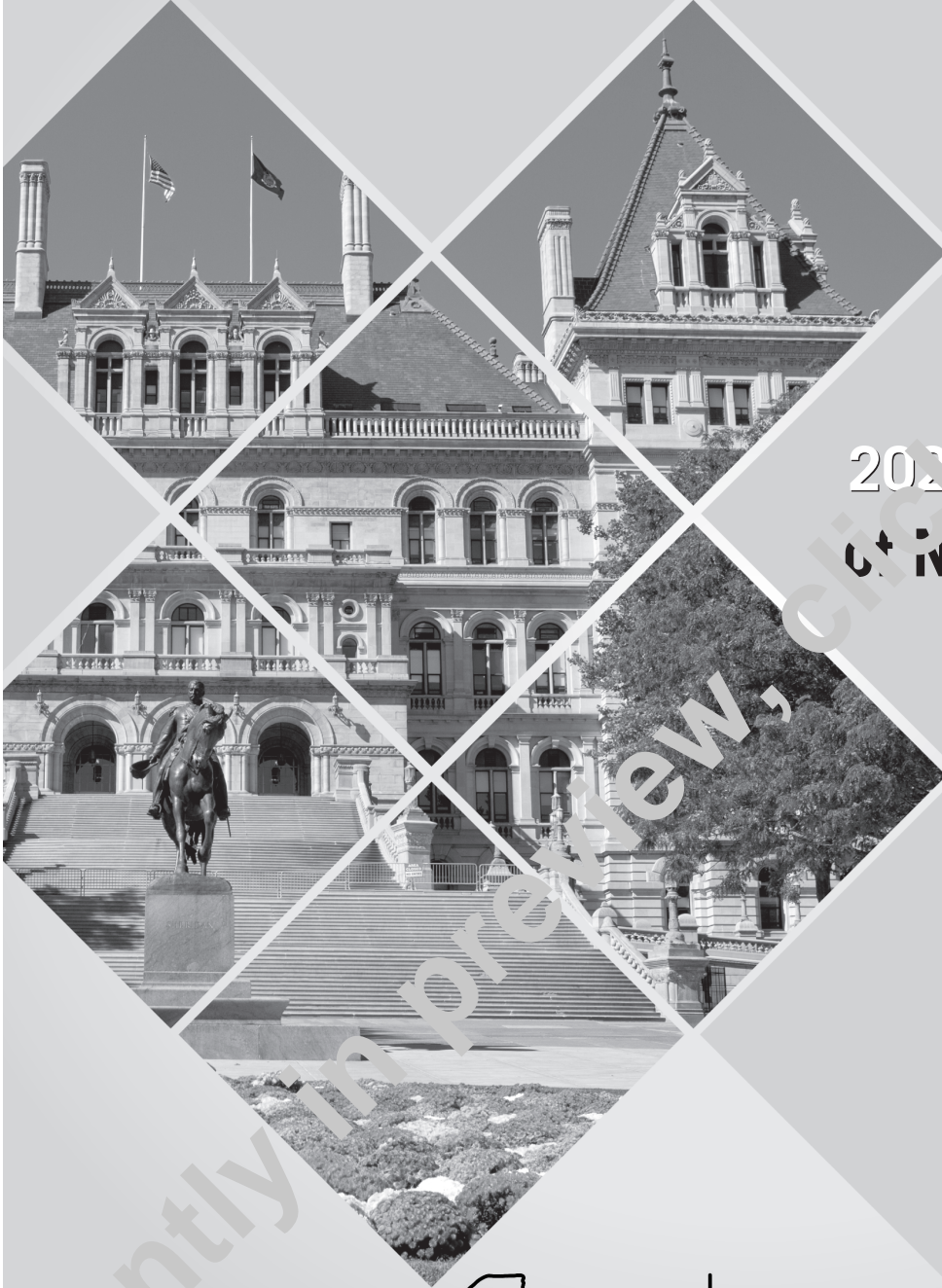


ANDREW M. CUOMO GOVERNOR
ROSSANA ROSADO SECRETARY OF STATE



2020 FUEL GAS CODE
of NEW YORK STATE



**Building Standards
and Codes**



2020 Fuel Gas Code of New York State

Publication Date: November 2019

ISBN: 978-1-60983-915-4

COPYRIGHT © 2019
by
INTERNATIONAL CODE COUNCIL, INC.
and
NEW YORK STATE DEPARTMENT OF STATE

ALL RIGHTS RESERVED. This 2020 *Fuel Gas Code of New York State* is a copyrighted work owned by the International Code Council, Inc. (“ICC”). This work contains: (1) portions of the ICC International Codes® (I-Codes®); (2) material that is a derivative of the I-Codes; and (3) wholly original materials prepared by the New York State Department of State (NYS DOS) or by the New York State Fire Prevention and Building Code Council (the “Code Council”). The International Code Council, Inc., has copyright ownership of the I-Codes. The International Code Council and the New York State Department of State have joint copyright ownership of the material that is a derivative of the I-Codes. The New York State Department of State has copyright ownership of the wholly original materials prepared by the New York State Department of State and/or by the Code Council. As to the ICC International Codes, all rights, including the right of reproduction in whole or in part in any form, are reserved to the International Code Council. As to the material that is derivative of the I-Codes, all rights, including the right of reproduction in whole or in part in any form, are reserved to the International Code Council and the New York State Department of State, jointly. As to the wholly original materials prepared by the New York State Department of State or by the Code Council, all rights, including the right of reproduction in whole or in part in any form, are reserved to the New York State Department of State. 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 use rights and permissions, please contact: ICC Publications, 4051 Flossmoor Road, Country Club Hills, IL 60478. Phone 1-888-ICC-SAFE (422-7235).

Trademarks: “International Code Council,” the “International Code Council” logo, “ICC,” the “ICC” logo, “International Fuel Gas Code,” “IFGC” and other names and trademarks appearing in this book are trademarks of the International Code Council, Inc., and/or its licensors (as applicable), and may not be used without permission.

Material designated IFGS
by
AMERICAN GAS ASSOCIATION
400 N. Capitol Street, N.W. · Washington, DC 20001
(202) 824-7000
