HEALTHY PEOPLE, HEALTHY PLACES

Environmentally responsible affordable housing, social equity in schools, new pilot credits in response to COVID-19, LEED Zero Water projects
Take your LEED exam online, from the comfort of home.

The LEED Green Associate and LEED AP exams are now available online.

Download the credential handbook, review requirements & schedule your exam today.

usgbc.org/credentials
Join USGBC for live virtual events all year long.

Connect and learn with peers and leaders locally, regionally and globally. Earn CE credits while learning from experts on topics like LEED v4.1, LEED Zero, Arc, and more.

Experience great green building content delivered live and online.

<table>
<thead>
<tr>
<th>JULY</th>
<th>SEPTEMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ July 21: Water Conservation Showcase</td>
<td>+ Sept. 8: Kansas, Missouri, Nebraska &amp; Iowa Town Hall</td>
</tr>
<tr>
<td>+ July 23: A Midsummer Night’s Green</td>
<td>+ Sept. 9: Minnesota, Wisconsin, North Dakota &amp; South Dakota Town Hall</td>
</tr>
<tr>
<td></td>
<td>+ Sept. 15: Idaho, Montana, Wyoming &amp; Utah Town Hall</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AUGUST</th>
<th>NOVEMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ August 4-5: Healthy Economy Forum</td>
<td>+ Nov. 10-12: Greenbuild virtual experience</td>
</tr>
<tr>
<td>+ August 4, 18, 25: Water Conservation Showcase</td>
<td></td>
</tr>
<tr>
<td>+ August 11: Texas Town Hall</td>
<td></td>
</tr>
<tr>
<td>+ August 12: Oklahoma Town Hall</td>
<td></td>
</tr>
<tr>
<td>+ August 12: LEED v4.1 workshop</td>
<td></td>
</tr>
<tr>
<td>+ August 13: Tennessee Town Hall</td>
<td></td>
</tr>
<tr>
<td>+ August 13: Arc Performance Pro Workshop</td>
<td></td>
</tr>
</tbody>
</table>

Virtual events are taking place all year — visit usgbc.org/events to learn more.
LETTER FROM OUR LEADERS
Mahesh Ramanujam
President and CEO,
USGBC and GBCI

FEATURES

46 HEALTHY PEOPLE IN HEALTHY PLACES EQUALS A HEALTHY ECONOMY
A new tagline underscores USGBC’s commitment to health and wellness, while also addressing the most pressing challenges facing people and businesses today.

56 USGBC DEVELOPS NEW PILOT CREDITS IN RESPONSE TO COVID-19
Best practices to help safely reopen the nation’s offices, industries and beyond.
We’re building a better future through green building.

As a USGBC member, you are part of a community that shares a common mission. For more than 25 years, together we have worked to create better buildings, a higher standard of living and a more equitable future. While we all bring with us different backgrounds and experiences, we share one steadfast belief: that the green building community has a unique power to change our world for the better.

Thank you for investing in a sustainable future.

Explore your member benefits at usgbc.org/join
LEED v4.1 is here.

LEED v4.1 offers achievable credits. Project teams will see more strategies to drive better outcomes.

**DELIVER ON:** MATERIALS • PERFORMANCE • ENERGY • HEALTH & HUMAN EXPERIENCE • INTERIORS • SIMPLICITY • CARBON

LEED v4.1 is here to help you meet your goals. Try it on a new project or apply your choice of credits to a project already in progress.

usgbc.org/LEEDv41
USGBC’s Second Generation
Healthy people in healthy places equals a healthy economy

The decisions we make in the coming weeks, months and years will shape a new chapter in our collective work to create safer, healthier places for all. For USGBC, 2020 is the start of our second generation as an organization. And while the beginning of this decade has so far delivered a stark reminder of how precious and fragile human life is and our world can be, it’s also reminded us just how important our work is.

Those of us in the green building community spend the better part of our days talking about the need for our society to be more resilient, healthy and equitable. The global foundation for sustainability that we have set in place over the last 25 years is indestructible. And even in the midst of this unprecedented public health crisis, I have no doubt that what all of us have built over the past generation will endure.

The impact of the COVID-19 pandemic will be felt for years to come—on the economy, on people and on our life. While cities around the globe work to flatten the curve and return to some sense of normalcy, it’s incumbent on us to recognize that life is going to look much more different, but we remain committed.

Our work and our mission have not stopped—in fact, they are more critical now than ever before. We have the chance to gather under the common banner of humanity and champion a better quality of life for millions of people around the world.

As we enter our second generation and as COVID-19 continues to change our way of life, we have the opportunity to help one another by sharing our best practices and resilient behaviors with vulnerable communities around the world. The second generation of USGBC will be about possibility, innovation and coming together to create safer, healthier places for all.

For more than 25 years, we’ve worked together to build USGBC, GBCI and LEED into the extraordinary entities they are today. In the times ahead, we can rely on one another and on these foundations to help us recalibrate and recover from this crisis. Through the use of LEED, and with the support of our members and communities, together we can transform our world into an environmentally and socially responsible, healthy and prosperous place that improves our quality of life. But to be able to effectively initiate that recovery, we must refine LEED strategies to clearly communicate the economic, health and environmental benefits of a project to its occupants and the community to which it belongs.

We believe that healthy people in healthy places is the fastest way to build a healthy economy. That is why, going forward, we will prioritize our efforts to build people’s trust that their spaces are healthy and have a positive impact not only on them, but on the economy at large. Our second generation at USGBC will be supported by a relevant and reimagined vision:

Healthy people in healthy places equals a healthy economy.

As part of this vision, we have outlined immediate and long-term actions we will take to support the global recovery effort and leverage the power of our community to shape a healthier future for all. This includes upgrades to LEED v4.1, new LEED pilot credits, a call for ideas on how LEED can better evolve to deliver on the new reality we’re facing, an adapted review process to incorporate lessons learned from COVID-19, guidance reports on best practices to help project teams assist their occupants as they reenter their spaces, and much more.

We’re facing a once-in-a-lifetime crisis, but it also presents us with a once-in-a-lifetime chance for us to fulfill our new vision by asking the right questions and discovering the most equitable, inclusive and innovative solutions. And by working together, I truly believe our community will create a greener good—a world in which human life isn’t compromised, but instead championed as the focus of why we build in the first place.

We will not be defined by the crisis we’re currently facing. Instead, we will use it to find strength and motivation for continuing our vital work.

This is our focus moving forward. We hope you’ll join us in making it a reality.

LEED ON,

Mahesh Ramanujam
President and CEO
USGBC and GBCI
CONTRIBUTORS

HEATHER BENJAMIN
is the associate director of editorial content at the U.S. Green Building Council, where she writes articles for the website, as well as for Green Home Guide and the USGBC Studio marketing blog. Other publications have included The Washington Post and the industry journals CoatingsTech and O&P Almanac. She lives in Alexandria, Virginia.

ASHLEY CAMPBELL
has experience in business development, strategic marketing and communications for construction firms. She currently manages internal and external communications and corporate business development for HITT in Falls Church, Virginia, and leads the strategic vision for the client experience.

JEFF HARDER
is a journalist who has written for Triathlete Magazine, the Boston Globe Magazine, Cape Cod Life magazine, New Old House magazine, HowStuffWorks.com, and many other outlets. He lives in Massachusetts.

CALVIN HENNICK
has written feature stories for a number of national magazines and newspapers including the Boston Globe, the Philadelphia Inquirer, New York Press, Men’s Health, Running Magazine, and Eating Well, among others. He is a creative writing instructor at the University of Massachusetts.

KILEY JACQUES
is the design editor for Taunton Press’s Fine Homebuilding magazine, a publication steeped in green building science and construction methods. She has written on sustainability topics for Energy of the City, Proud Green Home, and Green Building and Design, among others.

ALEXANDRA PECCI
is a professional writer specializing in lifestyle, travel, food, sustainability, and health care topics. Her work appears in Northshore Magazine, Energy of the City, and New Old House. She lives in southern New Hampshire with her husband and daughter.

NANCY A. RUHLING
LEED v4.1 is here.

LEED v4.1 is improved for interiors, enabling productive spaces that influence the carbon footprint of the whole building. Every action counts and everyone deserves a space where they can be productive, healthy and happy.

**DELIVER ON:** MATERIALS • PERFORMANCE • ENERGY • HEALTH & HUMAN EXPERIENCE • INTERIORS • SIMPLICITY • CARBON

LEED v4.1 is here to help you meet your goals. Try it on a new project or apply your choice of credits to a project already in progress.

The Bryant School Redevelopment | LEED Gold

usgbc.org/LEEDv41
Throughout the spring, Congress has largely been focused on enacting emergency aid legislation in response to the COVID-19 pandemic. In June, changes to the Paycheck Protection Program were made to improve its effectiveness, and in early July, the program was extended until Aug. 8.

The prospect of stimulus funding, more likely in early 2021, is getting attention. USGBC has five priority areas for economic stimulus funding: schools, critical facilities, housing, federal buildings and private sector incentives.

In the House of Representatives, the **INVEST in America Act** was enacted before the July 4 recess. The bill includes several USGBC priorities:

- **School facilities funding:** The Reopening and Rebuilding America’s Schools Act would provide federal funding to local school districts for construction and renovation. Schools funded by this bill would be built to updated energy and water standards, and would meet green requirements, including LEED, on a phased basis. Another part of the bill would establish a separate grant program focused on school energy retrofits.
- **Critical facilities:** The bill would fund public–private partnerships to spur investment to upgrade critical public facilities to improve their safety, energy efficiency, resilience and flexibility.
- **Low-income housing tax credit (LIHTC) expansion:** The bill would expand and improve the federal program where tax credits are allocated to states for construction and renovation of low-income housing. The bill would more than double the value of allocations and make other improvements related to finance.
- **Federal Energy Management Program (“FEMP” Act):** The bill would statutorily authorize the U.S. Department of Energy’s FEMP program. The bill also reestablishes federal building energy and water efficiency goals through 2030 for energy and water consumption, along with landscape water use.
- **Bird-safe Buildings Act:** This provision would require the U.S. General Services Administration to incorporate strategies and features to reduce bird fatalities resulting from collisions with its public buildings.
- **Energy-efficient public buildings:** The bill approved funding to states for state and local building energy efficiency retrofits, as well as benchmarking programs, including consideration of third-party certification to verify performance.
- **Clean energy tax incentive updates and extensions:** The “GREEN Act” contains updates, extensions and new tax credits and deductions for clean energy. The energy-efficient commercial buildings tax deduction would be extended through 2025. The act would also add energy storage to an investment tax credit.
- **HOPE for HOMES Act:** This part of the bill provides funding for online residential energy efficiency training, including LEED courses, and creates a new rebate program for homeowners to invest in energy efficiency.

