

LEED Certified Project Case Study

Blair Towns

Overview

- Location: Silver Spring, MD
- Building type(s): Multi-unit residential
- New construction
- 107,000 sq. feet (9,970 sq. meters)
- Project scope: 3 4-story buildings
23,100 sq ft (2,140 sq meters)
33,100 sq ft (3,070 sq meters)
50,700 sq ft (4,710 sq meters)
- Urban setting
- Completed August 2003
The phased completion began with Building 3 in May 2003.
- Rating: U.S. Green Building Council LEED-NC, v2--Level: Certified (27 points)



Photo credit: Courtesy of the Tower Companies

The new Blair Towns at the Blairs represent a "Smart Growth" approach to multi-family development. This 78-unit apartment community, comprising one 4-story building and two 3-story buildings, was built on a surface parking lot located on a portion of the Blair property, a mixed-use urban site in downtown Silver Spring, Maryland with existing apartment buildings, shops, and a variety of parking facilities. The Blair Towns apartments offer the added value of variety in unit types and high-end interiors.

Environmental Aspects

The entire Blair Park site is transit-oriented, located near a major Metro rail station and bus lines, with convenient storage for bicycles and a measured walking path around the perimeter of the site. In addition to its transit-oriented, urban infill land-use, the Blair Towns reduce site-related impacts by meeting strict Maryland standards for erosion and sediment control and treatment of stormwater runoff, thereby reducing detrimental impacts to the Chesapeake Bay. The drought-tolerant landscape plantings eliminate the need for an irrigation system, and the buildings use 30% less water than conventional apartment buildings thanks to a combination of ultra-efficient showerheads, faucet aerators, and Energy Star clothes washers and dishwashers. The efficient lighting, HVAC system, and thermal envelope also save over 20% base building energy use. This project, and several others, are served by a landmark green power purchase made by the Tower Companies in 2003. Over 40% recycled-content materials and over 60% regionally manufactured materials (excluding equipment) were used, and ample space is provided for occupant recycling. Wood-efficient framing and the use of finger-jointed lumber

minimized the total amount of wood used for the structure. Indoor air quality was protected during construction, and all finish materials are low-emitting. A comprehensive user-education program helps Blair Towns residents appreciate and make the best use of their new green apartments and site.

Owner & Occupancy

- Owned by The Tower Companies, Corporation, for-profit
- Occupants: Individual(s)
- Typically occupied by 160 people, 168 hours per person per week

Blair Towns is a market-rate rental apartment community.

Building Programs

Indoor Spaces: Living quarters (81%), Circulation (11%), Structured parking (6%), Other (2%)

Outdoor Spaces: Garden—decorative, Parking, Pedestrian/non-motorized vehicle path

Keywords

[Integrated team](#), [Green framework](#), [Simulation](#), [Green specifications](#), [Commissioning](#), Transportation benefits, [Stormwater management](#), [Efficient fixtures and appliances](#), Drought-tolerant landscaping, [Insulation levels](#), [Glazing](#), [Airtightness](#), [HVAC](#), [Efficient lighting](#), Recycled materials, [Local materials](#), Occupant recycling, [Daylighting](#), Natural ventilation, Low-emitting materials

Team & Process

Predesign

The Tower Companies conceived the Blair Towns as green buildings based on their values and standards related to environmental sustainability and quality building. The choice to build the new buildings on an existing surface parking lot on the Blair property represents "Smart Growth" thinking. By adding density and improvements to their own property, the Tower Companies also enhanced the sense of community and quality of life at the Blairs. The infill location takes advantage of the existing grocery store, drug store, bank, dry cleaner, and on-site restaurants.

Design

In early design development, the Tower Companies hired Natural Logic, Inc. to guide the project team in green building and site design. The LEED(R) Green Building Rating System version 2 provided the framework to explore various green building strategies and narrow them down to those that best fit the project parameters. Once the majority of decisions were made, a comprehensive "greening of the specifications" was performed to ensure that the applicable LEED and green building criteria were appropriately documented. A commissioning authority was also brought on board to conduct design reviews and construction-phase commissioning.

