U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

BUILDING TECHNOLOGIES PROGRAM

Building Energy Codes Program

2011 Annual Report

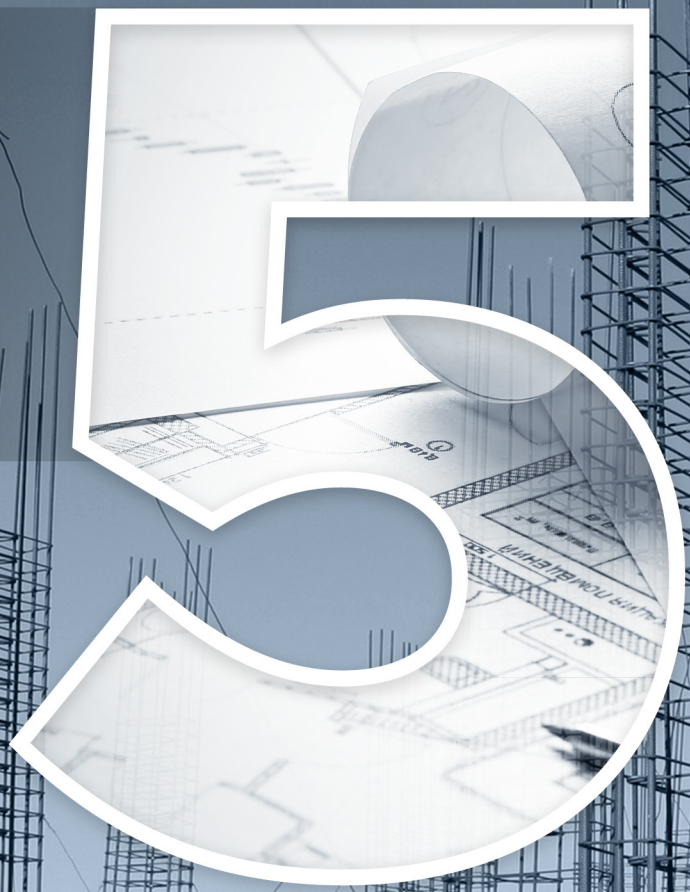
DEVELOPMENT ADOPTION COMPLIANCE

BUILDING greater energy efficiency

Building Energy Codes

DEVELOPMENT

The Department of Energy (DOE) is committed to increasing energy efficiency in all buildings, commercial and residential. In support of this commitment, the Building Energy Codes Program (BECP) goal in commercial and residential development will be to cost effectively increase energy savings by 50% through more efficient building codes by 2015.



EVOLUTION of energy-efficiency codes

2011 HIGHLIGHTS

Significantly Increasing Baseline Energy Code Savings: BECP coordinated with members of the ICC in developing significant code change proposals that resulted in 30% improvement over the 2006 IECC as well as achieving the 30% energy savings goal in conjunction with the publication of the 2012 IECC and ASHRAE Standard 90.1-2010.

Increasing Transparency: BECP provided stakeholders with access and visibility to the code methodology by developing a publicly available cost database, documenting BECP's code analysis methodology and inviting comments on the methodology.

ADOPTION

BECP engages with states and jurisdictions throughout the adoption process to provide technical assistance and support to ensure that codes adopted can be readily implemented and enforced. This includes providing adoption support, tracking state adoption status, and delivering state specific resources. BECP is developing a comprehensive adoption strategy that will enable 70% of the states to adopt either 2009 IECC, ASHRAE Standard 90.1-2007 or better by 2015.

COORDINATION with energy-efficiency partners

2011 HIGHLIGHTS

Raising the Bar and Going Beyond: BECP launched a new initiative to provide comprehensive support for the adoption and implementation of green building and beyond code programs.

Passing the 50% Mark: BECP provided technical assistance for state adoption which resulted in a 50% adoption rate for residential and commercial construction.

COMPLIANCE

BECP has a comprehensive suite of code compliance software tools that provides no cost software and tools to the building industry. These tools assist the building community in complying with codes and standards. We are committed to assisting states in achieving 90% compliance with the 2009 IECC and ASHRAE Standard 90.1-2007 nationwide by 2017.

PIONEERING the way in code compliance

2011 HIGHLIGHTS

Tailored Resources and Assistance: BECP launched nine state and regional compliance pilot studies which included comprehensive training on compliance assessment using BECP developed software tools. In addition, BECP provided over $7 million directly to 24 states to fund state-specific adoption, training, and compliance activities.

