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FEATURES | ENGAGE & EMPOWER

26 Engage
Green Mountain City
Burlington, Vermont, is completely powered by renewable energy and on track to become a net-zero city.

34 Empower
RETRAINING AMERICAN WORKERS FOR GREEN ENERGY JOBS
In coal country and elsewhere across the United States, workers are signing up to learn the necessary skills for jobs in clean energy.

44 Perform
THE PLATINUM CORRIDOR
A Philadelphia developer builds one of the nation’s most sustainable urban neighborhoods.
LEED On

7  LETTER FROM OUR LEADERS
Senator Patrick Leahy
U.S. Senator of Vermont; Vice Chairman, Senate Appropriations Committee

LEED Impact Categories

10 community
Architect, policy maker, and green school champion Joseph da Silva advocates for integration and collaboration on every front.

16 ecosystems
Liberty Wildlife Rehabilitation Center makes significant strides in its conservation and education efforts using its new LEED Platinum building as a vehicle.

22 green economy
A spotlight on the first LEED-certified steel production mill in the world.

Departments

54 advocacy
David Matiella is a champion of sustainability in the Lone Star State.

60 professional pulse
Q & A with Amira Hassan, Green Globes professional and Green Classroom professional
While the world watched, One World Trade Center grew in both height and symbolism, its 1,776-foot crystalline form bringing unmatched views back to Lower Manhattan. A redundant structural steel frame, the result of creative collaboration between Skidmore, Owings & Merrill and WSP Cantor Seinuk, ensures that its safety is as substantial as its stature. Read more about it in Metals in Construction online.
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There’s a bumper sticker phrase about Vermont that says, “Vermont: We Were Green Before Green Was Cool.” I’ve always enjoyed that sentiment, that our state has been a leader in environmental responsibility and stewardship, conserving our resources, and the sustainability movement long before it became trendy.

Smart, sustainable development relies on effective engagement and empowerment. With Leadership in Energy and Environmental Design (LEED), the U.S. Green Building Council (USGBC) has worked hard to bring people to the table from every stakeholder group, industry, and corner of the economy to help define a common understanding of what it means to build sustainably. This important work is making us stronger, more resilient, and more secure as a nation.

In 2003, when the Leahy Center for Lake Champlain opened in Burlington, it was the first LEED-certified building in Vermont. Today the Burlington area is home to more than 75 LEED-certified projects, encompassing more than 3 million gross square feet of space. For a town of 42,000 residents, this constitutes a significant growth in green building in less than 15 years, and it represents real savings for energy, water, and maintenance, leading to lower utility bills, costs, and impact on the environment.

LEED has been a driver of sustainable development in Vermont and across the country, raising the bar for our real estate market and residents, and helping to showcase our leadership and Yankee ingenuity. We have always been a state made up of farmers, foresters, and others whose livelihoods are tied to the land. The lifeblood of our state’s economy is connected in so many ways to the health of our natural environment, which is why I am thankful for all that USGBC has done recently to better support markets for sustainable wood supplies and our family woodland owners by allowing more wood to be used in green buildings.

By embracing LEED, as well as city and statewide strategies around energy efficiency, renewables, waste management, and more, Burlington and the entire state of Vermont have shown the world that we honor and care about our environment and our health, while still progressing as a haven for 21st-century jobs and technologies.

Burlington is one of very few communities in the nation powered entirely by renewable energy. Across the state more residents and businesses are turning to renewable energy sources as our state has sought ways to encourage their development. Some might say this is too ambitious a stance for other states to follow, but I disagree.

Although Vermont is a special state for many reasons, it is not so unique that its model of development and energy use cannot be replicated elsewhere. Look at Chicago, Atlanta, and Boston—there are many examples of local and state level leadership making a very real difference in how people experience sustainability.

Progress starts with bringing people together, hearing them out, working out differences, and coming to an agreement to turn ideas and rhetoric into real action. I applaud the membership of USGBC for consistently proving the power of collaboration, for championing responsible, smart, and sustainable development, and for engaging and empowering so many thousands of green building advocates across the country.

LEED ON,

Patrick Leahy
MARY GRAUERHOLZ is a healthcare grant writer and feature writer who focuses on sustainability, architecture, health, and food. She has written for a variety of magazines, newspapers, and websites, including the Boston Globe, New Old House, Spirituality & Health, and Suffolk University Alumni Magazine. She lives on Cape Cod.

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MARY GRAUERHOLZ is a healthcare grant writer and feature writer who focuses on sustainability, architecture, health, and food. She has written for a variety of magazines, newspapers, and websites, including the Boston Globe, New Old House, Spirituality & Health, and Suffolk University Alumni Magazine. She lives on Cape Cod.

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Joseph da Silva, Ph.D., has a unique perspective when it comes to school buildings. The first-generation immigrant was born in the Azores, Portugal, which he describes as “an environmental paradise.” Upon moving to the United States as a young boy, he entered the public school system, where he became distinctly aware of his surroundings.

“I really connected with the space of the classroom because it was so foreign to anything I had ever experienced,” he recalls. “I was exposed to the fact that schools have all of these unique spaces. They have auditoriums, theaters, offices, classrooms, and athletic facilities—all together in one place. That was fascinating to me. That was when I started really focusing on architecture and school buildings.”

That formative time set him on a path from which he has never strayed. He earned a degree in environmental science and management from the University of Massachusetts, Amherst, which proved pivotal in shaping his course. He considers his interest in the budding green movement of the late 1990s closely tied to those studies and the work of R. Buckminster Fuller. “I was exposed to really deep environmental issues through architecture and engineering in a way that I hadn’t been before,” says da Silva, who remembers being enthralled with scholars whose lectures focused on sustainability and “doing more with less.” “When I left there, I had made that connection.”

He landed in an architectural firm, where he quickly realized there was little to no thought being given to the connection between architecture and the environment. “I felt that was really odd, so when I saw the [green] movement starting [to form], I knew it was the right thing, and naturally got involved.” That involvement put da Silva at the forefront of the green schools movement in New England. In fact, he was one of the first U.S. Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) APs in Rhode Island. As an architect, he worked with schools in Massachusetts—before LEED for Schools existed—and earned a grant “to reconcile what LEED would be for schools.” That work would prove exemplary.
In time, he joined the Rhode Island Department of Education as school construction coordinator for the Rhode Island School Building Authority. The position’s appeal had much to do with the sustainability regulations being implemented. Rhode Island requires that public building construction projects of at least 5,000 square feet and public building renovation projects of at least 10,000 square feet be designed and built to achieve LEED or equivalent certification—this includes school district building projects and renovations if they have received state funding.

State-mandated sustainability-focused building regulations are something about which da Silva speaks reverently. For him, having state support for sustainable school building projects makes all the difference in terms of how much can be done and to what degree. He makes the point that Rhode Island’s regulations are exceptional in that they have not needed amending, unlike those in other states.

“It is important to support those regulations in a way that doesn’t warrant revising them, because that can result in reduced opportunities,” he says. “You need to administer them in a way that is fair and gives them life, and that’s not easy—you really have to work at keeping them relevant, and you have to provide the technical support so that it works. If you do, you can actually avoid costs for local educational agencies.” His own work is proof of that; he and his team produced more than $100 million in savings for local communities in just a few years’ time.
Rhode Island provides state-funded schools anywhere from 30 to 96 percent reimbursements for green school capital projects, though da Silva notes one caveat is an extremely robust set of sustainability requirements. The state also offers incentives, which increase in value the greener the project is. “Those progressive percentages can easily be translated to additional green features and enhancements,” says da Silva. “That is really powerful as a way to implement incentives—it encourages more and more sustainability when the two are connected.”

Myriad roles, responsibilities, projects, and outcomes that da Silva has managed during his long tenure as a green school champion have shaped the narrative he shares with future leaders and policy makers. While pursuing graduate work, for instance, he researched indicators of sustainability and how they relate to school planning and design. “So during the day, I was practicing, and at night I was immersed in theory. That is one of the things I would recommend—if you can study in theory what you are practicing, it can be a transformative learning experience. I am a real advocate of experiential learning.”

