What's New in Codes and Standards

Building Standards and Guidelines

DOE works with industry to develop energy efficiency standards for buildings

Technical feasibility and cost-effectiveness are key to designing and constructing buildings that are more comfortable than today's buildings yet require less than one-third as much energy. However, several market barriers prevent architects and builders from doing so. Those who design and construct buildings—often not the same as those who own and operate the buildings—tend to focus on first cost rather than operating costs. Building operating costs are often hidden and passed on to others. Information on the feasibility, cost, and benefits of improving building energy efficiency is often not available.

Today, few home buyers have an idea of the energy value built into the various homes that are offered for sale. Most homes have no equivalent to the energy cost we regularly find on appliances or the miles-per-gallon rating found on automobiles when we shop. Yet for most of us, a home is the single most expensive investment we make in our lifetime. Builders have little incentive to incorporate energy efficiency

measures in a home if its value cannot be recognized at the time of sale. Without a recognized system of value, appraisers also have little inclination to reflect a value in their reports, and lenders are reluctant to make loans or extend mortgages on poorly defined values.

Building energy standards and home energy rating guidelines can assist in overcoming such barriers. The U.S. Department of Energy (DOE), through its Office of Building Technologies, works with the buildings industry, state and local governments, and other Federal agencies to

- Assist in upgrading voluntary building energy codes
- Assist states in updating their building energy codes
- Promulgate energy standards for Federal buildings and assist Federal agencies with energy-efficient residential loan programs
- Develop, test, and deploy energy-efficient financing (mortgages and loans).

DOE's program strategy is to promote, assist, and act as a catalyst in developing and implementing building energy efficiency codes, standards, and guidelines that are technically feasible, economically justified, and environmentally beneficial. By working in the market to eliminate the most inefficient technologies and building practices, this program complements DOE efforts to develop and introduce advanced, highly efficient technologies.

Upgrading Voluntary Codes

DOE has collaborated over the past two decades with the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE), national building code organizations, and others in developing, adopting, and implementing model energy codes. These codes are based on engineering

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Workshops provide a forum for state officials to discuss proposed and existing building codes.

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and economic analyses introduced by DOE into national voluntary code development processes. The processes have resulted in a set of widely accepted standards for new residential and commercial buildings. These codes and standards are continually updated and improved.

In cooperation with DOE and the building industry, ASHRAE and the Illuminating Engineering Society of North America have produced a draft of an updated ASHRAE Standard 90.1 for public review. The new standard, scheduled to be published in 1997, could yield an estimated energy savings of 25%. DOE also contributed a number of changes to the Model Energy Code (MEC) of the Council of American Building Officials and assisted in the adoption of window testing and labeling criteria into the code.

The voluntary building energy codes provide the basis for updating state and local building codes, as well as the mandatory standards for Federal buildings. They also provide the basis for the energy efficiency provisions in the loan and loan guarantee program standards of the Department of Housing and Urban Development, the Department of Veterans Affairs, and the Farmers Home Administration.

Updating State Building Codes

The Energy Policy Act of 1992 requires states to review and update their commercial building energy codes and, where appropriate, update their residential building energy codes. DOE monitors state progress in adopting updated standards and reports to Congress annually. DOE also provides technical support for the complex process of implementing and enforcing building codes at the state and local levels. More than half the Federal investment is allocated directly to state and local governments to support their efforts to meet federal mandates.

DOE offers funding and technical assistance. Direct grants assist states in adopting, implementing, and enforcing energy codes for new buildings. DOE further helps states document exemplary code implementation programs that can be transferred to other states. Direct technical assistance to states takes many forms such as:

- The Building Energy Code Hotline operates to quickly answer questions from state and local code officials, builders, and others.
- Regional energy code workshops provide a forum for state officials to discuss code issues, needs of their states, successes and failures of other states, and availability of technical assistance.
- DOE collaborates with states on training materials and programs, using a "train-the-trainer" approach to broaden the reach of technical assistance.
- Staff members provide expert testimony at hearings on upgrading state codes.
- Technical assistance supplements resource-constrained state energy offices and gives states access to specialized skills in drafting code legislation, analyzing impacts of alternatives, and implementing codes.

DOE-developed software tools, technical support documents, and other materials help states with adopting, implementing, and enforcing codes. To ensure that future codes are available for state adoption, DOE participates in forums on national model codes and standards. DOE also supports the building industry by introducing independent technical analyses to mediate disagreements over levels of code stringency.

One product is a set of compliance tools developed in response to comments that MEC is difficult to use. MECcheck™ materials include a compliance and enforcement manual for all the MEC requirements and software to help builders comply with the thermal envelope requirements. The MECcheck™ Software and Prescriptive Package were released in December 1994 and have been well received.

Developing Standards for Federal Buildings

DOE also uses the voluntary standards for developing mandatory energy efficiency standards for new Federal residential and commercial buildings. Similarly, technical support materials developed for states form the basis of materials DOE offers Federal agencies to assist them in meeting or exceeding the standards.

DOE will announce the final Federal commercial and residential codes and distribute technical assistance materials to Federal agencies in mid-1996. DOE will publish the Federal commercial code rule in 1998 and the residential code rule in 1999. The department continues to assist Federal agencies in implementing and enforcing the interim standards.

Saving Energy

By establishing minimum efficiency requirements, building codes can significantly reduce energy use and greenhouse gas emissions. Efficiency improvements resulting from building energy codes and standards could save nearly \$2 billion in 2000 and nearly \$4 billion in 2010. These savings translate into long-term direct economic and productivity gains for a large sector of the U.S. economy.

By helping states implement building codes, occupants of new buildings will save an estimated \$1.2 billion in avoided energy costs by 2000. Based on a cumulative Federal investment of less than \$100 million during the same period, this represents a 10-to-1 return on investment.

For More Information

Building Energy Code Hotline
(800) 270-CODE

Jean J. Boulin
Director, Buildings Division
Office of Building Technologies, EE-432
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585
(202) 586-9870

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