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THE DEFINITIVE SAFETY STANDARD FOR THE NATIONAL
ELECTRICAL GRID AND COMMUNICATIONS SYSTEMS

THE NATIONAL ELECTRICAL SAFETY CODE[®] (NESC[®])



THE NESC

Updated and published every five years by The Institute of Electrical and Electronics Engineers (IEEE) and approved by the American National Standards Institute (ANSI), the NESC has been in continuous use since the first edition was issued in 1915.

The current edition of the NESC is available in digital, printed, and mobile-app formats and is structured with initial sections covering scope, purpose, and grounding methods, followed by four main parts that contain specific rules for electric supply stations, overhead lines, underground lines and safety-related work practices. A companion document—the NESC Handbook—is also available and provides users with insights and commentary on the rules and how to apply them from the experts who helped develop the Code.

From a code enforcement perspective, the NESC differs substantially from the National Fire Protection Association’s National Electrical Code® (NEC®) rules that apply to the premises wiring in residential, commercial, and industrial structures. The NESC is primarily applied by the nation’s electric and communications utilities and may be adopted by state regulatory commissions for investor-owned utilities. The NEC primarily applies to installations of nonutility electrical equipment, such as in-building wiring. The NEC code is enforced largely by local building and electrical inspectors, who are tasked with approving building electrical systems.



NESC VALUE

THE NESC EMBODIES THE BASIC STANDARDS REQUIRED FOR THE SAFE INSTALLATION, OPERATION, AND MAINTENANCE OF POWER AND COMMUNICATIONS UTILITY SYSTEMS.

As the definitive safety standard for more than a century, the National Electrical Safety Code continues to be the go-to resource for utility companies of all sizes and ownership structures. Within the utility environment, the NESC is used by individuals in a myriad of roles—business leadership, operations management, engineering and line design, crew supervisors, and safety trainers to name just a few.

The service utilities that depend on the National Electrical Safety Code are also diverse, and include providers of power, telecommunications, cable TV, wireless, and internet service, as well as transportation providers such as railroads that look to the NESC for guidance on their railway power and signaling systems.

Beyond utilities, there is a broad ecosystem of companies that are key users of the NESC. These stakeholders include the manufacturers of electrical equipment and associated product testing agencies, the consultants and contractors that assist in the design and construction of utility lines and infrastructure, as well as the state and federal regulatory agencies that provide industry oversight.

The NESC is focused on the end-to-end safety of utility systems from their point of origin (such as a power generating plant or communications central office), across transmission and distribution facilities, and ending at the service point (or communications network interface unit), which acts to separate the supply side (or network side) coming from the utility, to the premises side where the service is finally utilized by the end-user.

The requirements within the NESC directly influence the capital cost of new utility facilities, as well as guide how and when maintenance is performed. As a further reflection of its influence, the NESC is often used as a basis for the OSHA rules that govern the construction and maintenance of power supply and communications facilities, as well as the joint-use of structures, rights-of-way, and other facilities.

Although the National Electrical Safety Code is published as a voluntary standard in the United States, it is typically adopted into law by individual state legislatures and public utility commissions and at the federal level for all cooperatives financed by the Rural Utilities Service (USDA). Outside of the U.S., the NESC is also used as an authoritative reference in more than 100 countries around the world.

VALUE





THE PURPOSE

Unlike many technical codes, the NESC is not intended to provide explicit design specifications or step-by-step instructions. Instead, it emphasizes practical guidance for safeguarding workers and the public when in proximity to utility infrastructure and equipment that includes overhead and underground conductors, transformers, circuit breakers, and storage batteries.

Given its role as a safety code, the NESC underscores the importance of hazard avoidance as the primary means for achieving worker and public safety. In addition to emphasis placed on the need for appropriate protective clothing for workers, the NESC provides guidance and rules for specific situations such as the effective grounding of circuits, and maintaining minimum safe clearances between conductors and the ground or nearby buildings.

THE BENEFIT

Renewable energy technologies like solar and wind are delivering a steady stream of new distributed generation concepts and, along with new technologies related to Smart Grid and distributed energy resources, are changing the entire utility business model. Moreover, the build out of 4G and 5G small cell antenna systems that will enable the Internet of Things (IoT) and autonomous vehicles depends largely on placing additional attachments onto existing utility structures. The potential impacts from all of this growth and expansion to our professional and personal lives are very significant.

Just as it has done for more than a century, the NESC is continuously evolving and being refined to embrace new technologies while also addressing the opportunities and any safety issues they present. Regardless of your company's role in the industry, this is clearly a time to be at the forefront of change. Participation in the NESC will provide the opportunity to both contribute—and benefit from—the non-stop innovation that is impacting our society and economy.

CONSENSUS

NESC INVOLVEMENT

The NESC is a consensus standard that depends on the involvement of motivated volunteers to provide the industry with accurate and impactful guidance. The NESC code-making process is well defined and clearly structured, with guiding principles that help ensure the inclusion of all viewpoints during an open and fair process for reaching agreement and resolution.

Organizationally, the NESC has a central oversight Main Committee made up of a well-balanced representation of member organizations, along with seven standing technical subcommittees which are maintained to provide recommended revisions to NESC rules for the Main Committee.

The technical subcommittees meet to create change proposals, consider change proposals submitted by others, and are empowered to establish Working Groups and Task Forces to conduct in-depth research on specific technical topics and issues.

The NESC's core principles of inclusion and openness also extend to the public, with any interested party being able to submit their ideas for a new rule or modification of an existing rule. In addition to actively soliciting input from all NESC members, an open comment period is built into each revision cycle to help ensure the broadest possible set of perspectives.

SUBCOMMITTEE	PRIMARY RESPONSIBILITY	SECTION/PART
1	Scope, Purpose, Definitions & Coordination	Sections 1, 2, and 3
2	Grounding Methods	Section 9
3	Electric Supply Stations	Part 1
4	Overhead Line Clearances	Part 2/Sections 20-23
5	Overhead Line Strength and Loading	Part 2/Sections 24-28
7	Underground Lines	Part 3
8	Rules for Safeguarding Workers and the Public	Part 4

SHAPING THE FUTURE

These are very exciting times in the industry, with unprecedented levels of technological change presenting huge opportunities as well as challenges for all participants. As an NESC member, you can play a hands-on role in helping to decide what the Code needs to be—both now and into the future.

If this sounds intriguing and you are up for a challenge at the cutting edge of our industry, please visit ieeesa.io/nesc.

We look forward to hearing from you.

NESC PRODUCTS

- NESC 2023 Edition
- NESC 2023 Handbook
- NESC 2023 eLearnings
- NESC 2017 Edition
- NESC 2017 Premier Edition Handbook
- NESC 2017 Handbook Spanish Translation
- NESC 2017 Handbook Chinese Translation
- Mobile App

For more details, links to purchase and subscribe to updates on the NESC, visit ieeesa.io/nesc


For more information about organizational access to the NESC, please contact onlinesupport@ieee.org

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