Da Silva respects John Dewey’s progressive education philosophy, as he was one of the first to unite space and experience as part of learning. “We can make a building that is 30 percent more efficient and that has a sizable return over its life,” notes da Silva, “but when we educate a child, that has a lifetime of benefits. I think that is the most advance-forward and sustainable thing we can do.”

That kind of learning is at the root of the Rhode Island’s “school as a tool” protocol, which requires state-funded schools to integrate green school systems, practices, and technologies into the curriculum—something that is in evidence at the Manchester-Essex Regional Middle/High School in Massachusetts, for which da Silva was a lead architect. “The beauty of that school is that it teaches the protocol and environmental education. . . . It forces a deeper understanding . . . because we are connecting students with very relevant things in their space. They are understanding sustainability while washing their hands or turning on a light. The goal is to include a deeper environmental learning experience.”

It is his devotion to such strategies that earned da Silva the 2017 Best of Green Schools Policymaker Award from the Center for Green Schools at USGBC and the Green Schools National Network. For decades, he has heralded green school design and construction standards on every front, recognizing that his accomplishments are tied to those of his colleagues and collaborators. Da Silva sees smart policy making as a means for securing the future of green schools. “Without the policies, it is difficult to implement sustainable standards,” he says, noting the reciprocal payoff. “In my role, I serve students, but citizens and lawmakers provide the critical funding. We need their backing to support green public schools. . . . That is one of the big lessons learned—through collaboration [we can] really focus on policies that go to that end.”
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Liberty Wildlife Rehabilitation Center makes significant strides in its conservation and education efforts using its new LEED Platinum building as a vehicle.

BY KILEY JACQUES

Located on the banks of the Rio Salado River in Phoenix, Arizona, the Liberty Wildlife Rehabilitation Center uses its site and new green home to advance its work. Incorporated in 1981 by founder Dr. Kathryn Orr, a veterinarian and expert ornithologist, the nonprofit’s mission is to nurture the nature of Arizona by providing quality wildlife rehabilitation, environmental education, and conservation services. The award-winning, volunteer-driven organization uses raptors that have been deemed nonreleasable to evidence the importance of protecting wildlife species and their habitats. “We can take the face of an animal and use it to demonstrate why the use of sustainable practices is so vital to whatever you are doing,” says Executive Director Megan Mosby.

The Center’s location—a former brownfield now comprising upper Sonoran desert, riparian, and wetland biomes—is key to its teachings. The 6.5-acre parcel on which the new U.S. Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) Platinum facility sits is part of the Rio Salado Habitat Restoration project, the aim of which is to bring the poisoned river and natural surroundings back to health. The once thriving desert river and riparian habitat has suffered long-term abuse since the early 1920s, when industrial operations began polluting the region. “It was transformed from a lush blue-and-green ribbon through the valley into a kind of industrial scar in the center of the Phoenix metro area,” explains Philip Weddle, principal of Weddle Gilmore Architects, the firm responsible for the building.
It has been a long process with a large scope. What began in the early 1960s didn’t become a reality until the 2000s. The former gravel quarry on which the center was built was restored as part of a joint project between the U.S. Army Corps of Engineers and the city of Phoenix. Weddle sees the work as a transformation of that industrial scar into a place with purpose. “We are interested in that whole idea of how you can restore the waterway and the banks to make it a place that brings the community together.”

Given the sensitive site, it made sense to build a LEED Platinum facility. Weddle’s design program called for bringing the native riparian habitat from the outlying landscape into the site and creating a series of bioswales to manage stormwater. Part of the aim was to make water conservation strategies highly visible to provide educational opportunities. To that end, they located two 28,000-gallon rainwater-harvesting cisterns at the front of the building.

Likewise, energy conservation and renewable energy strategies are showcased to work in conjunction with the organization’s broader mission. To achieve Platinum-level energy efficiency, the nonprofit partnered with Salt River Project, the local utility company, which donated the entire 80.4-kW PV solar array, which produces over 80 percent of their energy demand. Additionally, daylighting strategies include an open north side, a minimally glazed east side, and protectively glazed south side; solar tube skylights were installed in rooms that would be otherwise windowless. Furthermore, recycled exterior materials include weathered copper panels, reclaimed wood, and river rock gabion walls.

Upon arrival, visitors are immersed in a learning environment. “The organization wants the building to be part of their educational curriculum, so we tried to make things visible and easy to understand,” says Weddle, noting that the interpretive signage includes both wildlife rehabilitation and sustainability messaging. “It’s nice to pair those stories together—they have very similar messages between them.”

Of note, too, is the shape of the building. Budget constraints called for a relatively simple design. Inspired by the organization’s work with raptors, Weddle and his team devised a wingspan-inspired layout, whereby one wing of the building is devoted to wildlife rehabilitation and veterinary care, while the other caters to environmental education with its classroom, interpretive spaces, and outdoor amphitheater.
Unique to Liberty Wildlife Rehabilitation Center’s work is the giving of molted feathers and animal carcasses to Native American tribes to use in cultural ceremonies. “It’s a huge part of what we do,” notes Mosby. “They haven’t been able to get feathers legally since 1996, which was causing the creation of a black market. . . . That’s a repurposing of a feather to help maintain the resource and preserve the Southwestern culture.” They are the only non-Native American organization to do this.

Additionally, they are conducting an experiment to identify solutions to the problem of negative interactions between power distribution and wildlife. They anticipate data that will support a redesign of power lines and poles, which large birds make use of for perching and nesting. The idea is to find a way to prevent power line–related deaths. “It is a very interesting and greatly needed research project that occurs smack dab in the middle of our 180-ft flight enclosure,” explains Mosby. “The structure itself is just cool. It has a bend to allow for flight banking maneuvers, a pond for stocking with fish if necessary, and several samples of utility equipment set up to mock actual poles.”

Prior to moving into the new building, the Center offered more than 800 annual educational opportunities in more than 400 different venues because they didn’t have the ability to host them. Now, they are open to the public, which expands their reach into the greater community. Plus, they operate from a center that makes the connection between the built environment and a sustainable ecosystem.

Watching the steady stream of people who come in with an animal in need of attention, Mosby sees the profound effect their site and center are having. “Every one of those people cared enough to pick up an animal and drive it to south Phoenix . . . and each one of them is blown away by the building.” In fact, it often sparks dialogue around sustainability—they see the cisterns and the solar panels, and they start to understand the landscape and its different biomes. “It’s been a powerful tool,” she says. “You don’t have to say a lot if you can just teach somebody to look around and take it in.”

The ultimate hope is that the Center will inspire a community commitment to sustainability and conservation in this thoughtfully restored area that would otherwise remain barren. “Our mission is to nurture the nature of Arizona. That’s what we do,” says Mosby. “And we feel like this building is an integral part of that mission. . . . It all fits together. You can’t pull one thing out without affecting everything else.”
The Arkansas Delta conjures the backdrop of *The Adventures of Huckleberry Finn*, and the town of Osceola is the region’s quintessential landscape: soybean and cotton fields, the chum of the Lower Mississippi River beyond the levees, and wide-open miles between glimpses of one small town and the next. The area, about an hour north of Memphis, has also fallen on hard times, with declining population and high unemployment. But on 1,300 acres between the Mississippi and BNSF Railway train tracks, an Osceola steel maker is changing fortunes by turning a soot-stained industry a new shade of green.

Last February, the Big River Steel Production Facility became the world’s first steel mill to achieve the U.S. Green Building Council’s (USGBC) Leadership in Energy and Environmental Design (LEED) certification.

