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Energy management systems — Evaluating energy performance using energy performance indicators and energy baselines

*Systèmes de management de l'énergie — Évaluation de la
performance énergétique à l'aide d'indicateurs de performance
énergétique et de situations énergétiques de référence*



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 301, *Energy management and energy savings*.

This second edition cancels and replaces the first edition (ISO 50006:2014), which has been technically revised.

The main changes are as follows:

- concepts and technical aspects have been harmonized with the latest edition of ISO 50001:2018;
- definitions in [Clause 3](#) have been updated in accordance with the latest edition of ISO 50001:2018 and considering a new approach for general harmonization under ISO/TC 301;
- upgrades have been made related to the normalization of energy performance indicators (EnPIs) and corresponding energy baselines (EnBs);
- upgrades and new considerations have been made related to the new definition and requirement to demonstrate energy performance improvement.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

0.1 Background

Energy performance evaluation is a tool which applies to all types of organizations and can be used to evaluate the results of its efforts in energy management. Relevant variables affect the energy consumption and energy efficiency of organizations. To effectively evaluate energy performance under equivalent conditions, the effects of relevant variables should be taken into account by using the process of normalization.

Measuring and monitoring of energy performance and demonstration of energy performance improvement can be challenging because of the complexity of determining energy performance indicators (EnPIs) and corresponding energy baselines (EnBs) which are appropriate for an organization to better understand the energy consumed within the facilities, equipment, systems or energy-using processes.

Improving energy performance helps organizations to become more competitive by reducing their energy costs. In addition, improving energy performance can help organizations to reduce their energy-related greenhouse gas emissions. Climate change and the need for decarbonization are major global concerns. Reducing greenhouse gas emissions associated with energy consumption is a significant tool in tackling climate change. Methods for monitoring and measuring energy performance to ensure appropriate results are key aspects of this activity.

In those activities or processes in which no energy performance improvement has been planned, benefits can also be obtained by using EnPIs and EnBs to manage operational control, identify maintenance needs or identify significant deviations in energy performance.

Communicating the energy performance of the organization and its processes to appropriate person(s) in the organization is a key element for success. It is also a key to building ongoing commitment and engagement of top management to allocate resources for energy management including the effective establishment of EnPIs and EnBs.

The technical information in this document enables an organization to meet the requirements of ISO 50001 including using normalization in measuring, monitoring, analysing and evaluating its energy performance and energy performance improvement. In this way, it can demonstrate continual improvement in energy performance using EnPIs and corresponding EnBs.

0.2 Overview of contents

This document provides an organization with practical guidance related to managing energy performance, including its evaluation, control and continual improvement through the establishment, use and maintenance of EnPIs and the corresponding EnBs.

This document gives guidance on the selection of appropriate EnPIs according to the objectives of the organizations which can achieve significant benefits by implementing them.

This document is intended to guide an organization in establishing, using and maintaining EnPIs and EnBs in accordance with the requirements in ISO 50001.

The process described in this document can provide benefits to any organization, including those that do not have an EnMS. Nevertheless, additional benefits can be obtained if this process is embedded within an EnMS in accordance with ISO 50001.