While the Senate is not expected to act on the **INVEST in America Act**, we anticipate the individual bill versions of some of these provisions to get attention. We will continue to advocate for stimulus funding to help transition our buildings and communities to be efficient, resilient and supportive of health and climate.
With most states’ fiscal years concluding on June 30, recent attention has been focused on 2021 budgets and responding to the pandemic. As federal stimulus decisions take shape, likely in 2021, states will have additional opportunities to shape progress in green building, and USGBC will work to provide specific recommendations, as well as education on benefits of green building.

Several state legislatures remain active or will reconvene later in 2020. In addition, executive agencies are continuing work on issues such as codes and other policies.

**CALIFORNIA:** USGBC submitted a comment letter to the Department of General Services on changes to the ventilation requirement in state code, asking for the proposed revision to Table 4-A in the California Mechanical Code to be rescinded. USGBC also submitted a letter of support on the California Green Building Standards Code Amendment, addressing proposed electric vehicle charging at nonresidential developments.

**COLORADO:** USGBC joined a WildLife Corridors support coalition and sign-on letter requesting the Colorado General Assembly take action by supporting wildlife corridors in the state.

**NEW JERSEY:** USGBC submitted multiple letters of support to encourage positive green building legislation and help maintain the state’s momentum into the next legislative session.

Bills included NJ A1190—New Jersey Innovation Assistance Act, NJ S1343—New Jersey Innovation Zone Tax Credit, NJ A1179—High Performance Green Building Standards, NJ A3032—Sustainable Tiny Home Pilot Program, and Request for Information for a potential green financing mechanism to be established by the state of New Jersey.

**VIRGINIA:** USGBC submitted a comment letter on a Dominion Virginia Energy Star Homes proposed incentive. We are in support of the demand-side management app.

**QUALIFIED ALLOCATION PLANS**

Qualified Allocation Plans (“QAPs”) are annual or semi-annual plans that state housing finance agencies must develop, establishing the conditions and priorities for low-income housing tax credits. USGBC Advocacy has prioritized the review of such plans and providing recommendations to green affordable housing, including making the case for LEED certification and other supportive policies, such as energy efficiency and performance tracking.

Since Advocacy undertook this initiative to increase our engagement in state QAPs, we have seen improvements in policy in several states, including the recognition of LEED as a preferred pathway to achieving sustainable design in affordable housing projects. Advocacy provided input to state housing finance agencies in Connecticut, Kentucky, Minnesota and North Carolina on their draft or proposed QAPs so far in 2020, with more anticipated throughout this year. By requiring or incentivizing LEED certification, states can help more low-income housing residents benefit from sustainable, efficient and resilient housing—housing that also supports efforts to improve equity.

USGBC is optimistic about seeing proposals for increased federal funding and improvements for this important program in bills in the House and Senate, as well as in the House infrastructure bill. We will continue to work to support passage.
Carlie Bullock-Jones

Carlie Bullock-Jones, founder of Ecoworks Studio, reflects on taking a leap of faith into the world of sustainability.

WRITTEN BY Ashley Campbell
Carlie Bullock-Jones grew up in Auburn, Alabama, where her father was a professor at Auburn University, and she too became a War Eagle. Although she majored in interior architecture, the 45-year-old says her career in sustainability “really started with my college thesis, which was titled ‘The Built Environment Has an Impact on the Natural Environment’.”

“It sounds rudimentary now,” she says of her thesis title, “but you have to remember that in 1998, the conversation was just beginning.”

While there were no formal classes on green building, the professors at Auburn infused their teachings with sustainability principles, often applying methods such as materials reviews, building orientation and the use of natural light.

“My interest in this idea that what we design and build has an impact on our planet was a natural dovetail for my education and career…but at that time, I had no idea where it would take me,” says Bullock-Jones.

After graduating in 1999, she joined tvsdesign, a 50-year-old architecture firm, as an interior designer at their headquarters in Atlanta, Georgia. Just a year before, the first version of Leadership in Energy and Environmental Design (LEED) had been released by the U.S. Green Building Council (USGBC).

Seeing her interest in sustainability, the firm’s principals tapped Bullock-Jones to form an in-house committee on green building. “We had clients—mostly government and higher education—who were interested in pursuing LEED for their projects. The principals asked if I wanted to get involved, and I said absolutely. I went with my gut and my passion, and it all began to happen.”

That decision set her career on a trajectory she didn’t expect. “It took me away from design and towards a consulting role. I wasn’t only working on green projects at tvsdesigns, but we were also being tapped to advise other design firms’ green projects.”

This work included leading the certification effort for the first facility in the world certified LEED Platinum under Commercial Interiors: the Interface Showroom and Offices.

“It was an amazing experience to work with a client who wanted to achieve something that had never been done,” comments Bullock-Jones. The retail and commercial showroom featured an open design that reduced materials and simplified the disassembly required for future adaptability. In addition, 85% of the construction waste was diverted from landfills, a notable achievement on the early LEED scorecard.

In 2007, with a teaching offer from Auburn and a few consulting projects secured, Bullock-Jones founded Ecoworks Studio. “It was a leap of faith…but I’m a cautious risk taker. I didn’t intend to necessarily start a firm; I simply saw this as the chance to follow my passion again.”

Based in Atlanta, Ecoworks is now nationally recognized in the practice of integrated design principles and sustainability consulting services. The firm intentionally provides a diverse range of services. During the Great Recession of 2007–2009, Bullock-Jones learned that diversity of services and clients was critical to a firm’s longevity. Beyond sustainability certifications and reporting, Ecoworks specializes in building performance, WELL certification, commissioning and education.

Bullock-Jones believes that by diversifying the portfolio, the firm can weather difficult financial times and keep employees engaged. “We work on all types of projects and clients. From offices and health care facilities to zoos, this variety also keeps our team engaged and the creative juices flowing,” she says. “I don’t ever want my team to be bored.”

Ecoworks specializes in sports projects, a niche that was launched with its work on the 1.6-million-square-foot Mercedes-Benz Stadium project, designed by HOK. Home to the Atlanta United FC (MLS) and Atlanta Falcons (NFL), the multipurpose stadium...
replaced the NFL indoor arena Georgia Dome, which had been the home of the Falcons since 1992. Mercedes-Benz Stadium features the world’s largest halo board and is one of the few NFL stadiums with a retractable roof. Ecoworks led the project to achieve LEED Platinum certification, making it one of the few sports stadiums in the world to accomplish this feat. Notably, the team leveraged the magnitude and visibility of the project to influence materials vendors, ultimately achieving what would become the new standard of Materials and Resources credits in LEED v4.

Bullock-Jones noted that controversy surrounded the construction of the $1.6 billion project, as some in the local community cited the waste of building a new stadium when the Georgia Dome was still functional—but she feels sports organizations have much potential for the sustainability movement. “The celebrity and influence of sports in this country is fascinating,” says Bullock-Jones. “I see a lot of opportunity to infuse my message and inspire the American public to be more invested in sustainability and the health of our planet through these projects.”

Having grown from a one-woman shop to a team of 16, Ecoworks is going through the “awkward teenage years,” says Bullock-Jones. The firm weathered the Great Recession and grew through recent boom years, but now they face new challenges. “I’m leading through a pandemic, a civil rights movement and potentially an economic downturn.”

Bullock-Jones is examining her role as a leader and firm owner in these tumultuous times. While Ecoworks is diverse, employing more than 50% women, she notes there is so much more work to do. “When the Black Lives Matter movement came roaring into the spotlight, I really struggled with how to take action and make an impact. I don’t want to just offer lip service.”

Bullock-Jones says it’s nearly impossible to talk about Black Lives Matter—and the wider conversation on equality—without considering the principles of sustainability. “[The] coronavirus’s staggering impact on the minority communities has revealed what I and my colleagues have always known—there is systemic environmental racism.”

Research by the U.S. Environmental Protection Agency released in 2018 shows that Black Americans are more likely to live near landfills and industrial plants that cause pollution, making them three times more likely to die from exposure to air pollutants than white Americans.

Ecoworks wants to be part of the solution by ensuring they’re not just delivering “healthy for the wealthy,” a phrase that means sustainable design is often only attainable for certain project types and people, which may perpetuate the struggle for vulnerable populations to access natural daylight, air quality and clean water. The firm will be more intentional in its work, choosing projects and clients that will drive climate equality for Black
people and other minorities, such as by investing in affordable housing projects and zero waste efforts.

Bullock-Jones believes health and wellness is the next frontier for sustainability and is positioning Ecoworks to lead the way. In 2015, she was selected as WELL Faculty by the International WELL Building Institute (IWBI), with the mission to advance the world’s first building standard focused exclusively on human health and wellness.

However, she strongly believes WELL and LEED are most effective when achieved together. “We recommend our clients pursue both certifications, as they are meant to build upon one another. We can focus all day on the health of the people inside the building, but if we don’t manage the facility’s energy consumption, then how can we improve the air quality when you step outside?” she asks.

Bullock-Jones points to IWBI’s highly anticipated Health-Safety Rating Certification, released on June 30, which focuses on the services, behaviors and engagement of the people who occupy the (preferably LEED-certified) buildings.

Bullock-Jones has worked with USGBC from the beginning. Over the years, she’s developed a network of peers who have collaborated to help guide the evolution of LEED. In 2006, she joined USGBC Faculty, the only individuals officially authorized to teach USGBC-approved content live (in person or virtually). She has been involved extensively in the development of LEED standards, serving as a subject matter expert for USGBC and GBCI, assisting in course curriculum, exam development and reference guide creation. Bullock-Jones was also named a LEED Fellow in 2012.

Now mother to a four-year-old son, she feels deeply connected to the future generations who must live in the world we leave behind. She believes the key to ensuring a healthy Earth is informing human behavior and making the connection to our planet personal.

“I’m looking to design buildings that passively influence you to make healthier choices, for yourself and the environment,” says Bullock-Jones. The novel coronavirus pandemic is proving that we can shift our habits, including reducing air pollution through teleworking. She calls this outcome “the silver lining” of a dark time, and she is hopeful that this proves we can—and will—change the course of our impact on the Earth.

Left and above: Bullock-Jones led the certification effort for the first facility in the world certified LEED Platinum under Commercial Interiors: the Interface Showroom and Offices.

The design featured an open plan that reduced materials and simplified the disassembly required for future adaptability. In addition, 85% of the construction waste was diverted from landfills.
USGBC Member Companies Support Hospitals During the Pandemic

USGBC members pivot during the COVID-19 pandemic to help better serve health care workers and hospitals.

BY JEFF HARDER

A tractor-trailer rolled around Appleton, Wisconsin, in late 2019, taking hard turns, rumbling over bumpy stretches of road and generally jostling the cargo in back. These were ordinary times for the Boldt Company, a construction services firm based in the city, and this was an ordinary test to see how a new product would hold up during shipping. The product happened to be a prefabricated health care clinic room, a prototype built without a client in mind or contract in hand.

