

State Energy Program Case Studies

Building Confidence, A Story of Consensus in Kansas

One Midwestern state uses its own initiative, as well as support from the federal government, to help conserve energy and make new homes more efficient.

It was January 2003, and an update of the International Energy Conservation Code (IECC) was being prepared for publication. The IECC is considered the bible of building energy conservation. It is a thick volume packed with technical specs and standards on everything from insulation R-values to fireplace flues, and is published by the International Code Council in Falls Church, Virginia.

Staff members at the council received a call from someone in Kansas who was interested in obtaining an advance copy. They asked why. “We were drafting an energy plan for the state,” recalls Jim Ploger, who directs the energy office within the state’s public utility commission (called the Kansas Corporation Commission, or KCC). One of his colleagues had made the phone call. The latest IECC standards would be a welcome addition to the state energy plan—except that they wouldn’t be in print for several weeks. Rather than wait, Kansas officials obtained pre-press pages from the publisher.

Within a few months, Kansas became the first state to formally adopt the new set of building codes. First, they were cited in the Kansas Energy Plan under “legislative action items.” The plan recommended that the Kansas State Legislature pass House Bill 2131, in which the new code (called IECC 2003) would replace an older version. The bill passed by wide margins in both houses of the legislature, and became law on July 1, 2003. The extra effort in Kansas last year exemplified what has been nearly a decade of steady progress toward improved energy conservation in homes and commercial buildings.

The energy plan document also mentioned an unsettling trend that may have helped spur lawmakers to action. Fossil-based energy resources have always been abundant in Kansas, and its economy has long relied on energy development. But the 1990s brought declining production of oil and natural gas concurrent with increased imports of coal for electricity. Around 1997, Kansas reversed from being a net exporter of energy to being (like most states) a net importer. Mitigated only slightly by the rising development of wind energy, the import-export gap has widened.

But in roughly the same time period—the mid-1990s—the state energy office emerged as a positive force. As its mission began to crystallize, the office sought ways to encourage conservation around the state. In 1998, it applied to the U.S. Department of Energy’s (DOE’s) State Energy Program (SEP) for Special Projects funding of \$259,000 and has secured Special Projects funding in every year since then. More than \$1 million has come from DOE in this way, leveraging cash and in-kind contributions from the state and other sources. Much of the funding has paid for various types of training and education. Filling the seats have been builders, inspectors, lenders, real estate agents, public officials, and private individuals.



New home construction in Kansas is subject to the latest energy conservation standards from the International Code Council.

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U.S. Department of Energy
Energy Efficiency
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A blower door subjects the home to a small negative pressure, and measures the seepage around openings in the building envelope.

Training and education may be the single biggest factor affecting public attitudes about energy in Kansas, says Ploger. Free classes on home weatherization, for example, were offered to the public beginning in 2001. More recently, builders, real estate agents, and code officials were trained to implement IECC 2003. “Conceptually, everyone is interested in saving energy,” says Ploger. “Classes give people some practical ways of doing that.”

Home Energy Rating Systems

The building codes legislation adopted in Kansas last year has two parts: one applies to commercial and industrial buildings, and one affects residential construction. On the commercial side, the law

says simply that IECC 2003 is now “the applicable thermal efficiency standard for new commercial and industrial structures in the state.”

More extensive changes affect residential building. In the past, the builder or seller of any new home had to complete a Kansas Energy Efficiency Disclosure Form. The form informed the buyer either 1) of the energy performance ratings of all components such as doors, walls, water heaters, and air conditioners; or 2) that the home complied with the 1993 Model Energy Code, which is a predecessor to the IECC.

The new law adds a third means of code compliance, the industry-standard Home Energy Rating System (HERS). Kansas was the 16th state to adopt a HERS, in which various tests are performed. In one procedure, for example, a blower device subjects the home to a small negative pressure. It measures the amount of air that seeps in around doors, windows, and openings in the building envelope. Numerical test scores are tallied, for a total of 1 to 100. Code compliance in Kansas requires a minimum score of 80.

A HERS allows trade-offs between the use of various energy-efficient technologies, which can improve cost efficiency as well. Most well-constructed new homes pass the test easily, says architect Joe King, a former head of the state energy office within the KCC, and an active member of the Kansas Building Energy Code Team. Various members of that team have been contracted to help spread the word about IECC 2003 in Kansas, compensated largely through the state’s current grant from DOE’s State Energy Program.

Another part of this year’s SEP-funded work is a case study that assesses the recent implementation of building codes in the state’s fastest growing area, Johnson County, which includes the city of Overland Park. The study aims to clarify which aspects of the building code can best be adopted by local governments.

“We found people to be very reasonable and willing to comply, up to a point,” said King. “But certain aspects of the code probably weren’t realistic.” If Johnson County builders can’t meet certain requirements, similar difficulties can be expected in other areas, which generally aren’t as well funded.

