

2015 ISEP™

INTERNATIONAL SOLAR ENERGY PROVISIONS™

Includes all I-Code solar energy provisions, plus SRCC Standards 100, 300 and 600

CODE ALERT!

Sign up now to receive critical code updates and free access to videos, book excerpts and training resources.

Signup is easy, subscribe now!
www.iccsafe.org/alerts



2015 International Solar Energy Provisions™

First Printing: March 2015

ISBN: 978-1-60983-604-7

COPYRIGHT © 2015
by
INTERNATIONAL CODE COUNCIL, INC.

ALL RIGHTS RESERVED. This 2015 *International Solar Energy Provisions* contains substantial copyrighted material from the 2015 *International Building, Energy Conservation, Fire, Mechanical, Plumbing, Residential and Swimming Pool and Spa Codes*, which are copyrighted works owned by the International Code Council, Inc. Without advance written permission from the copyright owner, no part of this book may be reproduced, distributed or transmitted in any form or by any means, including, without limitation, electronic, optical or mechanical means (by way of example and not limitation, photocopying, or recording by or in an information storage retrieval system). For information on permission to copy material exceeding fair use, please contact: Publications, 4051 Flossmoor Road, Country Club Hills, IL 60478-5795. Phone 1-888-ICC-SAFE (422-7233).

SRCC 100, *Minimum Standards for Solar Thermal Collectors*; SRCC 300, *Minimum Standards for Solar Water Heating Systems*; and SRCC 600, *Minimum Standards for Solar Thermal Concentrating Collectors* are copyrighted works of the Solar Rating & Certification Corporation and are reprinted herein with permission.

Trademarks: “International Code Council”, the “International Code Council” logo, and the “International Solar Energy Provisions” are trademarks of the International Code Council, Inc. “Solar Rating & Certification Corporation,” the “SRCC”, the “SRCC” logo, “OG-100”, the “OG-100” logo, “OG-300”, and the “OG-300” logo are trademarks of the Solar Rating & Certification Corporation.

PRINTED IN THE U.S.A.

PREFACE

The International Code Council develops model codes and standards used in the design, build and compliance process. The codes are founded on broad-based principles that make possible the use of new materials and new building designs. The International Codes® (I-Codes®) are chosen by most U.S. communities and many global markets for the design, construction and administration of safe, sustainable, affordable and resilient structures, including solar energy systems. As solar technologies have matured, become more cost effective and more mainstream, solar provisions have been featured throughout the I-Codes.

This 2015 *International Solar Energy Provisions*™ (ISEP™) brings together in one, easy-to-use format all solar energy provisions found throughout the 2015 I-Codes for both solar thermal and photovoltaic energy systems. These provisions are fully coordinated with those already in the I-Codes, including the *International Building Code*®, *International Energy Conservation Code*®, *International Fire Code*®, *International Mechanical Code*®, *International Plumbing Code*®, *International Residential Code*® and the *International Swimming Pool and Spa Code*™, thereby simplifying implementation. Adoption of the family of the 2015 I-Codes by a jurisdiction would include all of the provisions found in this document.

Modeled after the format of the *International Energy Conservation Code*® (IECC®), the commercial and residential sections are separate and distinct, each including administrative provisions, definitions, general regulations, and system-specific requirements for solar thermal (or solar heating and cooling) and photovoltaic system types. Provisions for typical water heaters and other heating or cooling systems have also been included because they may be used as backup or in hybrid solar systems. For electrical requirements, reference is made to NFPA 70, the *National Electrical Code*, as published by the National Fire Protection Association.

In addition to the 2015 *International Solar Energy Provisions*, this document includes three standards from the Solar Rating & Certification Corporation (SRCC). These standards are referenced by the *International Residential Code* and have been reprinted, with permission, in their entirety. They include: SRCC 100, *Minimum Standards for Solar Thermal Collectors*; SRCC 300, *Minimum Standards for Solar Water Heating Systems*; and SRCC 600, *Minimum Standards for Solar Thermal Concentrating Collectors*. Additional resources such as sample permitting forms and basic principles from the U.S. Department of Energy make the 2015 ISEP the most comprehensive document for solar energy provisions/standards in the nation.

Letter Designations

The 2015 ISEP is divided into two distinct parts: Part CS, Commercial Solar Energy; and Part RS, Residential Solar Energy. The section numbers in Part CS are preceded by capital letters CS (e.g., CS101.1) to indicate commercial provisions. Section numbers in Part RS are preceded by capital letters RS (e.g., RS101.1) to indicate residential provisions. In parentheses immediately following the ISEP section numbers are the code acronym and section number from the original *International Code* source, according to the following list:

- (IBC): International Building Code;
- (IECC): International Energy Conservation Code;
- (IFC): International Fire Code;
- (IMC): International Mechanical Code;
- (IPC): International Plumbing Code;
- (ISPSC): International Swimming Pool and Spa Code;
- (R): International Residential Code – Building Provisions;
- (M): International Residential Code – Mechanical Provisions;
- (N): International Residential Code – Energy Provisions; and
- (P): International Residential Code – Plumbing Provisions.

Format Designations

Because the ISEP provisions are a compilation, the original text often contains language referencing back to the source code itself. However, such provisions also apply to the ISEP as a whole. When the phrase [this code] or [this chapter] is shown in brackets, it denotes a reference to the ISEP as a collection of the same relevant code provisions.

Supporting, clarifying or contextual notes have been added throughout the document to aid in understanding. So as not to be confused with the code text, and for purposes of easy identification, these notes are shown directly under the section, indented and in an italicized font.

