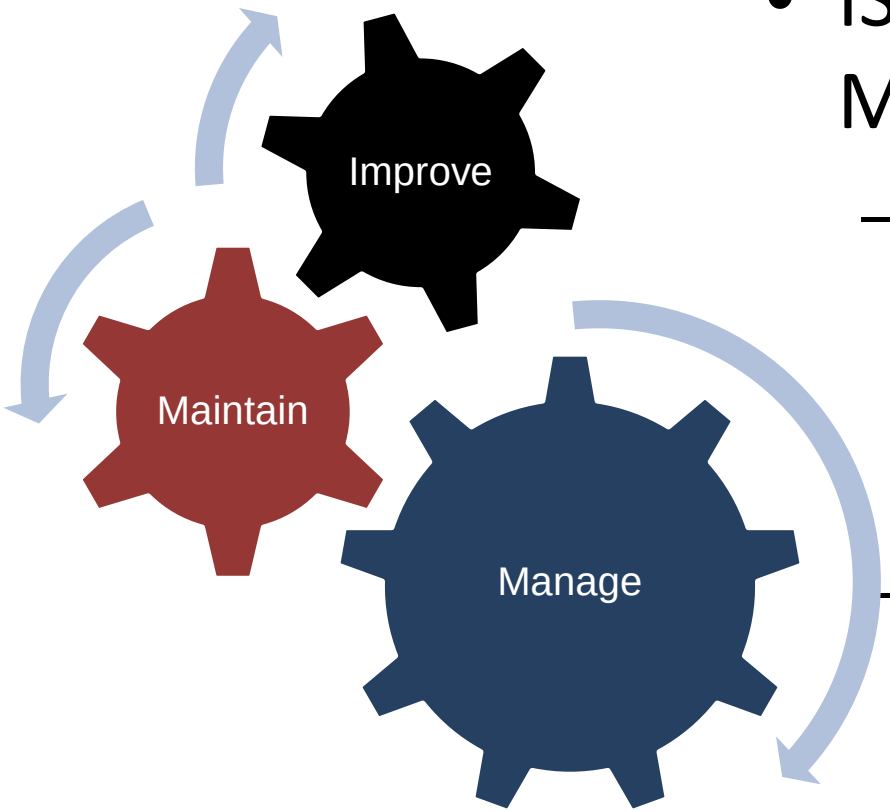
GovEnergy
www.govenergy.gov
· August 15-18, 2010 · Dallas, Texas ·
· Dallas Convention Center ·

ISO50001 – Overview

John Ruiz, Johnson Controls Inc.

ISO50001 Introduction



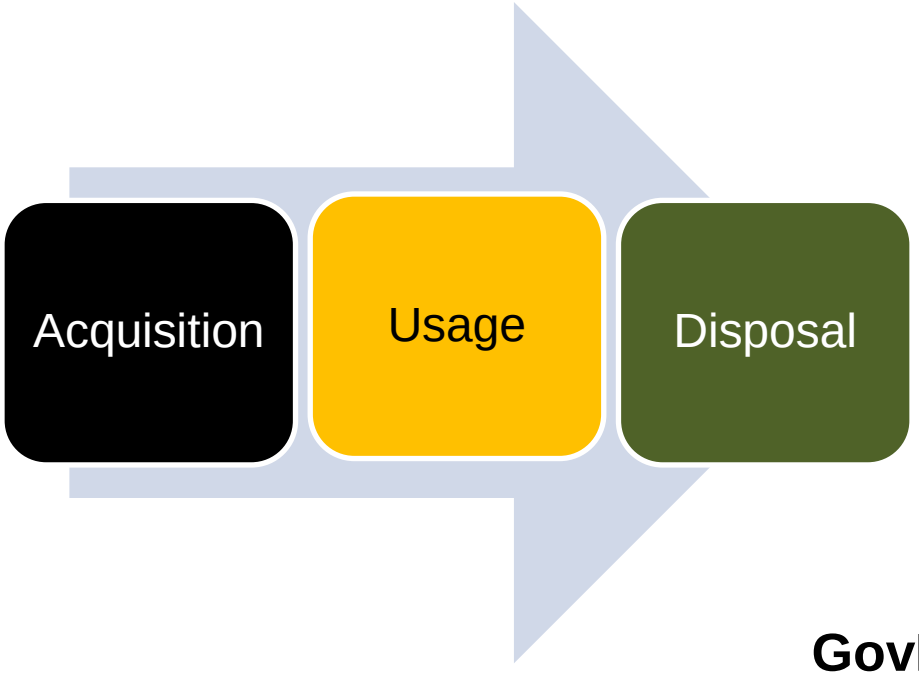
- ISO50001 is one of the ISO Management Standards.
  - Intent is to provide guidance on “good management practices” in a specific area.
  - Examples include:
    - ISO9001 Quality Management Systems
    - ISO14001 Environmental Management Systems

