Provisions in EMEER 2008 and reporting requirements in EMIS that are relevant in ISO50001:2018 EnMS requirements.

Prepared by:
Zaini Abdul Wahab
Registered Electrical Energy Manager
(PTE-0016-2012)

28 January 2021

1.0 RELEVANT DEFINITIONS

ISO50001:2018	EMEER 2008
Energy Management System(EnMS) Management system to establish an energy policy , objectives, energy targets , action plans and process(es) to achieve the objectives and energy targets.	• Regulation 6(1)(c) • Regulation 16 (a) (ii) • EMIS reporting requirement
Energy policy statement by the organization of its overall intention(s), direction(s), and commitment(s) related to its energy performance, as formally expressed by top management.	• Regulation 6(1)(c) • EMIS reporting requirement
Energy Management Team Person(s) with responsibility and authority for effective implementation of an energy management system and for delivering energy performance improvement.	• EMIS reporting requirement
Documented Information Information required to be controlled and maintained by an organization and the medium on which it is contained. Notes: • Documented information can be in any format and media, and from any source. • Documented information can refer to: — the management system, including related processes (3.3.6); — information created in order for the organization to operate (documentation); — evidence of results achieved (records).	• Regulation 6(1)(c) • Regulation 16 (b) • EMIS reporting requirement
Energy Performance measurable result(s) related to energy efficiency, energy use and energy consumption. Notes: • Energy performance can be measured against the organization's objectives ,energy targets and other energy performance requirements. • Energy performance is one component of the performance of the energy management system.	• Regulation 16 (a)(iii) – to monitor effective implementation of measures.
Energy Performance Indicator (EnPI) Measure or unit of energy performance , as defined by the organization. Notes: • EnPI(s) can be expressed by using a simple metric, ratio, or a model, depending on the nature of the activities being measured. • See ISO 50006 for additional information on EnPI(s)	• Regulation 16 (a)(iii) – to monitor effective implementation of measures & data and reporting requirement in EMIS(BEI/SEC)
Energy Performance Indicator value (EnPI value) Quantification of the EnPI at a point in or over a specified period of time	Regulation 16 (a)(iii) – to monitor effective implementation of measures & data and reporting requirement in EMIS(BEI/SEC)

Energy Performance Improvement Improvement in measurable results of energy efficiency , or energy consumption related to energy use , compared to the energy baseline.	Regulation 16 (a)(iii) – to monitor effective implementation of measures.
Energy Baseline (EnB) Quantitative reference(s) providing a basis for comparison of energy performance. Notes: • An energy baseline is based on data from a specified period of time and/or conditions, as defined by the organization. • One or more energy baselines are used for determination of energy performance improvement (3.4.6), as a reference before and after, or with and without implementation of energy performance improvement actions. • See ISO50015 for additional information on measurement and verification of energy performance. • See ISO 50006 for additional information on EnPIs and EnBs.	Regulation 16 (a)(iii) – to monitor effective implementation of measures & data and reporting requirement in EMIS(BEI/SEC)
Energy consumption Quantity of energy applied.	Regulation 16 (a)(i)
Energy use Application of energy EXAMPLE Ventilation; lighting; heating; cooling; transportation; data storage; production process. Note 1 to entry: Energy use is sometimes referred to as “energy end-use”.	Regulation 16 (a)(i)
Energy review Analysis of energy efficiency , energy use and energy consumption based on data and other information, leading to identification of SEUs and opportunities for energy performance improvement.	Regulation 16 (a)(i)
Significant Energy Use (SEU) Energy use accounting for substantial energy consumption and/or offering considerable potential for energy performance improvement. Notes: • Significance criteria are determined by the organization. • SEUs can be facilities, systems, processes, or equipment.	Regulation 16 (a)(i)
Relevant variable Quantifiable factor that significantly impacts energy performance and routinely changes Note: • Significance criteria are determined by the organization. EXAMPLE Weather conditions, operating conditions (indoor temperature, light level), working hours, production output.	data and reporting requirement in EMIS

Objective Results to be achieved. Notes: • An objective can be strategic, tactical, or operational. • 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). • 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). • In the context of energy management systems , objectives are set by the organization , consistent with the energy policy , to achieve specific results.	Regulation 6(1)(c) EMIS reporting requirement
Effectiveness Extent to which planned activities are realized and planned results achieved.	Regulation 16 (b)
Energy target Quantifiable objective of energy performance improvement Note: • An energy target can be included within an objective.	Regulation 6(1)(c)

2.0 RELEVANT CLAUSES IN ISO50001:2018 AND PROVISIONS IN EMEER 2008

Clause 4.4 Energy Management System (EnMS)

The organization shall **establish, implement, maintain and continually improve** an EnMS, including the processes needed and their interactions, and **continually improve energy performance**.

