

Efficiency Kansas

**Comfort & savings,
all year long.**

**This homeowner is saving
money & conserving energy.**



EfficiencyKansas.com | 877.448.3185

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INTRODUCTION

With Efficiency Kansas, you can afford to be more comfortable.

What is Efficiency Kansas?

Efficiency Kansas is a practical, low-cost loan program that helps Kansans like you make cost-effective, energy-efficiency improvements to your home, rental unit, or small business.*

The program was developed by the Kansas Energy Office with \$37 million in federal funds, made available through the American Recovery and Reinvestment Act of 2009 (ARRA).



If you've been trying to save on your winter gas or electric bills by setting the thermostat lower than you like, you've been sacrificing comfort for savings. Efficiency Kansas provides a way to make your home more comfortable and reduce your energy costs.

Home improvement? In THIS economy?

In today's tough economic climate, it's no surprise that people are taking a long, hard look at how they spend their money. With a comprehensive home energy audit as its cornerstone, Efficiency Kansas is designed so that the cost of all improvements is covered by the estimated energy savings over the term of the loan, 15 years or less.

Who can participate in the program?

Efficiency Kansas has no income restrictions. Any Kansas homeowner or landlord with an existing home or small business can apply. The financing is available through our partner lenders and utilities. Tenants may use the program, too, if their utility is an Efficiency Kansas partner.

The maximum loan amount is \$20,000 for homes and \$30,000 for small businesses, though most projects will be smaller.

*Efficiency Kansas defines a small business as one using residential-sized heating and air conditioning equipment.

Local business partners

Efficiency Kansas is a true public/private partnership. The Kansas Energy Office teamed up with local lenders and utilities to make the loans available statewide and to keep the application process simple. The home energy audits and all of the energy-efficiency retrofits are done by energy auditors and contractors that you select.

Is THIS how you stayed warm in your house last winter?



INTRODUCTION

There are benefits for you, for Kansas, and even the planet.

Comfort, savings, and safety for you

Efficiency Kansas provides you with a customized plan for effective energy-efficiency upgrades that are designed to make your home more comfortable, ensure indoor air quality, and reduce your energy costs all year long.



The program also gives you access to low-cost financing through our partner lenders and utilities, so you won't have to break the bank to put your plan into action.

Long-term benefits for Kansas

We're having a positive impact on local economies, at a time when jobs are scarce. Before Efficiency Kansas, it was hard to find many energy auditors working statewide; now more than seventy energy auditors are qualified to work with Efficiency Kansas, making their expert home assessments available across Kansas.

Efficiency Kansas gives local contractors another financing option to offer their customers and provides skilled home remodelers an opportunity to expand their services to include energy-efficiency upgrades.

In addition to boosting economic activity today, the program is designed to benefit Kansas over the long term. As a revolving loan program, all loan payments go back into the fund to be loaned out again. In this way, Efficiency Kansas financing will continue to be available in the years to come, long after the original federal funds have been distributed.



Efficiency Kansas gives our communities another way to tackle the problem of deteriorating housing stock, too. Energy-efficiency upgrades bolster both residential and commercial property values.

Benefits for the planet, too

You don't have to be an environmentalist to appreciate how Efficiency Kansas helps you save money while making your home more comfortable.

Still, by making it easy and affordable for Kansans to streamline their energy use, we will reduce our overall energy consumption as well as emissions of carbon dioxide and regulated pollutants. That means cleaner air and water now and less demand for costly new power plants in the future. That's a solid benefit for all of us, including our children and our grandchildren.

You don't have to be an environmentalist to appreciate the benefits of saving energy.





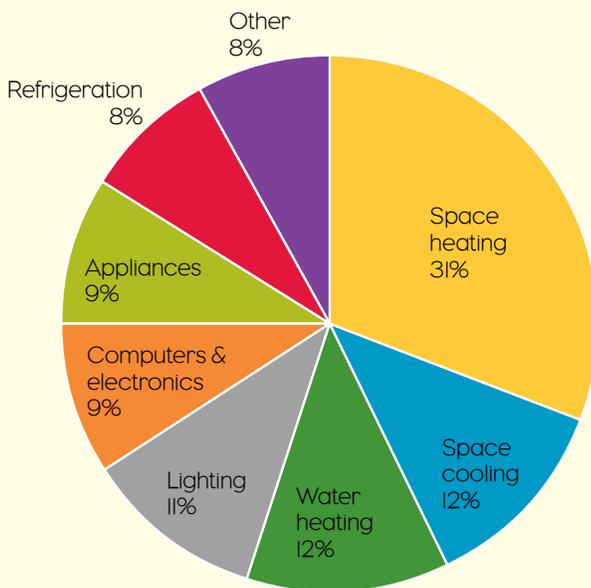
**Home improvement
that's affordable
AND sensible? I can't
wait to get started!**

Comfort and energy efficiency go hand-in-hand.