GovEnergy
www.govenergy.gov

GovEnergy 2010

Introduction - Continued

- ISO50001 provides guidance on an Energy Management System (EnMS).
  - Like the other “Management” standards, it focuses on managing the energy lifecycle within a business.



GovEnergy
www.govenergy.gov

ISO50001 Maturity

- ISO50001 is still a “work in progress”.
  - Standard is still in Draft (DIS) stage.
    - Completion expected in 2011
- Identical in scope and similar in content to ANSI Management System for Energy (MSE) 2000 – 2008.
  - ANSI is leading the standards group (PC 242) that is developing ISO50001.

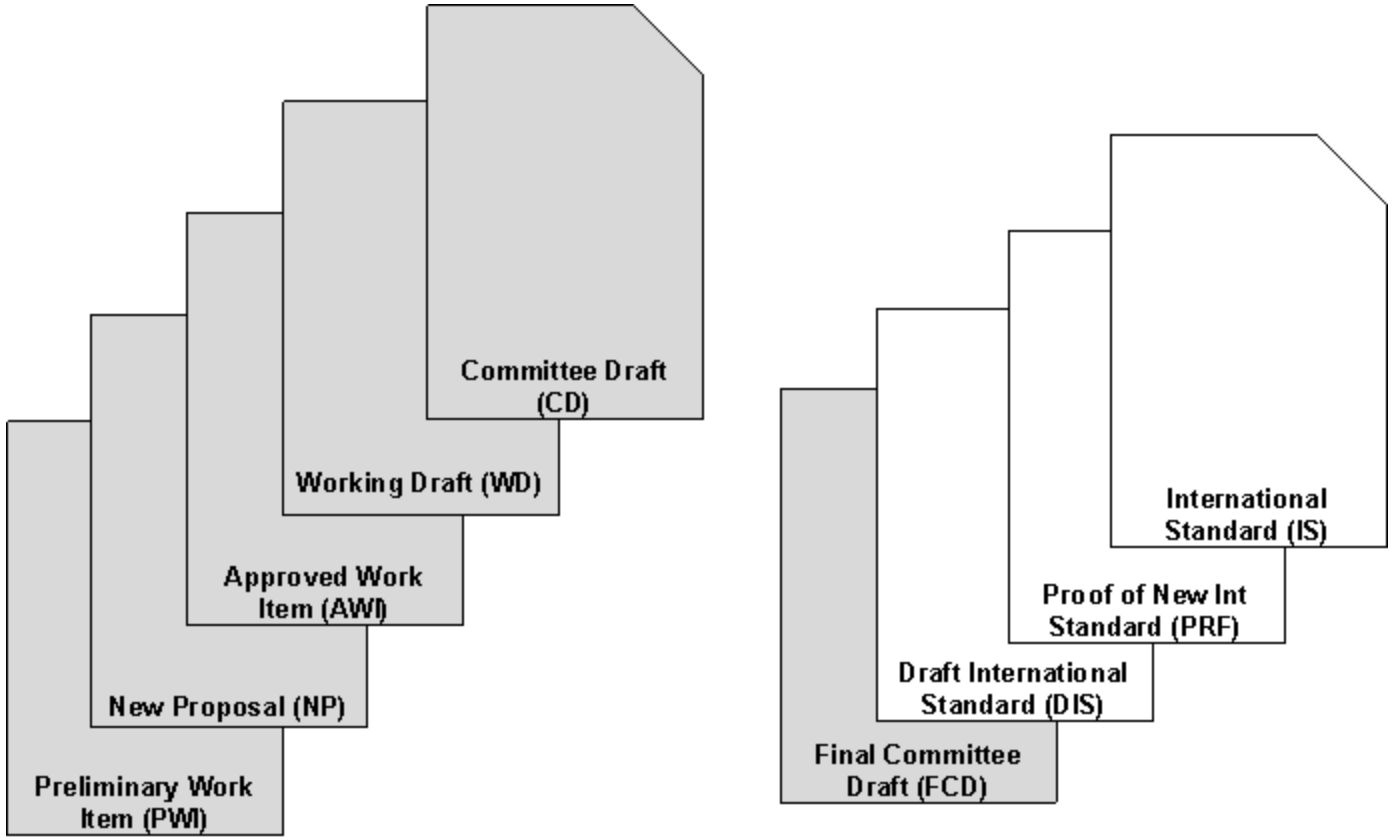
ANSI
American National Standards Institute

