ENERGY POLICY

VISION

To be one of the Institutions of Higher Learning (IHLs) to practice and implement efficient energy management system

MISSION

To achieve reduction and optimization of energy usage through UNIMAS Efficient and Sustainable Energy Management System (SMES) programs and activities with the support and involvement from all stakeholders of UNIMAS

DECLARATION OF COMMITMENT

Universiti Malaysia Sarawak is committed to practice energy efficiency and Low Carbon Campus (LCC) throughout its campus in order to create a conducive and sustainable campus environment for teaching, learning, research and development.

STATEMENT OF POLICY

Universiti Malaysia Sarawak's (UNIMAS) energy policy is a framework for sustainable energy management system to enable continuous, effective and widespread implementation of energy efficiency and Low Carbon Campus (LCC) practices at all PTJs within UNIMAS. The process and procedure adopted shall enable the establishment of measurable energy reduction Targets and Energy Index without compromising reliability, comfort and safety. The energy management system will be driven and motivated by creative and innovative initiatives from within the UNIMAS community. UNIMAS's Energy Policy will be managed by the Energy Manager who will also manage compliance issues.

OBJECTIVES

1. To establish a sustainable energy management system and a culture of conservation within the campus community
2. To reduce carbon emissions through efficient energy management
3. To introduce and implement the utilization of renewable energy
4. To be a leader in energy sustainability and to promote the best practices locally and internationally

IMMEDIATE GOALS

1. To conduct training & awareness programme towards establishing a culture of conservation within UNIMAS campus community.
2. To initiate an energy award scheme to encourage creative and innovative energy management solution and sharing of best practices from the stakeholders within UNIMAS.
3. To strengthen energy management procedure and organizational structure as well as information and recording systems.
4. To implement appropriate measures to reduce energy consumption through change of behaviour, improved housekeeping practices, maintenance, operation and purchasing for new and existing buildings or equipment.

MALAYSIA NATIONAL ENERGY POLICY

The energy policy of Malaysia is determined by the Malaysian Government, which address issues of energy production, distribution, and consumption. The stakeholders that contribute to the policy are the Ministry of Energy, Green Technology and Water, Energy Commission (Suruhanjaya Tenaga), and the Malaysia Energy Centre (Pusat Tenaga Malaysia). The policy is also based on the 1974 Petroleum Development Act, 1975 National Petroleum Policy, 1980 National Depletion Policy, 1990 Electricity Supply Act, 1993 Gas Supply Acts, 1994 Electricity Regulations, 1997 Gas Supply Regulation and the 2001 Energy Commission Act.

1.0 UNIMAS Energy Management Structure

UNIMAS energy management structure, also known as UNIMAS energy management team consists of 3 committees, namely Corporate Energy Management Team (CEMT) and Pusat Tanggungjawab (PTJ) Energy Management Team (PEMT) and Energy Accounting Centre (EAC). This energy management team is the key player to develop and review the energy policy and to ensure the success of implementation stated in the policy.

1.1 Corporate Energy Management Team (CEMT)

UNIMAS Corporate Energy Management Team (CEMT) function is on the development of strategic plan and action plan. This team is responsible to provide all the relevant information regarding the energy related financial, expectations and setting up Key Performance Index (KPI) for all the UNIMAS PTJs Energy Management Teams (PEMT). This committee also involve in developing metrics for tracking overall energy improvement, and build accountability for energy management activities. The committee also required to support relevant suggestions or initiatives from PEMT for better improvement and towards the AEMAS 3 Star EMGS certification.
CEMT is also responsible to look at overall energy policy, make amendment if necessary for improvement, provide support and endorsement of any financial implications and capacity building related to the energy efficiency initiatives. The CEMT will be chaired by UNIMAS Vice Chancellor and the secretariat is by appointment and must be a qualified and certified Energy Manager within UNIMAS personnel. Other members include Deputy Vice Chancellor (HEPA), Registrar, Bursary, representatives from Development Division, Quality Assurance and Risk Management Division, UNIMAS Global, Training Unit, Head of Students Colleges, Deans/Director of Faculties/Institutes/Centers and Student MPP representative. The organization chart and process of CEMT is shown in Figure 1 and Figure 2 respectively.