– Regulation 16 (a)(ii) …he shall be responsible to advise the private installation licensee or consumer in developing and implementing measures to ensure efficient management of electrical energy.

Clause 5 Leadership

5.1 Leadership and commitment

Top management shall demonstrate leadership and commitment with respect to continual improvement of its energy performance and the effectiveness of the EnMS, by:

- ensuring that the EnMS scope and boundaries are established.
- ensuring that the energy policy , objectives and energy targets (see 6.2) are established and are compatible with the strategic direction of the organization.
- ensuring the integration of the EnMS requirements into the organization's business processes.
- ensuring that action plans are approved and implemented.
- ensuring that the resources needed for the EnMS are available.
- communicating the importance of effective energy management and of conforming to the EnMS requirements.
- ensuring that the EnMS achieves its intended outcome(s).
- promoting continual improvement of energy performance and the EnMS.
- ensuring the formation of an energy management team.

- directing and supporting persons to contribute to the effectiveness of the EnMS and to energy performance improvement.
- supporting other relevant management roles to demonstrate their leadership as it applies to their areas of responsibility.
- ensuring that the EnPI(s) appropriately represent(s) energy performance.
- ensuring that processes are established and implemented to identify and address changes affecting the EnMS and energy performance within the scope and boundary of the EnMS.

5.2 Energy policy - Regulation 6 (1) (c)

Top management shall establish an energy policy that:

- is appropriate to the purpose of the organization.
- provides a framework for setting and reviewing objectives and energy targets (see 6.2).
- includes a commitment to ensure the availability of information and necessary resources to achieve objectives and energy targets.
- includes a commitment to satisfy applicable legal requirements and other requirements related to energy efficiency, energy use and energy consumption.
- includes a commitment to continual improvement of energy performance and the EnMS.
- supports the procurement of energy efficient products and services that impact energy performance.
- supports design activities that consider energy performance improvement. The energy policy shall: — be available as documented information; — be communicated within the organization; — be available to interested parties, as appropriate; — be periodically reviewed and updated as necessary.

5.3 Organization roles, responsibilities and authorities – information and reporting requirement in EMIS.

Top management shall ensure that the responsibilities and authorities for relevant roles are assigned and communicated within the organization.

Top management shall assign the responsibility and authority to the energy management team for:

- ensuring that the EnMS is established, implemented, maintained and continually improved.
- ensuring that the EnMS conforms to the requirements of this document.
- implementing action plans to continually improve energy performance.
- reporting on the performance of the EnMS and improvement of energy performance to top management at determined intervals.
- establishing criteria and methods needed to ensure that the operation and control of the EnMS are effective.

6.2 Objectives, energy targets and planning to achieve them. -Regulation 6(1)(c)

6.2.1 The organization shall establish objectives at relevant functions and levels. The organization shall establish energy targets.

6.2.2 The objectives and energy targets shall:

- be consistent with the energy policy.
- be measurable (if practicable).
- take into account applicable requirements.
- consider SEUs (see 6.3).
- take into account opportunities (see 6.3) to improve energy performance.
- be monitored.

- be communicated.
- be updated as appropriate.

The organization shall retain documented information on the objectives and energy targets.

6.2.3 When planning how to achieve its objectives and energy targets, the organization shall establish and maintain action plans that include:

- what will be done.
- what resources will be required.
- who will be responsible.
- when it will be completed.
- how the results will be evaluated, including the method(s) used to verify energy performance improvement .

The organization shall consider how the actions to achieve its objectives and energy targets can be integrated into the organization's business processes. The organization shall retain documented information on action plans .

6.3 Energy review -– Regulation 16 (a)(i)

The organization shall develop and conduct an energy review. To develop the energy review, the organization shall:

a) analyse energy use and consumption based on measurement and other data, i.e.:
   - identify current types of energy. - **data and reporting requirement in EMIS**
   - evaluate past and current energy use(s) and consumption.- **data and reporting requirement in EMIS.**

b) based on the analysis, identify SEUs –

c) for each SEU:
   - determine relevant variables – **data and reporting requirement in EMIS.**
   - determine current energy performance.
   - identify the person(s) doing work under its control that influence or affect the SEUs.

d) determine and prioritize opportunities for improving energy performance. **- data and reporting requirement in EMIS (Energy saving measure list, implemented & proposed)**

e) estimate future energy use(s) and energy consumption.

