Section: Operation

Task 19: We establish energy performance criteria spanning the operating life for purchases affecting energy performance, inform suppliers that this is a factor in procurement, and define and use specifications for energy supply purchases.

Getting It Done

1. For purchases related to significant energy uses (SEUs), clearly identify any energy performance-related requirements. Communicate these requirements to suppliers and/or service providers, and inform them that energy performance is part of the evaluation criteria.
2. Evaluate your organization's current procurement processes for items that can significantly impact energy performance.
3. Determine and take any needed actions to adjust existing procurement processes to meet energy management system (EnMS) requirements.
4. Develop life cycle criteria for specific types of procurement activities.
5. Develop and communicate specifications for the purchase of energy supply and ensuring the energy performance of procured equipment and services.
6. Determine if any specifications for the purchase of energy supplies are applicable to ensure the energy performance of equipment and services purchased.

Task Overview

The purchase of energy-using products, equipment, and services can affect your organization's significant energy uses (SEUs) and energy performance. Your organization must establish a procurement process to ensure energy performance is considered when procurement is related to your organization's SEUs or when it can have a significant impact on energy performance. Your procurement activities need to support effective management of SEUs and the achievement of improved energy performance.

You should evaluate energy performance over the planned or expected operating lifetime for any purchased items or services expected to have a significant impact on energy performance. Your organization must determine the evaluation criteria. These criteria look beyond your SEUs, so consider the bigger picture of how procurement impacts any item that substantially affects energy performance.

An important part of procurement in an EnMS involves ensuring the energy performance, over time, of procured equipment and services. If applicable, you must define and communicate those specifications to the appropriate personnel.

Another important part of procurement in an EnMS involves acquiring an adequate supply of energy with acceptable quality to maintain ongoing operations. Developing purchasing specifications for the types of energy used by your organization helps ensure the availability of a sufficient quantity of energy with acceptable quality and at a reasonable price.

This guidance is relevant to Section 8.3 of the ISO 50001:2018 standard.

Associated Resources	Short Description
50001 Ready Playbook Task 19	Energy Considerations in Procurement

Full Description

SEEC Tips

The Regulatory Framework for small-scale Solar PV Systems from ECRA can be viewed on the ECRA website.

Inform suppliers of energy performance as an evaluation factor for SEU-related purchases

You identified significant energy uses (SEUs) (Task 9 Significant Energy Uses (SEUs)) to focus your resources in the areas where you can achieve the most benefit. When an energy use is identified as significant, you should address a number of ISO 50001 requirements that apply specifically to SEUs, including those related to procurement.

Learn More: **Purchases related to SEUs**

Examples of purchases that could be related to SEUs include:

- Repair parts
- Add-on equipment
- Replacement parts or equipment
- Maintenance materials
- Maintenance services
- Operational and maintenance controls
- Calibration services
- Supplies
- Input materials
- Operator services
- Engineering services
- Consultants

Your organization determines the role energy performance will play in the procurement selection

process. For purchases related to an SEU, procurement specifications need to clearly identify any energy performance-related requirements. Communicate these requirements to suppliers and inform them that energy performance is part of the evaluation criteria. Energy performance does not have to be the sole or most heavily weighted criterion, but it is one of the factors you use to make the final purchase decision. Consider leveraging your existing supplier communication processes for this purpose, such as through purchase orders, supplier meetings, and supplier agreements.

Purchased services that will impact an SEU must be identified and service providers informed that energy performance is part of the evaluation criteria for procuring their services. Competency in energy efficiency is a common evaluation factor in procuring energy-related services.

Learn More: **Evaluation factors relevant to service providers**

Evaluation factors related to service providers could include relevant:

- Training
- Certifications
- Experience with similar energy uses
- Skilled trades availability
- Procurement practices for parts or materials
- Client recommendations or reviews

Establish operating lifetime energy performance criteria for purchases expected to significantly affect energy performance

It is important that your organization makes the connection between procurement and its impact on energy performance. At a minimum, energy performance for your organization is determined by the following:

- Energy performance of the significant energy uses
- Significant energy uses relevant variables
- Energy performance indicators (EnPIs)
- Effectiveness in meeting energy objectives and targets through action plans
- Actual versus expected energy consumption evaluation

If a purchase can affect one of more of these key characteristics, your organization must establish criteria for evaluating whether there is a significant impact on energy performance.