Throughout the design and construction phases, the Tower Companies invested in the research necessary to build what would ultimately become the first LEED-certified apartment community, and found ways to make the commercial office building standard better fit this residential building application. The team submitted several "LEED Credit Inquiries" to this effect, with mixed responses from the US Green Building Council. In some cases, following their values, the Tower Companies elected to pursue green building strategies even if LEED points for the effort could not be secured.

Construction

The construction phase included frequent progress meetings in which the owner and its representatives played an active role. The LEED project manager and/or commissioning authority attended meetings as needed and provided comments and clarifications that helped avoid potential problems. The general contractor demonstrated high standards and a cooperative, problem-solving nature particularly where green-building issues were involved. The general contractor also compiled a significant amount of documentation for submission to the U.S. Green Building Council for eventual LEED certification. The completion of this phased construction began with Building 3 in May 2003 and ended with Building 1 in August 2003. Following the end of construction, the project team submitted Blair Towns to the U.S. Green Building Council for LEED certification, which it was officially awarded in January 2004.

Operations/Maintenance

Management is provided from other management support offices located throughout the Blair community. High standards of operations will be followed to help ensure that the property is maintained as a green building throughout its use.

Commissioning

The Tower Companies hired a commissioning authority to perform fundamental and additional commissioning services for the project. The commissioning authority reviewed the design, the construction documents, and the contractor submittals of commissioned equipment, as well as developing a recommissioning management manual and drawing up a contract for a near-warranty end or post-occupancy review. As full commissioning is rarely done in residential construction, this helped ensure a more thoughtfully detailed design and a more quality-controlled construction process, ultimately leading to a better built product.

In addition to these commissioning services, the Tower Companies hired both an air sealing inspector, to ensure (as well as possible without blower-door testing) that the building envelope was built to minimize air infiltration to the level presumed in the energy model, and an indoor air quality expert, to perform tracer gas testing of a sampling of unit-to-common-space conditions to comply with the LEED prerequisite for environmental tobacco smoke control.

Post-Occupancy

A near-warranty-end/post-occupancy evaluation will be conducted. The Tower Companies will have utility bills to verify energy performance for the common systems.

Primary Design Team Members

Marc Fogleman

Niles Bolton Associates

Architect (Project architect)

Alexandria, VA

<http://www.nilesbolton.com>

John Binder

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Architect (Project manager)

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Jeffrey Abramson

The Tower Companies

Owner/developer (Principal)

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Charles Segerman

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Steve Tapparo

Clark Realty Builders, LLC

Contractor (Project manager)

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Andrew Schwartz, PE

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Mechanical, electrical, and plumbing engineer

Chevy Chase, MD

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T.S. Venkat, PE

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Pritam Arora, PE

Design Engineering, Inc.

Civil engineer

Gaithersburg, MD

Bernie Sanker

Bernie Sanker Associates, Inc.

Construction management consulting (President)

Potomac, MD

[William Reed](#)

Natural Logic, Inc.

Environmental building consultant (Principal LEED consultant)

Arlington, MA

<http://www.natlogic.com>

[Sandra Leibowitz Earley](#)

Sustainable Design Consulting

Environmental building consultant (LEED project manager, former Natural Logic staff)

Richmond, VA

<http://www.sustaindesign.net>

[Paul Tseng](#)

CH2MHILL

Commissioning agent

Herdon, VA

<http://www.ch2m.com>

The design team also included:

- Energy consultant
- IEQ consultant
- Interior designer
- Landscape architect

Finance & Cost

The Tower Companies started construction with cash on-hand. A traditional construction loan was later obtained. Eventually, permanent financing replaced the construction loan.

Financing Mechanisms

- Equity: Cash

Cost Data

Cost data in U.S. dollars as of date of completion.

- Total project cost (land excluded): \$10,400,000
- Property cost: \$2,000,000
- Soft cost: \$20 per sq foot (\$200 per sq meter)
 - professional fee: \$17 per sq foot (\$180 per sq meter)
 - finance: \$3 per sq foot (\$30 per sq meter)
- Hard cost: \$77 per sq foot (\$830 per sq meter)
 - site work: \$10 per sq foot (\$100 per sq meter)
 - construction: \$67 per sq foot (\$720 per sq meter)

Professional fees were high because of the added cost of greening (including additional research and documentation and a third-party commissioning authority, which is unusual for residential developments.)

