

ISO 50001: Recommendations for compliance

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How to achieve ISO 50001 compliance, reduce energy consumption and related energy costs, and provide a solid foundation for enterprise carbon and energy management

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Key Takeaways

ISO 50001: Abstract

The International Organization for Standardization (ISO) is the world's largest developer and publisher of International Standards. ISO 50001 is a framework designed by the ISO to serve as a blueprint, or set of standardized strategies, to assist organizations in improving the ways they manage their energy and resources. ISO 50001 provides measurable benefits to both public and private organizations worldwide, and many experts agree that it will dramatically influence the world's energy use and ultimately benefit society as a whole.

ISO 50001 is a specification for an energy management system that defines requirements for establishing, implementing, maintaining and improving such a system. It enables an organization to follow a systematic approach to achieving continual improvement of its energy performance, including efficiency, usage and consumption.

The process of adopting ISO 50001 is highly beneficial for organizations, especially those with reporting and transparency pressures from shareholders and other entities requesting measurement data. ISO 50001 will help these companies formalize accepted best practices and ensure accurate and standardized reporting. However, the ultimate benefit is in the form of sustainable energy savings that arise out of following a systematic approach.

Not only will these recommendations help achieve ISO 50001 compliance, but will also provide a solid foundation for compliance to anticipated energy and carbon regulations in the future.



This paper is designed to provide recommendations that will help achieve ISO 50001 compliance

Introduction to ISO 50001: What is it, and why do I want to comply?

The ISO provides business, government and society with tools for economic, environmental and social development. Each International Standard is developed by experts from the applicable industrial, technical and business sectors and represents a global consensus on the subject of that particular standard.

ISO 50001 enables organizations to establish the systems and processes necessary to improve energy performance, including energy efficiency, use and consumption. The goal of this standard is to create an energy management system (EnMS) within an organization that will lead to a **reduction in greenhouse gas emissions** and other harmful environmental impacts while controlling energy costs.

This International Standard lays out the best practices for managing energy. Those who adopt ISO 50001 will experience **cost savings, quality improvement and risk mitigation**. ISO 50001 also serves as a functional support for an organization's sustainability program. This International Standard is based on common elements of other ISO management system standards, ensuring a high level of compatibility with the ISO 9000 quality management system adopted by most industrial and manufacturing organizations as well as the ISO 14001 environmental management system.

Definition of terms used in ISO 50001

ISO 50001 employs definitions and terms similar to terminology used in other ISO standards. The following terms included in ISO 50001 are unique to energy management and are important to define:

Energy Management System (EnMS) is a set of interrelated or interacting elements that comprise an energy policy and energy objectives, as well as the processes and procedures to achieve those objectives.¹ The EnMS is managed and led by an Energy Manager/Management representative who utilizes tools that collect, audit, analyze, forecast, trend and report energy data from the site to enterprise level.

> An EnMS is comprised of internal resources (human resources), hardware and software, and consulting services.

Migration of data to a centralized system that integrates site level sub-meter information to global enterprise reporting is a recommended best practice for organizations seeking ISO 50001 certification.

Energy Performance Indicator (EnPI) is a quantitative value or measure of energy performance, as defined by the organization.² An Energy Manager/Management representative develops EnPI's that satisfy a cross functional team within the organization (sales, operations, finance). EnPI's are utilized to normalize energy data based on factors that may contribute to energy fluctuations such as energy per unit of revenue, energy per square foot, energy per headcount and energy per unit of production.

¹ Energy management systems – Requirements with guidance for use, ISO/CD 50001, page 1

² Energy management systems – Requirements with guidance for use, ISO/CD 50001, page 1

General requirements of ISO 50001

According to the International Standard, an organization should establish, document, implement, maintain and improve an EnMS in accordance with the requirements; define and document the scope and boundaries of its EnMS; and determine how it will meet the requirements of this International Standard in order to achieve continual improvement of its energy performance and of its EnMS.

