



HEAD OF THE CLASS

The Rust Belt state and center-right presidential bellwether is the nation's unlikely green schools leader. Here's how it happened.

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It was air conditioning and cigarettes that brought green schools to Ohio. Before the air conditioning and the cigarettes, in 1995, schools in the Buckeye State were like schools everywhere else in America: heated by inefficient, leaky systems that left some classrooms drafty in the winter and others boiling hot; poorly lit, with stale air that led to asthma flare-ups and afternoon headaches; and totally unequipped to harness the sun, wind, and rainwater that could help reduce utility bills and minimize the environmental impact of the buildings.

Then, in 1997, the state embarked on an ambitious school building program. For the first time, these new schools were required to include air conditioning, and a number of districts struggled with the higher utility costs. Franklin Brown, a since-retired planning director at the Ohio Facilities Construction Commission, began searching for design standards that would help mitigate these costs, and discovered that building to LEED specifications could help schools save an average of \$100,000 a year in operating and maintenance expenses.

Brown began pushing hard for a statewide LEED requirement for new schools, to the point that his then boss called him a “zealot.” A vegetarian of 40 years who is on his fourth Toyota Prius, Brown admits that he’s “kind of a tree hugger,” and he says it would

have been worth getting fired to advocate for green building standards.

“LEED was the best deal that the schools could get,” Brown says.

In 2007, the commission passed a resolution requiring all new schools to be built to LEED Silver standards or higher. At the same time, the state decided to dedicate more than \$4 billion in tobacco settlement funds to school construction, leading to an unprecedented school building boom. The fact that the new schools (funded by the tobacco settlement) came on line under the new LEED regulations (inspired by high air conditioning bills) helped Ohio race to the head of the pack, and earlier this year it became the first state to hit 200 LEED-certified schools.

The tobacco settlement funds ran out in 2011, and so school construction has slowed somewhat, but the state is still going strong, adding green schools in 10 to 20 districts per year (down from 30 to 35 at the peak of the boom). At last count, Ohio had 228 LEED-certified schools—3 Platinum, 81 Gold, 139 Silver, and 5 Certified—more than another 125 LEED-registered projects. Instead of hissing radiators and humming fluorescent lights, many Ohio schools today are outfitted with solar panels, wind turbines, and geothermal heating and cooling systems; with vegetable gardens and rain gardens; with





C. Robin Brandon (left) is the Cincinnati Public Schools manager of Facilities Planning and Construction and has been instrumental to the continued success for sustainability at CPS. Lisa Laney (right) is the sustainability administrator of Ohio Facilities Construction Commission.

low-offgassing paints, coatings, and furnishings; and with LED lights and large windows that let in the sun.

Rachel Gutter, director of the Center for Green Schools at USGBC, says that Ohio can serve as a model for other states, not only because of its track record, but also because many people might consider it one of the “least likely” states to become a hotbed for a sustainable building.

“We’re hoping that Ohio’s story is something we can show other states that are struggling, and say, ‘You can turn this ship around,’” Gutter says. “When we presented green schools in early days, people said, ‘Green is a luxury that we can’t afford.’ They said, ‘It works in California or Portland, Oregon, but not in my state.’ Ohio has debunked that.”

Ohio officials are upfront about which type of green is most important to schools undertaking building projects: cash.

“We put together a study that showed, if while we’re spending this \$4 billion, we did it with LEED, there would be a tremendous savings over time for the state,” Brown says.

“We lead with the money, and the rest comes along,” says Lisa Laney, sustainability administrator

for the state construction commission and chair of USGBC’s Central Ohio chapter. “When we’re talking to the school districts, we’re really just informing them about the different ways an efficient building can save them in operating costs.”

This emphasis on cost savings is perhaps one reason that school districts across the state have largely embraced the LEED requirement. Some of them, in fact, were already pursuing green building strategies before the mandate was handed down, precisely because they wanted a way to control their utility bills.

“First and foremost, operating cost is always a concern,” says Bill Franke, business manager for the Miami Trace Local School District, a 2,600-student district between Columbus and Cincinnati. The district only has three buildings, and two of them are new: an elementary school, which opened in 2008 (but was started before the LEED requirement went into effect), and a LEED Gold middle school that opened in 2011.

Even though the elementary school isn’t LEED certified, its energy performance is comparable to the LEED middle school, Franke says, thanks to systems that include occupancy-sensitive lighting and geothermal heating and cooling. The sustainable

features were incorporated into the design in part to ensure that the addition of air conditioning wouldn't bust the district's annual budget—the same chief factor that led the state to pursue sustainable design standards for all districts.