Learn More: **Evaluation criteria examples**

Some examples are as follows:

- **Significant energy use:** Assume that your critical production process and the associated

steam heating system has been determined to be an SEU. You may define a significant impact as the increase in production through the process and thus the amount of steam supplied to the process. Additional steam capacity is required to accommodate the increased production, and therefore, the purchase of additional boiler capacity and related steam delivery equipment is needed.

- **Significant energy use relevant variables:** A relevant variable for the steam system associated with the process SEU is the amount of steam supplied per kilogram of product produced. The amount of steam supplied by the expanded steam system should be carefully monitored. If the steam supply EnPI for the process SEU changes negatively relative to past performance further investigation of how the steam system is operating is warranted.
- **Effectiveness in meeting objectives and energy targets through action plans:** The purchase of a service or piece of equipment could determine whether an energy target is reached for an energy improvement project. Failure to meet the target could be a significant impact on energy performance.

Brainstorm other factors that can have a major impact on energy performance, such as controls for SEUs, controls to sustain past energy improvement projects, and energy system maintenance activities.

Significant impact on energy performance can be a specific hurdle or limit, or it can be an evaluation based on your organization’s experience. Be mindful of using cost as a hurdle for determining significant impact, as it can be misleading. For example, buying a few light bulbs on a frequent basis can have a bigger impact on energy performance than replacing one large piece of machinery once over a long time span.

Similarly, a significant impact on energy performance does not have to relate to large items or complex services. It can result from relatively inexpensive maintenance items.

Learn More: **Example maintenance items that can significantly impact energy performance**

Example maintenance items that can significantly impact energy performance include:

- High efficiency air filters
- Synthetic lubricants
- Cogged v-belts
- Low leakage couplings
- Electronic condensate drain valves on compressed air systems

If a purchase can have a significant impact on energy performance, your organization should evaluate the purchase and its energy performance over its planned or expected operating lifetime. Many tools can be used to calculate life cycle cost, and the best one for your organization will depend on the

items purchased and their application, as well as the complexity of your accounting system.

To ensure that procurement actions support the EnMS, it is critical that procurement personnel be kept informed about the requirements of the EnMS, including the SEU and the types of items and services that can significantly affect your organization's energy performance. This information enables them to make appropriate procurement decisions. Procurement personnel must be familiar with the key characteristics of operations that determine energy performance, and mindful that energy performance and life cycle assessment may be part of the procurement decision. Once personnel are aware of their role within the EnMS, it is their responsibility to purchase items in a manner consistent with the EnMS's requirements.

Learn More: **Life cycle tool resource list**

In addition to the guidance in the Task 19 playbook worksheet, below is a non-exhaustive list of sources for tools that will assist you in conducting a life cycle analysis:

Pump Life Cycle Costs: A Guide to LCC Analysis for Pumping Systems: This guide, which can be generalized to other pieces of equipment other than pumps, was developed by the U.S. Department of Energy. https://www.energy.gov/eere/amo/downloads/pump-life-cycle-costs-guide-lcc-analysis-pumping-systems-executive-summary

This guide details the important life-cycle considerations that should be accounted for during the evaluation process when purchasing new pumps and equipment, where a product's life cycle cost (LCC) can be specified by the following equation:

LCC = Cic + Cin + Ce + Co + Cm + Cs + Cenv + Cd

Cic: initial costs, purchase price (pump, system, pipe, auxiliary services)

Cin: installation and commissioning cost (including training)

Ce: energy costs (predicted cost for system operation, including pump driver, controls, and any auxiliary services)

Co: operation costs (labor cost of normal system supervision)

Cm: maintenance and repair costs (routine and predicted repairs)

Cs: down time costs (loss of production)

Cenv: environmental costs (contamination from pumped liquid and auxiliary equipment)

Cd: decommissioning/disposal costs (including restoration of the local environment and disposal of auxiliary services).