GovEnergy
www.govenergy.gov

ISO50001 Status

- A Draft International Standard (DIS) of ISO50001 is currently being reviewed within the participating countries.
  - Standard is being developed by PC 242
  - 52 countries are participating
    - There is a US Technical Advisory Group (TAG) that is formulating comments.
- Final standard expected in 2011.

Chronology Of An International Standard



GovEnergy
www.govenergy.gov

GovEnergy 2010

Implementation

- US Council for Energy-Efficient Manufacturing pilot program in place for manufacturing organizations called the Superior Energy Performance (SEP) Program.
  - Goal is to reduce industrial energy intensity by 25% over 10 years.
  - Program uses ANSI/MSE 2000-2008 as the Management System Standard in the pilot program but will use ISO50001 in final program.
  - http://www.superiorenergyperformance.net/

ISO50001 DESCRIPTION

GovEnergy
www.govenergy.gov

GovEnergy 2010

Energy Management System (EnMS)

- To ISO50001 an Energy Management System (EnMS) is a formalized business process. It consists of:
  - Organizational Responsibilities
  - Energy Policy
  - Energy Targets
  - Action Plans

- Developed to improve energy performance, leading to lower energy costs and emissions.

GovEnergy
www.govenergy.gov

ISO50001 Overview

- ISO50001 requires an organization to:
  - Develop an Energy Policy taking into account any legal or administrative requirements.
  - Establish energy targets and Energy Performance Indicators (EnPIs).
  - Identify areas/equipment that have significant energy consumption or savings potential.
  - Create an organization/processes to implement the Energy Policy.
  - Use the Plan-Do-Check-Act methodology to implement the Energy Policy.

GovEnergy
www.govenergy.gov

Energy Policy

- Energy Policy is upper management ‘s statement of its organizational commitment to managing energy.
- An Energy Policy should commit the organization to:
  - Continuous energy improvement.
  - Resources to meet the energy improvement goals.
  - Availability of energy information needed to meet energy improvement goals.
  - Legal and regulatory compliance