There will be no direct payback to the Tower Companies from energy-saving measures, because tenants pay for their own electricity. Tower Companies can command higher rents, though, because they can market lower utilities and a healthier living environment.

Some media attention has already been received as a result of the sustainability measures. Media coverage has added value in visibility to the owner.

Land Use & Community

The Blair Towns contribute to the current "Smart Growth" redevelopment of downtown Silver Spring, Maryland. These new apartments are built on a former surface parking area of the Blair Park property, a mixed-use urban site with existing apartment buildings and shops within walking distance and a variety of parking facilities. Immediately prior to construction of the Blair Towns, a new parking structure was added to the property to serve all these uses, so both development projects increased the site density. An owner-initiated study found that by developing the new Blair Towns on the existing surface parking lot, total impervious area only increased from 69% to 73.5%, in spite of the addition of three buildings holding 78 dwelling units and associated parking facilities.



Photo credit: Courtesy of the Tower Companies

The entire Blair Park site is transit-oriented, located near a major Metro rail station and bus lines, with a hiker-biker path along the property and convenient, covered storage for bicycles. A carpool pick-up/drop-off space is assigned to the Blair Towns, with a rider board by the mailboxes to encourage carpooling. A shared "Flex Car" is also stationed on the property, serving all of the Blair Park residences. Additional Flex Cars will be purchased if demand increases. The owner's study found that if eight people living in the Blair Towns share carpools at the pick-up/drop-off area, four cars can be removed from the road, with an average annual savings of 37,600 miles not driven.

Green Strategies

- **Responsible Planning**
 - Ensure that development fits within a responsible local and regional planning framework
 - Carry out mixed-use development
- **Properties with Excessive Impacts**
 - Avoid contributing to sprawl
- **Support for Appropriate Transportation**
 - Design development to have pedestrian emphasis rather than automobile emphasis
 - Provide storage area for bicycles
 - Provide access to public transportation
 - Provide vehicle access to support car and vanpooling
- **Property Selection Opportunities**
 - Look for opportunities for infill development
 - Select already-developed sites for new development
 - Look for a property where infrastructure needs can be combined

Site Description

The Blair Towns reduce site-related impacts in a variety of ways, including reduction of the heat-island effect by the creation of structured parking and the further minimization of paved surface area by building on a former parking lot. The development meets strict Maryland Department of the Environment standards for erosion and sediment control and treatment of stormwater runoff. To address stormwater runoff, a premium-grade sand filter removes over 80% of the post-development total suspended solids and 40% of the total post-development phosphorus.



Photo credit: Photo by Niagara Conservation
<http://www.niagaraconservation.com>

The drought-tolerant landscape plantings eliminate the need for a permanent irrigation system. The buildings use 30% less water than conventional apartment buildings, thanks to a combination of ultra-water-efficient showerheads (1.75 gallons per minute), faucet aerators, and Energy Star dishwashers and clothes washers. Water use at the Blair Towns is submetered to provide an incentive for residents to further conserve water.

The water use listed below is estimated.

- Lot size: 99,899 ft²
- Building footprint: 32,000 sq ft (2,970 sq meters)
- Previously developed land

Water Conservation and Use

- Indoor potable water use: 2,050,000 gal/yr (7,770,000 liters/yr)
- Outdoor potable water use: 0 gal/yr (0 liters/yr)
- Total potable water use: 2,050,000 gal/yr (7,770,000 liters/yr)
- Potable water use per occupant: 12,800 gal/person/yr (48,600 liters/person/yr)
- Potable water use per unit area: 19.1 gal/sq ft (779 liters/sq meter)

Green Strategies

- **Development Impacts**
 - Limit parking area
- **Water Conservation Education**
 - Educate residents about water conservation
- **Water-Efficient Appliances**
 - Specify horizontal-axis washing machine
 - Specify low-water-use residential dishwasher

- **Low-Water-Use Fixtures**
 - Retrofit faucet aerators or flow-regulators onto lavatory sinks
 - Install showerheads using less than 2.2 gallons per minute
- **Managing Stormwater**
 - Incorporate a pollutant separation/filtering system in parking lot drains
- **Construction Impacts**
 - Minimize soil erosion from construction activities
- **Demand for Irrigation**
 - Select plants for drought tolerance
- **Low-Impact Siting**
 - Select an already-developed portion of a site for new development

