors, educating their family, friends and community about the value of going green. The school's website can provide an opportunity to share the school's green initiatives with the community, including tracking the school's reduced utility costs, highlighting the pounds of trash sent to the recycling center, and showcasing sustainability programs that are bringing the school and community together.

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1 Barron, T., & Sutherland, B. (1999). *Environmentally Preferable Janitorial Products: Issues and Opportunities. Pollution Prevention Review*, Fall 1999. Retrieved from informinc.org/pprjanitorial.pdf.

2 Warren County Public Schools. (Spring 2010). *Warren County school system receives award for energy efficiency.* Vision. 6. Retrieved from warren.k12.ky.us/wcps/about_us_files/newsletter2010spring.pdf.

3 Carroll, T., & Foster, E. Thomas G. (January 2010) *Who Will Teach? Experience Matters. National Commission on Teaching and America's Future*. 4. Retrieved from nctaf.org/nctafwhowillteach.pdf.pdf.

4 Allen, M. (September 2005). *Eight Questions on Teacher Recruitment and Retention: What does the Research Say? Education Commission of the States*. 6. Retrieved from ecs.org/html/educationissues/teachingquality/trrreport/home/teacherrecruitmentretention.pdf.

5 National Association of Realtors. (August 2009). *Field Guide to Schools And The Home Buying Decision*. Retrieved from realtor.org/library/library/fg307.

HOW STATE LEGISLATORS CAN MAKE A DIFFERENCE 2

The Role of State Legislators in Promoting Green Schools

State legislators are much more than budget appropriators. They are leaders — directing efforts to craft legislation that meets the needs of constituents and ensuring their states are vibrant places to live, work and learn. There is no better way to guarantee the state's strength and vitality than to seek the best education for its children. Even though local school districts typically control day-to-day operations and manage capital budgets, there remains much that state legislators can do to lead efforts to green schools. Legislators can:

- Set green building standards for the construction of new schools and major renovations;
- Encourage policies to ensure operations and maintenance best practices; and
- Provide innovative funding mechanisms that create financing opportunities for green schools and promote green job training.

Like the integrated approach that defines green building, legislators should seek input from all stakeholders — fellow legislators, local business leaders, Realtors, school administrators, maintenance staff, teachers, students, parents, developers and green building practitioners — to develop legislation and initiatives that best reflect local and state needs. When working in collaboration with various stakeholders, legislators should be open to new ideas and innovative solutions. Leading the charge may require legislators to craft new tactics, form strategic alliances, and develop innovative ways to communicate with constituents.

Now is the time to be bold. Lawmakers should use their unique and trusted position to articulate a state-wide vision for green schools and to demonstrate a commitment to that vision by working with all stakeholders to craft meaningful and effective legislation — legislation that ensures all schools in the state are healthy environments conducive to learning while saving energy, resources and money.

One of the first steps is to investigate the variety of ways schools can become greener. This toolkit showcases the efforts of many states and provides a framework to begin outlining a plan. There is no one-size-fits-all approach, but the legislative solutions profiled provide excellent points of departure for getting started.

"As former school committee members, we know that the schools of tomorrow, whether newly constructed or renovated, need to facilitate the education of true 'sustainability natives.' As legislators who have made education reform a primary part of our public service, working within our legislatures to promote green schools through state legislation is a natural fit."

State Representative
Patricia Haddad
Massachusetts

State Representative
Sondy Pope-Roberts
Wisconsin

Building Support: The 50 for 50 Green Schools Caucus Initiative and the 2009 Green Schools State Legislative Summit

In September 2008, six state lawmakers, with the support of the U.S. Green Building Council, launched the 50 for 50 Green Schools Caucus Initiative. The initiative seeks to encourage and support the formation of a green schools caucus in every state legislature in the country. For the latest information about the 50 for 50 Green Schools Caucus Initiative, visit centerforgreenschools.org/50for50.

The following section of *Greening Our Schools* was developed during the 2009 USGBC Green Schools State Legislative Summit. Funded with the generous support of the Turner Foundation, USGBC convened 30 leading legislators from 25 states to discuss legislative solutions for greening our nation's schools. The summit provided an opportunity for legislators to strategize with leading green building and education experts, and together share success stories and generate ideas to promote healthy, high-performance schools in this challenging economy.

LEED: A Framework for Green Buildings

LEED is the internationally recognized green building certification system that provides third-party verification that a building or community was designed, built or is operating using strategies aimed at improving performance across all the metrics that matter most: energy savings, water efficiency, CO_2 emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts.

Developed by the U.S. Green Building Council (USGBC), a 501(c)(3) non-profit organization, LEED provides building owners and operators a concise framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions.

As of April 2010, 34 state governments have included LEED as a part of their climate change and green building strategies, 24 of which have established "Leadership By Example" policies requiring LEED for state government-owned buildings.

USGBC 2009 Green Schools State Legislative Summit
Photo courtesy of Kristina Hopper

Additionally, LEED-based public policy initiatives — through legislation, executive orders, resolutions, ordinances, policies and incentives — can be found in more than 200 localities situated in 45 states across the United States. For the latest list of public policy efforts, visit usgbc.org/government.

The LEED for Schools rating system recognizes the unique nature of the design and construction of K-12 schools. Based on the LEED for New Construction rating system, LEED for Schools addresses issues such as classroom acoustics, master planning, mold prevention and environmental site assessment.

By addressing the unique characteristics of school spaces and children's health issues, LEED for Schools provides a comprehensive tool for schools that wish to build green, with measurable results. LEED for Schools is the recognized third-party benchmark for high-performance schools that are healthy for students, comfortable for teachers, and cost-effective.

Schools can be certified under the LEED for Schools or the LEED for Existing Buildings: Operations & Maintenance rating systems. Non-academic school buildings, such as free-standing gymnasiums or performance spaces, should use LEED for New Construction or LEED for Existing Buildings: O&M. See the LEED Facts section on page 53 for additional information.

"As state lawmakers, we have a paramount responsibility to make sure that our children are educated in healthy school buildings. In green schools, students learn about saving our planet and have the very best learning environment. This is an area where we need to lead — not follow."

State Representative
Karen May
Illinois

"Not only is this the first time I've had a chance to strategize with other allies on green schools, it is the first conference on green construction and retrofits that has focused on policy and the messaging that supports it. This has been the best organized and most useful summit on the new economy that I've yet attended."

State Representative
Jules Bailey
Oregon

Incorporating LEED into Legislation

The following sample language can be used in legislation for adopting green building rating systems which ensure third-party verification, including LEED:

"... must have achieved certification at no less than a [insert level of LEED targeted in existing policy here, for example, LEED Certified, LEED Silver, LEED Gold or LEED Platinum] level under the U.S. Green Building Council's most applicable current LEED rating system, or have achieved a comparable rating under no less than an equivalent green building rating system, so long as a qualified third party provides such a rating."

Legislative Action

STATES CAN SET GREEN STANDARDS FOR THE CONSTRUCTION OF NEW SCHOOLS AND MAJOR RENOVATIONS

States Can Require Green School Construction

State legislation can require new school construction and major renovation projects be built to trusted national green rating system guidelines. Doing so will demonstrate a commitment to providing healthy and safe schools, while exhibiting fiscal responsibility and promoting green jobs. Legislators can consider requiring the use of a third-party rating system, such as LEED, to ensure green benchmarks have been achieved.

LEED is the "gold standard" for designing, constructing, operating and maintaining green buildings. It is an internationally recognized certification system, providing third-party verification that measures how well a building performs in terms of energy savings, water efficiency, CO_2 emissions reduction, improved indoor environmental quality, and stewardship of resources.

By requiring the use of the preeminent green building rating system, legislators can ensure buildings are constructed and maintained for maximum efficiency to reduce operating costs and designed with superior occupant health in mind.

As of April 2010, 12 states and the District of Columbia have adopted green school policies for new construction based on LEED: Arizona, Connecticut, Colorado, Florida, Hawaii, Illinois, Kentucky, Maryland, New Jersey, Ohio, Rhode Island, Washington, and Washington, D.C.

Sample Green School Legislation

Illinois

In 2007, the Illinois State Senate amended the *School Construction Law* (*Public Act #95-0416*) with the governor's approval, directing the Capital Development Board (CDB) to only issue grants to school projects seeking LEED or a comparable rating system certification or to projects that meet the standards set forth by the CDB's Green Building Advisory Committee. In 2009, Illinois approved *HB0312*, re-appropriating construction and modernization funding for Illinois schools consistent with the provisions outlined in *Public Act #95-0416*.

Maryland

On April 24, 2008, Governor Martin O'Malley signed the *High Performance Building Act* (*SB 208*) into law, requiring all new public construction and major renovation projects of 7,500 square feet or greater, and intended for occupancy, to earn LEED Silver certification or two Green Globes. *The High Performance Building Act* further requires that Maryland public schools using state funds earn LEED Silver certification or two Green Globes. The Act also states that "the State will pay half of any extra costs" incurred in building green public schools.

Rhode Island

On February 25, 2010, State Representative Arthur Handy introduced the *Green Buildings and Job Creation Act* (*HB 7720*). The bill would require all public buildings to be constructed or renovated to meet "green building requirements" and provide for a revolving loan program for energy improvements. The bill defines "green building requirements" as the requirements that a building project be designed and constructed to achieve certification at no less than LEED Silver certification or an equivalent.

The bill provides for improvements to school district and government buildings and carries a provision for residential weatherization. Additionally, the bill specifically outlines renovations to schools be based on the LEED for Existing Buildings: Operations & Maintenance rating system (or equivalent), citing LEED as "a guide for high-yielding, and often low costing retrofit improvements to optimize operational and resource efficiency, and maximize benefits to human and environmental health."

States Can Set Standards to Green Existing Schools

With approximately 99,000 public schools in the United States, the greatest opportunity for state legislators to promote green schools to children, teachers and communities in their state is to encourage existing schools to go green. Most schools that undergo green retrofits and renovations will yield significant utility cost savings and improve occupant comfort and health.

State legislators can promote the greening of existing schools by passing legislation that encourages energy-efficient renovations and retrofits. The legislation can stipulate pursuit of LEED for Existing Buildings: Operations & Maintenance certification, when practicable, to ensure the school includes high-performance building systems and implements green operations and maintenance best practices. Training requirements for facilities managers and building operators can also be required in the legislation to ensure the new building systems are run efficiently in order to yield the desired energy cost savings from improved energy, water and solid waste management.

"I am proud to join legislators from across the country in working towards the use of green construction and design in our schools. We have the opportunity to set a green building standard that every community should strive for. Requiring renovation and new construction in schools to meet a minimum LEED standard can have tremendous impacts on the health and wellness of our students and teachers, while also saving on operating and maintenance costs of school buildings."

State Representative
Carl Sciortino, Massachusetts

"Greening our schools through energy savings projects should be the first solution legislators look to save money. Greening our schools doesn't just prevent harm—like other budget items might—it actually does good on many, many levels."

State Representative
Jeremy Kalin, Minnesota

States Can Benchmark Energy Performance of Existing Schools

Legislators can require all educational facilities to conduct energy audits, providing a baseline to help identify opportunities for improvement. State legislators can also promote the greening of existing facilities by passing legislation requiring all facilities to benchmark with ENERGY STAR Portfolio Manager. Portfolio Manager is a free online tool that allows building owners to track and assess energy and water consumption, performance and cost information for individual buildings and building portfolios. ENERGY STAR is also the required benchmarking platform for validating building performance in the LEED for Existing Buildings: Operations & Maintenance rating system. (ENERGY STAR Portfolio Manager is a program of the U.S. Environmental Protection Agency.)

States Can Ensure Training for Facilities Staff to Maximize Building Performance

Facilities personnel need to know how to operate high-performance building systems in order to maximize building performance. Legislation providing funding to renovate schools to green benchmarks should also include requirements and resources to train facilities personnel for ongoing maintenance.

States Can Offer Technical Assistance

States can promote the construction and renovation of green schools by offering technical assistance during the design and construction process through a state authority. Technical assistance is commonly offered by staff with professional green building credentials. Legislation can designate this position within the state government.

Green Building Fund for Technical Assistance

Washington, D.C.

In 2006, the Washington, D.C., City Council enacted a bill that established a Green Building Fund for technical assistance and monitoring of green buildings, education and incentive funding for private buildings.

STATES CAN REQUIRE POLICIES THAT ENSURE OPERATIONS & MAINTENANCE BEST PRACTICES

States Can Require Green Cleaning Practices

Instituting a green cleaning program can improve the indoor environmental quality for students, teachers, and staff, reducing instances of asthma and other illnesses that are major causes of absenteeism. Green cleaning supplies do not need to cost more than conventional cleaning supplies.

A green cleaning policy can include:

- Criteria for the purchase and use of sustainable cleaning chemicals and products
- Methods for managing the disposal of cleaning materials
- Best practices for mixing concentrates
- Criteria for the purchase and use of janitorial equipment, and
- Plans to assess cleaning performance.

Green Cleaning Schools Act

Illinois

The *Green Cleaning Schools Act* (*Public Act 095–0084*) requires the Illinois Green Government Coordinating Council, in consultation with other agencies, to establish and amend annual guidelines and specifications for environmentally sensitive cleaning and maintenance products for use in school facilities.

All elementary and secondary public and non-public schools should establish a green cleaning policy and exclusively purchase and use environmentally sensitive cleaning products pursuant to the guidelines and specifications.

A school may deplete its stock of existing cleaning and maintenance supplies and implement the new requirements in the procurement cycle for the following school year.

