

ENERGY UTILIZATION MANAGEMENT BUREAU

Overview of Energy Management System



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Elements of Energy Management Systems

ENERGY EFFICIENCY METHODOLOGY

MANAGERIAL

PLAN:

- Policies/Goals
- Resources

DO:

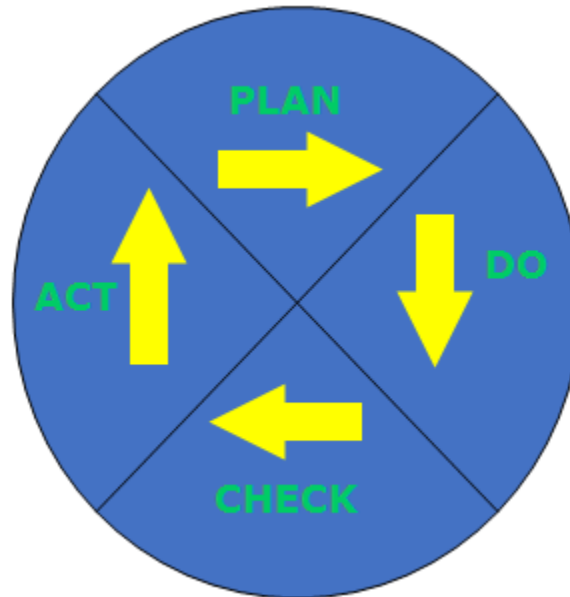
- Training
- Communication
- Control tools & processes

CHECK:

- Corrective action
- Internal audits

ACT:

- Management review



TECHNICAL

PLAN:

- Energy data mgt.
- Assessments

DO:

- Energy purchasing
- Design
- Projects
- Measurement

CHECK:

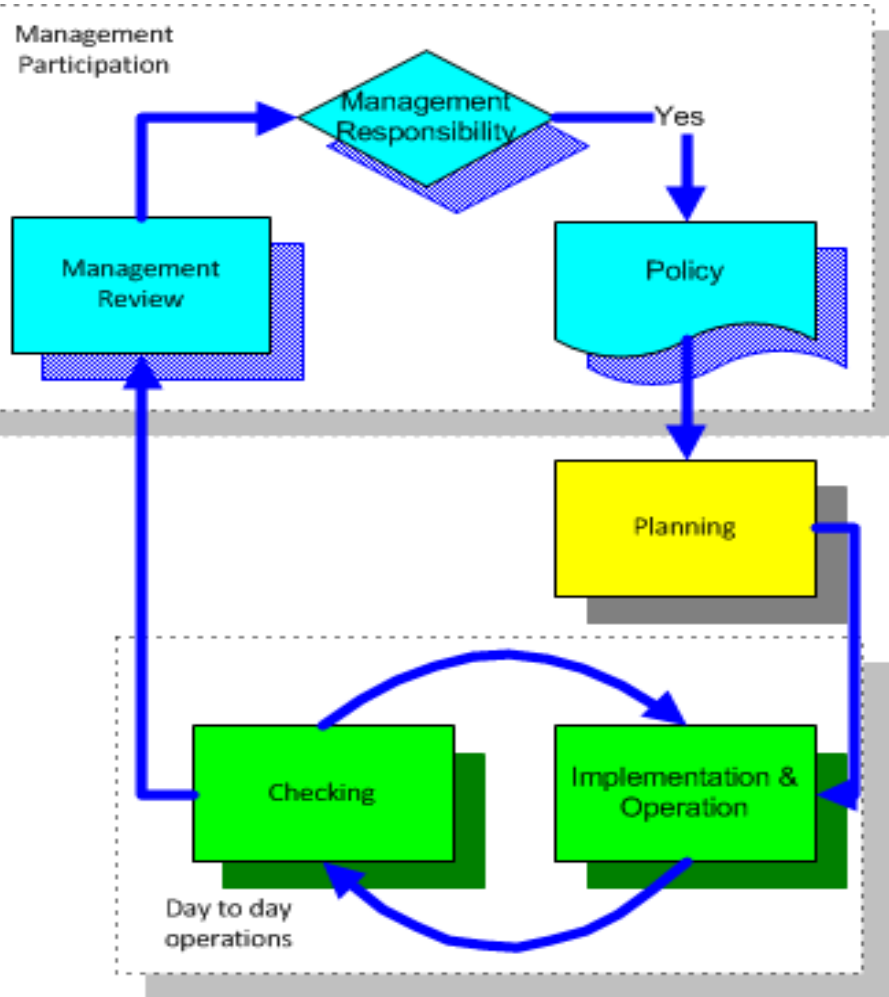
- Monitoring
- Verification

ACT:

