

# Financing an Energy-Efficient Home

The average homeowner spends close to \$1,300 a year on utility bills. But an energy-efficient home—with such features as proper insulation, high efficiency heating and cooling systems, and energy-efficient windows—can lower your utility bills by 10 to 50 percent.

It's easier than you may think to enjoy the savings and comfort of an energy-efficient home. Since an energy-efficient home is cost-effective, there are financing programs available from mortgages to home improvement loans, which allow more people the opportunity to live in such a home.

You can benefit from energy-efficient financing whether you're buying, selling, refinancing, or remodeling a home. If you're looking to buy an energy-efficient home, you can qualify for a better, more comfortable home because with lower utility costs, you can afford a slightly larger mortgage payment. You can also obtain financing to make energy-efficient improvements to an older home before moving in or to your existing home. And if you put your home on the market, you can use its energy efficiency as an attractive selling point.



Terry Schuyler, NREL/PIX07679

**A homeowner in Colorado refinanced his home (above) through an energy-efficient mortgage to pay for the solar electric back-up system installed on the roof.**



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*An energy rater will inspect the energy-related features of a home.*

## Home Energy Rating

Most energy-efficient financing programs will encourage you to have an energy rating for your new or existing home, which will tell you and the lender how energy-efficient it is. A rating typically involves an inspection by a professional energy rater who is certified under a nationally or state accredited home energy rating system (HERS). There are several options regarding HERS, so the type of HERS used will depend on where you live. Some states even have more than one HERS. Some of the organizations listed at the end of this fact sheet may be able to provide you with more information regarding HERS in your state.

For the most part, an energy rater will inspect the energy-related features of a home, such as insulation levels, window efficiency, heating and cooling systems, and air leakage. After the inspection, the energy rater will probably give you a report that includes the home's energy rating along with an estimation of annual energy use and costs. The report also may include recommended energy-efficient improvements, if needed, and their costs, as well as the potential annual savings and eventual payback of the improvements.

To help qualify for most energy-efficient financing, the report usually must show that the home is energy-efficient or that recommended improvements are cost-effective and will save you more money than you'd be borrowing to install them. While calculating whether a borrower qualifies for a mortgage, a lender can recognize these savings and add the cost of the improvements into the mortgage. Or, if the home is already energy-efficient, the lender can stretch the debt-to-income qualifying ratio, which is expressed as a percentage (the ratio is calculated by dividing a borrower's monthly payment obligation on long-term debts by the borrower's net effective income or gross monthly income).

The cost of a home energy rating and how it can be paid—by the borrower, the seller, the lender, the real estate agent, or financed as part of the mortgage—as well as the availability of certified energy raters, can vary from state to state and from one energy-efficient financing program to another.



A home energy rating inspection sometimes involves a duct blaster test, which measures air leakage in the ductwork.

Warren Gretz, NREL/PIX04869

## An Example of a HERS and Its Reports

### HERS Scale

Points	Stars	Energy Consumption
0-39	★	More than 3 x the reference home
40-59	★★	More than 2 x and up to 3 x the reference home
60-79	★★★	More than 1 x and up to 2 x the reference home
80-85	★★★★	Reference home level and up to 30% less than reference home
86-91	★★★★★	30% less and up to 60% less than reference home
92-100	★★★★★+	60% less and up to 100% less than reference home

Table 1. This scale, developed by the National Home Energy Rating Systems Council, is based on the U.S. Department of Energy's national voluntary guidelines for HERS uniformity. For rating purposes, a subject home is compared to a "reference home," which scores 80 points on a 100-point scale with a rating of four stars. Every 5% decrease in the annual energy costs between the subject home and the reference home increases the subject's home score by 1 point from 80 points. Meanwhile, every 5% increase reduces the score by 1 point from 80 points. Note: your state may use a different HERS and scale.