States Can Require Indoor Air Quality (IAQ) Management Programs

Improved indoor air quality enhances the well being of students, faculty and staff and can help to increase attendance rates, performance and productivity. Legislation can require the development and implementation of an ongoing indoor air quality management program, using such programs as the EPA's Building Education and Assessment Model (I-BEAM). I-BEAM is a free tool to manage indoor air quality in buildings and includes information on how to:

- Conduct an indoor air quality building audit
- Ensure that energy-efficient building systems are compatible with IAQ
- Better manage housekeeping services for IAQ
- Train management and staff in indoor air quality management
- Provide documentation that the building is following IAQ building practices, and
- Reduce liability exposure to indoor air quality complaints.

States Can Require Integrated Pest Management Policies

Pests and the pesticides used to deter them can be harmful to occupants and facilities. An integrated pest management plan protects school occupants by reducing the application of harmful pesticides. Legislation can require the adoption of such a plan based on the specifications outlined in the LEED for Existing Buildings: Operations & Maintenance rating system. Integrated pest management plans can be more effective than conventional pest control methods because they treat the underlying causes of pest problems. The programs also tend to be less expensive because they require less pesticide application.

STATES CAN PROVIDE INNOVATIVE FUNDING MECHANISMS FOR FINANCING GREEN SCHOOLS AND ENCOURAGE GREEN JOBS

In this challenging economic climate, legislators can support green schools by promoting innovative funding mechanisms. Options include grant programs, revolving loan funds, tax abatement and rebates, performance contracting, and tax-exempt lease-purchase agreements, among many others.

States Can Establish Green Building Grant Programs

States can award grants to encourage the construction of green schools and the renovation of existing facilities to green standards. Grant programs can use the LEED for Schools or LEED for Existing Buildings: Operations & Maintenance rating systems to develop the criteria for awarding grants.

States Can Create a Revolving Loan Fund

States can create a revolving loan fund to finance building improvements that generate utility cost savings. The savings, in turn, are used to replenish the fund.

Allocating state money to be used for revolving loan funds can promote the construction and renovation of green schools. By providing low-interest loans from a large fund, financial barriers can be removed for schools pursuing green initiatives. The fund, regularly replenished from utility savings, can provide loans to additional educational facilities on a continual basis, turning a one-time appropriation into a perpetual investment program. Priority can be given to projects pursuing requirements of LEED or equivalent.

Revolving Loan Fund

Colorado

The Renewable Energy and Energy Efficiency for Schools Loan Program Act (HB09-1312) created a program that provides school districts with low-interest loans for renewable energy. The loans can be used to install solar panels or wind turbines on site, or can be used to convert diesel-powered school buses to battery or hybrid-electric power.

States Can Share Maintenance Funds

States can share or match maintenance funds with school districts to encourage the proper maintenance of school facilities. Legislation can stipulate that green operations and maintenance (O&M) standards are required in order to receive the funds. The legislation can also specify training on O&M best practices and establish more favorable criteria for schools that meet green standards.

States Can Offer Tax Abatements and Rebates

States can offer tax abatements to companies who implement energy-efficient building systems. Converting a portion of the abatement to a direct rebate will help lower up-front costs and encourage companies to take on the project. Furthermore, because green retrofits usually generate savings in operations costs, the tax abatement can save the state money.

States Can Enable Performance Contracting (PC)

States can enable performance contracting (PC) — also known as energy performance contracting (EPC) or guaranteed energy savings performance contracting (ESPC). PC is a well-established means of procuring and financing needed building repairs and upgrades. Under performance contracting, building owners contract with an Energy Services Company (ESCO) to act as the project developers for a wide range of tasks and to assume the technical and performance risk associated with the project, including guaranteeing the cost savings generated from the system upgrades. The costs savings are used to pay for the upgrades within a specific pay-back period.

In addition to allowing performance contracting, states can encourage the use of green performance contracting (Green PC), a process based on the same project-delivery methods as traditional performance contracting, but enhanced by the inclusion of the LEED for Existing Buildings: Operations & Maintenance rating system as green criteria. The range of project measures in a Green PC project is broader than the utility system upgrades found in a traditional performance contract and allows for the inclusion of O&M best practices and sustainable policies.

Performance contracting and Green PC can provide funding for significant renovations and retrofits, while mitigating up-front costs. Because states manage the liability and financial risk on an aggregate level, some states do not allow public entities, including school districts, to engage in long-term contracts, thus prohibiting performance contracts. Legislation that allows schools to use performance contracting to green facilities can mitigate the issue of long-term contracts by setting a maximum time frame. The legislation can also require a pre-approval process of contractors compiled by the state's department of energy.

"One reason I am most excited about greening our schools is the ease of financing these projects. The energy savings provide reliable revenue to pay for the needed upfront capital, such as high-efficiency boilers, roofing, insulation, or air conditioning and lighting upgrades. Some states, such as my state of Minnesota, have adopted lease-purchase financing frameworks to mobilize local banks as lenders for school energy improvement projects. Other states have used capital bonding authority to finance these improvements, finding the payback period so short that school operating budgets have been stabilized or even reduced in just a couple of years."

State Representative
Jeremy Kalin
Minnesota

States Can Establish a Tax Credit Pass-through Option

States can establish a tax-credit "pass through" option that allows a project owner — the school district — to transfer tax credits to a partner in exchange for capital to assist with project costs. Under the program, a state can allow schools and other non-taxable entities to "sell" tax credits to pay for the installation of green retrofits and energy-efficient renovations to a third party for a cash payment. The payment is used to fund the renovation.

Business Energy Tax Credit and Pass-through Option

Oregon

Oregon's Business Energy Tax Credit Pass-through Option allows a project owner to transfer a tax credit to a pass-through partner in return for a lump-sum cash payment upon completion of the project. The Pass-through Option currently allows non-profit organizations, schools, governmental agencies, tribes, other public entities and businesses without tax liability to use the Business Energy Tax Credit by transferring their tax credit for an eligible project to a partner with a tax liability.

States Can Promote Tax-Exempt Lease-Purchase Agreements

States can assist schools with the purchase of building-system improvements as part of a retrofit or renovation by encouraging tax-exempt lease-purchase agreements. A tax-exempt lease-purchase agreement is an effective alternative to traditional debt financing because it allows organizations — including schools and other government entities – to pay for energy-saving upgrades by using money set aside in the annual utility budget. When properly structured, tax-exempt lease-purchase agreements can allow public-sector entities or qualifying organizations to draw on the anticipated savings from future utility bills to pay for new, energy-efficient equipment and related services up-front.

States Can Encourage Public-Private Partnerships

States can establish public-private partnerships to help promote green schools. Partnerships can be forged to research strategies, develop a green schools plan, and, if structured to do so, serve as a financing mechanism.

Public Private Partnerships

Illinois

Illinois State Representative Karen May, in collaboration with the USGBC Illinois Chapter and several civic and corporate partners, established a public-private partnership to help three Illinois public schools achieve LEED for Existing Buildings: Operations & Maintenance certification. The partnership is providing resources and guidance to these schools, and will fund any additional costs incurred to achieve certification. The goal is to provide a model for implementing a state-wide campaign to green existing public schools. The three pilot projects are: Prescott School, Chicago; Prairie School, Urbana; and Lakewood School, Carpentersville.

The project will provide a blueprint for a state-wide campaign by:

- Determining the actual costs of achieving LEED for Existing Buildings: Operations & Maintenance certification for existing schools,

- Identifying barriers within the existing building code and/or local codes that prevent schools from implementing green strategies and technologies,
- Deciding how school districts can use traditional energy performance contracting, green performance contracting and existing funding to green an existing school, and
- Identifying opportunities to tap into community resources

The project will produce a comprehensive report on the process and individual case studies for each of the three schools.

State Representative Karen May introduced *HJR 45* to create a LEED task force to offer input into the project's process and final report, and to make recommendations concerning the creation and financing of a system to ensure that existing public schools are retrofitted to support resource efficiency and sustainability.

Members of the task force include representatives from: the Illinois House and Senate (as appointed by the majority and minority leaders from both houses), Illinois Governor's Office, Illinois Department of Commerce and Economic Opportunity, Illinois Capital Development Board, Illinois State Board of Education, and the USGBC-Illinois Chapter. The task force will create a final report of its own to be submitted to the Illinois General Assembly on or before November 1, 2010.

"Investing in schools means not only adequate and stable funding, but also ensuring we have healthy, high performance learning environments for our children."

State Representative
Jules Kopel Bailey
Oregon

States Can Encourage Green Schools by Promoting Green Job Training

Legislators can use green schools as a catalyst for green job creation and training. In Washington State, legislators introduced a house bill (*HB 2561*) that would issue $861 million in general obligation bonds for the purpose of creating jobs by constructing capital improvements that lead to energy related cost savings in public schools, state colleges and universities, and other public facilities.

STRATEGIES FOR SUCCESSFUL COMMUNICATION 3

Every story about green schools is a story about children, teachers, interactive learning, and cultivating a generation of sustainability natives for our future. The powerful message of green schools should resonate with every audience: parents who want their children to learn in safe and welcoming classrooms; teachers who want to provide the best learning environments for their students; local businesses and Realtors who want to create desirable places to live and work; contractors and developers who want to provide opportunities for their employees to gain green job skills; and legislators who want to craft legislation that reflects their community's values, spends taxpayer dollars wisely, and ensures their leadership legacy.

Key Components of a Successful Communications Strategy

State legislators should prepare a comprehensive communications strategy that highlights the benefits of green schools for different audiences, including those who may have misconceptions about the value of green schools. The components of a successful communications strategy are noted below.

- Focus on how green schools benefit people: students, parents, teachers, administrators, facilities staff, business owners, community members and taxpayers
- Provide the definition of a green school
- Outline the benefits of green schools
- Articulate why a state-wide approach is necessary
- Highlight cost savings and the ability to integrate green construction into existing or planned capital improvement projects
- Identify target audiences and develop messages that are likely to appeal to each
- Widen the stakeholder tent to form strategic alliances
- Invite input from stakeholders at the start, not the end
- Understand and address each stakeholder group's position and concerns
- Highlight how green schools provide an opportunity to build green job skills
- Tell stories about real people and showcase success

Mississippi State Senator David Baria conducts a practice interview during the 2009 Green Schools State Legislative Summit.

Making the case for green schools will require a multi-level approach. The plan should be devised early in the process and include a variety of communications tools and methods to reach various audiences. Assessing efforts throughout the process will ensure that key milestones are met and needed adjustments are made.

Form Strategic Alliances

Effective communication plans use strategic partnerships to ensure success. Allies are partners who — because of their stature in the community and expertise — can best make the case for green schools and form the critical partnerships needed to implement initiatives and pass legislation.

Legislators need to be creative in forming alliances. For green schools, consider organizations that want to promote high-quality schools, such as teachers' unions, state school board associations, Realtors, small-business owners, and large employers in the state. Also consider groups that want to develop skills for the new green economy, including local craftsmen, trade-school apprentices, developers and contractors, and community colleges with two-year degrees in building construction.

Talking Points for Debate: Myths and Facts

MYTH… GREEN SCHOOLS ARE EXPENSIVE TO BUILD.

Fact: Green schools do not have to cost a penny more than conventional schools.

- A 2007 report, *The Cost of Green Revisited* (Davis Langdon), looked into 100 buildings achieving LEED certification. When compared to a random sample of traditionally designed buildings and controlling for time, location and cost, the study found no significant difference in average costs for green buildings as compared to non-green buildings.
- By utilizing the integrated design process, a process that brings all stakeholders together to identify and resolve problems early in the process, green schools can be built for no additional premium.
- Costs to operate energy- and water-efficient schools are far less than conventional schools.
- To create green schools, a community does not have to build new schools. There are many cost-effective measures available to turn the approximately 99,000 existing public schools in the United States into green schools.

MYTH… LEED IS EXPENSIVE, SO WHY CERTIFY?

Fact: LEED-certified buildings do not need to cost more than regular buildings, and you can't manage what you can't measure.

- Third-party certification validates and gives owners confidence that the building was built as designed with performance in mind and can be expected to perform as intended.
- Registration and certification fees are minimal; the documentation costs should be a cost of doing business. The cost to register and certify a 100,000-square-foot school for USGBC member organizations is less than $4,000 using LEED for Existing Buildings: Operations & Maintenance, and less than $5,500 using LEED for Schools. See page 54 for more information about certification and pricing.
- Costs and availability of green products and services are now competitive with conventional products.
- You can say you are "building to LEED specifications" without seeking certification, but how can stakeholders know you did what you said you were going to do without third-party verification? Building green without seeking certification is like finishing high school but not applying for a diploma.

MYTH… GREEN SCHOOLS SHOULD NOT BE THE CONCERN OF STATE LEGISLATORS; SCHOOLS ARE THE PURVIEW OF LOCAL DISTRICTS.

Fact: Smart state policies and frameworks set up the "what and the why," leaving the "how" to local districts, as they should.

- Legislators are charged with the fiduciary responsibility of using taxpayer dollars responsibly, and green schools save money.
- Because school capital budget financing is complex, local districts benefit from leadership from state legislators who understand the return on investment that green schools yield. State legislators have an opportunity and obligation to develop policies that maximize this return on investment.

- Especially with existing schools, policies designed to give latitude to the school district facilities management team to make decisions that work for their specific buildings significantly improve that return on investment.
- States have the ability to aggregate resources that can benefit all districts at an economy of scale that districts cannot do by themselves.
- Constituents want green schools. They want schools that are conducive to learning while saving energy, resources and money.
- If state legislators do not lead the efforts to ensure every child in the state attends a safe and healthy school, who will?

