

REAL ESTATE

The Passive House in New York

By ALISON GREGOR MARCH 27, 2015

It was less than a decade ago that a building design philosophy from Germany called “passive house” jumped the Atlantic Ocean and quietly took root in Brooklyn.

Now, with a few dozen homes and small projects built or retrofitted to this still exotic standard, passive buildings appear poised to enter New York City’s housing market in a much bigger way. Large projects delivering hundreds of new passive units to market are in the works, and city officials are watching closely.

Passive buildings maintain a comfortable interior climate without active heating and cooling systems — that means no more radiators or air-conditioning units for people who live in environments more temperate than New York’s. This is done using, among other things, an airtight building envelope and a system that exchanges interior and exterior air, usually an energy recovery ventilator. In New York, small heating and cooling systems are generally included in passive homes.

A house built to passive standards uses less than a quarter of the energy of a traditionally powered home, according to the Passivhaus Institut, which developed the standard in Germany. Besides lower energy bills, benefits include quiet interiors because of thick, insulated walls, along with fresher, cleaner air, thanks to the filters in energy recovery ventilators. Builders and residents of passive houses say the filters can help eliminate allergies and asthmatic symptoms.

With a small group of developers, builders and architects convinced that passive standards can now be achieved at little or no extra cost, proponents hope to see a revolution in how homes and other structures are built in the city.

“Building to passive-house standards just makes a lot of sense,” said Stephen Lynch, an architect and principal of **Caliper Studio**, who retrofitted his townhouse in South Slope, Brooklyn, using passive house principles two years ago. There are some cost hurdles and a learning curve, but those challenges can be overcome, he said, “and then you realize how amazing it is that we don’t already build to these standards.”

Officials working to implement Mayor Bill de Blasio’s sweeping green-building initiative, which has a target of an 80 percent reduction in greenhouse gas emissions by 2050, are studying passive-house standards as they overhaul performance standards for new construction.

Worldwide, buildings are responsible for about 40 percent of carbon emissions, but in New York City, it’s closer to 71 percent. The Mayor’s Carbon Challenge Progress Report of 2013 found that residential buildings account for 37 percent of the city’s emissions.

“We’ll be looking to high-performance innovations, such as passive-house, carbon-neutral or zero net energy strategies, to inform the city’s standards to reduce energy use in both new construction and our older building stock,” said Amy Spitalnick, a spokeswoman for the mayor.

Buildings constructed to passive standards aren’t widespread enough for consumers to inadvertently bump into them — they still have to be sought out. Among the small adherent developments is 255 Columbia Street, a 13-unit building in Brooklyn marketed in late 2013. And dozens of townhouses in Brooklyn and Manhattan are undergoing passive retrofits.

The cost of creating a passive house has been much debated. A few years ago, the Passivhaus Institut put the additional cost in the United States at somewhere around 6 percent. But proponents say costs have come down as prices for materials dropped and contractors have become more familiar with passive-building methods. Triple-pane windows and added insulation may add costs upfront, but these expenses are offset by the smaller boilers and smaller heating and air-conditioning systems passive houses require.

Kurt Roeloffs renovated his townhouse on West 88th Street in Manhattan using passive systems that he says did not add any extra costs to the renovation.

Since moving in this past November, he's been nothing but satisfied living in his home, where the temperature is a constant 72 degrees, and he can walk around barefoot in a T-shirt in total comfort in the winter.

"We were so impressed with how quiet it is, and how comfortable it is," he said. "The air just smells fresh and sweet, even after we cook, because the filters get rid of it so quickly."

His house uses an energy recovery ventilator, which pushes out stale air while drawing in fresh air, exchanging heat in the process. During the winter, heat from the exhausted air is transferred to the incoming cold air; and in summer, heat and humidity are drawn out of incoming air and transferred to the outgoing stale air.

David and Aliana Spungen have two-story windows in the kitchen of their Brooklyn Heights townhouse, recently retrofitted to passive house standards.

"I remember thinking we'll probably feel a lot of cold coming off those windows," Ms. Spungen said. "But even with this brutal winter, we just don't."

Mr. Lynch, the architect, said it now cost him about \$323 a year to heat his 3,140-square-foot house with a gas boiler. "I'm really satisfied and interested in how to make this method of building more commonly used," he said.

Heating an ordinary townhouse of similar size with gas would cost about \$2,500 a year, said Anthony DelleCave, a salesman at Citi Habitats who manages townhouses in Brooklyn and Manhattan.

Another passive apartment house in New York is an eight-unit building at 210 Pacific Street in Cobble Hill, Brooklyn, designed and developed by NAVA Companies. The building, which has half-floor and full-floor units of three and four bedrooms, has many green elements, such as solar thermal hot water systems and induction cooktops.

However, also of interest to potential buyers is that the building's passive design should cut their energy consumption by 75 percent, according to marketers at Brown Harris Stevens, using data provided by the Passivhaus Institut. They note, however, that the actual energy savings depends on the individual apartment owner, with those who opt for 65-degree rooms during the summer or an 80-degree home during the winter saving less than those who aim for more moderate interior temperatures. Half-floor units start at \$2.45 million and full-floor units

start at \$4.9 million.

Stewart Osborne, a partner in NAVA Companies, is an architect, as is David Ruff, another NAVA partner. Both saw passive construction as the best way to achieve a better designed energy-efficient building, Mr. Osborne said. They did not build a premium for passive construction into their pricing.

Passive-house design, Mr. Osborne said, “is something that is an extra added bonus for the buyer who’s thinking, ‘Oh, my energy bill is going to be a lot cheaper,’ or ‘Oh, I’m in a forward-thinking building that has a reduced footprint.’ ”

Because relatively few consumers know what a passive house is and even fewer may be willing to pay more for it, lowering the cost of passive construction has become important to its proponents.