"That was one of our main concerns," says Franke. "The buildings that were replaced were all 100-year-old buildings. You go from a non-air-conditioned building to an air-conditioned building, and your utility costs are going to go up. In our case, in this district, we're actually paying less in our total energy costs now than what we were paying with the old buildings."

"Our old buildings had a mix of fuel oil, propane, and natural gas," Franke adds. "You would fire the boiler up in the fall and turn it off in the spring, and in between, you basically regulated it by opening and closing windows. It was a pretty bad situation."

In 2008, Miami Trace's total energy costs were \$651,000. Last year—even after the addition of air conditioning in two of the district's three schools—that bill was down to \$490,000. And Franke expects the number to drop even lower when the district builds a new LEED-certified high school.

Allison McKenzie, the director of sustainability for the architecture firm SHP Leading Design (which has its two offices in Columbus and Cincinnati), has worked on dozens of LEED schools in the state. She says some school officials are enthusiastic about LEED certification, while others bring a "checklist" mentality to the process, viewing certification as just another thing on their lengthy to-do lists.

"Some of our districts are extremely excited about it and want to make their buildings as sustainable as possible," McKenzie says. "But then we also get certain districts that think, 'Jeez, this is just one more thing in a complicated building project. This is going to cost us money, this is going to cost us effort.'"

But, McKenzie says, some of those feet-draggers come around after they see how the process adds value to their projects. "Districts are starting to see some great energy savings," she says. "Some are seeing increases in test scores, are attracting new staff, are seeing fewer absentee days. I haven't seen any school district go through the process and then say, 'Oh, we're so upset that we have this LEED-certified sustainable building.'"

In 2007, the Ohio Facilities Construction Commission passed a regulation that all new schools in Ohio had to be built to LEED Silver standards or higher.





Test scores have gone up and there have been fewer absentees in the buildings that have been upgraded.

Brown says there was a “learning curve,” both for district leaders and for those in the architecture and design community. “All of the architects we used had not had experience with LEED. Many of them had the attitude that, we’re architects, we know how to do buildings, we don’t need the state to tell us.” But, he says, the architects eventually bought in, and even began suggesting improvements to the state’s building design manual. Brown credits the sector with not only improving the quality of the state’s schools, but also applying their new green building knowledge to private construction projects.

“The benefit to the citizens of Ohio goes beyond schools,” Brown says. “If an architectural firm is able to design a LEED-compliant high school, it’s going to affect all of the buildings they do. It was kind of a rising tide of knowledge within the architectural community.”

C. Robin Brandon, manager of facilities planning and construction for Cincinnati Public Schools, says reaction to the LEED mandate was “most definitely mixed” at first.

“We had some people on the facilities and maintenance management side that were skeptical,” Brandon recalls. “I think they saw it as putting in systems that maybe they weren’t familiar with, or they didn’t think were going to be ideal for a school situation. There were

cost considerations. Part of it was the unknown, and just general skepticism. But the design professionals were very excited to pursue LEED.”

In the Milton-Union Exempted Village School District outside of Dayton, officials built support for a LEED Gold K-12 building that opened in 2012 by keeping the community informed through frequent meetings, and even a regular project newsletter called “Moving Forward.”

“People always felt they knew what we were doing,” says Virginia Rammel, superintendent of the district. She says officials didn’t view the LEED process as a “hassle,” but rather as a tool that helped them build the best possible school. “We’re a blue-collar community. We wanted quality for our kids and our community, and a building that we could be proud of years later.”

Franke, the Miami Trace business manager, says that school officials must continue to get buy-in from staff even after the building is completed. For example, facilities personnel must make sure that teachers aren’t closing their window blinds and turning on the lights on a sunny day (and thus eliminating the environmental, budgetary, and health benefits of a day-lit building). “We build a lot of these nice, sustainable features into our school, but it takes a lot of time to educate people



The benefits of the sustainable upgrades are numerous: better acoustics, thermal comfort, and daylight.

about what you're doing, and why you did it," he says. "That's ongoing. That's something that will continue."

In addition to lowering operating costs (and reducing environmental impacts), evidence suggests that green schools can boost the health and well-being of occupants through better acoustics, thermal comfort, and daylight. In short, they're simply nicer places in which to teach and learn.

Andrew Plogsted, president of the Cincinnati chapter of the USGBC, says that the city's schools—about half of which were LEED certified after the state mandate went into effect—are pulling people back into the district from private, charter, and suburban schools.

