IEC 63223-2

Edition 1.0 2026-07

INTERNATIONAL STANDARD

Management of network assets in power systems -
Part 2: Risk-informed decision-making process

ICS 29.240.01; 03.100.01

ISBN 978-2-8327-1359-4

IEC 63223-2:2026-07(en)

THIS PUBLICATION IS COPYRIGHT PROTECTED
Copyright © 2026 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Secretariat
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC
The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications
The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform
The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, …). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished
Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc
If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch
Discover our powerful search engine and read freely all the publications previews, graphical symbols and the glossary. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org
The world's leading online dictionary on electrotechnology, containing more than 22 500 terminological entries in English and French, with equivalent terms in 25 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

FOREWORD 3
INTRODUCTION 5
0.1 General 5
0.2 Benefits of the risk-informed decision-making process 5
0.3 Relationship to asset management system 6
1 Scope 7
2 Normative references 7
3 Terms, definitions and abbreviated terms 7
3.1 Terms and definitions 7
3.2 Abbreviated terms 10
4 Risk-informed decision-making process and principles 10
4.1 Core concepts of risk science 10
4.1.1 General 10
4.1.2 Uncertainty 11
4.1.3 Risk 11
4.1.4 Risk representation 11
4.1.5 Risk control 12
4.1.6 Risk management strategy 12
4.2 Asset management requirements 14
4.2.1 General 14
4.2.2 Asset portfolio 14
4.2.3 Decision-making criteria 14
4.2.4 Asset management objectives 14
4.2.5 Asset management plans 15
4.3 Risk-informed decision-making process implementation 15
4.3.1 General 15
4.3.2 General documented information of the RIDM process 17
4.3.3 Roles in the RIDM process 17
4.3.4 Documented information at each iteration of the RIDM process 17
5 Risk decision-making context 18
5.1 Risk identification 18
5.2 Knowledge characterization 18
5.3 Stakeholders' concerns 18
6 Risk management strategies 19
6.1 Risk analysis 19
6.1.1 Risk mitigation options identification 19
6.1.2 Probability models 19
6.1.3 Consequence evaluation 20
6.1.4 Risk mitigation options evaluation 20
6.1.5 Strength of knowledge 21
6.2 Cautionary principle 22
6.2.1 Actions to improve knowledge 22
6.2.2 Identifying cautionary measures 22
6.2.3 Impact of the cautionary measures on the stakeholders 22
6.3 Discursive strategy 23
6.3.1 Sharing knowledge and objectives 23

6.3.2 Alignment on values and objectives 23
6.3.3 Alignment on risk controls 23
7 Managerial review and judgement 23
7.1 Quality of the analyses 23
7.1.1 Competence and independence of the analysts 23
7.1.2 Conformity of the analyses 24
7.1.3 Consensus among the analysts 24
7.2 Risk control option analysis 24
7.2.1 Performance of risk control options 24
7.2.2 Operational impact of risk control options 24
7.2.3 Other considerations of risk control options 24
7.3 Portfolio analysis 24
7.3.1 Portfolio performance 24
7.3.2 Portfolio constraints 25
8 Performance evaluation and improvement 25
8.1 Monitoring the decision 25
8.2 Reviewing 25
8.3 Improving 26
Bibliography 27

Figure 1 – The three main risk management strategies and their relationship with the dimensions of uncertainty 13
Figure 2 – Risk-informed decision-making process for managing network assets of power systems 15

Table 1 – Example of parameter(s) for optimization, implementation costs and residual risks (not limited to financial aspects) for some preventive risk mitigation options 21

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

Management of network assets in power systems - Part 2: Risk-informed decision-making process

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.

2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.

3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.

4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.

5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.

6) All users should ensure that they have the latest edition of this publication.

7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.

8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.

9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at https://patents.iec.ch. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 63223-2 was prepared by IEC Technical Committee 123: Management of network assets in power systems. It is International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
123/135/FDIS	123/141/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts of the IEC 63223 series, under the general title *Management of network assets in power systems*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

– reconfirmed,

– withdrawn, or

– revised.

INTRODUCTION

0.1 General

This document specifies requirements, recommendations, and examples for implementing a risk-informed decision-making (RIDM) process for managing existing network assets on power systems. The main intended audience includes power network organizations' stakeholders and decision makers, such as asset managers, risk managers, regulators, asset owners, and service providers.

ISO 55000:2024 [1] and ISO 55001:2024 [2][1] provide asset management principles and asset management system requirements for any organization. IEC TS 63224:2025 [3] gives recommendations for asset management aspects of power system network organizations. The IEC 63223 series [4] aims to establish International Standards specific to asset management for power system networks. While IEC 63223-1:2026 [5] provides an overview of the scope, principles, and terminology, this document focuses on a process for making risk-informed decisions regarding existing assets. These decisions are driven by the creation of asset related value through mitigation of the risks. Quantitative assessments such as cost-benefit analyses are generally the most advisable approach to justify renewal investments and risk mitigation measures such as inspections and monitoring. However, risk analysis relies on calculation and expert judgment, which depend on assumptions, models, and data that are not always validated. As a result, the outcomes can mislead decision makers if they do not adequately account for all uncertainties and risk controls derived from other risk management strategies such as the cautionary principle and the discursive strategy.