“It was serendipitous that we did that just a few months before we had the call for the COVID crisis,” says Zach Lauria, Boldt’s director of self-performed construction.

On March 15, Boldt’s executive vice president, Ben Bruns, called Kurt Spiering, principal at HGA, an architecture, engineering and design firm. The pandemic had arrived in the United States, and hospitals faced shortages of personal protective equipment (PPE), doctors and nurses, and airborne infection isolation rooms (AIIRs)—the single-patient, negative-pressure spaces engineered to prevent spreading airborne pathogens like the novel coronavirus.

As infection rates climbed, hospitals jury-rigged triage tents. HGA and Boldt had collaborated for more than 30 years and both had track records serving health care markets. On the phone call, Bruns and Spiering sought an answer to a tricky question: With COVID-19 patients expected to flood hospitals, could the prototype on the back of the truck become an AIIR in a matter of weeks?

The pandemic has compelled many companies to work under once unimaginable circumstances and constraints, as they navigate stay-at-home orders and an economic shutdown to deliver vital equipment to health care workers. The STAAT Mod, a two-bed modular critical care isolation room created through the collaboration between HGA and Boldt, is the result of such nimble thinking. The first units were designed, built and shipped to Maryland hospitals by the end of April; the first patients occupied them before the end of May.

Ultimately, the process validated the companies’ emphasis on prefabrication, an approach that slashes waste and resource use, and that often upgrades the performance of existing hospital facilities at roughly 65% of the cost of similar, conventional construction.

“The market was already moving in that direction, but the COVID-19 crisis has been a catalyst for change,” Spiering says.

The concept for the STAAT Mod began with shipping dimensions both companies knew would work: 10 feet high, 40 feet long and 12 and a half feet...
wide. (“We called it ‘inside-the-box thinking,’” Spiering says.)
But little else was certain at the outset of the pandemic; supply chains were breaking down, so parts had to be readily available, and with social distancing orders in place, HGA and Boldt had to collaborate remotely. Based on past research on inpatient units, however, HGA already knew the essentials to include. The design included donning and doffing stations for health care providers to disinfect before entering and after leaving the room, viewing windows to better monitor patients, individual carts for medical supplies in each room, fixed hookups for oxygen and other medical gases, and ample room to move patients and cart in X-ray machines.

HGA created a virtual reality mockup of the room and recruited nurses in Wisconsin to run through different COVID-19 care scenarios, tweaking features along the way. “PPE gear was extremely scarce,” Spiering says, “so we thought, could we put all the controls for pumps outside the room so [the nurses] didn’t have to go in for an unnecessary alarm?”

The room’s HVAC system, meanwhile, grew out of recommendations by the Centers for Disease Control and Prevention to sequester potential COVID-19 patients, in light of a shortage of AIIRs. “To protect staff, we needed to make each [STAAT Mod] room equivalent to an AIIR,” says Jeff Harris, director of engineering for HGA and a LEED AP, “which means you need a minimum of 12 air changes an hour, and the room had to maintain negative pressure.”

To speed along design and delivery, the HVAC subcontractor, Tweet/Garot Mechanical, employed a standard rooftop system with an attached HEPA filter and exhaust fan to prevent virus aerosols from recirculating. “When the staff weren’t physically in the room, they were in a safer environment than, say, a tent, where you don’t have any control over how the air moves around,” Harris adds.

Meanwhile, just a week after Spiering and Burns spoke, Boldt set up a prefabrication shop in Appleton. Once the design was finalized and after a nine-day startup period, a new unit rolled out of the shop every day.

“We’re building the same thing over and over again, and the standardization and repeatability inherently drive a much more efficient, lower-waste delivery process,” Lauria says. “You’re wasting less material because you can order things in exactly the way you need them. We don’t have to order an extra three inches on a stud just in case something isn’t where it’s supposed to be: Things are always where they’re supposed to be. There’s no magic bullet that slashes waste by 40%, but when you maximize every single, incremental improvement, it yields an impressive result.”

STAAT Mods can serve as stand-alone clinics or link into existing hospital facilities. After publicizing the STAAT Mod, a program manager in Maryland asked for a shipment to Adventist HealthCare Fort Washington Medical Center that arrived on April 24; before then, the hospital separated patients in an open-bay intensive care unit using plastic sheets with zippers.

“This is a phenomenal improvement over what they had in their fixed facility,” Spiering says. “In most cases, hospitals [that use the STAAT Mod] are going up in quality in the middle of the crisis.” After pouring foundations and bringing in utilities, installing a 16-bed inpatient unit takes as few as four weeks; similar, conventional construction, Spiering says, could take a year.
In nine different countries around the world, DuPont manufactures protective garments for health care workers that are made from Tyvek, a fabric-like polyethylene material designed to breathe while keeping out hazardous materials. (A slight variation of the material functions as a weather barrier in home construction.) As the COVID-19 pandemic brought widespread PPE shortages and precarious global supply chains, DuPont launched an initiative called #TyvekTogether, delivering rolls of the material from its production facility in Richmond, Virginia, to domestic manufacturers with idle capacity.

“These are companies that made consumer clothes, automotive upholstery and other things, but the commonality is that they have the capability to cut and sew garments with a little bit of help,” says David Domnisch, global business director of DuPont Personal Protection.

Along with ramping up materials production, the company provided free patterns and technical support to partners like Mirror Manufacturing and Ferrara Manufacturing, in hopes of matching DuPont’s garment manufacturing and expediting equipment to front-line workers. By the end of April, the production of Tyvek protective garments grew to 30 million a month.

Johnson Controls, which manufactures HVAC, fire safety and security equipment for clients in health care markets, began responding to the COVID-19 pandemic at the source. In mid-February, when China was the locus of the pandemic, the company mobilized staff on the ground, erecting a makeshift hospital in Wuhan, providing communication and security technology for 300 hospital beds, and equipping 860 critical care beds in China with nurse call systems.

As the coronavirus spread, “We were running on adrenaline,” says Lisa Roy, a vice president of commercial sales at Johnson Controls. “We had folks from cross-functional teams—project managers, health care experts, technology experts, people from the product side of our business—center on the question, ‘When this hits the United States, what will the needs be and how can we help with the response?’”

Johnson Controls developed designs for temporary hospitals used in a variety of environments, from dorm rooms and hotels to convention centers, and helped health care clients navigate new restrictions and accommodate patient surges. The company manufactured 60 five-ton heating and cooling units for field and pop-up hospitals.
It is for good reason the following projects received LEED Homes Awards for 2020 in the Affordable Housing category. Each stands as an example of what is possible in that realm of development when energy efficiency, social equity and high design are combined for the betterment of people and place. It is uncommon for a housing project to be ideally located, sustainably designed, architecturally pleasing and attainable for local residents who are often marginalized. All three buildings hit every mark, setting an example for widespread affordable housing reform.

Freedom Commons
Located in the historically underserved South Side neighborhood of Syracuse, New York, Freedom Commons was born out of a collaboration between the Syracuse Housing Authority, the Center for Community Alternatives, and North Star Homes and Development. Designed to support formerly incarcerated individuals, the project was intended to add more equity to the region—a place ripe for investment.

The building houses 54 apartments, with 43 affordable units designated for individuals or families with incomes at or below 50% of the Area Median Income (AMI); 11 permanent supportive units are designated for those whose incomes are at or below 30% of the AMI and who have experienced homelessness and involvement with the criminal justice system. On-site support services include access to education, recovery programs, employment and civic restoration training, housing support and case management.

The building’s location was a key driver in terms of Leadership in Energy and Environmental Design (LEED) certification. Sited on a lot close to multiple bus lines, residents have easy access to community goods and services; it is also a mile from two college campuses.
“We were the first step of a major master plan, so we wanted to set some precedent,” says senior project architect Dan Glading, who notes moves made to enhance the pedestrian experience. They include putting parking to the interior of the lot, on the back side of the building, which was designed to have a strong street presence. Locating the parking out of sight from the front façade, dividing the building into two distinct masses to break up what would otherwise be “a long, relentless wall,” and including front stoops all work toward that end.

Part of the goal was to encourage an active, socially engaged lifestyle. “We looked at how we could make these more than apartments,” Glading explains. “We wanted it to be a place where residents could form a supportive network. We also wanted to interrupt some of the standard tropes of architectural design, such as double-loaded corridors, no windows in the hallways and low-cost materials—we wanted to do better.”

The team proposed single-loaded corridors to get more light into the building, as well as double-height common spaces that would create “little neighborhoods within the project.” Ultimately, the single-loaded corridors were not financially feasible. Instead, a central atrium space was added to harvest natural light and promote social connectedness.

To balance cost against design goals, the team used simple materials, such as lap siding for a backdrop for large colorful panels meant to appear like hung artwork. Their repetition creates an architectural rhythm that works from a pedestrian perspective, as well as from inside a car. “We wanted it to catch the eye without screaming and looking out of place,” Glading says.

A number of decisions were also made to limit the building’s carbon footprint. “There are a lot of first steps we take that make it hard for a building owner to not want to pursue LEED certification. You can get 80% of the way there with 20% of the effort just by making a few smart choices,” says Glading, giving the examples of reduced parking; limited paving; on-site stormwater management with a surface-level rain garden; a tight building envelope with energy-efficient windows; and long-lasting materials such as brick, metal and fiber cement. “These are simple choices, but so many affordable housing projects don’t make them,” he says.

“By getting to LEED Gold, they demonstrated that they had picked the most cost-effective elements for what they want to do and the population they intend to serve,” adds James Moriarty, vice president of Sustainable Comfort and the LEED rater on the project. “This project will provide a cornerstone for this part of the city. It is a place that people can be proud of and will want to maintain, because it has a visual element that not all affordable housing projects have.”

“Rather than asking, ‘How cheap can we make it?’ we ask, ‘How much can we shoehorn into the budget?’ because people need to have pride in where they live. It’s humane and it helps everybody.”—Dan Glading, AIA
The Arroyo
In California, all new housing projects are required to have an affordable housing component. As a stand-alone building, this project is unique. The work of Koning Eizenberg Architecture, The Arroyo is their answer to the question of how to merge ecological and social benefits in an urban housing typology. The design is meant to do as much for the neighborhood as it does for the residents.

Sited on a storied lot in Santa Monica, The Arroyo is a sister project of 500 Broadway, a market-rate downtown housing project less than a quarter of a mile away. The building houses 64 family-oriented residential units, two community spaces, on-site laundry facilities, an outdoor patio and a central courtyard with a basketball half-court.

The site’s history includes a natural arroyo that was disrupted in the late 19th century by the building of a train line. When that line was dismantled in the early 20th century, a massive storm drain was installed, which is still there today. That pipe made developing the lot for market-rate, below-grade parking a challenge—however, it also brought the cost down, making The Arroyo project possible.