- System performance

EnMS

Six Key Concepts



1. Management Commitment
 - Roles and Responsibilities
2. Significant Energy Users (SEUs)
3. Energy Performance Indicators (EnPIs)
4. Opportunities List
5. Operational Control
6. Review

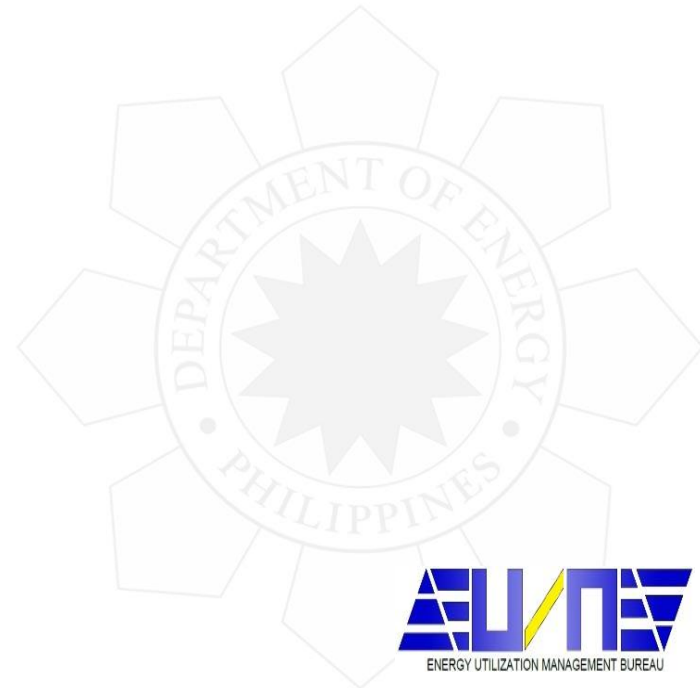
Energy Management – a commitment built on Partnerships

- Policies and Enforcement
- Conservation Programs
- Energy Efficient Upgrades
- Tracking and Monitoring Results
- Benchmarking Utilities and Maintenance



Energy Management (cont.)

- Increase efficiency of mechanical and electrical systems
- Introduce energy education and awareness to employees
- Reduce pollution emissions



Roles and Responsibility

Task	OSEC	OUSEC	EUMB/EECD	Financial Services	Admin Services	GSD	Technicians	Janitorial	Security	Field Offices	Bureau/Unit Representatives
Develop Policy		Lead	Participate		Participate						
Approve Policy	Lead	Participate	Participate	Participate	Participate						
Member of energy team	Inform	Lead	Participate	Participate	Participate	Participate	Participate	Participate	Participate	Participate	Participate
Analyse energy consumption	Inform	Inform	Lead	Participate	Participate	Participate				Inform	
Develop energy metrics	Inform	Inform	Lead			Participate				Participate	
Use energy metrics		Inform	Lead			Participate	Participate			Participate	
Operational Control -utilities		Inform	Participate			Lead	Participate				Participate
Operational Control -offices		Inform	Participate	Participate	Participate	Participate	Participate	Participate	Participate	Participate	Lead
Financial Appraisal	Inform	Participate	Participate	Lead	Participate						
Monitor bills		Inform	Lead	Participate		Participate					
Maintain Energy Performance database	Inform	Inform	Lead			Participate	Participate				
Implement training	Inform	Inform	Participate		Lead	Participate	Participate	Participate	Participate		
Develop EE&C Projects	Inform	Inform	Lead	Participate	Participate	Participate	Participate				
etc											