Introducing the Whole House Approach

If your home is like the average household in the Midwest, more than half of your annual energy expenditures go toward heating, air conditioning, and water heating. Depending on the age and condition of your home, you could be paying for energy that's literally going through the roof.

How we use energy at home



Source: U.S. Department of Energy, 2007, Buildings Energy Data Book, Table 4.2.1, 2005 energy cost data.

If your house always feels too cold during the winter or if you think your energy costs are too high, it seems logical to conclude that you need a bigger or more efficient furnace. But before you invest in expensive new heating equipment, try thinking about your house in a new way: as a *unified system*. This is the Whole House Approach to energy savings.

Don't blame it all on your old furnace

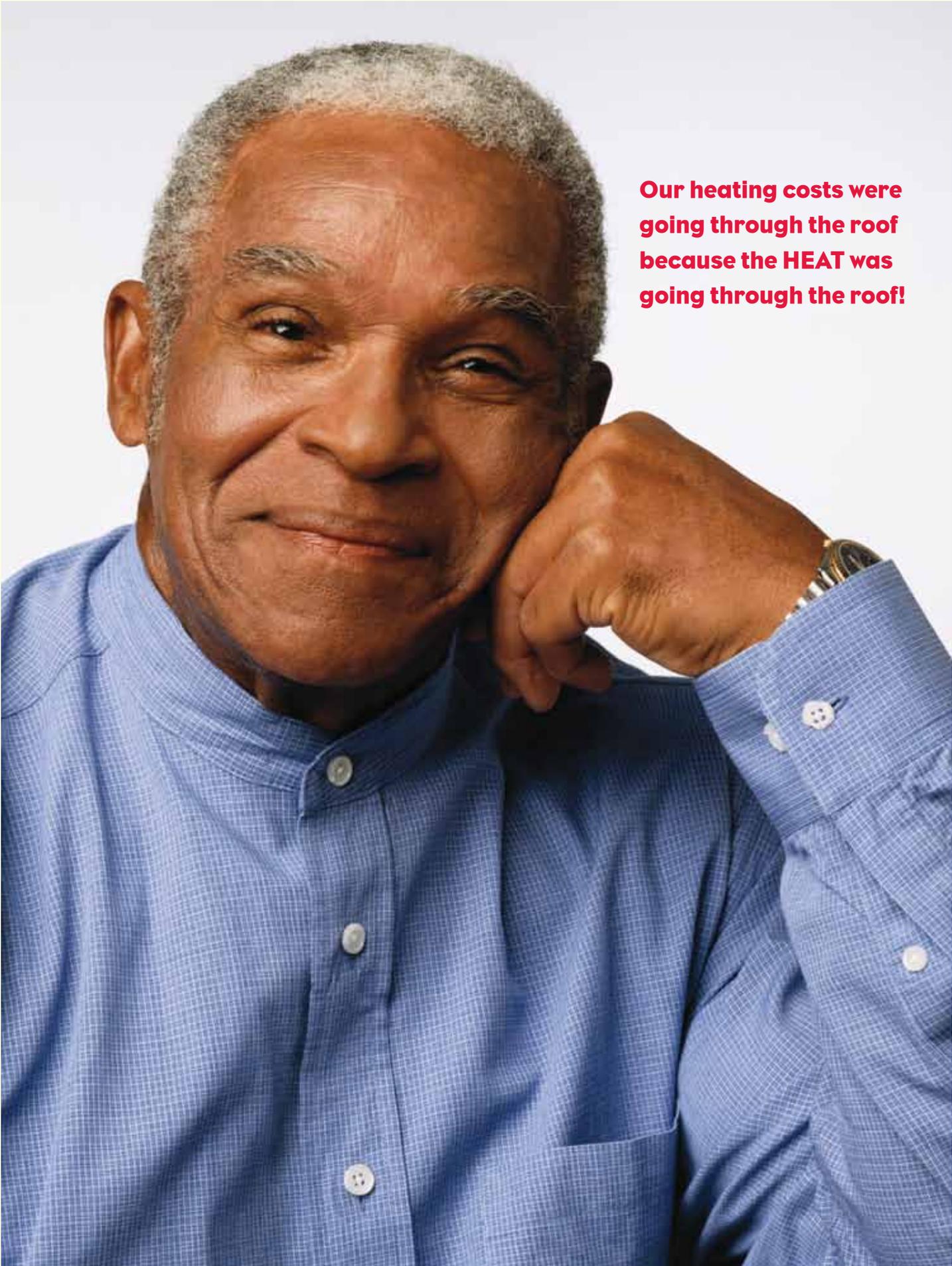
If you believe your furnace is responsible for heating your home, you're only partly right. The furnace's performance is affected by the condition of your home's ductwork, the walls surrounding the plumbing pipes, and the level of attic insulation, to name just a few. These elements interact to create the microclimate of your home. Viewing your house as a system, you can see how insufficient attic insulation would contribute to high heating bills, or how damaged ductwork would interfere with the steady flow of heat to the rooms of your house.