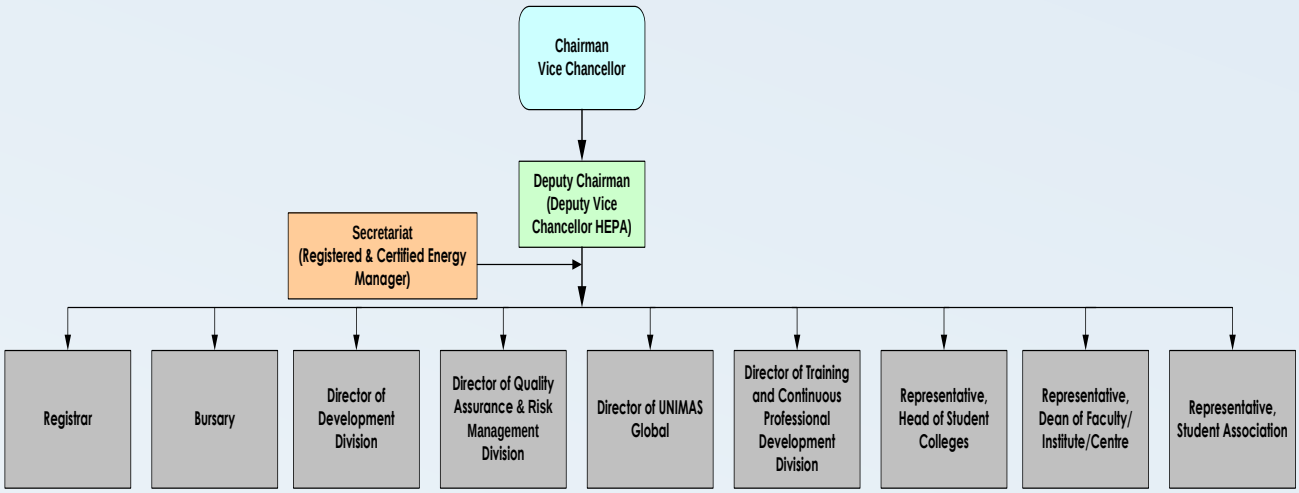


Figure 1.0 CEMT Organization Chart

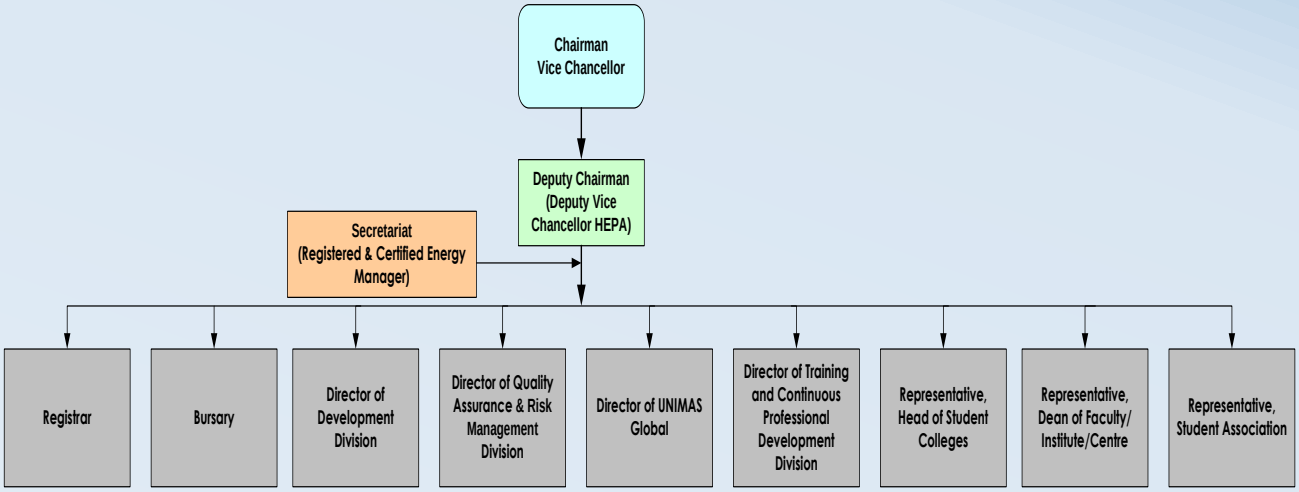


Figure 1 CEMT Organization Chart

Figure 2 UNIMAS Sustainable Energy Management System

1.2 Pusat Tanggungjawab (PTJ) Energy Management Team (PEMT)

The function of PEMT is more on the monitoring the implementation of energy management program at their own PTJs. It will be lead by the Dean of faculties or Director of Centres or Head of Colleges or personnel with qualified CEM to chair the committee. The team members consist of Deputy Deans, Head of Departments and can be anyone who has skills, passion and interest in energy efficiency within the PTJs respectively. The organization structure of PEMT is shown in Figure 3.

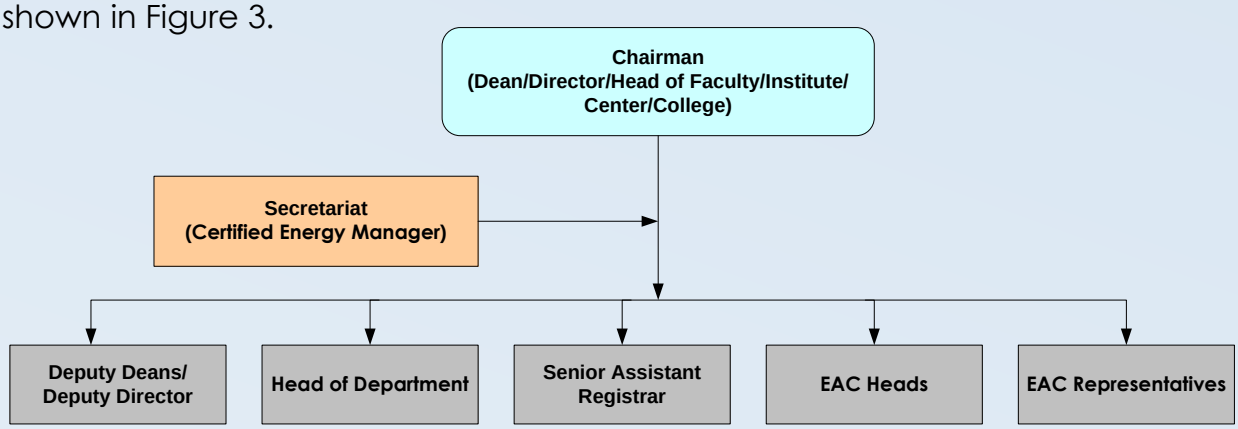


Figure 3 Organizational Chart of PEMT

1.3 UNIMAS Energy Accounting Centre (EAC)

The function of EAC is to effectively control energy consumption in UNIMAS. The task will be on a tactical level. This group or team will also implement the micro level operational activities and technical part of energy management thus able to perform an analysis of the data collected monthly. Each on of the EAC will prepare Efficient Energy Index (EEI), target & plan, budget and monitoring process.

They are required to implement the strategies and metrics agreed upon by the CEMT and report progress and success on a regular basis to PEMT. Where needed, EAC can solicit support and approval for projects and initiatives from the CEMT. Number of EAC will also depend on the size of the university i.e. number of faculties, Institutes, centres and student colleges. They will be provided or adequate with the metering equipment, facilities and measurement tools. The organization structure of EAC is shown in Figure 4.