The $1.3 billion, four-building facility has also been a true economic engine for eastern Arkansas, bringing more than 500 full-time jobs paying good salaries. And for an industry traditionally considered at odds with the environment, Big River Steel augurs a new way forward from the billowing smokestacks and coal-fueled blast furnaces of the past. "Being a good steward of the environment is the right thing to do," says Dave Stickler, the company’s CEO. "If you can figure out a model that also gives you a competitive advantage, that’s a win-win."

Arkansas is no stranger to the steel industry: Mississippi County, where Osceola lies, claims to be the fourth-largest steel-producing county in the country. Nor is the state a stranger to green buildings, with LEED-certified projects like the Clinton Presidential Library and the headquarters for Heifer International in Little Rock. But finding common ground was almost a matter of serendipity: Stickler was originally just an investor with Global Principal Partners, the backers of Big River Steel, when he met Laura Steinbrink, president of sustainable building consulting firm Emerald Built Environments, during a chance encounter in their shared hometown of Cleveland, Ohio. After hearing about the project, Steinbrink joined in and nudged the project’s team to seek LEED certification. “They hadn't been thinking about [LEED] before,” Steinbrink says, “but efficiencies were so ingrained in their whole business model and how they put their company together, in addition to their process and their facilities, that it was a no-brainer.”

Right: Big River Steel has energy savings of 18 percent compared to other compact strip production processes.
When Big River Steel announced its plans in early 2013, Arkansas officials began pitching the delta as the ideal locale, and the state legislature eventually secured $125 million in bonds for the project—the state’s largest single investment on record, according to Mike Preston, executive director of the Arkansas Economic Development Commission. “First and foremost, we were interested in the job creation,” he says. “Arkansas’s Delta region is one of the poorest regions in the country, and we knew the jobs being created by Big River Steel would be a boon to the area’s economy.” In exchange, Big River Steel guaranteed the state that its employees would earn an average annual salary of $75,000-plus benefits—no small sum in a part of the country where the median household income is less than half that figure.

After breaking ground in 2014, Big River Steel encountered setbacks: The company was the target of lawsuits from competitors, and in 2015 John Correnti, Big River Steel’s original CEO, passed away unexpectedly. (Stickler stepped in days later.) There was also the matter of working with Green Business Certification, Inc. (GBCI), to certify a project type with no LEED precedent. Fortunately, the same team behind Big River Steel had already succeeded in using credit interpretation rulings (CIRs) to certify another first-of-its-kind business in Osceola: BlueOak Arkansas, an e-waste recycler that extracts precious metals from smartphones, computers, and other technology for future use and whose industrial facility earned LEED Silver in 2016.

Big River Steel’s grand opening arrived this past March. Its 1,300-acre campus comprises a quartet of buildings, three of which have achieved individual LEED certifications, one of which is currently registered. The centerpiece is its Flex Mill, a combination of different steel-making equipment suited to produce niche steel products. The specifics are complicated, but space-efficient facilities with patented technology on its efficient natural-gas burners, steel rollers, and elsewhere on the production floor streamline the steel-making process while reducing its energy needs compared to a conventional mill. While the drives and motors of many traditional steel mills run at full horsepower nonstop, Big River Steel’s idle at much lower speeds, Stickler says. Wells pump water from below ground to cool down hot steel, and once it leaves the energy-efficient wastewater treatment facility, the water is cleaner than when it left the ground, Stickler says.

Elsewhere, the warehouse, employee services building, and administration buildings—LEED Certified, LEED Gold, and LEED registered, respectively—feature loads of natural light, energy-efficient appliances, and efficient lighting and...
water fixtures. The project was completed with regionally sourced building materials, and 82 percent of construction waste was diverted from landfills. Across the campus, the landscape is filled with native plants that require no irrigation and features amenities like bike racks and electrical car charging stations. Big River Steel also adopted a company-wide sustainability policy.

That focus on sustainability has only made Big River Steel—a supplier for automakers (including steel specifically targeted for electric cars), electrical component manufacturers, and construction projects, among other industries—more competitive, Stickler says. The patented, artificial intelligence–enhanced technology in its mill facilities means spending less energy than its rivals and making constant improvements in its production process. “We believe we’re at least 10 percent more energy efficient than our competition,” Stickler adds. In January 2017, prior to its ceremonial grand opening in March, Big River Steel set a record for the SMS Group, the provider of its steel equipment, by producing 63,000 tons of hot-rolled steel during its first full month in operation. It’s positioned to produce as much as 1.65 million tons of steel in 2017 at full production. And all costs being equal, Stickler says, a client will choose steel from a LEED-certified producer over its traditional counterpart.

While it’s impossible to credit Big River Steel with every bit of good economic news in the Arkansas Delta, its arrival coincides with reasons for optimism. The construction of the Big River Steel campus created 2,000 temporary jobs and employed Arkansas-based businesses. Mississippi County’s unemployment rate, which was 9.3 percent when the mill broke ground in 2014, is now 5.5 percent; the median household income has risen 2.6 percent over the same period. Big River Steel’s total estimated economic impact on the area hovers around $3 billion. (Stickler recalls asking a gas station mini-mart owner to keep tabs on how many slices of pizza he sold before and after construction of the mill; the tally increased from 2,000 slices in 2014 to 9,000 in 2016.)

There are plans afoot for a Big River Steel expansion. “We want to lead by example,” Stickler says. “...You can produce steel in a much more environmentally friendly way: by recycling [materials] in a manner that’s highly energy efficient, by looking at the environment in a sustainable way, and by creating an atmosphere that workers can be proud of.” Whether it influences the rest of the industry remains to be seen. For now, the world’s first LEED-certified steel mill is proof that even the dirtiest businesses of the past can find a cleaner future. ●

These mini-mills make high outputs of steel by melting down scrap metal and can produce the quality and quantity of the traditional mill but with much better efficiency—both environmentally and financially.
Burlington, Vermont, is completely powered by renewable energy and on track to become a net-zero city.
There’s a duality to the greening of Burlington, the most populous city in Vermont. It’s at once the result of decades of incremental, forward-thinking decisions, as well as a headlong dive into sustainability on this side of the 21st century. Its homes and buildings are reaping the rewards of energy efficiency efforts that date back three decades, and yet sourcing 100 percent of its electricity from renewable energy—something Burlington achieved three years ago—happened inside of 10 years.

The city consumes less electricity today than it did in 1989. Now, there are initiatives underway to put thousands of electric cars on the streets, rewrite zoning laws to encourage Leadership in Energy and Environmental Design (LEED) standard redevelopment downtown, and develop a Burlington 2030 district. Burlington is also taking aim at becoming a net-zero city within 15 years—no pipe dream, given its history.

To hear its leaders tell it, the secrets of weaving sustainability into the fabric of this community of 42,000 aren’t secrets at all. “There were two big reasons for our success: political will and deciding to make progress in a given area, then resourcing the effort with skilled professionals,” says Miro Weinberger, who was elected Burlington’s mayor in 2012. “I think just about any community that commits to making an effort, sustains that political will, and resources with a skilled team will see progress.”

Located on the edge of Lake Champlain about 45 miles from the Canadian border, Burlington is the urban center for a rural landscape of Green Mountains and black diamond slopes. Tourism and snow-related recreation contribute billions to the state’s economy, and both industries face significant threats from climate change. Preserving the breathtaking beauty of northern Vermont has helped residents find common ground across the partisan divide. In 1970, under a Republican governor, the state legislature passed the Land Use and Development Act, a piece of legislation aimed at balancing development with environmental welfare.

“We love our natural environment, we want to keep it as beautiful as it’s been, and that’s an ethic that cuts across generations and political parties,” says Neale Lunderville, general manager of Burlington Electric Department, the municipally-owned power utility. “…I’m a Republican. I work for a Democratic mayor in a progressive city, home of Bernie Sanders. There’s something we all agree on about renewable energy.”

In the late 1970s, Burlington Electric decided to swap a coal-fired power plant with the McNeil Generating Station, a 50-MW biomass plant on the Winooski River that generates electricity with wood chips from sustainably harvested forests—the first major step toward the city’s renewable energy achievements. (Today, the McNeil station accounts for half of the city’s electricity.)