Energy

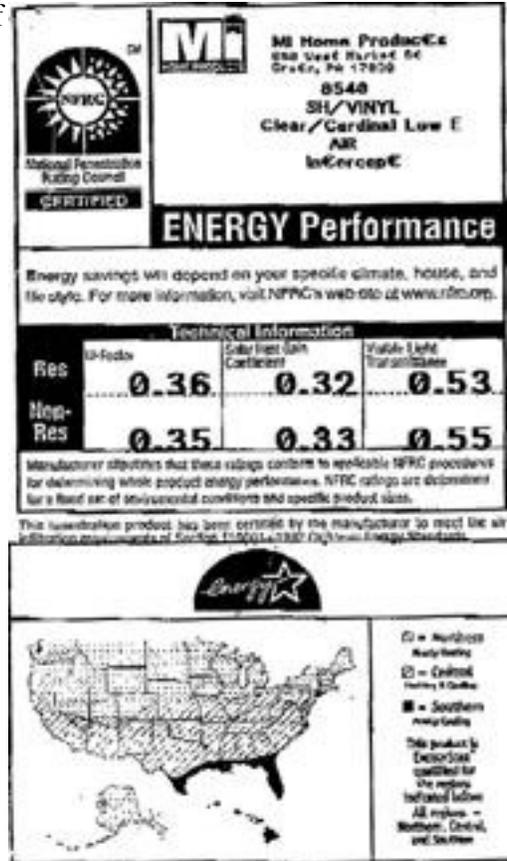
The Blair Towns employ a number of strategies to save 21% of base building energy use compared with an ASHRAE 90.1-1999 reference building (or up to 35% when fully factoring in energy savings from infiltration reduction). Non-regulated loads (appliances and unit lighting) are not included in this calculation. An owner-initiated study found that a 34% energy savings avoids the annual emission of 313,705.47 pounds of carbon dioxide, which is equivalent to taking 26 cars off the road annually. It would take 43 acres or .07 square miles of forest to absorb this much carbon dioxide.

The high quality thermal envelope combines high insulation values (walls R-19, roof R-38, perimeter slab over R-2) with special attention to airtightness. An air sealing inspector was hired to confirm that the air infiltration rate assumed in the energy model was accurate. Considerable attention was also paid to the selection of window glazing, balancing thermal efficiency with daylighting. After much research, the owner selected a particular low-E glazing for the windows to provide an overall high window efficiency while maintaining the visible light transmittance recommended for residential applications.

The mechanical, electrical, and plumbing engineer specified small, packaged, individual HVAC equipment. Special efficiencies were gained by the use of a combined furnace and water heater in each dwelling unit. Nearly all of the unit and common interior areas use Energy Star-labeled fluorescent lights with electronic ballasts. The ceiling fans, provided as a special feature in bedrooms, are also Energy Star labeled.

The residential appliances represent another opportunity for reducing energy use, even though these are considered "plug loads" by the ASHRAE 90.1 standard and, as such, are not included in the modeling of base building energy use. The owner elected to use only Energy Star-labeled dishwashers and clothes washers, most of which are efficient horizontal-axis models. Energy Star refrigerators were not specified because the new national efficiency standards for refrigerators are already so much higher than they were previously that an upgrade would not have proven cost-effective. The combined plug load measures will save over 5% more energy compared to the base building, and the Tower Companies has committed to replacing these appliance with only Energy Star-labeled products throughout the building's life.

A final energy-related measure is the purchase of green power. The Tower Companies had already shown leadership by signing a landmark green power contract supplying over 24 million kilowatt hours of Green-e certified green power for 13 of its commercial and residential properties, a portion of which was designated to the Blair Towns. In addition, the Tower Companies negotiated a bulk discount with the same green power provider to offer their energy product to Blair residents at a discounted price.



