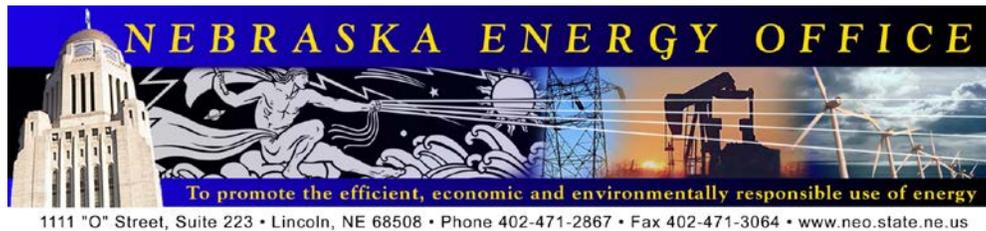


## 2014 Senator Info Session

### Acronyms

- Codes Council** ..... Energy Codes Advisory Council
- Collaborative** ..... Codes Compliance Collaborative
- Energy Office or NEO**..... Nebraska Energy Office
- ICC** ..... International Code Council
- IECC** ..... International Energy Conservation Code
- MEEA**..... Midwest Energy Efficiency Alliance



## What are Energy Codes?

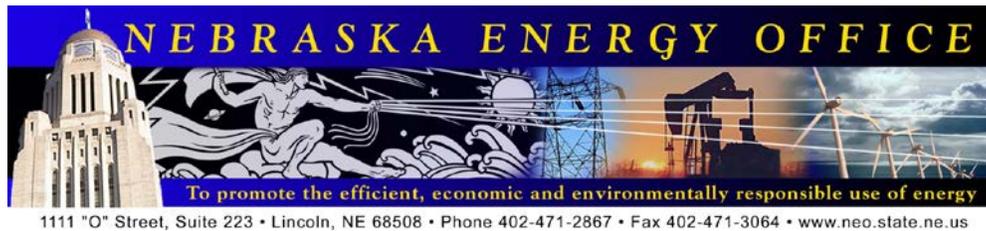
- Minimum requirements for energy-efficient design of newly constructed and renovated buildings
  - The “worst” energy-efficient building you can legally construct
- Energy-efficiency baselines for building envelope, lighting systems and HVAC equipment
- The code is developed on a national level, however the process include variations by climate or weather regions.

## What do Energy Codes Apply to?

- Building envelope walls, floors, ceilings, doors and windows.
  - Specifies minimum insulation levels
  - Mandates installation and air leakage standards with intent to ensure sealing the building against air leakage and controlling moisture migration.
- Heating, ventilating, and cooling system equipment.
  - Minimum criteria for the size of systems and equipment.
    - Takes into consideration the energy demands of the building space.
- Lighting systems and equipment.
- Water heating systems and equipment.

## What is the National Code Adoption Process?

- The International Energy Conservation Code (IECC) is developed and published by the International Code Council (ICC) since 1998 and is maintained through a three year public consensus process.
- The IECC is revised every three years through the ICC’s governmental consensus process.
  - Code change proposals are submitted by any interested party and are vetted through two public hearings. Between the two hearings, public comments are received which may include suggested changes. At the Initial Hearing, proponents and opponents of change proposals make their arguments before a committee of experts assembled by the ICC. At the Final Hearing, arguments are presented to the ICC Governmental Member Representatives present at the hearing and final voting is completed



## How is the Energy Code Drafted and Adopted in State and Local Jurisdictions?

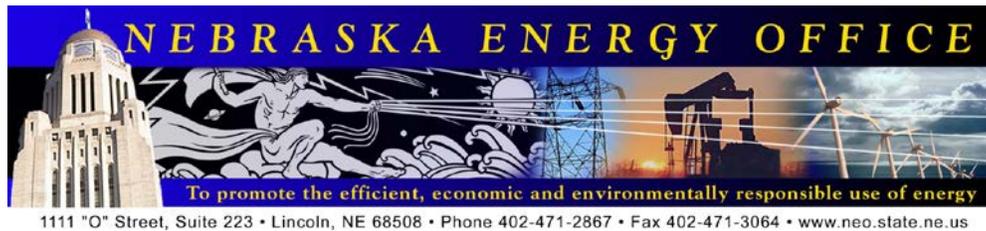
Although the adoption of a model energy code presents a significant opportunity to save energy in residential and commercial buildings across the country, the U.S. does not have a national energy code or standard, so energy codes are adopted at the state and local levels of government. The U.S. Department of Energy and other national and regional organizations (i.e. the Building Energy Codes Program (BECP), Midwest Energy Efficiency Alliances, and the Alliance to Save Energy) provided technical assistance to state and local governments to help facilitate the adoption process.

