

Building a School Replaces Its Used Energy J. Alex Tarquinio, WSJ

On a remote plot of scrubland in the southwestern corner of Staten Island, the city is building a school unlike any other in New York.

When P.S. 62 has its opening scheduled for the fall of 2015, it will be billed as a "net zero" school. This jargon means that, according to the architect's projections, the new public elementary school for 444 pre-K through fifth-grade pupils will produce at least as much energy as it consumes over the course of a year, and possibly even be able to sell energy back to the grid.

The \$70 million, 68,000-square-foot building is being designed as a "laboratory for ideas for future construction," said Lorraine Grillo, president of the School Construction Authority, which oversees the design and construction of city schools.

Demographic projections of the expansion of the school age population call for the need of tens of thousands of new seats in the city's public schools over the next five years. The new capacity will be added by expanding existing schools, by leasing space in residential or office buildings, and by building new schools like the one in Staten Island.

Over the last five years, the city's public school system of 1.1 million students has added nearly 43,000 new seats at a cost of about \$4.4 billion.

To be sure, not all of the lessons learned in Staten Island will be applicable across the 130 million square feet of space in the city's more than 1,800 existing public schools.

The urban settings of most current school buildings provide little available space for solar panels or wind turbines. Some of the energy conservation measures are more likely to be adapted in other new schools and in future building renovations.

Net zero projects are extremely rare, according to architect Chris McCready, the director of the education, health and science practice area at Skidmore, Owings & Merrill, the firm that won the design contract for the Staten Island school in a 2010 competition.

This is especially true in the relatively harsh climate of New York, where buildings must be heated in winter and cooled in summer, Mr. McCready said. He scrutinized a few similar schools in Texas and Kentucky, with their warmer winters and more abundant sunshine for solar energy production. But from the start, he knew that this project would be more challenging.

The first sight parents will see when they drop off their children at the new school, which is being built on an isolated 3.5-acre lot at 644 Bloomingdale Rd., near the Clay Pit Ponds State Park Preserve, will be an array of solar panels covering an area approaching the size of a football field. More than 2,000 panels will be installed on the two-story building's rooftop and southern exposure, as well as on a canopy over the adjoining parking lot.

Although the panels will create most of the energy produced on site, a small wind turbine will serve as a demonstration project. Even the children can do their bit by using energy-generating exercise equipment, just like in some science fiction movies.

Several other design elements should reduce energy usage in the building, while also making it a kid-friendly environment.

For example, lighting will be produced by LED bulbs using motion sensors, so the lights aren't left on in vacant school rooms.

Many days, the teachers shouldn't need to flick the switches at all. Large public corridors will be illuminated by skylights, and classrooms will have windows onto the hallways as well as the exterior. Mr.

McCready pointed to some recent research indicating that abundant daylight in the classrooms might improve student concentration and even test scores.

Some of the new school's energy conservation projects will fall below the radar, like the efficient kitchen equipment and heating and ventilation system. Geothermal wells will help heat the building in winter and cool it in summer by using ground water, which remains at a fairly constant 50 degree temperature throughout the year.

Children should have more fun with features like the science laboratories, a walkway with educational way stations on energy conservation and a greenhouse and vegetable garden that will furnish some of the cafeteria food.

The teachers, who have yet to be selected, will be asked to help reduce energy usage in classrooms. The design team visited teachers in other New York schools and discovered that many had refrigerators and printers in their classrooms. In the new school, these appliances will be located in common areas so they can be shared by teachers.

In addition to the Internet access that is wired into all of the city's public schools, this building will have "dashboards"—flat-screen monitors displaying current energy usage in each classroom intended to create a friendly competition among the students about which classes are saving more energy. Math and science teachers will be encouraged to work this data into their instruction.

"The big idea is to include children in the process of reaching net zero," Mr. McCready said.