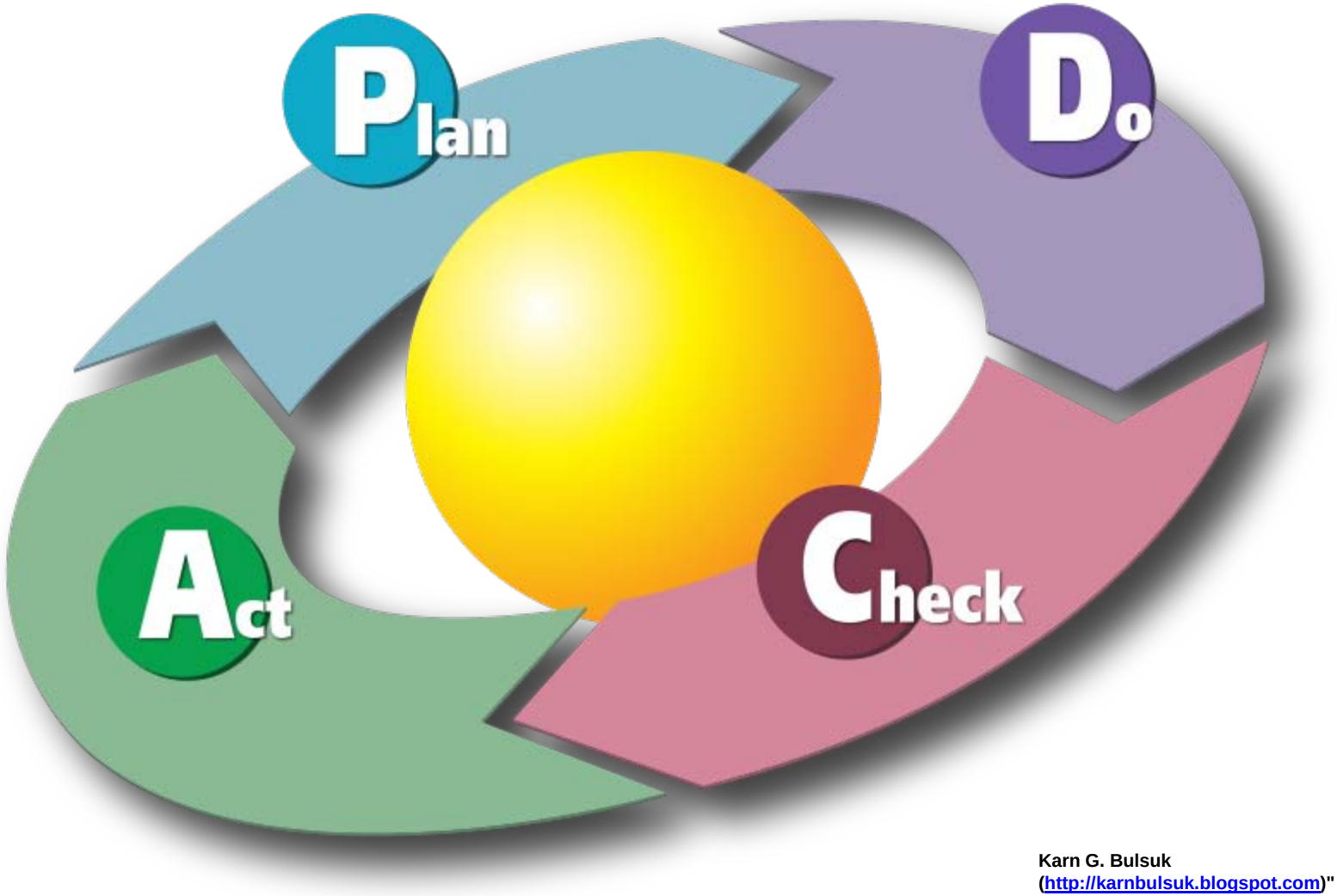
GovEnergy
www.govenergy.gov

Energy Savings Goals

- ISO50001 does not specify energy performance goals.
  - Business sets its own Energy Policy commitments.
    - Measures its own progress.
  - Business Can self declare conformance.
    - It is expected that certification process will be put into place.

