

## Case Study



"Everybody says they'll save you money; [TerraLogos GHS] actually did it. I think everybody should do this."

~ Mark Davis

### Customer:

Mark and Ann Tran-Davis

### Location:

Annapolis, MD

### Work completed:

September, 2008

### Improvements:

- Systemic duct sealing
- Whole house air sealing
- Insulation increased to R48

### Benefits:

- This all-electric home showed a 19.2% reduction in kWh for the 1<sup>st</sup> quarter '09 vs. 1<sup>st</sup> quarter '08. Plus winter 2009 was significantly colder than winter 2008.
- They used 5,496 kWh less in the 1<sup>st</sup> quarter of '09; this probably represents a yearly reduction of 11,000 kWh, which at \$0.15/kWh = a savings of \$1,650/yr.

### Project cost:

\$9,016 total

### Annual savings:

\$1,650/yr; 5.5 year payback at current energy costs, before tax credits

# Maryland Home Performance with ENERGY STAR®

## Tran-Davis Residence

### Meet Mark and Ann Tran-Davis

Mark and Ann live in a 28-year-old home in Annapolis, MD. Their contemporary, wood, all-electric home with brick and stone veneer is approximately 4,600 square feet, with energy issues that are typical for Maryland homes.

### Why Mark and Ann Decided to Make Changes

The homeowners wanted to make their home as energy efficient as possible to lower their utility bills and environmental impact. In addition, they wanted to make the house more consistently comfortable in all seasons, especially the basement. They had installed a solar water heater and upgraded one of their heat pumps to a high efficiency model. Most of their windows are double glazed. They wanted to know what more they could do to cost-effectively improve energy efficiency.

### Getting Started

Mark and Ann called TerraLogos Green Home Services, participating contractors with the Maryland Home Performance with ENERGY STAR program, and scheduled an energy audit. Auditor, Frank Lee, performed a visual inspection and several tests on the home to determine the causes of their home's comfort, health, and energy issues.

### TerraLogos Green Home Services Findings

- There was substantial air leakage from the supply & return air ducts in both the upper & lower HVAC systems.
- Blower Door Testing indicated very high air leakage in the home, with an Air Change per Hour (ACH) rate of 1.3. The target ACH rate for a well sealed house is 0.35.
- Visual and infrared camera inspection of the home revealed that insulation levels were insufficient in the attic, the kneewalls of the master bedroom and the crawlspace.
- The 3 skylights in the home were single-glazed.

### The Improvements

- Systemic duct sealing - \$4,031
- Whole house, blower door assisted air sealing - \$1,230
- Foam insulation in the crawlspace to provide air sealing as well as insulation; R30 blown-in cellulose in attic to fill voids and cover ductwork; Solar Guard foil sheets in kneewall areas to air seal & improve existing insulation. All insulation upgrades - \$2,555
- Replaced 3 skylights with double-pane, Energy Star units - \$1,200

### Results

The 2 HVAC Systems in Mark and Ann's home had a combined capacity of 9 tons. The duct sealing process sealed 8 tons worth of leaks, which will improve the air delivery by 60%. The improvements have made the home much less drafty and more comfortable, especially in the sunroom and the kids' bedrooms. The total project cost them \$9,016 and it is projected to save \$1,650 per year, for a 5.5 year payback at current energy costs and before incentives.