Copyright © American Gas Association, 2017. All rights reserved.

ACKNOWLEDGMENTS

With gratitude, the Department of State acknowledges the contributions of the following individuals in the creation of the 2020 Codes of New York State:

STATE FIRE PREVENTION AND BUILDING CODE COUNCIL

Rossana Rosado	Chair – Secretary of State, New York State Department of State Designee - Matthew W. Tebo, Esq.
Francis J. Nerney, Jr.	State Fire Administrator, Office of Fire Prevention and Control Designee - Paul Martin
RuthAnne Visnauskas	Commissioner, Division of Housing and Community Renewal Designee - Michael Weber Designee - Joseph Palozzola
Roberta Reardon	Commissioner, New York State Department of Labor Designee - Vincent R. Rapacciuolo
Honorable Bill de Blasio	Mayor, City of New York Designee - Keith Wen, NYC Department of Buildings
Honorable Michael R. Sabatino, Jr.	Councilmember, City of Yonkers
Claudia K. Braymer, Esq.	County Board of Supervisors, Warren County
David A. Seeley	Supervisor, Town of Irondequoit
Timothy DeRuyscher, P.E. FSFPE	Professional Engineer Representative
Patrick Dolan	Trade Union Representative, Steamfitters Union, 638
Shawn Hamlin, R.A.	Registered Architect Representative, Hamlin Design Group
Robert Hughes	Code Enforcement Representative, Village of Pleasantville
Dominic Marinelli	Persons with Disabilities Representative, United Spinal Association
Joseph J. Toomey	Fire Service Representative, Albany Fire Department
William W. Tuyn	Builders Representative, Forbes Capretto Homes

DEPARTMENT OF STATE

Rossana Rosado	Secretary of State
Brendan Hughes	Executive Deputy Secretary of State
James W. Leary, Esq.	Assistant Executive Deputy Secretary of State
Mark P. Pattison	Deputy Secretary of State for Local Government
Matthew W. Tebo, Esq.	Deputy Secretary of State for Agency Transformation and External Affairs
John R. Addario, P.E.	Director of the Division of Building Standards and Codes
Brian Tollisen, P.E.	Deputy Director of the Division of Building Standards and Codes
Gerard A. Hathaway, R.A.	Assistant Director for Code Development
Kevin Duerr-Clark, P.E.	Assistant Director for Technical Support
Francis “Nick” McAndrew, P.E.	Assistant Director for Educational Services
Joseph Hill, R.A.	Assistant Director for Code Administration
Jeffrey M. Hinderliter, P.E.	Professional Engineer
Emma Gonzalez-Laders, R.A., LEED AP	Senior Architect
Daniel Carroll	Code Compliance Specialist I
Jane Miller	Program Aide
Joseph P. Ball, Esq.	Supervising Attorney
Luigiota K. Hyde, Esq.	Senior Attorney