"Definitely, the perception [of the school district] has totally changed," he says. "People are coming back to the public school system. We expect to see enrollment [increase] in the next couple of years."

"It has gotten people interested in coming into our buildings and touring our facilities," says Brandon, the Cincinnati facilities manager. "We feel like if we can get them in the door, maybe we can keep them."

The new schools have also become community hubs, hosting after-hours activities like Boy Scout meetings and church services. "Before, once school was over, they locked the gates," Plogsted says. "That was a big shift. When you're activating a place like that





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past the school day, the community recognizes that it's an active, thriving school."

Green schools also become, in many cases, a teaching tool. "I hear the kids talking about the energy efficiencies and the sustainable initiatives, from recycling, to the turn-out-the-lights campaign, and they take it home with them," says Laney. "All of a sudden, they're negotiating with their parents about utility savings, or getting their mom and dad to recycle. They're able to discuss what the benefit is. It's really great."

Ohio's first 200 LEED schools were designed, on average, to use 33 percent less energy and 37 percent less water than those built to normal design standards. But those numbers are merely theoretical. The state hasn't tracked whether the buildings are performing up to those levels, and it's possible that some of the buildings aren't being operated at peak efficiency.

Ian MacGregor, a member of the board for USGBC's Central Ohio chapter, is leading a research study that will determine how closely the actual performance of the new LEED schools aligns with projections. The early data suggests that the schools are performing better than traditional schools, but may be using more energy than predicted by consumption models. MacGregor cautions, however, that it's too early to draw conclusions.

"It seems basic, but it's complex, because there are many different potentially mediating factors," he says. "You can design the building one way, but if you're operating it in a way that's not meeting the design, it might not achieve the desired performance. We need

to do weather normalization. Not every school is in the same climate. You have schools in the northern part of the state and schools in the southern part of the state, and they have different heating needs."

Gutter, the Center for Green Schools director, hopes to push even further with an "epic" multiyear, multivariable study to explore the impact of green schools on metrics like student health and performance, teacher retention, and healthcare costs. (The study would cost around \$1 million, and Gutter hopes to have it funded within the next year.) While many advocates of green schools tout the positive impact the buildings can have on those outcomes, the connections are largely anecdotal, because researchers haven't had access to hundreds of green school buildings within a concentrated geographical area.

Until now, that is.

"For the first time ever," Gutter says, "we have a data set that really lends itself to that [study] in Ohio."

For Brown, the success of the LEED requirement is evident in the quality of the schools that have been built in Ohio during the last few years. They dot the state, standing as monuments vindicating the so-called "zealot" and his view that investments in green building techniques would pay off in the long run.

"Look at what's been accomplished," Brown says. "What I find truly gratifying is that there is a process in place that guarantees that, moving forward, Ohio is going to have good schools," he says. "There are controls, regulations—you can't build a bad school in Ohio." 🌱

LEED and Ohio: Economic Impact

Ohio's requirement that all new schools pursue LEED Silver certification or higher affects the local green building economy in two big ways. First, there's the regional materials LEED credit that gives points to districts using building materials from within a 500-mile radius of the project, which keeps money in the local economy. And second, credits for sustainable systems and materials help boost the market for those products—spurring competition and driving down prices.

“There are so many ways to look at these LEED projects and see how they help the environment, economy, and human health,” says Lisa Laney, sustainability administrator for the state construction commission and chair of USGBC's Central Ohio chapter.

Laney estimates that the LEED regional materials credits alone have brought more than \$890 million to businesses in Ohio and neighboring states.

Lance Piper, a business development manager for Lexington, Kentucky, fan manufacturer Big Ass Fans, says that when states and other organizations require LEED standards, it leads new customers to consider the company's products. (The use of ceiling fans can help projects attain LEED points for categories like “energy and atmosphere” and “enhanced refrigerant management.”)

“It has opened up doors for us,” Piper says. “The fact that more architects and engineers are designing schools to LEED standards has helped us.”

Bob Schrock, architectural services manager for PPG Industries—a company that makes low-VOC paints and other sustainable building materials—credits LEED standards with helping to create a more robust market for those materials.

“Any time you raise the demand for something, it gets used more, and that lowers costs by virtue of higher production numbers,” Schrock says. “The demand has gone up for those types of products, and it's directly related to the LEED rating system.”

“The [Ohio] school system had such a big impact,” Schrock adds. “They required everyone who was participating to meet the LEED bar. That forced companies to either change their products and become sustainable, or get out of the game.”



Many of the materials used in the buildings have been locally sourced.