To achieve maximum return on investment on energy management and efficiency projects, it must be part of an organization's culture. The Energy Plan needs to be supported from top executives down to operations staff.

Many organizations will not have all the competencies required to address every component of ISO50001 based on internal resources. An alternative to completing the steps to compliance internally is to outsource competency gaps to a knowledgeable energy management organization who can ensure that the requirements are executed according to proven best practices.

> The most effective EnMS and energy plans are often the result of strong collaboration between an organization's internal resources and an expert energy management company.

It is recommended that a third party professional certification company is used to submit an application for ISO50001 compliance. This will ensure legitimacy of the compliance, as well as act as an unbiased advisor that can provide suggestions to improve.

Plan, Do, Check, Act: Continuous Energy Management Improvement

ISO 50001 is based on the Plan - Do - Check - Act (PDCA) continual improvement framework and integrates energy management into daily organizational practices.

Plan: Conduct the energy review and establish the baseline, energy performance indicators (EnPIs), objectives, targets and action plans necessary to deliver results that will improve energy performance in accordance with the organization's energy policy;

Do: Implement the energy management action plans;

Check: Monitor and measure processes and the key characteristics of operations that determine energy performance against the energy policy and objectives, and report the results;

Act: Take actions to continually improve energy performance and the EnMS.

Energy Management Best Practices for ISO 50001 Compliance

ISO 50001 is based on the following principles for efficient and effective energy management. For maximum return on investment and optimization of energy usage, energy management should be:

- Initiated by general management of the enterprise and organization
- Lead by an identified responsible person
- Communicated to all levels of management
- Described in detailed energy policies
- Supported by measurement system
- Set up on a continuous improvement process

Energy Aspect Reviews	Awareness, Training, Competencies	Monitoring and Measurement	Operational Control
• Past and Present Consumption • Estimated expected consumption • Identification of stakeholders	• Training for all levels of management and people involved in areas of significant energy use	• Energy Metering Plan • Consumption and Energy KPI's	• Energy considerations in purchasing • Design/change or restoration

Additional key factors for successfully implementing ISO 50001 include:

- Clear objectives
- Energy visibility is crucial at all stages of an energy plan; before, during, after
- Ensure consistency of data at different levels of organization
- Revisit past decisions regularly (recurrent cycle); practice both passive and active energy efficiency
- Seek support of reputable Consultant to gain efficiency and consistency

ISO 50001 Standard Recommendations to Ensure Compliance

The following section outlines the ISO standard's requirements (International Standard) and recommendations for compliance. In each section a role or solution is described that will contribute towards compliance. A thorough gap analysis should be performed to assess organizations' assets, identify where the recommended asset currently exists, whether it is outsourced or needs to be outsourced because the competencies do not exist within the organization. (See Supplement Document to ISO 50001 Whitepaper for a quick gap analysis).

1. Energy management best practices

Standard Says:

Energy management should be integrated into the existing organizational culture. It should:

1. Be initiated by management;
2. Have an internal leader who can communicate at all levels;
3. Be supported by energy policies, objectives, targets, and action plans;
4. Support a measurement system;
5. Have a continuous improvement process.

Recommendations:

Every organization's culture is unique. Social, regulatory and market pressures on environmental and sustainability issues have steadily increased in recent years.

Selection of an internal leader is essential to ensure success. This leader will communicate internally as well as with vendors. This leader should be positioned at a high level of the organization to have credibility and access to power sponsors. An energy management company can assist the internal leader with the development and implementation of strategies and best practices specific to the business for seamless integration. An energy management company can add value by defining the targets and action plans for successful implementation of EnMS. Often, the expertise and guidance provided by an energy management company saves time and money by eliminating the need for trial and error and the risk of delayed certification.

2. Management steps to compliance

Standard Says:

Successful implementation of the standard depends on commitment from all levels and functions of the organization, especially top management. Top-level management may identify a management representative to be responsible for ensuring delivery of energy performance improvements. This person can be a current employee, new hire or contracted employee.