Chris Benedict, an architect, has a long history of low-energy building and designed some of the city’s first multifamily buildings constructed to passive standards, which she says can be done at no extra cost. Her buildings, at 803 Knickerbocker Avenue and 424 Melrose Street in Bushwick, Brooklyn, both have 24 apartments and are on the verge of receiving formal certification.

“It wasn’t a huge leap for me personally to be doing passive house,” Ms. Benedict said, “because I’d already been looking at how to solve these energy issues in buildings, and how to do it for the same price as typical construction. So we were able to deliver these buildings without additional cost, and it was a big goal for us.”

In Mayor de Blasio’s 111-page green buildings initiative, the building at 803 Knickerbocker is used as a case study. Ms. Benedict said she is now working on a project to retrofit several 40-unit apartment buildings in Brooklyn to passive standards. Another passive project she is designing is called Perch Harlem at 542 West 153rd Street, a 34-unit rental building with anticipated delivery in spring of next year.

(Perch Harlem is in a bit of an unofficial competition with a six-unit project at 11 West 126th Street, also in Harlem, to determine which will be the first multifamily building in Manhattan to receive passive certification.)

Justin Palmer, the chief executive of Synapse Development Group, the developer of Perch Harlem with Taurus Investment Holdings, said he sees passive construction as a way of delivering “luxury” through smart design. Mr. Palmer said

that he expects to be able to charge more for the development's passive design.

“On the rental side, the value is you have all these comfort factors in a residential apartment in New York City,” he said, listing temperature, air quality and noise reduction. “And we’ve found through passive house design, you address all those issues.”

Since building to passive standards involves creating a virtually airtight building, often with thick insulated walls and triple-pane windows, not only is temperature regulated extremely well, but outside noise is almost eliminated.

Another developer considering whether to charge a premium for passive construction is Steve Bluestone, a partner in the Bluestone Organization, which is about to build a 249-unit rental development in Mount Vernon, N.Y. Mr. Bluestone said he can deliver the development with only 1 percent in additional costs tied to passive house standards.

“One percent is not much, but it’s still money, and I’ve had many conversations with marketing experts and builders about whether we can raise the rent right up front,” Mr. Bluestone said. The jury is still out.

Some naysayers believe it’s a mistake to incorporate possibly expensive and not strictly necessary standards into the building code. But with the cost of meeting passive-construction standards apparently dropping, passive-house proponents now see a role for the standards in the creation of affordable and low-cost housing.

Mr. Bluestone is also working on Beach Green North, an eight-story affordable housing development with 101 apartments in Rockaway, Queens. Incorporating passive standards, it should be completed in the winter of 2016-17. Also, as part of the city’s Build It Back program, Mr. Bluestone will be rebuilding four Staten Island houses destroyed by Hurricane Sandy in 2012, all to passive standards.

A social services organization, the Hellenic American Neighborhood Action Committee or Hanac, has also jumped on the passive-construction bandwagon for its eight-story 68-unit senior housing development, to be completed in Queens in summer 2017, said John Napolitano, Hanac’s director of community development and planning.

Part of the allure of passive house is the ability to withstand some of the effects of power cuts, he said.

“We’ve had several blackouts, and keeping the seniors in their homes during those periods, in an environment where we can maintain thermal controls in the units for a period of at least five days without disturbance, resonates with us,” Mr. Napolitano said. “We can do that with passive house.”

Mr. Bluestone found the transition to passive construction fairly easy after years of building low-energy structures. He said he was already using insulated concrete forms that conform well to passive-house models, and that he had an Ohio manufacturer design a small energy recovery ventilator that meets both his budget goals and passive standards.

“Budget numbers are saying where we’re going to be, and we hope we land there,” Mr. Bluestone said. “Passive house is code in many European countries now for new construction, and we’re a little behind here, but I think it’s catching on.”

Just this month, **Passive House Institute US**, which broke with the **Passivhaus Institut** in Germany several years ago, released new standards tailored to the varying climates found in the United States.

While this makes it easier and cheaper to achieve certification in some parts of the United States, the new standards for New York aren’t all that different from the original German standards, said Ms. Benedict, who sits on the board of **Passive House Institute US** and seeks certification from both entities for her projects.

The differing standards may bring about more passive certifications as intended, or they may unintentionally sow confusion. However, as many people involved in passive construction point out, a house that falls a bit short of the original **Passivhaus Institut** standards and fails to obtain certification is still a very low-energy house.

“Whether people get certified or not, they still get so far in terms of their ability to save energy that, for me, the exciting thing is, if everybody starts doing this, the effect on the environment will be just so significant,” said Michael Ingui of **Baxt Ingui Architects**, who has worked on retrofitting townhouses in Brooklyn and Manhattan with passive features.

Other passive-building proponents see passive certification as only a step on the road toward developing net zero energy buildings — buildings that use no energy or produce the energy they need — and even buildings that generate carbon

credits to sell.

“Many people are targeting zero energy, not passive house,” said Sam McAfee, a passive-building consultant and the founder of sg.Build who is working on many projects in New York. “Passive house is just a gateway to this. All the competing passive-house religions will achieve this goal ultimately.”

Correction: April 5, 2015

A cover article last Sunday about passive-house construction misstated the percentage of carbon emissions in New York City for which buildings are responsible. It is 71 percent, not 58 percent. And a picture caption with the article reversed the names of the wife and daughter of Stephen Lynch, an architect. His wife is named Hannah, and his daughter is Vera.

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