



Home Ratings Sweep the Nation—Almost

by Greg Thomas

As the ratings industry in the United States shifts from a subsidized market to an unsubsidized one, we look at four areas of opportunity for home energy raters. Will these opportunities be growing or collapsing in the 21st century?

Home energy ratings have had a turbulent history in the United States. The economic promise and business risks of a national system to score the energy use of housing have attracted serious attention and have sometimes turned into a battlefield. Many of the political issues affecting ratings have been addressed, but some major issues remain. Still, the work of a diverse group of energy efficiency proponents is producing results. Consumers are increasingly investing their dollars in energy efficiency, which is, after all, the desired result of the energy rating.

GMAC Mortgage reports that, in 1998, they processed more than \$700 million of energy-efficient mortgage products, or roughly the value of 7,000 houses, each financed by a \$100,000 mortgage. Assuming an estimated average of \$4,000 of efficiency improvements per house, that adds up to \$28 million of energy efficiency improvements facilitated by the energy-efficient mortgage process. Still, \$700 million is just 0.05% of the total estimated 1999 U.S. mortgage market, which is expected to reach \$1.4 trillion. While the ratings industry has the potential to lead to very large investments in energy efficiency, in some ways it has still barely attained adolescence.

The opportunities and issues currently confronting the energy ratings industry can perhaps best be understood by looking at four industry value propositions—that is, opportunities to use ratings to provide value to a customer. In an unsubsidized market, businesses base their services on the opportunities they perceive to sell their

services cost-effectively, to make money, and to grow. And the ratings industry is becoming an unsubsidized market: Utilities are cutting back on funding demand-side management programs that have supported raters, and federal support for state level HERS programs is coming to an end in seven states. The ratings industry must understand these value propositions if it is to make the transition successfully from dependence on subsidy to self-supporting systems.

The four value propositions are:

- adding value by scoring;
- providing preferential access to financing;

- helping builders to demonstrate compliance; and
- performance testing.

What's the Score?

Back in the early 1980s, the now-defunct Western Resources Institute in Seattle, Washington (founder of Energy Rated Homes of America), established a scoring system for energy use in housing. This scoring system was originally designed to help real estate appraisers value homes based on their relative energy efficiency. It was also intended to help consumers incorporate energy efficiency into their housing decisions. All else being equal, if house A scores better than house B, the logical consumer will tend to choose house A.

In the new construction market, the score has largely evolved into a label, at least from the consumer's perspective. The most prominent of these labels is provided by the federal Environmental Protection Agency (EPA) Energy Star Homes program, which requires homes to achieve a score of 86 out of 100 possible rating points, or 5 stars. These ratings are based on the draft *Home Energy Rating System Technical Guide*, and variations of that document, by the National Association of State Energy Officials. The Energy Star Homes program gets increased consumer label recognition by using the Energy Star label in a wide variety of efficiency programs, through a national campaign of public service announcements and other marketing partnerships. As of June 1999, there were 8,235 Energy Star homes, and about 14% of these received the label not through



Home energy rater Pat Haller, of the Vermont Investment Corporation, checks the efficiency of this furnace and water heater.

BARRY LAMPE/ENERGY RATED HOMES OF VERMONT

getting rated but rather through a builder option package (BOP).

Individual state energy offices are beginning to adopt the Energy Star label to enhance public recognition of their own energy programs. For example, New York State has signed an agreement with EPA to allow New York to use the label in its own market transformation initiatives. New York's programs are being designed around the Energy Star efficiency levels, and marketing efforts will focus on reinforcing the Energy Star message and label to consumers and the product sales and distribution networks. More information on the Energy Star Homes program is available at www.epa.gov/homes.

EPA has supported a study on the effects of energy efficiency on the purchase price of a home. This study, "Evidence of Rational Market Values for Home Energy Efficiency," shows that a home's value increases \$20 for every \$1 reduction in the average annual utility bill, and that on average, these annual savings will add \$8,400 to the market value of the home. The study, conducted for EPA by Rick Nevin and Gregory Watson of ICF Incorporated, was published in the October 1998 issue of *Appraisal Journal*. It is also available online at www.natresnet.org or www.epa.gov/homes.

A variety of energy-rating organizations have scored the more than 7,000 Energy Star homes that have been rated (see Table 1). Many of these organizations are state-based systems. Typically, they originated as not-for-profits funded by a state energy office. Some of these states—Arkansas, Alaska, California, Colorado, Mississippi, Virginia, and Vermont—received significant levels of federal funding spread out over five years, but this type of funding is drying up.