MYTH… GREEN SCHOOLS DO NOT SAVE MONEY.
Fact: Green schools are designed to save money.

- On average, green schools use 33% less energy and 32% less water than conventionally constructed schools, significantly reducing utility costs.
- The typical green school saves $100,000 per year on operating costs — enough to hire at least one new teacher, buy 200 new computers, or purchase 5,000 textbooks.
- Green schools will meet cost-saving goals if operated and maintained as intended. A green school with no plans to measure and manage its performance may not realize cost savings.
- By using LEED as a framework to green schools, legislators can ensure schools are designed, maintained and monitored to deliver their highest performance.

MYTH… GREEN SCHOOLS REQUIRE CONSTRUCTION AND RENOVATION STANDARDS THAT CREATE A BURDEN.
Fact: Developing green job skills is an opportunity not a burden.

- Any gaps in green building and maintenance skills can be addressed by including training and technical assistance in the green school legislation.
- Setting green construction and renovation standards provides opportunities for constituents to develop needed skills for the new green economy.

MYTH… GREEN SCHOOLS DO NOT IMPROVE STUDENT PERFORMANCE.
Fact: Green schools create inviting classrooms that lessen distractions and encourage student participation.

- Green schools have clean air, high-quality acoustics, temperature control systems, and use daylighting strategies to create welcoming learning environments that lessen distractions and encourage student participation.

MYTH… GREEN SCHOOLS WILL NOT WITHSTAND OUR STATE'S SEVERE WEATHER.
Fact: All green schools are built to code.

- All new schools — green or conventional — must be built to code and are designed to withstand severe weather. Jurisdictions decide what structural, seismic, hurricane-resistant or flood-resistant measures their code will require along with all other fire and life safety requirements.

MYTH… GREEN SCHOOLS MAKE SENSE IN SOME STATES, BUT NOT OURS.

Fact: Green Schools make sense for every state and in every community.

- There is no prescriptive blueprint for a green school. A green school in Florida will have different project measures than a green school in Minnesota.
- The promise and potential of green schools should be one for every child in America. All children deserve this opportunity.
- Green schools seek to save money through resource efficiency and green operations and maintenance procedures and policies that create schools that are conducive to learning while saving energy, resources and money.

MYTH… GREEN SCHOOLS DO NOT IMPROVE STUDENT HEALTH.

Fact: Green schools improve health by eliminating toxic materials and products and circulating cleaner air.

- Green schools emphasize high indoor air quality by improving air circulation, removing toxic materials and products, and reducing CO_2 emissions.
- Nurses at green schools report fewer clinic visits, students note less eye, nose and throat irritation, and asthma-related incidents decline, helping to improve student health and decrease absenteeism.

MYTH… GREEN SCHOOLS CAN'T USE WOOD GROWN IN OUR STATE BECAUSE LEED WON'T LET THEM.

Fact: LEED doesn't prohibit the use of local wood; in fact, it rewards the use of materials acquired locally (within a 500-mile radius).

- LEED also rewards the use of wood that has been certified to be grown and harvested in an environmentally responsible way.
- If we are to drive fundamental change in the marketplace, we must focus on helping everyone in the industry, including the forest industry, to improve the sustainability of its business practices, and this is happening every day.

MYTH… LEED-CERTIFIED BUILDINGS DON'T PERFORM AS EXPECTED.

Fact: LEED-certified buildings save energy, save water and save money.

- Proper operation and maintenance of a green building is how you ensure performance.
- There are hundreds of case studies on the USGBC website that you can access to see how LEED-certified buildings at all levels have performed.

MYTH… GREEN BUILDING CODES ARE A REPLACEMENT FOR GREEN BUILDING RATING SYSTEMS SUCH AS LEED.

Fact: Above-code green building rating systems are both distinct and complementary to green building codes, and signal community leadership.

- On the road to truly sustainable schools, neighborhoods and communities, it's not a choice between codes or rating systems, but it's the use of both codes and rating systems, learning from one another, and continuously improving content, implementation and results. Read more about green building codes and rating systems in *Greening the Codes* at usgbc.org/government.

GLOSSARY OF TERMS, ASSOCIATIONS AND ORGANIZATIONS
AND ADDITIONAL RESOURCES, DATABASES, AND PROGRAMS

4

Glossary of Terms

ENERGY SERVICE COMPANY (ESCO)

An ESCO is a business that develops, installs and arranges financing for projects designed to improve the energy efficiency and maintenance costs for facilities over a seven- to 20-year period. ESCOs generally act as project developers and assume the technical and performance risk associated with the project. Services are included in the project's cost and are repaid through the cost savings generated. ESCO can identify and evaluate energy- and water-saving opportunities, provide engineering services from design to equipment specifications, order and install equipment, manage construction, provide long-term energy management and maintenance services, guarantee performance and savings, and, if needed, arrange financing.

ENERGY STAR® RATING

USGBC uses the U.S. Environmental Protection Agency's (EPA) Portfolio Manager as the benchmarking platform to validate a building's energy performance. Portfolio Manager is a free, interactive online tool that assesses energy and water consumption, performance, and cost information for individual buildings and building portfolios. Rating the building's energy performance is the first step in conducting the LEED Certification Assessment. Portfolio Manager rates the current level of building energy efficiency, based on 12 months of utility data entered into the online tool. The building then receives an energy performance rating on a scale of 1 to 100, known as the ENERGY STAR rating. For LEED for Existing Buildings: O&M certification, a building must have a score of 69 or above.

GREEN PERFORMANCE CONTRACTING (GREEN PC)

Green PC integrates traditional performance contracting with the goal of achieving LEED for Existing Building: Operations & Maintenance certification. It requires owners and ESCOs to simultaneous manage two processes: performance contracting and LEED certification. The owner and the ESCO are not obligated to achieve a LEED certification within the Green PC project time schedule, since the time frame of a Green PC project may be nine to 18 months and the LEED certification process can span 12 to 24 months. Green PC does not guarantee LEED certification, since many of the credits, especially those related to O&M best practices and sustainable policies, are the responsibility of the owner, not the ESCO. An ESCO may be able to support these types of credits, but ultimately, the owner will be responsible for ensuring the practices and policies needed to secure the credits are adopted and implemented.

THE LEED GREEN BUILDING CERTIFICATION PROGRAM

USGBC's LEED certification program is an internationally recognized suite of rating systems for buildings designed, constructed and operated for improved environmental and human health

performance. LEED addresses all building types and emphasizes state-of-the-art strategies for improving performance across all the metrics that matter most: energy savings, water efficiency, CO_2 emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts. LEED provides building owners and operators a concise framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions. The rating systems are designed for new and existing commercial, institutional, and residential buildings, as well as for neighborhood developments. Learn more at usgbc.org/leed.

Each rating system is organized into credit categories. The credit categories for commercial and institutional buildings are Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, and Innovation in Design or Operations. LEED points are awarded on a 100-point scale, and credits are weighted to reflect their potential environmental impacts. A project must satisfy all prerequisites and earn a minimum number of points to be certified. Certification levels, based on the number of points, are Certified, Silver, Gold and Platinum.

LEED CERTIFICATION ASSESSMENT

The LEED Certification Assessment is a technical assessment to evaluate the project's potential to achieve the nine prerequisites required for LEED for Existing Buildings: Operations & Maintenance certification. The assessment is also used to help determine the LEED credits to pursue.

LEED FOR EXISTING BUILDINGS: OPERATIONS & MAINTENANCE RATING SYSTEM

The LEED for Existing Buildings: Operations & Maintenance rating system certifies the ongoing operations and maintenance of existing buildings that are not undergoing major renovations. The certification system identifies and rewards current best practices and provides an outline for buildings to use less energy, water and natural resources; improve the indoor environment; and uncover operating inefficiencies. The goal of the rating system is to institutionalize a process of reporting, inspection and review over the lifespan of a building. The rating system can be applied both to existing buildings seeking LEED certification for the first time and to projects previously certified under LEED for New Construction, LEED for Schools, or LEED for Core & Shell.

LEED FOR NEW CONSTRUCTION

The LEED for New Construction rating system is designed to guide and distinguish high-performance commercial and institutional projects, including office buildings, high-rise residential buildings, government buildings, recreational facilities, manufacturing plants and laboratories. Non-academic school buildings, such as free-standing gymnasiums or performance spaces, should use LEED for New Construction.

LEED FOR SCHOOLS

LEED for Schools recognizes the unique nature of the design and construction of academic facilities. Based on the LEED for New Construction rating system, it addresses additional issues such as classroom acoustics, master planning, mold prevention and environmental site assessment. LEED for Schools should be used for buildings that provide regular academic instruction.

PAID-FROM-SAVINGS FUNDING APPROACH

The paid-from-savings approach is a financing strategy to green existing buildings. It leverages the savings generated from utility system upgrades to pay for a comprehensive greening project within a defined pay-back period. Paid-from-savings financing options include: tax-exempt lease purchase

agreements, power purchase agreements, performance contracts, equipment finance agreements, and commercial loans. In many cases, successful projects may employ a combination of these financing options, along with supplemental funding, such as revolving loan funds, utility rebates and renewable energy grants, tax incentives, as well as funds from the organization's capital and operating budgets. The paid-from-savings approach allows owners to implement needed repairs and upgrades, achieve reductions in energy and water use, and incorporate other green strategies and technologies in the most cost-effective manner.

PERFORMANCE CONTRACTING (PC)

Performance contracting, also known as energy performance contracting (EPC) or guaranteed energy savings performance contracting (ESPC), is a well-established means of procuring and financing needed building repairs and upgrades. It is both a paid-from-savings financing strategy and a project-delivery method. PC projects implement project measures that focus on the building's physical systems that produce utility cost savings, such as energy and water system upgrades. The costs savings are guaranteed by the ESCO contracted to do the work. As with all paid-from-savings projects, the costs savings are leveraged to pay for the project within a defined pay-back period.

RETURN ON INVESTMENT (ROI)

(Annual Net Savings)/(Total Cost) = ROI (%)

To calculate the ROI, divide the annual net savings by the project's total cost. The ROI will vary depending on both the size of the project and the amount of savings produced.

REVOLVING LOAN FUNDS

Many institutions, including state governments and universities, have established revolving loan funds to finance building improvements that generate utility cost savings. The savings, in turn, are used to replenish the fund.

TAX-EXEMPT LEASE-PURCHASE AGREEMENTS

A tax-exempt lease-purchase agreement is an effective alternative to traditional debt financing because it allows organizations to pay for energy-saving upgrades by using money set aside in the annual utility budget. When properly structured, tax-exempt lease purchase agreements make it possible for public sector or qualifying organizations to draw on the anticipated savings from future utility bills to pay for new, energy-efficient equipment and related services up front.

In most states, a tax-exempt lease-purchase agreement does not constitute a long-term "debt" obligation because of non-appropriation and/or abatement language written into the agreement, which may mean that public approval is not required. Non-appropriation language effectively limits the payment obligation to the organization's current operating budget period, typically 12 months. The organization will, however, have to assure lenders that the energy-efficiency upgrades being financed are considered of essential use, which minimizes the non-appropriation risk to the lender. If, for some reason, future funds are not appropriated, the equipment is returned to the lender, and the repayment obligation is terminated at the end of the current operating period without placing any obligation on future budgets. Abatement language limits the payment obligation to the ability to use the equipment and may be required in some states.

Qualifying organizations should consider using a tax-exempt lease-purchase agreement to pay for energy-efficiency equipment and related services when the projected energy savings will be greater than the cost of the equipment (financing costs included). While the financing terms for tax-exempt lease-purchase agreements may extend as long as 20 to 25 years, they are usually less than 15 years and are limited to the useful life of the equipment.

UTILITY REBATES AND RENEWABLE ENERGY GRANTS

Utility rebates or renewable energy grants are used to reduce capital costs, which in turn reduce the amount of financing needed, making the project more attractive to lenders.

Associations and Organizations

AMERICAN ARCHITECTURAL FOUNDATION

The American Architectural Foundation (AAF) is a national nonprofit organization that seeks to educate individuals and community leaders about the power of architecture to improve lives and transform the places where people live, learn, work, and play. AAF believes that cities and buildings affect mental well-being and quality of life in profound ways. Through numerous outreach programs, grants, and educational resources, AAF aims to inspire people to become thoughtful and engaged stewards of the world around them. AAF's programs include The Mayors' Institute on City Design, Great Schools by Design and the Sustainable Cities Design Academy — highly regarded initiatives that help improve the built environment through the collaboration of thought leaders, designers, and local communities. archfoundation.org

AMERICAN ASSOCIATION OF SCHOOL ADMINISTRATORS

The American Association of School Administrators (AASA), founded in 1865, is the professional organization for more than 13,000 educational leaders in the United States and throughout the world. AASA members range from chief executive officers, superintendents and senior level school administrators to cabinet members, professors and aspiring school system leaders.

