



INTERNATIONAL WILDLAND-URBAN INTERFACE CODE™





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2009 International Wildland-Urban Interface Code™

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PREFACE

Introduction

Internationally, code officials recognize the need for a modern, up-to-date code addressing the mitigation of fire in the wildland-urban interface. The *International Wildland-Urban Interface Code*TM, in this 2009 edition, is designed to bridge the gap between enforcement of the *International Building Code*[®] and *International Fire Code*[®] by mitigating the hazard of wildfires through model code regulations, which safeguard the public health and safety in all communities, large and small.

This comprehensive wildland-urban interface code establishes minimum regulations for land use and the built environment in designated wildland-urban interface areas using prescriptive and performance-related provisions. It is founded on data collected from tests and fire incidents, technical reports and mitigation strategies from around the world. This 2009 edition is fully compatible with all the *International Codes*® (I-Codes®) published by the International Code Council® (ICC®), including the *International Building Code*®, *International Energy Conservation Code*®, *International Existing Building Code*®, *International Fire Code*®, *International Fuel Gas Code*®, *International Mechanical Code*®, ICC *Performance Code*®, *International Plumbing Code*®, *International Private Sewage Disposal Code*®, *International Property Maintenance Code*®, *International Residential Code*® and *International Zoning Code*®.

The *International Wildland-Urban Interface Code* provisions provide many benefits, including the model code development process, which offers an international forum for fire safety professionals to discuss performance and prescriptive code requirements. This forum provides an excellent arena to debate proposed revisions. This model code also encourages international consistency in the application of provisions.

Development

The first edition of the *International Wildland-Urban Interface Code* (2003) was the culmination of an effort initiated in 2001 by the ICC and the three statutory members of the International Code Council: Building Officials and Code Administrators International, Inc. (BOCA), International Conference of Building Officials (ICBO) and Southern Building Code Congress International (SBCCI). The intent was to draft a comprehensive set of regulations for mitigating the hazard to life and property from the intrusion of fire from wildland exposures and fire from adjacent structures, and preventing structure fires from spreading to wildland fuels. Technical content of the 2000 *Urban-Wildland Interface Code*, published by the International Fire Code Institute, was utilized as the basis for the development, followed by the publication of the 2001 Final Draft. This 2009 edition presents the code as originally issued, with changes approved through the ICC Code Development Process through 2008. A new edition such as this is promulgated every three years.

This code is founded on principles intended to mitigate the hazard from fires through the development of provisions that adequately protect public health, safety and welfare; provisions that do not unnecessarily increase construction costs; provisions that do not restrict the use of new materials, products or methods of construction; and provisions that do not give preferential treatment to particular types or classes of materials, products or methods of construction.

Adoption

The *International Wildland-Urban Interface Code* is available for adoption and use by jurisdictions internationally. Its use within a governmental jurisdiction is intended to be accomplished through adoption by reference in accordance with proceedings establishing the jurisdiction's laws. At the time of adoption, jurisdictions should insert the appropriate information in provisions requiring specific local information, such as the name of the adopting jurisdiction. These locations are shown in bracketed words in small capital letters in the code and in the sample ordinance. The sample adoption ordinance on page ix addresses several key elements of a code adoption ordinance, including the information required for insertion into the code text.

Maintenance

The *International Wildland-Urban Interface Code* is kept up-to-date through the review of proposed changes submitted by code enforcing officials, industry representatives, design professionals and other interested parties. Proposed changes are carefully considered through an open code development process in which all interested and affected parties may participate.

The contents of this work are subject to change both through the code development cycles and the governmental body that enacts the code into law. For more information regarding the code development process, contact the Codes and Standards Development Department of the International Code Council.

Although the development procedure of the *International Wildland-Urban Interface Code* assures the highest degree of care, ICC, its members and those participating in the development of this code do not accept any liability resulting from compliance or noncompliance with the provisions, because ICC and its founding members do not have the power or authority to police or enforce compliance with the contents of this code. Only the governmental body that enacts the code into law has such authority.

