

It's electric! In Boston, buildings are testing cutting-edge technology to transition fully to renewable energy.

From solar batteries to wind-powered heating systems, local building owners are among the first to test the latest green technology.

By **Ivy Scott** Globe Staff, Updated July 31, 2024, 10:54 a.m.



Building owner Julie Klump, with the Preservation of Affordable Housing, looks out over solar panels on the roof of The Kenzi at Bartlett Station, Boston's first fossil-fuel-free mid-rise apartment. JONATHAN WIGGS/GLOBE STAFF

On a sloping plot of land down the street from [Nubian Markets](#) sits The Kenzi, an affordable housing complex for older adults in Roxbury that opened its doors to the first residents last month. From the outside, it appears to be a building like any other. Inside, though, a giant battery, just bigger than a refrigerator, is changing the way building owners and architects think about emergency power.

The technology, a solar-powered substitute for the diesel generators many buildings rely on during power outages, is the first in Massachusetts. It is part of an emerging trend of Boston building owners turning to the latest green technology to slash the use of fossil fuels, as the city tries to meet a looming [goal of net-zero greenhouse gas emissions](#) by 2050.

In downtown Boston, Emerson College is slated to become the first college in the nation to partner with what's called a district energy provider to heat all its buildings with renewable energy. In Dorchester, meanwhile, the Franklin Field Apartments are also testing a new approach to heating, drawing on warmth from deep below the earth's surface with geothermal wells. And in Jamaica Plain, the JFK Elementary School is piloting a similar first-in-the-city geothermal program, wrapping up the [first drilling tests at the school](#) this month.

“These kinds of innovations are exciting and another example of Boston being ahead of the green curve,” said Holly Samuelson, a faculty member at Harvard's Center for Green Buildings and Cities and Graduate School of Design architecture professor.



A close-up of the emergency battery system, which draws from solar energy generated on the roof to power the building in the event of an outage. JONATHAN WIGGS/GLOBE STAFF

Samuelson said Boston is among the cities with the “political will” to pave the way to a broader green transition through building innovation, pointing to a city ordinance mandating that [large buildings slash their greenhouse gas emissions](#) over the next two decades. Stringent policies, she noted, often drive innovation.

Emerson, which has its own climate goals to reach by 2030, is working with Vicinity Energy, the country’s largest district energy operator. Its heating operations pipe steam underground to buildings across the city, a 19th-century technology with a 21st-century twist: Wind turbines will soon generate much of the electricity that powers the system.

“If you want to change how each one of the buildings is heated, you don’t have to change it on a building-by-building basis. You simply change the technology back at the central plant,” said Kevin Hagerty, Vicinity’s president and CEO. “Much in the same way the plant went from coal to oil to natural gas, we’re now at the next inflection point.”

The company became an industry leader in renewable steam when it installed its first electric boiler in Kendall Square earlier this year. The gigantic boiler, which Hagerty said can produce enough energy to eliminate carbon emissions from “about 30 Prudential towers,” is expected to turn on late next month.

When it launches this fall, the technology is expected to help eliminate at least a third of the remaining greenhouse emissions Emerson has pledged to get rid of in the next six years.

“I’m hoping we’ll be able to set a good example for other urban colleges and universities,” said Jennifer Lamy, Emerson’s sustainability director. “If we can support this by being a first-mover customer, then we’re acting in the interest of the broader Boston area.”

Across the city in Dorchester, test drilling for the geothermal wells is expected to start at the Franklin Field Apartments in the coming months, according to city officials. The Boston Housing Authority, which operates the public housing complex, is partnering with National Grid to [transition away from gas](#) by replacing an old boiler that heats 129 units in seven buildings on the property. The pilot project is part of the agency’s push to be fossil fuel-free by 2030 and marks both the first effort of its kind in the city and second in the state, following a project at [UMass Lowell](#) launched last year.

“It’s a critical moment in Boston’s energy transition that we are not only embracing the shift away from fossil fuels, but putting public housing at the front of it,” said Housing Authority deputy administrator Joel Wool. “It’s going to ensure that residents who are often overlooked or at the back of the line are going to be at the front of clean energy transition.”

There are, of course, challenges to being the first.

Though The Kenzi is now Boston’s first mid-rise apartment to go completely fossil fuel-free, the initial blueprint called for a traditional diesel generator, said Julie Klump, vice president of design and building performance for the Preservation of Affordable Housing,

which owns the 50-unit building. When they decided to make the switch to an electric battery early in the construction process, Klump met regularly with their architects at DREAM Collaborative, solar designers at ReVision Energy, and the city's building and fire departments to establish the proper permits and safety measures.



A model one-bedroom unit inside The Kenzi at Bartlett Station, Boston's first fossil-fuel-free mid-rise apartment. JONATHAN WIGGS/GLOBE STAFF

Beyond the extra permitting, cost was another consideration. While the switch bumped up the overall price tag (it's about double the cost of the solar panel setup), Klump said the battery is expected to pay for itself within a decade.

Innovation in the buildings sector is in part fueled by grants and other financial incentives for green construction and renovation from both the state and federal government.

In Dorchester, for example, the Franklin Field project received nearly \$6 million in state grants last week to support the electrification of heating and hot water alongside other

renovations, which is expected to reduce energy use by 55 percent.

“We know once they make these investments, they’re going to save on their energy bills,” said Elizabeth Mahony, the state’s Energy Resources commissioner, whose office awarded the grant. “That frees up money for the building owner to invest in other ways for the tenants.”

Wool, from the Housing Authority, said switching to renewable energy also creates an opportunity to improve resident comfort as Boston’s climate warms, since the geothermal wells allow the Housing Authority to add cooling equipment to the apartments as well as heating.

“It’s hot out,” he said. “And we’re going to feel it next summer and the summer after that, so we’re just trying to get ahead of storms and heat waves with some of these renovations.”

The benefits of phasing out fossil fuels can spread well beyond a single building and into the local community, Klump said. An electric battery, for example, means no diesel fumes wafting through the apartment building — or in the surrounding neighborhood.

“I don’t want to do any more fossil fuel. I don’t want it anywhere near our buildings,” Klump said. “So hopefully, this will give people some incentive.”

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