AASA members are the chief education advocates for children. AASA members advance the goals of public education and champion children's causes in their districts and nationwide. As school system leaders, AASA members set the pace for academic achievement. They help shape policy, oversee its implementation and represent school districts to the public at large. aasa.org

AMERICAN FEDERATION OF TEACHERS

The American Federation of Teachers (AFT), an affiliate of the AFL-CIO, was founded in 1916 and represents nearly 3,000 local affiliates nationwide, 43 state affiliates and more than 1.4 million members. Five divisions within the AFT represent the broad spectrum of the AFT's membership: pre-K through 12th-grade teachers; paraprofessionals and other school-related personnel; higher education faculty and professional staff; federal, state and local government employees; and nurses and other healthcare professionals. In addition, the AFT represents approximately 80,000 early childhood educators and nearly 250,000 retiree members. aft.org

ASSOCIATION OF SCHOOL BUSINESS OFFICIALS INTERNATIONAL

The Association of School Business Officials International (ASBO) is a professional association that provides programs and services to promote the highest standards of school business management practices, professional growth, and the effective use of educational resources. Founded in 1910, ASBO International has nearly 6,000 school business management professionals as members. With an average budget oversight of $141 million annually, ASBO International members are the finance decision makers in school districts around the world. asbointl.org

BUILDING OWNERS AND MANAGERS ASSOCIATION (BOMA) INTERNATIONAL

The BOMA Energy Performance Contracting (BEPC) model is a model contract with supporting documents that allow building owners and operators to execute energy efficiency retrofits to existing buildings. BOMA and the Clinton Climate Initiative (CCI), in collaboration with major real estate companies and ESCOs, has developed a standardized, user-friendly contracting model that allows building owners and operators to successfully execute larger, more sophisticated retrofits and bring greater operational improvements in investment real estate.
boma.org/resources/bepc/pages/default.aspx

THE CLINTON CLIMATE INITIATIVE

The Clinton Climate Initiative's (CCI) Energy Efficiency Building Retrofit Program (EEBRP) brings together many of the world's largest cities, energy service firms and financial institutions in a landmark effort to reduce energy consumption in existing buildings. CCI works with industry, financial, government and building partners to overcome market barriers and develop financially sound solutions that accelerate the growth of the global building efficiency market. CCI provides support to building owners, such as city governments, commercial portfolio owners, schools, universities, and public housing authorities in identifying, designing, and implementing large-scale energy efficiency retrofit projects and brings the owner together with the necessary contracting and financial firms for implementation. clintonfoundation.org/what-we-do/clinton-climate-initiative

COUNCIL OF EDUCATIONAL FACILITY PLANNERS INTERNATIONAL

Established in 1921, the Council of Educational Facility Planners International (CEFPI) is a worldwide professional 501(c)(3) non-profit association whose sole mission is improving the places where children learn. CEFPI members, individuals, institutions and corporations are actively involved in planning, designing, building, equipping and maintaining schools and colleges. cefpi.org

ENERGY SERVICES COALITION

The Energy Services Coalition (ESC) is a national, non-profit organization composed of experts from a wide range of organizations working together at the state and local level to increase energy efficiency and building upgrades through energy savings performance contracting. Energy savings performance contracting enables building owners to use future energy savings to pay for up-front costs of energy-saving projects, eliminating the need to use their capital budgets.

The ESC website includes links to information on guaranteed energy savings performance contracting, state programs and activities, federal programs, financing, legislation, and model documents. Many states have ESC chapters that conduct informational meetings and workshops on how to implement performance contracting projects. Chapter contacts can be found on the ESC website.
energyservicescoalition.org

HEALTHY SCHOOLS CAMPAIGN

Healthy Schools Campaign (HSC), an independent not-for-profit organization, is the leading authority on healthy school environments and a voice for people who care about the environment, children, and education. Its mission is to advocate for policies and practices that allow all students, teachers and staff to learn and work in a healthy school environment. HSC accomplishes its work by addressing issues of environmental health and wellness in schools. The campaign prepares school stakeholders — students, parents, teachers, school nurses, administrators, community members and others — to become leaders in efforts to create change at the school, district, state and national levels.
healthyschoolscampaign.org

NATIONAL ASSOCIATION OF ENERGY SERVICE COMPANIES

The National Association of Energy Service Companies (NAESCO) is a national trade association that promotes the benefits of energy efficiency. NAESCO works to help open new markets for energy services by directly promoting the value of demand reduction to customers through seminars, workshops, training programs, publication of case studies and guidebooks, and the compilation and dissemination of aggregate industry data. The NAESCO website has information on how to locate an ESCO, an overview of the latest technologies being used in performance contracting projects, case studies, and more. naesco.org

NATIONAL CLEARINGHOUSE FOR EDUCATIONAL FACILITIES

Created in 1997 by the U.S. Department of Education and managed by the National Institute of Building Sciences, the National Clearinghouse for Educational Facilities (NCEF) provides information on planning, designing, funding, building, improving, and maintaining safe, healthy, high performance schools. edfacilities.org

NATIONAL EDUCATION ASSOCIATION

The National Education Association (NEA) is the nation's largest professional-employee organization, representing 3.2 million elementary and secondary teachers, higher education faculty, education support professionals, school administrators, retired educators and students preparing to become teachers. nea.org

NATIONAL EDUCATION ASSOCIATION HEALTH INFORMATION NETWORK

As the non-profit health affiliate of the National Education Association, the NEA Health Information Network (NEA HIN) provides health and safety information to the 3.2 million educational employees and students it serves. NEA HIN distributes information nationally through NEA's 51 state/territory affiliates as well as 14,000 local education associations. neahin.org

NATIONAL PTA

As the largest volunteer child advocacy association in the nation, Parent Teacher Association (PTA) reminds the country of its obligations to children and provides parents and families with a powerful voice to speak on behalf of every child while providing the best tools for parents to help their children be successful students. PTA does not act alone. Working in cooperation with many national education, health, safety, and child advocacy groups and federal agencies, the national PTA organization collaborates on projects that benefit children and that bring valuable resources to its members. pta.org

NATIONAL SCHOOL BOARDS ASSOCIATION

The National School Boards Association (NSBA) is a not-for-profit organization representing state associations of school boards and its member districts across the United States. Its mission is to foster excellence and equity in public education through school board leadership. NSBA achieves its mission by representing the school board perspective before federal government agencies and with national organizations that affect education, and by providing vital information and services to state associations of school boards and local school boards. nsba.org

U.S. DEPARTMENT OF ENERGY'S GUIDE TO FINANCING ENERGYSMART SCHOOLS

The new Guide to Financing EnergySmart Schools provides guidance on the process of financing energy-efficient school renovations, retrofits, or new construction and outlines the advantages and disadvantages of a variety of financing mechanisms. Written for school administrators and school board members, the guide describes: principles of financing high-performance schools, such as

determining project objectives, performing life-cycle cost analysis, and selecting a cost-benefit analysis method; making a business case for high-performance schools; non-energy benefits of energy-efficient schools; internal financing; debt financing; leasing arrangements; energy savings performance contracts; and financing information resources.
www1.eere.energy.gov/buildings/energysmartschools/financing_guide.html

U.S. GREEN BUILDING COUNCIL

The U.S. Green Building Council (USGBC) is a Washington, D.C.-based 501(c)(3) nonprofit organization committed to a prosperous and sustainable future for our nation through cost-efficient and energy-saving green buildings. USGBC works toward its mission of market transformation through its LEED green building certification program, robust educational offerings, a nationwide network of chapters and affiliates, the annual Greenbuild International Conference & Expo, and advocacy in support of public policy that encourages and enables green buildings and communities. usgbc.org

Additional Resources, Databases, and Programs

CENTER FOR GREEN SCHOOLS

The Center for Green Schools at the U.S. Green Building Council is how USGBC is making sure every student has the opportunity to attend a green school within this generation. From the kindergartner entering the classroom, to the Ph.D. student performing research in a lab, the Center provides the resources and support to elevate dialogue, accelerate policy and institute innovation toward green schools and campuses. centerforgreenschools.org

DATABASE OF STATE INCENTIVES FOR RENEWABLES & EFFICIENCY

The Database of State Incentives for Renewables & Efficiency (DSIRE) website contains information on federal and state incentives, such as rebate and renewable energy grants. dsireusa.org

ENERGY STAR® FOR BUILDINGS AND PLANTS

The U.S. Environmental Protection Agency's ENERGY STAR program has many resources and tools to help building owners and facility managers improve the performance of their facilities. The ENERGY STAR home page also has additional information on the Cash Flow Opportunity (CFO) Calculator and Target Finder. energystar.gov

FEDERAL ENERGY MANAGEMENT PROGRAM

The Federal Energy Management Program (FEMP) is part of the Department of Energy. Its website provides energy management resources and tools for federal agencies, some of which have a broader application at the state and local levels. Information is available by clicking on "Financing Mechanisms" and then clicking on "Super Energy Savings Performance Contracts." www1.eere.energy.gov/femp

GREEN BUILDING CERTIFICATION INSTITUTE (GBCI)

Established in 2008, GBCI is the institution that grants both project certification and professional credentials that recognize excellence in green building performance and practice. GBCI administers project certification for commercial and institutional buildings and tenant spaces under USGBC's LEED rating systems. GBCI also manages the professional credentialing programs based upon the LEED rating systems, including the LEED Green Associate and LEED AP credentials. gbci.org

GREEN SCHOOLS RESOLUTION

Adopting a campus- or district-wide green schools resolution helps to set priorities, solidify the school/school district commitment to sustainability, and empower leadership and staff. An example is located on the next page.

NCEF'S GREEN SCHOOLS WEBSITE

Hosted by the National Clearinghouse for Educational Facilities (NCEF), this comprehensive website contains up-to-date news, resources, and upcoming events related to green schools. The NCEF website also tracks funding opportunities, data, research, and additional information that can be useful to achieve healthy, high-performing schools in your district. ncef.org/green-schools

SAMPLE GREEN SCHOOLS RESOLUTIONS 5

Whereas, deteriorating school infrastructure and poor indoor environmental quality threaten the health, well being and achievement of staff and students;

Whereas, current climate and energy challenges compound the structural and resource deficiencies of our district's schools;

Whereas, green schools are schools that create a healthy environment that is conducive to learning while saving energy, resources and money;

Whereas, green schools create a learning environment that supports student learning through improvements in site selection, daylighting, indoor air quality, thermal comfort, acoustics, and classroom design — all of which have an important impact on a child's ability to learn and a teacher's ability to teach;

Whereas, the benefits of superior indoor air quality — a key emphasis of green schools — have been linked to lower asthma rates, fewer allergies, reduced absenteeism, and increased teacher retention rates;

Whereas, green schools use an average of 30–50% less energy compared to conventional schools;

Whereas, green schools cost less to operate, utilize durable materials, and greatly reduce water and energy use, which generates significant financial savings;

Whereas, green schools provide an educational experience that transcends the classroom by creating a host of opportunities for curriculum innovation and hands-on, project based learning in which the building itself becomes an interactive teaching tool;

Whereas, green schools do not cost more to build than conventional schools;

Therefore, be it resolved that:
Effective _____ , for new construction and major renovation projects undertaken using District funds the school district will seek and submit application for LEED certification under the U.S. Green Building Council's LEED for Schools or LEED for New Construction rating system as appropriate. The school district will undertake a good faith effort of meeting a minimum of LEED Silver certification, or receive a rating under a comparable system with requirements at least

equivalent to the requirements of LEED Silver certification. Projects are encouraged to earn LEED Gold or LEED Platinum certification, or an equivalent rating, to the extent practicable.

Effective _____ , the district will register all facilities under the LEED for Existing Buildings Operations & Maintenance rating system, or under a comparable system with requirements at least as equivalent to the LEED for Existing Buildings Operation & Maintenance rating system. The district will pursue certification for each facility to the extent practicable.

The LEED for Schools rating system recognizes the unique nature of the design and construction of K-12 schools. Developed by the U.S. Green Building Council, LEED for Schools is the recognized benchmark for green schools, with third-party reviews to ensure that school are healthy for students, comfortable for teachers and cost-effective.

The LEED for Existing Buildings: Operations & Maintenance rating system helps building owners and operators measure operations, improvements and maintenance on a consistent scale, with the goal of maximizing operational efficiency while minimizing environmental impacts. LEED for Existing Buildings addresses whole-building cleaning and maintenance issues (including chemical use), recycling programs, exterior maintenance programs, and systems upgrades. It can be applied both to existing buildings seeking LEED certification for the first time and to projects previously certified under LEED for New Construction, Schools, or Core & Shell.

Kentucky HR24

During the 2010 legislative session, the Kentucky House of Representatives voted unanimously to institute a Green Schools Caucus for the Commonwealth.

A **resolution**, relating to Green Schools.