From the Building Codes Supervisor

SARALYN BUNCH

For over 35 years, the Building Technologies Program (BTP) has championed the development of energy-efficient products and services, making them more tangible and affordable for building professionals and owners. BTP coordinates with national laboratories, universities, and other partners to engage in cutting edge energy-efficiency research. As an integral part of BTP, the Building Energy Codes Program (BECP) plays an important role in the process of developing and implementing standards for energy-efficient design and construction for both new and upgraded commercial and residential buildings. BTP's advances in energy efficiency have a positive impact that is strengthened by BECP's support of code adoption and compliance. Energy codes that are implemented effectively reduce energy bills, and increase the resale value of a building. In addition, the economic and environmental paybacks can benefit our nation for decades, if not centuries.

BUILDING greater energy efficiency into the built environment is a primary goal for the U.S. Department of Energy. In the United States, residential and commercial buildings account for 40 percent of all energy consumed and 70 percent of electricity used. With buildings consuming more energy than any other single portion of the U.S. economy, efficient and adoptable energy codes represent a perfect opportunity for BECP to work with other BTP divisions to encourage reduced energy consumption and secure energy independence.

Over the last 20 years the BECP has assisted in reducing the nation's energy bill by more than 0.3 quads annually, saving consumers more than $15 billion.[1] In Fiscal Year 2011 (FY11), BECP continued to foster its relationships within the codes community to educate and achieve higher efficiency among commercial and residential buildings. Working with constituents to continually achieve the highest possible building energy-efficiency rates reduces air pollution and greenhouse gas emissions, drives innovation, and secures jobs. With significant levels of new construction or renovations predicted for the U.S. building sector by 2035, BECP will continue to develop and provide innovative tools to drive the transition to energy efficiency.

EVOLUTION of energy-efficiency codes is vital to our mission. During FY11, BECP worked to advance commercial and residential codes to become 50 percent more efficient than ASHRAE Standard 90.1-2004 and the 2006 IECC, respectively. The American Recovery and Reinvestment Act tasked the states with a new goal—90 percent compliance with energy codes requirements within each state. Since then, BECP has developed processes and materials to help measure compliance with energy codes and worked closely with regional efficiency organizations to assist states in their efforts to reach this ambitious efficiency benchmark. We also helped state and local authorities establish voluntary or mandatory programs that extend well beyond traditional minimum code requirements for new buildings. Furthermore, we participated in a nationwide energy forum for tribes. In this effort, we engaged with other federal agencies and tribal representatives, and provided introductory information on green construction and energy codes. Research indicates that, by 2030, total projected annual energy savings from adoption and implementation of future energy codes is expected to be 2.4 quadrillion Btu of primary energy. In FY12, BECP will be engaged in bringing together energy professionals, policy makers, builders, and manufacturers from across the nation to realize this vision.

COORDINATION with energy-efficiency partners is the key to leveraging best practices and strategies for integration into the industry. BECP has worked with several stakeholders in developing building codes that call for more energy efficiency and are easier to understand and to provide technical and financial assistance that help states adopt, implement, and enforce the codes. Aside from working within BTP, we know that connecting with national organizations and regional energy-efficiency partnerships is an integral step in the adoption of and compliance with building energy codes. BECP works closely with many organizations to implement items such as resource guides on energy codes, support materials, training and education efforts, and communications initiatives such as website connection and presentations. During FY11, BECP produced a suite of resource guides that are available to the public. These resource guides are intended to offer guidance on how to support the creation of statewide energy efficiency goals and standards. In addition, BECP also coordinated with energy-efficiency partnerships to create and execute stretch codes in regions across the nation. In FY 12, we are committed to furthering our coordination successes and implementing useful collaborative items such as support materials and training and education materials.

PIONEERING the way in code compliance is a core goal for BECP. We have produced a collection of innovative tools that help stakeholders achieve compliance with residential and commercial building energy codes. Our award winning RES*check* and COM*check* software applications address and facilitate implementation of most state and national residential and commercial building codes. Both resources are used to train users on the content of code requirements and to provide compliance reports for officials who are documenting the codes that were followed during construction. In addition, we created two new tools during FY11—Score+Store™ and State Sample Generator. These tools are used to provide data based on construction compliance that allows building code analysis across states. Integrating these tools in the compliance process guarantees that our stakeholders have access to the latest instruments for ensuring compliance of their buildings.

