

## Energy Efficiency through Strong Building Codes

Energy efficiency is a key component in easing the transition to the 21<sup>st</sup> century energy production and delivery. Building codes support the construction of energy efficient homes and commercial buildings by providing a minimum standard for construction and renovation of buildings. Among the items covered by energy codes are adequate insulation in walls and attics, well-sealed doors and windows, energy efficient windows, energy efficient heating and cooling systems, insulated ductwork, sealed fireplaces, programmable thermostats, and energy efficient lighting, and other building attributes.

Every year 2 percent of the buildings are constructed or renovated. Including energy efficiency in a new building or major renovation is easier and cheaper than to retrofit energy efficiency into an existing building. A building lasts from 50 to 100 years. Strong energy efficient building codes result in buildings that lower energy use and save the occupant money in electricity, heating, and cooling costs; while weak or poor building codes cast wasteful use of energy and higher costs over the building's lifetime. Retrofitting a building to conserve energy can be costly or ineffective.



*Photo credit: National Renewable Energy Laboratory*

Every three years the energy model building codes are updated. There are two sets of model codes.

- The International Energy Conservation Code (IECC) has the model codes for residential and commercial buildings. It is updated every three years (2018, 2021, 2024). These codes are established by architects, home builders, engineers, and consumer advocates.
- The American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) publish the model codes for commercial buildings. These codes are updated every three years (2013, 2016, 2019).

The 2012 IECC codes have been adopted in Iowa<sup>1</sup> and the 2010 ASHRAE Sustainability Design Standards have been adopted in Iowa<sup>2</sup>. In Iowa the energy code is adopted at the state level as well as some other codes, while other building codes are adopted at the city and county level. Local jurisdictions that have building codes can also adopt the state building codes; however those codes cannot be weaker than the state codes but can be stronger than the state codes. The Building Code Commissioner, an employee of

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<sup>1</sup> See 661 Iowa Administrative Code, Chapter 303 for the energy conservation codes.

<sup>2</sup> See 661 Iowa Administrative Code, Chapter 310 for the codes related to sustainable design standards.

the Iowa Department of Public Safety, develops the changes to the State Building Code. Then the Building Code Advisory Council<sup>3</sup> is responsible for approving the amendments.<sup>4</sup>

When building codes are adopted, the adopting jurisdiction can adopt the codes as they are written (ASHRAE or IECC) or they can be amended. If the codes are adopted without amendments, the federal Department of Energy has training materials that can be used; otherwise the local jurisdiction must prepare its own training materials.

To be effective, the building codes must be accompanied with compliance – by builders, architects, and building code officials. The Building Code Bureau is responsible for inspections of buildings to ensure that the codes are enforced. In those jurisdictions where there are local building codes and where the local codes adopt the state code, the local building codes officials are responsible for building inspections.<sup>5</sup>

In a Residential Energy Code Compliance Pilot Study, 50 new single-family homes were reviewed for code compliance. The study found 70 percent compliance with the energy codes, with higher compliance in metropolitan areas and lower compliance in rural areas.<sup>6</sup>

### Policy Recommendations

The Iowa Chapter supports:

- strong energy efficiency requirements in building codes being adopted by IECC and ASHRAE.
- Iowa adopting strong energy efficiency requirements in building codes shortly after the IECC and ASHRAE codes are published and adopting them as they are published.
- Efforts to ensure that the codes are complied with, at both the state level and local jurisdictions that have adopted the state building codes
- Strong programs to educate builders, architects, and code officials in the energy building code requirements.



*Photo credit: Lynn Betts, USDA NRCS*

Strong energy codes save the owners and renters of homes and commercial buildings money in heating, cooling, and lighting. They reduce the environmental impacts, including reducing pollution emitted from power plants and the environmental damage due to mining and extracting coal, natural gas, and uranium. With fewer pollutants emitted into the air, the public health is protected.

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<sup>3</sup> The Building Code Advisory Council is a seven-member board appointed by the governor. See Iowa Code section 103A.14.

<sup>4</sup> Additionally the Building Code Advisory Council approves or disapproves applications for alternate materials or methods of construction. Appeals of decisions made by the Building Code Commissioner or local building departments are heard by a second group, the Board of Review.

<sup>5</sup> 661 Iowa Administrative Code, Chapter 300.6

<sup>6</sup> Power Point presentation developed by Brian Bishop for the Midwest Energy Efficiency Alliance conference on Midwest Energy Solutions, “Utility Programs and Energy Code Compliance”, Iowa Department of Public Safety, January, 2012