



LINDA REEDER, AIA

Understanding LEED®,
Green Globes®, ENERGY STAR®,
the National Green Building
Standard™, and More

**GUIDE TO
GREEN
BUILDING
RATING
SYSTEMS**



CASE STUDY 4

Multi-Family High-Rise,
Intervale Green, Bronx,
New York

Figure 3-12 Intervale Green was built on a long-vacant site once visited by President Jimmy Carter to bring attention to urban decay. A few years later, the shoot-out scene in the movie *Fort Apache, the Bronx* was filmed there. Located only half a block from a subway station, the building is convenient to public transportation. Photo courtesy of WHEDCo.

Climate: Mixed-Humid (Zone 4)

Space Type: Multifamily residential with ground floor commercial

Size: 128 units (one to three bedrooms each); 140,801 square feet residential, 6,800 square feet commercial

Completion Date: 2008

Construction Cost: \$155 per square foot

Total Development Costs: \$39,237,815

Owner/Developer: Women's Housing and Economic Development Corporation (WHEDCo), Bronx, New York

Architect: Edelman, Sultan, Knox, Wood/Architects LLP, New York, New York

Energy Consultant: Steven Winter Associates, Inc., New York, New York

Structural Engineer: Robert Silman Associates, New York, New York

Mechanical, Electrical, and Plumbing Engineer: Abraham Joselow, P.C., P.E., New York, New York

General Contractor: Mega Contracting, Inc., Astoria, Queens



Figure 3-13 The project has 20,000 square feet of green roof, some of it accessible to residents. Residents also have access to two private courtyards and a public sculpture garden featuring the work of local Bronx artists. *Photo courtesy of WHEDCo.*



Figure 3-14 Fluorescent lighting and occupancy sensors in common areas help reduce the building's energy load. Photo courtesy of WHEDCo.

Energy-Efficiency Costs and Savings

Energy-efficient costs and savings were as follows:¹⁵

Estimated hard costs associated with energy reduction measures: \$437,750

Projected total energy (all fuels) costs saved annually: \$82,492 (over baseline ASHRAE 90.1 2004 building)

Simple payback period: 5.3 years

Savings-to-investment ratio: 2.8

Incentives and green building support were provided by Enterprise Green Communities, NYSERDA Multifamily Performance Program, Bronx Overall Economic Development Corporation's Bronx Initiative for Energy and the Environment, Home Depot Foundation, New York City Council, and the Bronx borough president.

This multifamily residential project was developed on a triangle of city-owned property that had been vacant for more than 25 years. All apartments are rented to people earning below 60 percent of the area median income. "We pursued the ENERGY STAR designation to set an example that high-rise green building can be both affordable and beautiful," said WHEDCo president Nancy Biberman.¹⁶ The project includes two green roofs totaling 20,000 square feet, a private backyard, an entry courtyard, and a public garden.

Energy-Saving Features

The building is expected to use 33.4 percent less energy than the ASHRAE 90.1 2004 baseline building, resulting in projected savings of 208,401 kWh electricity

and 3,410 MMBtu annually. Energy-saving features consist of a high-performance building envelope, which includes air sealing, continuous insulation, and insulated low-e argon-filled windows; 85 percent efficient boilers and hot water heaters; carbon monoxide sensors in the garage, so ventilation only runs when needed; and ENERGY STAR lighting fixtures and appliances. The design team also received a code modification to reduce the excessive ventilation rate to a lower level while maintaining good air quality. Cary Trochesset, project manager for Edelman, Sultan, Knox, Wood/Architects LLP, said that without the ventilation waiver it would have been difficult to earn the ENERGY STAR.¹⁷ The New York City building code has since been updated to make ventilation waivers unnecessary.

In addition to the two green roofs, part of which are accessible to tenants, green features include recycled-content flooring; low-flow faucets and showerheads; and low-VOC paints, adhesives, and sealants.

Tips from the Developer

Nancy Biberman of WHEDCo offers the following tips when undertaking ENERGY STAR for multifamily high-rise projects:

- “Familiarize the entire design and development team with ENERGY STAR goals. Green features can too easily become an afterthought in the face of a major construction project. Every party on the design and development team should know the ENERGY STAR checklist for a given project, and should be made aware of which measures are nonnegotiable and tied to project funding.
- “Engage the energy consultant as part of the development team, early and often. The architects, engineers, and contractors should get to know the energy consultants and use them as a resource, and the consultants should keep a close eye on construction progress, from beginning to completion.
- “Ensure the construction lender understands the funding mechanism and anticipates incentive disbursements. While the ENERGY STAR program is fairly simple, lenders should be made aware prior to implementation.”¹⁸

Tips from the Architect

Randy Wood, AIA, principal at Edelman Sultan Knox Wood/Architects LLP said his firm had already been incorporating many of the energy-efficient practices required by the ENERGY STAR MFHR pilot program into the firm’s projects. “I don’t consider myself an expert; I just think it’s what we should be doing, and we’re doing it,” said Wood. “If there was anything that I found difficult, it was getting contractors to understand what they had to do and getting them to do

it.” Woods gave as an example sealing ductwork to comply with the specifications, rather than as the subcontractor was accustomed to doing—which did not pass performance testing.¹⁹

Edelman Sultan Knox Wood designs many low-income and subsidized multifamily high-rises and Wood says that now many clients are asking them to evaluate the feasibility of participating in the ENERGY STAR program.²⁰

RESOURCES

ENERGY STAR, www.energystar.gov/homes: Here you will find links to the following resources for new homes: technical guidelines for designing and constructing an ENERGY STAR home, including the Thermal Bypass Checklist; national and regional Builders Option Package specifications; information and resources on ENERGY STAR for affordable homes; listings of builders and designers that are ENERGY STAR Partners; and information on becoming a Partner.

Residential Energy Services Network, www.natresnet.org: This website has information on, and tells how to locate, Home Energy Raters and Building Option Package Inspectors. Or visit the ENERGY STAR website (above).

NOTES

1. “ENERGY STAR Qualified Homes 2011 Fact Sheet,” revised May 4, 2009, p. 4.
2. The 2004 International Residential Code is the reference for ENERGY STAR, but the RESNET reference for the HERS rating is the 2006 International Energy Conservation Code.
3. Sam Rashkin, National Director, ENERGY STAR for Homes, telephone conversation with the author, February 19, 2009.
4. “ENERGY STAR Qualified Homes 2011 Fact Sheet,” pp. 1–2.
5. EPA, “ENERGY STAR 2011 Frequently Asked Questions,” revised April 28, 2009.
6. Sidney Nichols, email to the author, February 20, 2009.
7. Isaac Zuercher, co-owner of Zurich Homes, email to the author, February 13, 2009.
8. Nichols, email to the author, February 20, 2009.
9. Brandon O’Connor, Clayton i-house, email to the author, forwarded by Justin Kidd, Retail Marketing, Clayton Homes, July 8, 2009.
10. Justin Kidd, Clayton Homes, email to the author, July 13, 2009.
11. Ted Nissly, CGP, CGB, Product Development, the McKee Group, email to the author, February 25, 2009.
12. Ibid.