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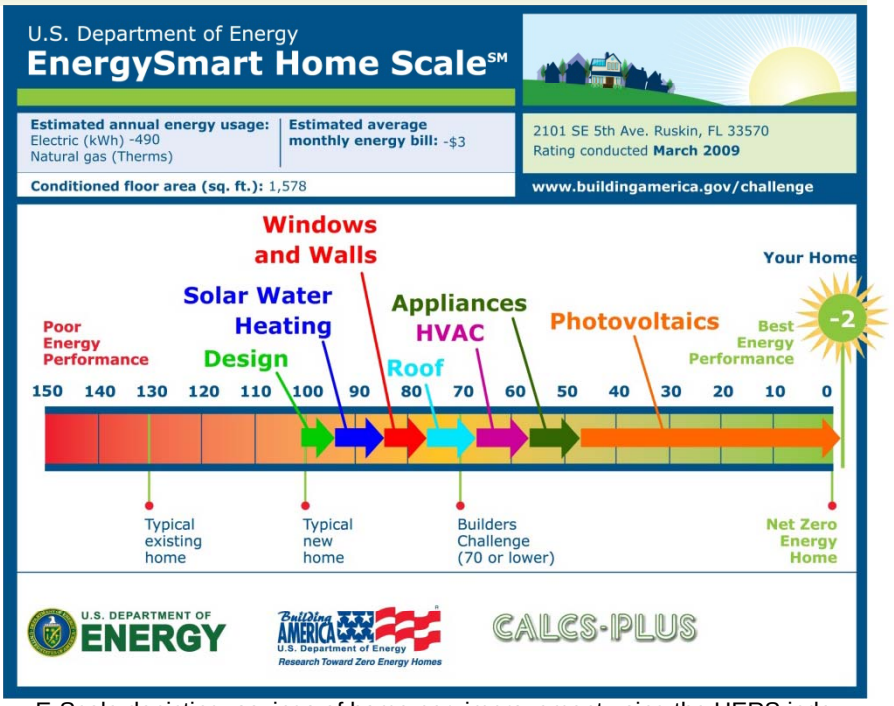
Achieving Zero: Design of a Ruskin Florida "Dog Park" House

A home is planned to serve as a caretaker residence on a dog park site in Ruskin, Florida. The owner and architect have designed the home to achieve the goal of **Net Zero Energy** combining high efficiency and on-site grid-connected solar power. An energy rater modeled the home using Energy Gauge USA to determine measures (see table) to meet this goal. The home is designed to obtain a Home Energy Rating System Index (HERS) of -2 (see scale).

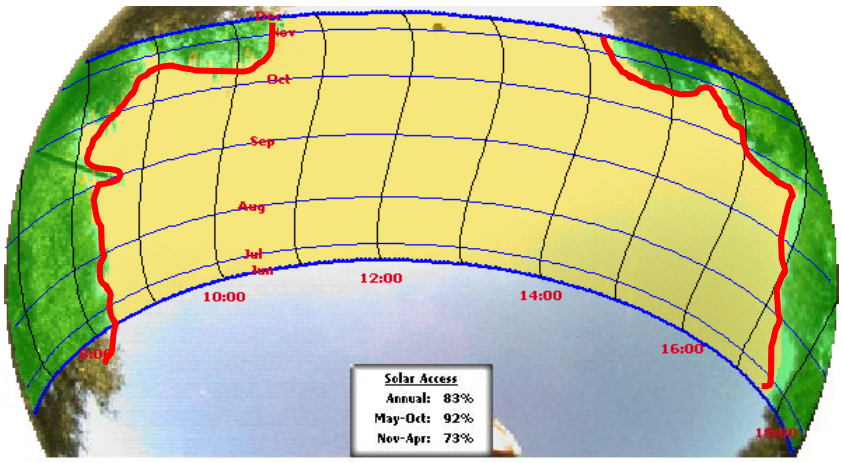
Measure	From	To
Orientation	All walls and windows are of equal size	More windows on North and South
Overhang	0 foot overhang	2 foot minimum
Tile Floors	20% of floors are tile	100% of floors are tile
Solar Hot Water Heater	Standard water heater installed	Installed with closed loop
Windows	U-Value: 0.75 SHGC Value: 0.4	U-Value: 0.35 SHGC Value: 0.31
Walls	Insulation: R-13.7 Framing Fraction: 0.23	Insulation: R-20 Framing Fraction: 0.06
Tight Infiltration	ACH-0.36	ACH-0.076
Roof	Composite shingle	Unfinished Galvalum Metal
Duct Tightness	Qn: 0.08	Qn: 0.00
Attic	Vented attic with R-27 on roof	Unvented attic with R-26.2 on ceiling
Ducts Location	Supply and return in attic	All interior
HVAC	SEER 13, HSPF 7.7	SEER 19, HSPF 9
Appliance	Standard	Energy Star
Programmable Thermostat	None	Installed
PV	None	5,130 Watts

*Note: Colors in table pertain to E-Scale

The Florida Solar Energy Center (FSEC) then created a typical HERS Index 100 level home with the same floor plan. A step-by-step procedure provided savings of measures. The categories were: design, solar water heater, windows and walls, roof, HVAC, appliances, and Photovoltaic's. Ideally a zero energy home maximizes efficiency to relieve expenditure on photovoltaics.



E-Scale depicting savings of home per improvement using the HERS index that goes from 100 for typical new home to 0 for a net zero energy home.



Data by Solmetric SunEye™ -- www.solmetric.com

Solar path tool indicates time of day and year where trees or neighboring buildings will shade panels. This analysis should be made for any solar installation

Case study contributed by:

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