In 1989, five years after the plant came online, Burlington Electric started offering energy efficiency incentives. “If you looked inside many of the homes around the city, you’d see good air sealing around the windows, high-quality insulation in older buildings, compact fluorescents and LEDs—the evidence of more than three decades of energy efficiency efforts,” says Weinberger.

By 2004, the city was deriving a quarter of its electricity from renewable sources. Around the same time, city leaders decided to stop purchasing power from the Vermont Yankee Nuclear Power Station. “The city needed to make a proactive, intentional decision: If we’re not going to buy nuclear energy, what are we going to buy?” Weinberger says. That, he said, sparked its move toward 100 percent renewable electricity.

After developing a portfolio based around the wind—from Burlington’s highest points you can see the four-turbine, 10-MW wind farm on Georgia Mountain—solar, and the wood-fired McNeil station, nearly 80 percent of voters approved a $12 million bond to buy Winooski One, a 7.4-MW hydroelectric dam on the Winooski River, in 2014. That same year, the facility made Burlington the first American city to derive its entire electricity portfolio from renewable energy.

Whatever opposition to the city’s all-in approach to renewable power that might have existed has been muted by the bottom line. By converting the energy...
it produces into high-value renewable energy credits, selling them to other utilities, buying lower-cost credits to cover their portfolio, and using the revenue to offset what they charge customers, Burlington Electric hasn’t raised its electric rates since 2009. “This is where the conventional wisdom of renewables gets turned on its head: Everybody thinks renewables are going to cost more money and that if you want to be 100 percent renewable you have to pay more. We’re here to tell you that you don’t,” Lunderville says. “You have to be creative—and we are creative—but there are ways to do this without breaking the bank.”

When the city drew international attention for its renewable energy achievements—news crews from Paris to South Korea descended on the city—it put a spotlight on a culture of sustainability that had already taken shape inside Burlington. The Intervale Center, a 29-year-old, 350-acre, nonprofit urban farm along the Winooski River that also leases land to organic growers, supplies $1.4 million of locally grown food and other goods to the area each year. Eco-conscious brands like Seventh Generation are headquartered in Burlington. The University of Vermont, an early adopter of green building practices, now requires all new construction and major renovations to achieve LEED Silver at minimum.
In 2000, the city developed the Burlington Legacy Plan, an early document describing the city’s interconnected approach to sustainability. “It was novel at the time to have all of these people sitting around a table, talking about how the city could meet the needs of current residents while honoring the demands and needs of future generations,” says Jennifer Green, sustainability coordinator for the City of Burlington. Around the same time, the city created the first iteration of its Climate Action Plan, a blueprint of key strategies for reducing the city’s greenhouse gas emissions.

More recently, Burlington became one of 17 North American cities to establish a 2030 District. The public–private partnership aims to reduce energy consumption, water use, and transportation emissions in existing buildings by 50 percent—and make new and larger construction projects carbon neutral—by 2030. Since launching the 2030 District in April, 2.2 million square feet of building space in Burlington have been committed to those ambitions. “By establishing the economic case for these reductions, the District helps property owners increase asset value, reduce operating costs, and create a healthier community,” says Jenna Antonino DiMare, director of the Burlington 2030 District and executive director of the Vermont Green Building Network, which is affiliated with USGBC.

This fall, the city is aiming to issue new zoning guidelines that, as drafted at press time, would require all new buildings above 25,000 square feet to achieve LEED Gold certification or better. Then there’s Burlington Town Center, a five-acre, three-block redevelopment project expected to break ground this fall—and aiming for LEED Gold—that reimagines the downtown mall as a mixed-use neighborhood with some 270 apartments, offices, and retail spaces. The redevelopment is a key part of a proposed district energy heating system that would help reduce the city’s overall greenhouse gas footprint by 20 percent, in part by capturing waste heat from the McNeil station and using it to heat the downtown area and institutional buildings.

It would be a springboard to Burlington’s latest grand ambition: the city recently decided to go net zero across electricity, thermal, and ground transportation. “We’re a long way from that now,” Weinberger admits. Vermont’s existing housing stock is one of the oldest in the country, a complicating factor in enhancing the energy efficiency of Burlington’s buildings, and nine in ten homes use natural gas. And at the same time
that the city has made its renewable energy strides, transportation-related emissions have risen, accounting for roughly half of Burlington’s carbon footprint.

Still, those challenges haven’t paralyzed Burlington’s leadership or its residents. There are plans to nearly quadruple the miles of bike routes within the city while creating a safe, wide transportation network that encourages walking and cycling. Burlington Electric recently began offering $1,200 rebates to purchase or lease electric vehicles; and the city is home to CarShare Vermont, the first nonprofit car-sharing service in the country. And electricity isn’t a settled issue: The number of solar installations has bloomed from 25 to 150 during Weinberger’s five years as mayor; in 2015, Burlington International Airport installed a 2,000-panel, 500-kW solar array on the roof of its parking garage.

With the withdrawal of the U.S. from the Paris Agreement, individual communities have taken on an outsized role in curbing fossil fuel consumption and greenhouse gas emissions. And while Burlington is an eager participant in that effort, some residents hesitate at their home being cast as a bastion of city-scale sustainability. “My hesitation is this sense that Burlington has everything figured out, because we haven’t,” says Green, the city’s sustainability coordinator. “Sustainability is very elusive. You want the best quality of life for every resident—regardless of where they come from, what they do for a living, what their sexual orientation is—not only the folks who are here today but for those who will be here in generations to come. What that will mean and how that will look is hard to articulate. We’re on the right track, but there’s still more work to do.”

Still, Burlington remains a case study for what can happen when a community marshals support for sustainability and backs it up with action. “It was only a decade from when we went from 25 percent to 100 percent of our energy from renewable sources,” Weinberger says. “There’s no doubt that there’s power in incremental, accumulated impact. At the same time, I think the Burlington story shows that change can happen relatively quickly.” However fast or slow, this much is true: A city on the eastern shore of Lake Champlain is a beacon of possibility.
RETRAINING
AMERICAN WORKERS
FOR GREEN ENERGY JOBS
In coal country and elsewhere across the United States, workers are signing up to learn the necessary skills for jobs in clean energy.

Written by Calvin Hennick

At its peak nearly 100 years ago, the coal mining industry in West Virginia employed around 400,000 workers. That number is now under 25,000. In Wyoming, coal production is actually increasing due to improved automation, but coal employment is not. The industry employs fewer than 6,000 people in the state—a number that is down slightly in recent years, and is dramatically lower than a high of almost 40,000 in the early 1980s.

No one expects renewable energy jobs to completely replace the fossil fuel jobs that have been lost in these states and elsewhere. But clean energy advocates in both areas are hoping that renewables can be one step on the path to more diversified, robust local economies. To make that happen, they’re training workers for what they believe are the energy jobs of the future.

“As costs fall dramatically, renewables are being adopted more and more, and so that is naturally creating a market demand for workers,” says Robert Godby, director of the University of Wyoming’s Center for Energy Economics & Public Policy. “Those workers are in numerous [renewable energy] sectors, and the two largest sectors are solar and wind. There’s been significant growing demand in those areas. It’s partly driven by policy, but the biggest driver has just been the affordability of those two technologies.”

“There have been a lot of programs to retrain workers,” Godby adds. “In renewables, you can enter the industry as a technician, through manufacturing, or through installation and construction. All of those things are happening. In different regions, there are different opportunities.”

Godby notes that wind service turbine technician tops the U.S. Bureau of Labor Statistics’ list of fastest growing occupations, with a projected growth of 108 percent between 2014 and 2024. Solar installer, while lower on the list, is one of the only nonhealthcare occupations to crack the top 50, with a projected growth of 24.3 percent over the same time frame.

“Companies are actively searching people out, whether they’re displaced energy workers, or someone else,” Godby says. “They just need workers.”

