

# **2012 INTERNATIONAL ENERGY CONSERVATION CODE®**

**AND**

# **ANSI/ASHRAE/IES STANDARD 90.1-2010: ENERGY STANDARD FOR BUILDINGS EXCEPT LOW-RISE RESIDENTIAL BUILDINGS**



## FOREWORD

With energy efficiency and green construction near the top of the national and global construction agenda, the International Code Council® (ICC®) and the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) are once again collaborating on a joint publication that offers the best of the energy efficiency requirements for both residential and commercial buildings. This new publication, containing both the 2012 *International Energy Conservation Code*® (IECC®) and ANSI/ASHRAE/IESNA Standard 90.1- 2010, *Energy Standard for Buildings Except Low-Rise Residential Buildings* (ASHRAE 90.1) in one volume, follows the great success of the initial effort that resulted in the publication of the 2009 IECC/ASHRAE 90.1-2007 in one book. This has been a big positive step forward in the efforts of both organizations to increase awareness and effective application of energy-efficient criteria in building design.

The original joint publication came about as a direct result of the American Recovery and Reinvestment Act of 2009 (ARRA), passed in February 2009. ARRA was designed to stimulate economic recovery by providing stimulus funding to various sectors of the economy and to accomplish a policy goal of creating more energy-efficient buildings.

There is almost universal agreement that increasing the energy efficiency of buildings is a simple and effective way to reduce overall energy use and, ultimately, reduce carbon emissions. More than 70 percent of all electricity in the United States, and about 40 percent of the total energy worldwide, is consumed by residential and commercial buildings. Consequently, even small increases in building efficiency result in big reductions of energy and carbon emissions.

Both ICC and ASHRAE are proud of the processes they administer to produce the *International Energy Conservation Code* and ANSI/ASHRAE/IESNA Standard 90.1. Brought together are experts, government officials from all levels, and industry representatives who manufacture, service and maintain the systems and products that go into energy-efficient buildings. These open and transparent processes produce documents that are respected and usable by all communities.

These two documents are recognized by the federal government, in several bills dating back to 2003, as the benchmarks for the energy efficiency of residential and commercial buildings. They address the same issues and, because both may overlap in their coverage of building systems and designs, it makes sense to publish these two documents together—for the benefit of building designers, engineers and building code compliance personnel. In some cases, having both documents in one place will make it easier to choose between different design options. In all cases, this dual edition will help ensure that newly built and renovated buildings are in compliance with the latest references available, from local requirements to those continuing the federal goal of higher energy efficiency in all types of buildings.

Richard P. Weiland  
Chief Executive Officer  
International Code Council, Inc.

# TABLE OF CONTENTS

## 2012 INTERNATIONAL ENERGY CONSERVATION CODE

<b>IECC—COMMERCIAL PROVISIONS</b> . . . . .	<b>C-1</b>
<b>CHAPTER 1 SCOPE AND ADMINISTRATION</b> . . . . .	<b>C-3</b>
<b>CHAPTER 2 DEFINITIONS</b> . . . . .	<b>C-7</b>
<b>CHAPTER 3 GENERAL REQUIREMENTS</b> . . . . .	<b>C-11</b>
<b>CHAPTER 4 COMMERCIAL ENERGY EFFICIENCY</b> . . . . .	<b>C-29</b>
<b>CHAPTER 5 REFERENCED STANDARDS</b> . . . . .	<b>C-77</b>
<b>INDEX</b> . . . . .	<b>C-83</b>
<b>IECC—RESIDENTIAL PROVISIONS</b> . . . . .	<b>R-1</b>
<b>CHAPTER 1 SCOPE AND ADMINISTRATION</b> . . . . .	<b>R-3</b>
<b>CHAPTER 2 DEFINITIONS</b> . . . . .	<b>R-7</b>
<b>CHAPTER 3 GENERAL REQUIREMENTS</b> . . . . .	<b>R-11</b>
<b>CHAPTER 4 RESIDENTIAL ENERGY EFFICIENCY</b> . . . . .	<b>R-29</b>
<b>CHAPTER 5 REFERENCED STANDARDS</b> . . . . .	<b>R-41</b>
<b>INDEX</b> . . . . .	<b>R-43</b>

## ANSI/ASHRAE/IES STANDARD 90.1-2010, ENERGY STANDARD FOR BUILDINGS EXCEPT LOW-RISE RESIDENTIAL BUILDINGS (I-P EDITION)

<b>Section</b>	
Foreword . . . . .	4
1 Purpose . . . . .	4
2 Scope . . . . .	4
3 Definitions, Abbreviations, and Acronyms . . . . .	5
4 Administration and Enforcement . . . . .	21
5 Building Envelope . . . . .	23
6 Heating, Ventilating, and Air Conditioning . . . . .	39
7 Service Water Heating . . . . .	70
8 Power . . . . .	73
9 Lighting . . . . .	75
10 Other Equipment . . . . .	86
11 Energy Cost Budget Method . . . . .	90
12 Normative References . . . . .	99
Normative Appendix A: Rated R-Value of Insulation and Assembly U-Factor, C-Factor, and F-Factor Determinations . . . . .	103
Normative Appendix B: Building Envelope Climate Criteria . . . . .	134
Normative Appendix C: Methodology for Building Envelope Trade-Off Option in Subsection 5.6 . . . . .	145
Normative Appendix D: Climatic Data . . . . .	154
Informative Appendix E: Informative References . . . . .	199
Informative Appendix F: Addenda Description Information . . . . .	201
Informative Appendix G: Performance Rating Method . . . . .	209