Recognizing & Quantifying Energy Efficiency in Housing

Using the RESNET HERS Index to Attract and Educate Buyers

Orlo Stitt, President
Stitt Energy Systems, Inc.
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Early Educational Challenges

• Stitt Energy Systems focus
  – Energy efficient custom homes
  – Began in 1978 shortly after Arab oil embargo

• Challenges in marketing energy efficiency
  – Public equated energy efficiency with ‘ugly’ and hardship
  – No means of quantifying benefits
  – Relied on customer testimonials
Interim Progress

• Late ’80s participated in Energy Rated Homes of Arkansas
• Supported by State Energy Office
• Involved bankers and appraisers
• Scoring
  – 90-100 equaled 5 stars plus
  – The higher the better
Energy Star® for Homes

• Energy Star® promoted energy efficiency at national level
  – Began using Energy Star® logo on materials in 1996

• RESNET HERS Index provided visual way of quantifying savings to home buyers
  – Scoring changed to the lower the better
  – Used Index across marketing channels
Home Shows

• Banners
  – Enhanced Index with photos of homes to show energy performance of Stitt homes
  – Compared scores to golf: the lower the score the better
MATERIALS AND TECHNIQUES

ENERGY SHELL

Your home’s energy shell consists of its foundation, framing, roof, insulation, windows, and doors. The energy shell of a typical home in the United States is rated at 30% below the ENERGY STAR® standard and up to 50% better than the IECC.

FOUNDATION

The foundation is typically the least energy-efficient part of a home, with a significant impact on the overall energy consumption. A well-insulated, tight foundation helps reduce energy loss and提高 home comfort.

WIND RESISTANCE AND WATER PENETRATION

Wind resistance and water penetration are important factors in the design of energy-efficient homes. Proper ventilation and drainage systems are essential to prevent water damage and improve indoor air quality.

INDEPENDENT ENERGY RATING

Incorporating energy-efficient features and systems into your home will not only save you money on energy bills but also enhance your home’s value. Stitt ENERGY STAR® homes are rated for their energy efficiency, ensuring that you’re investing in a home that will save you money and reduce your environmental impact.

SOLAR ENERGY

Stitt homes are designed to be passive and active solar technologies whenever possible. Passive solar design includes installing heat-reflecting material on the exterior walls to reduce heat loss and making windows larger to increase sunlight penetration. Active solar technologies include solar water heating and solar electric systems, both of which are designed and sized for maximum efficiency and long life. Up to 50% of your annual fuel costs may be reduced by installing a solar water heating system, while the purchase of electricity that can be provided by a solar electric system depends on your home’s size, location, and use.

HERS Index

The Home Energy Rating System (HERS) Index is a measure of a home’s energy efficiency. A lower HERS Index indicates a more energy-efficient home. Stitt ENERGY STAR® homes have a HERS Index of 70 or less, meaning they use 30% less energy than a typical new home. The HERS Index is a measure of a home’s energy use, with lower numbers indicating greater energy efficiency.

EXPERIENCE

In 1973, Stitt Energy Systems was founded on the principles of building homes that are energy-efficient and sustainable. Over the years, we have built a reputation for excellence in energy efficiency and sustainability, and our homes have been recognized for their energy conservation and environmental benefits.
Stand-Alone HERS Brochure

- Ask Your Builder for the Score
  - Emphasized HERS Index
  - Explained how scoring relates to energy efficiency, comfort, and healthy IAQ
Customer Seminars

• Banners create talking point
  – Consumer education key to willingness to spend more on efficiency up front
  – We emphasize the home as a holistically or complete and integrated energy system
Published Book
Holistically Green Homes

• Book
  – 248 pages with full color photographs and illustrations
  – Emphasizes our holistic approach to building and energy performance
  – HERS Index explained in detail in Technical Notes
Appraisal and Banker Seminars

• May 2010
  – Partnered with the Ozark Mountain Chapter of the Appraisal Institute

• Sandra Adomatis
  – Approved Appraisal Institute Instructor for “Valuation of Residential Green Properties”

• HERS Index
  – Provided visual for bankers and appraisers
New tool

• Developed by the Appraisal Institute

• Residential Green and Energy Efficient Addendum

• Now available to appraisers, bankers, realtors, builders and owners.
### Solar Panels

<table>
<thead>
<tr>
<th>Description</th>
<th>Array #1</th>
<th>[ ] Leased</th>
<th>[ ] Owned</th>
<th>Array #2</th>
<th>[ ] Leased</th>
<th>[ ] Owned</th>
<th>Array #3</th>
<th>[ ] Leased</th>
<th>[ ] Owned</th>
<th>Array #4</th>
<th>[ ] Leased</th>
<th>[ ] Owned</th>
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</thead>
<tbody>
<tr>
<td>Age of Panels</td>
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<td>Energy Production (kWh) per Array</td>
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<td>Incentives for Production</td>
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<td>Location (Roof, Ground, Etc.)</td>
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<td>Roof/Shape for Array</td>
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<td>Arrays per Array</td>
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<td>Age of Inverter(s)</td>
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</tbody>
</table>