This is why Efficiency Kansas takes the Whole House Approach to energy efficiency and requires a comprehensive energy audit to identify and evaluate these interactions in your home.

This approach also takes into account how you live in your home. For example, a family of six will take more showers than the retired couple down the street, and those showers add more moisture to the indoor climate of their home. Without a properly vented bathroom, their air conditioner will have to work harder to remove the moisture from the air. We rarely think about such differences, yet small things can have a big impact on our overall comfort and energy usage.

Why trade comfort for savings?

Contrary to popular belief, personal comfort and energy efficiency are not at odds with each other. Efficiency Kansas relies on the findings of the energy audit to analyze the unique conditions of your home, helping you to make informed decisions that result in the highest level of comfort and the greatest energy reductions for each dollar you spend.



Our heating costs were going through the roof because the HEAT was going through the roof!

There's a hole in your house the size of a basketball.

Small leaks = big energy losses

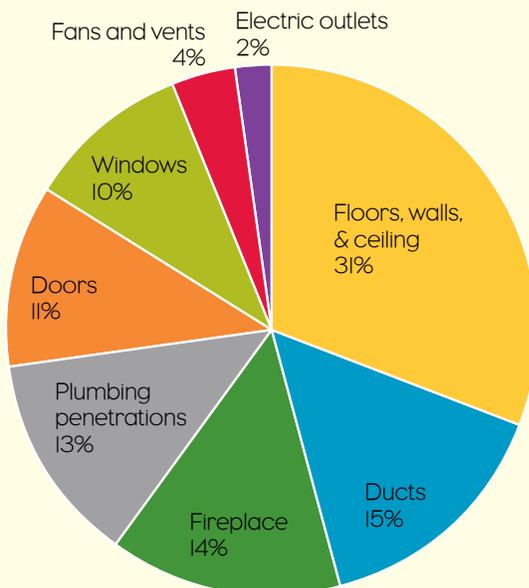
If you've ever caulked a window, you've sealed a common energy leak in your home's thermal boundary, or "envelope." Other common leaks are shown below and are not always easy to spot. In fact, if all of the small leaks in your house were combined into one, you'd have a hole in your house the size of a basketball, or even larger!

What is an energy audit?

The Efficiency Kansas energy audit is a thorough inspection by a building science professional, trained to analyze your home's energy use and energy loss, and to recommend upgrades that generate enough estimated energy savings to offset their cost over a specific time period.

Online energy calculators, do-it-yourself kits, and quick walk-through inspections can highlight some problems, but for a complete picture of your home's energy use and energy loss, it's worth hiring a professional.

Common air leaks in the home



Source: U.S. Department of Energy, 2009, Energy Savers Booklet, Tips on Saving Energy & Money at Home.

What exactly does the auditor do?

The Efficiency Kansas energy auditor measures and tests every aspect of your home's envelope, to identify the problems that are leaking energy (and dollars) from your home.

Before beginning the inspection, your energy auditor will ask about any comfort issues you may be experiencing in your home, and you'll be asked for your energy bills from the past 12 months. This information, and the data collected during the audit, will be used to determine the most cost-effective and energy-efficient upgrades that will fit your home and your lifestyle.