### HERS Reports

#### An Energy-Efficient Home

#### Estimated Annual Energy Use & Costs

Description		Energy Use*	Energy Cost
Space Heating	23.9%	21.90 Mbtu	\$110.33
Space Cooling	33.2%	30.41 Mbtu	\$588.61
Water Heating	16.6%	15.23 Mbtu	\$76.14
Other Energy Uses	26.3%	24.12 Mbtu	\$272.36
<b>Total</b>	<b>100%</b>	<b>91.66 Mbtu</b>	<b>\$1,047.44</b>

Source: National Home Energy & Resources Organization, Inc.  
\*Mbtu= 1,000,000 Btu

Table 2. Based on the HERS scale in Table 1, this brand new, energy-efficient, 3,585 square-foot home in Houston, Texas, received a score of 89 points and five stars. The home features double-glazed windows, a 40-gallon natural gas water heater, a natural gas central air furnace, and an electric central air conditioner. A programmable thermostat controls the furnace and air conditioner.

#### A Home in Need of Energy-Efficient Improvements Annual Energy Use & Costs without Improvements

Description		Energy Use*	Energy Cost
Space Heating	78.5%	223.44 Mbtu	\$1,141.43
Space Cooling	10.5%	29.79 Mbtu	\$645.77
Water Heating	6.2%	17.60 Mbtu	\$88.02
Other Energy Uses	4.9%	13.92 Mbtu	\$265.04
<b>Total</b>	<b>100%</b>	<b>284.79 Mbtu</b>	<b>\$2,140.26</b>

Source: National Home Energy & Resources Organization, Inc.  
\*Mbtu= 1,000,000 Btu

Table 3. Based on the HERS scale in Table 1, this 1,475 square-foot home in Tulsa, Oklahoma, received a score of only 21 points and one star. The home has single-paned windows, a 40-gallon natural gas water heater, natural gas central furnace, and an electric central air conditioner. A manual thermostat controls the furnace and the air conditioner. Equivalent carbon-dioxide emissions of 31.01 tons per year.

#### Estimated Annual Energy Use & Costs with Improvements

Description		Energy Use*	Energy Cost
Space Heating	58.7%	63.99 Mbtu	\$326.90
Space Cooling	12.4%	13.46 Mbtu	\$291.73
Water Heating	16.2%	17.60 Mbtu	\$88.02
Other Energy Uses	12.8%	13.92 Mbtu	\$265.04
<b>Total</b>	<b>100%</b>	<b>108.97 Mbtu</b>	<b>\$971.69</b>

Source: National Home Energy & Resources Organization, Inc.  
\*Mbtu= 1,000,000 Btu

Table 4. The homeowner will save more than 50% annually in energy costs if recommended energy-efficient improvements are made to the house in Table 3. These improvements include sealing heating and cooling ducts, caulking, weatherstripping, installing a more energy-efficient central cooling system (10 SEER), installing more insulation in the crawlspace/basement and in the ceiling, and insulating hot water pipes. Payback for the improvements is estimated at a little more than 4 years. Equivalent carbon-dioxide emissions of 10.88 tons per year.

## Energy-Efficient Financing Programs

You can apply for energy-efficient financing through a government-insured or conventional loan program. Some states even have programs for their residents, so it's a good idea to contact your state energy office to find out if your state does.

There are two types of energy-efficient mortgages (EEMs): one for a new home and one for an existing home. With an EEM, you can purchase or refinance a home that is already energy-efficient. Or you can purchase or refinance a home that will become energy-efficient after energy saving improvements are made. Most energy-efficient financing programs offer both types of EEMs, as well as home improvement loans for making energy efficiency upgrades to your existing home.

Here's an overview of some of the energy-efficient financing programs available. Each program is subject to change; therefore, you should contact a program directly for the most current, detailed information.

### Government-Insured U.S. Department of Housing and Urban Development

Under the U.S. Department of Housing and Urban Development (HUD), the Federal Housing Authority (FHA) insures mortgage and home improvement loans,

through its approved lenders, for borrowers who would not otherwise qualify for conventional loans on affordable terms, such as some first-time home buyers and some residents of disadvantaged neighborhoods.

### **FHA Energy-Efficient Mortgage**

FHA allows borrowers to finance the cost of adding energy-efficient improvements to new or existing homes as part of their FHA-insured purchase or refinancing mortgage.