Effective Communication

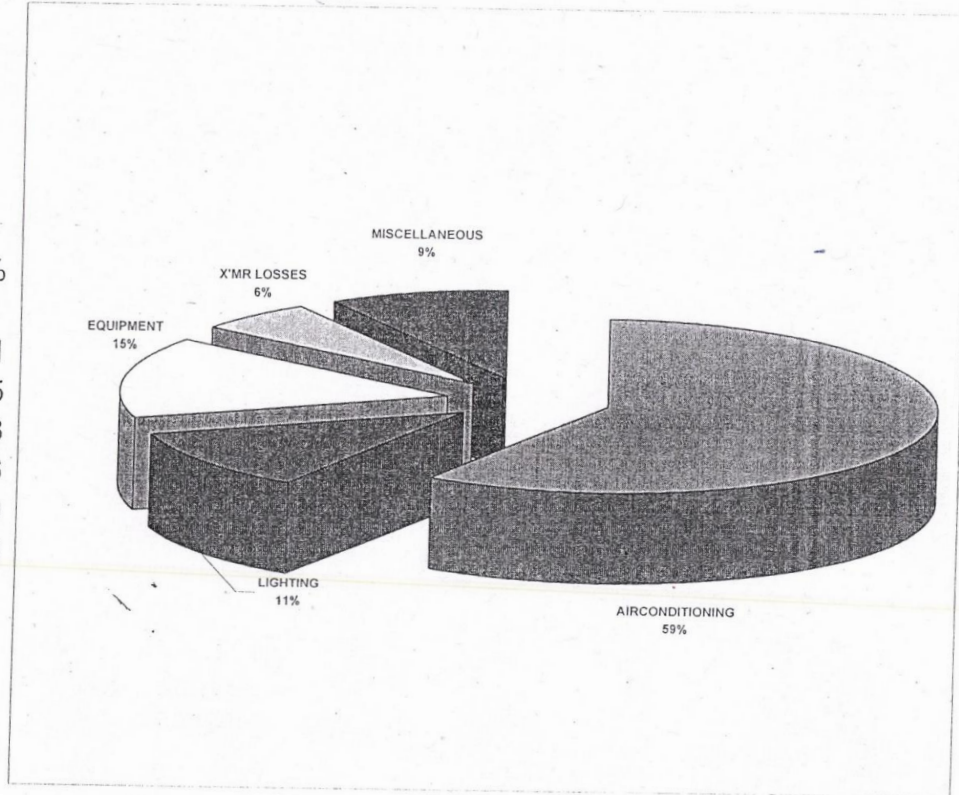
- Management Directive on energy management must be clearly stated and understood.
- Each member of the organization shall develop energy efficient/conserving habits.
- EnMS can induce behavioral change to be conscious on effective conservation of energy use.
- EnMS shall develop a prosperous eco-friendly business.



Significant Energy Users (SEUs)

Figure 1
DEPARTMENT OF ENERGY
BUILDING MONTHLY ENERGY USAGE BREAKDOWN PROFILE

COMPONENT	kWh	%
AIRCONDITIONING	81,894	58.81
LIGHTING	15,671	11.25
EQUIPMENT	21,141	15.18
X'MR LOSSES	8,304	5.96
MISCELLANEOUS	12,244	8.79
Total	139,255.00	100.00



