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Energy management and energy savings — General guidelines for selecting energy savings evaluators

Lignes directrices générales pour la sélection des personnes chargées d'évaluer les économies d'énergie

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Foreword

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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 documents 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*.

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

This document provides guidelines for the selection of energy savings evaluators, i.e. people conducting energy savings evaluations who have the required knowledge and skills to determine energy savings leading to credible and reliable results. Energy savings evaluations are widely used for assessing programme effects and policy impacts, and for validation and/or verification of results at project, organization and region levels.

At the project level, energy savings evaluation results can help entities reduce operating costs and determine financial returns, help government regulators understand policy impacts, and help financing institutions make loan or grant decisions.

At the organization level, energy savings evaluation results can help leaders of organizations reduce operating costs and control risks.

At the region level, energy savings evaluation results can help governments understand and improve the impacts of policies.

Evaluation methods to determine energy savings vary depending on the level (project, organization or region). Different knowledge and skills are required for each level.

By selecting an appropriate energy savings evaluator with the required knowledge and skills, it is possible to properly calculate the energy savings and to implement climate and energy policy agreements appropriately.

Energy management and energy savings — General guidelines for selecting energy savings evaluators

1 Scope

This document gives guidelines for selecting energy savings evaluators to determine ex-post (realized) energy savings for projects, organizations and regions. It gives general principles and identifies the key factors to consider. It also defines roles and responsibilities, recommends the required competence and provides key elements for assessing the knowledge and skills of energy savings evaluators.

At the project and organization level, this document is applicable to both internal and external energy savings evaluators.

Selecting evaluators who calculate predicted energy savings is out of the scope of this document.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
energy savings
reduction of energy consumption compared to an energy baseline

Note 1 to entry: Energy savings may be the result of implementation of an action(s) or of autonomous progress.

Note 2 to entry: An evaluation of savings from implementation of actions may need to identify the separate impacts of the actions compared to other factors.

[SOURCE: ISO 17743:2016, 3.8, modified — The notes to entry have been replaced.]

3.2
energy savings evaluation
systematic process to measure, quantify, verify, analyse and report *energy savings* (3.1) within a defined boundary

3.3
energy savings evaluator
individual, or a team of people, conducting an *energy savings evaluation* (3.2)

Note 1 to entry: The internal energy savings evaluator is affiliated with the implementer of the evaluated project or evaluated organizations.

Note 2 to entry: The external energy savings evaluator who is being entrusted or commissioned is not affiliated with the interested parties or entities to be evaluated.

3.4
lead energy savings evaluator
person who is competent to lead and/or review and provides assurance of consistency to relevant requirements of an *energy savings evaluation* (3.2)

Note 1 to entry: A lead energy savings evaluator might also take part in an energy savings evaluation.

3.5
selector of energy savings evaluator
entity or personnel appointed by the client to choose an energy savings evaluator

Note 1 to entry: the client is an organization or a person requesting *energy savings evaluation* (3.2). The client could be the responsible party, the programme administrator or the interested party.

3.6
objective
results to be achieved

Note 1 to entry: An objective can be strategic, tactical or operational.

Note 2 to entry: Objectives can relate to different disciplines (such as financial, health and safety, and environmental goals) and can apply at different levels (such as strategic, organization-wide, project, product and process).

Note 3 to entry: An objective can be expressed in other ways, e.g. as an intended outcome, a purpose, an operational criterion, as an energy objective, or by the use of other words with similar meaning (e.g. aim, goal).

[SOURCE: ISO 50001:2018, 3.4.13, modified — Note 4 to entry has been deleted.]

3.7
competence
ability to apply *knowledge* (3.9) and *skills* (3.10) to achieve intended results of *energy savings evaluation* (3.2)

[SOURCE: ISO 9000:2015, 3.10.4, modified — "of energy savings evaluation" has been added to the definition and the notes to entry have been deleted.]

3.8
experience
<evaluation> combination of *knowledge* (3.9) and *skills* (3.10) obtained through a period of practical application of carrying out *energy savings evaluation* (3.2)

3.9
knowledge
<evaluation> assimilation of facts, theories and practices with regard to carrying out an *energy savings evaluation* (3.2)

3.10
skill
<evaluation> ability to apply *knowledge* (3.9) in order to carry out an *energy savings evaluation* (3.2)

3.11
energy performance improvement action
EPIA
action, measure, or group of actions or measures implemented or planned within an organization intended to achieve energy performance improvement through technological, managerial or operational, behavioural, economical or other changes

[SOURCE: ISO 50015:2014, 3.5]

4 Considerations for selecting energy savings evaluators

4.1 General

When selecting the energy savings evaluator, the following key factors, explained in more detail below, should be considered:

— the final objectives of the energy savings evaluation;

— the subjects of the energy savings evaluation;

— the approaches to the energy savings evaluation;

— the reporting requirements;

— the budgets for the energy savings evaluation.

Some of the key factors affecting the energy savings evaluation may be confirmed in the planning stage by the evaluation client (e.g. final objectives). Other factors will be confirmed in the planning process by either the energy savings evaluators or the evaluators' organization. The energy savings evaluators may be selected from competitive bids or appointed from internal employees based on how well the potential energy savings evaluator understands the key factors and needs of the evaluation.

