

NFPA®

2400

**Standard for
Small Unmanned Aircraft
Systems (sUAS) Used for
Public Safety Operations**

2019



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.

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NFPA codes, standards, recommended practices, and guides (“NFPA Standards”) should be aware that these documents may be superseded at any time by the issuance of a new edition, may be amended with the issuance of Tentative Interim Amendments (TIAs), or be corrected by Errata.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.

Copyright © 2018 National Fire Protection Association®. All Rights Reserved.

NFPA® 2400

Standard for

Small Unmanned Aircraft Systems (sUAS) Used for Public Safety Operations

2019 Edition

This edition of NFPA 2400, *Standard for Small Unmanned Aircraft Systems (sUAS) Used for Public Safety Operations*, was prepared by the Technical Committee on Unmanned Aircraft Systems and released by the Correlating Committee on Professional Qualifications. It was issued by the Standards Council on November 5, 2018, with an effective date of November 25, 2018.

This edition of NFPA 2400 was approved as an American National Standard on November 25, 2018.

Origin and Development of NFPA 2400

NFPA 2400, *Standard for Small Unmanned Aircraft Systems (sUAS) Used for Public Safety Operations*, 2019 edition, is the first NFPA standard supporting sUAS integration into the public safety community. Creation of the Technical Committee on Unmanned Aircraft Systems (UAS), the committee responsible for NFPA 2400, was approved at the August 3–5, 2016, Standards Council meeting. It was charged with developing a standard for the implementation, deployment, and operation of UAS in the public safety community, including the creation of professional qualifications necessary for public safety operations. The committee includes representatives of a variety of public safety departments that deal with UAS, including the fire service, law enforcement, and emergency medical services.

NFPA 2400 is an all-encompassing standard providing a foundation for sUAS integration into the public safety community. Based on a clear stakeholder need, the project was accelerated and the committee produced a quality standard in approximately 2¼ years, completing every stage of the NFPA standards development process. Originally the project encompassed all types of unmanned aircraft systems, however, because sUAS constitute the most pressing public safety need, the committee chose to focus on them, as defined by the FAA, for this first edition.

NFPA 2400 divides sUAS integration into three main elements within three core chapters. Chapter 4, Organizational Deployment and Considerations for sUAS, provides requirements on program development, program assessment, deployment, general operations, and multiple aircraft operations. A key element of Chapter 4 is the identification of the need for a risk assessment and consideration of mission objectives. Chapter 5, Professional Qualifications for sUAS Public Safety Personnel, identifies the minimum job performance requirements (JPRs) a remote pilot in command (RPIC) and visual observer are required to perform. In essence, it covers essential job tasks that can be evaluated and tested. Finally, Chapter 6, Maintenance of sUAS, provides requirements aimed at identifying the maintenance needs within a sUAS program. It stipulates the need for core maintenance procedures identifying elements such as record keeping, cleaning, and decontamination.

Combined, these three chapters form the core of NFPA 2400 and provide a road map for public safety departments to begin to develop and integrate sUAS into their incident response operations. NFPA 2400 is the foundation from which public safety departments can develop sUAS programs and can do so based on the most current industry knowledge and with the backing of an ANSI-accredited standard.

Correlating Committee on Professional Qualifications

William E. Peterson, Chair
Kissimmee, FL [M]

Rep. International Fire Service Training Association

Brian R. Brauer, University of Illinois Fire Service Institute, IL [E]
Rep. National Board on Fire Service Professional Qualifications

Gregg A. Cleveland, La Crosse Fire Department, WI [U]
Rep. NFPA Fire Service Section

Gordon Descutner, Alaska DPS Fire Standards Council, AK [E]
Rep. Alaska Fire Standards Council

Angus Maclean Duff, Consolidated Fire District 2, KS [U]

Richard A. Dunn, SC State Firefighters' Association, SC [E]

Richard T. Dunton, Unified/ Rochester/Milton Fire Departments, NH [E]

Alec Feldman, Fulcrum Consultants, Ireland [SE]
Rep. JOIFF-International Organisation for Industrial Hazard Management

Douglas P. Forsman, Fairfield Bay Fire Department, AR [L]

Scott M. Gorgon, North Las Vegas Fire Department, NV [L]
Rep. International Association of Fire Fighters

R. Kirk Hankins, Fire Consulting & Case Review International, Inc., MO [U]

Rep. International Association of Arson Investigators, Inc.