Determine the Energy Performance Indicator

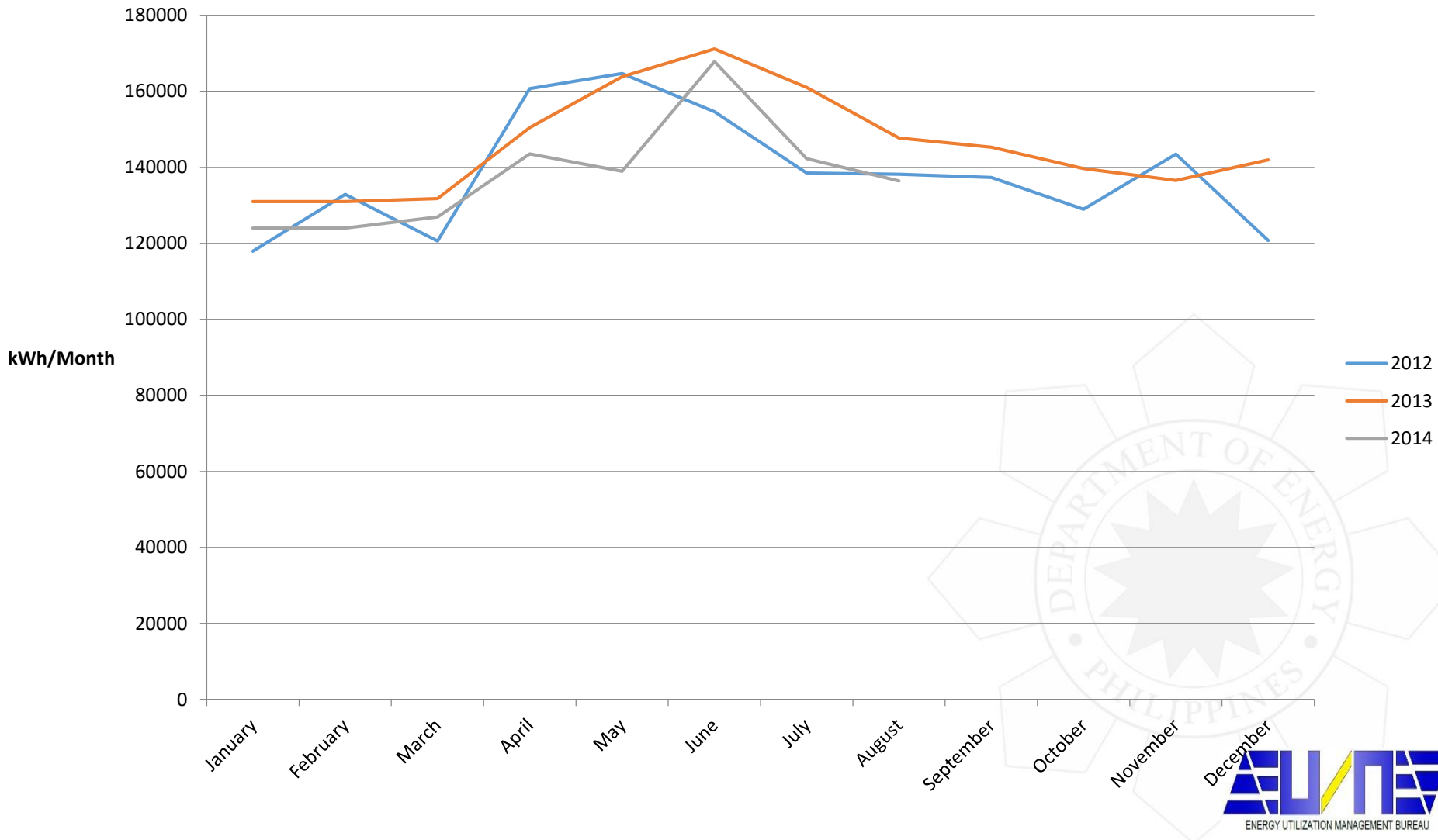
Compare the monthly electricity or fuel consumption with influential factor, say:

- kWh/person
- kWh/hour of use
- kWh/room and ambient temperature (aircon)
- kWh/m²- month (office building)
- Km traveled/liter of fuel (vehicle)



Historical Data

Monthly Electricity



Lighting System Improvement

- ✧ Delamping
- ✧ Relamping
- ✧ Installation of High Efficiency Lamp Fixtures
- ✧ Installation of Low Loss Type Ballast
- ✧ Improvement of Surface Reflectance
- ✧ Rewiring of Light Switches for Alternate Operations and to Serve a Light to Switch Ratio of 4:1
- ✧ Application of Task Lighting
- ✧ Lowering of Fixture Mounting Height
- ✧ Cleaning of Lamp Fixtures
- ✧ Optimum Utilization of Daylight