State versus Local Control

It is not the role of state government—in Kansas or in most states—to directly mandate building energy conservation standards. That’s done most often at the local level, by counties and municipalities. By embracing IECC 2003, Kansas state law merely encourages local governments to adopt the standards. Cities and counties may disregard that recommendation, adopt the standard partially, or draft tougher ones of their own.

One effect the state recommendation may be to make builders of faulty projects more susceptible to liability claims. Particularly in commercial and industrial construction, builders who follow IECC specifications may have an added degree of protection.

A DOE study says building codes offer the single best opportunity for local governments to bring about energy conservation. Other approaches include energy audits, tax credits, rebates and product promotions, and more efficient traffic signals. None of the others yield results even close to tougher building codes. Ploger agrees. “They are an extremely important part of saving energy,” he says.

(Note: Among all similar SEP activity areas—such as energy audits, tax credits, rebates, and product promotions—a study by Oak Ridge National Laboratory (ORNL) found “building codes and standards” to result in the greatest total energy and cost savings per dollar invested. The State Energy Program published a feature article on that ORNL study last year in its newsletter, *Conservation Update*. See chart, above.)

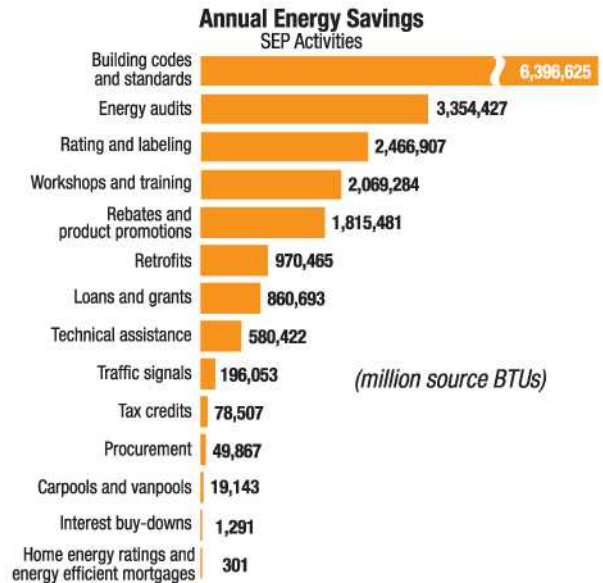
House Bill 2131 was drafted with input from an influential group of government and industry representatives appointed by the state’s governor in 2002. The State

Energy Resources Coordinating Council (SERCC) was formed with several specific purposes, one of which was to create a state energy plan.

The home-building and real estate industries traditionally have not been strong proponents of energy conservation standards, fearing that tougher codes would increase the cost of building and buying homes.

But their input was solicited by the SERCC. Those industries are “much more onboard with the cause of energy conservation,” says Ploger. “We’ve accomplished a methodical building of confidence.” Additional support has come from labor unions, the AARP, and the North American Insulation Manufacturers Association. The broad industry-based support for House Bill 2131 contributed greatly to its easy passage in the Kansas State Legislature.

Energy efficiency has emerged as a selling point both to buyers of new and previously owned homes, says Ploger. “In the past, people said energy conservation standards would put the cost of homes out of reach. Over the years, they realized that energy standards weren’t this big monster that would cripple the home industry. We know now that if buyers are informed and they say they want energy-efficient homes, those homes will be built.”

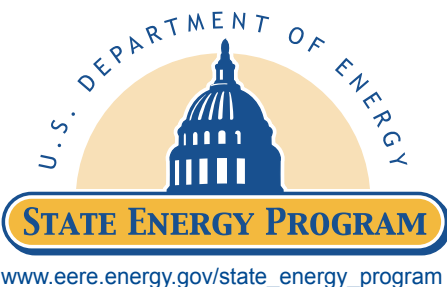


A DOE study found building codes and standards, among all SEP activities, to result in the greatest energy savings per dollar.

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A Strong Energy Portfolio for a Strong America

Energy efficiency and clean, renewable energy will mean a stronger economy, cleaner environment, and greater energy independence for America. Working with a wide array of state, community, industry, and university partners, the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy invests in a diverse portfolio of energy technologies.



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Tips for Home Buyers

Kansas State University has long been an important partner to Kansas and its energy office. Through its engineering extension program, the university has provided technical assistance in energy development and conservation since 1980.

A successful product of that relationship is "Tips for Purchasing an Energy-Efficient Home" The six-page brochure was first published by KSU in 1997. Written specifically for homebuyers, it provides recommendations for insulating walls, windows, floors, and foundations. It explains the various efficiency ratings that pertain to heating and cooling equipment. Included is a copy of the Energy Efficiency Disclosure Form, which represents one way to comply with home selling requirements in Kansas.

The "Tips" brochure has been revised four times; the latest version reflects the adoption of IECC standards in Kansas state law. More than 60,000 copies have been distributed. The brochure can be ordered by anyone (not just Kansas residents) by calling (888) 578-8898, or by visiting www.engext.ksu.edu.

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