Local code adoption provisions regarding the Nebraska Energy Code are specified in Statutes §81-1608 – §81-1616

## What are Benefits of Energy Codes?

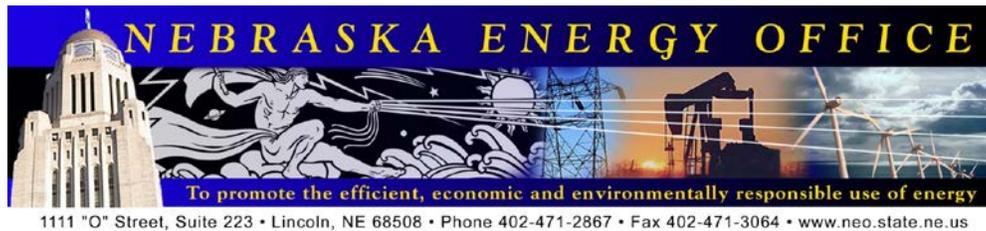
The primary goal of an energy code or standard is to conserve energy. Commercial buildings and residential households in the US consume nearly 50% of the nation's total primary energy, 70% of the nation's electricity, and account for one-third of the nation's greenhouse emissions. In addition to energy efficiency the adoption of energy codes:

- **Save money.** The energy and cost savings that result from adoption of energy codes can be significant.
  - Nationally, it is estimated that the adoption and enforcement of building energy codes will produce a financial benefit to owners of nearly \$2 billion annually by 2015, rising to over \$15 billion annually by 2030.
  - In Nebraska, since 2000, an residential Energy Impact Study has been completed every time the Energy Code was updated to the quantify:
    - the energy savings for typical homes, the
    - energy cost savings for typical homes,
    - in some cases, the additional constructed costs associated with the updated code, and
    - the statewide impact of adoption.
  - The studies have been completed by Dr. Amy Musser with Vandemusser Design LLC and all of them are available on the Energy Office Website. The latest Study, evaluating the Impact of updating from the 2009 to the 2012 IECC in Nebraska



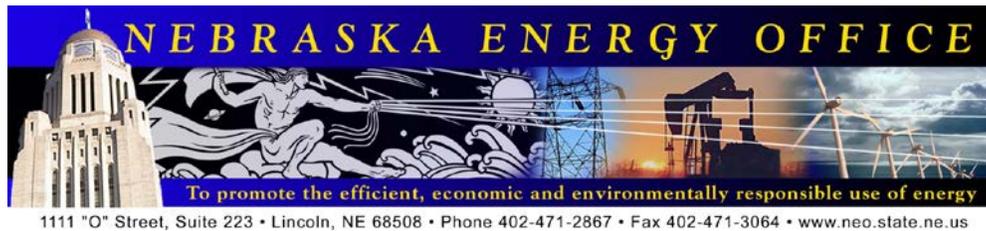
showed an average savings in whole-house energy costs of 11% and an energy cost savings of \$311. Statewide, the new code was projected to save homeowners \$254,000 the first year and \$59.6 million dollars over the life of homes built before 2015.

- **Protect consumers and support grid reliability.** Energy codes reduce utility costs which help to cushion consumers from the impacts associated with fluctuating fuel prices in volatile markets. Additionally, knowing the energy efficiency of buildings and homes through appropriate system sizing and increased controls, energy codes are able to curb the impact that buildings have on the energy grid. By decreasing the impact and peak loads of buildings, energy codes help lessen the stress on the grid, which increases grid reliability.
- **Improved Health.** Improved Energy Codes that reduce energy demand and uses also reduce pollution and greenhouse gas emissions. Improving the indoor air quality of homes and businesses and keeping consumers comfortable and healthy while lowering the health risks associated with burning fossil fuels.
- **Reduce emissions.** Buildings use a significant amount of energy that creates considerable emissions. A study conducted by the Climate Policy Initiative found that states that adopted federal building energy codes reduced household energy usage by 10% and household greenhouse gas emissions by 16% from 1986–2008.
- **Create jobs.** As new codes for greater energy efficiency in buildings are adopted, many new jobs will become available, including technical experts, duct and air leakage professionals, quality control assessors, building and system commissioning agents, energy auditors, and compliance officers. Expanding these efforts into the existing building stock will also create new employment opportunities in project retrofits and the building weatherization industry.



