Section: Planning

Task 10: We identify and prioritize energy performance improvement opportunities, and have processes in place to update them.

Getting It Done

1. Develop and document a methodology and criteria for how your organization will identify, prioritize, and update energy performance improvement opportunities.
2. Apply the methodology and criteria you developed to identify, prioritize, and update energy performance improvement opportunities.
3. Update the list of prioritized improvement opportunities at specific intervals and when major changes in sites, equipment, systems, or energy-using processes take place.

Task Overview

Opportunities for energy performance improvement are a key component of the energy review. Energy performance improvement opportunities are identified by examining current practice and determining how it can be improved. This process can bring to light the potential for improved operating practices, equipment and system improvements, and advanced technologies that would benefit your organization.

Opportunities are prioritized in accordance with your organization's criteria to optimize the use of resources.

This guidance is relevant to Section 6.3 d) of the ISO 50001:2018 standard.

Associated Resources Short Description

no resources for this questions

Full Description

Identify energy performance improvement opportunities.

Identification of energy performance improvement opportunities is the responsibility of the energy team. Input from all employees, as well as from external resources, should be solicited and considered as appropriate.

Learn More: **Benefits from implementing energy performance improvement opportunities**

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- Reduced energy consumption
- Decreased operating and energy costs
- Improved operating efficiency
- Environmental improvements

One common method for identifying opportunities is an energy assessment. Energy assessments are an excellent method for collecting data for the energy review (see Task 8 Energy Data Collection and Analysis) and provide a vital source of information for energy management planning, including identification of energy improvement opportunities. Assessments yield a "snapshot" of your organization's current energy performance and offer a list of quantified improvement measures. Assessments can be conducted by the energy manager, members of the energy team or continual improvement teams (e.g., Kaizen teams), corporate energy specialists, external consultants, utility personnel, or university experts.

Learn More: **Energy assessments**

The types of opportunities identified depend on the scope and intent of the assessment, but they may address energy purchasing improvements, better operating and maintenance practices, and renovation or replacement of existing energy equipment. Elements of an energy assessment include the following:

- Determining the scope of an assessment, including buildings, systems, and utility metering
- Reviewing any past energy-optimization projects to help focus the scope of the assessment
- Reviewing past assessments and determining additional or updated information requirements
- Developing the energy assessment plan based on the identified scope
- Conducting the assessment
- Recording the findings of the assessment(s)

Many sources, including national governments, provide a variety of resources for identifying energy savings opportunities in specific energy systems, including a variety of online system assessment tools. System analysis tools are available for compressed air systems, fans, motors, pumps, process heating systems, steam systems, and industrial buildings. As an example, the American Society of Mechanical Engineers (ASME) System Assessment standards also provide guidance on energy system assessments. ASME guidance is available on sites and specific energy systems related to both industrial and commercial organizations.

Personnel working for or on behalf of your organization are generally useful in defining energy opportunities not discovered during an energy assessment. These personnel may be closely associated with energy equipment or processes and may uncover unique opportunities because of their experience. Using this type of asset offers the potential to discover unconventional improvements and engage personnel who otherwise may not be actively involved in energy management.

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Energy assessments are very effective but can be expensive. Other approaches to defining energy performance improvement opportunities are described in the “Learn More” link directly below.

Learn More: **Other approaches to defining energy performance improvement opportunities**

The following sources can help to identify energy performance improvement opportunities:

- Employee suggestions
- Utility representatives
- Service technicians
- Commercial building standards
- Industrial sector standards
- Equipment standards
- Government organizations
- Equipment vendors

The optional Playbook worksheet can be helpful in finding and using other methods to identify opportunities. It identifies several different methods for spotting opportunities, as well as suggested contact points and possible outcomes of applying the method.

Establish criteria for prioritizing opportunities

The next step in energy planning is to prioritize the opportunities. The choice of prioritization method is up to the organization; however, it must be systematic and ongoing. It can be difficult and time-consuming for your organization to process every potential improvement idea; prioritizing them based on defined criteria helps you focus resources on the most practical opportunities.

The following activities will help you develop and apply criteria for prioritizing opportunities:

- Get the right people together.
- Review relevant organizational information.
- Determine criteria.
- Develop tools or techniques for applying criteria.
- Apply criteria to prioritize opportunities.

