NFPA®

59

Utility LP-Gas Plant Code

2021

IMPORTANT NOTICES AND DISCLAIMERS CONCERNING NFPA® STANDARDS

NFPA® codes, standards, recommended practices, and guides ("NFPA Standards"), of which the document contained herein is one, are developed through a consensus standards development process approved by the American National Standards Institute. This process brings together volunteers representing varied viewpoints and interests to achieve consensus on fire and other safety issues. While the NFPA administers the process and establishes rules to promote fairness in the development of consensus, it does not independently test, evaluate, or verify the accuracy of any information or the soundness of any judgments contained in NFPA Standards.

The NFPA disclaims liability for any personal injury, property, or other damages of any nature whatsoever, whether special, indirect, consequential or compensatory, directly or indirectly resulting from the publication, use of, or reliance on NFPA Standards. The NFPA also makes no guaranty or warranty as to the accuracy or completeness of any information published herein.

In issuing and making NFPA Standards available, the NFPA is not undertaking to render professional or other services for or on behalf of any person or entity. Nor is the NFPA undertaking to perform any duty owed by any person or entity to someone else. Anyone using this document should rely on his or her own independent judgment or, as appropriate, seek the advice of a competent professional in determining the exercise of reasonable care in any given circumstances.

The NFPA has no power, nor does it undertake, to police or enforce compliance with the contents of NFPA Standards. Nor does the NFPA list, certify, test, or inspect products, designs, or installations for compliance with this document. Any certification or other statement of compliance with the requirements of this document shall not be attributable to the NFPA and is solely the responsibility of the certifier or maker of the statement.

REVISION SYMBOLS IDENTIFYING CHANGES FROM THE PREVIOUS EDITION

Text revisions are shaded. A Δ before a section number indicates that words within that section were deleted and a Δ to the left of a table or figure number indicates a revision to an existing table or figure. When a chapter was heavily revised, the entire chapter is marked throughout with the Δ symbol. Where one or more sections were deleted, a • is placed between the remaining sections. Chapters, annexes, sections, figures, and tables that are new are indicated with an *N*.

Note that these indicators are a guide. Rearrangement of sections may not be captured in the markup, but users can view complete revision details in the First and Second Draft Reports located in the archived revision information section of each code at www.nfpa.org/docinfo. Any subsequent changes from the NFPA Technical Meeting, Tentative Interim Amendments, and Errata are also located there.

REMINDER: UPDATING OF NFPA STANDARDS

Users of NFPA codes, standards, recommended practices, and guides ("NFPA Standards") should be aware that these documents may be superseded at any time by the issuance of a new edition, may be amended with the issuance of Tentative Interim Amendments (TIAs), or be corrected by Errata. It is intended that through regular revisions and amendments, participants in the NFPA standards development process consider the then-current and available information on incidents, materials, technologies, innovations, and methods as these develop over time and that NFPA Standards reflect this consideration. Therefore, any previous edition of this document no longer represents the current NFPA Standard on the subject matter addressed. NFPA encourages the use of the most current edition of any NFPA Standard [as it may be amended by TIA(s) or Errata] to take advantage of current experience and understanding. An official NFPA Standard at any point in time consists of the current edition of the document, including any issued TIAs and Errata then in effect.

To determine whether an NFPA Standard has been amended through the issuance of TIAs or corrected by Errata, visit the "Codes & Standards" section at www.nfpa.org.

ADDITIONAL IMPORTANT NOTICES AND DISCLAIMERS CONCERNING NFPA® STANDARDS

Updating of NFPA Standards

Users of NFPA codes, standards, recommended practices, and guides ("NFPA Standards") should be aware that these documents may be superseded at any time by the issuance of a new edition, may be amended with the issuance of Tentative Interim Amendments (TIAs), or be corrected by Errata. It is intended that through regular revisions and amendments, participants in the NFPA standards development process consider the then-current and available information on incidents, materials, technologies, innovations, and methods as these develop over time and that NFPA Standards reflect this consideration. Therefore, any previous edition of this document no longer represents the current NFPA Standard on the subject matter addressed. NFPA encourages the use of the most current edition of any NFPA Standard [as it may be amended by TIA(s) or Errata] to take advantage of current experience and understanding. An official NFPA Standard at any point in time consists of the current edition of the document, including any issued TIAs and Errata then in effect.