Richard A. Mason, National Fallen Firefighters Foundation, NH [SE]

Bill Slosson, Washington State Patrol, WA [E]

Philip C. Stittleburg, La Farge Fire Department, WI [L]
Rep. National Volunteer Fire Council

Christopher A. Toten, U.S. Marine Corps, TX [E]

Charles "Randy" Watson, S-E-A, Ltd., GA [SE]

Tracie M. Young-Brungard, Pennsylvania Office of the State Fire Commissioner, PA [E]

Rep. International Fire Service Accreditation Congress

Michael J. Yurtec, Global Emergency Products, IL [M]

Dalan Lee Zartman, Rescue Methods, OH [U]

Alex Zielinski, Safety Training Services, IN [SE]

Alternates

Thomas W. Aurnhammer, Los Pinos Fire District, CO [U]
(Alt. to R. Kirk Hankins)

Wayne Bailey, North Carolina Fire & Rescue Commission, NC [E]
(Alt. to Tracie M. Young-Brungard)

David W. Lewis, Odenton, MD [L]
(Alt. to Philip C. Stittleburg)

Frederick W. Piechota, Jr., National Board on Fire Service Professional Qualifications, MA [E]

(Alt. to Brian R. Brauer)

Nonvoting

Stephen P. Austin, Cumberland Valley Volunteer Firemen's Association, DE [L]
Rep. TC on Traffic Control Incident Management Professional Qualifications

Alan W. Conkle, Ohio Association of Emergency Vehicle Technicians (OAEVT), OH [M]
Rep. TC on Emergency Vehicle Mechanic Technicians Professional Qualifications

John S. Cunningham, Nova Scotia Firefighters School, Canada [U]
Rep. TC on Fire Fighter Professional Qualifications

Jay Dornseif, III, Priority Dispatch Corporation, UT [M]
Rep. TC on Public Safety Telecommunicator Professional Qualifications

Richard C. Edinger, Chesterfield County Fire & Emergency Medical Services [E]
Rep. TC on Hazardous Materials Response Personnel

Ronald R. Farr, Plainwell Fire Department, MI [C]
Rep. TC on Electrical Inspection Practices

Dave E. Hanneman, Idaho Falls Fire Department, ID [U]
Rep. TC on Incident Management Professional Qualifications

Edward M. Hawthorne, Shell Oil Company, TX [U]
Rep. TC on Industrial Fire Brigades Professional Qualifications

Orlando P. Hernandez, Texas Division of Emergency Management, TX [E]
Rep. TC on Rescue Technician Professional Qualifications

Ronald L. Hopkins, TRACE Fire Protection & Safety Consultant, Ltd., KY [SE]
Rep. TC on Fire Service Instructor Professional Qualifications

Robert J. James, UL LLC, IL []

Rep. TC on Building Fire and Life Safety Director Professional Qualifications

Randy J. Krause, Port of Seattle Fire Department, WA [E]
Rep. TC on Fire Service Occupational Safety and Health

Peter J. Mulvihill, Reno, NV [SE]
Rep. TC on Fire Inspector Professional Qualifications

Randal E. Novak, Ames, IA [SE]
Rep. TC on Accreditation & Certification Professional Qualifications

Ryan Peterson, Orem Fire Department, UT [U]
Rep. TC on Unmanned Aircraft Systems

Lawrence L. Preston, Maryland Fire and Rescue Institute, MD [E]
Rep. TC on Fire Officer Professional Qualifications

Jim Stumpf, Organizational Quality Associates, ID [SE]
Rep. TC on Wildfire Suppression Professional Qualifications

Nancy J. Trench, Fire Protection Publications, OK [M]
Rep. TC on Public Fire Educator Professional Qualifications

Paul Valentine, TUV SUD America Inc./Global Risk Consultants, IL [M]
Rep. TC on Fire Marshal Professional Qualifications

George A. Wendt, Travelers Insurance Company, NJ [I]
Rep. TC on Fire Investigator Professional Qualifications

Robert Fash, 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 the management of the NFPA Professional Qualifications Project and documents related to professional qualifications for fire service, public safety, and related personnel.

