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Start Small and Think Long-Term: Saving Energy

By **ELIZABETH A. HARRIS**

NEW YORKERS get to feel smug about a lot of things. We have great food, arts and culture, the Yankees. We can also feel good about our relatively low use of energy, thanks to public transportation and our small living spaces. But sometimes — sometimes — we fail to notice where there's room for improvement.

Thirty-nine percent of [New York City's](#) greenhouse gases come from residential buildings. And there are New Yorkers who have looked hard at their homes, in buildings of all ages and sizes, and found ways to make them more energy efficient. Others are watching their operating costs rise (along with global temperatures), and want to know what to do about it.

"With new developments, it's easy," says Marc Zuluaga, a senior engineer at Steven Winter Associates, a consulting firm that works on energy issues. "But in almost any building, there are low-hanging opportunities."

Every building is different, and predicting the return on an investment in efficiency can be tricky. Older buildings are not necessarily bigger energy hogs than their newer neighbors, and some buildings that went up in the last 10 years should be ashamed. But the size and age of a structure can tell an expert where to start looking for savings.

"You have to start with conservation," Mr. Zuluaga said. "Once you squeeze every last ounce of efficiency out of a building — until you can't make it more efficient without knocking it down and building a new one — then it makes sense to add solar."

To find out where energy savings might be found in your building, an energy audit is in order. These are available from private consultants or utility companies like Con Edison.

A good place to begin is to make sure that all systems are working as efficiently as they can.

"If you have the right thermostat in place but the temperature sensor is in the wrong place, that can have a huge impact on energy performance," said Jeffrey Perlman, the president of Bright Power, an energy consulting group. "But it doesn't cost a lot to fix."

From there, you can get more ambitious: you can try to balance the temperature.

"Generally, buildings are heated to the tenant who's complaining the most because they're cold," Mr. Perlman said. "To be more energy-efficient, you want the whole building to get to be roughly the same temperature at roughly the same time. A well-balanced system can work wonders. And it can save money as well."

Last year, Mr. Perlman worked with Carl Wallman, who owns a 19-unit rental building on East 70th Street in [Manhattan](#).

“For years,” Mr. Wallman said, “it really got me to see windows open in the building and the heat blasting away. Surely, I’m interested in the savings, but really having the building run more energy efficiently was important.”

Mr. Perlman’s team made some small fixes, like adjusting the controls on the boiler and installing a new thermostat for the ground floor, which had its own heating system and was always cold.

In the 2007-8 heating season, the building used 11 percent less energy than it had the previous year, before the changes. Mr. Wallman spent almost \$19,000 on energy bills for all of 2007; if the tweaks had been in place then, he would have saved about \$2,000.

“These are small buildings,” Mr. Wallman said, “so the savings are not going to be in the tens of thousands.”

But, he pointed out, New York is home to thousands of small buildings. “These little buildings are going to make a big difference.”

Mr. Perlman charged about \$1,500 for the initial energy audit, \$1,200 for boiler upgrades and \$500 annually for continuing monitoring and maintenance. And with savings of just over \$2,000 a year, the project should pay for itself in less than two years.

An enormous amount of energy is spent heating buildings, and an enormous amount is wasted when someone throws open a window to cool off a boiling apartment.

Another way to bring building temperatures under control is to regulate the heat in individual rooms. A gadget called a thermostatic radiator valve attaches to some steam and hot-water radiators and automatically senses the temperature of the room. If it gets too toasty, the valve clamps down.

These valves were installed in a 102-unit co-op building on Fourth Street in the East Village about 10 years ago with the help of Henry Gifford, an energy consultant in New York City. The co-op’s yearly consumption of oil has decreased by 15 percent.

“I don’t think it was so much an energy conservation thing at that time,” said Tom Ostrowski, the president of the co-op board. “It wasn’t quite in vogue at that point. But it was just a more efficient way to do it.”