Utilities are also using a variety of new-construction-labeling programs to foster consumer loyalty and to meet other goals, such as competing against other fuels, managing peak load, fulfilling regulatory requirements, and maintaining a good public image. Most of these utility programs use prescriptive standards for compliance, though utilities are increasingly turning to the

Table 1. Energy Star Homes

Organization Name	State Code	Total Energy Star Homes Rated	Energy Star Homes Rated In Last 12 Months	Primary Funding Source
Energy Rated Homes of Alaska	AK	939	281	Federal
Alaska Housing Finance Corporation	AK	1,164	1,164	State
Energy Rated Homes of Arkansas	AR	24	15	Federal, State
Tucson Electric Power Company	AZ	63	63	Utility
Arizona State University at Tempe	AZ	564	499	Federal
CHEERS Incorporated	CA	0	0	Utility
Chicwood Energy Management	CA	4	1Y	Private
California—Energy Plus	CA	0	0	Private
Energy Rated Homes of Colorado	CO	16	14	State
Connecticut Light and Power	CT	76	76	Utility
Energy Services Group	DE	371	194	Utility
American Property Consultants Incorporated	FL	1	0	Private
Energy Technology Services	FL	1	1	Private
Florida HERO	FL	92	84	Private
Florida Solar Energy Center	FL	93	50	State
Energy Rated Homes of Iowa	IA	391	340	Private, State
Illinois	IL	0	0	State
Energy Rated Homes Midwest	IN	894	411	State
Kansas Building Science Institute	KS	1	1	Private
HOME-CHECKUP	KS	2	2	Private
BALANCE Home Energy	KS	11	10	Private
Energy Pro, LLC	KS	12	2	Private
Energy Rated Homes of Louisiana	LA	0	0	State
Western Massachusetts Electric Company	MA	8	6	Utility
Conservation Services Group	MA	233	199	Utility, Federal
Building Science Corporation	MA	250	242	Private, Federal
Southern Maryland Electric Cooperative	MD	962	962	Utility
Maryland	MD	0	0	State
Maine HERO	ME	0	0	Private
Michigan Home Energy Rating System	MI	32	22	Private
Sheltersource	MN	18	15	Private
Energy Rated Homes of Mississippi	MS	20	5	Federal
Montana Energy Raters	MT	7	7	Private
Air by Design	NC	1	1	Private
Essential Energy Services	NE	1	0	Private
MaGrann Associates	NH	482	481	Utility
Energy Savers	NM	1	1	Private
Energy Rated Homes of Nevada	NV	1	0	State
Southwest Gas Corporation	NV	1	1	Utility
Woods & Associates	NV	48	48	Private
North Fork Retrofit	NY	2	2	Private
Ohio Office of Energy Efficiency	OH	10	10	State
Guaranteed Watt Savers Systems	OK	4	4	Private
Oklahoma Gas and Electric	OK	61	25	Utility
Energy Rated Homes of Oregon	OR	3	2	
Comfort Home Corporation	PA	8	8	Utility
Tennessee Valley Authority	TN	0	0	Utility
Superior Energy Wise Systems	TX	1	0	Private
Energy Rated Homes of Utah	UT	406	250	Private, State
V-HERO	VA	20	5	Federal
N-HERO	VA	140	104	Private
Energy Rated Homes of Vermont	VT	144	121	Federal
EMF Home Inspection	WI	1	1	Private
Energy Keep	WI	2	2	Private
Global Energy Options Incorporated	WI	2	2	Private
Windsor Homes Incorporated	WI	5	2	Private
Hofmann Energy Consultants	WI	12	12	Private
Wisconsin Home Performance Ratings	WI	29	2	State

Sources: Blaine Collison, Environmental Protection Agency; Greg Thomas

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more flexible rating. Some programs mandate performance testing. A fairly comprehensive list of the nation's utility programs can be viewed on-line at www.natresnet.org/sites.