Recommendations:

An internal candidate supported by an expert energy management company will ensure the energy performance improvements are accepted internally. Support from an energy management company will streamline the planning and deployment and ensure the use of industry best practices.

This management representative is identified as the Energy Manager/Management representative who works with an energy team and reports to top management, with a prime responsibility of promoting EnMS. The Energy Manager or management representative leads a team of energy professionals who are either internal resources or outsourced resources comprising of both subject-matter and regional experts. The team is responsible for issuing and managing RFPs, auditing energy bills, facilitating training, overseeing data measurement and management, implementing site level sub-meters as needed, and more. In essence, the Energy Manager or management representative is accountable for ensuring that the entire suite of energy solutions used to develop the EnMS are effectively and efficiently leveraged on the company's behalf.

3. Establishing an energy policy

Standard Says:

The standard outlines the process of creating an effective energy policy which includes defining planning inputs, performing an energy review (analyzing energy consumption, identifying areas of significant consumption, and identifying opportunities for improving energy performance) and defining planning outputs (EnPI, targets and objectives).

Recommendations:

An energy policy is created by the Energy Manager or management representative in collaboration with a team of energy experts. Using consultants can make developing an effective energy plan faster, and allows an organization to take advantage of the experience of experts who have best practices based on their vast experience developing energy policies.

The Energy Policy summarizes the client's best approach for identifying, capturing, and tracking energy savings/cost avoidance. The energy policy is a dynamic document, revised as frequently as necessary to adjust to the client's changing business objectives. The policy should include:

- Definition of the scope and boundaries of the Energy Management System (EnMS), appropriate to the scale of operation
- Commitment to continual improvement
- Identification of the Energy Management Team
- Identification of Energy Performance Indicators (EnPI)
- Formation of energy performance objectives and targets

A document management plan should detail reporting practices and include sections outlining boundary conditions, calculation methodologies, data management processes and auditing and verification. The plan documents the

scope, process and methods for reporting data. The Energy Manager or management representative is responsible for ensuring that the energy policy is established, implemented, maintained and continually improved in accordance with the International Standard. Additionally, documentation procedures should be established, which should include documentation for control of significant energy users and their EnPIs.

4. About the Energy Policy

Standard Says:

The energy policy should state the organization's commitment to achieving energy performance improvement. Top management defines the energy policy and ensures that it:

1. Is appropriate to the nature and scale of the organization's energy use and consumption;
2. Includes a commitment to continual improvement in energy performance;
3. Includes a commitment to ensure the availability of information and of necessary resources to achieve objectives and targets;
4. Includes a commitment to comply with applicable legal requirements and other requirements to which the organization subscribes related to its energy use, consumption and efficiency;
5. Provides the framework for setting and reviewing energy objectives and targets;
6. Supports the purchase of energy-efficient solutions, and design for energy performance improvement;
7. Is documented and communicated at all levels within the organization;
8. Is regularly reviewed, and updated as necessary.

Recommendations:

The Energy Manager/ Management Representative should guide top management through this process, ensuring it meets the guidelines outlined in the International Standard as the company establishes an energy policy. The Energy Manager/Management representative should create consistent processes and procedures across the organization to support the energy policy. Energy Manager/Management representative should also institute behavioral changes for personnel ensuring facility wide adoption of the energy policy. The Energy Manager/Management representative will guide in:

- Creation of communication tools for end-users and management
- Adaptation of new equipment, major renovation, and new design policies to incorporate energy efficiency as a key component
- Modification of procurement policies and standard terms and conditions for purchasing energy services, solutions, equipment and energy supply to inform vendors of customers' commitment to energy efficiency
- Creation of training guides for equipment end-users to convey their roles in EnMS and positively impact their behavior contributing to energy objectives and targets

5. Legal requirements and other regulations

Standard Says:

The organization should identify, implement and have access to the applicable legal requirements and other requirements to which the organization subscribes related to its energy use, consumption and efficiency.