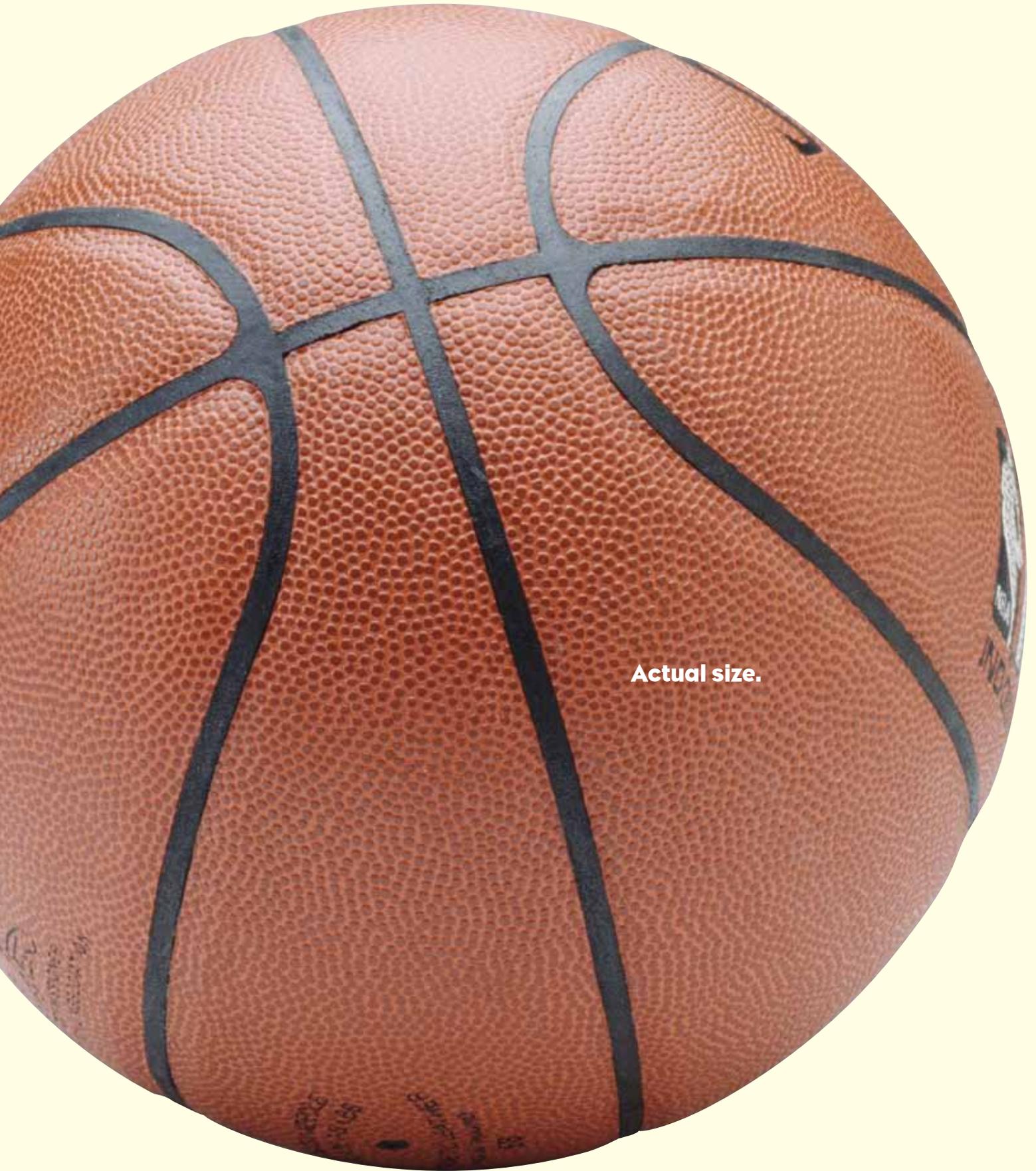
The auditor will examine the exterior of the house, taking measurements and making detailed notes about the condition of windows and doors, type of siding, vents or crawlspace accesses, and also looking for drainage and moisture issues.

Inside the house, the auditor will inspect the ventilation systems, checking the attic and basement for open wall and floor cavities, and noting any other features throughout the house that may need to be sealed, covered, or insulated. All combustion equipment will be tested. Then, with all the doors and windows closed, the auditor will perform a "blower door" test by placing a powerful fan in your doorway to draw air out of the house. This allows the auditor to find any gaps in your home's envelope that weren't detectable during the initial inspection.