Marginal Markings

Solid vertical lines in the margins within the body of the code indicate a technical change from the requirements of the 2006 edition. Deletion indicators in the form of an arrow (\Rightarrow) are provided in the margin where an entire section, paragraph, exception or table has been deleted or an item in a list of items or in a table has been deleted.

Italicized Terms

Selected terms set forth in Chapter 2, Definitions, are italicized where they appear in code text. Such terms are not italicized where the definition set forth in Chapter 2 does not impart the intended meaning in the use of the term. The terms selected have definitions which the user should read carefully to facilitate better understanding of the code.

Effective Use of the International Wildland-Urban Interface Code

Population growth and the expanding urban development into traditionally nonurban areas have increasingly brought humans into contact with wildfires. Between 1985 and 1994, wildfires destroyed more than 9,000 homes in the United States. Generally, these homes were located in areas "where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels," also known as the wildland-urban interface.

The International Wildland-Urban Interface Code (IWUIC) is a model code that is intended to be adopted and used supplemental to the adopted building and fire codes of a jurisdiction. The unrestricted use of property in wildland-urban interface areas is a potential threat to life and property from fire and resulting erosion. The IWUIC has as its objective the establishment of minimum special regulations for the safeguarding of life and property from the intrusion of fire from wildland fire exposures and fire exposures from adjacent structures and to prevent structure fires from spreading to wildland fuels, even in the absence of fire department intervention

Safeguards to prevent the occurrence of fires and to provide adequate fire protection facilities to control the spread of fire in wildland-urban interface areas are provided in a tiered manner commensurate with the relative level of hazard present.

Arrangement and Format of the 2009 IWUIC

Before applying the requirements of the IWUIC it is beneficial to understand its arrangement and format. The IWUIC, like other codes published by ICC, is arranged and organized to follow logical steps that generally occur during a plan review or inspection. The IWUIC is divided as follows:

Chapters	Subjects		
1–2	Administration and Definitions		
3–4	Wildland-Urban Interface Area Designation and Requirements		
5	Building Construction Regulations		
6	Fire Protection Requirements		
7	Referenced Standards		
Appendices A-H	Adoptable and Informational Appendices		

The following is a chapter-by-chapter synopsis of the scope and intent of the provisions of the *International Wildland-Urban Interface Code*:

Chapter 1 Administration. This chapter contains provisions for the application, enforcement and administration of subsequent requirements of the code. In addition to establishing the scope of the code, Chapter 1 identifies which buildings and structures come under its purview. Chapter 1 is largely concerned with maintaining "due process of law" in enforcing the regulations contained in the body of the code. Only through careful observation of the administrative provisions can the code official reasonably expect to demonstrate that "equal protection under the law" has been provided.

Chapter 2 Definitions. All terms that are defined in the code are listed alphabetically in Chapter 2. While a defined term may be used in one chapter or another, the meaning provided in Chapter 2 is applicable throughout the code.

Where understanding of a term's definition is especially key to or necessary for understanding of a particular code provision, the term is show in *italics* wherever it appears in the code. This is true only for those terms that have a meaning that is unique to the code. In other words, the generally understood meaning of a term or phrase might not be sufficient or consistent with the meaning prescribed by the code; therefore, it is essential that the code-defined meaning be known.

Guidance regarding tense, gender and plurality of defined terms as well as guidance regarding terms not defined in this code are also provided.

Chapter 3 Wildland-Urban Interface Areas. Chapter 3 provides for the fundamental aspect of applying the code—the legal declaration and establishment of wildland-urban interface areas within the adopting jurisdiction by the local legislative body. The provisions cover area analysis and declaration based on findings of fact (located in Appendix E), mapping of the area, legal recordation of the maps with the local keeper of records and the periodic review and reevaluation of the declared areas on a regular basis. If needed, revisions can be directed by the legislative body of the jurisdiction.

Chapter 4 Wildland-Urban Interface Area Requirements. The requirements of Chapter 4 apply to all occupancies in the urban-wildland interface and pertain to:

1. Fire service access to the property that is to be protected, including fire apparatus access roads and off-road driveways;

- 2. Premises identification;
- 3. Key boxes to provide ready access to properties secured by gated roadways or other impediments to rapid fire service access;
- 4. Fire protection water supplies, including adequate water sources, pumper apparatus drafting sites, fire hydrant systems and system reliability;
- 5. Fire department access to equipment such as fire suppression equipment and fire hydrants; and
- 6. Fire protection plans.