Recommendations:

With regular reports, alerts and contact from the Energy Manager/Management representative, management will be aware of the probability and timing of regulatory issues that may impact supply, reliability and price. Opportunities are communicated by the Energy Manager/Management representative, and this information can be made available over the Internet, preferably through a customized, secure energy and sustainability portal that is accessible from across the enterprise from the site level to the executive management team.

6. Conducting an energy review

Standard Says:

The organization should develop, record, and maintain an energy review. The methodology and criteria used to develop the energy review is documented. To develop the energy review, the standard states that the organization must:

1. Analyze energy use and consumption based on measurement and other data;
2. Based on the analysis of energy use and consumption, identify the areas of significant energy use;
3. Identify, prioritize and record opportunities for improving energy performance.

Recommendations:

When conducting an energy review, the Energy Manager/ Management representative must analyze energy data and identify areas of significant energy use, hotspots and areas for energy performance improvement. The Energy Manager/ Management representative should perform a physical assessment of the site to conduct an energy review including:

- Analysis of historical utility data (12 or 24 months) to establish energy baseline
- Creation of a detailed load breakdown in order to identify significant energy users in the facility
- Collaboration with facility personnel to establish appropriate EnPIs
- On-site analysis of major energy users
- Identification and recommendation of potential Energy Conservation Measures (ECMs) including low and no-cost retro-commissioning recommendations providing direct energy savings and indirect cost savings
- Identification of dysfunction and energy waste

- Assessment of the feasibility of metering, monitoring, new energy management systems, and automatic controls by conducting a detailed WAGES (Water, Air, Gas, Electricity, and Steam) metering assessment
- Assessment of the feasibility of renewable and/or innovative technology applications

The energy review assessment can be complimented by using a software platform that functions as a centralized portal of the energy data and is often referred to as an Energy Management Information System or EMIS.

An EMIS is a hub for viewing cost performance against targets, energy data/information, energy efficiency projects and resulting savings. Data should be updated in 15 minute intervals to provide access to real time energy information, or daily if real time information is not required. Starting with high-level or corporate-wide information, the EMIS should have the capacity to “drill-down” to business-unit and site-level information.

A hosted EMIS platform can provide instant online access to energy information, and allow for timely and informed decision-making and operational management at any level in the organization. A hosted platform also instantly provides the latest functionality, ensuring the platform evolves as quickly as your business needs.

Energy efficiency initiatives, such as upgrading lighting, should be reported in the platform. This allows the company to accurately report on the effectiveness or ROI of an initiative. Based on the reports generated by the EMIS, the Energy Manager/ Management representative will be able to identify factors of significant energy consumption and determine energy performance, which helps estimate future use. The Energy Manager/ Management representative then identifies and records areas where there are opportunities and implements a plan for improved energy performance.

The Energy Manager/ Management representative then should take the energy data information and initiate a comprehensive energy audit on the selected sites, performed by an energy expert with experience in evaluating sub-meter data and site operations. The audit should produce a customized action plan. This plan includes both low and no cost solutions to reduce energy consumption at the site in addition to capital intensive investments for dramatic increases in efficiency.

7. Establish an energy baseline

Standard Says:

An organization should establish an energy baseline using the information in the initial energy review, considering a data period suitable to the organization's energy use and consumption. Changes in energy performance are measured against the energy baseline.

Recommendations:

In order to establish an energy baseline, data must be collected, audited and analyzed. Power Monitoring solutions including meters should be installed or utilized so utility data can be monitored and trends recorded. Establish an energy baseline by analyzing historic utility data (12 months or 24 months). This process can be simplified by using a software portal designed to account for and report the

calculation methodologies, roles and responsibilities, data management processes, and change-management systems. The energy and sustainability portal provides a framework for defining, compiling, and reporting the enterprise-wide inventory for greenhouse gas (GHG) emissions, energy and water consumption, and waste generation. This portal can provide, not only a baseline, but key data regarding the company's ongoing environmental reporting program.