Energy Data Set: Simulation: Units: English

Annual Purchased Energy Use

Fuel	Quantity	Cost(\$)	MMBtu	kBtu/ft2	\$/ft2
Electricity	613,000 kWh		2,090	19.5	
Natural Gas	727,000 kWh		2,480	23.1	
Fuel Oil (No. 2, diesel)	0 kWh		0	0	
Biomass (wood or other)	0 kWh		0	0	
Other	0 kWh		0	0	

Total Annual Building Energy Consumption

Fuel	Cost	MMBtu	kBtu/ft2	\$/ft2
Total Purchased		4,570	42.6	
Grand Total		4,570	42.6	

Annual End-Use Breakdown

End Use	Quantity	MMBtu	kBtu/ft2
Heating	1,700 MMBtu	1,700	15.9
Cooling	94,000 kWh	321	2.99
Lighting	284,000 kWh	969	9.03
Fans/Pumps	27,700 kWh	94.4	0.88
Plug Loads and Equipment	207,000 kWh	707	6.59
Domestic Hot Water	778 MMBtu	778	7.25
Other			

Data Sources & Reliability**Simulation software**

Energy-10

Green Strategies

- **Wall Insulation**
 - Minimize wall area through proper building massing
 - Achieve a whole-wall R-value of 15 or greater
- **Solar Cooling Loads**
 - Orient the building properly
- **Hot Water Loads**

- Use water-efficient dishwashers
- Use water-efficient showerheads
- Use water-efficient faucets
- **Water Heaters**
 - Use a combined furnace/water heater to heat water
- **Cooling Systems**
 - Use AC systems with a high efficiency rating
 - Commission the HVAC system
- **Light Sources**
 - Specify Energy Star-rated lighting equipment
- **High-performance Windows and Doors**
 - Select insulated doors for optimal thermal performance
 - Optimize energy performance of glazing systems
- **Heating Systems**
 - Keep heating equipment in conditioned space
- **Air Infiltration**
 - Seal all penetrations through the building envelope
- **HVAC Distribution Systems**
 - Seal ducts
- **HVAC Controls and Zoning**
 - Use occupancy-based conditioning controls
 - Use small packaged equipment for multiple zones
- **Other Energy-Efficient Appliances**
 - Use high-efficiency clothes washers
 - Use Energy Star dishwashers
- **Roof Insulation**
 - Achieve a whole-roof R-value greater than R-35

Materials & Resources

The Blair Towns use 40% recycled-content materials, over 60% locally manufactured materials, and over 10% locally harvested, extracted, or recovered materials, calculated by materials cost, excluding equipment and labor. This combination of measures conserves both material and related resources normally used in manufacturing and transportation. The Blair Towns took advantage of its location in the Washington D.C. area, which is well-positioned to source products manufactured and originating within a 500-mile radius.

Recycled-content materials used at the Blair Towns include all steel products, the concrete sub-base, ground granulated blast furnace (GGBF) slag in concrete mixes, recovered flue-gas gypsum in drywall boards, aluminum floor grates with recycled tire rubber treads, commercial carpet with recycled fiber in the corridors, and recycled plastic wheelstops for parking areas. An owner-initiated study found that since 1,033 square yards of virgin nylon were used in the corridor carpet, and the carpet fiber had approximately 50% recycled content, an equal amount of virgin nylon fiber was saved. Furthermore, since 1,085 tons of RC-6 recycled concrete was used for the Blair Towns base floor, this amount of virgin sub-base was not used.

As a wood-framed building, most of the Blair Towns wood-saving strategies occur in the structure itself. Floor and roof trusses are framed at 24 inches on center and two- or three-ply girder trusses were avoided. The floor and roof components are open-web wood trusses. All wood beams supporting trusses and wall loads, including header beams at wall openings, were designed and sized for actual loading conditions. The ground levels of the buildings are concrete slabs on grade, thus eliminating a wood-framed first floor level. Wood-efficient finger-jointed lumber is used for all vertical stud applications, including structural and non-structural uses. Interior non-load-bearing partitions are framed at 24 inches on center, rather than 16 inches on center. Where applicable, drywall clips are used to support drywall instead of third non-structural studs at corners.



Photo credit: Clark Realty Builders, Inc.

Diversion of Construction & Demolition Waste

Construction waste recycling was considered but not pursued due to costs. However, ample facilities are provided for occupant recycling. It is estimated that 90 gallons of recycled materials (newspapers, cans, bottles, etc.) are to be picked up every week, which is equivalent to 4,680 gallons of recycling per year. A description of the recycling system will be included in the comprehensive "user education" program.