In the years since, however, Mr. Ostrowski’s co-op has looked into a solar hot water system and batted around the idea of replacing all the windows and insulating the building. All of these options were deemed too expensive.

So, for now, the co-op is replacing windows with more efficient models one by one, and it has a plan in place to install motion-sensing lights in interior stairwells and trash rooms. But at the moment, No. 1 on the agenda is to finish repair work on the building facade.

“If I was an individual homeowner, I could say, ‘I don’t care if I make my money back on solar panels,’ ” Mr. Ostrowski said. “But I can’t. I can’t say, ‘Hey, one hundred other people! Follow my dream!’ ”

Other buildings have had more success getting larger projects under way.

The [Winston Churchill](#), a large postwar co-op at 2500 Johnson Avenue in Riverdale in the [Bronx](#), is making 12 upgrades, including adjustments to the air-conditioning system, ventilation improvements and new lighting.

To cover the cost, the building secured a \$1.695 million loan, and the New York State Energy Research and Development Authority brought down the interest rate from 6.5 percent to zero percent with a payment of \$336,122 to the lender. This program, the Multifamily Performance Program, is not currently accepting new applications while it re-examines the criterion used to evaluate projects. The authority says it will resume the program but does not have a target date.

“We had been working under the assumption that the energy savings would be such that the loan could be paid back by those savings,” said Steven M. Hochberg, the board president. “It looks like that is, in fact, going to be the case.”

So far, the building has completed 5 of the 12 planned upgrades. It has, for example, switched to natural gas from No. 6 oil, an extraordinarily dirty fuel. “It’s like the garbage of oil,” said Mark Singh, the building superintendent at the Winston Churchill.

The co-op has also installed a new mechanism for making hot water, separating that system from the one that generates energy to heat the air.

“Mark would have to run his large boilers all summer long to make hot water for the building,” said Michael Scorrano, the managing director of the En-Power Group, which is overseeing the project for the co-op. “It’s just way oversized for what you need.”

These new systems were installed this summer, so the building has yet to go through a full heating season. But Mr. Scorrano estimates that in the summer the building will experience a 50 percent reduction in fuel use, which had cost about \$700,000 per year. In the winter, he expects that reduction will be closer to 15 percent. The cost of the new hot water system for the 333-unit building was \$300,000.

“You read a lot of articles on saving the environment,” Mr. Hochberg said. “But most people are only going to save the environment if they can save some money in the process. And it seems to have come together.”

For some people, however, making their homes as green as can be is a goal in itself.

Stephen Vernon is the president of a 112-unit co-op in Inwood called Nagle Apartments that has tried hard to become more environmentally responsible. The residents of the three-building complex started simply about five years ago by upgrading the lighting with motion sensors and more efficient bulbs. Then they moved on to larger projects.

“Our goal,” Mr. Vernon said, “was to do green projects that made fiscal sense.”

Almost all of the windows were replaced and new radiator valves were installed, at a cost of about \$860,000. To cover the costs of these and other upgrades, the building took out a two-part loan and the development authority brought down the interest, leaving the residents with an average rate of 4.31

percent.

Through a combination of selling apartments that the co-op owned, interest on investments (it owns some [Treasury bonds](#)), and energy savings, the improvements were made without an assessment or maintenance increase.

These days, the building's boiler spends a great deal of time resting comfortably on the lowest setting, and gas consumption has decreased by around 40 percent.

Now, the building is looking into putting in a green roof — layers of plantings and soil.

Green roofs keep the top of a building cool and provide a layer of insulation. They also retain rainwater, which can help keep the city's sewer system from being overwhelmed in a heavy rain. But some consultants say that you'll get more bang for your buck keeping the roof cool with white or silver paint and that a building will be better insulated with traditional materials like fiberglass. Green roofs are, however, much nicer to look at — and hang out on — than the alternative.