Technical Committee on Unmanned Aircraft Systems

Ryan Peterson, *Chair*
Orem Fire Department, UT [U]

Michael Baltrotsky, Montgomery County Fire & Rescue Service, MD [U]
Brian R. Brauer, University of Illinois Fire Service Institute, IL [SE]
John James Cefalu, L. N. Curtis & Sons, WA [IM]
Kai-Dee Chu, Department of Homeland Security, DC [E]
Robby Cordobes, Los Angeles Fire Department, CA [L]
 Rep. California State Firefighters Association
Adam Dershowitz, Exponent, NY [SE]
Chris Dibona, Brewster Ambulance Service, MA [U]
Darshan Divakaran, NC Department of Transportation, NC [E]
Ritesh Ghimire, FAA, DC [E]
Darren Goodbar, Piedmont Virginia Community College, VA [SE]
Tim Henderson, L.N. Curtis & Sons, CA [IM]
Robert W. Hill, City Of Stillwater, OK [M]
 Rep. International Fire Service Training Association
George C. Hough, FDNY, NY [U]
 Rep. Fire Department City of New York
John Hudgins, Boeing Fire Department, WA [U]
David Ison, Embry-Riddle Aeronautical University - Worldwide, OR [SE]
Adam Jacoff, National Institute of Standards & Technology (NIST), MD [RT]
James Allan Kidd, Oklahoma State University, OK [SE]
Kevin Kimmel, Clark Nexsen, VA [U]

John Michael Looney, JML Engineering, MA [U]
Richard Michael Lusk, Oak Ridge National Laboratory, TN [RT]
David Martel, Las Vegas Metropolitan Police Department, NV [U]
Mike Miles, U.S. General Services Administration, DC [E]
 Rep. U.S. General Services Administration
Michael A. Mocerino, W. S. Darley & Company, IL [M]
Robin Murphy, Texas A & M University, TX [SE]
Matt Nestor, LA Unified School District (LAUSD), CA [U]
Adam Norton, UMASS Lowell, MA [RT]
Michael O'Shea, U.S. Department Of Justice, DC [E]
Eddie Reyes, Police Foundation, DC [U]
Noah Ryder, Fire & Risk Alliance, MD [SE]
Christopher Wayne Sadler, York County Fire And Life Safety, VA [U]
 Rep. International Association of Fire Chiefs
Peter M. Schecter, Oakland Park, FL [SE]
Daniel Schwarzbach, ALEA (Airborne Law Enforcement Association), MD [M]
Donald Shinnamon, Sr., Aeryon Labs, FL [M]
Matt Sloane, Skyfire Consulting, GA [M]
Kevin D. Westwood, BP International, United Kingdom [SE]
Doug Wiedman, Sacramento County Sheriff, CA [E]

Alternates

Ivanna Almanzar, JML Engineering, MA [U]
 (Alt. to John Michael Looney)
Wayne Bailey, North Carolina Fire & Rescue Commission, NC [SE]
 (Alt. to Peter M. Schecter)
Timothy P. Butters, VA Department Of Emergency Management, VA [E]
 (Voting Alternate)
Brian Carlson, University Of Cincinnati, OH [SE]
 (Voting Alternate)
Matthew Darley, W. S. Darley & Company, IL [M]
 (Alt. to Michael A. Mocerino)
Romeo Durscher, DJI, CA [M]
 (Voting Alternate)
Tim Henderson, L. N. Curtis & Sons, CA [IM]
 (Alt. to John James Cefalu)

Matthew Kenney, Donan Engineering, KY [IM]
 (Voting Alternate)
Coitt Kessler, Austin Fire Department, TX [L]
 (Voting Alternate)
Benjamin Kroll, SkyFire Consulting, GA [M]
 (Alt. to Matt Sloane)
Michael Leo, FDNY, NY [U]
 (Alt. to George C. Hough)
Philip Mattson, Department of Homeland Security, DC [E]
 (Alt. to Kai-Dee Chu)
Kamel Saidi, National Institute of Standards & Technology (NIST), MD [RT]
 (Alt. to Adam Jacoff)

Michael T. Wixted, 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 relating to the operation, deployment, and implementation of Unmanned Aircraft Systems (UAS) by public safety entities and public safety officials. This includes all documents that establish operational protocols for those who use and support UAS services and operator professional qualifications.