To determine whether an NFPA Standard has been amended through the issuance of TIAs or corrected by Errata, visit the "Codes & Standards" section at www.nfpa.org.

Interpretations of NFPA Standards

A statement, written or oral, that is not processed in accordance with Section 6 of the Regulations Governing the Development of NFPA Standards shall not be considered the official position of NFPA or any of its Committees and shall not be considered to be, nor be relied upon as, a Formal Interpretation.

Patents

The NFPA does not take any position with respect to the validity of any patent rights referenced in, related to, or asserted in connection with an NFPA Standard. The users of NFPA Standards bear the sole responsibility for determining the validity of any such patent rights, as well as the risk of infringement of such rights, and the NFPA disclaims liability for the infringement of any patent resulting from the use of or reliance on NFPA Standards.

NFPA adheres to the policy of the American National Standards Institute (ANSI) regarding the inclusion of patents in American National Standards ("the ANSI Patent Policy"), and hereby gives the following notice pursuant to that policy:

NOTICE: The user's attention is called to the possibility that compliance with an NFPA Standard may require use of an invention covered by patent rights. NFPA takes no position as to the validity of any such patent rights or as to whether such patent rights constitute or include essential patent claims under the ANSI Patent Policy. If, in connection with the ANSI Patent Policy, a patent holder has filed a statement of willingness to grant licenses under these rights on reasonable and nondiscriminatory terms and conditions to applicants desiring to obtain such a license, copies of such filed statements can be obtained, on request, from NFPA. For further information, contact the NFPA at the address listed below.

Law and Regulations

Users of NFPA Standards should consult applicable federal, state, and local laws and regulations. NFPA does not, by the publication of its codes, standards, recommended practices, and guides, intend to urge action that is not in compliance with applicable laws, and these documents may not be construed as doing so.

Copyrights

NFPA Standards are copyrighted. They are made available for a wide variety of both public and private uses. These include both use, by reference, in laws and regulations, and use in private self-regulation, standardization, and the promotion of safe practices and methods. By making these documents available for use and adoption by public authorities and private users, the NFPA does not waive any rights in copyright to these documents.

Use of NFPA Standards for regulatory purposes should be accomplished through adoption by reference. The term "adoption by reference" means the citing of title, edition, and publishing information only. Any deletions, additions, and changes desired by the adopting authority should be noted separately in the adopting instrument. In order to assist NFPA in following the uses made of its documents, adopting authorities are requested to notify the NFPA (Attention: Secretary, Standards Council) in writing of such use. For technical assistance and questions concerning adoption of NFPA Standards, contact NFPA at the address below.

For Further Information

All questions or other communications relating to NFPA Standards and all requests for information on NFPA procedures governing its codes and standards development process, including information on the procedures for requesting Formal Interpretations, for proposing Tentative Interim Amendments, and for proposing revisions to NFPA standards during regular revision cycles, should be sent to NFPA headquarters, addressed to the attention of the Secretary, Standards Council, NFPA, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101; email: stds_admin@nfpa.org.

For more information about NFPA, visit the NFPA website at www.nfpa.org. All NFPA codes and standards can be viewed at no cost at www.nfpa.org/docinfo.

NFPA® 59

Utility LP-Gas Plant Code

2021 Edition

This edition of NFPA 59, *Utility LP-Gas Plant Code*, was prepared by the Technical Committee on LP-Gases at Utility Gas Plants. It was issued by the Standards Council on March 15, 2020, with an effective date of April 4, 2020, and supersedes all previous editions.

This edition of NFPA 59 was approved as an American National Standard on April 4, 2020.

Origin and Development of NFPA 59

NFPA 58, *Standard on Liquefied Petroleum Gases*, was applied to utility gas plants to the degree it covered them until NFPA 59 was adopted in 1949. Subsequent editions were adopted in 1954, 1956, 1958, 1962, 1963, 1968, 1974, 1976, 1979, 1984, 1989, 1992, 1995, 1998, 2001, 2004, 2008, 2012, and 2015.

