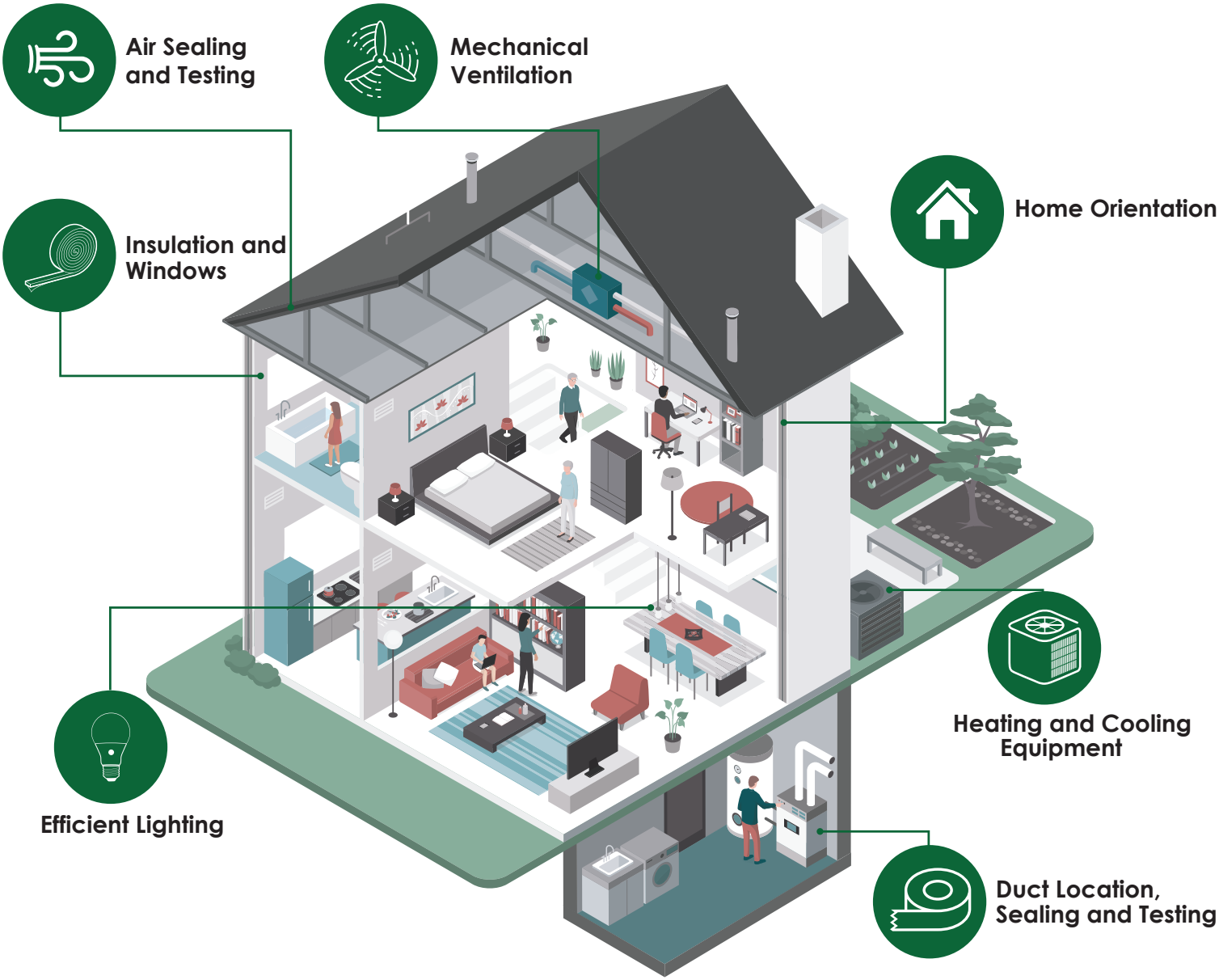
The House as a System: It's all Connected

Let the code be your guide to energy savings

Every home is made up of several components that work together to provide a safe, comfortable and healthy indoor environment. Unfortunately, it only takes one faulty component to affect the performance of the entire system. The good news is that energy codes provide guidance on which efficiency measures need to be installed and how those measures should perform to create a more livable and more efficient home.

Upgrades to Save Energy in Your Home



Graphic: Ameren Missouri

Energy Codes

Energy codes establish the minimum energy efficiency requirements for the building envelope (the building components that separate outdoors from indoors, like walls and windows) and energy consuming equipment like furnaces, air conditioners, water heaters, and lighting. In Missouri, local jurisdictions are responsible for adopting and enforcing their own energy codes. The residential energy code covers residential buildings that are less than three stories. All non-residential buildings and multifamily buildings over three stories are covered by the commercial energy code. Both codes apply to new construction or major renovations of existing buildings. The energy code measures listed below work together to help make your home more efficient and comfortable.

Air Sealing and Testing

Air leakage of the home's shell allows uncontrolled air and moisture to move through the walls, potentially causing degradation of the building structure and increased energy waste. The energy code provides guidance on key detailing needed to seal and insulate a home for improved performance. Attention to detail, combined with a blower door test to verify air sealing, guarantees a home is well-sealed, keeping conditioned air in and unwanted air and moisture out.

Insulation and Windows

Proper insulation on all sides of the home and energy-efficient windows provide a strong building envelope, maintain indoor temperatures and reduce energy waste. Together with proper air sealing, following energy code recommendations on insulation and windows helps make homes more comfortable and energy efficient, and is important for ensuring HVAC equipment and duct work is sized correctly for the home.

Duct Location, Sealing and Testing

The ductwork connected to an HVAC system ensures conditioned air is distributed appropriately. Adhering to energy code guidelines, such as keeping the ductwork inside the building envelope, sealing all seams and conducting a Duct Pressurization™ Test to verify the system is well-sealed, will reduce energy waste and improve HVAC performance. The design of the duct location, sizing and layout relies on both the building envelope and HVAC equipment.

Heating and Cooling Equipment

A well-sealed and well-insulated home reduces the size and cost of heating and cooling equipment needed in a home. To ensure the system runs long enough to regulate indoor moisture, it is a code requirement that an equipment sizing analysis be conducted and submitted to the code official. Once the right-sized unit is identified, utilize utility rebates to install a high-efficiency heating and cooling system. Right-sized equipment, together with properly sealed ductwork, improves comfort and better regulates the indoor environment.

Mechanical Ventilation

A critical component of all homes, an efficient mechanical ventilation system distributes fresh outside air into the home. Paired with proper air sealing, appropriate mechanical ventilation controls air infiltration, improves indoor air quality and increases building durability—by mitigating condensation and dispersing accumulated indoor pollutants.

Efficient Lighting

Installing efficient lighting is one of the most cost-effective ways to reduce energy waste and lessen the cooling load. With the introduction and expansion of LEDs in the marketplace, homes can now be well-lit for a fraction of the energy use of incandescent bulbs. The code requires at least 90% of installed lighting fixtures include efficient bulbs, like LEDs.

Home Orientation

Although not an energy code requirement, you can impact the efficiency of a home through its orientation by taking advantage of the sun through passive design. If the lot allows, orienting the longest dimension of the home on an east-west axis and installing the largest amount of glazing on the south-facing side, provides warmth in the winter and year-round natural light. Installing overhangs will also reduce heat gain in summer.

Southface VERDATEK SOLUTIONS MEEA MIDWEST ENERGY EFFICIENCY ALLIANCE