IN MEMORIAM

John H. Flanagan	Code Enforcement Representative, Code Council Member (2003–2017)
Honorable Judith Kennedy	Mayor, City of Newburgh, Code Council Member (2013–2018)
Brendan Fitzgerald	Executive Deputy Secretary of State (2016–2018)

Currently in preview, click buy full version

PREFACE

Introduction

The *Fuel Gas Code of New York State* (FGCNYS) establishes minimum requirements for fuel gas systems and gas-fired appliances using prescriptive and performance-related provisions. It is founded on broad-based principles that make possible the use of new materials and new fuel gas systems and appliance designs. This 2020 edition was developed as a derivative work of the 2018 edition of the *International Fuel Gas Code*® (IFGC®) published by the International Code Council® (ICC®).

Intention

This code is founded on principles intended to establish provisions consistent with the scope of a fuel gas code that adequately protects 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.

Letter Designations in Front of Section Numbers

The bracketed letter designations for the party responsible for portions of this code are as follows:

ICC Code Development Committee

- [A] = Administrative Code Development Committee;
- [BF] = IBC—Fire Safety Code Development Committee;
- [BG] = IBC—General Code Development Committee;
- [BS] = IBC—Structural Code Development Committee;
- [E] = International Energy Conservation Code Development Committee;
- [F] = International Fire Code Development Committee;
- [M] = International Mechanical Code Development Committee; and
- [P] = International Plumbing Code Development Committee

New York State Code Development

- [NY] = New York State Department of State

The *International Fuel Gas Code* segregates section numbers into two categories—“code” and “standard.” These are designated by the acronyms “IFGC” and “IFGS.” The 2020 *Fuel Gas Code of New York State* does not retain these designations.

Marginal Markings

Solid vertical lines in the margins within the body of the code indicate a technical change from the requirements of the 2015 edition. Deletion indicators in the form of an arrow (➡) 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 a table has been deleted.

Italicized Terms

Words and terms defined in Chapter 2, Definitions, are italicized where they appear in code text and the Chapter 2 definition applies. Where such words and terms are not italicized, common-use definitions apply. The words and terms selected have code-specific definitions that the user should read carefully to facilitate better understanding of the code.

EFFECTIVE USE OF THE FUEL GAS CODE OF NEW YORK STATE

The *Fuel Gas Code of New York State* (FGCNYS) is a code that regulates the design and installation of fuel gas distribution piping and systems, appliances, appliance venting systems, combustion air provisions, gaseous hydrogen systems and motor vehicle gaseous-fuel-dispensing stations. The definition of fuel gas includes natural, liquefied petroleum and manufactured gases and mixtures of these gases.

The purpose of the code is to establish the minimum acceptable level of safety and to protect life and property from the potential dangers associated with the storage, distribution and usage of fuel gases and the byproducts of combustion of such fuels. The code also protects the personnel that install, maintain, service and replace the systems and appliances addressed by this code.

With the exception of Section 401.1.1, the FGCNYS does not address utility-owned piping and equipment (i.e., anything upstream of the point of delivery). See the definition of “point of delivery” and Section 501.8 for other code coverage exemptions.

The FGCNYS is primarily a specification-oriented (prescriptive) code with some performance-oriented text. For example, Section 503.3.1 is a performance statement, but Chapter 5 contains prescriptive requirements that will cause Section 503.3.1 to be satisfied.

The FGCNYS applies to all occupancies including one- and two-family dwellings and townhouses. The RCNYS is referenced for coverage of one- and two-family dwellings and townhouses; however, in effect, the FGCNYS provisions are still applicable because the fuel gas chapter in the RCNYS (Chapter 24) is composed entirely of text extracted from the FGCNYS. Therefore, whether using the FGCNYS or the RCNYS, the fuel gas provisions will be identical. The FGCNYS does not apply to piping systems that operate at pressures in excess of 125 psig for natural gas and 20 psig for LP-gas (note exception in Section 402.7).

The general Section 104.3 and the specific Sections 304.8, 402.3, 503.5.5 and 503.6.10 allow combustion air provisions, pipe sizing and chimney and vent sizing to be performed by approved engineering methods as alternatives to the prescriptive methods in the code.

Arrangement and Format of the 2020 FGCNYS

The format of the FGCNYS allows each chapter to be devoted to a particular subject, with the exception of Chapter 3, which contains general subject matters that are not extensive enough to warrant their own independent chapter.

