

# Energy Savings in Michigan Housing

December 2006



A summary from the study [Energy Usage of ENERGY STAR Homes in Michigan](#). For more information, please see the full report on WARM's website at [www.warmtraining.org/pdf/energy-report-2006.pdf](http://www.warmtraining.org/pdf/energy-report-2006.pdf).

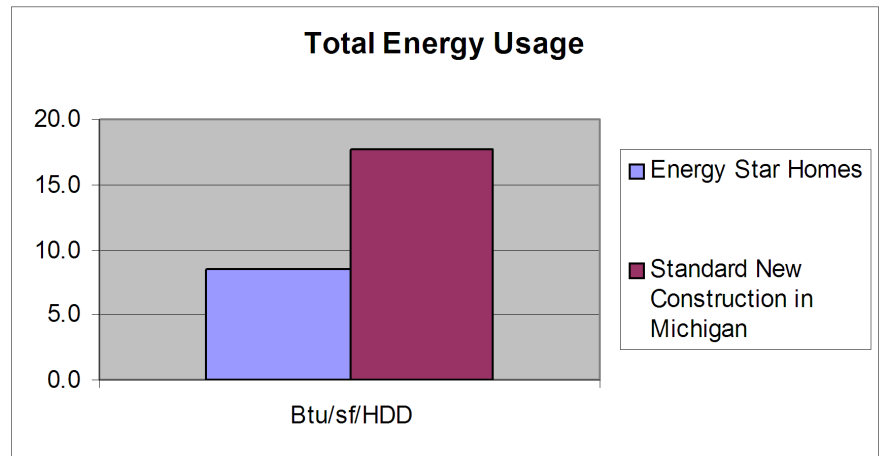
## Overview

In 2005, Habitat for Humanity of Detroit built 30 homes as part of the Jimmy Carter Work Project for that year. WARM Training Center consulted with Habitat for Humanity of Detroit to review their home designs and train the construction crew. After completion, the homes were certified as ENERGY STAR Homes. In 2006 WARM Training Center analyzed the bills of the homeowners to determine the actual energy usage in the homes.

The exact requirements for reaching Energy Star standards varies with the home's design. These homes used basement insulation, high efficiency furnaces and careful air sealing, as well as energy efficient lighting and appliances.



One of the Habitat for Humanity Energy Star Homes.



## Energy Savings

While national Energy Star figures show that Energy Star Homes typically use 30% less energy than standard built homes, this study shows savings of 52% over standard new construction in Michigan. The improvement in energy usage is dramatic. Given standard 2006 prices in Michigan, this translates into a savings of at least \$1500 a year (with \$1 / CCF and \$.10 / KWH). Over 10 years this represents a savings of \$15,000 at current utility prices.

This savings is important for any homeowner, but may be particularly significant for the affordable housing field and for lenders, since lenders must closely examine homeowner finances before approving a mortgage.

Two reasons most likely account for the dramatic improvement. For one, the Michigan Residential Code lags behind most of the country's energy performance standards. Since Michigan starts with a lower

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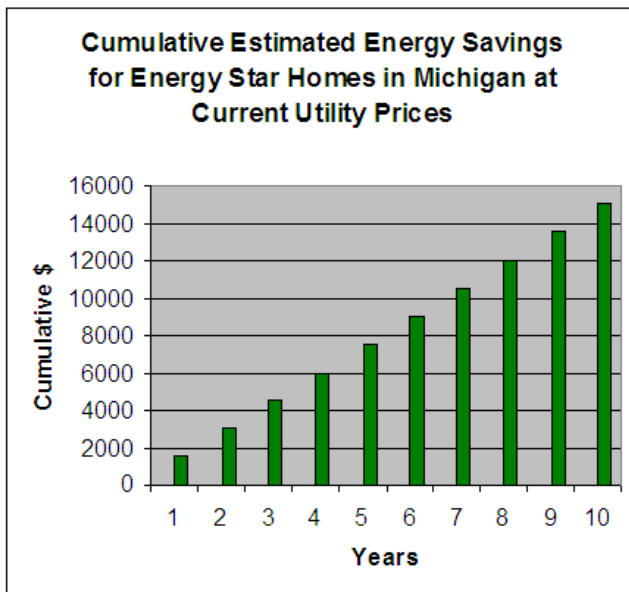
standard, bringing a home up to ENERGY STAR standards results in even greater savings. Secondly, the homeowners of the study homes all received education on how to keep their bills low. Training occupants is an important step in maximizing the savings possible for a home.

## Study Data

In Michigan, heating is the largest energy need in a typical home. Most homes in Michigan use natural gas, measured in CCF (cent cubic feet), for heating. The ENERGY STAR Habitat Homes used an average of 68 CCF per month. This is 41% of the average monthly CCF use of homes throughout the DTE territory in Michigan.

Another way to measure energy use in a home is to use Btu (British thermal units), which can combine gas and electric use for a house. This combined gas and electricity measure was divided by square footage of the homes so that the comparison is not affected by the size of the home.

Furthermore, the temperatures for the year of study was compared to standard temperatures for Detroit. This is measured through Heating Degree Days



(HDD), and the final Btu measurements were adjusted accordingly so that the mild winter of 2006 wouldn't skew the results.

The Habitat Homes, on average, used 8.5 Btu/sqft/HDD annually. By comparison, Standard New Home Construction in Michigan uses 17.8 Btu/sqft/HDD each year. The Habitat Homes used 48% of the energy used by Standard New Home Construction in Michigan.

## Resources

1. Life Cycle Analysis of a Residential Home in Michigan, by Steven Blanchard and Peter Reppe, from the Center for Sustainable Systems, University of Michigan. Report No. 1998-5, September, 1998.

[www.umich.edu/~nppcpub/research/lcahome](http://www.umich.edu/~nppcpub/research/lcahome)

2. Energy Star information:  
[www.energystar.gov](http://www.energystar.gov)

3. Habitat for Humanity and the Jimmy Carter Work Project:  
[www.habitat.org](http://www.habitat.org)



4. Energy Usage of ENERGY STAR Homes in Michigan:

[www.warmtraining.org/pdf/energy-report-2006.pdf](http://www.warmtraining.org/pdf/energy-report-2006.pdf)

5. Payment Collections in Energy Efficient Affordable Housing:

[www.warmtraining.org/pdf/collections-2007.pdf](http://www.warmtraining.org/pdf/collections-2007.pdf)

6. This report can be found at:

[www.warmtraining.org/pdf/energy-savings-in-michigan-housing.pdf](http://www.warmtraining.org/pdf/energy-savings-in-michigan-housing.pdf)

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