Contents

Chapter 1 Administration	2400– 6	4.6 Concepts of Operations (ConOps).	2400– 9
1.1 Scope.	2400– 6	4.7 Operational Applications.	2400– 10
1.2 Purpose.	2400– 6	Chapter 5 Professional Qualifications for sUAS	
1.3 Application.	2400– 6	Public Safety Personnel	2400– 10
1.4 Equivalency.	2400– 6	5.1 Administration.	2400– 10
1.5 Enforcement.	2400– 6	5.2 General Requirements.	2400– 11
1.6 Additional Administrative Information.	2400– 6	5.3 RPIC.	2400– 11
Chapter 2 Referenced Publications	2400– 7	5.4 Flight.	2400– 13
2.1 General.	2400– 7	Chapter 6 Maintenance of sUAS	2400– 13
2.2 NFPA Publications. (Reserved)	2400– 7	6.1 Administration.	2400– 13
2.3 Other Publications.	2400– 7	6.2 General Requirements.	2400– 13
2.4 References for Extracts in Mandatory Sections. (Reserved)	2400– 7	Annex A Explanatory Material	2400– 14
Chapter 3 Definitions	2400– 7	Annex B Explanation of Professional Qualification Standards and the Concepts of Job Performance Requirements (JPRs)	2400– 23
3.1 General.	2400– 7	Annex C An Overview of JPRs for RPIC and Visual Observer	2400– 25
3.2 NFPA Official Definitions.	2400– 7	Annex D Applicable Standard Test Methods	2400– 27
3.3 General Definitions.	2400– 7	Annex E Informational References	2400– 28
Chapter 4 Organizational Deployment and Considerations for sUAS	2400– 8	Index	2400– 29
4.1 Administration.	2400– 8		
4.2 General Requirements.	2400– 9		
4.3 sUAS Program Criteria.	2400– 9		
4.4 sUAS Mission Objectives and Goals — Operational Needs Assessment.	2400– 9		
4.5 sUAS Selection — Needs of the Public Safety Entity.	2400– 9		

NFPA 2400

Standard for

Small Unmanned Aircraft Systems (sUAS) Used for Public Safety Operations

2019 Edition

IMPORTANT NOTE: This NFPA document is made available for use subject to important notices and legal disclaimers. These notices and disclaimers appear in all publications containing this document and may be found under the heading “Important Notices and Disclaimers Concerning NFPA Standards.” They can also be viewed at www.nfpa.org/disclaimers or obtained on request from NFPA.

UPDATES, ALERTS, AND FUTURE EDITIONS: New editions of NFPA codes, standards, recommended practices, and guides (i.e., NFPA Standards) are released on scheduled revision cycles. This edition may be superseded by a later one, or it may be amended outside of its scheduled revision cycle through the issuance of Tentative Interim Amendments (TIAs). An official NFPA Standard at any point in time consists of the current edition of the document, together with all TIAs and Errata in effect. To verify that this document is the current edition or to determine if it has been amended by TIAs or Errata, please consult the National Fire Codes® Subscription Service or the “List of NFPA Codes & Standards” at www.nfpa.org/docinfo. In addition to TIAs and Errata, the document information pages also include the option to sign up for alerts for individual documents and to be involved in the development of the next edition.

NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates that explanatory material on the paragraph can be found in Annex A.

A reference in brackets [] following a section or paragraph indicates material that has been extracted from another NFPA document. As an aid to the user, the complete title and edition of the source documents for extracts in mandatory sections of the document are given in Chapter 2 and those for extracts in informational sections are given in Annex E. Extracted text may be edited for consistency and style and may include the revision of internal paragraph references and other references as appropriate. Requests for interpretations or revisions of extracted text shall be sent to the technical committee responsible for the source document.