Green Products Used

- Energy- and Water-Efficient Washing Machines
- Energy-Efficient Dishwashers

- Entryway Track-Off System
- High-Performance Insulating Glass
- Recycled-Content Commercial and Residential Carpet
- Recycled-Content Synthetic Gypsum Board
- Recycled-Plastic Site Amenities
- Recycled-Rubber Parking Stops and Speed Bumps
- Water-Conserving Fixtures

Green Strategies

- **Protection of Global Ecosystem**
 - Minimize ozone-depletion potential of refrigerants in cooling systems
- **Design for Materials Use Reduction**
 - Use advanced framing (optimum value engineering) to optimize material use
- **Plan for Materials Longevity**
 - Minimize dependence on sealants by good detailing of building skin
- **Recycling by Occupants**
 - Specify recycling receptacles that are accessible to the occupants
- **Resource-Efficient and Biobased Materials**
 - Use trusses for roofs and floors
 - Use engineered wood products for rough carpentry
- **Post-Consumer Recycled Materials**
 - Use recycled-plastic wheel stops and speed bumps
 - Specify carpet made with recycled-content face fiber
- **Pre-Consumer Recycled Materials**
 - Use gypsum board made with higher percentages of synthetic gypsum
- **Transportation of Materials**
 - Prefer materials that are sourced and manufactured within the local area

Indoor Environment

The owner hired an indoor air quality expert to perform tracer gas testing of a sampling of unit-to-common-space conditions. Daylighting and views are amply provided by the unit layouts, window sizes, and visible light transmittance. Permanent floor grates are included at building entries to minimize the amount of particulate matter that tracks into the indoor space on people's shoes. Ceiling fans in bedrooms improve ventilation while reducing energy costs.

All finish materials, including paints, sealants, adhesives, and carpet systems are low-emitting. Unfortunately, no off-the-shelf unit cabinetry could be found made without any added urea-formaldehyde, and custom cabinetry, possible for some high-end commercial projects, would be cost-prohibitive for a typical multi-family building.

Indoor air quality was protected during construction based on detailed indoor air quality management specifications. Prior to the final construction stage, all ductwork, HVAC units, and supply and return grilles were completely sealed to prevent contamination from construction dust or moisture. Detailing to protect the building envelope from moisture damage and mold was reviewed during the first stages of the commissioning process.

In addition to providing information about the design- and construction-related indoor air quality measures employed, the comprehensive user education program will include information on "green housekeeping" products to help residents maintain the quality of their own indoor living environment.



Photo credit: Sandra Leibowitz

Green Strategies

- **Entry of Pollutants**
 - Design entry to facilitate removal of dirt before entering building
- **Visual Comfort and The Building Envelope**
 - Choose interior and exterior glazing to maximize daylight transmission
- **Visual Comfort and Interior Design**
 - Select only white to midrange finishes to maximize reflectance of light
- **Visual Comfort and Light Sources**
 - Use electronic ballasts with fluorescent lighting
- **Ventilation and Filtration Systems**
 - Provide occupants with access to operable windows
- **Above Grade Humidity and Condensation**
 - Design building envelope to avoid thermal bridging
- **Elimination of Indoor Pollutants**
 - Use only non-solvent-based adhesives

- **Reduction of Indoor Pollutants**
 - Use only very low or no-VOC paints
- **Ventilation During Construction**
 - Provide temporary filters on any permanent air-handling devices used during construction
- **Building Commissioning for IEQ**
 - Use a comprehensive commissioning process to ensure that design intent is realized

Images

Please click on image thumbnails to view full-size photographs in a new window:



Resource-efficient finger-jointed lumber, shown here, is used for all vertical studs.

Clark Realty Builders, Inc.



The high-tech showerheads at Blair Towns use only 1.75 gallons of water per minute while providing a comfortable shower.

Photo by Niagara Conservation <http://www.niagaraconservation.com>



This aerial photo shows the infill lot on the Blair property prior to construction of the Blair Towns and the Blair parking structure.

Courtesy of the Tower Companies



The construction sign in this photo shows one way the Tower Companies has marketed green building.

Sandra Leibowitz



Plentiful daylight, good indoor air quality, and ceiling fans for extra thermal comfort are provided in each dwelling unit, such as the one shown here.

Sandra Leibowitz



This photo shows the street view of Blair Towns Building 3, with Buildings 2 and 1 in the background.

