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# IEEE Std 3006.3™ - 2017

Recommended Practice for  
Determining the Impact of  
Preventative Maintenance on  
the Reliability of Industrial and  
Commercial Power Systems



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# IEEE Recommended Practice for Determining the Impact of Preventative Maintenance on the Reliability of Industrial and Commercial Power Systems

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**Technical Books Coordinating Committee  
of the  
IEEE Industry Applications Society**

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**IEEE-SA Standards Board**

**Abstract:** This recommended practice describes how to determine the impact of preventive maintenance on the reliability of industrial and commercial power systems. It is likely to be of greatest value to the power-oriented engineer with limited experience in the area of reliability. It can also be an aid to all engineers responsible for the electrical design of industrial and commercial power systems.

**Keywords:** availability, failure mode, IEEE 3006.3™, mean time between failures, reliability

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This introduction is not part of IEEE Std 3006.3-2017, IEEE Recommended Practice for Determining the Impact of Preventative Maintenance on the Reliability of Industrial and Commercial Power Systems.

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This recommended practice was developed by the Technical Books Coordinating Committee of the Industrial and Commercial Power Systems Department of the Industry Applications Society, as part of a project to repackage the popular IEEE Color Books®. The goal of this project is to speed up the revision process, eliminate duplicate material, and facilitate use of modern publishing and distribution technologies.

When this project is completed, the technical material included in the 13 IEEE Color Books will be included in a series of new standards—the most significant of which will be a new book, IEEE Std 3000™, IEEE Recommended Practice for the Engineering of Industrial and Commercial Power Systems. The new book will cover the fundamentals of planning, design, analysis, construction, installation, start-up, operation, and maintenance of electrical systems in industrial and commercial facilities. Approximately 60 additional “dot” standards, organized into the following categories, will provide in-depth treatment of many of the topics introduced by IEEE Std 3000™:

- Power Systems Design (3001 series)
- Power Systems Analysis (3002 series)
- Power Systems Grounding (3003 series)
- Protection and Coordination (3004 series)
- Emergency, Stand-By Power, and Energy Management Systems (3005 series)
- Power Systems Reliability (3006 series)
- Power Systems Maintenance, Operations, and Safety (3007 series)

In many cases, the material in a “dot” standard comes from a particular chapter of a particular IEEE Color Book. In other cases, material from several IEEE Color Books has been combined into a new dot standard.

The material in this recommended practice largely comes from Chapter 5 of IEEE Std 493™-2007 (*IEEE Gold Book™*).

### IEEE Std 3006.3

The objective of this recommended practice is to illustrate the important role effective maintenance plays in the reliability and availability of power systems for industrial plants and commercial buildings. Details of “when,” “how,” and “how often” can be obtained from other sources.

Of all the factors involved in reliability and availability, preventive maintenance often receives meager emphasis in the design phase and operation of distribution systems when it can be a key factor in high reliability and availability. Large expenditures for systems are made to provide the desired reliability and availability; however, failure to provide timely, high-quality effective maintenance leads to system or component malfunction or failure and prevents obtaining the intended design goal.

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# IEEE Recommended Practice for Determining the Impact of Preventative Maintenance on the Reliability of Industrial and Commercial Power Systems

## 1. Overview

### 1.1 Scope

This recommended practice describes how to determine the impact of preventive maintenance on the reliability of industrial and commercial power systems. It is likely to be of greatest value to the power-oriented engineer with limited experience in the area of reliability. It can also be an aid to all engineers responsible for the electrical design of industrial and commercial power systems.

## 2. Normative references

The following referenced documents are indispensable for the application of this document (i.e., they must be understood and used, so each referenced document is cited in text and its relationship to this document is explained). For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments or corrigenda) applies.

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IEEE Std 493<sup>TM</sup>, IEEE Recommended Practice for the Design of Reliable Industrial and Commercial Power Systems (*IEEE Gold Book<sup>TM</sup>*).<sup>1,2</sup>

IEEE Std 3006.2<sup>TM</sup>, Recommended Practice for Evaluating the Reliability of Existing Industrial and Commercial Power Systems.

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