Whereas, deteriorating school infrastructure and poor indoor environmental quality threaten the health, well-being, and achievement of staff and students; and

Whereas, current climate and energy challenges compound the structural and resource deficiencies in many school districts of the Commonwealth; and

Whereas, green schools are schools that create a healthy environment that is conducive to learning while saving energy, resources, and money; and

Whereas, green schools create an environment that supports student learning through improvements in site selection, daylighting, indoor air quality, thermal comfort, acoustics, and classroom design, all of which have an impact on a child's ability to learn and a teacher's ability to teach; and

Whereas, the benefits of superior air quality, a key emphasis of green schools, have been linked to lower asthma rates, fewer allergies, reduced absenteeism, and increased teacher retention rates; and

Whereas, green schools consume an average of 30 to 50% less energy compared to conventional schools, according to the U.S. Green Buildings Council; and

Whereas, green schools cost less to operate, utilize durable materials, and greatly reduce water and energy use, which generates significant financial savings; and

Whereas, green schools provide an educational experience that transcends the classroom by creating a host of opportunities for curriculum innovation and hands-on, project-based learning in which the building itself becomes an interactive teaching tool; and

Whereas, three new schools currently under construction, two in Warren County and one in Kenton County, are on track to be among the first energy net-zero K-12 schools in the nation; and

Whereas, there are now 30 commitments for Green Schools working groups and caucuses as a result of the Green Building Council's state legislative conference last October;

Now therefore,
Be it resolved by the House of Representatives of the General Assembly of the Commonwealth of Kentucky:

Section 1. The House of Representatives enthusiastically endorses the creation of a Green Schools Caucus in the Kentucky General Assembly to advocate and encourage broader application of the design and construction practices for green schools, both for new construction and major renovation projects undertaken with school district funds. School districts are encouraged to consider seeking

application for certification of green schools under the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system, or certification under a comparable system with requirements at least equivalent to the LEED Silver certification for new or retrofit construction, or other building performance certification systems, such as the U.S. Department of Energy's ENERGY STAR program.

www.lrc.ky.gov/record/10RS/HR24/bill.doc

GREEN BUILDING FACTS 6

- The overall green building market (both non-residential and residential) is likely to more than double from today's $36–49 billion to $96–140 billion by 2013. [1]
- The value of green building construction is projected to increase to $60 billion by 2010. [2]
- The construction market accounts for 13.4% of the $13.2 trillion U.S. GDP. [3]

MARKET IMPACT

- The green market was 2% of non-residential construction starts in 2005; 10–12% in 2008; and will grow to 20–25% by 2013. [4]
- Comprises 13.4% of the $13.2 trillion U.S. GDP. This includes all commercial, residential, industrial and infrastructure construction. New commercial and residential building construction constitutes 6.1% of the GDP. [5]
- Green building will support 7.9 million U.S. jobs and pump $554 million into the American economy over the next four years (2009–2013). [6]

ENERGY

- Buildings represent 38.9% of U.S. primary energy use (includes fuel input for production). [7]
- Buildings are one of the heaviest consumers of natural resources and account for a significant portion of the greenhouse gas emissions that affect climate change. In the U.S., buildings account for 38% of all CO_2 emissions. [8]
- Buildings represent 72% of U.S. electricity consumption. [9]

WATER

- Buildings use 13.6% of all potable water, or 15 trillion gallons per year. [10]

MATERIALS

- Buildings use 40% of raw materials globally (3 billion tons annually). [11]
- The EPA estimates that 170 million tons of building-related construction and demolition (C&D) debris was generated in the U.S. in 2003, with 61% coming from nonresidential and 39% from residential sources. [12]

- The EPA estimates that 209.7 million tons of municipal solid waste was generated in the U.S. in a single year. [13]

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1 McGraw Hill Construction (2009). *Green Outlook 2009: Trends Driving Change.*

2 McGraw-Hill Construction (2008). *Key Trends in the European and U.S. Construction Marketplace: SmartMarket Report.*

3 Department of Commerce (2008). *Annual Value of Construction Put in Place.*

4 McGraw Hill Construction (2009). *Green Outlook 2009: Trends Driving Change.*

5 Department of Construction (2008). *Annual Value of Construction Put in Place.*

6 Booz Allen Hamilton and U.S. Green Building Council (2009). *Green Jobs Study.*

7 Environmental Information Administration (2008). *EIA Annual Energy Outlook.*

8 Energy Information Administration (2008). *Assumptions to the Annual Energy Outlook.*

9 Environmental Information Administration (2008). *EIA Annual Energy Outlook.*

10 U.S. Geological Survey (2000). *2000 data.*

11 Lenssen and Roodman (1995). *Worldwatch Paper 124: A Building Revolution: How Ecology and Health Concerns are Transforming Construction.* Worldwatch Institute.

12 U.S. Environmental Protection Agency (2009). *Estimating 2003 Building-Related Construction and Demolition Materials Amounts.*

13 U.S. Environmental Protection Agency (1997). *Characterization of Municipal Solid Waste in the United States. Report No. EPA 530/R-98-007.*

PROJECT PROFILES 7

30%
REDUCED WATER USE

$18K
ANNUAL ENERGY SAVINGS

40%
BUILDING MATERIALS MANUFACTURED WITHIN 500 MILES OF SITE

CLEARVIEW ELEMENTARY SCHOOL

Day in and day out, Clearview Elementary School in Hanover, Pennsylvania, has an important duty: educate 250 young minds, eager to learn. The school serves children in kindergarten through the fourth grade, providing a learning environment tailored to the particular needs of young children. In designing Clearview, the project team's goal was to create an educational facility that would protect the children's delicate health while teaching them how to protect their delicate environment. Clearview's innovative, high-performance design does just that.

Using Green Features to Teach

The 43,000-square-foot, two-story schoolhouse was built on an empty lot next to an existing school. Hanover Public School District wanted its new school to be sustainable and efficient, a school that would save money on energy and water bills year after year. The $6.35 million building cost less than 2.5 percent more to build than average elementary schools in Pennsylvania. The building saves about $18,000 a year on energy costs — meaning a complete payback in nine years from energy savings alone.

Clearview's many green features serve a purpose beyond preserving the environment and promoting good student and teacher health. The creativity and collaboration of the school's

designers and faculty resulted in a school where eco-friendly design has opened up a new world of teaching opportunities.

A curved sunscreen in front of the school's glass corridor is more than just an energy-efficient design element; it's also a teaching tool. The sunscreen not only offers shade from the hot summer sun and forms an acoustical backdrop for outdoor assemblies and presentations; it also functions as a sundial, providing an opportunity for hands-on learning.

At Clearview the classrooms, hallways and even stairwells are bathed in natural sunlight, thanks to the design of its classroom wing. The east-west wing is long and narrow, allowing light to penetrate into the center of the building through windows, including high, south-facing clerestory windows. These daylighting strategies reduce the need for electrical lighting and promote learning and productivity. Recent studies by the California Board for Energy Efficiency showed test scores in classrooms with natural light were 15 percent to 26 percent higher than in classrooms with low levels of daylight.

Strategies and Results

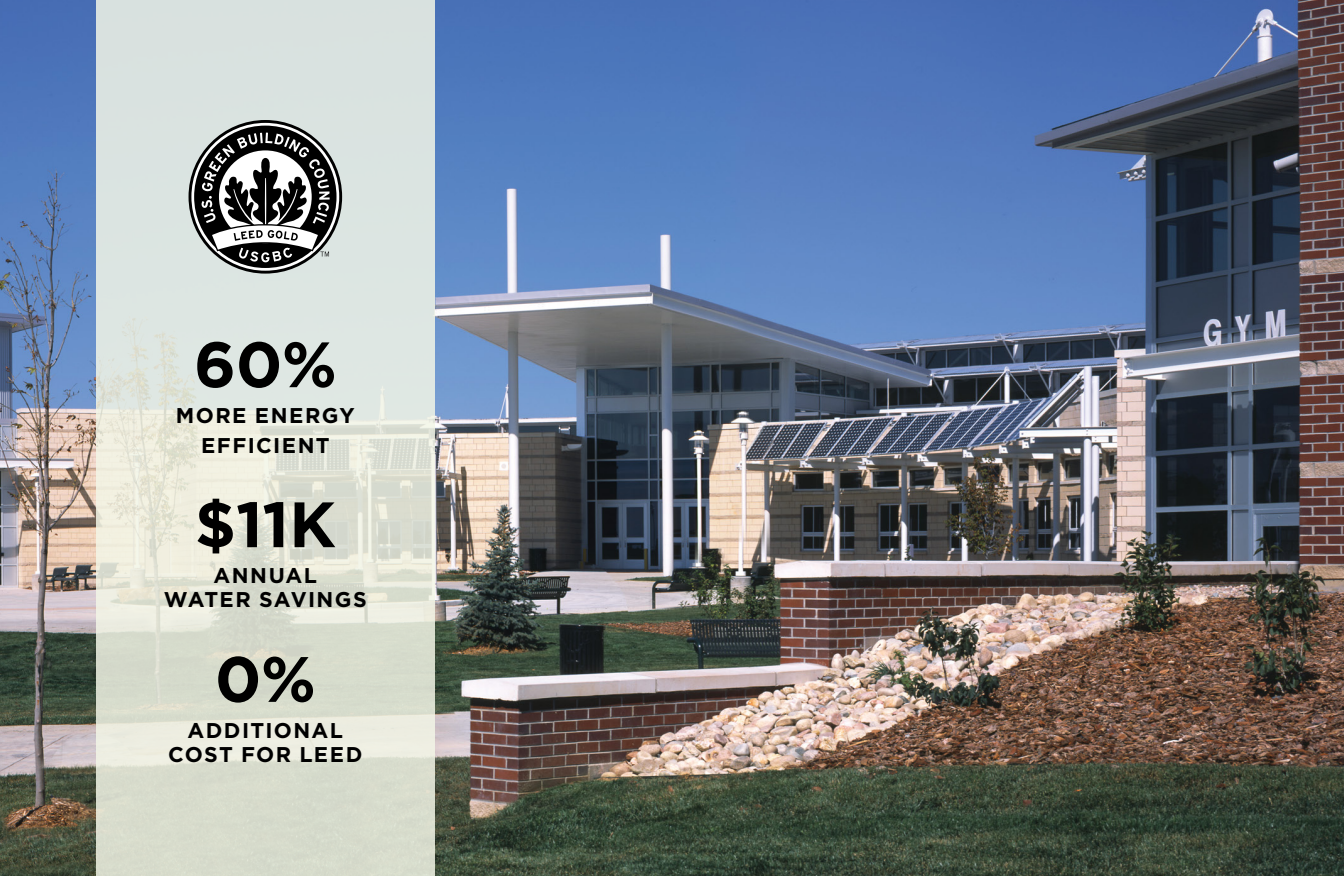
The school building maintains superior indoor air quality through a floor-mounted, air-diffusing system that responds to changes in temperature, humidity and carbon dioxide levels. Because air comes through the floor rather than vents in the ceiling, the fresh air is closer to the breathing zone of students and teachers. Low- and no-VOC (volatile organic compound) paints, non-solvent-based adhesives, and low-emitting carpeting also contribute to high indoor air quality in the school.

The facility was built with an emphasis on both local and recycled materials. Some 40 percent of the building materials, such as hemlock siding, were harvested and manufactured within a 500-mile radius; transporting local materials requires less energy and supports the region's economy. Insulation, fiberboard panels and rubber flooring are all made from recycled materials, and more than 75 percent of the school's construction waste was diverted from the landfill through recycling.

Clearview conserves water through water-efficient landscaping and plumbing fixtures. In fact, the school uses more than 30 percent less potable water than a traditionally designed school. The site is landscaped with indigenous plant species, which are more suited to the area's climate and therefore require less watering. Urinals use waterless technology, and lavatory sinks use automatic faucet controls to reduce potable water use.

About Hanover Public School District

The Hanover Public School District is committed to excellence in education through nurturing, challenging and inspiring all students to achieve their full potential and become productive citizens in a global community. Building a green school afforded the district a unique opportunity to provide students with a facility that embodied those very principles.



60%
MORE ENERGY EFFICIENT

$11K
ANNUAL WATER SAVINGS

0%
ADDITIONAL COST FOR LEED

FOSSIL RIDGE HIGH SCHOOL

When building a new high school in Fort Collins, Colorado, Poudre School District's primary goal was to provide students with the healthiest, most comfortable learning environment possible. Poudre also wanted the school to be flexible and adaptable; to make it a teaching tool for environmental stewardship; and to build it for no added cost. To achieve these goals, the district chose to pursue LEED certification for the new Fossil Ridge High School. The result is a state-of-the-art, 290,000-square-foot building with capacity for 1,800 students—all of whom will learn in an environmentally responsible, healthy building that's saving the school district money.

Energy Savings Equal Classroom Spending

Poudre had built two high performance schools in the past, but wanted LEED certification for Fossil Ridge because of the added benefits of third-party validation. LEED gave the district confidence that its new school would perform as expected, and enabled the district to benchmark the building's performance. LEED also helped justify green practices by demonstrating to building operators how their actions can have a positive impact throughout the building.

Like all school districts, Poudre has to make decisions based on a tight budget. LEED delivered a higher quality building for no added cost: at $179 per square foot, including design fees, furnishings

and equipment, Fossil Ridge's cost compares favorably with other school building projects in the region. And that doesn't include the significant savings from reduced water and energy use. "Fossil Ridge's energy bills will be about one-third less than the newest high school in the district of the same size," said Stu Reeve, energy manager for the district. "And the dollars saved go right back into the classroom."

Strategies and Results

Poudre's success was a result of involving not just architects and engineers, but also teachers, maintenance staff, and others from the very beginning. Making sure that everyone at the school was committed to achieving LEED goals helped the project team build a school that met the district's goals for student health, operating efficiency, and environmental stewardship, at no additional cost.

Many studies show that natural lighting improves students' reading and math scores, so the team focused on daylighting strategies such as placing windows on multiple sides of classrooms, roof monitors, and Solatubes to bring light into interior spaces. Superior indoor air quality is also a primary concern for schools, so the building features operable windows to let in fresh air; carbon dioxide sensors; and paints and furnishings with low volatile organic compounds (VOCs).

Fossil Ridge is 60 percent more energy efficient than comparable buildings because of innovative measures, including lighting occupancy sensors; connecting HVAC coils to occupancy; and heat wheels for heat recovery. Ice is made and stored during off-peak nighttime hours to cool the building during the day, and energy use is offset by wind power purchases. Water conservation is a key concern across Colorado, so Fossil Ridge uses a raw water pond for campus irrigation; installed low-flow faucets and toilets; and has artificial turf for the athletic field.