GovEnergy
www.govenergy.gov

Plan-Do-Check-Act Cycle



Karn G. Bulsuk
(http://karnbulsuk.blogspot.com)"

GovEnergy 2010

GovEnergy
www.govenergy.gov

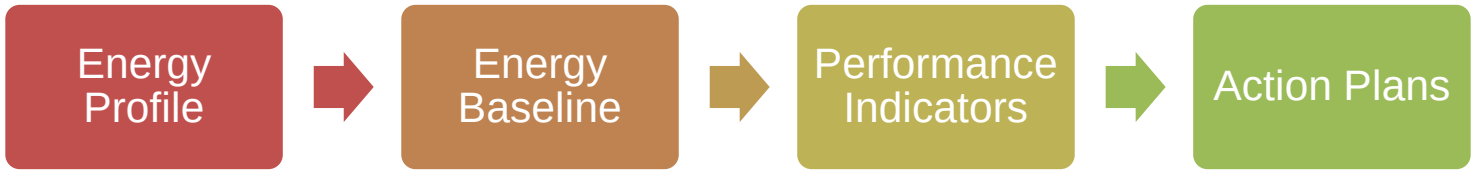
PLANNING PHASE

GovEnergy
www.govenergy.gov

GovEnergy 2010

Planning Process Steps

- After completion of an Energy Policy, the planning process creates:
  - Energy Profile
  - Energy Baseline
  - Energy Performance Indicators
  - Action Plans



Energy Profile

- An Energy Profile identifies the amount and characteristics of energy that an organization consumes.
  - Helps in identifying significant energy consumers in an organization.
  - Helps in identifying specific energy use patterns.
  - Helps in identifying opportunities to reduce energy use.
- Energy Profile should be updated regularly to address changes in the organization.

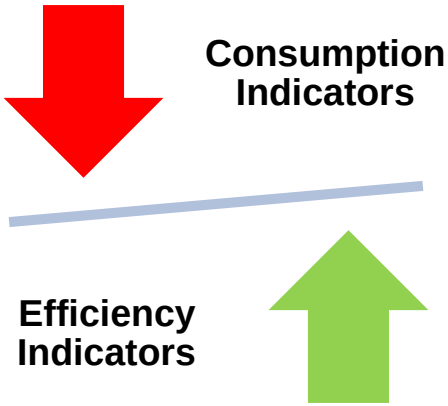
GovEnergy
www.govenergy.gov

Energy Baseline

- An Energy baseline measures energy performance over a specific time period.
  - Typically uses 12 months of measured data but longer timeframes are better.
  - This provides the starting point for setting goals, creating performance indicators, and evaluating overall energy performance.
- Energy Baseline should be updated regularly to address changes in the organization.

Energy Performance Indicators (EnPIs)

- Performance indicators are benchmarks that can be compared over time.
  - Indicator has to be meaningful to the organization.
  - Should be easy to understand.
  - Typical Examples:
    - KW / m^2 in leased office environments
    - KJ / line / hr for a production line
    - Energy Expense ($) / person



