HOME ASSESSMENTS

How, when, and in what form we use energy can have a dramatic effect on our lives, our bank accounts, and our environment. Using energy wisely makes sense and is a goal that we all share.

The average Minnesota family spends a significant amount of money on energy, but we can dramatically reduce these costs—up to 30%, according to the U.S. Department of Energy—by making some simple energy-saving improvements to our homes. In addition to saving money on utility bills, we can protect our homes from moisture damage year-round, reduce problems caused by ice dams on the roof during the winter, significantly cut summer cooling costs, extend the life of houses, and sometimes increase resale values. Furthermore, reductions in energy use also reduce environmental effects, including lowering contributions of carbon dioxide and other greenhouse gases.

Homes are no longer simple

When many of our homes were built, there was little concern about energy conservation and efficiency, therefore little attention was given to things like insulation and air leakage. Energy was cheap and construction materials and techniques were sufficient for the time.

Over the past several decades our homes (and the things within them) have become increasingly complex. Rising energy costs, along with environmental and other concerns, have increased awareness and driven research into the operations of buildings. The effects of the interactions of structural systems, weatherization components, mechanical equipment, and electrical devices in today’s homes are the subject of an entire field of study: building science.

Saving energy benefits everyone

Depending on your home, you may see substantial reductions in your energy use through conservation and efficiency improvements. Even if the annual savings for your home are modest, however, they go on, year after year. Many energy improvements will save enough money to pay for the initial investment in just a few years—some even sooner!

Also, the cumulative effects of thousands of Minnesota families reducing their energy use will pay big benefits to all of us. We use a great deal of energy in our state, and the majority of it is derived from fossil fuels—all of which must be imported into our state. Anything that we can do to reduce the emissions from burning coal and petroleum products will help to slow the rate of climate change and have a positive impact on air and water quality. Additionally, investments in energy-related home improvements help to grow jobs in Minnesota—from contractors and installers to manufacturers and retailers.

What should be done first?

Many people assume that there is little they can do to significantly reduce their energy use and increase the efficiency of their homes. In reality, there are many things that typical residents can do themselves and many other things they can hire others to do.

Before you start on any large project, you should know what options you have and what the benefits may be. Today’s homes and their systems are much different than what was common 20, 30, or 50 years ago. The interactions between the various components of a house are more complicated, and the effects of systems not performing properly or being out of balance can be costly and sometimes dangerous. The Division of Energy Resources in the Minnesota Department of Commerce strongly recommends having a home energy assessment (sometimes called a home energy audit).
energy audit) before embarking on your energy improvements or remodeling. This assessment of how your house is functioning can help you decide what needs fixing, what needs upgrading, and what needs replacement. Many people have a follow-up inspection after work has been done to verify the estimated energy savings.

**Energy assessment: how your house works**

A home energy assessor will evaluate the operation of your home by inspecting and measuring the performance of the building. At minimum several things should be included:

- A review of energy bills to identify basic usage and identify opportunities for savings.
- A blower door test to determine air leakage rates.
- Infrared camera scans of walls, attic, and foundation to assess insulation levels and locate possible air leak sources.
- Efficiency and safety testing for combustion appliances (like furnaces, boilers, gas fireplaces, and water heaters) to ensure they are operating properly and not contributing to indoor air concerns.
- A visual inspection for attic, wall, crawlspace, foundation, basement, window, door, and roof problems.

Although many inspectors include some of these tests as part of a general home inspection, it is important to have all of the above tests completed by a trained and qualified energy assessor in order to determine the best approach to improving the energy performance of a home.

**When should you get an energy assessment?**

Most homes—even recently built ones—can benefit from an analysis of the operation and interactions of the various systems and equipment. There are times when having a professional diagnosis can solve complicated problems while saving time, energy, and money. Consider an energy assessment before:

- **Replacing equipment** such as a furnace, boiler, water heater, ventilator, or air conditioner. Finding and addressing air leakage, insulation, and other issues can help to correctly size new appliances and ensure they will work as efficiently as possible.
- **Replacing windows, doors, or siding.** Properly installed, these improvements can make your house much tighter, which can change the fresh air requirements for some combustion appliances or for the occupants.
- **Investing in major remodeling or additions.** Knowing the current operation of the home can help determine choices about designs, methods, or equipment options. In addition, pre- and post-construction testing can be used to verify energy performance improvements.
- **Problem-solving systemic or complex concerns,** such as excess moisture (including condensation, mold, mildew, or leakage), uneven heating or cooling, drafts, ice dams, or high energy bills.

