

## Energy Codes and Ensuring Efficient New Home Construction

This IPRO report examines states' efforts to improve energy efficiency standards for new home construction.

### International Energy Conservation Code and the International Code Council

Most states have an energy code<sup>1</sup> (a collection of regulations and rules of procedure) to ensure that new home construction meets certain energy standards.<sup>2</sup> The most commonly adopted code is the International Energy Conservation Code (IECC), written by the International Code Council (ICC).

Established in 1994, the ICC is a nonprofit organization comprised of several smaller nonprofits, including the Building Officials and Code Administrators International, Inc., International Conference of Building Officials, and Southern Building Code Congress International.<sup>3</sup> In addition to the IECC efficiency codes, the ICC publishes twelve other codes concerning property, including fire, plumbing, and zoning codes.<sup>4</sup>

The mission of the ICC is "to provide the highest quality codes, standards, products and services for all concerned with the safety and performance of the built environment."<sup>5</sup> The energy efficient code (IECC) concerns "portions of the building and building systems that impact energy use in new residential construction."<sup>6</sup>

### Other Codes and State Regulations Regarding Energy Efficiency

Missouri has adopted the American Society of Heating, Refrigerating and Air-Conditioning Engineers' (ASHRAE) ASHRAE 90.1, a handbook that outlines standards for its members and others concerned with refrigeration processes and the design and maintenance of indoor environments.<sup>7</sup> While the ASHRAE 90.1 is not as comprehensive as the IECC, it is referenced in the IECC.<sup>8</sup> The ICC has incorporated much of ASHRAE 90.1 into its 2009 IECC code.<sup>9</sup>

Louisiana, Michigan, and Kentucky use the International Residential Code (IRC), a comprehensive, stand-alone residential code that creates minimum regulations for

---

<sup>1</sup> All states except Wyoming, South Dakota and Tennessee have an energy code.

<sup>2</sup> "DOE: Building Energy Codes - Status of State Energy Codes." DOE: Building Energy Codes - Home. Web. 06 Sept. 2009. <[http://www.energycodes.gov/implement/state\\_codes/index.stm](http://www.energycodes.gov/implement/state_codes/index.stm)>.

<sup>3</sup> "ICC Online | News and Events | About ICC: Introduction to the ICC." Welcome to the International Code Council (ICC): Your source for building safety products and services and the International Codes. Web. 20 Sept. 2009. <<http://www.iccsafe.org/news/about/>>.

<sup>4</sup> Ibid.

<sup>5</sup> Ibid.

<sup>6</sup> Welcome to the International Code Council (ICC): Your source for building safety products and services and the International Codes. Web. 20 Sept. 2009. <<http://www.iccsafe.org/e/prodsearch.html?words=3800S09>>.

<sup>7</sup> "Standards & Guidelines." ASHRAE. Web. 20 Sept. 2009. <<http://www.ashrae.org/technology/page/548>>.

<sup>8</sup> "Proposes Changes to IECC Based on Standard 90.2." ASHRAE. Web. 20 Sept. 2009. <<http://www.ashrae.org/pressroom/detail/13584>>.

<sup>9</sup> "States Adopting, Administering ICC 2009 IECC to Receive Energy Assistance Grants." *IHS Architecture, Engineering and Construction (AEC) Solutions*. Web. 20 Sept. 2009. <<http://aec.ihs.com/news/energy-efficiency/2009/icc-energy-iecc-21209.htm>>.

residential construction.<sup>10</sup> It combines building, plumbing, mechanical, fuel gas, energy and electrical provisions.<sup>11</sup> The energy provisions references and closely resembles the IECC, but the two are not identical.<sup>12</sup>

South Dakota, Tennessee and Wyoming are the only states that IPRO identified that do not have state building codes.<sup>13</sup> Local governments decide energy efficiency codes in these states.<sup>14</sup>