GovEnergy
www.govenergy.gov

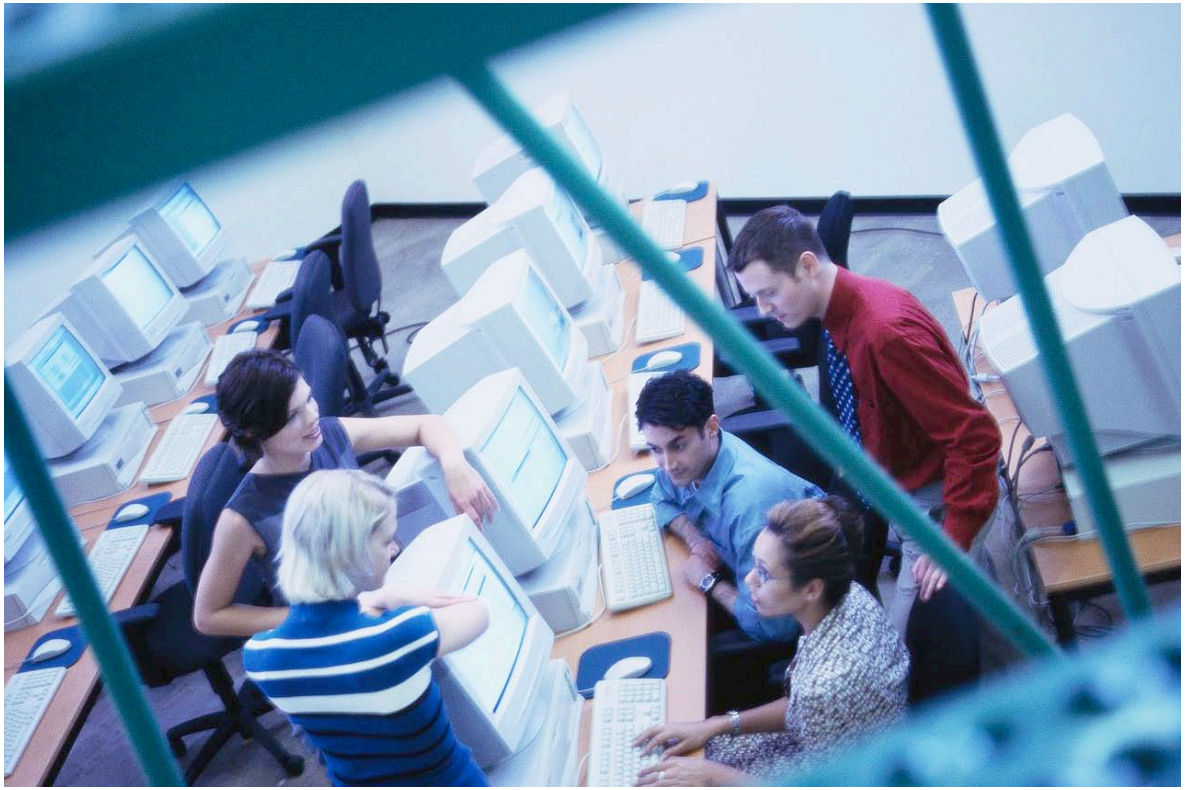
Industry Specific EnPIs

- Performance Indicators are typically normalized to make historical comparisons easier.
  - Can be normalized for weather, occupancy, commodity price changes, or production quantities.
- Energy Intensive industries may use standard benchmarks to compare against other companies in the same industry.

GovEnergy
www.govenergy.gov

Action Plans

- An Action Plan is a course of action used by the organization to achieve energy goals and targets.
  - Measureable energy reduction goals are established.
  - A plan to meet these goals are documented.
  - Resources needed to execute the plan are obtained.
  - Timeframe for the improvements are identified.



DOING PHASE

GovEnergy
www.govenergy.gov

GovEnergy 2010

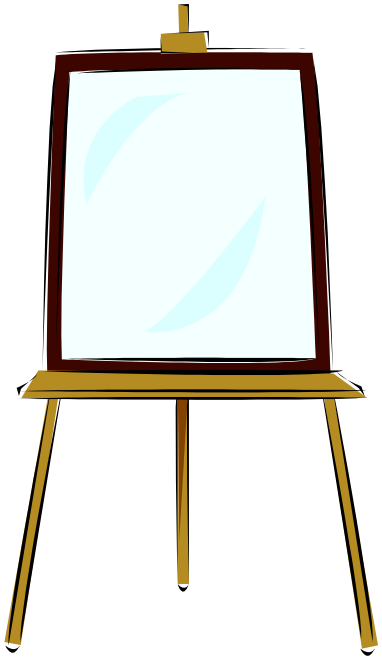
Implementation

- In addition to implementing projects that seek to reduce specific significant energy use area, ISO50001 manages the energy life-cycle.
  - Energy Selection
  - Energy Procurement
  - Energy Consumption
  - Energy Reliability
  - Energy Disposal
  - Environmental Impact of Energy Systems

GovEnergy
www.govenergy.gov

Training

- People working in areas of significant energy use and people working on energy reduction projects need to be trained on:
  - The importance of the Energy Policy.
  - The impact of their work on energy consumption.
  - The importance of using the energy procedures developed.



