



Mixed, Humid Climate Region 40+% Energy Savings

Overlook at Clipper Mill

Baltimore, MD

Developer/Owner:	Struever Bros. Eccles & Rouse
Location:	Baltimore, Maryland: Jones Falls Valley
Building Type:	Single Family Attached
Building Size:	1,600 - 2,500 sq ft
	2-3 bedrooms, 2.5-3.5 baths
Price:	Park Homes priced from the low \$500s
Status:	13 Units of 38 Completed
SWA Contact:	Srikanth Puttagunta

The Clipper Mill Development is the redevelopment of a former foundry, creating a new urban corporate campus and upscale residential community in the Jones Falls Valley. Overlook at Clipper Mill offers new perspective of urban living - combining the soul and history of one of Baltimore's great neighborhoods with an eye toward the future - focusing on sustainable living. Designed by architect, Charles Alexander of Alexander Design Studio, Overlook at Clipper Mill melds modern design with Clipper Mill's historic sense of place. Among other features, the expansive use of glass not only offers a living environment with abundant light, but also assures remarkable views of parkland, historic mill architecture and distant vistas.

Overlook at Clipper Mill contains 19 contemporary park home duplexes (38 units) focusing on "Live distinctively. **Live Green.**". These duplexes are a combination of 2-car garage units (Parkview) and/or 1-car garage units (Millrace). The Parkview is around 2,000 square feet of living space and the Millrace is slightly over 1,600 square feet. Both are 3 bedrooms with 2.5 baths. There are homeowner options for a 2-bedroom layout option and sunrooms off of the living room and/or basement.

The homes have been designed to perform 40+% better than the Building America benchmark house (comparable to mid-1990s construction). To achieve the desired reduction in energy use, SWA recommended 2x6 optimum value engineered framing with added insulation; low-emissivity windows with a Solar Heat Gain Coefficient of 0.29; tightly sealed envelope achieving an annual natural infiltration rate of 0.22 ACH; condensing furnaces with an AFUE rating of 94.1 and SEER-16 air conditioning units for lower level zone; a SEER-17.4/9.75 HSPF heat pump for upper level zones; tankless hot water heaters with an efficiency rating of 0.84; mastic sealing and foamed-over buried ducts in the attic to achieve 112 cfm duct leakage to outside (5%) for both zones combined; and ENERGY STAR fixtures and appliances.



"Innovative developer combines aesthetics, performance, and sustainable principles in Overlook at Clipper Mill."

ENERGY EFFICIENT FEATURES

- Noritz tankless water heater (0.84 EF)
- Jeld-wen Tradition plus clad IG low-e 272 windows with argon (U-0.31, SHGC-0.33)
- Certainteed Optima blown-in fiberglass insulation (R-38) in attic
- Certainteed Optima blown-in fiberglass insulation (R-21) in walls
- Spray-foam insulated rim/band joists
- Ruud 94 AFUE natural gas furnace with two-stage SEER 16 air conditioner for lower levels
- Ruud SEER 17/9.75 HSPF two-stage heat pump for upper level
- Energy Star® Bosch Appliances
- ASHRAE 62.2 compliant exhaust-only ventilation
- Mastic-sealed ductwork

GREEN BUILDING FEATURES

- Water-saver Kohler faucets and showerheads
- Kohler dual-flush toilets
- Low-VOC paints and caulks
- Drought resistant landscaping
- HardiePlank™ fiber-cement siding
- Formaldehyde-free insulation
- Garage exhaust fan
- Standing seam metal roof

CERTIFICATIONS

- Exceeds Energy Star® Homes Standards with HERS Index = 67
- Participating in LEED® for Homes (Silver certification)

<http://www.clippermillhomes.com/info.htm>

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The Clipper Mill Campus



Overlook Clipper Mill: **Millrace**



Overlook Clipper Mill: **Parkview**



The long-term goal of the Building America program is to develop cost-effective systems for homes that can produce as much energy as they use—a zero energy home. As teams increase the savings targets towards zero energy homes, maintaining cost neutrality is a key component. The added cost of higher efficiency technologies can typically be offset by reducing unnecessary waste in other systems or through utility bill savings. The annual mortgage payment is calculated based on a 30 year mortgage with a 7% fixed interest rate. For both home models, the cost neutrality is positive, so they are cost-effective in the long-run.

Measure	Incremental Cost Difference	
	Millrace	Parkview
Carpentry	\$174	\$200
Thermal/Moisture Protection	\$5,619	\$5,828
Doors & Windows	\$3,509	\$4,175
Appliances	\$1,043	\$1,043
Mechanical (Includes Plumbing)	\$5,366	\$5,433
Electrical (Includes Lighting)	\$3,626	\$3,010
added first cost	\$19,337	\$19,688
annual mortgage payment	(\$1,714)	(\$1,745)
annual utility savings	\$1,862	\$1,979
neutral cash flow	\$148	\$234



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According to an article (“Green Seal of Approval”) in the Baltimore Sun, savings are already being realized by new tenants:

"This is really the cutting edge of housing," says Overlook resident Robert Kan, a retired surgeon who moved into his new home in April. "I just got my first [Baltimore Gas & Electric] bill and I'm very happy," says Kan. "I use AC from 10 a.m. to 6 p.m. and we don't compromise on the temperature."