Chapter 5 Special Building Construction Regulations. The regulations in Chapter 5 establish minimum standards for the location, design and construction of buildings and structures based on fire hazard severity in the wildland-urban interface.

The construction provisions of Chapter 5 are intended to supplement the requirements of the *International Building Code* and address mitigation of the unique hazards posed to buildings by wildfire and to reduce the hazards of building fires spreading to wildland fuels. This is accomplished by requiring ignition-resistant construction materials based on the hazard severity of the building site. Construction features regulated include underfloor areas, roof coverings, eaves and soffits, gutters and downspouts, exterior walls, doors and windows, ventilation openings and accessory structures.

Chapter 6 Fire Protection Requirements. Chapter 6 establishes minimum fire protection requirements to mitigate the hazards to life and property from fire in the wildland-urban interface. The chapter includes both design-oriented and prescriptive mitigation strategies to reduce the hazards of fire originating within a structure spreading to the wildland and fire originating in the wildland spreading to structures.

Especially targeted for a systems-approach to fire protection are those new buildings which are deemed to be especially hazard-ous under Chapter 5; these buildings are required to be sprinklered. Other hazard mitigation strategies include establishing around structures defensible space zones wherein combustible vegetation and trees are regulated and kept away from buildings and trees are located 10 feet crown-to-crown away from each other. Additional hazards that are dealt with in Chapter 6 include spark arresters on chimneys, regulated storage of combustible materials, firewood and LP-gas.

Chapter 7 Referenced Standards. The code contains several references to standards that are used to regulate materials and methods of construction. Chapter 7 contains a comprehensive list of all standards that are referenced in the code. The standards are part of the code to the extent of the reference to the standard. Compliance with the referenced standard is necessary for compliance with this code. By providing specifically adopted standards, the construction and installation requirements necessary for compliance with the code can be readily determined. The basis for code compliance is, therefore, established and available on an equal basis to the code official, contractor, designer and owner.

Chapter 7 is organized in a manner that makes it easy to locate specific standards. It lists all of the referenced standards, alphabetically, by acronym of the promulgating agency of the standard. Each agency's standards are then listed in either alphabetical or numeric order based upon the standard identification. The list also contains the title of the standard; the edition (date) of the standard referenced; any addenda included as part of the ICC adoption; and the section or sections of this code that reference the standard.

Appendix A General Requirements. Appendix A, while not part of the code, can become part of the code when specifically included in the adopting ordinance (see sample ordinance on page ix). Its purpose is to provide fire-protection measures supplemental to those found in Chapter 6 to reduce the threat of wildfire in a wildland-urban interface area and improve the capability for controlling such fires. This appendix includes detailed requirements for vegetation control; the code official's authority to close wildland-interface areas in times of high fire danger; control of fires, fireworks usage and other sources of ignition; storage of hazardous materials and combustibles; bans the dumping of waste materials and ashes and coals in wildland-urban interface areas; protection of pumps and water supplies; and limits temporary uses within the wildland-urban interface area.

Appendix B Vegetation Management Plan. Appendix B, while not part of the code, can become part of the code when specifically included in the adopting ordinance (see sample ordinance on page ix). Its purpose is to provide criteria for submitting vegetation management plans, specifying their content and establishing a criterion for considering vegetation management as being a fuel modification.

Appendix C Fire Hazard Severity Form. Appendix C, while not part of the code, can become part of the code (replacing Table 502.1) when specifically included in the adopting ordinance (see sample ordinance on page ix). Its purpose is to provide an alternative methodology to using Table 502.1 for analyzing the fire hazard severity of building sites using a pre-assigned value/scoring system for each feature that impacts the hazard level of a building site. Included in the evaluation are site access, types and management of vegetation, percentage of defensible space on the site, site topography, class of roofing and other construction materials used on the building existing or to be constructed on the site, fire protection water supply, and whether utilities are installed above or below ground.