Chapter 1 Scope and Administration. Chapter 1 establishes the limits of applicability of the code and describes how the code is to be applied and enforced. A fuel gas code, like any other code, is intended to be adopted as a legally enforceable document, and it cannot be effective without adequate provisions for its administration and enforcement.

Chapter 2 Definitions. Chapter 2 is the repository of the definitions of terms used in the body of the code. Codes are technical documents and every word, term and punctuation mark can impact the meaning of the code text and the intended results. The code often uses terms that have a unique meaning in the code and the code meaning can differ substantially from the ordinarily understood meaning of the term as used outside of the code.

The terms defined in Chapter 2 are deemed to be of prime importance in establishing the meaning and intent of the code text that uses the terms. The user of the code should be familiar with and consult this chapter because the definitions are essential to the correct interpretation of the code and because the user may not be aware that a term is defined.

Chapter 3 General Regulations. Chapter 3 contains broadly applicable requirements related to appliance location and installation, appliance and systems access, protection of structural elements and clearances to combustibles, among others. This chapter also covers combustion air provisions for gas-fired appliances.

Chapter 4 Gas Piping Installations. Chapter 4 covers the allowable materials for gas piping systems and the sizing and installation of such systems. It also covers pressure regulators, appliance connections and overpressure protection devices. Gas piping systems are sized to supply the maximum demand while maintaining the supply pressure necessary for safe operation of the appliances served.

Chapter 5 Chimneys and Vents. Chapter 5 regulates the design, construction, installation, maintenance, repair and approval of chimneys, vents, venting systems and their connections to gas-fired appliances. Properly designed chimneys, vents and venting systems are necessary to conduct to the outdoors the flue gases produced by the combustion of fuels in appliances. The provisions of this chapter are intended to minimize the hazards associated with high temperatures and potentially toxic and corrosive combustion gases. This chapter addresses all of the factory-built and site-built chimneys, vents and venting systems used to vent all types and categories of appliances. It also addresses direct-vent appliances, integral vent appliances, side-wall mechanically vented appliances and exhaust hoods that convey the combustion byproducts from cooking and other process appliances.

Chapter 6 Specific Appliances. Chapter 6 addresses specific appliances that the code intends to regulate. Each main section applies to a unique type of gas-fired appliance and specifies the product standards to which the appliance must be listed. The general requirements found in the previous Chapters 1 through 5 also apply and the sections in Chapter 6 add the special requirements that are specific to each type of appliance.

Chapter 7 Gaseous Hydrogen Systems. Chapter 7 is specific to gaseous hydrogen generation, storage, distribution and utilization systems, appliances and equipment. Note that hydrogen is not within the definition of "Fuel gas," but it is, nonetheless, commonly used as a fuel for fuel-cell power generation and fuel-cell powered motor vehicles. The scope of Chapter 7 is not limited to any particular use of hydrogen (see Sections 622 and 635). Hydrogen systems have unique potential hazards because of the specific gravity of the gas, its chemical effect on materials and the fact that it is not odorized.

Chapter 8 Referenced Standards. Chapter 8 lists all of the product and installation standards and codes that are referenced throughout Chapters 1 through 7. The standards are part of the code to the extent of the reference to the standard. Chapter 8 provides the full title and edition year of the standards and codes, in addition to the address of the promulgators and the section numbers in which the standards and codes are referenced.

Appendix A Sizing and Capacities of Gas Piping. This appendix is informative and not part of the code. It provides design guidance, useful facts and data and multiple examples of how to apply the sizing tables and sizing methodologies of Chapter 4.

Appendix B Sizing of Venting Systems Serving Appliances Equipped with Draft Hoods, Category I Appliances and Appliances Listed for Use with Type B Vents. This appendix is informative and not part of the code. It contains multiple examples of how to apply the vent and chimney tables and methodologies of Chapter 5.

Appendix C Exit Terminals of Mechanical Draft and Direct-vent Venting Systems. This appendix is informative and not part of the code. It consists of a figure and notes that visually depict code requirements from Chapter 5 for vent terminals with respect to the openings found in building exterior walls.

Appendix D Recommended Procedure for Safety Inspection of an Existing Appliance Installation. This appendix is informative and not part of the code. It provides recommended procedures for testing and inspecting an appliance installation to determine if the installation is operating safely and if the appliance is in a safe condition.