- Energy-efficient improvement costs of \$4,000 or 5 percent of the property value (up to \$8,000), whichever is greater, can be financed.
- The FHA maximum mortgage limit for an area may be exceeded by the cost of the improvements.
- No additional down payment is required.
- No requalifying is necessary.
- No new appraisal is needed.
- Up to \$200 of the cost of a home energy rating may be included in the mortgage.

This EEM can be used in conjunction with several other FHA-insured mortgages, including the 203(k) rehabilitation mortgage insurance described below.

### **FHA Section 203(k) Rehabilitation Mortgage Insurance**

FHA Section 203(k) rehabilitation mortgage insurance provides a borrower with a single loan that covers both the purchase or refinancing and the cost of major home improvements, including those that save energy. The program allows borrowers to complete improvements after the loan closes. The funds are placed in an escrow account and released as improvements are made.

- Total cost of improvements must exceed \$5,000.
- The total property value must still fall within the FHA mortgage limit for the area. (The property value is determined by whichever is less: the value before the rehabilitation plus the cost of the rehabilitation or 110 percent of the appraised value after rehabilitation.)

*There are two types of energy-efficient mortgages: one for a new home and one for an existing home.*

### **How an EEM Can Save You Money**

**Borrower finances 100% of energy improvements (7.25%\*—30 year term)**

	Standard Mortgage	New EEM
Energy Improvement Costs		\$ 3,000
Appraised Value	\$100,000 (add cost of improvements)	\$103,000
Down Payment	\$ 10,000	\$ 10,000
Mortgage Amount	\$ 90,000	\$ 93,000
P&I	\$ 614	\$ 634
Energy Savings (monthly)	\$ —	\$ (50)
Total Monthly Payment	\$ 614	\$ 584

Source: Fannie Mae \*interest rates subject to change



Richmond Times Dispatch, NREL/PIX07641

This single mother (left) used an energy-efficient mortgage to purchase and upgrade her home in Richmond, Virginia.

*You can apply for energy-efficient financing through a government-insured or conventional loan program.*

## U.S. Department of Veterans Affairs

The U.S. Department of Veterans Affairs (VA) guarantees mortgage loans for veterans with active duty service and qualified reservists. Its EEM can be used to purchase or refinance a home along with the cost of making energy-efficient improvements. To cover the cost of the improvements, the loan amount can be increased:

- Up to \$3,000 based solely on documented costs
- Up to \$6,000 if the increase in the mortgage payment is offset by the expected reduction in utility costs.
- More than \$6,000 based on

a value determination by VA.

A VA refinancing loan may not exceed 90 percent of the home's appraised value plus the costs of the improvements.

### *Conventional*

Most of the national lenders who offer energy-efficient financing operate through one of the following programs.

### ENERGY STAR® Mortgage

The ENERGY STAR® Homes program—sponsored jointly by the U.S. Department of Energy and the U.S. Environmental Protection Agency—promotes voluntary partnerships with home builders to construct new homes that are 30 percent more efficient than the guidelines established by the Model Energy Code—a “model” national standard for residential energy efficiency.

The program also encourages lenders to provide EEMs for certified ENERGY STAR® homes. An ENERGY STAR® mortgage offers a minimum 2 percent stretch on a borrower's debt-to-income ratio, plus at least one additional incentive for borrowers. Incentives may include:

- A lower interest rate
- A discount on closing costs and/or origination fees

### **FHA Energy-Efficient Home Mortgage**

When purchasing an energy-efficient home, an FHA-approved lender can stretch the borrower's debt-to-income ratio by 2 percent.

### **FHA Mortgage Increase for Solar Thermal Systems**

The maximum loan limit under FHA's standard 203(b) or 203(k) property rehabilitation mortgage insurance can be exceeded by 20 percent if the home has or will have a passive or active solar heating system. The home must also have a 100 percent operational, conventional backup system.

### **FHA Title I Property Improvement Loan Insurance**

FHA also insures home improvement loans, including those that will make a home more energy-efficient, for homeowners with FHA-insured mortgages. It features:

- Loans up to \$25,000 for a single-family home
- Loans insured up to 20 years
- No required home energy rating reports.

*Some national lenders offer conventional energy-efficient financing through various programs.*



Whether you're buying or selling an energy-efficient home, it's best to use a realtor that is familiar with energy ratings and energy-efficient financing in your state.