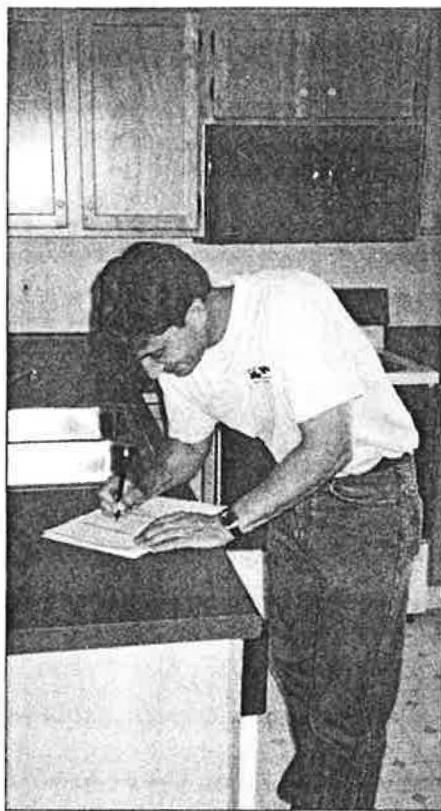
No comparable nationwide program currently exists for labeling existing housing. Some of those who promote Energy Star labels argue that applying the label to existing buildings, which may not meet the same high efficiency standard as a new Energy Star home, will be too confusing. Richard Faesy, development director of Energy Rated Homes of Vermont, says "As soon as a new home is sold, it becomes an existing home. It makes no sense to have two different existing homes similarly labeled but with different levels of efficiency." Others argue that because there is so much more existing housing, we need to use consumer recognition of the Energy Star label to encourage consumers to invest in efficiency for this housing. As Rick Gerardi, program director for the New York State Energy Research and Development Authority, points out, "the Energy Star label started out as a tool to save energy. If you don't apply it to existing housing, you are missing 95% of the problem." With luck, a compromise will be reached.

The Road to Easy Financing

The second value proposition is providing preferential access to financing. Almost a decade ago the Federal Housing Administration (FHA) and the U.S. Department of Veterans Affairs adopted mortgage programs that would allow borrowers to obtain long-term financing for energy improvements that were shown to be cost effective. The long-term nature of mortgage financing would turn the energy investment into a regular monthly source of positive cash flow for the home buyer. This program was available first as a pilot in five states; it became available nationally in October 1995.

The FHA program remains the best and most frequently used way to get purchasers of existing housing to invest in efficiency improvements. Virginia

Holman, a senior housing specialist with the federal Housing and Urban Development agency (HUD), notes that Energy-Efficient Mortgages (EEMs) rose from roughly 4,700 in fiscal 1997 to more than 16,500 in fiscal 1998. That rate of growth seems to have leveled off, with 8,100 EEMs completed in the first two quarters of fiscal 1999. The rise is due partly to an increase in the number of HUD 203K loans that incorporate an



To estimate household energy use, Haller takes account of household appliances, such as the stove and microwave in the kitchen.

EEM feature and partly to an increase in the number of mortgage refinancings that include EEMs, according to Holman. She sees facilitators and 203K consultants who are also raters as being the most effective in arranging EEMs. Holman reports that the bulk of the FHA EEMs are being done in California by facilitators such as Jim Curtis of EEMs Incorporated and Ray Hall of H&L Energy Savers (see "Contractor's Marketing Success," *HE* Jan/Feb '99, p. 43); in Virginia by the state-based rating program, Virginia Home Energy Rating Organization (V-HERO); and nationally by both the National Home

Energy Rating Organization (N-HERO) and members of Energy Rated Homes of America.

California has developed one of the most effective models for getting to buyers early and not burdening them with more work and decisions while they are purchasing their homes. Energy-efficient mortgage facilitators work with bankers and real estate professionals to get access to customers early in the process. The facilitator introduces the EEM to potential customers, arranges for the ratings, and provides proposals for work identified in the ratings. In central California, the number of EEMs as percentage of FHA loans has increased from .03% in 1993 to 3% in early 1999.

Other programs from secondary lenders such as Fannie Mae and Freddie Mac allow home buyers to borrow more than they would normally be qualified to borrow, based on their income and debt ratios, if they can show that their home is energy efficient—the so-called stretch mortgage. These programs, which have been expanded on a pilot basis, allow appraisers to adjust appraised values upward based on the cost of the energy improvements, qualifying home buyers to borrow more money. Other preferential state-based mortgage loan programs also exist.

Individual banks are having considerable success in creating loan programs that reward the home buyer for a good energy rating through the use of reduced closing costs and points. These savings typically more than offset the cost of the rating. Energy Rated Homes of the Midwest (formerly ERH of Indiana) has been particularly successful in working with banks; roughly 30% of ERH Midwest ratings come from referrals from loan officials working with a customer seeking an Energy Star Mortgage, which provides closing cost and sometimes rate reduction benefits.

The Builder as the Rating Customer

The third value proposition, helping builders to demonstrate compliance, has developed in areas where the

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energy code includes a performance pathway to compliance. In these areas, builders can work with raters to find the most cost-effective way to meet code, by using the software to compare the cost effectiveness of efficiency options. Rating tools also help builders demonstrate savings to customers and can help document energy code compliance.