During annual assessments, the Energy Manager/ Management representative should reassess major energy systems and update the energy baseline.

8. Establish energy performance indicators (EnPIs)

Standard Says:

An organization should identify EnPIs appropriate for monitoring and measuring its energy performance. The methodology for determining and updating the EnPIs is recorded and regularly reviewed and compared to the energy baseline.

Recommendations:

The Energy Manager/ Management representative and the team of energy experts (internal and outsourced) can assist in establishing energy performance indicators. To establish EnPIs, concepts and methodologies applied in identifying, capturing, and tracking energy savings/cost avoidance should be documented. Assumptions and specific calculations, including estimates, forecasts, and volumes should be noted. Savings performance consistent with mutually agreed-upon methodologies should be tracked. All of this information should be reported via an energy and sustainability portal.

EnPIs are utilized to help normalize energy cost and usage data to identify opportunities for improvement or to share best practices. An organization may have multiple EnPIs depending on the operation. Sample EnPIs are energy per square foot, energy per unit of revenue, energy per unit of production or energy per headcount.

To determine what can be improved, the Energy Manager/ Management representative may suggest an energy audit. This process helps corporate sustainability stakeholders, as well as on-site personnel, gain a thorough understanding of an existing baseline inventory of "eco-efficiency" metrics that are both quantitative and qualitative. The assessment will identify a list of priority areas and analyze a preliminary list of recommendations for driving cost and energy reductions. This process may include site level sub-meters installed to identify individual equipment usage contribution to energy use and cost.

9. Energy Management Action Plan

Standard Says:

The organization shall establish, implement and maintain action plans for achieving its objectives and targets. The action plans shall include:

- designation of responsibility;
- the means and time frame by which individual targets are to be achieved;
- a statement of the method by which an improvement in energy performance shall be verified;
- a statement of method of verifying the results

The action plans shall be documented, and updated at defined intervals.

Recommendations:

The Energy Manager/ Management representative should be able to establish and lead management through the Energy Management Action Plan by providing expertise in on-site hardware, energy and sustainability portal that creates targets and training facilitation. The Energy Manager/ Management representative should be accustomed to framing the energy action plan in terms of “plan do act check” language:

- The “plan” section is structured to support the company’s business strategies through defining objectives, budget, scope, and goals. This section defines how the company is going to establish EnPIs and how to best improve energy performance.
- In the “do” section, the Energy Manager/Management representative outlines how to execute the Energy Management Action Plan, what communication channels will be used and how stakeholders will be informed of energy issues and activities. The Energy Manager/ Management representative documents the concepts and methodologies applied in identifying, capturing and tracking energy savings/cost avoidance.
- The Energy Manager/Management representative outlines how the company is going to “check,” or monitor and measure, processes against the energy policy. A best practice is to use the reporting functionality of an EMIS to ensure visibility and transparency of actual cost and usage data.
- In the “act” section, the Energy Manager/Management representative states the actions taken to continually improve energy performance. A best practice for improvement is continual market monitoring and the development of realistic targets. Goals are adjusted as necessary in an effort get the best results from the action plan.

10. Implementation

Standard Says:

It is recommended that the organization use the action plans and other outputs resulting from the planning process for implementation and operation.

1. Establish energy performance indicators, energy objectives and targets that are measureable and have timelines for achievement;
2. All persons working on this project are trained and educated properly;
3. Appropriate records are maintained;
4. Anyone working on behalf of the organization is aware of the importance, their roles, the benefits, and the impact of this standard.

Recommendations:

To comply with implementation as stated in the standard, the Energy Manager/ Management representative must ensure that objectives and targets are measurable and have timelines for achievement. The Energy Manager/ Management representative maintains records and makes sure employees are aware of the International Standard and the impact of the standard.