Information on referenced publications can be found in Chapter 2 and Annex E.

Chapter 1 Administration

1.1 Scope. This standard shall cover the minimum requirements relating to the operation, deployment, and implementation of small unmanned aircraft systems (sUAS) for public safety operations.

1.1.1 This standard shall establish operational protocols for public safety entities who use and support sUAS.

1.1.2 This standard shall include minimum job performance requirements (JPRs) for public safety personnel who operate and support sUAS.

1.1.3 This standard shall include minimum requirements for the maintenance of sUAS when used by public safety entities.

1.1.4 This standard shall provide additional minimum requirements specific to public safety entities.

1.2 Purpose. This standard shall specify the minimum criteria necessary to support safe, effective, and efficient sUAS operations when utilized by public safety entities.

1.3 Application. This standard shall apply to all public safety entities operating sUAS.

1.3.1 This standard shall apply to non-public entities who conduct sUAS operations for public safety.

1.3.2* This standard shall apply to sUAS that weigh less than 55 lb (25 kg).

1.4 Equivalency. Nothing in this standard is intended to prevent the use of systems, methods, devices, or technology of equivalent or superior quality, effectiveness, and performance over those prescribed by this standard.

1.4.1 The technical documentation shall be submitted to the authority having jurisdiction to demonstrate equivalency.

1.4.2 The system, method, device, or aircraft shall be approved for the intended purpose by the authority having jurisdiction.

1.5* Enforcement. This standard shall be administered and enforced by the authority having jurisdiction.

1.6 Additional Administrative Information. This standard shall be divided based on the different types of minimum requirements for sUAS when used by public safety entities.

1.6.1 Chapter 4 shall include the minimum requirements relating to the organization, deployment, and selection of sUAS when used for operations supporting public safety entities.

1.6.2 Chapter 5 shall identify the minimum JPRs for remote pilot in command (RPIC) and visual observer for sUAS when used by public safety personnel.

1.6.3 Chapter 6 shall include minimum requirements for the maintenance of sUAS when used for public safety operations.

1.6.4 Chapters 4, 5, and 6 shall contain the following administrative sections in relation to the applicable type of requirements:

- (1) Chapter(s) scope
- (2) Chapter(s) purpose
- (3) Chapter(s) application
- (4) Chapter(s) definitions

1.6.5 Definitions found in Chapters 4, 5, and 6 shall be repeated in Chapter 3 in accordance with the *Manual of Style for NFPA Technical Committee Documents*.

1.6.6* Annexes shall provide explanatory information based on the applicable section number.

1.6.7 Annex B shall contain an explanation of professional qualification standards and the concepts of JPRs.

Chapter 2 Referenced Publications

2.1 General. The documents or portions thereof listed in this chapter are referenced within this standard and shall be considered part of the requirements of this document.

2.2 NFPA Publications. (Reserved)

2.3 Other Publications.

2.3.1 U.S. Government Publications. U.S. Government Publishing Office, 732 North Capitol Street, NW, Washington, DC 20401-0001.

Title 14, Code of Federal Regulations, Part 107, “Small Unmanned Aircraft Systems,” 2016.

FEMA — ICS Glossary, Incident Command System Training, 2008.

2.3.2 Other Publications.

Merriam-Webster’s Collegiate Dictionary, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2003.

2.4 References for Extracts in Mandatory Sections. (Reserved)

Chapter 3 Definitions

3.1 General. The definitions contained in this chapter shall apply to the terms used in this standard. Where terms are not defined in this chapter or within another chapter, they shall be defined using their ordinarily accepted meanings within the context in which they are used. *Merriam-Webster’s Collegiate Dictionary*, 11th edition, shall be the source for the ordinarily accepted meaning.

3.2 NFPA Official Definitions.

3.2.1* Approved. Acceptable to the authority having jurisdiction.