### **State Adoption of the IECC**

The average American home uses 30% more energy than homes compliant with the 2006 IECC code. While 18 states with energy codes have adopted the 2006 version of the IECC,<sup>15</sup> some use earlier versions of the code.<sup>16</sup> Delaware and Georgia's new homes are required to comply with the 2000 IECC, which mandates standards that use 20% more energy than the 2006 IECC.<sup>17</sup> Twenty states have adopted the 2003 IECC,<sup>18</sup> which requires standards that use 10% more energy than the 2006 IECC.<sup>19</sup>

Some states have already adopted the recently published 2009 IECC, which modifies many aspects of the 2006 code. To qualify for State Energy Program grants from the 2009 \$3.4 billion American Recovery and Reinvestment Act, states must adopt an energy code at least as strict as the 2009 IECC.<sup>20</sup> Adoption of the 2009 IECC code reduces energy consumption in new homes by 15-20% when compared to houses compliant with the 2006 IECC code.<sup>21</sup>

---

<sup>10</sup> "What is IRC? : ENERGY STAR." *Home* : ENERGY STAR. Web. 20 Sept. 2009.

<[http://www.energystar.gov/index.cfm?c=bldrs\\_lenders\\_raters.nh\\_IRC](http://www.energystar.gov/index.cfm?c=bldrs_lenders_raters.nh_IRC)>.

<sup>11</sup> Ibid.

<sup>12</sup> Ibid.

<sup>13</sup> *Benchmarking Standards, Model Codes, Codes and Voluntary Guidelines on the HERS Index*. Publication. Federation of American Scientists. Web. 27 Sept. 2009.

<[http://www.fas.org/programs/energy/btech/policy/Benchmarking%20standards%20and%20model%](http://www.fas.org/programs/energy/btech/policy/Benchmarking%20standards%20and%20model%20codes)

<sup>14</sup> *Benchmarking Standards, Model Codes, Codes and Voluntary Guidelines on the HERS Index*. Publication. Federation of American Scientists. Web. 27 Sept. 2009.

<[http://www.fas.org/programs/energy/btech/policy/Benchmarking%20standards%20and%20model%](http://www.fas.org/programs/energy/btech/policy/Benchmarking%20standards%20and%20model%20codes)

<sup>15</sup> Alaska, Colorado, Idaho, Iowa, Kansas, Kentucky, Louisiana, Massachusetts, Minnesota, Nevada, New Hampshire, New Jersey, New Mexico, Pennsylvania, Rhode Island, Utah, Virginia, and Wisconsin follow the 2006 IECC.

<sup>16</sup> *Benchmarking Standards, Model Codes, Codes and Voluntary Guidelines on the HERS Index*. Publication. Federation of American Scientists. Web. 27 Sept. 2009.

<sup>17</sup> Ibid.

<sup>18</sup> Alabama, Arizona, Arkansas, Connecticut, Florida, Hawaii, Louisiana, Maine, Maryland, Michigan, Montana, Nebraska, New York, North Carolina, Ohio, Oklahoma, South Carolina, Texas, Vermont and West Virginia follow a 2003 IECC model code.

<sup>19</sup> *Benchmarking Standards, Model Codes, Codes and Voluntary Guidelines on the HERS Index*. Publication. Federation of American Scientists. Web. 27 Sept. 2009.

<sup>20</sup> "States Adopting, Administering ICC 2009 IECC to Receive Energy Assistance Grants." IHS Architecture, Engineering and Construction (AEC) Solutions. Web. 20 Sept. 2009. <<http://aec.ihs.com/news/energy-efficiency/2009/icc-energy-iecc-21209.htm>>.

<sup>21</sup> *Benchmarking Standards, Model Codes, Codes and Voluntary Guidelines on the HERS Index*. Publication. Federation of American Scientists. Web. 27 Sept. 2009.