Another initiative that the co-op is undertaking is environmentally friendly renovations. As rental apartments become vacant, the co-op makes them over for sale. It uses recycled materials where possible, installs energy-efficient appliances and decorates with low- or nontoxic paints and finishes. One of these apartments, a 900-square-foot two-bedroom, is on the market for \$359,000.

The sales agent, Matthew Bizzarro of Stein-Perry Real Estate, who also lives in the building, says that he has priced it a bit higher than comparable apartments in the area. Traffic has been good, he says, and has included people who say the green factor appealed to them.

Some energy consultants are skeptical of renovations that focus on using recycled materials rather than the best materials for long-term energy savings.

"It's always good to use paints that are low in volatile organic compounds," Mr. Zuluaga of Steven Winter Associates said. "Where I do sort of take issue with those types of projects is when the focus is on recycling rather than using materials to make a better building."

At this point, it's hard to say whether people will pay a premium for a home that's been retrofitted to be green.

"I think over time there will be a modest premium associated with this because of the lower operating costs," said Jonathan J. Miller, the president of the appraisal group Miller Samuel. "But right now the reason it's hard to discern whether there's a premium is because it's usually one component of an extensive renovation."

Lisa Detwiler, a broker at the Corcoran Group, has a listing for a property that matches that description: a town house in Brooklyn Heights. The owner, Doug McDonald, gutted it and then put it back together with energy-efficiency in mind.

The house is on the market for \$5.95 million, a lot of money for a brownstone in Brooklyn Heights. But Mr. McDonald says that he is confident his home will command a premium, in part because he has been able to

charge \$4,000 a month for its two-bedroom garden apartment, more than comparable places in the neighborhood.

He said he got that price because tenants liked the idea of living in a place that is well insulated and low in volatile organic compounds, chemicals commonly found in paints and finishes.

Throughout the brownstone, the lights, windows and electrical system are all designed to conserve as much energy as possible. The materials used in construction were recycled wherever possible, and the roof is painted white to keep it cool.

The house is also wired for [solar power](#), but Mr. McDonald said that while he expected the price of solar panels to come down soon, the economics did not yet make sense to him. And before you worry about making your own energy, he added, you have to be sure you're wasting as little as possible.

Two of the biggest energy savers in the town house involve temperature. Each floor of the five-story house has its own heating and cooling system, so only the areas that need adjustment get a blast of warm or cold.

The insulation is also an energy-saver. Mr. McDonald used a spray-on foam called Icynene and a fluffy blue material made from recycled denim called Bonded Logic, and says he usually heats just the bottom floor and lets the warm air rise.

The electric bill for four stories of the five-story brownstone averages \$183 per month — the rental unit is metered separately. And the gas bill, which includes heat and hot water, averages out to \$83 per month.

“Waste reduction should be part of the purpose of good design,” Mr. McDonald said. “It’s like in [golf](#): you don’t want to waste any energy at all. It’s a long sport, and anything you waste ends up coming back and working against you.”

Because You Can't Knit the Building a Sweater

Making an old building more efficient can be a daunting prospect. Here are a few tips:

- One place to find energy savings is to avoid venting out more air than necessary — the boiler will just have to work extra hard to replace the temperate air. A leaky elevator shaft, for example, can act as a chimney, sucking warm air up and out of the building. And in many postwar buildings, ventilation and exhaust fans suck more air out of the building than necessary.
- An important part of long-term conservation is using equipment properly. The Thomas Shortman Training Fund, the arm of a building workers' union that provides classes to its members, offers a 40-hour class for superintendents on energy-efficient building management (www.1000supers.com).

Simple, inexpensive adjustments to consider:

- Low-flow shower heads and faucet aerators.
- Motion-sensor light switches and efficient bulbs.
- Thermostatic radiator valves, which keep rooms from overheating by regulating the heat coming out of

radiators.

- **White or silver paint for the roof to keep it cool.**
- **Insulation on exposed pipes.**

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