- Up to a 4 percent extension of the debt-to-income ratio stretch
- Paying for the cost of the home energy rating.

#### **Fannie Mae**

Fannie Mae—a private, shareholder-owned corporation—operates under a congressional charter that directs it to channel efforts into increasing the availability and affordability of homeownership. It doesn't lend money directly to home buyers; it purchases mortgages from lenders, ensuring that funds are available.

#### **Energy-Efficient Mortgage**

Fannie Mae encourages lenders to offer its EEM by providing incentives and specific criteria for those that it's willing to purchase from lenders. Both existing and new homes fall under this EEM.

- Several approved home energy rating methods and programs, not just a HERS, are allowed to evaluate a home's energy efficiency.
- For existing homes, the cost of improvements is limited to 15 percent of its total cost. There is no limit imposed on the cost of improvements for new construction.

- A home buyer can finance 100 percent of the energy efficiency improvements without increasing the down payment.

#### **Residential Energy Efficiency Improvement Loan**

Fannie Mae is partnering with utility companies to provide loans to utility customers for the installation of energy-efficient home improvements. The loans feature:

- A below-market interest rate
- An unsecured financing option
- Up to \$15,000
- A term of up to 10 years
- A "whole-house" or bundled approach to efficiency improvements.

#### **Freddie Mac**

Freddie Mac is a stockholder-owned, congressionally chartered corporation that works to create a continuous flow of funds to mortgage lenders in support of homeownership and rental housing. It purchases mortgages from lenders and packages them into securities that are sold to investors, providing homeowners and renters with lower housing costs and better access to home financing.

*It's always a good idea to ask lenders, energy raters, and realtors for references.*

### **Energy-Efficient Mortgage**

Like Fannie Mae, Freddie Mac provides incentives and criteria, as well as flexible guidelines, for EEMs that it's willing to buy, which encourage lenders to offer them. However, the EEMs are limited to purchasing existing energy-efficient homes or those to be retrofitted or renovated for energy efficiency.

- Several home energy rating methods and/or documentation, not just a HERS report, are acceptable.
- Lenders can exceed the standard 2 percent debt-to-income stretch at their own discretion.
- It allows a broader range of energy-efficient improvements than most EEM programs.

### **E Seal**

E Seal, an Edison Electric Institute program, provides energy-efficient solutions for home buyers, residential energy customers, small business customers, and home builders.

### **Energy Efficiency Mortgage**

This EEM is available through utilities with E Seal certified programs. It can be used to finance the purchase of a new home with energy efficiency upgrades or to refinance an existing home while adding these improvements. It features:

- 100 percent financing of energy efficiency upgrades
- No additional down payment, mortgage insurance obligation, or requalification
- Maximum qualifying ratios that are 5 percent better than standard ratios and 3 percent better than regular EEMs
- Lower than prevailing market interest rates and closing costs.

### **Residential Financing Program**

For energy-efficient home improvement loans, E Seal's program participates with Fannie Mae's Residential Energy Efficiency Improvement Loan program (see page 6).

When it comes to energy-efficient financing—whether you want to purchase, refinance, or remodel a home—it's best to work with lenders and/or real estate agents who are familiar with home energy ratings and program requirements. If you'd like a home energy rating report, it's also best to work with a certified energy rater. In all instances, it's always a good idea to ask for references and check companies with your local better business bureau.

## **Resources**

The following are sources of additional information on energy-efficient financing.

### **The Energy Efficiency and Renewable Energy Clearinghouse (EREC)**

P.O. Box 3048  
Merrifield, VA 22116  
Phone: 1-800-DOE-EREC (1-800-363-3732)  
E-mail: [doe.erec@nciinc.com](mailto:doe.erec@nciinc.com)  
Web site: <http://www.eren.doe.gov/consumerinfo/>

EREC provides free general and technical information to the public on many topics and technologies pertaining to energy efficiency and renewable energy.

You can also contact your state and local government energy offices for region-specific information on energy-efficient financing.