TABLE OF CONTENTS

CHAPTER 1 SCOPE AND ADMINISTRATION 1	409 Shutoff Valves 75
Section	410 Flow Controls 75
101 Title, Scope and Purpose 1	411 Appliance and Manufactured Home Connections 77
102 Applicability 2	412 Liquefied Petroleum Gas Motor Vehicle Fuel-dispensing Facilities 77
103 Administration and Enforcement 3	413 Compressed Natural Gas Motor Vehicle Fuel-dispensing Facilities 79
104 Materials, Equipment and Methods of Construction 4	414 Supplemental and Standby Gas Supply 80
105 Building Permits, Construction Inspections, Stop Work Orders, and Certificates of Occupancy 5	415 Piping Support Intervals 80
106 Submittal Documents 6	416 Overpressure Protection Devices 81
107 Service Utilities 7	
CHAPTER 2 DEFINITIONS 9	CHAPTER 5 CHIMNEYS AND VENTS 83
Section	Section
201 General 9	501 General 83
202 General Definitions 9	502 Vents 84
CHAPTER 3 GENERAL REGULATIONS 17	503 Venting of Appliances 85
Section	504 Venting of Category I Appliance Venting Systems 94
301 General 17	505 Direct-vent, Integral Vent, Mechanical Vent and Ventilation/Exhaust Hood Venting 98
302 Structural Safety 18	506 Factory-built Chimneys 99
303 Appliance Location 18	
304 Combustion, Ventilation and Dilution Air 19	CHAPTER 6 SPECIFIC APPLIANCES 121
305 Installation 22	Section
306 Access and Service Space 23	601 General 121
307 Condensate Disposal 25	602 Decorative Appliances for Installation in Fireplaces 121
308 Clearance Reduction 25	603 Log Lighters 121
309 Electrical 26	604 Vented Gas Fireplaces (Decorative Appliances) 121
310 Electrical Bonding 26	605 Vented Gas Fireplace Heaters 121
CHAPTER 4 GAS PIPING INSTALLATIONS 29	606 Incinerators and Crematories 121
Section	607 Commercial-industrial Incinerators 121
401 General 29	608 Vented Wall Furnaces 121
402 Pipe Sizing 29	609 Floor Furnaces 121
403 Piping Materials 30	610 Duct Furnaces 122
404 Piping System Installation 69	611 Nonrecirculating Direct-fired Industrial Air Heaters 122
405 Piping Bends and Changes in Direction 71	612 Recirculating Direct-fired Industrial Air Heaters 123
406 Inspection, Testing and Purging 72	613 Clothes Dryers 123
407 Piping Support 74	
408 Drips and Sloped Piping 74	

TABLE OF CONTENTS

614 Clothes Dryer Exhaust 123

615 Sauna Heaters 125

616 Engine and Gas Turbine-powered
Equipment 125

617 Pool and Spa Heaters 126

618 Forced-air Warm-air Furnaces 126

619 Conversion Burners 126

620 Unit Heaters 127

621 Unvented Room Heaters 127

622 Vented Room Heaters 127

623 Cooking Appliances 127

624 Water Heaters 128

625 Refrigerators 128

626 Gas-fired Toilets 128

627 Air-conditioning Appliances 128

628 Illuminating Appliances 129

629 Small Ceramic Kilns 129

630 Infrared Radiant Heaters 129

631 Boilers 130

632 Equipment Installed in Existing
Unlisted Boilers 130

633 Stationary Fuel-cell Power Systems 130

634 Chimney Damper Opening Area 130

635 Gaseous Hydrogen Systems 130

636 Outdoor Decorative Appliances 130

CHAPTER 7 GASEOUS HYDROGEN SYSTEMS 131

Section

701 General 131

702 General Definitions 131

703 General Requirements 131

704 Piping, Use and Handling 132

705 Testing of Hydrogen Piping Systems 133

706 Location of Gaseous
Hydrogen Systems 134

707 Operation and Maintenance of Gaseous
Hydrogen Systems 134

708 Design of Liquefied Hydrogen Systems
Associated with Hydrogen Vaporization
Operations 134

CHAPTER 8 REFERENCED STANDARDS 135

APPENDIX A SIZING AND CAPACITIES OF GAS PIPING 141

APPENDIX B SIZING OF VENTING SYSTEMS SERVING APPLIANCES EQUIPPED WITH DRAFT HOODS, CATEGORY I APPLIANCES AND APPLIANCES LISTED FOR USE WITH TYPE B VENTS 151

APPENDIX C EXIT TERMINALS OF MECHANICAL DRAFT AND DIRECT-VENT VENTING SYSTEMS 161

APPENDIX D RECOMMENDED PROCEDURE FOR SAFETY INSPECTION OF AN EXISTING APPLIANCE INSTALLATION 163

INDEX 169