Health and safety are important, too

The Efficiency Kansas audit isn't only about finding ways to save money and energy. The combustion tests on your heating and hot water systems can reveal potentially harmful problems. Evaluating indoor air quality is another important benefit of the inspection.





Actual size.

News you can use: your custom Energy Conservation Plan

After the audit

Once the comprehensive energy audit of your home has been completed, your Efficiency Kansas auditor will create an Energy Conservation Plan. The auditor will take all of the data collected and enter it into an energy analysis program to create a baseline for measuring the cost-effectiveness of all the suggested retrofits.

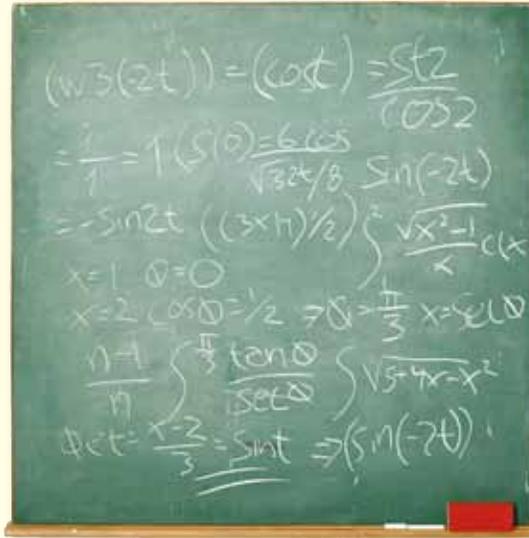
The auditor evaluates all the possible ways for you to save energy. For instance, if your home currently has R-8 insulation in the attic, the auditor can model what the energy savings would be if the insulation were upgraded to R-38. The auditor will analyze the other components of your home in the same fashion, using the Whole House Approach to determine the maximum amount of energy savings available to you.

Clear specifications for contractors

The Energy Conservation Plan will contain bid packages with specifications for each component of your project. This will make it easy for you to solicit bid requests from HVAC or insulation contractors or other specialists required to carry out the recommended projects. These specs will also be used by your auditor to conduct a thorough post-retrofit inspection of your home, to ensure that the work was completed correctly.

What makes the plan so cost-effective?

The Energy Conservation Plan is a *prioritized* list of recommended upgrades, beginning with the one that will produce the greatest savings. You might choose not to do everything recommended, but to be approved for Efficiency Kansas financing, your project must include



items in the order prescribed. This cost-effectiveness ranking is how we ensure maximum savings for the scope of your project, no matter how many of the improvements you decide to do.

In order to create the prioritized list, the auditor estimates the cost of having contractors implement each of the improvements, using current market conditions. By assigning these estimates to each of the suggested retrofits, the auditor can verify how quickly a particular improvement would pay for itself in energy savings.

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The results of an actual energy audit

The next page shows the actual findings from a home that received an Efficiency Kansas energy audit in 2009. Pay particular attention to the priority ordering of the recommended improvements. In this house, the first item on the list is air sealing and the final items on the list are an efficient new furnace and air conditioning unit, with a programmable thermostat.

Why not install the new furnace first?

Items at the top of the prioritized list impact the effectiveness of the items below and must be implemented to ensure the best results. Tightening the thermal envelope by sealing the air leaks and upgrading the insulation, allowed the new furnace to work most efficiently. Fixing the envelope might even mean a smaller furnace will be able to effectively heat the house. That's the power of the Whole House Approach.

Case study: Topeka, Kansas

With his average monthly energy costs totaling \$264, this homeowner scheduled an Efficiency Kansas energy audit to see whether he could realize some savings.

The Energy Conservation Plan included sealing and insulation improvements to tighten the home's thermal boundary, plus an upgrade of the heating and air conditioning equipment.

With the whole house operating more efficiently, his estimated energy expenses will be \$170, a savings of \$94 each month. Even with the monthly loan payment of \$57 added to the total, he's spending less than before.

House data

- Built in 1960
- 4-bedroom ranch house, attached 2-car garage
- 3,242 square feet (includes full basement)
- 4 occupants
- Existing 67% efficiency furnace is 29 years old
- Existing 8.1 SEER air conditioner is 31 years old

Average monthly utility bills

- Gas: \$152/month
- Electric: \$112/month

Before improvements: average monthly costs



After improvements: estimated average monthly costs



During an energy audit, all plumbing, wiring, and ductwork penetrations are carefully inspected for inadequate air sealing.