4.2 Final objectives of the energy savings evaluation

Energy savings evaluators should be assessed on an understanding of the basic knowledge of final objectives. This includes, but is not limited to:

— the financial return of EPIAs;

— the policy effect(s);

— financial assistance (e.g. subsidy, loan, grant);

— compliance with various initiatives and commitments to various interested parties (e.g. to government and industry);

— verification of an energy savings claim;

— technical issues involved in the EPIA or other improvement actions being evaluated;

— energy efficiency benchmarking.

4.3 Subjects of the energy savings evaluation

The subject(s) of an energy savings evaluation can include:

— a project;

— an organization (or part of an organization);

— a city, region or country;

— a group of organizations;

— any other entity that has the capacity to make energy savings.

4.4 Approaches to the energy savings evaluation

Energy savings evaluators should have the technical competence to apply suitable calculation method(s) for a certain approach(es) to fulfil an evaluation task. The methods should be agreed prior to the evaluation.

Examples of approaches and corresponding methods include, but are not limited to:

— a top-down approach, which is an entity-based approach (e.g. evaluating the change in the total energy consumption of the whole entity, such as a building, organization or city) involving indicator-based calculation methods;

— a bottom-up approach, which involves measure-based calculation methods, aggregating energy savings from identified EPIAs, energy consumption-relevant variables modelling, calibrated simulation and direct comparison;

— identifying the separate impacts of the energy saving actions compared to other factors.

NOTE ISO 17741, ISO 17742 and ISO 50047 give approaches and methods for determining energy savings. These International Standards can be applied independently or in combination.

4.5 Reporting requirements

Energy savings evaluators should have the competencies to satisfy specific reporting requirements agreed to prior to the evaluation. Some issues for consideration include:

— the level of accuracy of energy savings evaluation results;

— whether or not a formal report is needed;

— requirements on reporting format and data documentation;

— confidentiality;

— energy units to be used (e.g. kWh, GJ, toe);

— whether the report is solely about energy or if CO_2 equivalents are also expected.

4.6 Budgets for the energy savings evaluation

The financial and time budgets are likely to affect the quality of the energy savings evaluation and the qualification of energy savings evaluators. Budget and time should be set in order to allow hiring of energy savings evaluators with the appropriate competency to achieve the desired outcomes. In determining the financial and time budgets, the following factors should be considered:

— the final objective of the energy savings evaluation;

— the subject of the energy savings evaluation;

— the scale and complexity of the subject;

— the level of required accuracy for the results of the energy savings evaluations;

— the availability of data and evaluation models, including completeness, timeliness, granularity, etc.;

— the availability of the technical means to carry out the necessary data collection (e.g. measurement, recording, storing);

— the methods for evaluation [e.g. measurement and verification (M&V), simple statistical calculation or extensive calibrated modelling, calculation especially desired accuracy].

5 Roles and responsibilities

The main roles and responsibilities for selector of energy savings evaluator, lead energy savings evaluator and additional team member(s) of the energy savings evaluator are defined in Table 1.

NOTE Examples of selection methods for energy savings evaluators are shown in Annex A.

Table 1 — Roles and responsibilities for selector of energy savings evaluator, lead energy savings evaluator and additional team member(s) of the energy savings evaluator

Roles and responsibilities	Selector of energy savings evaluator	Lead energy savings evaluator	Additional team member(s) of the energy savings evaluator
Set the specifications for the energy savings evaluation (including time frame, budget and required competences) and possibly organize a tendering process	X		
Submit a bid describing how the energy savings evaluation would be performed (data collection, data processing, etc.)		X	
Agree on the energy savings evaluation contract (possibly including negotiations of budget and/or other contractual aspects)	X	X	
Agree on the energy savings evaluation methodology (boundary, evaluation method, baseline, etc.)	X	X	X
Ensure that the energy savings evaluator will have access to the information needed for the energy savings evaluation	X		
Perform the energy savings evaluation (data collection, data processing, etc.)		X	X
Report the energy savings evaluation		X	X
Communicate the energy savings evaluation	X	X	X
Manage the energy savings evaluation work within the agreed time frame and budget		X	
Mitigate the risks of the energy savings evaluation process regarding budget, data, etc.	X	X	

6 Principles for selecting energy savings evaluators

6.1 General

The selection of an energy savings evaluator is governed by several principles. The selection should be made in a way that allows clients to assess whether the proposed energy savings evaluator has the competence to perform the required energy savings evaluation consistently.

6.2 Confidentiality

Prior to the start of the energy savings evaluation, the energy savings evaluator agrees to the confidentiality agreement established by the selector of the energy savings evaluator, which is related to the disclosure or distribution of the results of the energy savings evaluation (e.g. the funder of the energy savings evaluation, government agency using the results), as applicable.

Energy savings evaluators should not use energy savings evaluation information for personal interest or in a manner detrimental to the legitimate interest of the entity being evaluated.

NOTE 1 This concept includes the proper handling of sensitive or confidential information.

NOTE 2 Subject to agreement by the client commissioning the energy savings evaluation, energy savings evaluators can be permitted to use anonymous data, for example, to improve advice about future EPIAs or to improve upon publicly available benchmarks.

6.3 Impartiality

Both internal and external energy savings evaluators should act in an independent and impartial manner to address the potential sources of bias, to ensure objectivity and to avoid conflicts of interest. Energy savings evaluators do not evaluate their own work.