Yesterday's emerging technologies have become today's building energy-efficiency success stories. BTP spearheads the evolution of energy-efficiency technologies that have ushered the evolution of building materials, lighting, and new design and construction strategies. By inspiring the breakthrough technologies of tomorrow, BECP improves people's lives and strengthens our economy. We thank our stakeholders and collaborators for their continued support to make a difference in increased energy efficiency nationwide.

Saralyn Bunch

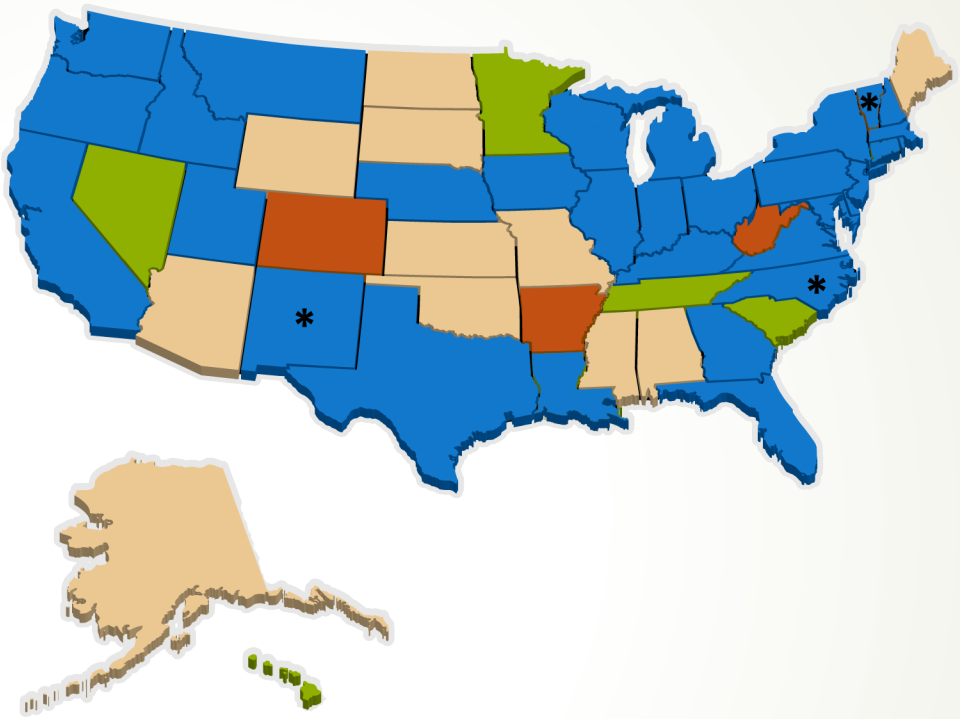
(1) Belzer DB, MA Halverson, DJ Hostick, KA Cort, and JD Stacey. 2011. *A Retrospective Analysis of Commercial Building Energy Codes*: 1990–2010. PNNL- 20477 Rev 1, Pacific Northwest National Laboratory, Richland, Washington.
Belzer DB, KA Cort, and DJ Hostick. 2011. *A Retrospective Analysis of Residential Building Energy Codes*: 1992-2010. PNNL-20708, Pacific Northwest National Laboratory, Richland, Washington.

ADOPTION
COMMERCIAL

Commercial buildings have the opportunity to comply with either ASHRAE 90.1 or the IECC codes. The map below tracks the adoption rates across the country within commercial buildings.

As of November 1, 2011

- Alabama
- Alaska
- Arizona
- Arkansas
- California
- Colorado
- Connecticut
- Delaware
- Florida
- Georgia
- Hawaii
- Idaho
- Illinois
- Indiana
- Iowa
- Kansas
- Kentucky
- Louisiana
- Maine
- Maryland
- Massachusetts
- Michigan
- Minnesota
- Mississippi
- Missouri
- Montana
- Nebraska
- Nevada
- New Hampshire
- New Jersey
- New Mexico *
- New York
- North Carolina *
- North Dakota
- Ohio
- Oklahoma
- Oregon
- Pennsylvania
- Rhode Island
- South Carolina
- South Dakota
- Tennessee
- Texas
- Utah
- Vermont *
- Virginia
- Washington
- West Virginia
- Wisconsin
- Wyoming
- American Samoa
- Guam
- N. Mariana Islands
- Puerto Rico *
- U.S. Virgin Islands