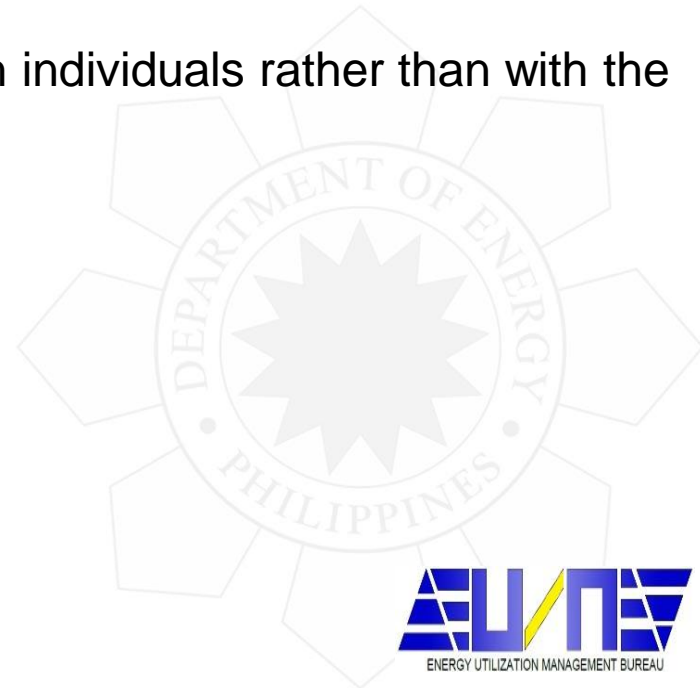


Operational Control

- Improve the energy performance of air-conditioning units (A/C unit).
- Develop effective and appropriate operational procedure and schedule for the A/C units.
 - A/C units are operated from 8:00 AM to 4:00 PM.
 - Be conscious of a Comfortable Room Temperature.
 - Keep A/C unit Temperature Control Setting at 25°C.
 - Install window blinds and curtains.
 - It is okay to put the A/C unit on Fan Mode during cold days.
 - Meeting Rooms should be appropriately cooled. A/C unit should not be operated too early before the meeting and switched off right after the meeting.
- Develop an Energy Performance Monitoring and Reporting Scheme
- Conduct employee feedback survey to be more effective in implementing the EnMS.

Barriers

- Management focus is on increasing business operation and not on energy efficiency
- Lack of information and understanding of financial and qualitative benefits
- Lack of adequate technical skills for developing and implementing EE measures and projects
- Poor monitoring systems and data
- First costs more important than recurring costs → disconnection between capital and operating budgets
- When EE knowledge exists, it very often resides with individuals rather than with the company/ organization → sustainability risk
- Defensiveness – “I’m already doing a good job!”



Benefits

- ✓ It saves money
- ✓ It reduces production and product costs
- ✓ It increase reliability of operations
- ✓ Reduced maintenance and operations costs
- ✓ It has a positive effect on productivity and competitiveness
- ✓ It can offer attractive financial and economic returns
- ✓ Reduces risk/exposure to rising energy prices
- ✓ Improved learning environment
- ✓ Environmental stewardship



Keep the EnMS Rolling

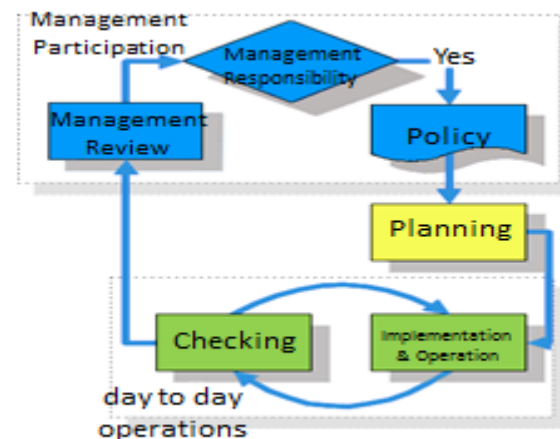
Energy Management System is a continuous cycle of improvement

Comply with Legal Requirement
i.e. DOE Memorandum Circular 93-03-05
Submission of Energy Consumption Report

Based on the concept of:

- Plan
- Do
- Check
- Act

Keep it Simple and Sustainable



Something that may help...



An **Energy Service Company (ESCO)** is a company that provides services that develops and implements projects designed to improve energy efficiency of various facilities at practically no-cost to the supplier. They recover their expenses through the savings generated as a result of the improvements done to the facilities.

The DOE currently has an ESCO Accreditation Program and has already accredited 26 Companies.



THANK YOU!



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