ISO50001:2011 Goal Setting

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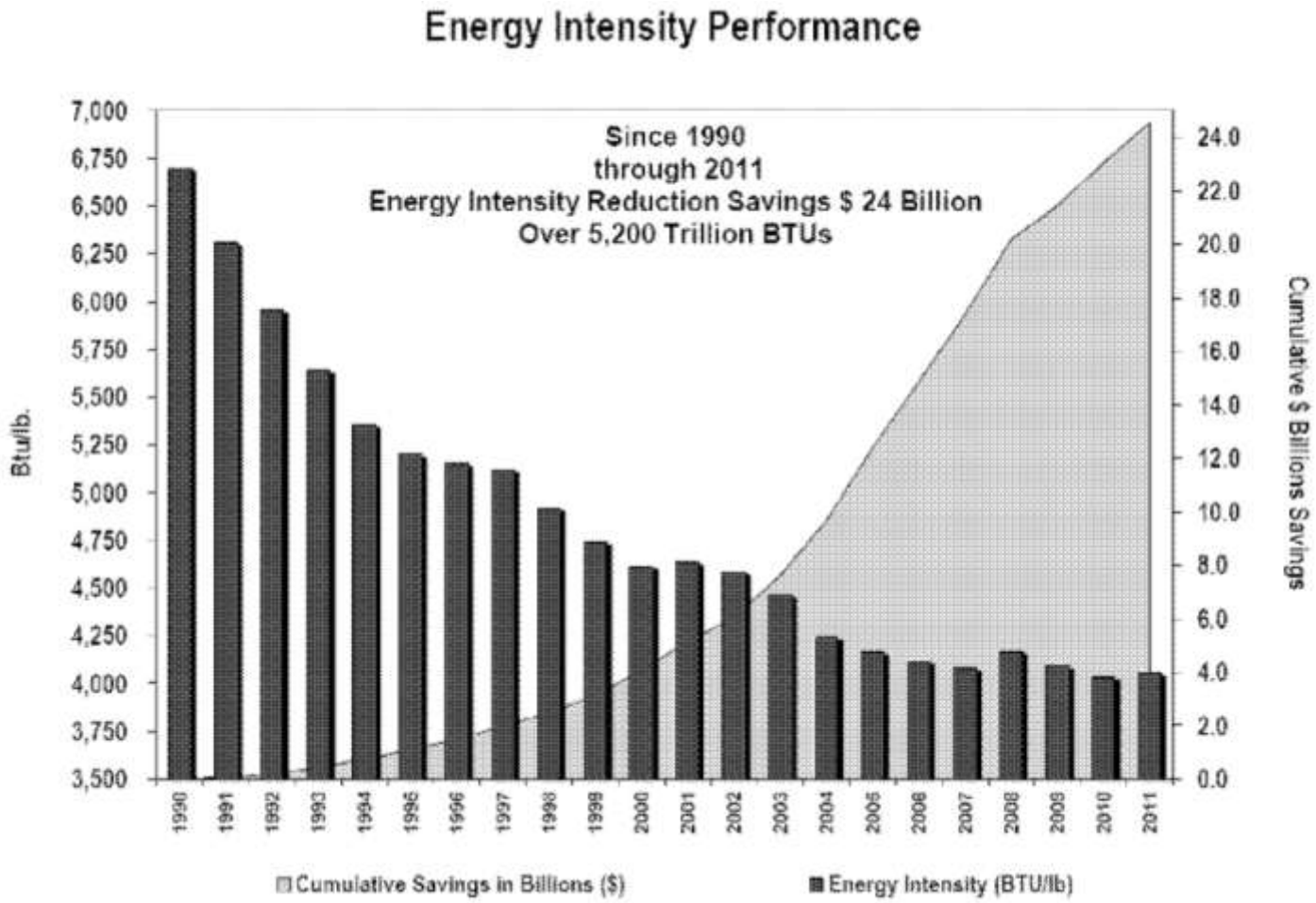
Simple Message

- Increasing energy costs
- Much “low-hanging fruits” to still pick
- Industrial sector accounts for 28% of the energy used worldwide
- $1 saved on the energy bill is a $1 profit