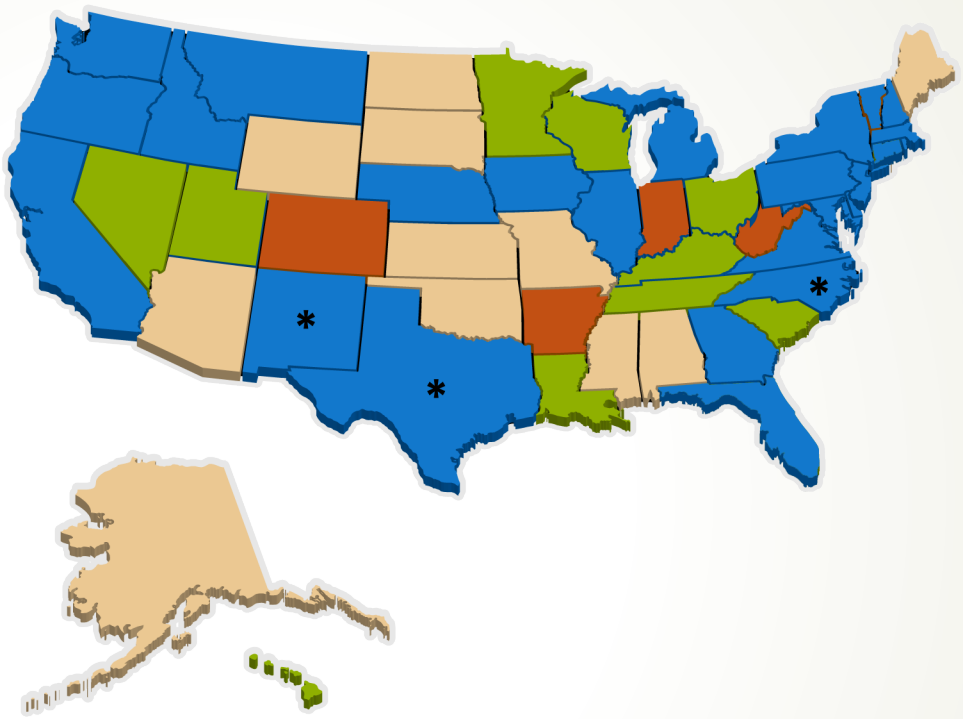
34	ASHRAE 90.1-2007/IECC 2009, equivalent or more stringent
5	ASHRAE 90.1-2004/IECC 2006, equivalent
4	ASHRAE 90.1-2001/IECC 2003, equivalent or less stringent
12	No statewide code
*	Adopted new code to be effective at a later date

ADOPTION
RESIDENTIAL

BECP uses the map below to track the adoption rates of the most current energy codes among residential buildings. Residential buildings must only comply with the IECC codes.

As of November 1, 2011

- Alabama
- Alaska
- Arizona
- Arkansas
- California
- Colorado
- Connecticut
- Delaware
- Florida
- Georgia
- Hawaii
- Idaho
- Illinois
- Indiana
- Iowa
- Kansas
- Kentucky
- Louisiana
- Maine
- Maryland
- Massachusetts
- Michigan
- Minnesota
- Mississippi
- Missouri
- Montana
- Nebraska
- Nevada
- New Hampshire
- New Jersey
- New Mexico *
- New York
- North Carolina *
- North Dakota
- Ohio
- Oklahoma
- Oregon
- Pennsylvania
- Rhode Island
- South Carolina
- South Dakota
- Tennessee
- Texas *
- Utah
- Vermont
- Virginia
- Washington
- West Virginia
- Wisconsin
- Wyoming
- American Samoa
- Guam
- N. Mariana Islands
- Puerto Rico *
- U.S. Virgin Islands



29	IECC 2009, equivalent or more stringent
9	IECC 2006, equivalent
5	IECC 2003, equivalent or less stringent
12	No statewide code
*	Adopted new code to be effective at a later date

BECP continues its efforts to reduce the energy consumption of buildings across the U.S by supporting energy code development, adoption, implementation, and compliance initiatives at the national, state and local level.

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EERE Information Center
1-877-EERE-INFO (1-877-337-3463)
www.eere.energy.gov/informationcenter

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Building Energy Codes

For information on Building Energy Codes, visit **www.energycodes.gov**