3.2.2* Authority Having Jurisdiction (AHJ). An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

3.2.3 Shall. Indicates a mandatory requirement.

3.2.4 Should. Indicates a recommendation or that which is advised but not required.

3.2.5 Standard. An NFPA Standard, the main text of which contains only mandatory provisions using the word “shall” to indicate requirements and that is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Nonmandatory provisions are not to be considered a part of the requirements of a standard and shall be located in an appendix, annex, footnote, informational note, or other means as permitted in the NFPA Manuals of Style. When used in a generic sense, such as in the phrase “standards development process” or “standards development activities,” the term “standards” includes all NFPA Standards, including Codes, Standards, Recommended Practices, and Guides.

3.3 General Definitions.

3.3.1 Crew Readiness. The availability and readiness of the RPIC and visual observer to deploy for sUAS operations given their knowledge and completion of pre-flight duties. (PQU)

3.3.2 Data Acquisition. The collection of information from sUAS for the purpose of fulfilling the mission objectives and goals in accordance with the mission plan. (PQU)

3.3.3 Designated Operations Area. The operating area or location defining the volume of airspace to include altitude in Above Ground Level (AGL) or Mean Sea Level (MSL), and the defined geographical operational perimeter for a given public safety mission.

3.3.4 Digital Media Evidence (DME). The digital recording of images, sounds, and associated data with probative value stored or transmitted in binary form.

3.3.5 Incident Command System (ICS). A standardized on-scene emergency management construct specifically designed to provide for the adoption of an integrated organizational structure that reflects the complexity and demands of single or multiple incidents, without being hindered by jurisdictional boundaries. ICS is the combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure, designed to aid in the management of resources during incidents. It is used for all kinds of emergencies and is applicable to small as well as large and complex incidents. ICS is used by various jurisdictions and functional agencies, both public and private, to organize field-level incident management operations. [FEMA — ICS Glossary, 2008]

3.3.6 Incident Commander (IC). The individual responsible for all incident activities, including the development of strategies and tactics and the ordering and the release of resources. The IC has overall authority and responsibility for conducting incident operations and is responsible for the management of all incident operations at the incident site. [FEMA — ICS Glossary, 2008]

3.3.7 Maintenance Program. A maintenance program is a system or set of procedures for the continuous maintenance of the sUAS in order to ensure air-worthiness.

3.3.8 Payload Drop. The release of an item or package from sUAS for the purpose of fulfilling the mission objectives and goals in accordance with the mission plan. (PQU)

3.3.9 Positive Aircraft Control. Consistently maintaining appropriate control of the aircraft, regardless of the phase of flight or potential distraction of other required tasks. (PQU)

3.3.10 Public Safety Entity. Any entity involved with public safety that has a mission to protect life, property, or the environment or any combination of these.

3.3.11 Public Safety Personnel. Any individual involved with public safety that has a mission to protect life, property, or the environment or any combination of these. (PQU)

3.3.12 Remote Pilot in Command (RPIC). The person who has been found by the public safety entity to be properly qualified to exercise the privileges of remote pilot and has the final authority and responsibility for the operation and safety of sUAS operation as determined by the authority having jurisdiction (AHJ). (PQU)

3.3.13 Resources. The equipment, personnel, and facilities required for the sUAS operations provided by the public safety department. (PQU)

3.3.14 Risk Assessment. The evaluation of the relative danger of sUAS operations when taking into consideration mission objectives and goals, sUAS, professional qualifications of the RPIC and visual observer, operational readiness of the crew, weather conditions, environmental conditions, regulatory requirements, potential hazards, and operating conditions. (PQU)

3.3.15 Small Unmanned Aircraft. An unmanned aircraft weighing less than 55 lb (25 kg) including everything that is on board the aircraft. [14 CFR Part 107, 2016]

3.3.16 Small Unmanned Aircraft Systems (sUAS). A small unmanned aircraft and its associated elements (including communication links and the components that control the small unmanned aircraft) that are required for the safe and efficient operation of the small unmanned aircraft in the national airspace system. [14 CFR Part 107, 2016]

3.3.17 sUAS Operations. The use of any sUAS for the purpose of protecting life, property, or the environment or any combination of these.