Superior Energy Performance: Getting the Most Value from ISO 50001 –Case Study



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Potential Obstacles

- Lack of in-house expertise or team
- Lack of effective methodology
- Lack of institutionalized operational procedures and standard

Tools

- Education and training of personnel
- Planning and execution of energy efficiency projects
- Institutionalization of best practices in the organizational and operational structure

Organization's Strategic Matrix

- Identify opportunities of improvements
- Identify and adapt best practices
- Develop standardized operational procedures
- Implement the strategic and operational plans
- Establish monitoring mechanisms
- Achieve continuous improvements

Missouri IAC Support Web Tool

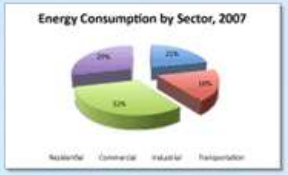
http://iac.missouri.edu/webtool/index.html

Industrial EE Overview | Audit Flowchart | Task Documents | List of Recommendations | IAC Resources

Welcome to MOIAC Webtool 2.0 Beta

Industrial Energy Efficiency

In U.S., the Industrial sector has a share of 32% or about 32,321 trillion BTU in energy consumption in 2007. (Source: http://www.eia.gov/) Our Missouri Industrial Assessment Center with a support from U.S. Department of Energy sees the opportunity to introduce this webtools to reduce the energy intensity and carbon emissions and to achieve the goal of energy efficiency.



Auditing

The auditing processes can start from the audit flow chart or use the task documents to conduct the audit. The section of list of recommendations is also good place to find details and calculations to justify your savings. The recommendations are categorized by the the processes or equipment.

Training and Learning this tool

This web tool is designed to support your exposture to the energy processes or specific equipment in your interest. The task documents is a good start for a learner where you can find reading materials, exercise/examples, simulations, cases, presentations, audio & video, worksheet, links, best practices and link to other resources.

MoIAC Webtools 2.0 beta

This webtool is developed to help plant managers, engineers, maintenence crews, and educators to reduce a waste energy in an industrial facility. This tools will help you identify a list of potential energy savings in most common areas found in small to mid-size industrial facility. The first version were modified and included here in this version. More features are introduced. Key features of this webtool are:

1. Task document style - User can browse their interest areas such as Lighting, HVAC, Process heating, Motors, Compressed air.

2. Workable spreadsheet for calculations - Some technical calculation spreadsheet can be downloaded directly from the website.

Feel free to contact us for sugestions or comments on our webtools.

Complete Cycle

- Required to achieve continuous improvement of system performance
  - Setting strategy and goals
  - Analysis and design
  - Implementation and operation
  - Performance monitoring and setting of new goals

Complete cycle of continuous improvement of industrial energy efficiency

Objective

- **Plan:** Plan necessary objectives and action plans to integrate expected output of improved energy performance according to the organization's energy policy.
- **Do:** Implement the plan to collect necessary data for the purpose of generating possible solutions and analyzing the gap.
- **Check:** Check the actual results of the collected data in "Do" and compare them against the energy policy and objectives.
- **Act:** Act to apply changes that will continually improve energy performance and make sure the goals are met for your planning.

Steps

- Secure a commitment from top management
  - identifying the benefits to the organization
  - Making the business case is an important element
  - Summarize the drivers and benefits in a short and targeted presentation to top management
- Acquire energy data/Track and analyze energy data
  - gathering measurement and other data about energy in your organization
  - Plan for how you will track and analyze this data over time

Steps Continued

- Determine significant energy uses
  - using energy use information and energy consumption data
- Establish a baseline
  - choosing a "base year" or a "base period of time" that will serve as the reference point
- Identify energy opportunities
  - identifying opportunities for improving energy performance
- Prioritize energy-saving opportunities