Although 500 Broadway is still under construction, The Arroyo is fully occupied. “It’s a really unusual model, financially,” says Nathan Bishop, principal of Koning Eizenberg, “to deliver affordable housing years before it would have been delivered if it had been included in the 500 Broadway building, which was the original plan. The Arroyo was born out of strange consequences of history, geology and social needs,” he adds, noting that they were able to maximize the development to include 14 more apartments than would have been possible at 500 Broadway.
Sustainability Strategies

Roof
- PV and solar hot water panels
- Highly efficient A/C units
- High albedo roof

Units
- Operable windows
- Open-air corridors allow breezes through
- Sunshades reduce solar gain, A/C use, and glare within unit

Courtyard
- Large trees for shade
- Long open-ended courtyard allows ocean breezes and daylight
- Plants are drought tolerant and in “real dirt” for infiltration

Walkability
- 10min walk to SM pier
- 10min walk to 3rd St Promenade
- 5min walk to train station
The two projects are similar in type. For example, they both feature open-ended courtyards that contribute to the daily life of the neighborhood. “It is a reaction to the closed-courtyard model that typified southern California from the 1960s and 1970s,” Bishop explains. “In those buildings, three-quarters of the units either face a lousy courtyard or an alley. It isn’t great, lifestyle-wise.” The open-ended corridors allow ocean breezes to circulate, and they take advantage of sunlight (passive ventilation and solar control strategies). They also give every unit a good view and access to the same light and air quality.

The Arroyo sits on Lincoln Boulevard, a car-centric street that the city views as ideal for mixed-use commercial development. This is the first finished project toward that end, but there are five additional projects under construction that will further push the effort to revitalize the neighborhood.

“From the get-go, we wanted to do something that captured a bit of the native California landscape,” says Bishop, pointing to the undeveloped land over the storm drain, which presented an unusual opportunity to plant trees that will mature to be 40 feet tall—a move certain to benefit the community.

The colorful sunshades over the walkways create what Bishop calls “sticky spaces,” where people are prone “to get caught up” at “points of engagement.” Because the area is shaded, the hope is people will want to congregate there. Moreover, the canopy controls solar gain, thereby reducing cooling loads. Similarly, high albedo roofs control heat island effect, and rooftop PVs and solar hot-water panels offset energy use.

“We wanted to make something robust and durable that fuses some ecological benefit with a lifestyle benefit and is easy to maintain,” Bishop explains, adding that a building that looks run-down after a few years sends a bad message for affordable housing and its reputation in the community. For that reason, they put all the bright colors on the undersides of balconies, awnings and walkways to protect against fading.

“The building itself is a play of light and shadow and texture; it’s only from the pedestrian point of view from the street where it comes to life as you see the colors. It’s also nice from within the units to get this kind of eyeliner against the California sky,” says Bishop. It is that kind of thinking that sets this project apart from its predecessors.
“Our mission is to always develop green, sustainable projects,” says Justin Stein, senior vice president of Bronx Pro Group, a developer of affordable housing since 1998. “Here, the drive was to meet Passive House certification in addition to LEED Platinum. We are always trying to push the envelope to achieve the most energy-efficient buildings that we can.”

Designed by Curtis & Ginsberg Architects, the eight-story, 30-unit project is located in the Morrisania section of the Bronx and is intended for a low- and moderate-income population that includes formerly homeless families. It also houses 9,586 square feet of community space for the Little Scholars Early Development Center. Once a manufacturing hub, the area was rezoned in 2003. Bronx Pro Group had built three affordable housing projects there prior to beginning work on this building, and they are currently erecting a fifth.
Part of what distinguishes 3365 Third Ave is its construction. It was built with insulated concrete forms (ICFs), a fairly new product for mid-rise buildings. Other cutting-edge products include heat pumps for heating and cooling, triple-glazed windows, and energy recovery ventilation (ERVs) units in each apartment. The last was a choice made to promote occupant health and well-being.

According to Stein, the Bronx has one of the highest asthma rates in the country. "The indoor air quality is one of the biggest benefits. Another is the reduced level of noise in the urban environment—these apartments are extremely quiet because of how airtight they are." In fact, the building envelope is so tight that some apartments don’t use heat unless temperatures are exceptionally cold.

Other green building features include a hollow-core plank floor system, tapered exterior rigid-foam roof insulation, a 43-kw solar array fastened to a steel pergola system and a green roof, among others. "To build to this level of energy efficiency certainly has a cost premium, although it is coming down as people are adapting and using these products more often," Stein says, adding that they were able to leverage the energy savings to provide additional capital for the project.

Architecturally speaking, brightly colored metal cladding enlivens the building, separating it from the surrounding manufacturing plants—a clear step toward redefining the neighborhood’s identity and positively influencing future development. ●

Spread: Designed by Curtis & Ginsberg Architects, the eight-story, 30-unit project is located in the Morrisania section of the Bronx.

Green building features include a hollow-core plank floor system, tapered exterior rigid-foam roof insulation, a 43-kw solar array and a green roof.
The awards recognize LEED-certified residential projects that are positively impacting communities through sustainable, healthy and resilient design, as well as builders and developers who are helping to advance green home building.

### OUTSTANDING MULTIFAMILY PROJECT

1. **ICONIA CUBOS LUXURY LIVING** Guadalajara, Mexico
   - The LEED Gold complex consists of two towers of 100 units each and is part of a hotel and connecting mall. Terraces, as well as panoramic and operable windows, provide views to the city from most of its regularly occupied areas while keeping thermal comfort a priority. All rainwater is reused on-site and graywater from the hotel is also treated on-site and reused in restrooms. Additionally, the owner adopted and restored public green areas around the site providing residents, as well as the city, with access to additional outdoor space.

2. **PARK MOZAIK A BLOCK** Ankara, Turkey
   - **(PROJECT OF THE YEAR)**
   - The 40-unit LEED Gold building was designed to support middle-income families and focused on decisions that promote sustainability, health and affordability. The human-centric design prioritizes health through enhanced ventilation, filtration, source separation and non-emitting materials. It also provides daylighting, access to quality views and improved thermal and acoustic comfort. Integrating sustainability goals from the beginning and using an integrative design approach contributed to ensuring this was an affordable, green residential building.

3. **SITKA APARTMENTS** Seattle, Washington
   - The LEED Platinum apartments provide a refuge to the urban dweller, bringing the beauty of the natural environment into a fast-paced setting. The seven-story, 384-unit mixed-use project has entrances that represent an environmental characteristic of the Northwest—mountains, meadows, forests and waterways. It includes a rooftop community garden, vegetated roof areas and indoor/outdoor entertainment zones. In one year, the project is expected to deliver $100,000 in savings divided between owner and tenants and eliminate nearly 80 tons of carbon.

### OUTSTANDING SINGLE-FAMILY PROJECTS

4. **GPD 346 HIGHLAND** Weston, Massachusetts
   - The LEED Platinum home is a preserved historic farmhouse that reused most of the existing structure and focused on preserving the classic New England home. Over 94% of all demo and construction waste material was diverted from landfill, including over 13 tons of interior fixtures, appliances and building materials salvaged for reuse. An above-code insulation package allows the home to operate on a fraction of the energy typical for a home of its size. This project shows how larger homes can deliver on sustainability goals, setting standards for health and efficiency.

5. **GREENLAB** Dallas, Texas
   - The LEED Platinum home was conceived as a demonstration project and designed in a biophilic style as a model for sustainable and accessible architecture. Materials were largely recycled, and its high-performance thermal shell provides peak comfort when heating or cooling systems are off. An innovative filtration system provides purified water and an irrigation process captures, filters and utilizes graywater alongside a rainwater harvesting system. This project represents how sustainability and universal design can work hand in hand while maintaining cost consistency.

6. **SIKES RESIDENCE** Cincinnati, Ohio
   - The site of this LEED Gold home was an infill lot in the historic Clifton Gaslight neighborhood and walkable to nearby amenities. It’s designed to manage 100% of its stormwater, mimicking the pre-development hydrology of the site. It takes advantage of the natural surroundings with carefully framed views and ample daylight and is also designed to accommodate a future green roof over the garage and solar panels on the south-facing main roof.

### OUTSTANDING AFFORDABLE PROJECTS

7. **3365 THIRD AVENUE** Bronx, New York
   - This LEED Platinum project demonstrates that quality housing can be both affordable and sustainable and was designed to encourage community-building. This low-energy, high-performance building consists of 30 studios to 4-bedroom units for low- to moderate-income families. It provides efficient heating and cooling, LED lighting and low-flow plumbing fixtures, all of which increases efficiency and helps residents keep utility payments in check.

8. **THE ARROYO** Santa Monica, California
   - The 100% affordable housing project is a LEED Platinum space with 64 dwellings, two community rooms, laundry facilities, an outdoor homework patio and central open courtyard with a half-court basketball area. Sunshades reduce solar gain, as well as energy demands on cooling systems. Construction was financed with Affordable Housing Tax Credits that require use of healthy materials and finishes, which were chosen to reduce VOCs and improve indoor environmental quality.

9. **FREEDOM COMMONS** Syracuse, New York
   - This LEED Gold residence was designed to support low-income families, formerly incarcerated residents, and those who have experienced homelessness. Forty-three of the building’s 54 units are designated as affordable housing and provide comprehensive reentry services that address education, recovery, employment, civic restoration and case management. It includes a computer lab, meeting space, laundry facility and communal dining area. The building provides access to transportation and uses a high-performing mechanical system.
OUTSTANDING DEVELOPERS

ACTIVE WEST BUILDERS  •  AMLI RESIDENTIAL  •  BROOKFIELD PROPERTIES  •  FRANKEL BUILDING GROUP  •  GABLES RESIDENTIAL – DC METRO

NATIONAL COMMUNITY RENAISSANCE  •  MARACAY HOMES  •  MHI DALLAS  •  MHI AUSTIN  •  TIERRA REALTY TRUST
Equalizing School Environments

Sustainability initiatives can promote social equity, health and wellness in schools.

BY ALEXANDRA PECCI

The residents of the neighborhood around Legacy Charter School in Chicago have given the school a fun and fitting nickname: “The Crayon Box.”

While the LEED Platinum school, with its whimsical and colorful design, has brightened up the neighborhood aesthetically, that’s not its only notable aspect. Ninety percent of the students the school serves come from low-income families.

It also seems to be part of a larger trend. Research published in the October 2019 issue of Social Science Quarterly found that “new schools serving lower-income and minority families and children are more likely to be green” than ones in more affluent communities.

School environments, “as an important environmental amenity for both children and communities, can be a crucial issue in the arena of environmental justice,” the authors (Shuang Zhao, University of Alabama in Huntsville; Shan Zhou, Michigan Technological University; and Douglas S. Noonan, Indiana University–Purdue University Indianapolis) write.

Values drive decisions

Although green buildings can yield financial savings in areas like electricity and water usage, cost “is usually not the driving factor,” for building greener, healthier schools, says Tamara Peffer, environment and ecology content advisor for the Pennsylvania Department of Education.