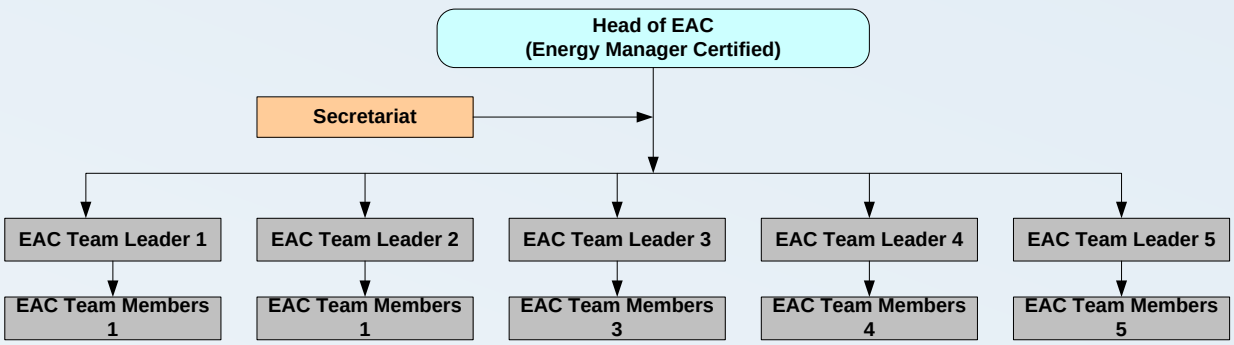


Figure 4 Organizational Chart of EAC

The Team Size

Depends on the size of university and depending on the number of building facilities. For a medium sized university the following people could form part of the team:

(i) a senior manager (champion);
(ii) the energy co-ordinator;
(iii) representative from each key function/area within the company that has a significant impact on energy use;
(iv) certain employees who have a commitment to energy management.

Appoint Team Members

Potential key functions to consider for your team include people from: Purchasing, Personnel Unit, Maintenance, Finance, IT, Operations (engineering, production, admin), Buildings/ Facilities, Administration.

Make Appointments Formal

UNIMAS Vice Chancellor to formally invite potential key members (by letter or memo) to join the energy team. Explain to people the importance of energy management and how it can contribute to their own job – you may have to attend meetings of other departments or functions. Seek out committed people and ask them to get involved in the programme.

Assign Responsibilities

Assigned responsibilities, activities and work plans, as part of the overall programme plan. Hold a kick-off meeting and plan future meetings on a regular basis.

Integrate the Team

Make sure that energy management is integrated throughout UNIMAS. Each function or area that provides team members should have an energy management role and have the authority to make their own decisions.

1.4 Energy Manager (EM)

Energy managers coordinate all aspects of energy management, from energy efficiency and reduction of carbon dioxide emissions to waste management and sustainable development by:

- Deriving solutions for carbon management;
- Encouraging the use of renewable/sustainable energy resources within an organisation or community;
- Raising the profile of energy conservation.

UNIMAS energy manager will be appointed and given a full authority from university top management. EM has to be responsible to do reporting on energy related issues and continuous development and communicated directly to top management.

01 First Key

Direct Knowledge of Energy-using Systems

02 Second Key

Developing and Maintaining the Focus for the Corporate Energy Management Team

03 Third Key

Coordinate Meetings, Set Agendas, and Delegate

04 Fourth Key

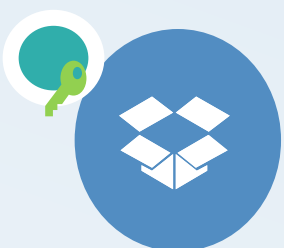
Manage Tasks Related to the Energy Management Team

05 Fifth Key

Responsible for Reporting the Activities to Energy Management Teams

The main responsibility of the energy manager is to improve energy efficiency by evaluating energy use and implementing new policies and changes where necessary. There are 3 main responsibilities of the energy manager are namely, planning, regulates and finally monitor energy used. Duties vary according to the setting in which the work is being carried out and may range from researching new developments and managing a range of strategies, to providing expertise to individuals.

01 Planning



02 Regulates

03 Monitors Energy Use

A. Planning

- **Coordinate (Organize)** an energy committee and energy champions
- **Develop (Design and run**) a programme of energy-saving projects
- **Prepare (Arrange)** invitations to tender for energy supplies
- **Participate (take part)** in energy benchmarking groups
- **Devise,** commission and deliver or supervise energy training programmes
- **Devise** a strategy for reducing energy costs and environmental impact
- **Assist** with the preparation of energy budgets
- **Conduct or arrange (organized)** staff awareness and motivation programmes
- **Assist (support)** in the development of energy-conscious design, maintenance, and operation
- **Establish** normal relationships between consumption and relevant driving factors