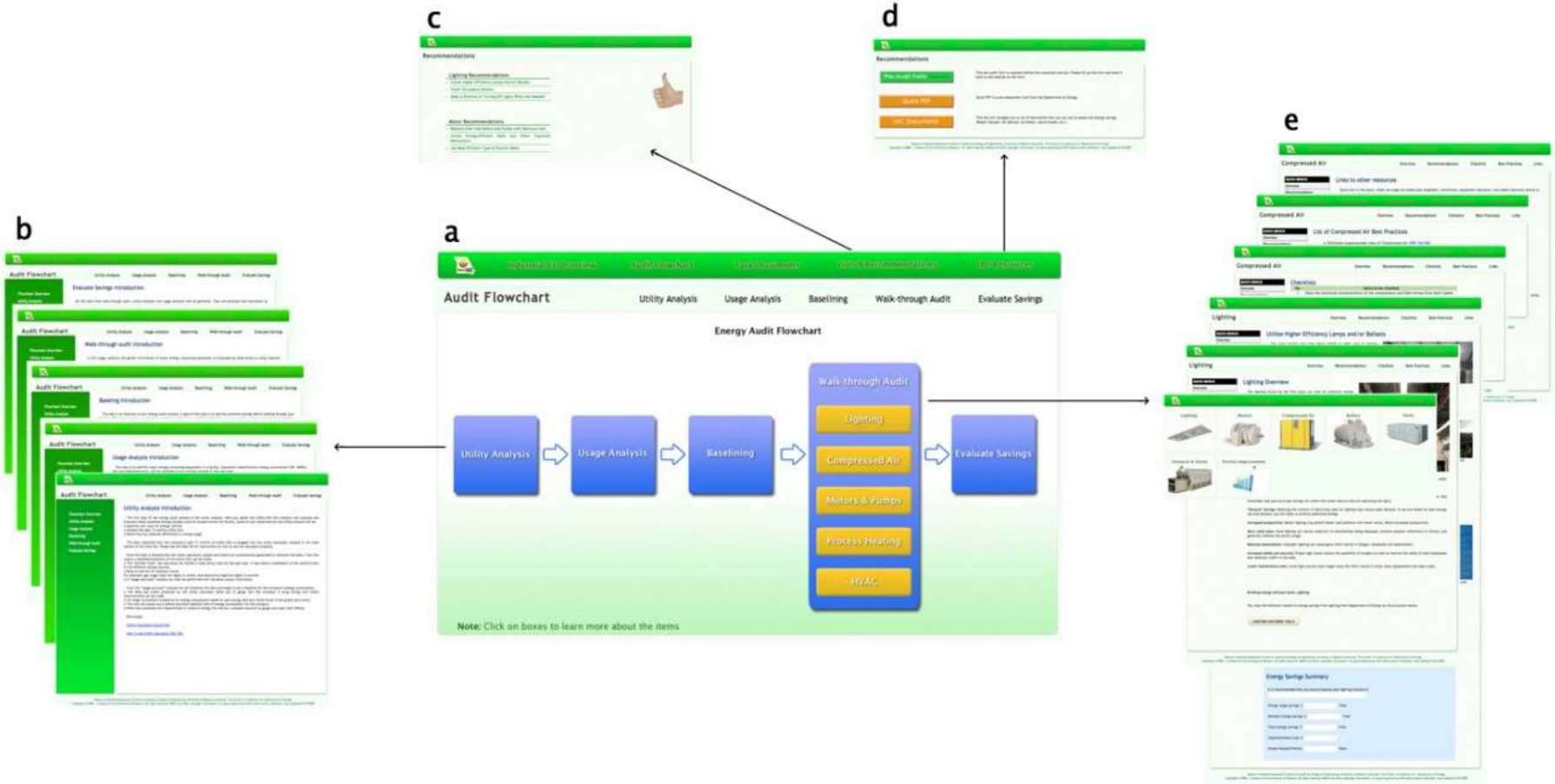
Computer-aided Workbook

- complete guide to the processes, tasks and outcomes
- initial audit planning to follow-up
- front-end flowchart
- training materials and instructions
- data collecting tools
- procedures of analysis and calculation
- worksheets to support task execution
- project management

Workbook Framework

- Logical and task-centered organization of links for:
  - Instructional materials
  - Worksheets
  - Analytical tools
  - Resources in a manner

Workbook Organization



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A. Audit Flow Chart

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B. Analysis

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Audit Flowchart

Utility Analysis | Usage Analysis | Baselining | Walk-through Audit | Evaluate Savings

- Flowchart Overview
- *Utility Analysis*
- Usage Analysis
- Baselining
- Walk-through Audit
- Evaluate Savings

Utility Analysis Introduction

The first step of the energy audit process is the utility analysis. Here you assess the utility bills the company has supplied and evaluate where potential energy savings could be located within the facility. Some of your objectives for the utility analysis will be:

o Quantify unit costs for energy utilities
o Analyze the past 12 months utility bills
o Determine any seasonal differences in energy usage

The data collected from the company's past 12 months of utility bills is plugged into the utility calculator located in the tools section of the Visio file. Please see the help file for instructions on how to use the calculator properly.