The project team saved fuel and transportation costs by using regionally manufactured materials whenever possible, and gave priority to products with high recycled content. Nearly 75 percent of the construction waste was diverted from landfills through recycling. Fossil Ridge is also a living educational tool, showing the next generation the importance of environmental stewardship and how it can be achieved.

About Poudre School Districts

The Poudre School District comprises 45 schools and nearly 22,500 students around the city of Fort Collins, Colorado. The District has won awards for outstanding student test scores and graduation rates, and strives "to support and inspire every child to think, to learn, to care, and to graduate prepared to be successful in a changing world."

25%
REDUCTION IN ENERGY USE

21%
BUILDING MATERIALS MANUFACTURED REGIONALLY

97%
CONSTRUCTION WASTE DIVERTED FROM THE LANDFILL

ROSA PARKS SCHOOL

Home to nearly 500 K–6 students, Rosa Parks School opened in North Portland, Oregon, in time for the 2006–2007 school year and earned a LEED Gold rating in August 2007. The 67,000-square-foot school is arranged in quadrants, each of which houses five classrooms, a resource room and other support areas organized around a central "neighborhood commons."

Community Connection

Rosa Parks School has been a revitalizing force for its neighborhood. Financed with tax credits designed to encourage development in underserved areas and built on land donated by the Housing Authority of Portland, the school is located in Portland's New Columbia Community Campus, a public-private partnership that includes a Boys and Girls Club and a community center in addition to the school. The Boys and Girls Club shares the school's art, music, and computer resources, and the larger community uses the school's library.

Strategies and Results

The 2.4-acre site is within walking distance of two bus lines, while bike racks and showers expand the commuting options for staff. Native, drought-tolerant vegetation adorns the three-quarters of an acre of open space, which cuts down on the use of drinkable water and upkeep of the landscape.

Trees preserved during construction provide shade to the site while preventing erosion. The project is anticipated to reduce irrigation needs by 60 percent and total water use by 24 percent, compared with a conventional school.

The school's energy-saving strategies — including extensive daylighting through skylights and operable windows, lightshelves, daylight sensors, extra insulation and an efficient condensing gas boiler — were expected to reduce energy use by 24 percent, compared with a comparable project designed in minimal compliance with ASHRAE Standard 90.1-1999. The project also features a 1.1-kilowatt demonstration photovoltaic system and a kiosk showing the system's real-time electricity production allowing students at Rosa Parks to learn about alternative energy first hand.

The project team employed several strategies to protect the school's indoor environmental quality. All air-handling equipment was sealed during construction, and the contractor conducted a two-week flushout before the school opened. Carbon dioxide monitors in all classrooms activate the displacement ventilation system when fresh air is required. Paints, carpeting, adhesives and sealants were selected for their low chemical emissions, and the school has implemented a green cleaning plan and an integrated pest management program.

The project team selected materials for their environmental characteristics. In all, 31 percent, by cost, were manufactured within 500 miles of the project site; of these, 61 percent were made with raw materials harvested or extracted within the same radius. A construction waste management plan diverted 97 percent of all construction waste, by weight, from the landfill.

About Portland Public Schools

Portland Public Schools serves 47,000 students, from pre-K through 12th grade, at 85 regular school buildings as well as at alternative schools, charter schools and other facilities for students with special needs.

BUILT FOR

8%

LESS THAN THE AVERAGE JUNIOR HIGH SCHOOL

55%

LOCALLY MANUFACTURED MATERIALS

WEST BRAZOS JUNIOR HIGH SCHOOL

West Brazos Junior High School, located in Brazoria, Texas, serves 600 students in grades seven and eight. The first public junior high school in Texas to earn LEED certification, West Brazos opened in time for classes in fall 2006. Built for $109 per square foot, the school was built for 18 percent less than the average junior high school in the region (*2006 Construction Report. School Planning & Management*).

Designed for Learning

Encouraged by the links between the indoor environment and student performance, the project team focused on strategies that would enhance daylighting and indoor air quality. Following the move to the new school, student standardized test scores improved by four, five, and seven percentage points for mathematics, reading, and social studies, respectively.

While privacy and security concerns convinced the project team to leave certain spaces — including the computer labs, fitness center, and teachers' lounge — without direct outdoor views, windows and clerestories bring daylight into other areas. More than 90 percent of these remaining areas, including classrooms, have views to the outdoors.

The project team selected adhesives, sealants, paints, and carpeting for their low chemical emissions. Entry grates collect dirt and other pollutants before occupants track them into the building. All custodial rooms, science labs and copy areas feature dedicated ventilation, and all drains from custodial rooms and science areas are separately plumbed. The school has committed to preserving indoor environmental quality by using only green cleaning products.

Strategies and Results

To encourage alternative transportation, the school provides bike racks and showers, preferred parking spaces for carpool vehicles and a carpool incentive program. All roofing materials and site paving are light-colored, reducing the project's contribution to the urban heat-island effect, and all site lighting was selected or modified to reduce light pollution.

The building is located on a 53-acre site landscaped with vegetation that is adapted to the region's coastal environment and needs no irrigation. Low-flow toilets and faucets reduce the project's interior water use, bringing total potable water consumption 31 percent below code.

Low-emissivity glazing in the classrooms, library, cafeteria, and office areas reduce the building's cooling loads while allowing daylight into working areas. Simple exterior shading devices reduce glare and solar heat gain. They also function as lightshelves, bouncing daylight deeper into classroom spaces.

The building is primarily concrete masonry and includes stucco and metal panels. The project team selected these materials for their durability and low maintenance needs as well as their cost and aesthetics. The team also selected materials for their recycled content and regional origins. More than 55 percent of all materials, by cost, were manufactured within 500 miles of the project site, and the construction team diverted 56 percent of all waste, by weight, from the landfill.

About Columbia Brazoria Independent School District

Columbia Brazoria Independent School District, located about 50 miles southwest of Houston, Texas, covers more than 225 square miles and educates more than 3,000 students.

LEED FACTS 8

LEED Certification: A Way to Define Green for New and Existing Schools

In 2000, USGBC established the LEED Green Building Rating System as a way to define and measure "green buildings." In school terms, LEED is like a report card for buildings, demonstrating to the community that a facility is built and/or operated in a way that supports the health and well-being of occupants and saves energy, resources and money. LEED is an internationally recognized certification system that measures how well a building is designed, built or operated to perform using several metrics:

- energy savings
- water efficiency
- CO_2 emissions reduction
- improved indoor environmental quality
- stewardship of resources

LEED provides a concise framework for identifying and implementing practical and measurable green building solutions. Based on established sustainable building practices and emerging concepts, the LEED rating systems are performance-based and comprehensive in scope. Points are awarded on a 100-point scale, and credits are weighted to reflect their potential environmental impacts. Different levels of certification are granted based on the total number of earned credits. The four progressive levels of certification are: Certified, Silver, Gold and Platinum.

Once the credits are implemented and the energy-efficiency and performance requirements met, the final step for certification is submitting the project certification documentation using the web-based LEED Online system. The Green Building Certification Institute (GBCI) reviews the application and provides feedback. If all requirements are met, GBCI awards a LEED certification to the building.

Green Building Certification Institute (GBCI)

Established in 2008, GBCI is the institution that grants both project certification and professional credentials that recognize excellence in green building performance and practice. GBCI administers project certification for commercial and institutional buildings and tenant spaces under USGBC's

LEED rating systems. GBCI also manages the professional credentialing programs based upon the LEED rating systems, including the LEED Green Associate and LEED Accredited Professional (AP) credentials.

HOW MUCH DOES LEED COST?

The cost to register and certify a school facility is based on the project's square footage and rating system used. The process provides a comprehensive third-party review of the energy and environmental performance of the school and ensures that goals are met.

The cost to register and certify at 100,000-square-foot school for USGBC member organizations is less than $4,000 using LEED for Existing Buildings: Operations & Maintenance, and less than $5,500 using LEED for Schools.

Prices are determined by GBCI and are subject to change. For complete pricing information, visit gbci.org.

LEED RATING SYSTEMS:

- LEED for New Construction
- LEED for Existing Buildings: Operations & Maintenance
- LEED for Commercial Interiors
- LEED for Core & Shell
- LEED for Schools
- LEED for Retail: New Construction
- LEED for Retail: Commercial Interiors
- LEED for Homes
- LEED for Neighborhood Development

LEED certification offers third-party verification that ensures taxpayers, parents, and students that the school has been constructed and maintained for maximum efficiency to reduce operating costs, and designed with occupant health in mind.

As the preeminent green building rating system, LEED has been used by 12 states and the District of Columbia to craft green school policies for new construction. LEED-registered and certified schools exist in all 50 states and the District of Columbia. Additionally, 45 states and over 200 localities across the United States have used LEED to inform green school public policy initiatives. For the latest list of public policy efforts, visit usgbc.org/government.

LEED FREQUENTLY ASKED QUESTIONS 9

LEED Frequently Asked Questions

WHAT IS LEED?

LEED is a third-party certification program and the nationally accepted benchmark for the design, construction and operation of high-performance green buildings and neighborhoods. Developed by the U.S. Green Building Council in 2000 through a consensus-based process, LEED serves as a tool for buildings of all types and sizes. LEED certification offers third-party validation of a project's green features and verifies that the building is operating exactly the way it was designed to.

WHAT TYPES OF BUILDINGS CAN USE LEED?

LEED certification is available for all building types, including new construction and major renovation, core and shell developments, schools, retail (both new construction and commercial interiors), commercial interiors, existing buildings, neighborhood developments, and homes. A LEED system for healthcare is currently undergoing public comment. To date, there is more than 9 billion square feet of space registered or certified using LEED rating systems.

HOW DOES LEED WORK?

LEED is a point-based system by which building projects earn points for satisfying specific green building criteria. Within each of the six LEED credit categories, projects must satisfy all prerequisites and earn a number of points from a variety of other credits. The six categories of the commercial and institutional rating systems are Sustainable Sites, Water Efficiency, Energy & Atmosphere, Materials & Resources, Indoor Environmental Quality, and Innovation in Design; LEED for Homes and LEED for Neighborhood Development have several unique categories tailored to those project types. The number of points the project earns determines the level of LEED certification the project receives. LEED certification is available in four progressive levels: Certified, Silver, Gold and Platinum.

LEED projects can also earn "bonus points" for implementing green building strategies that address the important environmental issues facing their region. A project can be awarded as many as four extra points, one point each for achieving up to four of the six Regional Priority Credits.

WHAT IS THE POINT BREAKDOWN FOR THE COMMERCIAL AND INSTITUTIONAL RATING SYSTEMS?

There are 100 possible base points; additionally, projects can earn up to 6 Innovation in Design points and up to 4 Regional Priority points.

Certified	40–49 points
Silver	50–59 points
Gold	60–79 points
Platinum	80 points and above

WHAT ARE THE LEED RATING SYSTEMS FOR COMMERCIAL AND INSTITUTIONAL BUILDINGS?

Green Building Design and Construction

LEED for New Construction & Major Renovations is a rating system that can be applied to commercial, institutional and residential buildings of four or more stories, with a focus on office buildings. The rating system has also been applied to manufacturing plants, hotels, laboratories and many other building types.

LEED for Core & Shell is a rating system that can be applied to speculative developments and core and shell buildings. Core and shell construction covers base building elements, such as the structure, envelope and building-level systems, like central heating, ventilating and air conditioning (HVAC). The rating system recognizes that the division between owner and tenant responsibility for certain elements of the building varies among markets, and it was designed to complement both the LEED for Commercial Interiors and LEED for Existing Buildings rating systems.

Pre-certification is a unique aspect of the LEED for Core & Shell rating system that gives formal recognition to a project for which the owner/developer has established a goal of achieving certification under LEED for Core & Shell. It provides the core and shell owner/developer the opportunity to market to potential tenants and financiers the unique and valuable green features of a proposed building. It is not required for certification, nor is it confirmation of, or a commitment to, achieve certification.

LEED for Schools recognizes the unique nature of the design and construction of K-12 schools, and, in addition to the environmental and health goals targeted by all LEED rating systems, LEED for Schools also addresses issues such as classroom acoustics, master planning, mold prevention and environmental site assessment. By addressing the uniqueness of school spaces and children's health issues, LEED for Schools provides a comprehensive tool for high-performance schools that are healthy for students, comfortable for teachers and cost-effective for budgets. Every day at least one school registers for LEED certification.

LEED for Retail: New Construction is designed to provide certification paths for ground-up retail construction and recognizes the unique nature of the new construction retail environment and addresses the different types of spaces that retailers need for their distinctive product lines. The rating system was developed with the help of members of the retail industry and a committee of industry experts. Following a pilot program that began in April 2007, LEED for Retail: New Construction and LEED for Retail: Commercial Interiors were approved by USGBC members in March 2010 and is expected to launch in late 2010.

Green Interior Design and Construction

LEED for Commercial Interiors addresses the specifics of tenant spaces primarily in office and institutional buildings and is designed for tenants who lease their space or do not occupy the entire building and want to certify their space as a LEED green interior. LEED for Commercial Interiors was designed to work hand-in-hand with the LEED for Core & Shell rating system.

LEED for Retail: Commercial Interiors is designed to provide certification paths for retail commercial interiors. Following a pilot program that began in April 2007, LEED for Retail: New Construction and LEED for Retail: Commercial Interiors were approved by USGBC members in March 2010 and are expected to launch in late 2010.

