



Hope Crossing

Residential Case Study





Healthy, efficient, high quality and sustainable – buzzwords that attract the homebuyer of today, but is it possible to wrap all these qualities into one home? Yes, in fact these are perfect for describing an entire neighborhood of some 217 affordable, energy-efficient homes in northeast Oklahoma City, Ok.

Hope Crossing, Central Oklahoma's Habitat for Humanity (COHFH) five-phase project covering 59 acres located at NE 83rd and Kelley Avenue, features brick, three-bedroom, two-bath homes, each with about 1,250 square feet; all this, and still offered with a very reasonable price tag around \$85,000.

Year-Round Comfort

Habitat strives to provide affordable housing, but regulating utility costs in the homes isn't a controllable option. Oklahoma City is considered a mixed-humid climate requiring significant amounts of both heating and cooling, and combating substantial humidity levels throughout the year. Air conditioning is a must in all new homes, which makes air-based distribution systems the norm. Most new homes use

either a central forced-air gas furnace coupled with a split-system air conditioner, or a split-system central air-source heat pump and supplemental resistance heat.

In low-cost single-story houses, typical of the COHFH homes, a standard duct system is used for heating and cooling. While easy to install, they are not the best choice for energy efficiency.

In response, ClimateMaster has made it possible for COHFH to offer families extremely energy-efficient homes by donating high-tech Geothermal heating and cooling systems to all the homes in Hope Crossing.

Geothermal systems provide homeowners with year-round comfort, high efficiency performance, and much lower utility bills, making these homes more affordable for families than ever.

The homes have integrated ground-loop pumping and purging valves in the heat pump to save on space required, equipment cost and field labor content. Additionally, a single 400 ft. geothermal loop is located directly under the floor slab instead of the typical practice



One of the ClimateMaster units installed at Hope Crossing

of drilling two 200 ft. heat exchangers 20 ft. apart in the lawn, which requires a separate excavation step to manifold them and route the piping into the house.

Upon completion, the homes will also be certified by the Leadership in Energy and Environmental Design (LEED), a third-party, independent verification system, which indicates a project is environmentally responsible in its design.

Energy savings produced by the Geothermal units contribute to the points used to obtain LEED certification. All energy loads within the Hope Crossing homes are met with electricity. In fact, natural gas distribution lines were not installed. Additionally, many of the homes have energy-efficient insulation, Low E windows and two homes have solar capabilities, equipped with 12 solar panels each on the roof.

The panels were supplied by a partnership between OGE Energy Corp. and ClimateMaster.

According to Ann Felton, COHFH Chairman, Habitat organizations on the coasts have built solar-powered homes, but the two at Hope Crossing are the first in this part of the country.

Proven Energy Savings

Dan Ellis, president of ClimateMaster, said “with all of those elements in place, as well as solar panels, the energy consumption of the homes is reduced by 75 percent. If more solar panels were added to the houses, he added, they could function off of the electrical grid.”



A contractor drills a 400 ft bore to insert a heat exchange ground loop at Hope Crossing

“They are going to save over \$1,200 a year compared to a Habitat house built last year,” he said. “That is very substantial when you talk about affordability for these homes.”

Ken Grant, managing director of marketing for OGE, said the Hope Crossing homes as a whole cost less than \$90 a month to cool in the summer and less than \$100 a month to heat in the winter.

“The heating and cooling bills of these homes are so much less than the typical home of this size,” he said.

Habitat CEO Jonathan Reckford said while Habitat homes across the board are becoming more energy-efficient, Hope Crossing holds a special distinction.

“Hope Crossing is going to be the largest green-build Habitat community in the United States when it’s completed,” he said. “That’s something that

is setting the tone and path for the rest of the country as well.”

What does all this mean for the environment? According to Ellis, The 217 low energy Geothermal homes to be constructed in the Hope Crossing project will collectively save nearly 1,100 metric tons of CO2 per year, or 22,000 metric tons over a nominal 20-year lifespan, compared to the Standard Gas homes that COHFH had been building. If all of the homes had the 2.3 kW solar panel option, another 12,000 metric tons could be saved over 20 years.

“ClimateMaster has stepped up to the plate in a big way and I’m very appreciative to them for their generosity and the active role they have taken in supporting this project,” said Felton.

Key Features

Hope Crossing

Square Footage: 217 Homes at around 1,250 sq. ft. each

Type of System: Geothermal Ground-Loop System

Number of Units: 217

Energy Savings: 1,100 Metric Tons of CO2 per year





Hope Crossing Oklahoma City, OK

Facility Manager: Central Oklahoma's
Habitat for Humanity

Electrical Contractor:
Oklahoma Gas & Electric

Manufacturer:
ClimateMaster, Inc.
climatemaster.com

ClimateMaster is the world's leader in the design and manufacture of water source heat pumps. For more than fifty years, ClimateMaster has been servicing the needs of the commercial and residential construction industry worldwide with the most comprehensive line of water source heat pumps.

ClimateMaster's state of the art facility in Oklahoma City, Oklahoma reflects the company's commitment to its customers, employees, and products. The company stresses quality in its modern quarter-of-a-million square foot (23,225 square meter) factory through extensive quality control programs.

At ClimateMaster we've made a commitment to excellence. We are building quality heat pumps for life... the life of buildings and the people who use them.



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