Building Life Cycle Cost Programs: The United States National Institute of Standards and Technology (NIST) developed the Building Life Cycle Cost (BLCC) Programs to provide computational support for the analysis of capital investments in buildings. They include BLCC, the Energy Escalation Rate Calculator, Handbook 135, and the Annual Supplement to Handbook 135. http://www1.eere.energy.gov/femp/information/download_blcc.html

Sustainable Facilities Tool: The U.S. General Services Administration (GSA) SFTool website provides resources to help site managers, purchasing agents, designers, and tenants make more sustainable decisions in their procurement, building management and operational practices. https://sftool.gov/

Life Cycle Assessment Software, Tools and Databases - Links to a variety of life cycle assessment (LCA) software tools. https://www.buildingecology.com/sustainability/life-cycle-assessment/

Procurement in your organization is likely to be centralized, typically handled by a corporate or headquarters function for larger organizations, or within one department for smaller organizations. To satisfy the ISO 50001 requirements you may need to work with the corporate procurement function to implement the necessary procurement processes.

Define and communicate procurement specifications for purchases of energy supply and for ensuring the energy performance of procured products and services

You should define and communicate specifications for purchases of energy supply. The energy requirements for your organization may be adequately addressed by the local supplier(s), and perhaps you do not require special considerations. In this case, the supplier can typically provide the specifications for the energy you are being provided, or it may be specified in your contract, along with the rates.

Your organization may have special needs, or there may be other considerations for selecting and purchasing the energy needed for your site. If your organization has unique energy supply requirements, you may have to develop the specifications necessary to meet your needs.

Learn More: **Factors affecting the development of specifications for purchasing various types of energy**

The development of energy supply purchasing specifications can depend on:

- Equipment requirements
- Energy availability
- Site location
- Manufacturing process requirements
- Environmental regulations

- Other governmental regulations

Specifications you may need to consider for your energy supply can include requirements related to quality, quantity, reliability, and cost.

Learn More: **Factors affecting energy supply specifications**

Examples of each of these factors (quality, quantity, reliability, and cost) include the following:

- Quality
  - Maximum sulfur content in fuel oil
  - Minimum Btu content in fuels
  - Acceptable voltage variation
  - Minimum power factor
  - Maximum nitrogen content in fuel
  - Maximum moisture content in coal
- Quantity
  - Amount
  - Delivery requirements
- Reliability
  - Allowable quality variation
  - Allowable delivery variation
  - Interruptible acceptance
- Cost
  - Cost per unit
  - Cost for non-interruption
  - Demand cost
  - Delivery cost

To help you develop purchasing specifications for energy supply, you may want to use the optional 50001 Ready Playbook Task 19 worksheet. This Playbook worksheet will help you identify important energy supply parameters and formulate suitable purchasing specifications. Because purchasing specifications are dependent on the energy source, this resource includes separate tabs for electricity, natural gas, heavy fuel oil, Arab light crude oil, Arab heavy crude oil, diesel, and solid fuels.

Document the energy supply specifications to ensure the energy source, delivery, price, invoicing, payment, and contracting requirements are known by all potential vendors and satisfied by selective purchasing. Consult your procurement specialists for help with delivery, invoicing, and payment requirements, and legal analysts for assistance with contractual issues. Document the specifications for purchasing the different types of energy used by the organization. This can help ensure that initial and future energy supply will meet the necessary requirements. The optional 50001 Ready Playbook Task 19 worksheet can be used to help organize the information needed for purchasing of energy supply.

Document procurement

Where applicable, your organization must define and document specifications needed to ensure the energy performance of equipment and services that have been purchased. First, identify the types of procured equipment and services where specifications are important for maintaining their energy performance. For those, consider possible specifications related to receiving inspections, equipment installation, preventive maintenance, operational controls, procurement of related supplies, etc. If specifications are needed, document them or incorporate them into training activities and ensure there are processes in place to communicate them to the appropriate personnel. If specifications are already in place for energy-using equipment and services, then check that the specifications are communicated to those who need to know them.