Green Building Operations and Maintenance

LEED for Existing Buildings: Operations & Maintenance is a tool for the ongoing operations and maintenance of existing buildings. The certification system identifies and rewards current best practices and provides an outline for buildings to use less energy, water and natural resources; improve the indoor environment; and uncover operating inefficiencies. The goal of the rating system is to institutionalize a process of reporting, inspection and review over the lifespan of a building.

LEED for Existing Buildings was launched in 2004; since a new version was launched in 2008, the rating system has been called LEED for Existing Buildings: Operations & Maintenance.

Residential and Neighborhood Rating Systems and Programs

LEED for Neighborhood Development is a rating system that integrates the principles of smart growth, new urbanism, and green building into the first national benchmark for neighborhood design. It was developed by USGBC in partnership with the Congress for the New Urbanism (CNU) and the Natural Resources Defense Council (NRDC). The rating system encourages smart growth and new urbanist best practices, promoting the location and design of neighborhoods that reduce vehicle miles traveled and communities where jobs and services are accessible by foot or public transit. It promotes more-efficient energy and water use — especially important in urban areas where infrastructure is often overtaxed.

LEED for Homes is a green home certification system for assuring homes are designed and built to be energy- and resource-efficient and healthy for occupants. LEED can be applied to single- and multifamily homes and is intended for both market-rate and affordable housing. To learn more about LEED for Homes, visit usgbc.org/homes.

REGREEN: Green Residential Remodeling Guidelines is the nation's first set of resources and tools for green home remodeling projects; unlike LEED, REGREEN is not a rating system or certification program. REGREEN provides guidance for the major elements of any green residential renovation project, including the site of the home, water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality. The guidelines blend product selection, building systems integration and proven technologies into a seamless compilation of green strategies and case studies for the homeowner, builder and design professional. The American Society of Interior Designers (ASID) Foundation and the U.S. Green Building Council (USGBC) partnered on the development of the guidelines and supporting educational resources for green residential improvement projects. The guidelines available for free online at regreenprogram.org.

For information on all LEED rating systems, visit usgbc.org/leed

LEED for Schools

WHAT IS LEED FOR SCHOOLS?

The LEED for Schools rating system recognizes the unique nature of the design and construction of K-12 schools. Based on LEED for New Construction, it addresses issues such as classroom acoustics, master planning, mold prevention, and environmental site assessment. By addressing the uniqueness of school spaces and children's health issues, LEED for Schools provides a unique, comprehensive tool for schools that wish to build green and achieve measurable results. LEED for Schools is the recognized third-party benchmark for high-performance schools that are healthy for students, comfortable for teachers, and cost-effective for budgets.

WHAT MAKES SCHOOLS DIFFERENT FROM OTHER BUILDING TYPES?

Children's health issues: Schools play the crucial role of providing healthy, safe environments in which children can learn. Because children breathe more air in proportion to their bodies than adults, environments for children must be carefully designed to minimize indoor pollutant exposure.

Educational mission: As learning environments, schools can demonstrate the importance of efficiency and conservation. LEED for Schools offers an opportunity to integrate environmental issues into the curriculum, allowing the built environment to become an interactive teaching tool.

Complex programmatic spaces: Schools combine many functions into a relatively small space; from classrooms to gymnasiums, cafeterias to machine shops, the job of school designers is particularly complex. LEED for Schools gives project teams guidance on the specific needs of unique space types.

HOW DOES LEED FOR SCHOOLS WORK?

Intended for use in the design and construction phases of a building, LEED for Schools facilitates and encourages project teams to use an integrated design approach from start to finish, bringing down overall costs and delivering project goals. Using this integrated approach, LEED promotes improved practices in:

- Site selection and development
- Water and energy use
- Environmentally preferred materials, finishes, and furnishings
- Waste stream management
- Indoor air quality and occupant comfort
- Innovation in sustainable design and construction

To become certified, projects must meet all prerequisites and a minimum number of points within the six areas listed above. The number of points the project earns, determines the level of LEED certification the project receives.

CAN I USE LEED FOR NEW CONSTRUCTION TO CERTIFY MY SCHOOL PROJECT?

If you are a K-12 educational building undergoing either major renovations or building new, you will need to use LEED for Schools. This is because LEED for Schools is more appropriate for these spaces than LEED for New Construction, especially because of LEED for Schools places an emphasis on children's health. Other projects, such as college or university academic buildings, K-12 athletic facilities, or interpretive centers are also eligible to use LEED for Schools.

CAN EXISTING SCHOOLS BECOME LEED CERTIFIED EVEN IF THEY ARE NOT UNDERGOING MAJOR RENOVATIONS?

Existing schools can certify using the LEED for Existing Buildings: Operations & Maintenance (O&M) rating system. LEED for Existing Buildings: O&M is the revised tool for the ongoing operations and maintenance of existing buildings. The certification system identifies and rewards, current best practices and provides an outline for buildings to use less energy and water, and fewer natural resources; improve the indoor environment; and uncover operating inefficiencies. It can be applied both to existing schools seeking LEED certification for the first time and to projects previously certified under LEED for Schools or LEED for New Construction.

HOW CAN I CONVINCE THE SCHOOL IN MY COMMUNITY TO STRIVE FOR LEED CERTIFICATION?

The U.S. Green Building Council has a number of resources to help you make the case to your school or school district. At the Center for Green Schools (centerforgreenschools.org), you can find facts on green schools, project profiles and valuable tools and resources the make the case for green schools. While there, you can check out our *Press Kit for Green Schools*, which includes fact sheets with talking points on LEED for Schools and the benefits of green schools. Also, encourage administrators to check out the free online tutorial, *Introduction to LEED for Schools*, which covers the basics of green design in schools, including sections on financing, case studies, and more. This course is available at usgbc.org/courses. Green building professionals can help schools understand the process of building green with LEED; visit centerforgreenschools.org to contact your local chapter's Green Schools Committee.

HOW DO I REGISTER MY PROJECT?

Project registration is the first step toward earning LEED certification for your building and is best done at the project outset. Once you register, you will have access to LEED-Online (leedonline.com) and the LEED credit interpretation database. USGBC encourages you to keep your project profile up-to-date in LEED-Online. LEED-Online provides your team with an interactive project management tool, and the information you supply will help us track your project, answer credit interpretation requests, and prepare project case studies upon certification. Aggregate data for all registered projects will be used to expand the growing knowledge base of green building operations costs and trends.

HOW MUCH DOES IT COST TO CERTIFY A PROJECT?

The average cost to register and certify a new facility is $5,500 for new schools and $3,500 for existing schools.

WHERE CAN I GET AN UPDATED COPY OF THE LEED FOR SCHOOLS RATING SYSTEM?

The LEED for Schools rating system is located within the Green Building Design & Construction reference guide and is available for purchase at usgbc.org/store.

WHERE CAN I LEARN MORE ABOUT LEED FOR SCHOOLS?

USGBC has a variety of resources for you to get started:

- Visit usgbc.org: There, you can learn more about LEED rating systems, download case studies, and more.
- Visit centerforgreenschools.org: Learn more about the benefits of green schools, find out which schools around the country are already going green, and take advantage of research and resources for educating yourself and your community about healthy, sustainable, green schools.

- Take the *Introduction to LEED for Schools* at at usgbc.org/courses: This quick online tutorial is a great introduction to green schools and LEED. Community members, administrators, and others can use this to learn about the benefits of green schools and how they can get one in their community.
- Attend a LEED workshop: LEED workshops provide a detailed exploration of the rating system, case studies, and effective strategies for designing, building and operating a green school. Visit usgbc.org/courses.
- Purchase a Green Building Design & Construction reference guide: This is the user's manual for teams that wish to pursue LEED certification. It contains supporting resources, calculation methodologies, approach and implementation strategies, and more. E-book reference guides are available for $140 and hard-copy guides are $150 for members and are available for purchase at usgbc.org/store.
- Become a member: Encourage your company to join USGBC. USGBC members are not only recognized leaders in supporting a better built environment; member company employees have access to USGBC resources, can participate in committees. Enjoy a wide array of discounts on USGBC publications, programs, and services. Visit usgbc.org/membership.
- Get involved with your local chapter: USGBC chapters routinely host informative presentations and are a great way to connect with other professionals in your region who have experience implementing LEED. Visit usgbc.org/chapters.

LEED for Existing Buildings: Operations & Maintenance

WHAT IS LEED FOR EXISTING BUILDINGS: OPERATIONS & MAINTENANCE?

LEED for Existing Buildings: Operations & Maintenance is the tool for the ongoing operations and maintenance of existing commercial and institutional buildings. The certification system identifies and rewards current best practices and provides an outline for buildings to use less energy and water, and fewer natural resources; improve the indoor environment; and uncover operating inefficiencies.

WHAT ARE THE BENEFITS OF LEED FOR EXISTING BUILDINGS: OPERATIONS & MAINTENANCE?

LEED helps building owners and managers solve building problems, improve building performance, and maintain and improve this performance over time. LEED reduces cost streams associated with building operations, reduces environmental impacts, creates healthier and more productive employee workspaces, and provides public recognition for leadership in sustainability. The majority of requirements for LEED for Existing Buildings: Operations & Maintenance certification are operations and maintenance best practices. LEED for Existing Buildings: Operations & Maintenance encourages owners and operators of existing buildings to implement sustainable practices and reduce the environmental impacts of their building over their functional life cycles.

HOW IS LEED FOR EXISTING BUILDINGS: OPERATIONS & MAINTENANCE DIFFERENT THAN OTHER LEED CERTIFICATION SYSTEMS?

The LEED for New Construction and Commercial Interiors rating systems focus largely on the construction and/or major renovation phase of a building. When the project is complete and the

building is in operation, LEED for New Construction and Commercial Interiors have performed their intended task. The intent of LEED for Existing Buildings: Operations & Maintenance is to certify the operations and maintenance of the building and create a plan for ensuring high performance over time. The rating system captures both a building's physical systems (equipment, design, land use, etc.) and the way the building is operated by its managers (waste management, temperature monitoring, commuting programs, etc.) and used by its occupants..

A key goal of LEED for Existing Buildings: Operations & Maintenance is to institutionalize a process of reporting, inspection and review over the lifespan of the building. So when LEED is applied to new construction and commercial interiors, the one-time act of renovating, constructing or tenant fit-out is certified. LEED for Existing Buildings: Operations & Maintenance certifies the completed and operated building as it functions on an ongoing basis.

WHO SHOULD USE LEED FOR EXISTING BUILDINGS: OPERATIONS & MAINTENANCE?

LEED for Existing Buildings: Operations & Maintenance helps building owners and managers solve building problems, and improve building life cycle performance. The rating system is targeted at single buildings, whether owner occupied, multi-tenanted, or multiple-building campus projects and requires three months of operational data for an initial certification; any building construction must be complete for at least a three-month span before LEED certification can be pursued. Historic properties can also become certified under the rating system, and the USGBC has been working collaboratively with the National Trust for Historic Preservation to outline specific metrics that highlight and promote preservation activities as green building strategies.

Existing buildings undergoing substantial renovations are eligible to become certified under LEED for Commercial Interiors, Existing Buildings: Operations & Maintenance (upon completion of the renovation and three months of occupancy/operation) or New Construction. Comparing the requirements of LEED for Existing Buildings: Operations & Maintenance to other LEED rating systems will help you determine which rating system is better suited to your project type. Projects that have already been certified using LEED for New Construction, LEED for Schools or LEED for Core & Shell will receive free registration if they choose to certify using LEED for Existing Buildings: Operations & Maintenance.

HOW DO I KNOW IF LEED FOR EXISTING BUILDINGS: OPERATIONS & MAINTENANCE IS RIGHT FOR MY PROJECT?

USGBC encourages the project team to tally a potential point total using the rating system checklists for all possibilities. The project is a viable candidate for LEED certification if it can meet all prerequisites and achieve the minimum points required in a given rating system. If more than one rating system applies, then it is up to the project team to decide which one to pursue. If questions or concerns remain, please email leedinfo@usgbc.org.

How often does a project need to recertify under LEED? Buildings can apply for recertification as frequently as each year but must file for recertification at least once every five years to maintain their LEED for Existing Buildings: Operations & Maintenance status. If projects do not recertify at the five-year mark, their next application will be considered an initial certification application. The project must recertify all prerequisites but may drop previously earned credits or add new credits as desired.

IS THERE A MINIMUM AGE FOR A BUILDING TO PARTICIPATE IN LEED FOR EXISTING BUILDINGS: OPERATIONS & MAINTENANCE?

LEED for Existing Buildings: Operations & Maintenance requires buildings to be in operations for at least 12 continuous months before certification can be granted.

WHAT IS THE POINT BREAKDOWN FOR LEED FOR EXISTING BUILDINGS: OPERATIONS & MAINTENANCE?

LEED for Existing Buildings: Operations & Maintenance ratings have 100 possible base points; additionally, projects can earn up to 6 Innovation in Design points and up to 4 Regional Priority points. The ratings are awarded according to the following scale:

Certified	40–49 points
Silver	50–59 points
Gold	60–79 points
Platinum	80 points and above

WHERE CAN I GET AN UPDATED COPY OF THE LEED FOR EXISTING BUILDINGS: OPERATIONS & MAINTENANCE RATING SYSTEM?

The LEED for Existing Buildings: Operations & Maintenance rating system is located within the Green Building Operations & Maintenance reference guide and is available for purchase from usgbc.org/store.