Courtesy of the Tower Companies



This aerial photo shows the infill lot on the Blair property prior to construction of the Blair Towns and the Blair parking structure.

Courtesy of the Tower Companies



This photo shows the National Fenestration Rating Council (NFRC) label for efficient vinyl windows with low-E glazing used at Blair Towns.

Awards

- **Environmental Design & Construction Magazine Excellence in Design Awards** in 2004; Category/title: Multi-Use Residential Category Runner Up
- **National Association of Home Builders Research Center Energy Value Housing Award** in 2004; Category/title: Gold Award: Custom Home, Moderate Climate
- **National Association of Home Builders Research Center Energy Value Housing Award** in 2004; Category/title: Outstanding Multifamily Builder Award

Ratings

- **U.S. Green Building Council LEED-NC, v2** in 2004; achievement level: Certified (27 points)
 - **Sustainable Sites, 6 of 14 possible points**
 - SS Prerequisite 1, Erosion & Sedimentation Control
 - SS Credit 1, Site Selection
 - SS Credit 4.1, Alternative Transportation, Public Transportation Access
 - SS Credit 4.2, Alternative Transportation, Bicycle Storage & Changing Rooms
 - SS Credit 4.4, Alternative Transportation, Parking Capacity
 - SS Credit 6.2, Stormwater Management, Treatment
 - SS Credit 7.1, Landscape & Exterior Design to Reduce Heat Islands, Non-Roof
 - **Water Efficiency, 3 of 5 possible points**
 - WE Credit 1.1, Water Efficient Landscaping, Reduce by 50%
 - WE Credit 1.2, Water Efficient Landscaping, No Potable Water Use or No Irrigation
 - WE Credit 3.1, Water Use Reduction, 20% Reduction
 - **Energy and Atmosphere, 4 of 17 possible points**
 - EA Prerequisite 1, Fundamental Building Systems Commissioning
 - EA Prerequisite 2, Minimum Energy Performance
 - EA Prerequisite 3, CFC Reduction in HVAC&R Equipment
 - EA Credit 1.1a, Optimize Energy Performance, 20% New 10% Existing
 - EA Credit 1.1b, Optimize Energy Performance, 20% New 10% Existing
 - EA Credit 3, Additional Commissioning
 - EA Credit 6, Green Power
 - **Materials and Resources, 3 of 13 possible points**
 - MR Prerequisite 1, Storage & Collection of Recyclables
 - MR Credit 4.1, Recycled Content
 - MR Credit 5.1, Local/Regional Materials, 20% Manufactured Locally
 - MR Credit 5.2, Local/Regional Materials, of 20% Above, 50% Harvested Locally
 - **Indoor Environmental Quality, 6 of 15 possible points**
 - EQ Prerequisite 1, Minimum IAQ Performance
 - EQ Prerequisite 2, Environmental Tobacco Smoke (ETS) Control
 - EQ Credit 4.1, Low-Emitting Materials, Adhesives & Sealants

- EQ Credit 4.2, Low-Emitting Materials, Paints
- EQ Credit 4.3, Low-Emitting Materials, Carpet
- EQ Credit 6.1, Controllability of Systems, Perimeter
- EQ Credit 8.1, Daylight & Views, Daylight 75% of Spaces
- EQ Credit 8.2, Daylight & Views, Views for 90% of Spaces

- **Innovation and Design Process, 5 of 5 possible points**
 - ID Credit 1.1, Innovation in Design "Exemplary Performance MRc5.1"
 - ID Credit 1.2, Innovation in Design "Sustainability Education"
 - ID Credit 1.3, Innovation in Design "Energy-Saving Appliances"
 - ID Credit 1.4, Innovation in Design "Water-Saving Appliances"
 - ID Credit 2, LEED® Accredited Professional

Lessons Learned

Incorporating green design early in the design process helps most effectively evaluate and optimize the many potential ways to solve design issues. Blair Towns incorporated overall green design thinking from its early stages, though many specific design strategies were explored mid-way through the development process. It would have been helpful to begin energy modeling earlier in the process to optimize the energy efficiency aspects of the design.

