

Caroline County Habitat for Humanity and Habitat for Humanity Choptank Case Study

From 2010 to 2014, [Caroline County Habitat for Humanity \(CCHFH\)](#) and [Habitat for Humanity Choptank \(HFHC\)](#) enabled 97 homeowners in three counties to live in safer, healthier, and more energy efficient homes through the EmPOWER Clean Energy Communities Low-to-Moderate Income (LMI) Grant Program.

Following the Habitat for Humanity model of leveraging volunteer labor and donated materials and equipment for energy efficiency upgrades, CCHFH and HFHC achieve substantial cost effectiveness. Both serve areas of the state where energy incentives may not be available from the local electric utility. With their MEA grant awards, both organizations have been able to develop larger than usual projects to better serve the needs of their low and moderate income communities; in this way, the grants have helped them meet their mission of providing affordable housing by lowering household energy bills while also making homes more comfortable and safe.



Incremental energy efficiency upgrades in this new Cambridge home constructed by Habitat for Humanity Choptank mean more manageable monthly energy bills for a low to moderate income Maryland family.

Habitat for Humanity Project Summary - 2014	
Total Project Cost	\$251,347
Estimated Annual Energy Cost Savings ¹	\$25,236
Simple Payback	10.0 years 9.3 years: net project cost without administrative, health & safety costs

CCHFH and HFHC used the following two strategies to lower the heating bills of 97 households between 2010 and 2014:

- 1) **Incremental Cost:** This new construction option covers the incremental cost difference of upgrading to a higher level of energy efficiency. For example, it covers the cost difference of upgrading from a baseline efficiency heat pump (SEER 13, the minimum efficiency unit that can be installed in a new home) to a higher efficiency [ENERGY STAR](#) qualified heat pump (SEER 14.5+).

Appliance upgrades (from a standard unit to an ENERGY STAR qualified, energy efficient unit) and increased levels of insulation are also typical incremental cost upgrades. Since new Habitat construction projects typically use the lowest cost appliances available with reasonable durability, this incremental-cost funding allows for the installation of efficient appliances that will save the homeowner money on energy bills every month. HVAC unit and weatherization upgrades—often done together—also help with peak load reduction, which improves energy availability for all of us. Upgraded appliances like refrigerators and water heaters go on saving energy all year long for the life of the units—which is often in excess of 15 or 20 years.

¹ Assumptions: electric rate, \$0.1347/kWh; propane rate, \$2.99/gallon

2) **Home Performance with ENERGY STAR (HPwES):** Under the [HPwES](#) program, MEA has funded energy efficiency upgrades for eligible homes. A certified [Building Performance Institute \(BPI\)](#) auditor assesses each home by performing a home energy audit that checks the following:

- Insulation levels
- Whole building performance, including areas such as the attic or basement
- Heating, cooling and water heating systems
- Utility bills from the past year, which provide a baseline for the home's energy use
- Diagnostic tests, including:
 - Air infiltration, to determine where unconditioned air is entering and exiting the house
 - Combustion safety testing, to assess how combustion appliances are performing

Diagnostic testing supports not only a tighter building envelope but also helps identify a range of health and safety issues, including moisture problems, excessive carbon monoxide levels and other risks to occupant safety and comfort.

The HPwES audit results in recommended measures that will pay for themselves in energy savings in less than 10 years. The MEA grant allows for homes without an HVAC upgrade to receive up to \$5,000 in energy efficiency measures and homes with HVAC upgrades to receive up to \$8,000. A typical HPwES home will save \$500 a year or more on its utility bills.

For the FY14 EmPOWER Clean Energy Communities Low-to-Moderate Income Grant Program, CCHFH and HFHC received the following awards:

- Caroline County Habitat for Humanity, Inc. — Caroline County: \$75,000
- Caroline County Habitat for Humanity, Inc. — Queen Anne's County: \$60,000
- Habitat for Humanity Choptank — Dorchester County: \$61,192
- Habitat for Humanity Choptank — Talbot County: \$65,000

The chart to the right summarizes the energy savings distribution associated with the energy efficiency upgrades made possible through the 2014 EmPOWER Clean Energy Communities Low-to-Moderate Income Grant Program.

In addition to its healthier and more comfortable homes, Maryland's Eastern Shore has benefitted from the grant awards to CCHFH and HFHC in a range of ways, including jobs for local auditors and contractors, neighborhood revitalization, leveraged funds and energy savings.

