



Building America Case Study

Rehabilitations of USDA
Multifamily Homes

Georgia (Climate Zones 2-4)

PROJECT INFORMATION

Construction: Rehabilitation
Type: Multifamily, affordable
Partners:
 Rea Ventures Group, LLC
reaventures.com
 Southface Energy Institute
Size: 590 ft²-905 ft²
Price Range: Rental
Date Completed: 2015
Climate Zone: Hot and mixed humid

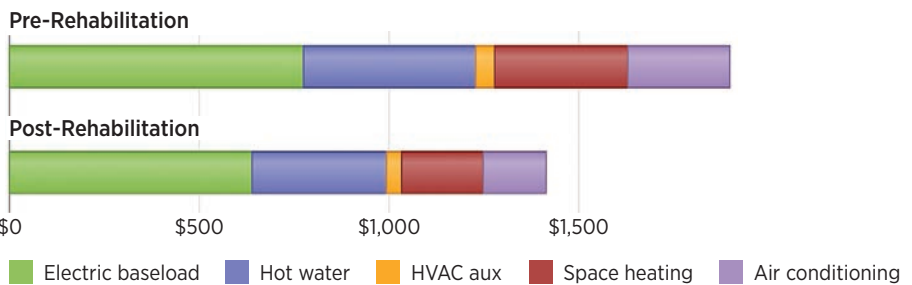
PERFORMANCE DATA

Average 15%-20% energy reduction
 Projected annual energy cost savings:
 \$186/unit
 Billing data: Not available

Rea Ventures Group, LLC, partnered with Southface Energy Institute (Southface), a member of the U.S. Department of Energy's Partnership for Home Innovation Building America research team, to develop a prescriptive approach for rehabilitating a portfolio of rural multifamily rental properties in Georgia, which was funded by the U.S. Department of Agriculture (USDA). Scopes of work for these projects were initially developed and funded based on capital needs assessments performed by a third party to satisfy Low-Income Housing Tax Credit protocol, which did not specifically include considering energy efficiency. Rea Ventures rehabilitated 14 properties consisting of 418 units; they used a quick-turnaround process that allowed the residents to remain in their homes during the work.

"Green building provides better value for our residents and better value for our investors."
 - Eric J. Buffenbarger, CFO
 Rea Ventures Group, LLC

Rea Ventures chose energy-efficiency upgrades that would lower resident energy bills, improve the ease of property maintenance, and could be easily implemented given the construction constraints. Meeting thresholds for utility rebate incentives was also a goal. Heating, ventilating, and air-conditioning (HVAC) units; water heaters; and kitchen appliances were replaced. Windows and doors were replaced with energy-efficient and more airtight models. All plumbing fixtures were replaced with models that meet current code in Georgia, which in turn meets WaterSense flow rate requirements that save energy and water.



Key Energy-Efficiency Measures

HVAC

- SEER 14.5 HSPF 8.2 heat pump
- Ducts in conditioned space.

ENVELOPE

- R-38 blown ceiling insulation in vented attic
- Double-pane low-e vinyl windows; U = 0.33, SHGC = 0.26
- Insulated metal doors
- Improved airtightness (average 13% air leakage reduction).

LIGHTING, APPLIANCES, AND WATER HEATING

- 100% compact fluorescent and linear fluorescent lamps
- Low-flow showerheads, kitchen sink faucet, and lavatory sink faucets
- Electric water heater efficiency upgrade to 0.93 EF.



HVAC systems in the pre-rehabilitation (left) and post-rehabilitation (right) conditions. Rea Ventures upgraded the heating and cooling efficiencies and access to the filter for easier inspection and maintenance.

Lessons Learned

- By not including energy-efficiency assessments, the capital needs assessment process used for financing and underwriting rehabilitations of U.S. Housing and Urban Development (HUD) and USDA affordable housing properties misses opportunities for increasing energy efficiency.
- Significant energy (15%–20%) and water savings are achievable for rehabilitations that are conducted while residents are in place.
- Utility energy-efficiency programs can provide significant motivation for achieving greater savings (up to \$1,100/unit).
- The HVAC upgrade was the measure that resulted in the largest savings, and it improved system maintainability.
- Additional air-sealing opportunities are still available in attics and at baseboards—via electrical and plumbing penetrations—and behind cabinets.
- Draft HUD Multifamily Accelerated Processing Guide requirements should be expanded to accommodate row house and town house buildings of fewer than 20 units—such as these. This common affordable housing type is not currently eligible for an ENERGY STAR® score in the ENERGY STAR Portfolio Manager.
- Developers who build high-performance multifamily and affordable housing command a premium for their tax credits in the syndication marketplace because of the perception that these properties represent a more secure investment vehicle.

For more information read the Building America report *Multifamily Housing Rehabilitation Process Improvements* at buildingamerica.gov.

Image credit: All images were created by the Partnership for Home Innovation team.