

Energy Star Homes Evaluation

Location: Roanoke, VA

Energy Star Rating: 84.6



Energy Related Characteristics For Mixed Climates Typical 3 Bedroom Frame House

Heating System
Gas Furnace, 80 AFUE

Cooling System
A/C, 10 SEER

Water Heating System
Gas Water Heater, 0.56 EF

Duct Leakage
10% (CFM25_{Total}=105)

Estimated Infiltration
7.0 ACH @ 50 pascal's

Areas (sq.ft.)
Condition floor - 1050
Windows - 126
Ceiling Area - 1050
Insulated Ex. Wall - 1010 (net)

Insulation
Ceiling: R-30
Walls: R-13+1" Rigid
Floor: R-19 Batt
Ducts: R-6

Windows
Double Clear-Vinyl Frame
U-Value=0.49
SHGC=0.56

Energy Evaluation Results

Estimated Annual Energy Use: 63.8 MBtu
Estimated Annual Energy Cost: \$829

The Energy Star program awards the "Energy Star Home" designation to homes scoring 86 points or more on the Home Energy Rating Scale (HERS). A score of 86 indicates that a home is 30% more efficient than a standard reference home which scores an 80. Implementing one of the Energy Star packages below would bring this home's score up above 86. You may also request evaluation of other improvements or packages of improvements. Annual energy costs are calculated using an electric rate of \$0.08/kWh and a gas rate of \$0.50/Therm.

Energy Star Package 1 HERS Score = 86.1

Estimated Annual Energy Use =60.5 MBtu
Estimated Annual Energy Cost=\$785
Estimated Annual Saving =\$44

1. Windows: Double Pane/LowE/Argon Fill/Vinyl Frame#2, U=0.32
SHGC=0.3
2. Attic: Increase to R-38
3. Duct Leakage: Reduce Duct Leakage
To 3% (CFM25_{Total}=31.5)

Energy Star Package 2 HERS Score = 86.2

Estimated Annual Energy Use =59.6 MBtu
Estimated Annual Energy Cost=\$789
Estimated Annual Saving =\$40

1. Water Heating: Gas Instantaneous, 0.56EF

Energy Star Package 3 HERS Score = 86.0

Estimated Annual Energy Use =60.8 MBtu
Estimated Annual Energy Cost=\$801
Estimated Annual Saving =\$28

1. Heating: Furnace, 95 AFUE

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General Guidance for ENERGY STAR Homes for Habitat for Humanity

Location: Roanoke, VA (Mixed)

HDD = 4,321; CDH = 9,275

Building Component	Base Case House ¹ HERS Rating = 84.6	Proposed Changes	Potential Point Value ^{2,3} of proposed Change	Cost
Frame Floor Insulation	R-19 Batt	Increase to R-30 Batt	0.3	
Wall Insulation	R-13+1" Rigid Insulation	R-13 No Rigid Insulation	-0.5	
		R-15 No Rigid Insulation	-0.4	
		R-15+1" Rigid Insulation	0.1	
Windows	Double Clear-Vinyl Frame	Double Pane/LowE/Argon Fill/Vinyl Frame#1, U=0.32 SHGC=0.3	0.9	
		Double Pane/LowE/Argon Fill/Vinyl Frame#2, U=0.36 SHGC=0.52	0.6	
Attic Insulation	R-30	Increase to R-38	0.2	
		Increase to R-50	0.4	
		R-30 + Radiant Barrier	0.2	
Heating Equipment	Gas Furnace, 80AFUE	Furnace, 95AFUE	1.4	
Cooling Equipment	A/C, 10 SEER	Increase to 12 SEER	0.7	
Water Heating Equipment	Gas Water Heater, 0.56EF	Gas Instantaneous, 0.65EF	1.6	
		Gas Tank, 0.56EF, R-5 tank insulation	0.5	
		Elec Tank, 0.9EF	0.1	
Duct Leakage	10% (CFM25 _{Total} = 105) ⁽⁴⁾	3% (CFM25 _{Total} = 31.5) ⁽⁴⁾	0.4	

¹ Typical 3 bedroom home described on the "Energy Star Homes Evaluation" for this location.

² Indicates change in HERS ENERGY STAR rating with each enhancement incorporated individually into the Habitat Home. A score of 86 qualifies a home for ENERGY STAR status and indicates 30% saving in combined heating, cooling, and water heating energy use compared to a standard Reference Home.

³ **IMPORTANT: Potential Point Values are not additive. Combinations must be evaluated by a Certified Rater to verify effective score.**

⁴ Duct leakage is shown as a % of conditioned floor area. For example, if CFM25=65, then leakage = 65/1050 = 6.2%.

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