<[http://www.fas.org/programs/energy/btech/policy/Benchmarking%20standards%20and%20model%](http://www.fas.org/programs/energy/btech/policy/Benchmarking%20standards%20and%20model%20codes)

Connecticut and Illinois recently adopted legislation requiring the compliance of the 2012 code within 9-18 months of its publication.<sup>22</sup> The 2012 IECC code will stipulate a 30% reduction from the 2006 IECC code in energy consumption in new homes.<sup>23</sup>

In Iowa, the Department of Public Safety has adopted energy efficiency codes for residential construction that comply with the 2006 IECC code.<sup>24</sup> Required compliance with the 2006 code began on January 1<sup>st</sup>, 2007, eight months after it was published.<sup>25</sup> The Department of Public Safety expects to adopt the 2009 IECC code on January 1<sup>st</sup>, 2010.<sup>26</sup> Building code officials are pressing for adoption of the 2009 IECC code in order to make Iowa eligible for the State Energy Program grants from the 2009 \$3.4 billion American Recovery and Reinvestment Act.<sup>27</sup>

### **State Modification of the IECC**

While many states have made various modifications to the IECC, California, Washington, New Jersey, Oregon, New York and Vermont significantly amended the IECC in adopting their energy codes. New York, for example, has its own energy code, the Energy Conservation Construction Code, that is a "New York-enhanced version of the IECC."<sup>28</sup> Its major amendments include tougher insulation in electrically heated homes, reduced infiltration in fireplaces, and more efficient thermostats.<sup>29</sup>

### **Future of Energy Efficiency in New Home Construction**

The Home Builders Association and Architecture 2030, two organizations concerned with home construction and energy efficiency, hope that homes will be carbon neutral by 2028, which means new homes will emit no greenhouse gases or fossil fuels in their operation.<sup>30</sup> Carbon-neutral construction is possible through the production of renewable energy on residential properties.<sup>31</sup>

---

<sup>22</sup> "Connecticut Governor Signs Bill Adopting 2012 IECC and Green Building Standards | Building Codes Assistance Project." BCAP Launches OCEAN: Online Code Environment & Advocacy Network | Building Codes Assistance Project. Web. 07 Sept. 2009. <<http://bcap-energy.org/node/434>>.

<sup>23</sup> "DOE: Building Energy Codes - Status of State Energy Codes." DOE: Building Energy Codes - Home. Web. 06 Sept. 2009. <[http://www.energycodes.gov/implement/state\\_codes/index.stm](http://www.energycodes.gov/implement/state_codes/index.stm)>.

<sup>24</sup> "DOE: Building Energy Codes - Status of State Energy Codes." DOE: Building Energy Codes - Home. Web. 06 Sept. 2009. <[http://www.energycodes.gov/implement/state\\_codes/index.stm](http://www.energycodes.gov/implement/state_codes/index.stm)>.

<sup>25</sup> DSIRE: DSIRE Home. Web. 07 Sept. 2009.

<[http://www.dsireusa.org/incentives/incentive.cfm?Incentive\\_Code=IA10R&re=1&ee=1](http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=IA10R&re=1&ee=1)>.

<sup>26</sup> Galluzo, Teresa, and Beth Pearson. Lighting the Way: How Iowa Can Lead with Energy Funding in Federal Stimulus. Publication. Iowa Policy Research Project, May 2009. Web. 27 Sept. 2009.

<<http://www.iowapolicyproject.org/2009docs/090505-energystim-xs.pdf>>.

<sup>27</sup> Ibid.

<sup>28</sup> "NYS Energy Code." Lorraine A. Cortes-Vazquez, Secretary of State New York Department of State. Web. 27 Sept. 2009. <<http://www.dos.state.ny.us/code/energycode/nyenergycode.htm>>.

<sup>29</sup> Ibid.

<sup>30</sup> Benchmarking Standards, Model Codes, Codes and Voluntary Guidelines on the HERS Index. Publication. Federation of American Scientists. Web. 27 Sept. 2009.

<[http://www.fas.org/programs/energy/btech/policy/Benchmarking%20standards%20and%20model%](http://www.fas.org/programs/energy/btech/policy/Benchmarking%20standards%20and%20model%20)

<sup>31</sup> Benchmarking Standards, Model Codes, Codes and Voluntary Guidelines on the HERS Index. Publication. Federation of American Scientists. Web. 27 Sept. 2009.

<[http://www.fas.org/programs/energy/btech/policy/Benchmarking%20standards%20and%20model%](http://www.fas.org/programs/energy/btech/policy/Benchmarking%20standards%20and%20model%20)