The first edition of NFPA 59 resulted from the formation of a special committee under the sponsorship of the American Gas Association (AGA), which was made up of utility engineers, specialists in gas plant construction, and engineers in the liquefied petroleum gas industry. The standard was initially the result of the AGA Committee's acting in an advisory capacity to the Sectional Committee on Utility Gas of the NFPA Committee on Gases.

With the formation in 1966 of the Committee on Fuel Gases, NFPA 59 was assigned to that committee and then to a new Subcommittee on Utility Gas Plants. In 1972, responsibility for NFPA 59 was reassigned to the Committee on Liquefied Petroleum Gases, which retained the Subcommittee on Utility Gas Plants.

In 1992, the subcommittee was discharged, and NFPA 59 was assigned to the Technical Committee on LP-Gases at Utility Gas Plants. The committee maintains correlation with NFPA 58 by overlapping committee membership and concurrent or joint meetings.

Changes in the 2004 edition included reorganization of the document to conform to the *Manual of Style for NFPA Technical Committee Documents*.

For the 2008 edition, the committee expanded extracts from NFPA 58, where the coverage was similar, to provide users of NFPA 59 a more complete document. Many requirements of the code were clarified, and the organization of the document was simplified.

For the 2012 edition, a new section on corrosion protection was added that largely extracted existing requirements from 49 CFR 193. Those requirements were included in NFPA 59 to increase awareness of corrosion control requirements and to align requirements among similar types of gas process facilities. The committee also added a new section on training of personnel engaged in the maintenance or operation of propane-air mixing equipment. In addition, the 2012 edition included a new section on construction and modification records that required operators to maintain records of the materials of construction for process equipment piping systems containing LP-Gas and other flammable fluids, including their supporting system and foundations for plants that were built or modified after the effective date of the 2012 edition. The requirements for separation distances for containers less than 2000 gal (7.6 m^3) were extracted from NFPA 58 because more plants covered under the scope of NFPA 59 were using these smaller containers. The requirement for vent stacks on nonrefrigerated aboveground containers was removed because studies showed that the dispersion of discharged vapor was not a safety issue.

In the 2015 edition, the scope in 1.1.1 was clarified to identify the demarcation between NFPA 59 and applicable pipeline regulations published by the Department of Transportation (DOT). Building ventilation requirements in Chapter 8 were expanded to specify the purpose and activation of the ventilation system. In addition, Chapter 9 was restructured for clarity and a new subsection was created to consolidate requirements for gas-fired vaporizers. The sizing method for nonrefrigerated

container relief devices in Section 10.2 was modified for propane storage over 300 psi and butane storage over 250 psi to provide more accurate sizing for higher pressure and butane containment.

Finally, the corrosion protection requirements in Section 12.3 was expanded to reflect current DOT regulations and common practices. The requirements for Chapter 12 were retroactive to all facilities, and a schedule for retroactivity of corrosion control requirements was added in 12.3.8.

For the 2018 edition, the technical committee added a purpose statement. Various extracts were updated, and vehicular fuel operations were removed because it was determined that vehicular fuel operations were outside the scope of this code. For containers taken out of service for a year, the *National Board Inspection Code* was to be used to determine the suitability of placing it back into service. Chapter 6, the refrigerated container chapter, was updated to reflect industry practices and external standard development. The committee also determined that instead of protecting only outside piping from physical damage and corrosion, all piping must be protected.

In addition, it was determined that it was no longer appropriate to use operating malfunctions to detect leaks. Installation of corrosion protection was moved from Chapter 12 to Chapter 4. New definitions for *component*, *facility*, *plant*, and *process pressure vessel* were added, and several sections were also added or revised to reflect the new definitions. New piping cover requirements were added to Chapter 7. Table 4.5.2.2 was revised to match the 1998 version of this code for relief valve discharge electrical area classification.

Finally, clarification was added for fire protection systems citing additional existing NFPA standards, and the term *fire control* was replaced with *fire protection*.