Former energy workers from the fossil fuels industries, Godby says, may be especially suited for these new jobs due to their previous experience.

“There’s a huge amount of education and training that’s necessary [for renewable energy jobs],” he says. “[Displaced energy workers] may have skills and an
awareness of safety processes—how to handle large equipment safely. They’ve operated heavy machinery in the past. Many of them will have skills that are transferable.”

Wyoming produces more coal than any other U.S. state. It also has abundant wind resources, but the wind energy industry has faced an uphill climb in the state, due in part to an unfavorable regulatory environment, including special taxes on wind energy. Still, wind power generation in Wyoming has increased by more than a factor of 10 in recent years, and the sparsely populated state now leads the country in per capita renewable energy production.

Wind power companies are looking at Wyoming as a site of potentially massive expansion—accompanied by new opportunities for workers, some of whom may have previously held jobs in the coal or natural gas industries.

This past summer, the U.S. arm of the Chinese wind turbine producer Goldwind held several information sessions in Wyoming about jobs in the wind sector, with promises of free, two-week training sessions to follow. David Halligan, chief executive of Goldwind Americas, says the company’s expectations for attendance at the sessions were “well exceeded.”

Sessions have drawn between 40-100 attendees, which is a lot considering a town size of 5,000 people.

“I think the response has been overwhelmingly positive—not only from folks that are interested in training and getting a new opportunity in a new industry—but I think there’s strong interest from other parties within Wyoming,” Halligan says. “We’ve been talking with colleges that offer programs for wind technicians. We’ve had government folks out at our seminars, saying, ‘We really like what you’re doing,’ who think that wind can be good for the state. Broadly, I think there’s strong support for what we’re doing.”

While the training program doesn’t guarantee a job with Goldwind, it also doesn’t prohibit participants from seeking employment with other wind energy producers. But Halligan hopes that the training will result in Wyoming residents working for the company, either in their home state or elsewhere across the country.

The company is looking to kick off its first project in the state next year—a large installation in Medicine Bow. “We want to get ahead of the curve and get ready for the growth in [the Wyoming] market,” Halligan says. “Wyoming has some of the best wind resources in the country, but it also has one of the smallest installations of wind farms in the country. That is hopefully set to change.”
Previous page, left: Robert Godby is the director of the University of Wyoming’s Center for Energy Economics & Public Policy.
Previous page, right: David Halligan is the chief executive of Goldwind Americas.
Above: Scott Rowland, vice president of engineering at Goldwind USA, exiting the top of the wind turbine.
Of the world’s largest four wind turbine producers, Goldwind lags behind the other three in U.S. market penetration, Godby says, and so it makes sense for the company to take a proactive role in training workers. “Goldwind is a new company, relatively, to this landscape,” Godby says. “They’re going to need workers. They have to either train them themselves, or poach other people.”

The economic impacts of large wind farms are even more significant than they first appear. While wind turbines do require some ongoing employment for maintenance, wind farms aren’t like coal mining, with workers needed to constantly extract more fuel. The majority of the labor, Godby says, comes up front in the form of building and installation—necessitating support workers, delivery drivers, concrete pourers, crane operators, and other construction workers.

“It’s like having a really large highway project,” Godby says. “Those employees don’t get listed as wind workers. But when you talk about direct and indirect jobs, renewable energy affects a lot of areas.”

Although Wyoming produces the bulk of the country’s coal, no state is more closely linked to coal production in the popular imagination than West Virginia. Utter the words “coal country,” and many people picture sooty, hard hat–wearing workers emerging from the mines of Appalachia.

Perhaps this inextricable association is due, at least in part, to how completely West Virginia’s economy relied for many decades on coal production.

“All the gas stations, all the hotels, all the marketing firms, even, it was all about coal,” says Brandon Dennison, chief executive of Coalfield Development, a West Virginia organization that aims to retrain workers for careers in five different industries, including solar energy. “Coal dominated. That’s the problem of not having a diversified economy. Getting out of that situation is going to take a long time.”

Coalfield trains people in solar installation in a controlled setting, and then gives them on-the-job experience. So far, the group has trained just about 20 people, with another cohort of 10 set for training this winter.

Dennison acknowledges that those numbers are a drop in the bucket compared to the thousands of coal jobs that have disappeared from West Virginia in recent decades. “That’s not actually a bad thing,” he says. “The problem with our economy is, we got hung up on one industry, and that’s all we had. My vision is a more diversified economy.”

“The solar market is still so small here that we’re trying to simply grow the market, and as the market grows, we know we’re going to need more trained people to fill it,” he adds. “In a rough regulatory environment, our solar sales double every year. So there’s demand for it.”

Dan Conant is chief executive of Solar Holler, a West Virginia solar installation company that helps to train and employ some of the people that Coalfield works
with. He agrees that solar energy jobs alone won’t come close to replacing lost coal jobs.

“I really shy away from the idea that this is going to be a silver bullet,” Conant says. “Part of the problem is that for so long, we were so dependent on coal. One of our challenges is how do you diversify the economy? That’s not just replacing all those jobs with one thing. That doesn’t get you out of your predicament.”

“Renewable energy is a big piece of [the solution],” he adds. “But I don’t want to make it seem like this is the thing that leads the state out of economic crisis.”

When Conant started his company four years ago, he says, there were fewer than 20 people in the solar energy industry in the entire state. Today, his company employs 16 people, and he says there are now around 100 people employed in solar jobs in West Virginia—although some estimates put that number as high as 300 according to Solar Jobs Census.

Solar Holler started out using creative financing programs to complete solar installations at nonprofit organizations, but now does the bulk of its work at...
private residences. The small size of the industry, Conant says, creates a sort of chicken/egg problem, with a lack of both job opportunities and trained workers to fill them.

“The last thing we wanted to do is train folks for jobs that didn’t exist,” Conant says. “We’ve been really mindful of trying to keep the workforce and project demand in close alignment. One of the challenges with any job retraining effort is, we try not to get too far ahead of ourselves. Literally, the industry didn’t exist in the state. We didn’t have the workforce, and it was hard to go out and sell systems until we did have the workforce.”

Workers who train with Solar Holler, Conant says, receive basic electrical apprenticeship experience, along with training in basic construction, mounting systems, system design, and energy analytics. “The real hands-on work is about all of the different mounting systems and how you wire all the systems correctly,” Conant says.

Before returning to his native West Virginia, Conant worked in the solar energy industry in Vermont. Because much of the electricity in Vermont comes from hydropower—as opposed to coal—Conant says he feels like he’s able to have a larger environmental impact by expanding solar offerings in his home state.

“Every single panel we install in West Virginia has the impact of 15 panels in Vermont, because you’re offsetting coal instead of hydro,” he says. “If you’re looking at this through an environmental lens, you really should be supporting programs in Appalachia.”

In addition to having an outsized environmental impact, Conant says, solar installations in West Virginia—and the jobs that come with them—help to win the hearts and minds of people in a place that has not traditionally been a hotbed of green energy activism.

“Every person that we hire and train and give full-time work in the industry, they then become an ambassador for solar,” Conant says. “That really changes people’s minds, when their kid or their parent is working in an industry. With a lot of the installations we’re doing, it’s the first time there’s ever been a solar installation in the town. We’re trying to expand the footprint, so it becomes less foreign and more familiar.”

Another potential benefit of training workers for renewable energy jobs: It could, over time, bring down costs in those sectors, says Dan Schwartz, director of the Clean Energy Institute at the University of Washington. In other markets where the solar energy sector is more mature, such as Germany, Schwartz says, “soft costs” for things like training and permitting are about half of what they are in the United States.

“Those costs typically make up more than two-thirds of the cost of doing a solar installation,” Schwartz says. “Through training, we have a tremendous opportunity to drop the cost of solar energy even further in the U.S.”