**Buying or selling a home.**

Many people already include a requirement for a home inspection as part of a purchase agreement. Although this may identify structural issues, mechanical system problems, code violations, and other health and safety issues, the typical home inspection may not provide a complete look at the energy usage for a home. An energy assessment will highlight energy-saving improvements that can reduce utility costs and improve the health and comfort of future occupants.

**How much does an energy assessment cost?**

Home energy assessments that meet the suggested minimum requirements cost from $100 to several hundred dollars, depending on the level of detail and the types of tests provided.

Contact your gas or electric utility to arrange for an energy assessment that includes the full range of testing. More comprehensive assessments (for new construction or major remodeling) are available from private contractors specializing in comprehensive home performance reviews.

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How hard is it to make energy improvements?

If you have some basic tools and are comfortable with making repairs and improvements to your house, you can handle some of the projects suggested in this booklet and make the most of your energy-improvement budget. Be sure to check with your local municipality for permits and inspections.

However, don’t hesitate to call a professional for help if you’d rather not do the work yourself; even with paying to have someone else do the work, the dollars gained through energy savings in upcoming years will be worth the expense. Be sure to check out the “Resources” section at the end of this guide to get tips on hiring contractors.

How do I pay for it?

Although many energy-efficiency projects (caulking windows, weather-stripping exterior doors, or insulating water pipes) will cost just a few dollars, others (insulating exterior walls, air-sealing an attic, replacing a furnace, or adding storm windows) may cost considerably more.

Many utility companies offer incentives on larger projects (furnace replacement, attic insulation, new refrigerator) by giving you a discount on energy bills or sending you a rebate check when the work is completed. Other utilities offer free or discounted services or products (like low-flow shower heads, CFL bulbs, or energy assessments). Contact your local energy utility or visit the Database of State Incentives for Renewables & Efficiency (dsireusa.org) for details.

Community nonprofits and neighborhood organizations offer a variety of services and programs, including energy assessments, energy education, free or discounted products, and financing. Contact your city or municipality to learn what is available in your area.

Your bank may be able to help, too. Ask about a low-interest loan designed specifically to cover the cost of your energy-saving projects, or consider a home-improvement loan to fund them. Some banks offer energy-efficiency mortgages, which take into account the reduced energy bills when improvements are made to homes. The Minnesota Housing Finance Agency (mnhousing.gov) also offers a Fix Up Fund Loan for home improvements—even if you do the work yourself.

Some Minnesota residents may be eligible for aid from the state Weatherization Assistance Program or Energy Assistance Program. Applications can be made through local service providers; go to mn.gov/commerce for eligibility requirements, application forms, and contact information.

Finally, for the latest information on tax incentives, rebates, or grant programs from federal, state, or local governments, check out their websites. It is important to find out the specifics (qualifying products, installation requirements, site analysis, inspections, etc.) before purchasing products or services. Some programs require approved applications or specific products or procedures in order to qualify for the funding. Not meeting the requirements may jeopardize your incentive, rebate, or grant. A listing of many current programs and links is also available at our website: mn.gov/commerce.

ENERGY STAR®

ENERGY STAR® is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy that helps save money and protect the environment through energy-efficient products and practices. Many appliances, lighting products, and electronics can earn the ENERGY STAR® label by meeting these energy-efficiency requirements:

• Qualified products must deliver the features and performance demanded by consumers, in addition to increased energy efficiency.
• If the qualified product costs more than a conventional, less-efficient counterpart, purchasers will recover their investment in increased energy efficiency through utility bill savings, within a reasonable period of time.
• Product energy consumption and performance can be measured and verified with testing.

When shopping for lighting, electronics, and appliances (including heating, cooling, and water heating), always look for the ENERGY STAR® label. To find qualifying products or to compare performance of several products that are ENERGY STAR® labeled, go to energystar.gov.