Appendix D Fire Danger Rating System. Appendix D is an excerpt from the National Fire Danger Rating System (NFDRS), 1978, United States Department of Agriculture Forest Service, General Technical Report INT-39, and is for information purposes and is not intended for adoption. The fuel models that are included are only general descriptions because they represent all wildfire fuels from Florida to Alaska and from the East Coast to California.

The National Fire Danger Rating System (NFDRS) is a set of computer programs and algorithms that allow land management agencies to estimate today's or tomorrow's fire danger for a given rating area. NFDRS characterizes fire danger by evaluating the approximate upper limit of fire behavior in a fire danger rating area during a 24-hour period based on fuels, topography and weather, or what is commonly called the fire triangle. Fire danger ratings are guides for initiating presuppression activities and selecting the appropriate level of initial response to a reported wildfire in lieu of detailed, site- and time-specific information.

Predicting the potential behavior and effects of wildland fire are essential tasks in fire management. Surface fire behavior and fire effects models and prediction systems are driven in part by fuelbed inputs such as load, bulk density, fuel particle size, heat content, and moisture content. To facilitate use in models and systems, fuelbed inputs have been formulated into fuel models. A fuel model is a set of fuelbed inputs needed by a particular fire behavior or fire effects model. Different kinds of fuel models are used in fire spread models in a variety of fire behavior modeling systems. The fuel models in this appendix correlate with the light, medium and heavy fuel definitions found in Chapter 2 of the code.

Appendix E Findings of Fact. Appendix E is an informational appendix that intends to provide a methodology for presenting the findings of fact that are required by Chapter 3 of the code when a jurisdiction defines and establishes a wildland-urban interface area that will be the subject of regulation by the IWUIC. The development of written "findings of fact" that justifies designation of wildland-interface areas by local jurisdictions requires that a certain amount of research and analysis be conducted to support a written finding that is both credible and professional. In the context of adopting a supplemental document such as the wildland-urban interface declaration, the writing of these findings is essential in creating the maps and overlap needed to use their specific options.

The purpose of this appendix is to provide an overview of how local officials could approach this process. There are three essential phenomena cited in some adoption statutes that vary from community to community: climate, topography and geography. Although it can be agreed that there are other findings that could draw distinction in local effects, these three features are also consistent with standard code text that offers opportunity to be more restrictive than local codes. The process demands a high level of professionalism to protect the jurisdiction's credibility in adopting more restrictive requirements. A superficial effort in preparing the findings of fact could jeopardize the proposed or adopted code restriction. Jurisdictions should devote a sufficient amount of time to draft the findings of fact to ensure that the facts are accurate, comprehensive and verifiable.

Appendix F Characteristics of Fire-Resistive Vegetation. Appendix F is an informational appendix provided for the convenience of the code user. It is simply a compilation of the eight characteristics of fire-resistive vegetation that can be used effectively within wildland-urban interface areas to reduce the likelihood of fire spread through vegetation.

Appendix G Self-Defense Mechanism The International Wildland-Urban Interface Code establishes a set of minimum standards to reduce the loss of property from wildfire. The purpose of these standards is to prevent wildfire spreading from vegetation to a building. Frequently, proposals are made by property or landowners of buildings located in the wildland-urban interface to consider other options and alternatives instead of meeting these minimum standards. Appendix G is an information appendix that provides discussion of some elements of the proposed self-defense mechanisms and their role in enhancing the protection of exposed structures in the wildland-urban interface. To accept alternative self-defense mechanisms, the code official must carefully examine whether these devices will be in place at the time of an event and whether or not they will assist or actually complicate the defense of the structure by fire suppression forces if they are available.

Appendix H International Wildland-Urban Interface Code Flowchart. Appendix H is an information appendix that is based on the "Decision Tree" concept and is intended to provide the code official with a graphical, flowchart representation of how the IWUIC is to be applied in an orderly manner.

ORDINANCE

The *International Codes* are designed and promulgated to be adopted by reference by ordinance. Jurisdictions wishing to adopt the 2009 *International Wildland-Urban Interface Code* as an enforceable regulation for the mitigation of fire in the wildland-urban interface should ensure that certain factual information is included in the adopting ordinance at the time adoption is being considered by the appropriate governmental body. The following sample adoption ordinance addresses several key elements of a code adoption ordinance, including the information required for insertion into the code text.