For communities that have lost fossil fuel jobs, Godby says, the pain goes beyond economics. “It’s a dramatic shift, and a tough one,” he says. “It requires whole communities to shift their entire focus, their entire outlook, and their entire identity.”

Dennison says he sees a generational divide between older out-of-work miners who spent decades in the coal industry, and younger workers whose identity isn’t so closely linked with the mines. “Miners under 35 are excited about the idea of reimagining our identity a little bit,” he says, “whereas for folks
who’ve been in the mines for decades, or are close to retirement, it’s very hard for them to imagine something different.”

There is some acknowledgment, even by those in coal country, that some workers may ultimately have to relocate to find better opportunities. (California has somewhere in the neighborhood of 1,000 times as many solar energy jobs as West Virginia does.) But there is also the sense that clean energy jobs give former miners, and other laid-off employees from fossil fuels industries, a second chance at well-paying, meaningful work.

“With mining, we powered the country for a century, and we’re really proud of that,” says Dennison. “So to go from that to service sector work isn’t very empowering. Mostly, folks just want to work. They want to work for decent wages. And they want to work in jobs they can be really proud of.”

Schwartz says he is “so proud” to be working in an industry that allows him to partner with labor unions. “I know that the innovations of Ph.D. students in our labs are going to be feeding, truly feeding, the employment chain,” he says. “There are just not many sectors of the economy where a high-tech innovation at a university lab provides so many broad benefits to so many folks in the economy. It’s a field that really spreads the benefits of innovation throughout the employment chain. It’s super exciting, and it feels really good.”

Conant says that the effort to diversify West Virginia’s economy is a race against the clock. “If people can’t get jobs now, they’re going to move away,” he says. “That could be to a bigger city in West Virginia, but it could be to a different state altogether. If we lose a worker to Columbus or Pittsburgh, it’s going to be next to impossible to get them back down the line.”

“It’s not just about the folks working in the coal industry,” Conant adds. “If folks move away because they’re not in the mines anymore, that’s not just them. It’s also their families. We realize that the industry is changing, and that those coal jobs are not coming back. But it shouldn’t mean that the entire state has to suffer, or that entire towns have to pack up. That’s what we’re working to prevent from happening.”

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“Every person that we hire and train and give full-time work in the industry, they then become an ambassador for solar.” – Dan Conant

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Green Energy Jobs By The Numbers

According to the Environmental and Energy Study Institute, 3.4 million Americans are directly employed by the clean energy industry—more than the 3 million Americans employed in the fossil fuels industry.

Employment in the clean energy industry increased by 18 percent between 2015 and 2016. Of the 3.4 million clean energy jobs, 677,544 are in renewable electric power generation and fuels jobs. Those jobs are distributed across five clean energy sectors:

- **SOLAR**: 373,807 jobs
- **WIND**: 101,738 jobs
- **HYDRO**: 65,554 jobs
- **GEOTHERMAL**: 5,768 jobs
- **BIOENERGY**: 130,677 jobs

THE PLATINUM CORRIDOR
Scott Mazo has never been a fan of cost-benefit analyses. The real estate developer and founder of Philadelphia’s University Place Associates, LLC, says the industry’s formulas ignore important factors—namely, social impact and brand value.

“I’ve been around the construction industry for 30 years,” says Mazo, “and there isn’t necessarily a correlation between the numbers people use and the real numbers that make up the formula for profit and loss.”

A Philadelphia resident for almost 40 years, Mazo has spent his career developing profitable properties that improve the lives of his neighbors. In 1990, he co-founded Neighborhood Restorations, a for-profit affordable housing development company. The company restored more than 1,000 abandoned and blighted homes in West Philadelphia, creating 1,200 affordable housing units for low-income residents. It went on to restore the historic Oliver Wendell Holmes Middle School, the first middle school in the United States, creating 42 units for senior citizens and resurrecting the performance auditorium for residents and the community.

“There’s no reason our efforts to make a living can’t also make a positive impact,” says Mazo.

Now, the 65-year-old developer is finding a new way to realize that double bottom line with the Platinum Corridor, a development of mixed-use commercial and retail buildings, each of which aims to achieve the highest distinction of Leadership in Energy and Environmental Design (LEED) certification. Located in Philadelphia’s University City neighborhood, home of the University of Pennsylvania, Drexel University, and renowned medical institutions, the project will feature as much as 2.5 million square feet spread across some seven city blocks.

The development’s first commercial building, 2.0 University Place, opened in 2013. In addition to achieving LEED Platinum for Building Design and Construction (BD+C) Core and Shell, all seven tenants’ spaces are additionally LEED Platinum for Interior Design and Construction (ID+C). The 97,000-sq-ft building is also Energy Star certified and has achieved top marks for energy efficiency, water conservation, transit-friendly design, green space accessibility, and indoor environmental health. It cost Mazo’s firm $31 million to build, and in 2016, Zurich Insurance Group bought 2.0 University Place for $42.75 million, a record-setting price in Philadelphia at $438 per square foot.

The next phase of the project, 3.0 University Place, will include both commercial and retail space and will break ground in 2018. At least two more certified buildings will follow—4.0 and 5.0 University Place—with long-term plans to include certified residential space.
as well, all of which will aim for Platinum certification. When completed, the Platinum Corridor will transform University City into one of the most sustainable mixed-use urban centers in the country.

**Platinum Planning**

While any large-scale urban project requires collaboration and communication, the stakes are even higher with a neighborhood-sized development. Every player is a human link in a chain connecting sustainable designs and technologies to actual green outcomes. To lay the foundation for a successful project, University Place Associates had to begin by making the business case for building the Platinum Corridor in University City.

“For our younger generation and for all generations in the knowledge economy, environmental sustainability matters, place matters, and buildings on the cutting edge of sustainability matter,” says Lee Huang, senior vice president and principal at Philadelphia’s Econsult Solutions.

Huang and his colleagues helped Mazo make the economic pitch for LEED Platinum development in West Philadelphia. The firm’s assessment went beyond promises of construction jobs and tax revenue; according to Huang, workers in the innovation economy seek out sustainably designed workspaces and urban environments that reflect their own values. That means companies across sectors, from creative startups to high-tech to biopharmaceuticals, want to lease space that is as socially and environmentally progressive as their workers.

“There’s a conglomeration effect, where success isn’t just, ‘I filled the building,’ but it creates a magnet for more activity,” says Huang. “Regions are competing for human and financial capital, and that capital can go anywhere. Scott is positioning the Platinum Corridor to be attractive and compelling.”

The plan seems to be working. Already, 2.0 University Place is nearly full, with tenants that include innovative companies and even the U.S. Citizenship and Immigration Services. And 3.0 University Place is already attracting inquiries from businesses looking for cutting-edge, sustainable workplaces. Last year, Benjamin’s Desk, a co-working space provider, leased 12,000 square feet at 2.0 University Place. Adam Glaser is partner and chief innovation officer at Benjamin’s Desk, and he says the company’s mission of “leveraging place-making and real estate to advance entrepreneurs” made the Platinum Corridor an ideal location.

“It isn’t just about a bunch of buildings with better electrical networks and green roofs—it’s about values,” says Glaser, who notes that the building’s green roof has become a gathering place for Benjamin’s Desk’s employees. “We give people an environment that helps them collaborate, and a sustainable environment is an extension of that experience. 2.0 University Place is more of a campus for our people.”

Of course, gaining buy-in from city officials and entrepreneurial companies is just part of the planning process. To build a project the size and scope of the...
Platinum Corridor, the University Place Associates team takes a collaborative approach that begins long before the buildings’ foundations are laid. From the earliest stages of the design phase, Mazo brought together sustainability consultants, architects, engineers, construction managers, and commissioning agents. The early meetings ensured that every team member understood the developer’s vision of sustainability, but they also were integral to building chemistry and accountability.