Financing

- Total cost of improvements: \$7,617
- Estimated annual savings: \$1,128
- Estimated monthly savings: \$94
- Estimated loan payment: \$57

Prioritized recommended improvements

1. Air-sealing

Seal all penetrations at rim joist, including wiring, plumbing, and gas pipe

Apply mastic and mesh at all ductwork connections and splices

Seal all gaps at return air passageways

Seal around all basement windows

Remove the inoperative whole house fan and seal opening permanently

Seal all gaps between the 1x12s at the garage walls

Seal all bathroom and kitchen plumbing penetrations

2. Insulation

Increase the attic insulation from R-8 to R-38

Install water heater blanket

Install R-19 insulation at all perimeter rim joists

Install R-19 draped insulation at crawlspace walls

3. Mechanical

Install new 92% efficiency furnace

Install new 14 SEER air conditioning unit

Install programmable thermostat

Ready to make your home more comfortable? Here's how:

1 Schedule your energy audit

The first step is to schedule an energy audit with an Efficiency Kansas qualified energy auditor. Go to EfficiencyKansas.com and use the “Find an Auditor” option to search for auditors working in your area. The auditor will make an appointment to conduct a thorough inspection and evaluation of your home, including the blower door test. An audit typically takes from two to four hours.

The analysis of the audit data will be done offsite, and the auditor will prepare your Energy Conservation Plan and submit it along with the audit report to the Kansas Energy Office for review. The auditor's computer modeling and savings calculations will be checked to make sure the recommended improvements meet Efficiency Kansas program guidelines.

2 Review your custom Energy Conservation Plan

Once your Energy Conservation Plan is approved by the Kansas Energy Office, your energy auditor will explain the improvements recommended for your home, including any health or safety issues uncovered in the audit.

The auditor will provide you with detailed project specifications to use when seeking contractor bids for the improvements listed in your Energy Conservation Plan. Remember, the priority order of the recommendations is the key to maximizing your energy and cost savings.

3 Solicit bids from contractors

Once you've decided on the scope of your project, starting with the first item and working down the prioritized list of recommended improvements, you can solicit contractor bids, using the specifications you received from your energy auditor.

You'll select your contractors and send their bid information and contractor forms to your energy auditor to be reviewed for any deviations from the original Energy Conservation Plan.

4 Arrange for financing

With contractor bids in hand, you're ready to arrange Efficiency Kansas financing for your project. You can access the financing in two ways: through our partner lenders or partner utilities.*

Partner lenders

Our partner lenders have branches throughout Kansas, and arranging for an Efficiency Kansas loan is similar to other types of loans. Lenders set their own creditworthiness standards, so you may want to contact more than one in your area. Interest rates are capped at 4%, and the maximum term is 15 years.

Partner utilities

If your utility provider is an Efficiency Kansas partner, you can work through them to arrange financing. You'll make payments through your utility bill. Administrative fees and other charges will be included in the financing, and the maximum loan term is 15 years.

No matter which track you choose, you'll get low-cost financing and the assurance that your dollars are going toward cost-effective upgrades for your home.

For a current list of partner lenders and partner utilities, go to EfficiencyKansas.com and use the “Find a Partner Lender/Utility” option. Check back often, as new partners may have been added since your last visit to our website.

**You may wish to contact a partner lender or utility to get pre-qualified for Efficiency Kansas financing, before scheduling an audit.*

5

The work begins!

Once your financing is approved, you can get in touch with your contractors and begin your Efficiency Kansas project. (Efficiency Kansas also allows you to do some of the work yourself. Ask your auditor for details.)

6

The post-retrofit inspection

When all the contractors have completed their work, your Efficiency Kansas energy auditor will return to conduct a post-retrofit inspection. This is to verify that

the improvements followed the Energy Conservation Plan and were made correctly.

The auditor will test the combustion equipment and perform the blower-door test once again to ensure that there are no air-quality or safety issues. Following the post-retrofit inspection, you and your auditor will sign the Efficiency Kansas Certificate of Completion.

Congratulations! With your Efficiency Kansas project completed, you'll start enjoying the comfort and savings right away, knowing that you've made a sound investment in your home.

We made our home more comfortable...

and lowered our energy bills, too!



Questions? Please visit us online at EfficiencyKansas.com or call us toll-free at **877.448.3185**.



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