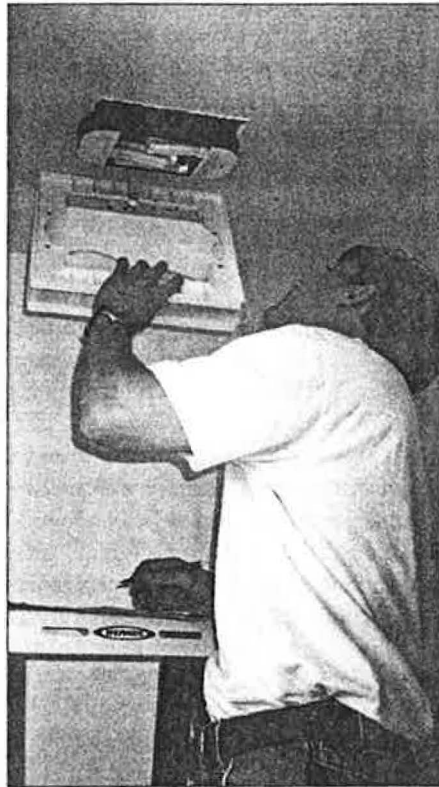
States are exploring this option in different ways. In Alaska, Florida, Indiana, Iowa, Massachusetts, Ohio, and Vermont, the state building code allows the use of a home energy rating as a compliance option. Some local code entities are providing incentives, such as a quicker plan review or reduced inspection fees, if the home is rated.

Buying Peace of Mind

The last value proposition is performance testing. This means identifying performance problems, or lack of problems, for both builders and homeowners, although rating systems do not directly score performance on health and safety or other nonenergy issues. Consumers and builders are displaying an increasing interest in home labeling programs that include, but go beyond, energy efficiency. Examples are the American Lung Association's Health House and a variety of green building programs that are being developed around the country. Some of these programs use energy ratings to score the contribution of a building's energy performance to its total "greenness." In Colorado, for example, the Home Builders Association of Metropolitan Denver's Built Green program has become a major source of business for the state's rating industry. (A comprehensive guide to setting up a builder-operated green building program is available at www.nahbrc.org.)

Performance warranties are another pathway to achieving customer peace of mind. A variety of private-sector warranty programs, such as those run by Greenstone, Certainteed, and Comfort Home, are entering the marketplace. These programs may warranty energy bills or even comfort. Some of them use the standard rating methodology to set the expected energy usage. Others use

proprietary software solutions. All of them use performance testing. Energy Rated Homes of Vermont even offers a warranty for existing buildings (see "Easy Mortgages with Energy Rated Homes of Vermont," *HE* July/Aug '99, p. 12). This is a very interesting and competitive arena. The accuracy of rating software energy estimates will be put to the private sector test in these programs.



The types of light fixture found in a house have an effect on annual energy use. Here, Haller checks a bathroom fixture.

Future Prospects

The market for rating services is still in a state of flux. In the near future, new opportunities may arise for expanding rater services, but possible threats to the existing value propositions may shrink some of the established markets.

The biggest new opportunity on the horizon is the development of bipartisan federal tax credit proposals to provide tax relief for consumers who invest in energy efficiency. The basic proposal is to allow a tax credit of up to \$2000 for 20% of the cost of the energy efficiency improvement (see "Energy Tax Credit

May Materialize," *HE* Mar/Apr '99, p. 7). If this legislation passes, the tax credit will create a tremendous amount of consumer interest in efficiency improvements. The question for the organizations that use ratings to promote efficiency is "Will that interest be channeled through an energy rating?"

The energy rating was developed as a validated means of forecasting savings. It would be the ideal tool to make sure that our tax money is being spent wisely on real, cost effective efficiency and not on bigger, north-facing windows. However, other players in the field—builders and insulation manufacturers particularly—would prefer to have a less expensive and more readily available way to obtain the tax credit. Bill Prindle of the Alliance to Save Energy says the alliance is committed to having ratings as the basis for certification in the performance path, but is also agreeable to a prescriptive alternative that would provide incremental credits for meeting specified component efficiency levels. With any luck, this compromise, which is largely acceptable to the 40-odd member organizations of the relatively new Coalition for Energy-Efficient Homes, will survive congressional maneuvers.

A possible obstacle to increasing the market for raters has been the development by the EPA of BOPs to qualify for the Energy Star label. These are customized prescriptive pathways used to achieve an Energy Star Homes label. They are intended to represent the worst-case set of parameters for meeting the threshold for obtaining the label. EPA developed these packages largely in response to requests from high-volume builders, utilities, and manufacturers who want to avoid the cost of rating each building. The buildings still require performance testing of the ducts and envelope, but a subcontractor can accomplish this testing. EPA is also looking to BOPs as a solution to the problem of trying to offer a national program despite the lack of rating organizations or adequate raters in certain areas.