### Comments

(Discuss inverters available for new panels, condition of current panels, and any maintenance issues)

### Green Features

<table>
<thead>
<tr>
<th>Certification</th>
<th>Year Certified</th>
<th>Certifying Organization</th>
<th>Reviewed on Site</th>
<th>Certification attached to this report</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>[ ] LEED</td>
<td>[ ] Silver</td>
<td>[ ] Gold</td>
<td>[ ] Platinum</td>
</tr>
<tr>
<td>[ ] HL-300 Adapts Green Building Operational Guidelines</td>
<td>[ ] Exterior</td>
<td>[ ] Interior</td>
<td>[ ] Solar</td>
<td>[ ] Gold</td>
</tr>
</tbody>
</table>

### Additions

Add any additions or changes made to the structure since it was certified:

### Comments

Are changes made to certification to verify rating is still applicable? [ ] Yes [ ] No

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**NOTE:** The Appraisal Institute publishes this form for use by appraisers where the appraiser deems use of the form appropriate. Depending on the assignment, the appraiser may need to adapt or modify this form to suit the needs of the assignment. The Appraisal Institute does not endorse or validate its use in any other context than that verified by the individual appraiser.
The SAVE Act

Sensible Accounting to Value Energy

The SAVE Act is proposed federal legislation, introduced by Senators Bennet (D-Co.) and Isakson (R-Ga.) that would instruct federal loan agencies to assess a borrower’s expected energy costs when financing a house. Better information about a homeowner’s monthly expenses will, at no cost to taxpayers or the current deficit:

- Enable better mortgage underwriting
- Reduce utility bills for American homeowners
- Provide affordable financing for home energy improvements
- Spark job creation in the housing industry

Background

The U.S. mortgage crisis has made clear that to protect taxpayers’ interests, mortgage underwriting and valuation must more accurately account for property values and borrowers’ capacity to service debt. Energy efficiency is an important part of this picture. The average homeowner spends over $2,000 each year on energy costs, more than on either real estate taxes or home insurance, both of which are regularly accounted for in mortgage underwriting. Yet, conventional underwriting ignores the value of energy savings. The SAVE Act would provide transparency to the homebuyer and lender of the expected energy costs of homeownership to improve the quality of mortgage lending.

Average U.S. Homeowner Costs 2008

<table>
<thead>
<tr>
<th>Energy</th>
<th>Property Tax</th>
<th>Homeowners Insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2,278</td>
<td>$1,897</td>
<td>$791</td>
</tr>
</tbody>
</table>

1. 46%
2. 37%
3. 16%
Actively Support Legislation

How Would It Work?

The SAVE Act instructs the Department of Housing and Urban Development (HUD) to issue updated underwriting and appraisal guidelines for any loan issued, insured, purchased, or securitized by FHA and other federal mortgage loan insurance agencies or their successors. Collectively these agencies currently guarantee more than 90% of all new loans. The legislation has two components:

Affordability Test

Instructs lenders to account for expected energy costs along with other recurring payments in the debt-to-income qualifying ratios—typically calculated as PITI (Principal + Interest + Taxes + Insurance) + car or students loans + credit card debt and other recurring expenses—which test the borrower’s ability to afford regular monthly mortgage payments. The maximum permitted DTI ratios would be adjusted upward to accommodate for the inclusion of expected energy costs.

Loan to Value Adjustment

Instructs lenders to add the net present value (NPV) of expected energy savings when calculating the loan-to-value ratio. If no qualified energy report is available, the valuation will not be adjusted. This will help ensure that the underwriting process consistently and accurately captures the added value of energy saving features, allowing homeowners to finance the cost of efficiency improvements as part of their mortgage.

How Are Energy Costs Calculated?

The SAVE Act establishes two methods for determining expected annual energy costs: (1) baseline calculation based on the average per square foot energy cost for properties of that building type in that region, derived from DOE’s Residential Energy Consumption Survey (RECS) database, or (2) an optional, qualified, independent energy report of the subject property.
“Beyond Building Science”

• Progressive Financing
  – S.A.V.E.  www.imp.org/SAVE-Act
  – P.A.C.E  http://pacenow.org/blog
  – Tax Credits  www.dsireusa.org
  – Utility Incentives  www.dsireusa.org
  – Energy System Leases

• Progressive Marketing

• Stay tuned – Change is rampant!
Summary

• Educated consumers with financial options are key
  – To selling energy efficient homes
  – For improving the efficiency of existing homes

• The HERS Index
  – Helps educate consumers
  – Provides a nationally accepted performance standard
  – Quantifies efficiency for bankers, appraisers and consumers
  – Serves as basis for IRS tax credits and other incentives
  – Can provide real estate MLS “Search Box” for green buyers
  – Is basis for sound financial decisions by many interested parties

• HERS Index Differentiates Our Company from Others – to sell more dollars to more people!

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