“Education agencies, school districts and private schools recognize that during the child’s development, they are more vulnerable to environmental stressors than, say, adults who have no underlying health issues,” says Peffer. “They recognize because of their size and ongoing development, [children] often experience exponentially higher exposure rates and effects of environmental contaminants because of places where they live or play,” she adds.

“So, there is a connection as to why many of the schools in urban areas or environmental justice areas are working very hard to try to create a better environment for their students within the school,” Peffer explains.

Lack of access to healthy environmental factors, which is often termed ‘environmental injustice,’ disproportionately affects low-income communities and schools. The study in Social Science Quarterly cites previous research showing that “minority students are more likely to attend schools near hazardous facilities” and “to suffer disparate health impacts and diminished school performance.”
In Pennsylvania, for instance, Peffer notes there's "a significant correlation" between environmental justice areas—which the Pennsylvania Department of Environmental Protection defines as "any census tract where 20% or more [of] individuals live in poverty, and/or 30% or more of the population is minority"—and the location of Title I schools (those that receive supplemental federal funding because of the number of low-income students).

Although cost savings may not be the main motivating factor for building green schools, it can certainly help make the case for doing so.

"A lot of our work previously has primarily focused on resources and trying to address minimizing the amount of energy used, because we can get more people on board with sustainability that way," shares Erik Lueders, a LEED AP and the sustainability and purchasing director for the Parkway School District in Missouri.

Parkway was one of 11 named a 2020 U.S. Department of Education Green Ribbon School District. The Green Ribbon Schools program recognizes schools and districts that work toward three sustainability pillars: reducing environmental impact and utility costs, improving health and wellness, and ensuring effective sustainability education.

In its Green Ribbon Schools award nominee presentation form, the district highlighted some of its measurable savings. Parkway has realized a cumulative districtwide energy savings of approximately 77 million kBTU and $960,000 since 2010; reduced water usage by 9% since 2012; and cut the amount of landfill dumpsters across the district in half since 2012.
At Legacy Charter School in Chicago, students spend a week each semester learning about the green features of the school and their community impact.
But like Peffer, Lueders says cost and energy savings are not the only reasons—or even the most important reasons—for committing to a green school district.

“Everything that our school district does is for the students,” he says, pointing to the district's mission to ensure that “students are capable, curious and confident in an ever-changing world.”

That world is one of climate crisis, Lueders says. “There’s ways that we can go about both educating our students and operating our facilities that better prepares students for that ever-changing world.”

Any building or space can positively or negatively impact health, which then could correlate to factors like academic performance. For instance, Peffer notes the connection between heat islands—which the U.S. Environmental Protection Agency (EPA) notes is an equity issue, since extreme heat disproportionately affects vulnerable populations—and how well kids do in school.

“There are studies that do link, specifically, decrease in performance academically to extremes in temperature—high and low—outside an optimal range,” she says.

For example, a 2018 National Bureau of Economic Research working paper found that “[w]ithout air conditioning, each 1 ° F increase in school year temperature reduces the amount learned that year by one percent.”

Students spend more than 1,000 hours per year in school buildings, and those spaces can provide relief from what may be stressful or unhealthy living conditions. For children at an economic disadvantage, it may be even more important for them to spend greater amounts of time in spaces that are healthier than the ones where they live or play, making schools a leverage point for creating a positive impact.

As the authors of the Social Science Quarterly study pointed out, schools don’t only serve their student populations. School facilities also serve as community gathering and meeting places.

“I think it’s great to be providing what I would consider a more optimal learning environment for students [who] have experienced more inequities in their lives,” Lueders says. “We need to engage in those restorative practices that truly make the playing field more level, so that way, everyone has access to the opportunities that everyone should have access to.”

The school–community link

Schools and school buildings have deep and sometimes complex relationships with the communities they serve, as well as their local neighborhoods, which may not always be the same. As places that both serve and reflect their communities, schools provide necessary services and become sources of pride.

“I think that a school itself represents a community in a lot of ways,” says Claire Talley, academic programs intern at the Penn State Sustainability Institute and co-author of a new case study about the Corl Street Elementary School in State College, Pennsylvania, which underwent a renovation to achieve LEED certification.

The case study digs into the renovation process and its goals, examining how a school represents “what a community
prioritizes and values, especially within their systems of
education," Talley says. Ultimately, says the study, a "new
school building physically manifests the community’s voice."

In 2008, the State College Area School District adopted
a Sustainable Facilities Resolution, which commits to
incorporating a minimum of LEED Silver standards into every
new building or major renovation. The district noted that such
buildings would not only save money and resources, but also
that "schools designed using the LEED system incorporate
features that provide a healthier physical environment and an
enriched context for education."

Prioritizing community values and overall health was
the driving force behind building the Renaissance West
STEAM Academy, in Charlotte, North Carolina, a LEED Silver,
Title I school where 78.1% of students are economically
disadvantaged. The school was built as part of the larger
Renaissance West Community Initiative, a neighborhood
revitalization project aimed at breaking the cycle of
intergenerational poverty. The initiative includes career and
health services and housing, along with education.

Building a green school was one way that the initiative
aims to "rethink how that neighborhood could rebuild itself
to create a more holistic, healthy community," says Shana
Hetherington, LEED AP BD+C and project manager for Little
Diversified Architectural Consulting, the firm behind the school.

Charlotte-Mecklenburg Schools "wanted to provide a
school that was sustainable, that thought about energy, that
thought about water, materials, that thought about the health
of the occupants—the students, the teachers—everybody in
the space," says April Lee, LEED AP BD+C, sustainability
project specialist for the same firm.

"We’re at 42% indoor water savings from all of our
plumbing fixtures; annually, we save 27.5% in energy costs," Lee
says, adding that they also sourced local materials that
have recycled content and regional materials for the building.

Hetherington notes that the sustainability goals of the
school design align with a fuller view of community well-
being. "It was this overall concept of ‘How can this school help
support the community as a whole?’, versus typically when we
work on schools, it's focusing just on that school," she says.

Of course, building a green school building doesn’t erase
environmental injustice within the local community. Because
schools are reflective of their communities, they might be
near landfills, transfer stations and smokestacks; there might
be stormwater management or water pollution problems;
and they might be sited within food deserts or heat islands.
School districts often struggle to find the right place to build
a school, constrained by land availability, cost of acquisition
and a desire to ensure easy access for all of the students
who will be attending. In fact, the EPA created guidance
for school siting in 2011 for this very reason—to encourage
school decision makers to locate schools with the health of
their students in mind.

Green school design is an important safeguard for
student and teacher health, but it can’t work alone. In fact,
Peffer notes that the Green Ribbon Schools program
"requires a component of community education and
community connection."
“With that component, it means that your work is not just on an island,” she says. “The Green Ribbon Schools program...recognizes that any kind of change requires extension of action beyond the immediate impact.”

**Sustainability education for a changing world**

For a school to be truly "green," its environmental impact must reach beyond the building and its location within the community. It also has to be green in practice by incorporating sustainability and environmental education. In fact, sustainability education is one of the three pillars that define a green school, according to the Center for Green Schools at USGBC.

Schools that engage in this work recognize that all students need an education that will adequately prepare them for college, careers and life in a world in which climate change will have a profound impact.

The specifics might look different across cities and towns, but all green and LEED-certified schools can support specific curricular efforts by using the school buildings themselves as learning tools, says Avi Lothan, LEED AP BD+C, design principal for Lothan Van Hook DeStefano Architecture and the principal in charge of the design for the Legacy Charter School in Chicago. There, students spend a week each semester learning about the green features of the school and their community impact, such as how the cistern under their parking lot can hold stormwater and limit flooding in the surrounding neighborhood.

The students at Charles Milby High School, a LEED Silver, Title I school in Houston, Texas, where more than 90% of students qualify for free or reduced lunch, have access to an outdoor classroom and hands-on learning opportunities.

The school also has a Peace Club, which spearheads school environmental initiatives like a recycling program, participation in the National Wildlife Federation’s Monarch Heroes pollinator program, a community garden, and eventually, a “pocket prairie” filled with native plantings.

“I think having a green school helps our students, especially those in the engineering pathway, and I know that our students appreciate the outdoor classroom,” says Rowena Verdin, the school’s librarian, who leads the club.

Meanwhile, Missouri’s Parkway School District has been making big strides in tying sustainability to its curriculum, and in 2019, the “board of education approved the addition of the Parkway Principles of Education for Sustainability to the guaranteed curriculum framework for all K–12 students,” according to its Green Ribbon Schools award nominee presentation form.

The district also hosts the Parkway Sustainable Schools Challenge, which allows schools to earn points—and even cash prizes—for their sustainability work.

Once again, though, the main measuring stick for programs like these isn’t necessarily money.

“It becomes a question of where your values lie… sometimes, if you only rely on cost as your decision makers, you can kind of get stuck. That’s what we found with pushing this next layer of student engagement curriculum,” says Hannah Carter, a LEED Green Associate and Parkway’s sustainability coordinator. “It’s not that we can always make a direct cost reason for why should we do these things. It’s just establishing that it’s a different value proposition.”

---

36  USGBC+  |  SUMMER 2020  PLUS.USGBC.ORG
Previous spread, center: Renaissance West STEAM Academy, in Charlotte, North Carolina, a LEED Silver, Title I school where 78.1% of students are economically disadvantaged.


Above and right: Renaissance West STEAM Academy was built as part of the larger Renaissance West Community Initiative, a neighborhood revitalization project. The initiative includes career and health services and housing, along with education.
Whether it’s happening in a small town an hour north of New York City or in a major metropolis in the south of Brazil, project teams achieving LEED Zero Water certification are building to the same ambitious goal: reducing their use of this increasingly scarce environmental resource to net zero.

A complement to the LEED rating system, LEED Zero certification, first announced in late 2018, verifies the achievement of net zero goals in water, carbon, energy and waste. LEED Zero Water recognizes buildings that achieve a potable water use balance of zero over a period of 12 months.

Along with LEED v4.1, these recognitions of performance in green building continue to push the market—from merely reducing natural resource use to creating truly regenerative structures, cities and communities.

Here are two of the early adopters:

**Leed Zero Water worldwide: Eurobusiness, Curitiba, Brazil**

On August 14, 2019, Eurobusiness, a LEED Platinum commercial office building in Curitiba, Brazil, became the first building in the world to earn LEED Zero Water certification.

Starting off with LEED Platinum in 2016 was a high achievement in itself for developer and investor Marcos Bodanese, but when the opportunity to attain LEED Zero recognition appeared, he didn’t hesitate.

“We were excited to have the first LEED Platinum office building in our region. At the time, LEED Zero Water didn’t exist. We did it because it was the right thing to do. But now, to have its actual, measured performance certified under LEED Zero is just thrilling,” says Bodanese.