Italicized Terms

Selected terms set forth in Chapter 2, Definitions, are italicized where they appear in code text. Where a term's definition is especially key or necessary to understanding a particular code provision, the term is shown in italics. This is true only for those terms that have a meaning that is unique to the code. The terms selected have definitions that the user should read carefully to facilitate better understanding of the code.

The 2015 ISEP Definitions chapters are not intended as all-inclusive lists of the italicized terms in the *International Codes*. Only those italicized terms directly related to solar energy systems have been included and defined in the 2015 ISEP chapters. Where terms are italicized and not defined herein, the definitions can be found in the corresponding source code document.

TABLE OF CONTENTS

<p><i>ISEP—COMMERCIAL PROVISIONS CS-1</i></p> <p>CHAPTER 1 SCOPE AND ADMINISTRATION CS-3</p> <p>CHAPTER 2 DEFINITIONS CS-7</p> <p>CHAPTER 3 GENERAL REQUIREMENTS CS-9</p> <p>CHAPTER 4 SOLAR THERMAL AND AUXILIARY SYSTEMS CS-17</p> <p>CHAPTER 5 PHOTOVOLTAIC SYSTEMS CS-23</p> <p>CHAPTER 6 ALTERNATE COMPLIANCE PROVISIONS CS-29</p> <p>CHAPTER 7 REFERENCED STANDARDS CS-33</p> <p>INDEX CS-37</p>	<p><i>ISEP—RESIDENTIAL PROVISIONS RS-1</i></p> <p>CHAPTER 1 SCOPE AND ADMINISTRATION RS-3</p> <p>CHAPTER 2 DEFINITIONS RS-7</p> <p>CHAPTER 3 SOLAR THERMAL AND AUXILIARY SYSTEMS RS-9</p> <p>CHAPTER 4 PHOTOVOLTAIC SYSTEMS RS-15</p> <p>CHAPTER 5 ALTERNATE COMPLIANCE PROVISIONS RS-19</p> <p>CHAPTER 6 REFERENCED STANDARDS RS-21</p> <p>APPENDIX U APPENDIX U SOLAR-READY PROVISIONS— DETACHED ONE- AND TWO-FAMILY DWELLINGS, MULTIPLE SINGLE-FAMILY DWELLINGS (TOWNHOUSES) RS-25</p> <p>INDEX RS-27</p> <p>SRCC STANDARD 100 Minimum Standards for Solar Thermal Collectors</p> <p>SRCC STANDARD 300 Minimum Standard for Solar Water Heating Systems</p> <p>SRCC STANDARD 600 Minimum Standard for Solar Thermal Concentrating Collectors</p> <p>RESOURCE A RESOURCE-1</p> <p>RESOURCE B RESOURCE-17</p>
---	--

ISEP—COMMERCIAL PROVISIONS

TABLE OF CONTENTS

CHAPTER 1 SCOPE AND ADMINISTRATION	CS-3	PART 2—AUXILIARY AND BACKUP THERMAL SYSTEMS	CS-18
PART 1—SCOPE AND APPLICATION	CS-3	CS405 Water Heaters	CS-18
Section		CS406 Pressure Vessels	CS-19
CS101 General	CS-3	CS407 Boilers	CS-19
CS102 Applicability	CS-3	CS408 Boiler Connections	CS-20
PART 2—ADMINISTRATION AND ENFORCEMENT	CS-4	CS409 Safety and Pressure Relief Valves and Controls	CS-20
CS103 Approval	CS-4	CS410 Boiler Low-water Cutoff	CS-20
CS104 Permits	CS-4	CS411 Bottom Blowoff Valve	CS-20
CS105 Inspections and Testing	CS-5	CS412 Hot Water Boiler Expansion Tank	CS-21
CHAPTER 2 DEFINITIONS	CS-7	CS413 Gauges	CS-21
Section		CS414 Tests	CS-21
CS201 General	CS-7	CHAPTER 5 PHOTOVOLTAIC SYSTEMS	CS-23
CS202 General Definitions	CS-7	Section	
CHAPTER 3 GENERAL REQUIREMENTS	CS-9	CS501 General	CS-23
Section		CS502 Fire Classification	CS-23
CS301 General	CS-9	CS503 Requirements for Roof Coverings	CS-24
CS302 Protection of Structure	CS-10	CS504 Rooftop Structures	CS-24
CS303 Equipment and Appliance Location	CS-11	CS505 Photovoltaic Panels and Modules	CS-25
CS304 Installation	CS-11	CS506 Construction Documents	CS-25
CS305 Piping Support	CS-12	CS507 Live Loads	CS-25
CS306 Access and Service Space	CS-12	CS508 Earthquake Loads	CS-25
CS307 Condensate Disposal	CS-14	CS509 Electrical Equipment, Wiring and Hazards	CS-26
CS308 Temperature Control	CS-14	CHAPTER 6 ALTERNATE COMPLIANCE PROVISIONS	CS-29
CS309 Heating and Cooling Load Calculations	CS-15	CS601 Definitions	CS-29
CHAPTER 4 SOLAR THERMAL AND AUXILIARY SYSTEMS	CS-17	CS602 Commercial Energy Efficiency	CS-29
PART 1—SOLAR THERMAL SYSTEMS	CS-17	CS603 Energy	CS-31
Section		CS604 Heaters	CS-31
CS401 General	CS-17	CHAPTER 7 REFERENCED STANDARDS	CS-33
CS402 Installation	CS-17	INDEX	CS-37
CS403 Heat Transfer Fluids	CS-18		
CS404 Materials	CS-18		