11. Competence, training and awareness

Standard Says:

The organizations is responsible for making sure that any person working for or on its behalf are competent on the basis of appropriate education, training, skills, or experience.

A representative must ensure that appropriate records are maintained and that all employees are aware of their roles and the benefits and impact of the International Standard.

Their understanding should include:

1. The importance of conformity with the energy policy, procedures and the requirements of the EnMS;
2. Their roles, responsibilities and authorities in achieving the requirements of the EnMS;
3. The benefits of improved energy performance;
4. The impact, actual or potential, with respect to energy use and consumption, of their activities and how their activities and behavior contribute to the achievement of energy objectives and targets, and the potential consequences of departure from specified procedures.

Recommendations:

The Energy Manager/ Management representative or the authorized representative should have the capacity to drive training throughout the organization and ensure all employees understand their roles in implementing the International Standard. The Energy Manager/ Management representative should assist with employee training sessions. Comprehensive training on the energy and sustainability portal, which is used as the primary energy information and communications platform, should be deployed by the energy and sustainability portal vendor in collaboration with the Energy Manager/ Management representative.

12. Communication

Standard Says:

A representative is also responsible for communicating the EnMS and EnPIs throughout the organization:

1. Communicate lessons learned;
2. Implement a process where anyone working for or on behalf of the organization can make comments or suggestions;
3. The organization must decide whether to communicate externally about its energy policy, EnMS, and energy performance. If the decision is to communicate externally, the organization establishes and implements a method for this external communication.

Recommendations:

The Energy Manager/ Management representative should simplify this process by using the energy and sustainability portal to communicate energy data and metrics. Additionally, the Energy Manager/ Management representative directly communicates through meetings, emails, and other channels as needed to ensure clear communication throughout the company.

13. Documentation

Standard Says:

The organization should establish, implement and maintain information, in paper, electronic or any other medium, to describe the core elements of the EnMS and their interaction.

Recommendations:

The Energy Manager/ Management representative should use the energy and sustainability portal to ensure the documentation process is aligned with the standard.

14. Control of documents

Standard Says:

A company needs to establish, implement and maintain procedures to:

1. Approve documents for adequacy prior to issue;
2. Periodically review and update documents as necessary;
3. Ensure that changes and the current revision status of documents are identified;
4. Ensure that relevant versions of applicable documents are available at points of use;
5. Ensure that documents remain legible and readily identifiable;
6. Ensure that documents of external origin determined by the organization necessary for the planning and operation of the EnMS are identified and their distribution controlled;
7. Prevent the unintended use of obsolete documents and suitably identify those to be retained for any purpose.

Recommendations:

A powerful energy and sustainability portal will enable appropriate control of documents. The Energy Manager/ Management representative should use the energy and sustainability portal to ensure that established procedures are implemented and maintained.

15. Operations control

Standard Says:

The organization needs to identify and plan operations and maintenance to ensure that they are carried out under specified conditions by means of the following:

1. Establishing and setting criteria for the effective operation and maintenance of significant energy uses, where their absence could lead to a significant deviation from effective energy performance;
2. Operating and maintaining facilities, processes, systems and equipment, in accordance with operational criteria;
3. Appropriate communication of the operational controls to personnel working for, or on behalf of, the organization.

Recommendations:

The Energy Manager/Management representative should guide the company through the process of identifying and planning operations and maintenance activities related to its energy uses. The Energy Manager/ Management representative ensures this process is consistent with the company's energy policy, targets, and action plans in order to execute under specified conditions. Certain software based tools can help the facilities in better monitoring and give alerts in case of any major deviation from the normal operating parameters.

16. Design

Standard Says:

The organization should consider energy-performance improvement opportunities in the design of new, modified, and renovated facilities, equipment, and systems.