The first building to certify to LEED Zero Energy was also in Curitiba: the headquarters of consulting firm Petinelli, which worked on the Eurobusiness project. Managing director Guido Petinelli uses his own LEED Zero Energy office building as a “living laboratory” of sustainability.
Below: Eurobusiness, in Curitiba, Brazil, became the first building in the world to earn LEED Zero Water certification.
Choosing to pursue net zero water

“I used to say that it is easier to sell a client on a Platinum than on a Certified project,” says Petinelli. “After all, what young athlete ever dreams of going to the Olympics to place second?” Bodanese, it turns out, was one of those early adopters who Petinelli notes “always want to go further and reach higher.”

Then, the responsibility was on Petinelli to do whatever it took to make it work. In spite of the ambitious nature of reaching net zero, however, he found that several elements combined to make the journey easier than expected: Beyond working with a visionary client, Curitiba is a city with progressive building codes and site conditions that made it easy to justify an innovative approach—plus, he was fortunate to work with a project team who bought into the idea.

In addition, the local water utility, Sanepar, supported the project, and as one of the best-managed and most respected water utilities in Brazil, its approval will likely encourage other projects to follow the Eurobusiness example and attempt similar projects.

Making smart choices with water

Eurobusiness incorporated many strategies to achieve net zero water. The 14-story building treats 100% of its wastewater (both gray and black) on-site, through a constructed wetland on its roof. The municipal building code requires that graywater be treated and reused and that a rainwater catchment basin be installed to reduce runoff rates. In a conventional design, these systems would be housed underground, taking up the space of about two parking spots.

In order to reduce initial costs and free up parking space, however, Petinelli suggested storing the rainwater on the roof. A pool of water now covers the entire surface of the roof deck. A raised floor system designed for exterior use was topped with fine gravel and planted with macrophytes, aquatic plants that thrive in or near water.

The constructed wetland is part of the treatment system, where the wastewater is repurposed for toilet flushing or is infiltrated on-site. No chemicals are used in the treatment process, and potable water is supplied by an on-site artesian well.

Replicating natural systems proved to be the most economical solution for treating the building’s wastewater. It also allowed for the treatment of both gray- and blackwater at no additional cost. In the end, the parking spaces paid for the system.

Since the available area on the roof was limited, it was also important to reduce the amount of wastewater generated in the first place. Efficient fixtures and fittings reduce potable water consumption and, therefore, the amount of wastewater.
Alternative water sources played a large role as well, contributing to an 82% reduction in potable water use. On-site water sources included captured rainwater, AHU condensate, subsurface infiltration, and gray- and blackwater. During a measured 12 months, 65% of all water used was reclaimed. An on-site artesian well serves as the building’s primary source of potable water, and the building only uses municipally treated potable water as a backup source. Most stormwater is also infiltrated on-site.

Meeting challenges in water metering
Metering is essential for LEED Zero certifications, and Petinelli is adopting this requirement going forward.

“This is our second LEED Zero certification, and a common theme that has already emerged is ‘meters,’” says Petinelli. “We’ve been designing net zero energy and water buildings for some time now. However, not all of these have meters in place… it’s easy to fix, however, and we are already working on it.”

Of the Eurobusiness project, he says, “The building already had meters installed for both potable and alternative water sources. When it came to certification, it was easy to demonstrate achievement of LEED Zero Water’s requirements. All that was needed was the measured data for a year’s period.”

Petinelli has worked closely with the GBCI team to resolve any questions that arise as they go, and he is confident that the data measurement will showcase many other clients’ projects going forward.

Giving meaning to the numbers with LEED Zero
Emphasizing measured performance “changes the conversation,” says Petinelli. “We, as green builders, finally have a simple way to communicate to clients a clearly quantified value proposition. You can’t argue with data. And LEED Zero brings meaning to that data.”

Petinelli finds that demonstrating market leadership through achieving the highest possible building performance standards is a natural sell for his clients. “I predict it will be even easier to persuade owners to achieve LEED Zero than LEED Platinum,” he says. It’s human nature to want to reach the highest goal.”

“Creating spaces and places of lasting beauty” is the vision of Alfandre Architecture, a firm in the Hudson River Valley of New York that specializes in green building and sustainable design.

Certified as LEED Platinum, LEED Zero Water and LEED Zero Energy, the firm’s office at 231 Main Street in New Paltz houses an architectural team that practices what they preach. With a diverse portfolio of residential and commercial projects, the company was founded in 1991 by Rick Alfandre, AIA, LEED AP BD+C, who has been designing for sustainability for more than 28 years.

His values, which he has instilled into the company, include designing and building high-quality spaces that are not only beautiful but that also promote occupant health and positively affect the environment.

 “[We try to] create buildings that are regenerative and can improve not only the lives of their occupants, but also improve the environment in which they are built,” says Alfandre.

In addition to his work as an architect and builder, Alfandre is a recent past chair of the market leadership advisory board of the USGBC New York Upstate community. He has also been active with its local Hudson Valley Branch.

Pursuing the highest sustainability standards

For the new headquarters on Main Street, the Alfandre team went all the way in seeking sustainable building techniques and certifications. Architect and project manager Sam Dillehay led the initial LEED Platinum certification process, from 2014 to 2015. Since 2014, the building has performed at a net zero energy level.

Subsequently, the building was recertified under LEED O+M, and that process, as well as the one for certifying to LEED Zero Energy and LEED Zero Water status, was led by green building analyst Ryan Smith.

The Alfandre Architecture building thus became one of the first in the United States to be certified as LEED Zero Water. The 5,400-square-foot structure, also home to Eco Builders, Inc. and other businesses, meets Passive House standards in addition to LEED.

“We were able to streamline the LEED Zero certification by using mainly the same information and documentation that we used for our LEED Platinum O+M certification,” says Alfandre. “We achieved LEED O+M Platinum certification on Oct. 10, 2019, and LEED Zero Water a few months later, on Feb. 7.”

The plans for the building have always included net zero energy and net zero water. “The buildings are designed for the future, not just for now,” reads the company’s blog, detailing the journey.
Water efficiency was a goal from the get-go. “We knew that with our rainwater capture and reuse system, we would, at the least, be very close to net zero water usage,” says Alfandre. “We use reclaimed rainwater for all flush fixtures and irrigation at 231 Main Street. When we heard about the LEED Zero program, we knew right away that we would likely qualify. All we needed to do next was confirm that we were in fact operating at a net zero water level.”

**Implementing water management strategies**
Stormwater management techniques featured prominently in the project’s water-saving strategies. Rainwater is collected from the 3,750-square-foot roof area and directed to a 1,500-gallon underground storage tank. Any overflow rainwater flows into a vegetated infiltration area. In drought conditions, a float switch in the storage tank causes the rainwater valve to close and the municipal water line to open. Average annual rainfall landing on the roof of the building totals about 74,750 gallons.

Annual projected water usage for all flush fixtures is about 11 kilogallons for the toilets and irrigation system, compared to an average of
Advice from the first LEED Zero Water projects

“Build with occupants in mind.”

“If you build just to achieve a certification, you may be distracted from the most important functions of the building itself. Buildings should enhance your quality of life and work, not detract from them. Instead of trying to do less bad, we should be trying to do good.”

— RICK ALFANDRE emphasizes having your true goal in mind at all times.

“Explore trade-offs where you need to.”

“Exploring trade-offs to offset first costs has made all the difference and has become a standard approach for us. As we’ve become smarter about ‘tunneling through the cost barrier,’ the number of LEED Zero projects has grown.”

— GUIDO PETINELLI shared that a big challenge with any net zero project will be budget.

about 31 kilogallons in an average building. All flush fixtures and hose bibs in the building are piped separately from the sinks and shower.

In addition, the parking areas use porous pavers, combined with subsurface storage and infiltration chambers, to allow rainwater to be diverted and absorbed into the ground, reducing runoff from the site. Surface water at the front of the building is directed into a stone-lined infiltration swale. Stormwater discharge from the site is miniscule, says Alfandre, even in major storm events, and is much better than the predevelopment condition of the site.

The biggest hiccup in the project came in October 2019, when the team was ready to submit for LEED Zero Water at the same time as the LEED O+M certification, but discovered an underground leak serving the irrigation system during the driest part of the year. The leak had gone undetected for a while, so the issue had to be remedied first.

“We had to wait a few more months, so that our 12-month reporting period began after the leak was corrected,” explains Alfandre.

Understanding the importance of operations

Designing for sustainability and operational efficiency is a part of Alfandre Architecture’s vision, and it was inherent in the team’s approach to the project. After aiming for LEED Gold in the first planning stages and then actually achieving Platinum, the next goal for the building was to reduce waste even further, over the long term.

“We take sustainability seriously, and our building operates at the level it was intended to operate,” emphasizes Alfandre. “We wanted to verify and acknowledge that we not only designed a building to LEED Platinum standards, but that five years later, it is still operating the way it was intended to. We incorporated the rainwater reuse system to reduce our potable water consumption, and with the LEED Zero program, we are now acknowledged for that.”

Designing for the human experience

Human health and well-being are a vital part of designing sustainably, and the architecture offices’ many green aspects meet these needs for staff, particularly in the area of indoor environmental quality.

“We have enhanced indoor air quality levels compared to the average building,” says Alfandre. “We have lower than average carbon dioxide, VOC and radon levels, which are linked to human health and performance. The building is designed and constructed to be ultra-energy-efficient and thermally comfortable. As a result, mechanical systems use a small amount of energy to provide heating or cooling, and we are able to provide enhanced ventilation to all spaces.”

He continues, “The building was designed and built to set an example of a highly productive and healthy work environment,” he says. Moreover, the goal was reached by using off-the-shelf systems.

When it comes to the zero water achievement, the knowledge of being part of a place that contributes positively to the environment can be motivating. “People also appreciate working in a building that prioritizes water conservation and implements rainwater reuse systems,” says Alfandre.

Left page: Alfandre Architecture’s offices were designed and built to set an example of a highly productive and healthy work environment.
Healthy People in Healthy Places Equals a Healthy Economy

A new tagline underscores USGBC’s commitment to health and wellness, while also addressing the most pressing challenges facing people and businesses today.

Human health and wellness has always been a crucial component of both green buildings and the Leadership in Energy and Environmental Design (LEED) rating system. But over the years, that messaging has sometimes been lost amid impersonal statistics about climate change and carbon reduction. While the U.S. Green Building Council (USGBC) is certainly not shifting its focus away from the impact of green buildings on the environment, the organization is doing more to communicate the human-scale benefits of sustainability. That means emphasizing not just climate change, but also the health and wellness and economic benefits of going green.

USGBC’s new organizational vision, “Healthy people in healthy places equals a healthy economy,” was being workshopped even before the COVID-19 crisis hit the United States in March. But the coronavirus crisis has, coincidentally, illustrated the importance of our buildings and spaces to both human health and the larger economy. People are afraid of entering crowded indoor spaces, and they’re also afraid of losing their jobs.