Rating organizations are concerned that the builder customers whom they have cultivated will be attracted to this

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lower-cost, nonrating way of getting the Energy Star label. They point out that the builders may easily be spending more on the energy measures to meet the Energy Star performance criteria because of the worst case assumptions used in the development of the BOP prescriptive guidelines. But those costs are hidden in the materials bills for the whole house, and the rater's invoice stands alone.

Going National

A national infrastructure of ratings organizations—but not necessarily a national single system—would create a larger consumer presence for HERS services and would give the industry added weight in working with lenders and others to create financing and tax credits tied to ratings. However, a persistent problem is hindering efforts to take ratings to a national level. This problem is the old site-energy-versus-source-energy issue that pits electric utilities against gas utilities. Simply put, scoring buildings based on their source energy use tends to better account for the overall environmental impact of the energy use reduction. Scoring buildings based on their site energy use tends to evaluate a Btu of electric energy saved as equivalent to a Btu of gas energy saved. This issue was a cause for much discussion during the development of the standardized rating methodology by the HERS Council, and it still is not resolved. The effort to settle this dispute was led by the HERS Council, which prepared a comprehensive consensus document under funding from the U.S. Department of Energy (DOE) several years ago, but DOE did not adopt the document. The possibility of a tax credit has refueled this controversy, but a potential solution may be at hand (see "Gas vs. Electric: An Equal Playing Field at Hand?" p. 7).

Meanwhile, in spite of this sizzling controversy, several efforts are under way to develop a national infrastructure for energy ratings. V-HERO was one of the first state-based rating programs to embrace a private sector market for ratings. V-HERO recognized that the rat-

ing activity in a single state was unlikely to be sufficient to support a robust rating organization. To address this issue, V-HERO spun off N-HERO, which works with individual raters across the country; these raters provide N-HERO with building information for software analysis.

Other state-based rating organizations are expanding their territories beyond their original borders in an effort to achieve economic self-sufficiency. Energy Rated Homes of America (ERHA) is an affiliated group of state-based rating organizations; see their Web site at www.erha.com. ERHA-supported programs in Indiana, Vermont, Alaska, and Mississippi are all actively expanding into adjacent states or providing rating services to nearby states.

Many state-based programs are also active in the related Residential Energy Services Network (RESNET) project. RESNET acts as a broad-based quasi-membership group that facilitates communications among rating organizations, lenders, weatherization agencies, contractors, manufacturers, and others interested in the residential energy efficiency market. RESNET has put considerable effort into presenting the energy rating case to the mortgage industry. RESNET and ERHA are closely connected to the National Association of State Energy Officials (NASEO), a group representing the state energy offices.

Accreditation and Rater Certification

A prime motivator behind the move to nationalize rating systems is the understanding that consistent and accurate estimates of savings and energy use across the country are essential to the credibility of the rating market and to its long-term health. Efforts to ensure quality are being made at two levels: that of the rating program and that of the rater.

Currently, rating organizations can get accredited through one of two methods. The HERS Council developed standards and produced a set of national accreditation guidelines. To

date, two organizations—V-HERO and N-HERO—have been accredited under those guidelines. Drawing on the efforts of the HERS Council, NASEO and RESNET also produced an accreditation guideline that named an accrediting body and gave the states more control over the operation of rating organizations in their state. To date, HERS providers in 27 states have been accredited under those guidelines.

Some states have gone the legislative route and have established their own standard for accreditation. The most notable example is California, which drew in part upon its Title 24 energy code to produce a standard for rating organizations.

Efforts to certify raters are being driven by the understanding that ratings are only as good as the rater. RESNET is acting to bring together a national task force of rater-training organizations and related parties to help develop a standard for the training and testing of raters. (To learn more about RESNET's efforts, visit www.natresnet.org.)

A Rosier Future, or a Paler One?

With the support of the federal government, states, and utilities, rating organizations have gotten a running start at using energy ratings to stimulate cost-effective consumer investment in energy efficiency. Now that the development of the ratings infrastructure is almost complete, raters and rating organizations must turn their attention to achieving self-sufficiency. The threat remains that, for some of these value propositions, economic interests will seek to work around the rating community, putting a rating organization's primary source of income at risk. But the promise also exists that the value of ratings will increasingly become recognized, and that raters will be looking at a brighter future. ■

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