SAMPLE ORDINANCE FOR ADOPTION OF THE INTERNATIONAL WILDLAND-URBAN INTERFACE CODE ORDINANCE NO._____

An ordinance of the **[JURISDICTION]** adopting the 2009 edition of the *International Wildland-Urban Interface Code*, regulating and governing the mitigation of hazard to life and property from the intrusion of fire from wildland exposures, fire from adjacent structures and prevention of structure fires from spreading to wildland fuels in the **[JURISDICTION]**; providing for the issuance of permits and collection of fees therefor; repealing Ordinance No. ______ of the **[JURISDICTION]** and all other ordinances and parts of the ordinances in conflict therewith.

The [GOVERNING BODY] of the [JURISDICTION] does ordain as follows:

Section 1. That a certain document, three (3) copies of which are on file in the office of the [TITLE OF JURISDICTION'S KEEPER OF RECORDS] of [NAME OF JURISDICTION], being marked and designated as the *International Wildland-Urban Interface Code*, 2009 edition, including Appendix Chapters [FILL IN THE APPENDIX CHAPTERS BEING ADOPTED], as published by the International Code Council, be and is hereby adopted as the *Wildland-Urban Interface Code* of the [JURISDICTION], in the State of [STATE NAME] for regulating and governing the mitigation of hazard to life and property from the intrusion of fire from wildland exposures, fire from adjacent structures and prevention of structure fires from spreading to wildland fuels as herein provided; providing for the issuance of permits and collection of fees therefor; and each and all of the regulations, provisions, penalties, conditions and terms of said *Wildland-Urban Interface Code* on file in the office of the [JURISDICTION] are hereby referred to, adopted, and made a part hereof, as if fully set out in this ordinance, with the additions, insertions, deletions and changes, if any, prescribed in Section 2 of this ordinance.

Section 2. The following sections are hereby revised:

Section 101.1. Insert: [NAME OF JURISDICTION]
Section 103.1. Insert: [NAME OF DEPARTMENT]

Section 109.4.7. Insert: [OFFENSE, DOLLAR AMOUNT, NUMBER OF DAYS]

Section 114.4. Insert: [DOLLAR AMOUNT] in two places

Section 3. That Ordinance No. _____ of [JURISDICTION] entitled [FILL IN HERE THE COMPLETE TITLE OF THE ORDINANCE OR ORDINANCES IN EFFECT AT THE PRESENT TIME SO THAT THEY WILL BE REPEALED BY DEFINITE MENTION] and all other ordinances or parts of ordinances in conflict herewith are hereby repealed.

Section 4. That if any section, subsection, sentence, clause or phrase of this ordinance is, for any reason, held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this ordinance. The **[GOVERNING BODY]** hereby declares that it would have passed this ordinance, and each section, subsection, clause or phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses and phrases be declared unconstitutional.

Section 5. That nothing in this ordinance or in the *Wildland-Urban Interface Code* hereby adopted shall be construed to affect any suit or proceeding impending in any court, or any rights acquired, or liability incurred, or any cause or causes of action acquired or existing, under any act or ordinance hereby repealed as cited in Section 3 of this ordinance; nor shall any just or legal right or remedy of any character be lost, impaired or affected by this ordinance.

Section 6. That the **[JURISDICTION'S KEEPER OF RECORDS]** is hereby ordered and directed to cause this ordinance to be published. (An additional provision may be required to direct the number of times the ordinance is to be published and to specify that it is to be in a newspaper in general circulation. Posting may also be required.)

Section 7. That this ordinance and the rules, regulations, provisions, requirements, orders and matters established and adopted hereby shall take effect and be in full force and effect **[TIME PERIOD]** from and after the date of its final passage and adoption.

Section 8. Specific boundaries of natural or man-made features of wildland-urban interface areas shall be as shown on the wildland-urban interface area map. The legal description of such areas is as described as follows: **[INSERT LEGAL DESCRIPTION]**

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