Once the data is entered into the utility calculator, graphs and charts are automatically generated to interpret the data. From this output a detailed evaluation of the utility bills can be made.

o The "Utilities Total" tab calculates the facility's total utility costs for the past year. It also shows a breakdown of the relative costs of the different energy sources.
o Keep an eye out for seasonal trends
For example: gas usage might be higher in winter, and electricity might be higher in summer
o A "usage and costs" analysis can then be performed with the given output information.

From the "usage and cost" analysis we can interpret this data and begin to set a baseline for the company's energy consumption.

o The data and charts produced by the utility calculator allow you to gauge how the company is using energy and where improvements can be made.
o Can begin to establish a baseline for energy consumption based on past energy bills and trends found in the graphs and charts.
o This tool will supply you a before and after baseline view of energy consumption for the company.
o When new processes are implemented to conserve energy this will be a valuable resource to gauge and track their effects.

Downloads:

Utility Calculators (Excel file)

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C. Lists of Recommendations

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Recommendations

Lighting Recommendations

- Utilize Higher Efficiency Lamps and/or Ballasts
- Install Occupancy Sensors
- Make a Practice of Turning Off Lights When Not Needed

Motor Recommendations

- Replace Over-Size Motors and Pumps with Optimum Size
- Utilize Energy-Efficient Belts and Other Improved Mechanisms
- Use Most Efficient Type of Electric Motor

Compressed Air Recommendations

- Install Compressor Air Intakes in Coolest locations
- Reduce the Pressure of Compressed Air to the Minimum Required
- Eliminate Leaks in Inert Gas and Compressed Air Lines/Valves

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D. IAC Resources

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Recommendations

Pre-Audit Form DATA ENTRY

This pre-audit form is required before the consultant service. Please fill up the form and send it back to the address on the form.

Quick PEP

Quick PEP is a pre-assessment tool from the Department of Energy.

IAC Documents

This link will navigate you to list of documents that you can use to assess the energy savings (Report Sample, IAC Manual, tip sheets, source books, etc.)

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E. Task Documents

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Lighting

Motors

Compressed Air

Boilers

HVAC

Furnaces & Ovens

Process Improvement

Overview

> How to use

How to use this Task Documents

Below are several categories to investigate when looking for potential energy savings. Each photo links to a Task Document page featuring information about that particular process. These links are designed to help you be able to conduct an energy audit at your facility which gives you the opportunity to identify potential savings. Each task document contains:

- Reading materials
- Exercises/examples
- Simulations, cases
- Presentations, audio, video
- List of recommendations, worksheet, calculations
- Best practices and links to other resources

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DOE Tools

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

EERE Home | Programs & Offices | Consumer Information

Sign In

Advanced Manufacturing Office

HOME | ABOUT | RESEARCH & DEVELOPMENT | TECHNOLOGY DEPLOYMENT | INFORMATION RESOURCES | NEWS | EVENTS | TOOLS

Tools to Manage your Energy Use

DOE eGuide for ISO 50001

DOE eGuide Lite

Industrial Facilities Scorecard

Plant Energy Profiler (ePEP)

Project Opportunities Tracker

Software Tool Updates

A four part webinar series based on the DOE eGuide and the ISO 50001 standard will start April 19th. The webinars will provide manufacturers with the information needed to prepare for implementing an energy management system. Each webinar includes suggested activities tied to the eGuide. For more information, email Carolyn.Sigg@ppc.com.

