

Case Study: Renovations for the 1714 Preston Road, in the ParkFairfax Community (Energy House 2)

- Location: Alexandria, Virginia
- Urban setting
- Building Type: Residential Multifamily
- Project scope: 1 single-story condo, 840 square feet
- Historic Construction: built in 1941
- Renovations completed April 2011



[Energy House](#) began as a collaboration of local businesses working together to demonstrate how energy conservation renovations can be cost-effective for homes and neighborhoods in the metro-DC area. The Energy House designation reflects a standard for design that focuses on retrofitting an existing home to make it highly energy efficient. The goal is to restore each home to be more healthy and comfortable, while reducing energy consumption. For the second Energy House project (Energy House 2), retrofits were completed on a single-family condo at 1714 Preston Road in the ParkFairfax Community. As a result of the energy efficiency improvements, the tenants are now saving 55% on their household energy consumption.

Existing Conditions:

- Heat loss through walls, windows, and doors
- Inefficient heating system; there were five separate electric heaters throughout the condominium
- Poorly insulated attic and walls
- Functionality of water systems had not been recently evaluated

Energy-Efficient Renovations:

- Replaced existing heaters with a Mitsubishi mini-split heating and cooling system. Mini-splits also dehumidify, improving air quality while being 40% more efficient than window units.
- Repaired weatherstripping and caulked around all doors and windows.
- Painted walls with no-VOC paint.
- Installed 16 inches of cellulose insulation in the attic and placed foam insulation behind baseboards. Cellulose is made from 80% recycled materials and contains no phosphoric acid.
- Examined current water fixtures and repaired any leaks.
- Swapped the existing thermostat for an interactive energy use monitoring system by [ecobee](#) that allows tenants to track their energy usage and can be adjusted remotely.

Costs and Savings:

- The renovations to Energy House Two were partially subsidized by the Energy House partners in agreement that the tenants would open the home up to the public for educational tours.

- The previous HVAC system was costing 58 cents per hour to run. After the mini-splits were installed, cooling and heating the house ran between 6-15 cents, or about 10 cents per hour.
- The energy monitoring system showed a 25% reduction in heating costs during the first year after the renovation and a 55% decrease total in energy costs.

Community Outreach:

- A core mission of the Energy House is to serve as a living classroom. The Parkfairfax condominium has hosted two open houses to educate other home owners in the community. Visitors have the opportunity to see first-hand how the energy-efficiency improvements look, sound, and feel. In addition, the energy monitors provide a concrete example of energy savings.
- To register to attend the next open house, see the Energy House Two [website](#). Attending is free!

Keywords:

Alexandria, Parkfairfax, residential, multifamily, condominium, historic, urban, Energy House, energy conservation, retrofitting, environment, insulation, renovation, mini-split systems, HVAC systems, caulking, weatherstripping, no-VOC paint, Google Power Meter, ecobee