"There was nothing else like it," says Lucinda Rouse, who moved from a 6,000-square-foot house in Federal Hill to her new 2,300-square-foot home in Overlook Clipper Mill in June. "I just paid my electric bill," says Rouse. "It was \$150 for everything, air conditioning, dryer, which I use a lot, everything. In comparison, I have a friend in a condo downtown whose last bill was \$450!"

As follow-on work to the energy modeling savings estimates, utility data is being gathered from the initial homeowners in the development. SBER has requested similar data from additional homeowners. Final analysis will begin upon receipt of a full-years worth of utility data, but the table below shows the estimated annual utility savings of these Overlook Homes compared to comparable homes built to minimum code standards (2006 IECC). A savings of 30% or nearly \$1,000 on a homeowner's utility bills is a significant savings with today's energy costs.

Unit Type	# of Sunspaces	# of Units of this Type	Annual Energy Star Home Utility Cost	Annual Code Compliant Home Utility Cost	Est. Savings [\$]	Est. Savings [%]
2-car	1	4	\$2,132	\$3,108	\$976	31.4%
2-car	2	14	\$2,364	\$3,348	\$984	29.4%
2-car	0	2	\$1,883	\$2,816	\$934	33.2%
1-car	1	5	\$2,063	\$2,988	\$924	30.9%
1-car	2	13	\$2,274	\$3,247	\$973	30.0%

One interesting aspect of the short-term marketing of these homes is how to sell units when the rest of the development is still under construction. The first homeowners in the development had this concern, but now are helping SBER eliminate this fear through testimonials (from Angie's List Magazine). Elvon Lloyd doesn't think it's a problem. "The house is tight," he says. "Other than the occasional truck, we don't hear the noise."





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SBER initially got involved with CARB and the Building America program due to an initiative by Ted Rouse, who was a partner in SBER until a few years ago. SBER's Clipper Mill team had the preliminary goal of developing a residential product that was aligned with their commercial developments. Green construction and contemporary design with an industrial edge became the focus of the new homes. Becoming LEED for Homes certified was identified as a means to quantify their "greenness" and differentiate themselves in the new homes marketplace. SBER initiated discussions with CARB about LEED certification and CARB identified Building America as a beneficial complement to LEED. To get better insight, CARB interviewed Jennifer Goold, the former development director of SBER.

What are the most important services that Building America and CARB was able to provide SBER?

Building America made energy and resource efficient construction feasible at Overlook Clipper Mill by creating an economical synergy with LEED certification. CARB was able to manage the two programs for SBER so that they were seamless. The technical analyses available through Building America are a great complement to the "branding" that we can do with LEED for Homes.

Do you see SBER continuing to implement the techniques and strategies that were pursued in the Overlook project in future communities? Will this be just for so called "green" communities or will elements from this project spread across all communities?

Green building is going to be a hallmark of SBER for the foreseeable future. LEED certification is a goal for all of our new buildings.

How difficult has it been to get sub-contractors (HVAC, plumbing, electrical, framing, etc.) to get on board with what SBER is trying to do with Building America? Has the down-shift in the market made it easier?

We work primarily with smaller subcontractors who are accustomed to working with a builder with a "unique" perspective to begin with and we have not had a lot of difficulties incorporating Building America into the construction process. The only major difficulty, to date, has been negotiating through HVAC unit sizing, since the HVAC industry gears towards oversizing to

make sure that the widest range of future users will be able to achieve their comfort standards.

How has this housing market downturn affected SBER?

Sales at Overlook are slower than initially predicted since the project was designed in the boom market. However, I think the resilience that we are seeing is partially due to the fact that the houses are green.

Have you seen any signs of the market improving in 2009?

We have not yet seen signs of the market improving.

Are there any interesting lessons about the Building America process that you can share with other builders?

I think that the Building American process has the added benefit of building a stronger relationship between the development, construction, subcontractor, sales, and buyer teams. The green home has become a new goal that we are all working towards together. It feels like we are really accomplishing something far more important than the average new home.

What is your take on the current housing market and the future of certification programs such as EPA's Energy Star, and USGBC's LEED for Homes?

The current housing market is very difficult. I think the recent trends in new housing construction, suburban and large, were built upon artificially low energy prices. I think this phase of our history is over and that the American people are facing a period of great change when we will need to find a way to use our resources far, far more efficiently and learn to use much less. I think Energy Star and LEED for Homes can help teach builders, consumers, and municipalities how to make this transition and create the pathway to the homes of the future. Living in an East Coast city, where we have a huge existing stock of houses, many in a state of disrepair, I think that having a path for economical rehabilitation of existing homes should be an equal focus of their work in the future.