The energy review shall be updated at defined intervals, as well as in response to major changes in facilities, equipment, systems or energy-using processes.

The organization shall maintain as documented information the methods and criteria used to develop the energy review and shall retain documented information of its results.

6.4 Energy performance indicators - Regulation 16 (a)(iii) – to monitor effective implementation of measures & data and reporting requirement in EMIS(BEI/SEC)

The organization shall determine EnPIs that:

- are appropriate for measuring and monitoring its energy performance.
- enable the organization to demonstrate energy performance improvement. The method for determining and updating the EnPI(s) shall be maintained as documented information .

Where the organization has data indicating that relevant variables significantly affect energy performance, the organization shall consider such data to establish appropriate EnPI(s).

6.5 Energy baseline – Regulation 16 (a)(iii) – to monitor effective implementation of measures.

The organization shall establish (an) EnB(s) using the information from the energy review(s) , taking into account a suitable period of time.
Where the organization has data indicating that relevant variables significantly affect energy performance, the organization shall carry out normalization of the EnPI value(s) and corresponding EnB(s). EnB(s) shall be revised in the case of one or more of the following:

- EnPI(s) no longer reflect the organization's energy performance.
- there have been major changes to the static factors.
- according to a pre-determined method.

7.5 Documented information – Regulation 6 (1) (c) ,(d),(e) & Regulation 16 (b)

7.5.1 General

The organization's EnMS shall include:

a) documented information required by this document.
b) documented information determined by the organization as being necessary for the effectiveness of the EnMS and to demonstrate energy performance improvement.

Note:

- The extent of documented information for an EnMS can differ from one organization to another due to:
  — the size of organization and its type of activities, processes, products and services.
  — the complexity of processes and their interactions.
  — the competence of persons.

7.5.2 Creating and updating.

When creating and updating documented information, the organization shall ensure appropriate:
a) identification and description (e.g., a title, date, author or reference number).
b) format (e.g., language, software version, graphics) and media (e.g., paper, electronic); c) review and approval for suitability and adequacy.

7.5.3 Control of documented information

Documented information required by the EnMS and by this document shall be controlled to ensure.

a) it is available and suitable for use, where and when it is needed.
b) it is adequately protected (e.g., from loss of confidentiality, improper use, loss of integrity).

For the control of documented information, the organization shall address the following activities, as applicable: — distribution, access, retrieval and use; — storage and preservation, including preservation of legibility; — control of changes (e.g., version control); — retention and disposition. Documented information of external origin determined by the organization to be necessary for the planning and operation of the EnMS shall be identified, as appropriate, and controlled.

8 Operation

8.1 Operational planning and control

The organization shall plan, implement and control the processes, related to its SEUs , needed to meet requirements and to implement the actions determined, by:

a) establishing criteria for the processes, including the effective operation and maintenance of facilities, equipment, systems and energy-using processes, where their absence can lead to a significant deviation from intended energy performance.
b) communicating the criteria to relevant person(s) doing work under the control of the organization.

c) implementing control of the processes in accordance with the criteria, including operating and maintaining facilities, equipment, systems and energy-using processes in accordance with established criteria
d) keeping documented information to the extent necessary to have confidence that the processes have been carried out as planned. - **Regulation 16 (b)**

The organization shall control planned changes and review the consequences of unintended changes, taking actions to mitigate any adverse effects, as necessary. The organization shall ensure that outsourced SEUs or processes related to its SEUs are controlled.

9.1 Monitoring, measurement, analysis and evaluation of energy performance and the EnMS – Regulation 16 (a)(iii)

9.1.1 General

The organization shall determine for energy performance and the EnMS:

a) what needs to be monitored and measured, including at a minimum the following key characteristics:
   - the effectiveness of the action plans in achieving objectives and energy targets.
   - EnPI(s).
   - operation of SEUs.
   - actual versus expected energy consumption.
b) the methods for monitoring, measurement, analysis and evaluation, as applicable, to ensure valid results.
c) when the monitoring and measurement shall be performed.
d) when the results from monitoring and measurement shall be analysed and evaluated.

The organization shall evaluate its energy performance and the effectiveness of the EnMS. Improvement in energy performance shall be evaluated by comparing EnPI value(s) against the corresponding EnB(s).

The organization shall investigate and respond to significant deviations in energy performance. The organization shall retain documented information on the results of the investigation and response.

The organization shall retain appropriate documented information on the results from monitoring and measurement.