The 2021 edition of NFPA 59 now has a table in the retroactivity section to identify the edition in which retroactive requirements were incorporated and the effective dates of those requirements. Additionally, whenever purging is conducted, it is to be done in accordance with the American Gas Association's *Purging Manual*.

Technical Committee on LP-Gases at Utility Gas Plants

Kevin L. Ritz, *Chair*
Baltimore Gas & Electric Company, MD [U]

David G. Black, Baker Engineering and Risk Consultants, Inc., TX [SE]

Mark Brownstein, Duke Energy, OH [U]

Randy Ervin, Algas-SDI, WA [M]

Jay Matthew Farnbach, Starr Companies, TX [I]

Adam Farnham, EFI Global, WA [SE]

Richard G. Fredenburg, State of North Carolina, NC [E]

Todd M. Hetrick, Exponent, Inc., IL [SE]

Richard A. Hoffmann, Hoffmann & Feige, NY [SE]

Scott A. Marshall, Commonwealth of Virginia, VA [E]
Rep. National Association of Pipeline Safety Representatives (NAPSR)

Chris Mastrup, Blue Star Gas, CA [U]

Charlie McDaniel, AXA XL Risk Consultants/Global Asset Protection Services, LLC, WV [I]

Gary McDonald, DOT PHMSA, OK [E]

Brian P. Normoyle, Columbia Gas of Massachusetts, MA [U]
Rep. American Gas Association

Michael H. Osmundson, Lexicon Propane Group, AR [SE]

Nancy C. Pehrson, CenterPoint Energy, Inc., MN [U]

James A. Petersen, Petersen Engineering, TX [SE]

William M Rice, Metropolitan Utilities Dist, NE [U]

Steven D. Ruffcorn, Standby Systems, Inc., MN [M]

Noah Ryder, Fire & Risk Alliance, MD [SE]

Eric C. Smith, State of Nevada, NV [E]

David J. Stainbrook, Engineered Controls International, LLC, NC [M]

Michael Lee Stroud, Vectren Energy Delivery Inc., IN [U]

Bruce J. Swiecicki, National Propane Gas Association, IL [IM]
Rep. National Propane Gas Association

Stephen Evans Warren, Warren Mechanical LLC, SC [IM]

William J. Young, Superior Energy Systems, Ltd., OH [M]

Rufus Youngblood, Ferrellgas LP, MO [U]

Alternates

David N. Cook, Standby Systems Inc., MN [M]
(Alt. to Steven D. Ruffcorn)

Michael J Cooney, R.A. Hoffmann Engineering P.C./FEIGE, NY [SE]
(Alt. to Richard A. Hoffmann)

John James Crompton, Fire And Risk Alliance, IL [SE]
(Alt. to Noah Ryder)

Leo Dobbs, Baltimore Gas & Electric Company, MD [U]
(Alt. to Kevin L. Ritz)

John Heer, CenterPoint Energy, Inc., MN [U]
(Alt. to Nancy C. Pehrson)

Frank Lane, Rego Product Manufacturing, TN [M]
(Alt. to David J. Stainbrook)

Andrew S. Melville, Metropolitan Utilities District, NE [U]
(Alt. to William M Rice)

Richard Todd Rogers, AGL Resources, GA [U]
(Alt. to Brian P Normoyle)

Mike Walters, Superior Energy Systems Ltd., OH [M]
(Alt. to William J. Young)

Mike Zimmer, Algas-SDI, WA [M]
(Alt. to Randy Ervin)

Alex Ing, NFPA Staff Liaison

This list represents the membership at the time the Committee was balloted on the final text of this edition. Since that time, changes in the membership may have occurred. A key to classifications is found at the back of the document.

NOTE: Membership on a committee shall not in and of itself constitute an endorsement of the Association or any document developed by the committee on which the member serves.

Committee Scope: This Committee shall have primary responsibility for documents on the design, construction, location, installation, operation, and maintenance of refrigerated and nonrefrigerated liquefied petroleum gas plants to the point of introduction into the utility gas distribution system or those plants that are subject to the requirements of Title 49, Code of Federal Regulations, Part 192, "Pipeline Safety Law," issued pursuant to the laws in 49 U.S.C. et seq.