Get the right people together. Involve individuals from different functions and levels within your organization in developing the criteria for prioritizing your organization’s opportunities. Different points of view will ensure consideration of a wide range of potential factors. If the energy team already has adequate representation from across the various functions and levels, then no additions to the team may be needed. On the other hand, this can be a time to involve other personnel who may bring specific knowledge or experience useful to the process of setting the criteria for prioritizing opportunities. This could include, for example, personnel knowledgeable about your organization’s capital planning or project justification processes.

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Review relevant organizational information. The energy team should gather and review organizational information that may affect the criteria and the approach to be used in prioritizing opportunities. In addition, it may be helpful for the energy team to be aware of any existing risk assessment processes already in use by your organization, and a clear understanding of your organization's safety and environmental risk tolerance.

Learn More: **Relevant organizational information**

Relevant organizational information could include:

- organizational business strategies.
- current hurdles or financial requirements for proposed capital projects.
- operations and maintenance (O&M) projects.
- other types of resource or funding requests.
- production or market forecasts.
- corporate requirements.

Determine criteria. When selecting criteria, consider the organizational information you collected, and develop criteria that will address your organization's needs and requirements.

Learn More: **Criteria examples**

Examples of criteria include:

- estimated energy or cost savings.
- cost of opportunity implementation.
- return on investment, internal rate of return, net present value, and life cycle cost.
- ease of opportunity implementation.
- length of implementation period.
- possible safety, health, and environmental issues.
- maintenance impact.
- production or operational impact.

You determine the type and number of criteria to be used. One or two criteria may be sufficient, or many may be required. You also determine whether scoring or rating scales for each criterion will be established and applied (e.g., a range of energy savings that are acceptable). If only one criterion is to be used, a simple go / no go limit may be adequate. Multiple criteria typically require a process for determining the relative importance of each criteria and how they will be evaluated (see the next activity).

Remember to maintain documented information on the criteria that will be used to prioritize the opportunities. This ensures the criteria are clearly understood and uniformly applied. The optional

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Playbook worksheet can give you some ideas on how criteria can be documented.

Apply criteria for prioritizing opportunities

Develop tools or techniques for applying criteria. You now have developed criteria for prioritizing opportunities. This ensures that your organization's resources are focused on the most viable set of potential energy performance improvement projects. Developing tools or techniques to apply the criteria can make the process of prioritization easier.

If your organization already has the tools to prioritize potential projects, it may make sense to use (or adapt) those same tools for prioritizing energy performance improvement opportunities.

Typically, the criteria used to evaluate projects will have different levels of importance. If the criteria are not equally important, then the energy team should determine the relative weighting.

As an example, within your organization, estimated cost savings may be more important than the ease of implementing the opportunity. In this case, cost savings might be weighted twice as heavily as the ease of implementation criteria.

Apply criteria to prioritize opportunities. Reorder the list of energy opportunities from highest to lowest priority. Use a "reality check" to evaluate the prioritized list; that is, ensure the list makes sense from perspectives that may not be directly reflected by the criteria, and that the opportunities seem to fall in line with the organization's expectations. If one or more of the opportunities appear to not make sense, it may be necessary to reevaluate the criteria or the weightings used for the criteria. Consider the following questions:

- Does the prioritized list make sense with regard to your organization's overall business objectives and plans?
- Are there criteria that have not been considered that have skewed the prioritization?
- Do the weights reflect your organization's priorities?
- Are there any planned organizational or other changes that will affect the prioritized list?

As new energy opportunities are identified, ensure they are prioritized and included in the list.

Implement processes to update the prioritized energy opportunities

As a component of the energy review, the prioritized opportunities for energy performance improvement must be updated at specific intervals and when major changes in sites, equipment, systems, or energy-using processes take place. The specific interval for the updating is defined by your organization. The interval chosen can be the same as that defined for the energy review as a whole, or as defined for other components of the energy review, or defined as an interval specific only to the updating of the energy opportunities. The minimum interval typically chosen by organizations is at least once a year.

Ensuring that energy opportunities are updated when major changes are made should be integrated with the updating of all components of the energy review in response to major changes in sites, equipment,

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systems, and energy-using processes. Such changes can present new opportunities for energy performance improvement, can negate some energy opportunities, or can affect the prioritization of the energy opportunities. The best approach for appropriate updating is to ensure that the relevant personnel (e.g., energy manager, energy team leader, one or more members of the energy team) are included in the planning for the types of major changes mentioned above. To be effective for the EnMS, change management processes must give attention to the effects of the changes on the energy situation of the organization, including the energy review and all its components.

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