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Part 2: Risk-informed decision-making process

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

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

Draft	Report on voting
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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– withdrawn, or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*

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