Although the principles behind the tagline are timeless, the “Healthy people in healthy places…” message is made for the current moment.

Here, USGBC president and CEO Mahesh Ramanujam discusses the shift in messaging, the impact of the coronavirus on the green building industry, and why he thinks the idea that companies will move to a permanent work-from-home model is overblown.

WRITTEN BY CALVIN HENNICK
USGBC+: What do you hope to communicate with this new messaging?

Mahesh Ramanujam: Throughout our history, USGBC has really done a good job of talking about green buildings, climate change, carbon reduction, materials, waste, energy efficiency and water quality. We have really done a phenomenal job of defining what green buildings are and driving transformation around the world with LEED. In the past 10 years, it has become clear to me that if we want to accelerate market transformation, then it’s not enough to just ask businesses to do the right thing, but we must continue to answer the question, “How do LEED or green buildings actually benefit us, the human beings?”

To me, green buildings are about people, planet and profit. But still, we have not always done a good job of talking about or quantifying the human health and economic benefits of green building. Even today, most of our communication narrowly focuses on concepts like climate change and carbon mitigation—which are important but abstract concepts for a layperson to follow.

This has led to a false narrative that LEED or green buildings are just about the planet and not about people. On the contrary, since its inception in 1998, LEED has always prioritized human health strategies within buildings, making it clear that environmental, occupant and economic health are inextricably tied together. This is why we also launched our Living Standard campaign in 2018 to educate everyone that better buildings equal better lives—and through this awareness, drive the adoption of LEED.

The COVID-19 crisis has brought a heightened awareness among everyone about how their living environment impacts their health and that of their families. And the global lockdown has triggered millions of job losses and imploded the global economy. While we are heartbroken by this pandemic, we saw a unique opportunity to both help the global economy and to encourage people to adopt LEED in order to help make their spaces healthier.

It is our belief that the fastest way to restore the global economy is to help people know that they are living, working, learning and playing in healthier places. This is why we announced our new vision of “healthy people in healthy places equals a healthy economy”—so we can simultaneously help with the global economic recovery, fight climate change and contribute to improving quality of life. This vision builds on our past to respond in the present and is also intended to position us for the future.

USGBC+: How has the new messaging been received so far?

Mahesh Ramanujam: The response has been overwhelmingly positive. Even our veteran stakeholders, who have been engaged in green buildings for a long time, are energized by the new message, as it is timely, simple, direct and transformative. We are glad to receive this validation from our own community, as that means we can accelerate and realize our vision both within and outside our community.

I have also heard some other interesting comments. On a recent call, someone asked me, “What happened to the green buildings? Why are you not focusing on climate change and carbon reduction? Why this new focus on health and wellness?”

I had to respond back with a series of questions: “How can you separate planetary health from human health? How can you separate environmental health from an individual’s health?” Because, really, this is not a new strategy. We’ve always emphasized the triple bottom line of people, planet and profit. This is nothing different. We’ve always focused on health and wellness, but now we are communicating more directly to our stakeholders. This is what is new. And that’s what this vision is about.

USGBC+: How has the focus of USGBC may not have changed, but the world certainly has. With the twin crises of the coronavirus pandemic and the associated increase in unemployment, how does this new messaging address the current moment?

Mahesh Ramanujam: Right now there are 40 million people out of work in the U.S. That is really bad for the country and for people. And this pandemic is going to set us back as a country, making it more difficult to address future challenges like this one.
USGBC has outlined the following near-term responses to the coronavirus crisis

**Immediate Response ...**

1. **UPGRADES TO LEED V4.1:** USGBC will make a series of upgrades to LEED v4.1 that will be available later this year.

2. **NEW LEED PILOT CREDITS:** On an emergency basis, USGBC will release LEED pilot credits to support social distancing, nontoxic surface cleaning, air quality and infection monitoring.

3. **CALL FOR IDEAS:** USGBC will launch a call for ideas to hear perspectives from the broader market on how LEED can better evolve to address current conditions.

4. **CEO ADVISORY COUNCILS:** CEO Advisory Councils will advise and support USGBC’s CEO on how the entire organization and its programs can adapt and move forward.

5. **ACCELERATE USGBC EQUITY:** The USGBC Equity program, announced at Greenbuild Atlanta in 2019, will be accelerated in order to help stakeholders address the social, health and economic disparities within their communities.

6. **ADAPTED REVIEW PROCESS:** GBCI will amend its LEED review process to incorporate the lessons learned about COVID-19 response.

7. **GUIDANCE REPORTS:** USGBC will publish a series of reports offering specific guidance on best practices to help project teams assist their occupants as they reenter their spaces.

**... And Future Planning**

8. **LAUNCH LEED V4.1 REGIONAL WORKING GROUPS:** USGBC will establish groups in the United States, Canada, Europe, North Asia, Southeast Asia, the Middle East and Latin America to provide recommendations to the LEED Steering Committee and Technical Advisory Groups.

9. **TAKE ADVANTAGE OF THE HUMAN EXPERIENCE CERTIFICATE:** USGBC will leverage the Human Experience performance certificate in Arc to deliver a workplace reentry or healthy space report or certificate for spaces to monitor and improve their occupant satisfaction, comfort and confidence.

10. **INVEST IN BETTER MATERIALS:** The Better Materials platform will continue to improve, curating and highlighting products that improve occupant health, wellness and confidence.

11. **FOCUS ON ADVOCACY:** By intensifying efforts with federal, state and city governments, USGBC will advocate for policies, guidance and incentives in support of the organization’s vision.

12. **RESEARCH:** USGBC will conduct focused and timely research projects, publish a series of reports, and initiate a LEED ROI study to demonstrate both return on investment and impact of green building.

13. **GREENBUILD:** USGBC will bring the green building community together to celebrate their progress and support for this new vision.
When you consider the economic situation, it’s going to be hard to get people to care about the environment. I’m sorry to say that, but right now most businesses and people are not going to care about sustainability. They are going to only think, “How do I keep my people in their jobs, how do I get my paycheck?” These are basic necessities.

In India, we have a saying that everyone has three basic needs: the bread, the clothing and the roof. Those are also universal priorities. The economy and health are so inextricably linked, and it’s more obvious now than ever because of COVID-19. And even the layperson now understands that the environment is the common denominator for personal health and prosperity.

Now, let’s take our new vision: “Healthy people in healthy places equals a healthy economy.” Let’s think about this a little differently and read this right to left. You start with the healthy economy, and then healthy places, and then healthy people. So if you want a healthy economy, then the places need to be healthy, which means people must stay healthy in those places.

**USGBC+: Are LEED buildings better equipped than traditional buildings to keep people safe and healthy from this new threat?**

**Mahesh Ramanujam:** I believe that the core tenets of LEED, like the indoor air quality, green cleaning, designing spaces for social interaction and daylighting will serve LEED building occupants well when they are back in their spaces.

Now, we don’t have data to prove that LEED buildings, at scale, have been able to prevent or insulate their occupants from COVID-19 infection. However, we’ll get more information as reentries happen, and we will know what has worked and what has not. This means we will be enhancing LEED to help in the fight against future pandemics like COVID-19 and also to make the necessary changes to LEED’s core strategies so that it remains relevant in the post-pandemic world.

But intuitively, we know that LEED buildings are in a better position than traditional buildings, as we have all the relevant strategies in LEED to support human health. How could this have not helped?

**USGBC+: How are USGBC’s member companies responding to the current public health crisis?**

**Mahesh Ramanujam:** I have been very impressed with everything our members have done so far in support of their communities. There are hundreds of heartwarming stories about how our members are on the frontlines supporting this crisis. This is because USGBC members have always believed that the greatest investment we can make is in one another.

One of my favorite stories is of our Gold-level member Johnson & Johnson. Since the beginning of the crisis, they’ve been making huge donations of PPE and funds to support frontline health workers. They are also doing a “30 Days of Action” campaign to channel everyone’s collective gratitude for frontline health workers, while working hard to deliver a vaccine. This is phenomenal leadership during this crisis.

In addition to these types of stories, there are also stories about how our members are adapting their spaces to support their communities. Two stories stand out for me.
First, we have the NYU Langone Health facilities that are certified Platinum under both LEED and PEER. As NYU Langone was able to integrate their clinical-side practitioners early on during their building design and LEED certification process, during this crisis they were able to convert their nonclinical spaces, like conference rooms, to clinical facilities. This is a lesson that we will incorporate into the future versions of LEED for Healthcare.

Second, we have TCF Convention Center in Michigan, which is the largest LEED-certified building in the state. During their pursuit of certification and recent renovations they made to the convention center, they installed an HVAC system that allows them to create negative air pressure throughout their entire facility. That has enabled them to convert the convention center into a temporary emergency hospital, because the negative air pressure allows them to approximate conditions in a regular hospital room and prevent cross-contamination between rooms. This is also a lesson that we will incorporate into LEED to support our community centers.
Many businesses are saying that they’re seeing high levels of productivity with employees at home, and some say they’re not going to ever bring back some of their workers into an office setting. Is there going to be a different—or even decreased—role for office space (and, by extension, USGBC and LEED) going forward?

Mahesh Ramanujam: In the past few years, we have seen the rise of coworking spaces. And we were almost made to believe that the idea of independent offices was over. But this did not happen, right?

I can see why certain companies see this crisis as an opportunity to consolidate and reduce their investment in real estate and physical office spaces. It’s not just about productivity, it is also about reducing real estate costs. I don’t think this is going to be a real trend.

On March 6, I initiated a lockdown for USGBC offices well before the global lockdown came into effect. I simply did not want to risk the safety of our people, whom I deeply care about. I saw what was coming and that our staff needed to prepare to support their spouses, kids, elders, and, potentially, even their sick relatives. I didn’t think that our employees could handle all of that stress simultaneously and, hence, wanted to give them the time to emotionally prepare themselves for what I knew was going to be an extended period of lockdown. It has worked out well for us, as everyone seems to have coped well. The funny thing is that now even the staff who were asking to be remote before are begging to come back.

Most definitely, the next two to three years could be a rough period for the commercial real estate sector. We will see some new construction slow down, but I predict we’ll correspondingly see a renewed focus in existing buildings. And we will start to see existing spaces redesigned to support social distancing and other needs related to COVID-19.

When we bring people back into the office, it may be more like a community center or an interaction center than an office. It could be a place where people will come in two days a week to meet with clients and their colleagues. The use, for sure, will change—maybe for educational sessions, videoconferencing, presentations or for just a coffee meetup. But people do want workspaces. We are humans, right? We like connectivity. We are not hermits. We need that connectivity, and that happens in the workplace.

62%


SOURCE: Gallup, April 2020
Even before the 2020 coronavirus crisis, many companies were making moves toward a model that incorporates telework—with 75% of employees saying their companies offer flexible work arrangements and 32% regularly working remotely.

