

Case Study: Energy Audit for 612 Notabene Drive, a Community Lodgings Building

- Location: Alexandria, Virginia
- Urban setting
- Existing Construction; built in the 1940s
- Building type: 600 square foot, 3-story multi-family residential building
- Layout: four 1-bedroom units (first floor) and both a 2- and 3-bedroom unit on the second and third floors
- Comprehensive energy audit performed on June 7, 2011



[Community Lodgings](#) is an organization that provides transitional and affordable housing to Alexandria residents. As part of the City of Alexandria's Energy Audit program, [EarthCraft Virginia](#) performed a comprehensive energy audit on the Community Lodgings building at 612 Notabene Drive to evaluate current energy use and to determine opportunities for energy efficiency improvements. Auditors assessed twelve months of utility use history and performed diagnostic testing to determine the amount and location of air leaks.

Energy Audit Results:

- Leaks in the building envelope allow heated or cooled air to escape
- Concrete walls with brick veneer lack modern insulation
- Significant air infiltration and ex-filtration around kitchen exhaust fans and AC window units
- Damaged door sweeps
- Absence of low-flow shower heads and CFLs in most dwellings
- Inefficient (but new) water heater

Recommended Repairs:

- Reinstall AC window units in a manner that seals the space between the unit and the wall more adequately.
- Replace water heater with an energy-efficient model when a new one is needed.
- Swap incandescent bulbs with CFLs.
- Weatherstrip exterior doors and replace door sweeps where necessary.
- Install low-flow faucets and shower heads.
- Replace existing 1.6 gallon-per-flush (gpf) with more reliable WaterSense rated toilets (1.26 gpf) to guarantee higher water efficiency.

Funding:

- Community Lodgings is working with HomeAid America, a non-profit that builds and renovates multi-unit homeless shelters, to arrange funding for the renovations. The Northern Virginia Chapter of HomeAid America has received a grant commitment from the Wal-Mart Foundation for energy efficiency improvements.
- The energy audit report for 612 Notabene Drive identified opportunities for improving energy efficiency, and made Community Lodgings eligible for Wal-Mart's grant of up to \$80,000 for energy efficiency improvements. HomeAid will also provide supplemental funding for non-energy related projects. Community Lodgings is hoping to receive confirmation on the grant funding by early September and aims to have the renovation underway by October 1, 2011.

Estimated Savings:

- Simply replacing incandescent bulbs with CFLs would save each unit \$38 per year while lowering cooling costs.
- Assuming each of the 30 residents takes one 8-minute shower each day, installing low-flow shower heads in each unit would save 7,000 gallons of water each year. These cost \$5-\$20 each and would save the building \$2,600 total each year.
- By making recommended minor repairs, EarthCraft estimated savings of \$176 per year for an average unit whose annual energy bill is \$1,060.

Community Outreach:

- The mission of Community Lodgings is to "lift families from homelessness and instability to independence and self-sufficiency." Those who enroll in their transitional housing program are required to attend educational workshops on parenting, substance abuse, job skills training, job counseling sessions, ESL/computer literacy courses, and etc. By making their transitional housing building on Notabene Drive more energy efficient, tenants will pay lower utility costs and find more flexibility within their budgets.

Keywords:

Existing construction, multi-family residential, EarthCraft, comprehensive energy audit, exhaust fans, hydronic space heating, incandescent bulbs, CFLs, air infiltration, building envelope, Water Sense toilets, weatherstripping, community outreach,