GovEnergy

www.govenergy.gov

CHECKING PHASE

GovEnergy
www.govenergy.gov

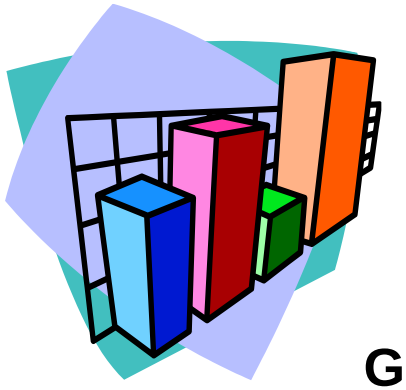
Measurement

- Measuring the performance of the Energy Management System by monitoring is critical to reducing energy consumption.
- Areas to be measured:
  - The Energy Performance Indicators (EnPIs)
  - Significant Energy Uses
  - Effectiveness of the Action Plans
- Remember the cost of measurement should be commensurate to the energy savings.

GovEnergy
www.govenergy.gov

Measurement & Verification

- Measurement and Verification (M&V) can be used to validate energy savings.
- The International Performance Measurement and Verification Protocol (IPMVP) is a standard method to ensure energy savings.
  - Multiple methods are identified including:
    - Whole Building Analysis
    - Submetering
    - Simulation



GovEnergy
www.govenergy.gov

ACTING PHASE

GovEnergy
www.govenergy.gov

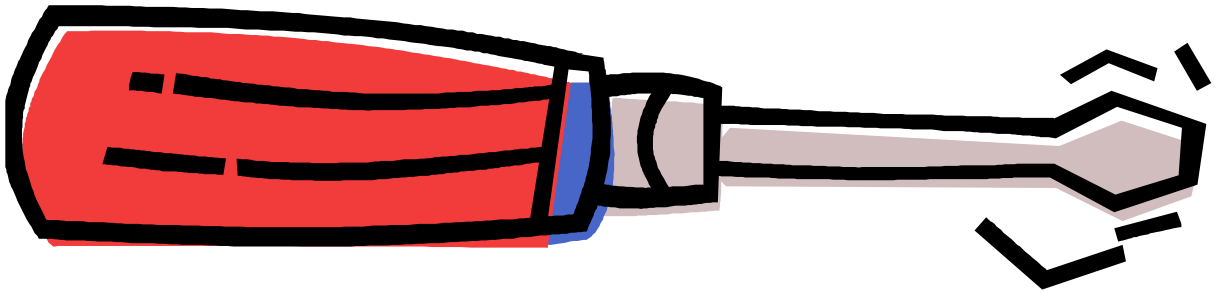
GovEnergy 2010

Continuous Improvement

- A key element of any management system is a continuous improvement framework.
- Continuous Improvement involves:
  - Reviews of the results, processes, and Energy Performance Indicators (EnPIs).
  - Corrective Actions identified to ensure the effectiveness of the Energy Management System.
  - Changes to the Energy Policy to reflect current organizational goals.

Corrective Action

- When a problem is found within the Energy Management System a process needs to be established to define the corrective and preventive actions needed.
  - Corrective actions should be measured against the size of any energy savings.



GovEnergy

Management Review

- A key element of any management system are frequent management reviews to ensure a continuous improvement framework.
  - Management reviews are be a dynamic process of status leading to decisions, and corrective actions.
    - Designed to ensure the continuing suitability, adequacy, and effectiveness of the Energy Management System.
  - Management reviews should be done often enough that Corrective Actions are effective.
    - At least yearly.

GovEnergy
www.govenergy.gov

CONCLUSIONS

GovEnergy
www.govenergy.gov

The ISO50001 Journey

- ISO50001 is being developed to ensure long-term sustainable energy performance improvements by making an Energy Management System part of the organizational culture.
  - Like the other ISO Management System standards, effective Energy Management is a process, not a project.
    - Long Term Commitment is needed at all levels of the organization.

GovEnergy
www.govenergy.gov

GovEnergy
www.govenergy.gov

GovEnergy 2010