**SOURCE:** “MODERNIZING MEETINGS: THE ULTIMATE GUIDE TO CONFERENCE ROOM TECHNOLOGY,” SAMSUNG

---

**The Office of the Future**

How will the coronavirus crisis affect the office environment? Here are some predictions from business and facilities experts.

**MORE SOLO SPACES** – Facility Executive magazine notes that employees were demanding solo spaces within open office layouts even before the coronavirus crisis hit. “Now, with added health threats, facility managers will need to finally address having an overabundance of conference room space designed for large groups of people versus smaller conference rooms,” the publication writes. “Employers will also begin to take a more active role in ensuring that employees are adequately distanced as they work in solo-oriented workspaces.”

**ROTATING SCHEDULES** – The BBC reports that a “staggered” workforce may become standard, with smaller groups coming in on alternate days and working in shifts that will help them to avoid peak hours on public transit systems. The BBC quotes an expert who says some workplaces are capping in-office staff numbers at 30% – a “sweet spot” for social distancing.

**SMALL CHANGES THROUGHOUT THE OFFICE** – CNBC reports that, as offices open back up, they may feature wider corridors with one-way foot traffic, improved air filtration, touchless elevator controls and videoconferencing, even among colleagues in the same building.

**REDESIGN BASED ON BUSINESS PRIORITIES** – “We all have ideas about what a typical office looks and feels like: a mixture of private offices and cubicles, with meeting rooms, pantries, and shared amenities,” writes McKinsey & Company. “Few offices have been intentionally designed to support specific organizational priorities. Although offices have changed in some ways during the past decade, they may need to be entirely rethought and transformed for a post–COVID-19 world.” For instance, McKinsey writes, organizations might create workspaces specifically designed to support the kinds of interactions that cannot happen remotely.

---

Left: Creating healthy spaces for people to work has always been a goal in Gensler’s designs. Shown here is the new LEED-certified Knoll showroom in Chicago. Photo: Courtesy of Gensler, © Eric Laignel
USGBC+: The organization was already shifting toward this message of healthy places and healthy people. In a way, is COVID-19 doing some of that messaging work for USGBC? Are people more aware of the health impact of our buildings than they were just a few months ago?

Mahesh Ramanujam: You’re absolutely right. It’s like having insurance for your car. You never know its value until your car is in an accident.

I think in a bizarre way—a very unfortunate way—you’re right. COVID-19 has really compressed our next 10 years of outreach to a few months. We’ve been saying for decades that the environment, individual health and the economy are all connected. I don’t think enough people heard us, and now COVID-19 has kind of put all of that on steroids.

It is unfortunate we have to learn this way, but now we are raising awareness among everyone. We are all working together to find solutions to this crisis.

USGBC+: What are USGBC’s next steps for this messaging effort?

Mahesh Ramanujam: It’s very simple. It’s the same thing that we started with when we founded USGBC in 1993. Our work is not done until all these green practices are no longer optional, but essential.

I was in India right before the COVID-19 crisis, and I asked a group of people a question about the country’s air pollution, which was really bad at that time. I asked, “If you have to drink everything you are breathing now in a glass of water, would you drink that glass of water?” And the instant response from everyone was a profound “no.” Pollution is an invisible thing, right? And people tend to always discount the invisible things.

So, how do we make people see all the invisible things that can impact their health? I think COVID-19 has taught us a great deal about that.

HOK office in Washington, DC. Photo: Jeffrey Totaro
USGBC Develops New Pilot Credits in Response to COVID-19

Best practices to help safely reopen the nation’s offices, industries and beyond.

WRITTEN BY NANCY A. RUHLING

Nearly 50 applicants working on projects ranging from schools and offices to hotels have registered for the four new LEED Safety First pilot credits. The pilot credits were created by the U.S. Green Building Council (USGBC) in response to COVID-19, to provide guidance and to help ensure that people feel safe and healthy in the places where they live, learn, work and play—while rebuilding our economy and replacing unprecedented job losses around the world.

The credits, available to LEED 2009, LEED v4 and LEED v4.1 projects that are certified or undergoing certification, were announced in June and outline sustainable best practices that align with public health and industry guidelines related to cleaning and disinfecting, workplace reoccupancy, indoor air quality and plumbing operations.

The Wisconsin-based company Miron has implemented the Cleaning and Disinfecting Your Space and the Re-Enter Your Workspace credits in its Milwaukee office.

Photo: McCullough Photography
Melissa Baker, USGBC senior vice president for technical core, says that the pilot credits build upon USGBC’s pioneering green cleaning practices, which she notes are also effective against the virus.

Atelier Ten, an environmental design consultancy based in New York City, is considering incorporating recommendations from the Cleaning and Disinfecting Your Space and Re-Enter Your Workplace pilot credits into its new office, which is in the design phase.

“We’re interested in the credits because we want to do all that we can to ensure the safety and well-being of everyone working in our new space,” says senior environmental designer Rebecca Riss, who would like to see the credits extended to all LEED rating systems.

“The Re-Enter Your Workspace credit is particularly helpful, as it references the American Institute of Architects (AIA) Re-occupancy Assessment Tool v2.0, which is a comprehensive checklist that our office can use as a guide to develop a reoccupancy plan with strategies tailored to our specific needs.”

Noting that the credits are based on current COVID-19 information, Baker says that USGBC will refine its recommendations as new developments arise.

“The pilot credits are an ongoing dialogue with the community,” she says. “We want everyone to use them as guidelines and test them and give us feedback.”

The following case studies offer insight into the initial implementation of the new credits.

Miron Construction’s Offices

Miron, a century-old private company, is using the Safety First pilot credits in its Madison, Milwaukee, and Green Bay offices, for which it is pursuing LEED Silver certification, and is also implementing them in its LEED-certified offices in Neenah, Wisconsin, and Cedar Rapids, Iowa.

Theresa Lehman, director of sustainable services for Miron, says that the pilot program “gives us the opportunity to provide real, practical, firsthand feedback on what works and doesn’t work using our own experience, including sharing any costs associated with initially implementing the Safety First requirements and the ongoing feasibility. I find all the Safety First credits helpful in managing the spread of the unprecedented pandemic.”

The Wisconsin-based company has implemented the Cleaning and Disinfecting Your Space and the Re-Enter Your Workspace credits at all its offices.

Lehman adds that it would be helpful for the USBGC credits to reference additional federal, state, local or city ordinances or executive orders in its Re-Enter Your Workspace credit.

USGBC has heard this feedback from many users and is working to provide additional guidance and alternatives in the COVID-19 resources section on usgbc.org. The expertise shown by volunteers in working with USGBC to author these pilot credits is
critical to answering questions like those raised by Miron, so our community can support one another and work together to solve problems during these challenging times. Additional pilot credits will address topics such as construction job site safety and pandemic planning at the city and community levels.

**Hudson Pacific Properties’ Metro Plaza**

Metro Plaza, a 456,921-square-foot, mixed-use commercial office building in San Jose, California, is implementing the Safety First Managing Indoor Air Quality pilot credit and is applying for LEED v4 under LEED for Building Operations and Maintenance: Existing Buildings.

The seven-story building, which was constructed in 1986, is owned by Hudson Pacific Properties.

Nancy Larson, a sustainability consultant for Envision Realty Services, says that USGBC’s air quality pilot credit was the best fit for Metro Plaza because “it addresses minimizing the spread of COVID-19 through the air and gives some additional guidance to some of the procedures already in place.”

Metro Plaza, which is documenting implementation for the LEED project, was already fulfilling requirements in the pilot credit. “By pursuing this credit, we could take a deeper dive into investigating the best practices for this property with the ability to continue to monitor outcomes,” she says. “This pilot gives us the opportunity to put in place a no-cost credit for a best precautionary practice.”

Larson also notes she was glad to see that “this pilot credit touches on the concern over trading out energy efficiency with the addition of increased outdoor air. It asks for details about reinstating energy-efficiency measures taken offline when COVID-19 is no longer a risk.”

In addition, she has found that registering for the pilot credits was easy: “I like the fact that they align with established standards and protocols and are not reinventing the wheel or adding separate options to guidance that is already in place to address COVID-19,” she states.

**Left page, left:** Melissa Baker is senior vice president for USGBC technical core.

**Left page, right:** Theresa Lehman is director of sustainable services for Miron.

**Above, left:** Nancy Larson is a sustainability consultant for Envision Realty Services.

**Above, right:** Metro Plaza, a seven-story, mixed-use commercial office building in San Jose, California, has registered for the Safety First pilot credit Managing Indoor Air Quality during COVID-19. Photo: Hudson Pacific Properties
USGBC offers plenty of online opportunities to invest in your career in sustainability. Webinars, case studies and on-demand courses allow you to gain continuing education credits while you advance your knowledge of green building concepts and practices. You can purchase an annual subscription to our platform, Education @USGBC, to access more than 800 online green building courses.

As the new school year begins, use these education resources to support learning in your schools and communities, both in person and online.

**K–12 EDUCATION RESOURCES**

usgbc.org/education/k12-education

- **Green Classroom Professional Certificate:** The Green Classroom Professional certificate provides K–12 educators and school staff with the skills to identify what supports or impedes healthy, resource-efficient and environmentally sustainable learning spaces.

- **Learning Lab:** USGBC’s online education platform for K–12 teachers and school leaders, Learning Lab, helps you find lessons, activities and resources that encourage student leadership, sustainability literacy and real-world action.

**HIGHER EDUCATION RESOURCES**

usgbc.org/education/higher-education

- **Education @USGBC Campus Subscription:** Find out what’s included in the Education @USGBC platform and explore the three subscription options for postsecondary instruction, including an all-access pass for faculty, staff and students.

- **Free curricular toolkits:** Access curated resources and processes, organized to help teach and engage students in the concepts of sustainability.

- **Green career resources:** Discover myriad green career resources for your students at usgbc.org/green-careers.

- **LEED Green Associate credential exam preparation resources:** Use our two-week study plan to prepare to teach a LEED Green Associate exam prep course. The syllabus can be expanded for a full academic term. Educators and students also receive special pricing on the LEED Green Associate Study Bundle.

**NEW USGBC CASE STUDIES**

usgbc.org/education-listing/case-studies

- Explore USGBC’s many project case studies to incorporate into your courses.

**VISIT USGBC.ORG/EDUCATION FOR MORE ONLINE EDUCATION OPPORTUNITIES**
LEED v4.1 is here.

LEED v4.1 emphasizes outcomes by tracking performance in energy, water, waste, transportation, indoor air quality, the indoor environment and occupant satisfaction. Track, measure, perform, excel.

**DELIVER ON:** MATERIALS • PERFORMANCE • ENERGY • HEALTH & HUMAN EXPERIENCE • INTERIORS • SIMPLICITY • CARBON

LEED v4.1 is here to help you meet your goals. Try it on a new project or apply your choice of credits to a project already in progress.

Boston Public Market Association (Owner), Architerra (Architect), Chuck Choi (Photographer)