## **Organizations**

### **E Seal**

Edison Electric Institute  
701 Pennsylvania Ave., NW  
Washington, DC 20004-2696  
Phone: (202) 508-5557  
Web site: [http://www.eei.org/esg/e\\_seal/](http://www.eei.org/esg/e_seal/)

### **ENERGY STAR® Homes**

Phone: 1-888-STAR-YES (1-888-782-7937)  
E-mail: [info@energystar.gov](mailto:info@energystar.gov)  
Web site: <http://yosemite.epa.gov/appd/eshomes/eshaware.nsf>

*(Continued on page 8)*

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**Fannie Mae**

3900 Wisconsin Avenue, NW  
Washington, DC 20016-2892  
Phone: 1-800-7FANNIE (1-800-732-6643)  
Web site: <http://www.fanniemae.com/>  
Consumer Web site: <http://www.homepath.com/>

**Federal Housing Authority (FHA)**

U.S. Department of Housing and Urban Development (HUD)  
451 7th Street SW  
Washington, DC 20410  
Web site: <http://www.hud.gov/>  
EEM program Web site:  
<http://www.hud.gov/progdesc/energy-r.html>  
FHA can be contacted through your local HUD office, which can be found in the phone book or on HUD's Web site.

**Freddie Mac**

8200 Jones Branch Drive  
McLean, VA 22102-3107  
Phone: 1-800-FREDDIE (1-800-373-3343)  
Web site: <http://www.freddiemac.com/>

**National Home Energy & Resources Organization (HERO)**

4005 Poplar Grove Road  
Midlothian VA 23112  
Phone: 1-800-373-2416  
Fax: (804) 560-9139  
E-mail: [n-hero@ix.netcom.com](mailto:n-hero@ix.netcom.com)  
Web site: <http://www.national-hero.com/>

Provides state-by-state listings of the energy raters it trains and certifies.

**Residential Energy Services Network (RESNET)**

P.O. Box 4561  
Oceanside, CA 92052-4561  
Phone: (760) 806-3448  
Fax: (760) 806-9449.  
E-mail: [resnet@earthlink.net](mailto:resnet@earthlink.net)  
Web site: <http://www.natresnet.org/>

A national network of mortgage companies, real estate brokerages, builders, appraisers, utilities, and other energy and housing professionals dedicated to improving the energy efficiency of the nation's housing. Its provides state-by-state directories of conventional EEM lenders and energy raters.

**U.S. Department of Veterans Affairs (VA)**

Phone: 1-800-848-4904  
VA Home Loan Guaranty Web site: <http://www.homeloans.va.gov/>

**Web Sites**

**Consumer and Lender Resources for Energy Efficiency Financing and Home Energy Ratings**

Alliance to Save Energy  
Web site: <http://www.ase.org/finance2.htm>

**Financing Solutions**

U.S. Department of Energy  
Office of Energy Efficiency and Renewable Energy  
Web site: <http://www.eren.doe.gov/financing/homeowners.html>

Provides useful links to energy efficiency and renewable energy financing resources.

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**Reading List**

The list is not exhaustive, nor does the mention of any publication constitute a recommendation or endorsement.

*Borrower's Guide to Financing Solar Energy Systems: A Federal Overview, Second Edition*, produced for the U.S. Department of Energy (DOE) by the National Renewable Energy Laboratory (NREL), 1999. Available in PDF on the DOE Million Solar Roofs Web site at <http://www.eren.doe.gov/millionroofs/pdfs/26242.pdf> or from NREL at (303) 275-4363.

*Energy-Efficient Mortgage Homeowner Guide*, Pacific Gas & Electric Company, 1996. Available on the Alliance to Save Energy Web site at <http://www.ase.org/nrgymort.txt>.

*Financing Home Energy Efficiency: An EEM Handbook*, R. Martin, Iowa Association of Municipal Utilities, 1997. Available on the Florida Solar Energy Center Web site at <http://www.fsec.ucf.edu/ratings/LndrHndBk/>.

*A Shopper's Guide, Energy-Efficient Mortgages, More House for Less Money*, DOE, 1999. Available from the DOE Office of Consumer Information through e-mail at [consumer.information@hq.doe.gov](mailto:consumer.information@hq.doe.gov) or at 1000 Independence Ave., SW, 4A-227, MA-9, Washington, DC 20585.