## Current Statutes

- Nebraska Energy Code is a statewide code. §81-1608 – §81-1616
- Local jurisdictions including an energy element in their local code, must adopt the Nebraska Energy Code
  - If a local jurisdiction does not include energy elements in their code, enforcement falls to the Nebraska Energy Office
    - When architects and engineers are retained for a project, they are responsible for ensuring that the building design meets code standards
    - If no architect or engineer is retained, the prime contractor is responsible for building to code
  - Local jurisdictions may amend out requirements of the code when it is not economically justified
    - Local code authority submits their analysis to the Energy Office
    - Energy Office transmits its findings and conclusions to the local jurisdictions
    - Local code authority submits its explanation or address any issues raised by the Energy Office
    - Local jurisdiction may then proceed to enforce its ordinance.
- Building owners, within two years of when a building is first occupied, may request the Energy Office undertake a determination to verify compliance with the energy code.
  - In local jurisdictions, determination will indicate whether the building complies with local code and if local code complies with the state code.
- Failure to comply is a Class IV misdemeanor.
- Code applies to all newly constructed buildings, new building additions and in the case of major renovations. It also applies to all state funded buildings (including renovations). The Energy Office provides compliance reviews of state owned/funded building plans and houses alternate compliance verification as required by statute. § 72-805

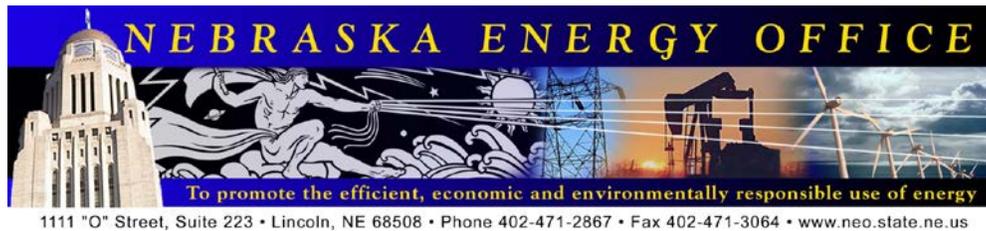


## Rules and Regulations

- Title 107
  - 005.03 Prime Contractor is responsible for conducting duct tightness test and insulation inspections per the 2009 IECC, and must maintain the verification for two years.
  - This was in response to concerns of homebuilders in rural areas without local jurisdictions, or an energy element in the local code.

## Compliance Studies

- A Residential Code Compliance Study was conducted in 2011 evaluating compliance with 2003 IECC
  - The study found a rate of sixty-five percent (65%) compliance. It was difficult to do the study because the homes were already constructed; it is best to check during construction.
  - The results of the study were used by NEO to help focus and coordinate training opportunities to help increase compliance.
- A second, independent residential compliance evaluation was completed in 2013 focusing on the impact of Nebraska's energy code training efforts and code compliance.
  - 42 homes were inspected in jurisdictions that had benefited from "targeted" training. These homes showed impressive compliance results associated with the targeted training.
  - The independent evaluator estimates the current compliance rate in jurisdictions that participated in the "targeted" training to be between 75%-80%.
- Commercial Code Compliance Baseline Study
  - Working with Britt/Makela Group to review 38 commercial buildings statewide
  - University of Nebraska Construction Management, Architecture and Engineering students are gathering the data
    - Students went through code trainings to learn inspection techniques and requirements
    - Local code jurisdictions are assisting the students with site selection and plan review
    - Students will keep a journal about their experiences
  - Expected completion of the study is May 2014.



## Energy Code Books

- The Energy Office has provided 2009 and 2012 IECC Code Books, IECC and ASHRAE Combination Books, Energy Inspector Guides, and a Residential Equipment Inspection Tool developed specifically for Nebraska.