Recommendations:

Supported by an energy management team, the Energy Manager/Management representative can assist with any aspect of energy improvement. They can conduct site assessments as needed and use the results of the energy-performance evaluation where appropriate. The Energy Manager/Management representative can also provide leadership in achieving energy efficient building certification such as LEED, Energy STAR, NABERS etc. Creating an effective EnMS can result in credits toward these certifications; check your local authority for details.

17. Procurement of energy services

Standard Says:

When procuring energy services, products, and equipment that can have an impact on significant energy use, the organization should inform suppliers that procurement is partly evaluated on the basis of energy performance.

Recommendations:

The Energy Manager/ Management representative or Purchase department can readily inform suppliers of all pertinent issues, including the fact that procurement is partly evaluated on the basis of energy performance. It is recommended that in all purchases involving significant energy use, Energy Manager/Management representative is in the loop to take the right decision on procurement.

The Energy Manager/ Management representative should use an extensive sourcing system that makes gathering information and managing RFPs much easier and less costly for vetted utilities and suppliers. This streamlines the procurement process, provides dynamic communication exchange and creates a centralized data warehouse.

Additionally, a rate analysis based upon each facility and any anticipated rate changes should be utilized. If a site does not qualify for an advantageous rate, the Energy Manager/ Management representative should report on potential operational changes or capital improvements that could achieve lower rates.

An Energy Manager/ Management representative should handle the transactional process and completes all relevant legal documentation and should make informed, confident decisions and navigate energy contract factors such as pricing, terms, product structures, and credit conditions.

18. Monitoring, measurement, analysis

Standard Says:

A company needs to define and periodically review its measurement needs. Key characteristics of its operations that determine energy performance need to be monitored, measured, and analyzed at planned intervals. Key characteristics include at a minimum:

1. Significant energy uses and other outputs of the energy review;
2. The relevant variables related to significant energy uses;
3. EnPIs;
4. The effectiveness of the action plans in achieving objectives and targets;
5. Evaluation of actual versus expected energy consumption.

Recommendations:

Managing consumption at the site level requires the right tools, strategy, analysis, and diligence. Power Monitoring solutions including meters and an EMIS platform will help the organization meet the Monitoring, Measuring and Analysis requirement of the standard.

Real-time metering tools should be installed or existing metering infrastructure should be used to log energy data and send it to an EMIS via a gateway. Other relevant data (e.g. weather, ERP, Building Management System) should be imported to the EMIS via ETL data integration tools. The result is consolidated energy data that can be data mined for further analysis.

Energy data collection should be reviewed for quality and the results monitored on an ongoing basis by the Energy Manager/ Management representative. Once data is consolidated, the data should be mined. Energy analytics including suggested initiatives and energy performance of actual versus expected energy consumption should be performed via an EMIS and energy expert. Taking a proactive approach and monitoring consumption in real time, and consolidating energy data into one platform can save up to 30% of energy costs.

19. Evaluation of compliance with legal requirements and other requirements

Standard Says:

At planned intervals, the organization needs to evaluate compliance with legal requirements and other requirements to which it subscribes related to its energy use and consumption.

Recommendations:

The Energy Manager/ Management representative should have access to market intelligence and maintain records for all evaluations of compliance. Along with a thorough understanding of current legal requirements, the Energy Manager/ Management representative should be backed with a team that includes legal expertise, either internal or outsourced.

20. Internal audits

Standard Says:

The organization is expected to conduct internal audits at planned intervals to ensure that the EnMS:

1. Conforms to planned arrangements for energy management including the requirements of this International Standard;
2. Conforms with the energy objectives and targets established;
3. Is effectively implemented and maintained, and improves energy performance.

Recommendations:

An energy and sustainability portal should be used that provides a documented audit trail and position the company for smooth success during an internal corporate audit. The Energy Manager/ Management representative should guide a company through this process, recommending best practices for an internal audit, including developing an audit plan and the selection of objective and impartial auditors

21. Nonconformities, correction, corrective action and preventive action

Standard Says:

The organization should address actual and potential nonconformities by making corrections and taking preventive action.