That’s according to Eric Lintner, CEO of the construction firm Dale Corporation, based just outside of Philadelphia. Since its founding in 1959, Dale Corp. has built a portfolio of conventional and sustainably designed projects worth more than $1 billion. After Mazo selected the firm as construction manager for 3.0 University Place, Lintner sat in on interviews with the next potential team members. And so it went with each new member of the Platinum Corridor team, building cohesion and a collective vision that Lintner describes as the purest form of integrated project delivery.

“Scott has not only broken new ground with the Platinum Corridor and green buildings,” says Lintner, “but he’s taking a cutting-edge approach to building design. We’re all collaborating, and Scott has hand-picked the team to marry skill sets, chemistry, and people aligned with his vision. And as the plan is developed, there is constant feedback—cost feedback, structural feedback, environmental feedback—all in real time.”
Much of that feedback comes from Chloe Bendistis, sustainability project manager at the Sheward Partnership. The Philadelphia-based architecture, planning, and sustainability consulting firm served as design architect for 2.0 University Place’s interior and is now designing 3.0 University Place. Bendistis managed the flagship building’s LEED certification and is overseeing the process for 3.0 and rest of the Platinum Corridor. It’s a mammoth task that requires both high-performance building systems and seamless communications.

As each phase of the Platinum Corridor moves from design to construction, Bendistis is a regular onsite presence. Weekly and monthly meetings are held with the construction team to ensure that designs and technologies are synchronized and to review documentation requirements for certification. That collaboration is crucial, as any misstep can mean falling short of the design’s energy and cost savings potential.

And while energy models are part of most sustainable developments’ design phase, Bendistis and her crew see the forecasts in a more expansive role. “We test that modeling as soon as possible and use it throughout the development,” she says, ensuring that sustainable designs and technologies become sustainable buildings with sustainable results.

Platinum Design
There is an undoubtable cool factor that comes with a LEED Platinum project, and this one is no exception. At 2.0 University Place, for example, a 14,000-sq-ft accessible green roof is a popular recreation spot for tenants and a living receptacle for stormwater that would otherwise flow to the sewers and rivers. The feature helps the building achieve LEED credits for stormwater design and reducing heat island effect, where bare urban rooftops reflect the sun and cause cities to heat up.

The building also features a SEMCO chilled beam system, which uses almost 100 percent outside air to distribute heating and cooling throughout the building and reduce HVAC energy consumption. By drawing in and purifying outside air, the system also reduces indoor carbon dioxide and allows occupants to individually control their particular spaces, helping the building earn a point toward the Thermal Comfort credit.

The aptly named 3.0 University Place takes sustainable technology and design to the next level. The building will feature cisterns that collect rainwater to both irrigate the 22,000-sq-ft rooftop garden and supplement water used in the building’s cooling towers. And SEMCO’s chilled beam technology will again be a fixture of 3.0 University Place, with a next-generation pump cap package that reduces energy consumption and operational costs.
“It allows us to turn on pumps only as we need them to circulate water through the chilled beams, instead of bringing cooled and hot water throughout the building,” says Brad Randall, principal at the engineering firm Bruce E. Brooks & Associates.

As 3.0 University Place’s engineering consultant, Randall’s firm is charged with a difficult task: ensuring that complex, highly efficient systems are effective, seamlessly integrated, and simple enough for tenants and maintenance crews to interface with on a daily basis.

To make that happen, Randall’s team meets with both the products’ engineers and the contractors who will install them. That process is made easier because Mazo also researches the latest technologies and meets with manufacturers to maximize system efficiencies and reduce product costs. It’s an unusual role for a developer to play and invaluable in pulling off a project as sophisticated as the Platinum Corridor.

Of course, occupant behavior and operator error can cause even the most advanced systems to fall apart, says Randall, so the firm designs systems that anticipate those behaviors. For example, automatic LED lighting is set to a low level by default, rather than beginning at maximum brightness and relying on users to manually turn them down. And Bruce E. Brooks & Associates offers education services to occupants to ensure that sustainable systems perform at their peak.

“It takes care during the design and construction and follow-up afterward,” says Randall.

Achieving LEED Platinum also means going beyond energy efficiencies and water conservation. As a transit-oriented development, the Platinum Corridor is strategically located just one block from Philadelphia’s subway system at 40th and Market Street. The site is also served by several bus lines and is bicycle accessible, with onsite showers available to encourage workers to ditch their cars for more efficient modes of self-propelled transportation. These measures help 2.0 University Place and future buildings in the Platinum Corridor achieve LEED Sustainable Sites credits for access to public and alternative transportation.

Yet the Platinum Corridor’s most significant contribution to University City’s workforce and businesses may be its emphasis on occupant health and wellness. In addition to providing workers in 2.0 University Place with accessible green space and visual access to the outdoors in 90 percent of the building, LEED Platinum tenant spaces were built with low-emission sealants and adhesives. The building also circulates more than twice the amount of outdoor air per person as a conventional office building. Why
2.0 University Place

**Status**
Opened 2013

**Features**
- 98,000 square feet
- 5 floors
- Transit-oriented design
- Bicycle accessible
- 14,000-sq-ft accessible green roof
- Stormwater collection for irrigation
- Chilled beam heating and cooling system with approximately 100% filtered fresh air circulation

**LEED Certifications**
- LEED Platinum BD+C
- LEED Platinum ID+C

**LEED Scorecard (BD+C: Core and Shell)**
- Total Credits: 47/62 – Platinum
- Sustainable Sites: 12/15
- Water Efficiency: 4/5
- Energy & Atmosphere: 11/14
- Material & Resources: 6/11
- Indoor Environmental Quality: 9/12
- Innovation: 5/5

**Awards**
- Greenest Project 2016, Philadelphia Business Journal

3.0 University Place

**Status**
Construction begins 2018; completion in 2019

**Features**
- 170,000 square feet
- 5 floors
- 22,000-sq-ft green roof
- SEMCO chilled beam system
- Cisterns recycle rainwater for irrigation and chiller towers

**Awards**
- 2017 Smart Growth Award, Delaware Valley Smart Growth Alliance (DVSGA)

4.0 University Place

**Status**
Schematic design phase
should that matter to existing and potential tenants of the Platinum Corridor?

According to a 2015 Harvard University study, “The Impact of Green Buildings on Cognitive Function,” workers who labored in spaces with low levels of volatile organic compounds (VOCs) and high levels of circulating outdoor air performed 101 percent better on cognitive function tests than workers in conventional workplace settings. It’s a finding that also has real-world implications for a company’s bottom line, with increased cognition generating as much as $6,500 in improved productivity per person per year, the study found.

“Energy is one piece, but looking at cost of productivity and human health benefits—that’s where Scott and the Platinum Corridor differentiate themselves,” says Michael Pavelsky, sustainability director at the Sheward Partnership.

In keeping with Mazo’s long history of making a meaningful impact on Philadelphia’s residents, the Platinum Corridor’s design also considers those already living and working in University City. The entrance to 2.0 University Place, for example, is oriented to the north to face residential neighborhoods and increase community connectivity. And exterior plazas throughout the Platinum Corridor will engage the community with open designs and green features.

“We want to make the Platinum Corridor a place where people want to come—to work and live in this neighborhood,” adds Pavelsky.

**Platinum Results**

Mazo’s Platinum Corridor is already seeing measurable results in energy efficiency and cost savings, and energy models for 3.0 University Place are generating impressive forecasts.

According to University Place Associates, 2.0 University Place uses 33 percent less energy than a conventional building, with a 29.2 percent reduction in energy costs. The building uses almost 42 percent less indoor water and captures and treats 95 percent of rainwater that falls on the site, reusing it for irrigation of the vegetated roof.

3.0 University Place’s sustainable design and green technologies will save 1 million KwH of electricity per year when compared to a conventional building. Through high-efficiency water systems, including the recycling of rainwater for both rooftop irrigation and the building’s cooling tower, the building will also save an estimated 778,000 gallons of water annually. Its design also calls for diverting 50 tons of construction waste from landfills.