## Energy Code Trainings

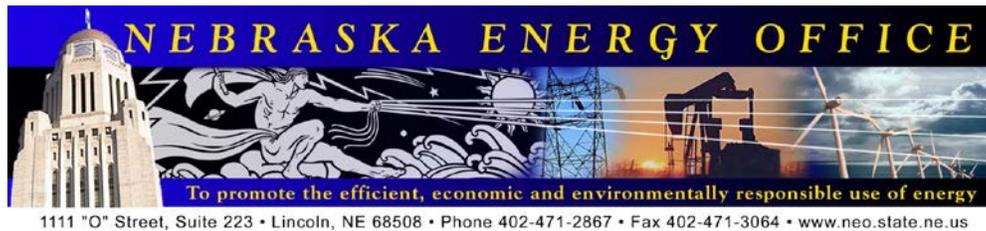
- Jim Harper: A retired code official provides local jurisdictions with targeted trainings associated with specific areas where code for enforcement improvements is needed. These targeted trainings are based on the results of the studies previously discussed.
- IECC training: When a new code is adopted, the Energy Office brings in ICC-certified instructors to teach the new code.
- REScheck/COMcheck: computer-based compliance tools used to verify code compliance.
  - Some local jurisdictions require this report.
- Building science classes: Joe Lstiburek, Matt Belcher, Steven Easley, Jamb Lamb; contractors and buildings scientists who provided information on beyond code options, building durability, sustainable construction, air sealing, mold and moisture concerns, all of which are closely related to energy code issues.
- Blower door training for code officials
- Green building for appraisers
- Home energy efficiency for real estate (OPPD)

## Technical Assistance

- The Energy Office's Building Program Specialist and the Technical Advisor provide free technical assistance to all of the state's construction industry.

## Regional Codes Conference

- As part of a federal grant, the Energy Office hosted a regional energy codes conference in October 2012 in Omaha
  - Nearly 175 attendees from 21 states, District of Columbia, Canada, and Guam
  - Builders, code officials, architects, engineers, HVAC installer/distributors, government officials, product suppliers, Home Energy raters and others were able to choose from 28 educational sessions in four tracks
  - Great support from the public power districts and gas utilities in the development of the conference.



## IECC Testing and Certification

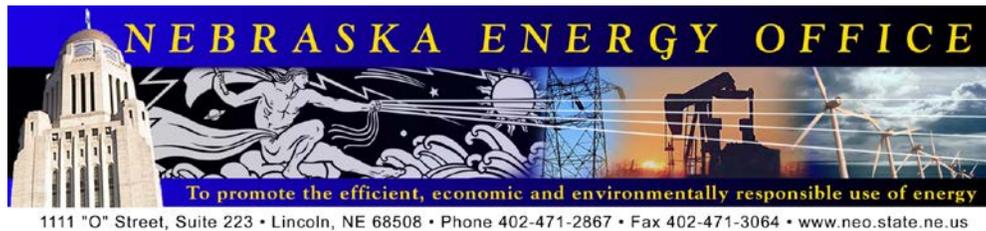
- As part of federal grants, the Energy Office coordinated ICC training and Energy Code testing certification in the State that resulted in increasing the number of ICC Certified Energy Code Inspectors (in three different certification types) from 1 to 28.

## Energy Code Advisory Council

- Only called to meet if there is legislation pending to adopt a new code.
- Stakeholders discuss the code and offer insights into complications that may arise in complying with the code.
- Does not take any action and does not influence the Energy Office regarding support or non-support of a code.
- Assisted with development and coordination of regional energy codes conference.

## Codes Compliance Collaborative

- Group of stakeholders interested in code compliance; approximately 25 active members out of the 75 initially invited.
- MEEA facilitates the Collaborative, which holds quarterly meetings.
  - Committee meetings are held in between the quarterly meetings: State and Local Policy, Compliance and Evaluation, Training, Funding, Outreach.
- Initiate and implement ideas for compliance:
  - Commercial Baseline Study was initiated by the Energy Office, but the Collaborative broadened it to become a service learning class
  - Senator Information Session
  - Other training ideas
  - Utility Funded Code Support



## Funding for Building Energy Code Program

*Nearly \$872,000 in federal funds has financed the energy code activities of the Nebraska Energy Office since 2008. A negligible amount of cash funds has been used as required matches.*

- 2008
  - State Energy Program: \$24,725
  - 30% Better-Nebraska's Upgrade Commercial Building Energy Code: \$303,065
    - Ended December 2013
- 2009
  - American Recovery and Reinvestment Act (ARRA): \$169, 398.83
  - Pacific Northwest National Laboratory (PNNL): \$276,417
- 2013/2014
  - Extended State Energy Program funds from FY 2012/13: \$98,288.66