Recommendations:

The Energy Manager/ Management representative should lead this process to ensure adherence and proper action is taken to maintain compliance. Upon discovering an error, the Energy Manager/ Management representative should work to resolve the issue and act to prevent future errors.

22. Control of Records

Standard Says:

The organization should establish and maintain records to demonstrate conformity to the requirements of its EnMS and the energy performance results achieved. Additionally:

- The organization defines and implements controls for the identification, retrieval and retention of records;
- Records remain legible, identifiable, and traceable to the relevant activity.

Recommendations:

The Energy Manager/ Management representative ensures controls are put into place to achieve the targets outlined above. The Energy Manager/ Management representative is responsible for data security and ongoing monitoring. Records are visible through the energy and sustainability portal, and data is traceable to the relevant activity. Data should be secured through user permissions as preferred by the company.

23. Management Review

Standard Says:

At planned intervals, top management should review the organization's EnMS to ensure its continuing suitability and effectiveness. This includes having a review on a scheduled basis and reviewing best practices. The outputs from the management review should include any decisions or actions related to changes in the energy performance, energy policy, EnPIs and another other changes to the objective or the allocation of resources.

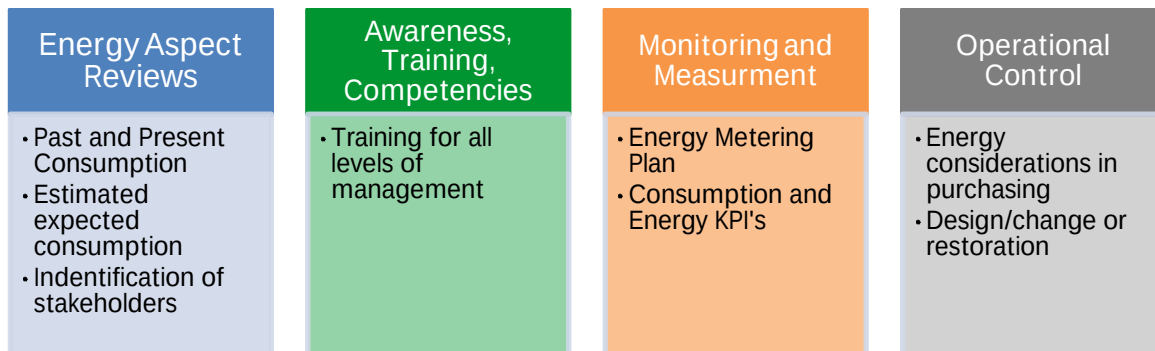
Recommendations:

The Energy Manager/Management representative should facilitate this process and help analyze previous year results against programs goals, elevate new/revised corporate objectives that may impact energy program, plan for upcoming year, and update the Energy Policy accordingly. The Energy Manager/ Management representative and management should work together to identify the energy management reports needed to meet the organization's monthly and quarterly reporting requirements.

Regular review meetings with top management should be scheduled and agenda items should include: review of the energy policy, review of energy performance and related EnPIs, and recommendations for improvement.

Key Takeaways

- > ISO 50001 enables organizations to establish the systems and processes necessary to improve energy performance, including energy efficiency, use and consumption.
- > The goal of this standard is to create an energy management system (EnMS) within an organization that will ultimately lead to a reduction in greenhouse gas emissions and other harmful environmental impacts while controlling energy costs.
- > This International Standard lays out the best practices for managing energy.
- > Energy Review, Energy Awareness and Training, Monitoring and Measuring Energy Data, and implementing the necessary operational controls are key to ISO50001 compliance.



> Implementing the recommendations in this paper will not only help achieve ISO 50001 compliance, but will also reduce energy consumption and related energy costs, as well as provide a solid foundation for compliance to anticipated energy and carbon regulations in the future.

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