B. Regulate (Control)

- **Analyse** supply tenders and negotiate with bidders to maximise value for money
- **Diagnose** (Analyse), investigate and rectify detected exceptions
- **Write** an energy-management policy
- **Report** on energy consumption and costs, associated transmission and distribution costs, budget variances, costs of exceptions, and savings achieved
- **Recommend** (**Endorse)** changes in patterns of consumption to minimise transportation charges
- **Commission (Command)** and supervise specialist consultants
- **Operate** an energy-saving suggestion scheme
- **Implement** sub metering and data logging where required
- **Conduct or arrange (organise)** energy audits and surveys, performance tests and investigations
- **Maintain** a register of energy-saving opportunities
- **Maintain** links with current and potential energy suppliers
- **Maintain** records of energy suppliers, transportation and metering companies, and regulatory bodies

C. Monitoring Energy Use

- **Measure** and verify the savings achieved
- **Collect (gather) and collate** half-hourly demand profile data from electricity suppliers and corresponding data for fuel consumption
- **Collect** weather statistics, occupancy and production figures, and other measureable variable factors which affect energy consumption
- **Collate (collect)** comparative data and yardstick figures for benchmarking purposes
- **Keep abreast** (up to date) of potential energy and water saving products
- **Ensure timely** collection of in-house meter readings
- **Check e**nergy supply invoices and obtain refunds and rebates
- **Monitor** and analyse energy consumption histories on a weekly basis (say) to detect exceptions
- **Monitor** the prices and other developments in energy markets
- **Monitor** and advise on legislation, regulations, and carbon trading schemes

2.0 Energy Audit Objectives

Energy audit activities enables UNIMAS to study closely their building operations, make observations about energy wastages, building study maintenance status and carry out necessary field measurement by using specific equipment and tools.

The objectives of energy audit are as follows:

- ❑ To evaluate energy management in the identified building.
- ❑ To evaluate thee energy performance and identify opportunities for improvement without compromising safety, UNIMAS operations and comfortability in campus activities; and
- ❑ To propose potential SEMS to be implemented.

2.1 Energy Audit Process

Energy audits provide a benchmark that enables an organization to track an energy management program's progress. It also identifies the most inefficient equipment or processes, and how they affect the organization as a whole. Lastly, performing regular energy audits enables the assessment of the effectiveness of energy management programs relative to past performance as well as measuring progress in reaching energy reduction targets. There are a variety of strategies for improving energy usage. From motors and drives, power monitoring systems, lighting control to SCADA applications and smart motor control centers, there are many solutions to help business reduce energy costs and achieve more efficient energy use.

2.2 UNIMAS Energy Audit Scope

The main components of UNIMAS audit exercise shall cover aspects as following;

- ❑ Building Energy Index
- ❑ Data Collection Energy Saving Measures & Recommendation
- ❑ Financial Analysis (for energy saving measures)
- ❑ Energy Audit Report

The scope of the energy audit will cover all energy consumption system as follows:

- ❑ Air-conditioning System (Chiller, Split System)
- ❑ Lighting
- ❑ Lifts
- ❑ Street Lighting
- ❑ Data Center an Operation Center
- ❑ Socket Load
- ❑ Office/laboratory Equipment
- ❑ Building Endures
- ❑ Air Quality

2.3 UNIMAS Energy Audit Data Collection

Initial data collection is very critical to determine the current status of UNIMAS. The data is required to determining the direction for implementing energy management program in UNIMAS. This data should comprise all related energy bills for the past 5 years and other relevant facilities and architectural data which could include not limited to:

- ❑ Utility bills
- ❑ Gross and net floor areas
- ❑ Asset List
- ❑ Architectural Drawing
- ❑ Mechanical and Electrical Drawing
- ❑ Building Material
- ❑ Space occupancy data
- ❑ Operation and repair manuals
- ❑ Operation and maintenance records

2.4 UNIMAS Energy Audit Deliverables

This audit process will provide the following deliverables through the time period given:

- ❑ Project Management Plan
- ❑ Monthly progress report
- ❑ Energy audit reports
- ❑ Measurement and verification report to the CEMT
- ❑ Financial analysis report for retrofit and cost impact analysis
- ❑ Other relevant deliverables as outlined in item 2.2 Energy Audit Scope