3.3.18 sUAS Program. The elements (administrative, operational, qualifications and training, safety, and maintenance) that are required within the structure of a public safety entity in order to support sUAS operations that are safe, efficient, and feasible.

3.3.19 Sustainable Life Cycle. A determination made by a public safety entity in relation to the ability of sUAS manufacturer, system provider, or both to supply replacement parts, critical maintenance, system updates, upgrades, and other applicable components critical to ensuring continuous sUAS operations.

3.3.20 UAS Coordinator. A public safety person responsible for mission coordination and local deconfliction of multiple aircraft. (PQU)

3.3.21 Unmanned Aircraft. An aircraft operated without the possibility of direct human intervention from within or on the aircraft. [14 CFR Part 107, 2016]

3.3.22 Visual Observer. A person who assists the RPIC and the person manipulating the flight controls of the small UAS (if that person is not the RPIC) to see and avoid other air traffic or objects aloft or on the ground. [14 CFR Part 107, 2016] (PQU)

Chapter 4 Organizational Deployment and Considerations for sUAS

4.1 Administration.

4.1.1 Scope. The chapter shall identify the minimum requirements relating to the organization, deployment, and selection of sUAS when used for operations supporting public safety entities (*see 1.6.1*).

4.1.2 Purpose. The purpose of this chapter shall be to provide minimum requirements that address the criteria a public safety entity is required to consider for sUAS operations.

4.1.3 Application. This chapter shall apply to all elements of sUAS when utilized by public safety entities, such as sUAS program criteria, sUAS mission objectives and goals, sUAS selection, concepts of operations (ConOps), and operational applications.

4.1.4 Definitions.

4.1.4.1 Designated Operations Area (DOA). The operating area or location defining the volume of airspace to include altitude in Above Ground Level (AGL) or Mean Sea Level (MSL), and the defined geographical operational perimeter for a given public safety mission.

4.1.4.2* Digital Media Evidence (DME). The digital recording of images, sounds, and associated data with probative value stored or transmitted in binary form.

4.1.4.3 Incident Commander (IC). The individual responsible for all incident activities, including the development of strategies and tactics and the ordering and the release of resources. The IC has overall authority and responsibility for conducting incident operations and is responsible for the management of all incident operations at the incident site. [FEMA — ICS Glossary, 2008]

4.1.4.4 Incident Command System (ICS). A standardized on-scene emergency management construct specifically designed to provide for the adoption of an integrated organizational structure that reflects the complexity and demands of single or multiple incidents, without being hindered by jurisdictional boundaries. ICS is the combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure, designed to aid in the management of resources during incidents. It is used for all kinds of emergencies and is applicable to small as well as large and complex incidents. ICS is used by various jurisdictions and functional agencies, both public and private, to organize field-level incident management operations. [FEMA — ICS Glossary, 2008]

4.1.4.5* Public Safety Entity. Any entity involved with public safety that has a mission to protect life, property, or the environment or any combination of these.

4.1.4.6 Remote Pilot in Command (RPIC). The person who has been found by the public safety entity to be properly qualified to exercise the privileges of remote pilot and has the final authority and responsibility for the operation and safety of sUAS operation as determined by the AHJ. (PQU)

4.1.4.7 Risk Assessment. The evaluation of the relative danger of sUAS operations when taking into consideration mission objectives and goals, sUAS, professional qualifications of the RPIC and visual observer, operational readiness of the crew, weather conditions, environmental conditions, regulatory requirements, potential hazards, and operating conditions. (PQU)

4.1.4.8 Small Unmanned Aircraft. Small unmanned aircraft means an unmanned aircraft weighing less than 55 lb (25 kg) including everything that is on board the aircraft. [14 CFR Part 107, 2016]

4.1.4.9 Small Unmanned Aircraft Systems (sUAS). Small unmanned aircraft system (sUAS) means a small unmanned aircraft and its associated elements (including communication links and the components that control the small unmanned aircraft) that are required for the safe and efficient operation

of the small unmanned aircraft in the national airspace system. [14 CFR Part 107, 2016]

4.1.4.10 sUAS Operations. The use of any sUAS for the purpose of protecting life, property, the environment or any or all of the above.