Steam

Boiler Tune-up

Steam Generation Equipment Scorecard

Steam System Tool Suite (SSTS)

Process Heating

Energy Opportunity Estimator for Chemical Plants and Refineries

NOx and Energy Assessment Tool (NxEAT)

Process Heating Assessment and Survey Tool (PHAST)

Process Heating Scorecard

Combined Heat & Power

CHP Application Tool

CHP Scorecard

Compressed Air

Air Compressor

AIRMaster+

Compressed Air Scorecard

Motors

MotorMaster+

MotorMaster+ International

Notched V-Belts

Pumps

Pump System Assessment Tool (PSAT)

Pumps Scorecard

VSD Calculator for Pumps

Fans

Fan System Assessment Tool (FSAT)

VSD Calculator for Fans

Data Centers

Data Center Profiler (DC Pro) 2.0

Solar

Daylighting Tool

Solar Power

Other

CO_2 Calculator

Mechanical Insulation Assessment and Design Calculators

Process Cooling and Refrigeration Scorecard

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Goal Setting -SMART

- Specific -clearly target key results and outcomes to be accomplished
- Measurable -described so results can be measured without ambiguity
- Attainable -although challenging, realistic and possible to achieve
- Realistic -include a stretch factor that moves toward real gains
- Timely -linked t specific timetables and "due dates"

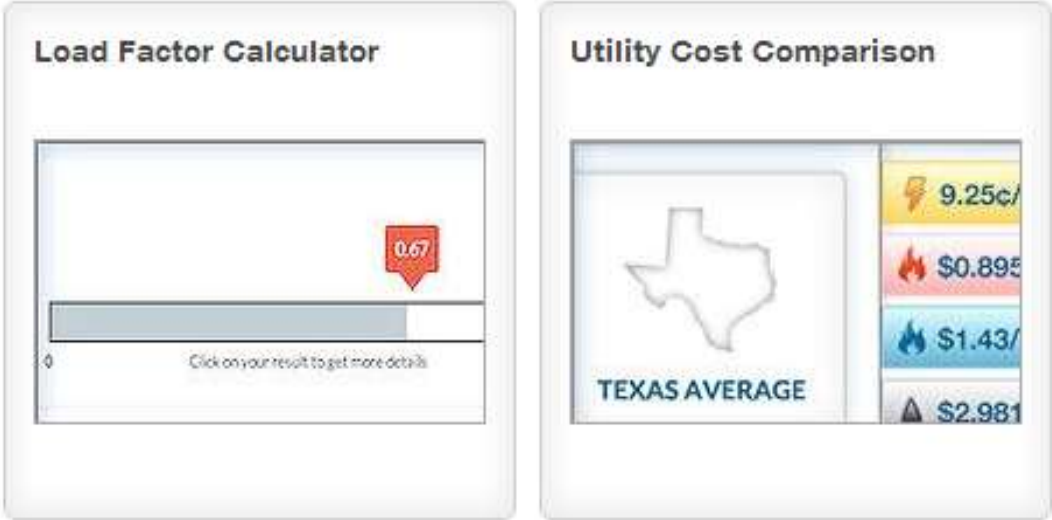
Goal Setting Example

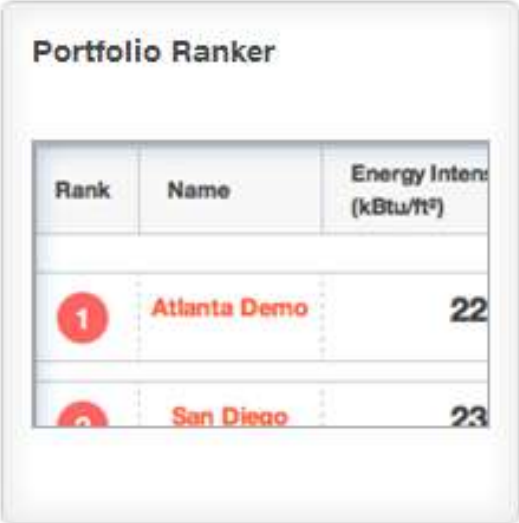
- Specific- From all perspectives
- Measurable –Use data loggers
- Attainable –All agree -top management
- Realistic –Accurate benchmarking
- Timely –Deadline –all agree to

Benchmarking

- Facility against itself
- Facility within portfolio
- Facility against external peers
- Free tools DOE and Noesis

Noesis Benchmarking Tools





Noesis Benchmarking

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Questions

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Other IAC Energy Management ISO50001:2011 Research

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