Those environmental benefits may not be a draw for every company, but the Platinum Corridor’s promise of significant utility savings, healthier work environments, and increased worker productivity is universally appealing. For Mazo, who sees both principle and profit as integral to his success, it’s all part of an unconventional formula three decades in the making.

“This is the contribution I want to make,” says Mazo. “There’s only one planet we have to live on, so I’m going to make it work by good practices. That’s part of the equation.” 🌍
The ribbon of highway from Dallas to Austin, Texas, is not a journey to be taken lightly. Interstate 35 South is a straight shot of asphalt, surrounded by vast open plains and wide sky, a monotone setting that can seem endless. Yet David Matiella, who plays a critical role in linking the state’s green initiatives to the Texas State Legislature, regularly draws volunteers from Dallas, Houston, and lesser-known outposts, to the state capital to advocate for sustainability policies. Matiella is an associate dean of academic affairs and a professor at the University of Texas at San Antonio’s College of Architecture, Construction, and Planning. As the organizer and chair of the U.S. Green Building Council (USGBC) Texas Chapter’s Advocacy Committee, Matiella is a prime mover and shaker for Texas green initiatives, deftly steering politicians and residents toward a more sustainable future.

“We focus on public policy and green building policy at the state level,” Matiella says. In a place like Texas, this is no easy feat. As he says: “Texas is diverse and large, a state where certain attitudes can be difficult to overcome, especially in policy.”

Matiella, a native Oklahoman, melds precise policy work with passionate beliefs about the environmental balance our world hangs in, embracing a career that includes teaching, university administration, policy work, and volunteerism—particularly with the USGBC Texas Chapter.

“I spend a lot of time listening to the [Texas Statewide] Advocacy Committee,” Matiella says. "It's a lot of teamwork, communication, knowing who your allies are, and how to share information," he says of the group, which was established in 2011. “I credit the great leadership I work with and the great partnerships.”

In partnership with USGBC’s national office, David and the Chapter led this year’s biennial Advocacy Day at the state capitol, where USGBC volunteers attend legislative sessions in Austin in support of policies that support and advance green building. “We are an effective committee because of our volunteers,” Matiella says.

Strong leadership, especially in the political arena, is critical. "We're nonpartisan," Matiella says. Still, it is significant that the Texas Advocacy Committee has a Republican, State Rep. J.M. Lozano, heading the Green Schools Caucus. Last winter, chairman Lozano read House Resolution 2090 on the House floor, which made green schools a priority in Texas; standing behind him were committee members from USGBC Texas Chapter: Mike Dieterich, Janah St. Luce, Sangeetha Karthik, Mike Myers, Caroline Kostak, and Kenneth Flippin. “That’s no small thing,” Matiella says.

Another notable achievement, House Resolution 1676, filed by Rep. Mark Strama on Earth Day in 2013, recognized USGBC for the organization’s work in Texas.

Left to right: Hon. Rep. Mark Strama, USGBC Texas Advocacy Committee Chair David Matiella, and USGBC Texas Advocate Larry Graf.
Building green schools is a major driving force behind much of Matiella's work. When he and his fellow volunteers approach Texas businesses, they may focus on the benefits of green building in the realm of the environment, economy, or both. “If the office isn’t ready to talk environmental aspects, perhaps they’ll talk about economic aspects,” he says. “Understanding people’s priorities—that’s how we talk. Instead of ‘what’s my agenda,’ ‘I do have an agenda, but I want to hear your agenda, too.’ It’s a bedrock for commonality and progress.”

Matiella’s work at the University of Texas at San Antonio is interwoven with the same spirit. His classes at the College of Architecture include design courses, with students in a laboratory design setting, and Introduction to the Built Environment, among others. He also teaches Sustainable Development in the College of Science, which covers the complicated systems that support a building, as he notes, “those aspects that people don’t see.”

He recently received a new appointment as the university’s associate dean of academic affairs. “It allows me to oversee academic affairs, students, and recruiting,” he says. The connection to youth, who have the world waiting for them, is key for Matiella. “Working with young people fuels me, drives my passion,” he says. “This generation wants to know about sustainability. I try to do more listening.” The time to act is now, he says. “The sense of backsliding in the environment is very real. The urgency should be felt by everyone now.”

Jeremy Sigmon, USGBC’s director of technical policy and state and local advocacy, sees a precise intersection of the facets of Matiella’s
work in academics, policy making, and volunteerism. "Seeing David engage with elected officials, it's clear his experience as a teacher has contributed to the Advocacy Committee's numerous wins," Sigmon says. "He understands the importance of learning the concerns and priorities of lawmakers first, then finding areas of commonality and ways to collaborate that advance green building policies."

Matiella first developed a fascination with buildings, culture, and community after high school, when, not knowing where he wanted to plant his feet, he bought a train pass in Europe and began exploring Berlin. "I couldn't get the trip out of me," he recalls. So he followed that trip with other more extensive travels around Europe. "That's when I really discovered the built environment," he says.

In 2003, he was working in a small architectural design office and attending architecture school. "I had been aware of USGBC," he says. "I knew the benefits of green building, construction, and what Leadership in Energy and Environmental Design (LEED) was." Then his direct supervisor asked Matiella to attend a USGBC Advocacy Committee meeting in San Antonio. That's when things clicked into place. "They were talking about policy, and I thought, policy is such an important way we can make an impact on society."

The idea of a "three-legged stool"—environment, economy, and society—left a lasting imprint. "I thought, architecture, green building, the priorities we express, how they come to fruition, and policy—the rules that need to be followed—that's one way to really effect change."

Another way, of course, is educating youth. Matiella sees pure potential. "They care about the environment; they see a complex world; they want to change it. They know they can. There's a lot of momentum and hope for the future, and it centers on young people." But they can't do it on their own. "They're looking for inspiration and opportunity," he adds. "As educators, we show them those avenues; oftentimes, they create their own opportunities."
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Amira Hassan is an educator with a background working with the U. S. Green Building Council’s (USGBC) Leadership in Energy & Environmental Design (LEED) green building rating system. She has worked for more than seven years as an architectural engineer at Dar Al-Handasah Company in Cairo, Egypt, a Platinum level member of USGBC. She is a LEEDAP and a WELL AP. She is also a Green Globes professional and a Green Classroom Professional. She is a volunteer with the International Living Future Institute as an ambassador and presenter.

What is your greatest fear? Wasting our time questioning and debating about climate change, and changes come faster than we think.

Which historical figure do you most identify with? Sinan, the great Ottoman architect and urban designer.

Which living person do you most admire? My Father for his balance between work and life, he is so professional at his career, and at the same time he is the most loving and caring father ever.

What is your greatest extravagance? Learning more about sustainability, green buildings, and nature.

What is your favorite journey? Saint Katherine Protectorate in the south of Sinai where I find the highest mountains in Egypt, serenity, and most important of all is being off-grid and with no mobile network connection.

What do you consider the most overrated virtue? Honesty. Not everyone can take honesty.

Which words or phrases do you most overuse? If you could just remember that we are not going to stay here forever.

What is your greatest extravagance? Learning more about sustainability, green buildings, and nature.

What do you consider the most overrated virtue? Honesty. Not everyone can take honesty.

Which words or phrases do you most overuse? If you could just remember that we are not going to stay here forever.

What is your most marked characteristic? Passionate, with all the things I love.

Who are your heroes in real life? Prophet Muhammad in history and today Jason F. McLennan.

What is it that you most dislike? Fake people.

What is your most treasured possession? My two kids, Mariam and Malek.

What do you regard as the lowest depth of misery? Living in countries where things are more valuable than people.

What is your favorite occupation? Positive change maker—in whatever occupation.

What is your most marked characteristic? Passionate, with all the things I love.

What is it that you most dislike? Fake people.

What is your motto? Love, learn, live.

What will you have them put on your tombstone? I think they will have to do it themselves—haha. I still don't know how my journey ends, maybe that's why I can't sum it up in words now.
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