Helpful tips to get started:

- Review the LEED rating system to assess credit potential
- Set your target certification level: Certified, Silver, Gold, Platinum
- Assess what equipment will need upgrades
- Assign responsibility for credits and for writing green policies
- Make a budget
- Create a timeline to optimize work and process flow
- Register project to take advantage of USGBC resources

WHAT IS THE PROCESS FOR LEED CERTIFICATION?

Certification is now administered by the Green Building Certification Institute (GBCI). To register a project for LEED certification, visit gbci.org.

WHAT EDUCATIONAL PROGRAMS ARE AVAILABLE TO LEARN MORE ABOUT LEED?

USGBC offers a variety of LEED instructor-led workshops, online courses and webinars (live and on demand). To learn more about USGBC's LEED curriculum, visit usgbc.org/education.

Even a box of crackers tells you exactly what's inside.
Shouldn't the same be true for buildings?

LEED RATING SYSTEMS CHECKLIST 10

LEED 2009 for Schools New Construction and Major Renovations Project Checklist

PROJECT NAME: _____

DATE: _____

Yes	No	?	Sustainable Sites		Possible Points	24
Y			Prereq 1	Construction Activity Pollution Prevention		
Y			Prereq 2	Environmental Site Assessment		
			Credit 1	Site Selection		1
			Credit 2	Development Density and Community Connectivity		4
			Credit 3	Brownfield Redevelopment		1
			Credit 4.1	Alternative Transportation—Public Transportation Access		4
			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms		1
			Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles		2
			Credit 4.4	Alternative Transportation—Parking Capacity		2
			Credit 5.1	Site Development—Protect or Restore Habitat		1
			Credit 5.2	Site Development—Maximize Open Space		1
			Credit 6.1	Stormwater Design—Quantity Control		1
			Credit 6.2	Stormwater Design—Quality Control		1
			Credit 7.1	Heat Island Effect—Non-roof		1
			Credit 7.2	Heat Island Effect—Roof		1
			Credit 8	Light Pollution Reduction		1
			Credit 9	Site Master Plan		1
			Credit 10	Joint Use of Facilities		1

Yes	No	?	Water Efficiency		Possible Points	11
Y			Prereq 1	Water Use Reduction—20% Reduction		
			Credit 1	Water Efficient Landscaping		2 to 4
			Credit 2	Innovative Wastewater Technologies		2
			Credit 3	Water Use Reduction		2 to 4
			Credit 3	Process Water Use Reduction		1

Yes	No	?	Energy & Atmosphere		Possible Points	33
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems		
Y			Prereq 2	Minimum Energy Performance		
Y			Prereq 3	Fundamental Refrigerant Management		
			Credit 1	Optimize Energy Performance		1 to 19
			Credit 2	On-site Renewable Energy		1 to 7
			Credit 3	Enhanced Commissioning		2
			Credit 4	Enhanced Refrigerant Management		1
			Credit 5	Measurement and Verification		2
			Credit 6	Green Power		2

Yes	No	?	Materials & Resources		Possible Points	13
Y			Prereq 1	Storage and Collection of Recyclables		
			Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof		1 to 2
			Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements		1
			Credit 2	Construction Waste Management		1 to 2
			Credit 3	Materials Reuse		1 to 2
			Credit 4	Recycled Content		1 to 2
			Credit 5	Regional Materials		1 to 2
			Credit 6	Rapidly Renewable Materials		1
			Credit 7	Certified Wood		1

Yes	No	?	Indoor Environmental Quality		Possible Points	19
Y			Prereq 1	Minimum Indoor Air Quality Performance		
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control		
Y			Prereq 3	Minimum Acoustical Performance		
			Credit 1	Outdoor Air Delivery Monitoring		1
			Credit 2	Increased Ventilation		1
			Credit 3.1	Construction IAQ Management Plan—During Construction		1
			Credit 3.2	Construction IAQ Management Plan—Before Occupancy		1
			Credit 4	Low-Emitting Materials		1 to 4
			Credit 5	Indoor Chemical and Pollutant Source Control		1
			Credit 6.1	Controllability of Systems—Lighting		1
			Credit 6.2	Controllability of Systems—Thermal Comfort		1
			Credit 7.1	Thermal Comfort—Design		1
			Credit 7.2	Thermal Comfort—Verification		1
			Credit 8.1	Daylight and Views—Daylight		1 to 3
			Credit 8.2	Daylight and Views—Views		1
			Credit 9	Enhanced Acoustical Performance		1
			Credit 10	Mold Prevention		1

Yes	No	?	Innovation and Design Process		Possible Points	6
			Credit 1.1	Innovation in Design: Specific Title		1
			Credit 1.2	Innovation in Design: Specific Title		1
			Credit 1.3	Innovation in Design: Specific Title		1
			Credit 1.4	Innovation in Design: Specific Title		1
			Credit 2	LEED Accredited Professional		1
			Credit 3	The School as a Teaching Tool		1

Yes	No	?	Regional Priority Credits		Possible Points	4
			Credit 1.1	Regional Priority: Specific Credit		1
			Credit 1.2	Regional Priority: Specific Credit		1
			Credit 1.3	Regional Priority: Specific Credit		1
			Credit 1.4	Regional Priority: Specific Credit		1

			Total		Possible Points	110

LEED 2009 for Schools New Construction and Major Renovation

Certified 40–49 points
Silver 50–59 points
Gold 60–79 points
Platinum 80–110 points

LEED 2009 for Existing Buildings: Operations & Maintenance Project Checklist

PROJECT NAME: _____

DATE: _____

Yes	No	?	Sustainable Sites		Possible Points	26
			Credit 1	LEED Certified Design and Construction		4
			Credit 2	Building Exterior and Hardscape Management Plan		1
			Credit 3	Integrated Pest Mgmt, Erosion Control, and Landscape Mgmt Plan		1
			Credit 4	Alternative Commuting Transportation		3 to 15
					Reduce by 10%	3
					Reduce by 13.75%	4
					Reduce by 17.5%	5
					Reduce by 21.25%	6
					Reduce by 25%	7
					Reduce by 31.25%	8
					Reduce by 37.5%	9
					Reduce by 43.75%	10
					Reduce by 50%	11
					Reduce by 56.25%	12
					Reduce by 62.5%	13
					Reduce by 68.75%	14
					Reduce by 75%	15
			Credit 5	Site Development—Protect or Restore Open Habitat		1
			Credit 6	Stormwater Quantity Control		1
			Credit 7.1	Heat Island Reduction—Non-Roof		1
			Credit 7.2	Heat Island Reduction—Roof		1
			Credit 8	Light Pollution Reduction		1

Yes	NO	?	Water Efficiency		Possible Points	14
Y			Prereq 1	Minimum Indoor Plumbing Fixture and Fitting Efficiency		
			Credit 1	Water Performance Measurement		1 to 2
					Whole building metering	1
					Submetering	2
			Credit 2	Additional Indoor Plumbing Fixture and Fitting Efficiency		1 to 5
					Reduce by 10%	1
					Reduce by 15%	2
					Reduce by 20%	3
					Reduce by 25%	4
					Reduce by 30%	5

Yes	NO	?	Water Efficiency (continued)		Possible Points	14
			Credit 3	Water Efficient Landscaping		1 to 5
					Reduce by 50%	1
					Reduce by 62.5%	2
					Reduce by 75%	3
					Reduce by 87.5%	4
					Reduce by 100%	5
			Credit 4	Cooling Tower Water Management		1
					Chemical Management	1
					Non-Potable Water Source Use	2

Yes	No	?	Energy & Atmosphere		Possible Points	35
Y			Prereq 1	Energy Efficiency Best Management Practices		
Y			Prereq 2	Minimum Energy Efficiency Performance		
Y			Prereq 3	Fundamental Refrigerant Management		
			Credit 1	Optimize Energy Efficiency Performance		1 to 18
					ENERGY STAR Rating of 71 or 21st Percentile Above National Median	1
					ENERGY STAR Rating of 73 or 23rd Percentile Above National Median	2
					ENERGY STAR Rating of 74 or 24th Percentile Above National Median	3
					ENERGY STAR Rating of 75 or 25th Percentile Above National Median	4
					ENERGY STAR Rating of 76 or 26th Percentile Above National Median	5
					ENERGY STAR Rating of 77 or 27th Percentile Above National Median	6
					ENERGY STAR Rating of 78 or 28th Percentile Above National Median	7
					ENERGY STAR Rating of 79 or 29th Percentile Above National Median	8
					ENERGY STAR Rating of 80 or 30th Percentile Above National Median	9
					ENERGY STAR Rating of 81 or 31st Percentile Above National Median	10
					ENERGY STAR Rating of 82 or 32nd Percentile Above National Median	11
					ENERGY STAR Rating of 83 or 33rd Percentile Above National Median	12
					ENERGY STAR Rating of 85 or 35th Percentile Above National Median	13
					ENERGY STAR Rating of 87 or 37th Percentile Above National Median	14
					ENERGY STAR Rating of 89 or 39th Percentile Above National Median	15
					ENERGY STAR Rating of 91 or 41st Percentile Above National Median	16
					ENERGY STAR Rating of 93 or 43rd Percentile Above National Median	17
					ENERGY STAR Rating of 95+ or 45th+ Percentile Above National Median	18
			Credit 2.1	Existing Building Commissioning—Investigation and Analysis		2
			Credit 2.2	Existing Building Commissioning—Implementation		2
			Credit 2.3	Existing Building Commissioning—Ongoing Commissioning		2

Yes	No	?	Energy & Atmosphere (continued)		Possible Points	35
			Credit 3.1	Performance Measurement—Building Automation System		1
			Credit 3.2	Performance Measurement—System-Level Metering		1 to 2
				40% Metered		1
				80% Metered		2
			Credit 4	On-site and Off-site Renewable Energy		1 to 6
				3% On-site or 25% Off-site Renewable Energy		1
				4.5% On-site or 37.5% Off-site Renewable Energy		2
				6% On-site or 50% Off-site Renewable Energy		3
				7.5% On-site or 62.5% Off-site Renewable Energy		4
				9% On-site or 75% Off-site Renewable Energy		5
				12% On-site or 100% Off-site Renewable Energy		6
			Credit 5	Enhanced Refrigerant Management		1
			Credit 6	Emissions Reduction Reporting		1

Yes	No	?	Materials & Resources		Possible Points	10
Y			Prereq 1	Sustainable Purchasing Policy		
Y			Prereq 2	Solid Waste Management Policy		
			Credit 1	Sustainable Purchasing—Ongoing Consumables		1
			Credit 2.1	Sustainable Purchasing—Durable Goods		1-2
				40% of Electric		1
				40% of Furniture		1
			Credit 3	Sustainable Purchasing—Facility Alterations and Additions		1
			Credit 4	Sustainable Purchasing—Reduced Mercury in Lamps		1
			Credit 5	Sustainable Purchasing—Food		1
			Credit 6	Solid Waste Management—Waste Stream Audit		1
			Credit 7	Solid Waste Management—Ongoing Consumables		1
			Credit 8	Solid Waste Management—Durable Goods		1
			Credit 9	Solid Waste Management—Facility Alterations and Additions		1

Yes	No	?	Indoor Environmental Quality		Possible Points	15
Y			Prereq 1	Minimum IAQ Performance		
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control		
Y			Prereq 3	Green Cleaning Policy		
			Credit 1.1	IAQ Best Mgmt Practices—IAQ Management Program		1
			Credit 1.2	IAQ Best Mgmt Practices—Outdoor Air Delivery Monitoring		1
			Credit 1.3	IAQ Best Mgmt Practices—Increased Ventilation		1
			Credit 1.4	IAQ Best Mgmt Practices—Reduce Particulates in Air Distribution		1
			Credit 1.5	IAQ Mgmt Plan—IAQ Mgmt for Facility Alterations and Additions		1
			Credit 2.1	Occupant Comfort—Occupant Survey		1
			Credit 2.2	Controllability of Systems—Lighting		1
			Credit 2.3	Occupant Comfort—Thermal Comfort Monitoring		1
			Credit 2.4	Daylight and Views		1
			Credit 3.1	Green Cleaning—High Performance Cleaning Program		1
			Credit 3.2	Green Cleaning—Custodial Effectiveness Assessment		1

Yes	No	?	Indoor Environmental Quality (continued)		Possible Points	15
			Credit 3.3	Green Cleaning—Sustainable Cleaning Products, Materials Purchases		1
			Credit 3.4	Green Cleaning—Sustainable Cleaning Equipment		1
			Credit 3.5	Green Cleaning—Indoor Chemical and Pollutant Source Control		1
			Credit 3.6	Green Cleaning—Indoor Integrated Pest Management		1

Yes	No	?	Innovation in Operations		Possible Points	6
			Credit 1.1	Innovation in Operations: Specific Title		1
			Credit 1.2	Innovation in Operations: Specific Title		1
			Credit 1.3	Innovation in Operations: Specific Title		1
			Credit 1.4	Innovation in Operations: Specific Title		1
			Credit 2	LEED Accredited Professional		1
			Credit 3	Documenting Sustainable Building Cost Impacts		1

Yes	No	?	Regional Priority Credits		Possible Points	4
			Credit 1.1	Regional Priority: Specific Credit		1
			Credit 1.2	Regional Priority: Specific Credit		1
			Credit 1.3	Regional Priority: Specific Credit		1
			Credit 1.4	Regional Priority: Specific Credit		1

			Total		Possible Points	110

LEED 2009 for Existing Buildings: Operations & Maintenance

Certified 40–49 points
Silver 50–59 points
Gold 60–79 points
Platinum 80–110 points

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