4.1.4.11 sUAS Program. The elements (administrative, operational, qualifications and training, safety and maintenance) that are required within the structure of a public safety entity in order to support sUAS operations that are safe, efficient and feasible.

4.1.4.12 Sustainable Life Cycle. A determination made by a public safety entity in relation to the ability of sUAS manufacturers, system provider, or both to supply replacement parts, critical maintenance, system updates, upgrades and other applicable components critical to ensuring continuous sUAS operations.

4.1.4.13 Unmanned Aircraft. Unmanned aircraft means an aircraft operated without the possibility of direct human intervention from within or on the aircraft. [14 CFR Part 107, 2016]

4.1.4.14 Visual Observer. A person who assists the RPIC and the person manipulating the flight controls of the small UAS (if that person is not the RPIC) to see and avoid other air traffic or objects aloft or on the ground. [14 CFR Part 107, 2016] (PQU)

4.2 General Requirements. Public safety entities that perform sUAS operations shall comply with Sections 4.3 through 4.7.

4.3 sUAS Program Criteria.

4.3.1 Public safety entities shall develop policies and procedures for sUAS programs.

4.3.2 Prior to implementing an sUAS program, public safety entities shall adopt policies and procedures that address the following:

- (1) Overall program management
- (2) Operational procedures
- (3) Personnel qualifications, training, and certifications
- (4) Safety
- (5) Care and maintenance of the aircraft, systems, and equipment

4.3.3 The decision to develop an sUAS program shall be assessed based on the following:

- (1) Mission objectives
- (2) Environmental conditions
- (3) Resources
- (4) Cost-benefit analysis

4.3.4 Public safety entities shall establish a policy that addresses data captured by the sUAS.

4.3.5 Public safety entities shall handle data collected by the sUAS for evidentiary purposes in accordance with the regulatory requirements as determined by the AHJ and policies governing DME.

4.3.6 Public safety entities shall handle data collected by the sUAS not of evidentiary value in accordance with the regulatory requirements as determined by AHJ.

4.3.7 Public safety entities shall have a policy that restricts data collection to what is necessary to accomplish the sUAS operation.

4.4 sUAS Mission Objectives and Goals — Operational Needs Assessment.

4.4.1 The deployment of sUAS operations shall be considered an additional segment of an operation or an operation of its own.

4.4.2 The deployment of sUAS operations shall be assessed based on the following:

- (1) Mission objectives
- (2) Risk assessment
- (3) Availability and capability of resources

4.5 sUAS Selection — Needs of the Public Safety Entity.

4.5.1 A purchase specification for the sUAS shall be completed by the public safety entity prior to commencing the acquisition process.

4.5.2 The purchase specifications shall be based on the specific uses and applications as determined by the operational needs assessment.

4.5.3* Any purchase specification shall consider the following:

- (1) Operational requirements
- (2) Minimum system configuration and specifications
- (3) Quantitative data demonstrating sUAS capabilities
- (4) Sustainable life cycle

4.6 Concepts of Operations (ConOps).

4.6.1 General Operations.

4.6.1.1 The RPIC of sUAS shall be directly responsible for, and is the final authority on, the operation of that aircraft.

4.6.1.2 sUAS operations shall only be conducted following a risk assessment that is performed by the RPIC.

4.6.1.3* The risk assessment shall address the operational risks severity and the operational risks probability.

4.6.1.4 Prior to sUAS operations, the RPIC shall develop mitigations to reduce the risks identified.

4.6.1.5 The RPIC shall verify mitigations do not create new hazards to the operation.

4.6.1.6* sUAS operations shall comply with all regulatory requirements as determined by the AHJ based on their type of operation.

4.6.1.7 sUAS operations shall only be conducted for authorized missions in accordance with the public safety entities policies and procedures.

4.6.1.8 sUAS operations shall be incorporated within ICS, when established.

4.6.1.9 sUAS operations shall be performed by individuals meeting the requirements of Chapter 5.

4.6.1.10 Deployment of sUAS operations shall include the establishment of take-off, landing, and drop zones to allow for safe operations.