While the LEED Rating System provides benchmarks for environmental performance, the Tower Companies would have appreciated some sort of LEED tool to calculate the bottom-line reduced environmental impacts of their green building measures, similar to the information being requested on the Department of Energy's High-Performance Buildings Database "Key Indicators" page. This would not only have helped quantify the environmental impacts of various project decisions, but when coupled with the price tags of those decisions, would have made it easier to more directly assess the environmental improvement that each added Blair Towns dollar could buy.

The level of effort required to address green building in a residential building using guidelines written for commercial office buildings required design team members to stretch themselves in many ways they had not been stretched before. An official LEED application guide for multi-family buildings would have helped minimize some of the excess investigation and formal LEED credit interpretation requests done by the project team. Future multi-family projects trying to use the LEED Rating System will benefit from the groundwork laid by this project and its peers. If an official LEED application guide for multi-family buildings is written, the scoring of the project should reflect the wanted attributes in a residential building that are different than office buildings.

For LEED projects to actually perform as intended, the design team needs to be proactive in developing simple, straight-forward, and common-sense design details that address the path of rainwater traversing the exterior facade. Providing details to the contractor, reviewed by the commissioning authority, eventually reduced the anxiety of the subcontractors involved in constructing the building envelope. Blair Towns would have benefited further by providing the details to the subcontractors earlier or by supplying all of them on the bid documents. The integration of envelope elements can be tricky for multi-family projects. Performing an on-site window and wall mock-up that included corner treatment and showing sequencing assisted the contractor, subs, and commissioning authority in building the details required by the architect.

In some ways, multi-family buildings are much more difficult to design than standard office buildings. The mechanical, electrical, and plumbing budgets are particularly tight in terms of both design fees and construction costs. Yet multi-family HVAC design must be carefully planned in order to deliver functional systems within the budget, particularly in small apartments where air flow is relatively low. From a LEED and high-performance building perspective, an in-depth HVAC design intent would have helped in setting minimum design and equipment quality standards and maintaining them through value engineering.

The Blair Towns is a commercial infill rental community built by a for-profit developer. No federal, state, or local tax credits were utilized, yet a profitable project was the end result. However, only certain measures could be incorporated to balance greening with cost effectiveness. To truly transform the environment and marketplace, additional measures are needed to stimulate changes in practice, starting with our federal government, and reciprocation from our state and local jurisdictions. Tax codes and zoning regulations need to include incentives at multiple tiers for developers to be able to

afford some of the additional measures available to green both buildings and the environment. While a tax credit for green buildings was very recently launched in the State of Maryland, its several requirements make many projects pursuing some level of green design ineligible. The project team hopes that a more sophisticated system will emerge to reward varying levels of financial risk. This may help defray costs associated with learning the necessary skills as well as subsidizing the construction industry's "fear of the unknown" regarding green building advancements.

Learn More

Visiting

It is possible to visit this project and tours are available.

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Information Resources

- Magazines
 - *“Green” Apartments for Health-Conscious Living*
Publication: Environmental Design + Construction Magazine (07/23/03)
http://www.edcmag.com/edc/cda/articleinformation/news/news_item/0,,104178,00+en-uss_01dbc.html
 - *Eco-Friendly Apartments Get the Green Light: Developers find that environmentally friendly apartments make good business sense.* Editors: McLinden, Steve
Publication: National Real Estate Investor (Jan 1, 2004)
<http://nreionline.com/microsites/magazinearticle.asp?mode=print&magazinearticleid=189688&releaseid=&srid=11492&magazineid=126&siteid=23>
- Web sites
 - [Design Revolution Returns Apartments to Nature](#) by Kamila, Avery Yale
Publication: GreenMarketReport.com (10/03)
 - [The Blairs](#)
Website for the Blair Apartments, including Blair Towns as well as Blair Towers, Blair House, Blair East, Blair Plaza, Blair Shops and the Blair Shopping Center.
- Others
 - Newspaper: *'Green' Units Rent in Silver Spring* by Lemke, Tim
Publication: The Washington Times (05/16/03)
 - Newspaper: *Blair grows green in Silver Spring* by Baker, Chris
Publication: The Washington Times (05/13/02)
 - Press Release: *Tower Companies, Pepco Energy Services and Sterling Planet Join Forces to Provide Washington's First Renewable Energy For a Commercial Developer: 2.5 million square feet will receive clean energy* (03/21/03)
http://www.towerbuilding.com/towerb_w/files/nr_PR032103.htm

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