This document intends to support and inform asset managers, decision makers, and stakeholders affected by the risk in establishing the appropriate risk management approach consistent with the asset management objectives, decision-making criteria, and the risk decision-making context. It details the necessary steps for controlling risks in an asset management framework by specifying:

– the risk decision-making context with regard to asset management objectives, available knowledge, and internal and external stakeholders' concerns;
– the relevant risk management strategies consistent with the risk decision-making context (risk analysis, cautionary principle, and discursive strategy);
– essential criteria to support decision-making;
– evaluation criteria and actions to ensure continual improvement.

The RIDM process aims to support decision-making without mandating a specific method or providing detailed calculations for particular risk assessment techniques. It encourages the use of appropriate methods in each step, referencing other standards or scientific sources, such as the risk assessment techniques outlined in IEC 31010:2019 [6]. It also enhances the process described in IEC 31010:2019 [6] and ISO 31000:2018 [7] by integrating the asset management principles and providing guidelines to handle all manifestations of uncertainty.

0.2 Benefits of the risk-informed decision-making process

The RIDM process provides a structured approach for managing the risks of network assets in power systems. It contributes to achieving the organizational objectives by ensuring transparency, consistency, and traceability of risk-informed decisions, and detailing the steps that support asset management stakeholders in their analyses by:

– providing guidance on the appropriate category of risk assessment techniques at each step of the process (risk identification, risk analysis, comparing risk mitigation options);
– providing essential information and warnings when performing a risk analysis by:

[1] Numbers in square brackets refer to the Bibliography.

  - specifying the essential information for the risk analysis (probability model, consequences, performance criteria);
  - specifying the strength of knowledge supporting assumptions, models and parameters;
- guiding toward other complementary risk management strategies when necessary, deliberating on risk analysis output and detecting constraints and conflicts by:
  - comparing options based on their performance;
  - considering the background knowledge supporting the risk analysis;
  - identifying the impacts of the decisions on the asset portfolio and for stakeholders;
- implementing performance evaluation and continuous improvement, including:
  - enhancing knowledge through information gathering, data collection, or experimentation;
  - identifying deviations from assumptions or expected performance;
  - ensuring that lessons learned are incorporated into future iterations of the process.

0.3 Relationship to asset management system

This document is based on the principles of asset management outlined in ISO 55000:2024 [1]. The focus is on implementing an RIDM process to mitigate network asset risks in power systems. Subclause 4.2 introduces essential elements of asset management and associated requirements. The requirements are independent but aligned with those of ISO 55001:2024 [2]. In the case of an asset management system conforming to ISO 55001:2024 [2], the RIDM process is part of the asset management decision-making framework described in 4.5 of ISO 55001:2024 [2], which is included in the strategic asset management plan according to 6.2 of the same standard. In addition, the RIDM process helps contribute to satisfying several subclauses of ISO 55001:2024 [2], including:

- subclause 4.5 Asset management decision-making;
- subclause 6.1 Actions to address risks and opportunities;
- subclause 7.6 Data and information;
- subclause 7.7 Knowledge;
- subclause 9.1 Monitoring, measurement, analysis, and evaluation.

1 Scope

This document specifies requirements, recommendations, and examples for implementing a risk-informed decision-making (RIDM) process for managing existing network assets in power systems. The intended audience concerns power network organizations' stakeholders and decision makers, such as asset managers, risk managers, regulators, asset owners, and service providers. The RIDM process details the steps to ensure transparency, consistency, and traceability of the decision by:

– specifying the risk decision-making context depending on asset management objectives, available knowledge, and risk stakeholders' concerns;
– identifying the appropriate risk management strategies and the knowledge supporting the analyses;
– detailing the essential steps for conducting a risk analysis and justifying investments, regardless of the calculation methods used;
– providing essential information and warnings to decision makers;
– implementing performance evaluation and continuous improvement.

The document is based on the asset management principles from ISO 55000:2024 [1] and is aligned with ISO 55001:2024 [2]. Compliance with the requirements of this document is independent of compliance with ISO 55001:2024 [2].

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60050-693:—, *International Electrotechnical Vocabulary (IEV) - Part 693: Management of network assets in power systems*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-693:— [2] as well as the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

– IEC Electropedia: available at https://www.electropedia.org/
– ISO Online browsing platform: available at https://www.iso.org/obp

3.1.1
risk
effect of uncertainty (3.1.3) on objectives (3.1.2)

Note 1 to entry: An effect is a deviation from the expected. It can be positive, negative or both, and can address, create or result in opportunities and threats.

Note 2 to entry: objectives (3.1.2) can have different aspects and categories, and can be applied at different levels.

[2] Under preparation. Stage at the time of publication: IEC FDIS 60050-693:2025