



DEPARTMENT OF ENERGY

Energy Efficiency and Conservation
Public Sector Management Division

PRELIMINARY ENERGY AUDIT REPORT

Agency Code	:	SUC-53-473-42-4203-1164-000126						
Name of Agency	:	Mindoro State University (MinSU) – Calapan City Campus						
Address	:	Brgy. Masipit, Calapan City, Oriental Mindoro						
Date of Audit	:	January 25, 2024						
		☒ 1 st Audit ☐ 2 nd Audit ☐ 3 rd Audit						
Rating	:	☆☆☆	Grade	:	B	Score	:	87.0%

I. Executive Summary

The Department of Energy (DOE) is mandated to spearhead the implementation of the Government Energy Management Program (GEMP) and to conduct energy spot checks and audits in all government entities to assess the level of their compliance with the GEMP. In line with this, a preliminary energy audit was conducted on January 25, 2024, by the DOE Energy Audit Team (DOE EAT) for the Mindoro State University (MinSU) - Calapan City Campus. The activity aimed to identify the opportunities for energy efficiency and conservation in its electrical facilities, particularly in its existing air-cooling units and lighting systems, and simultaneously assess its level of compliance with the GEMP.

The DOE EAT was composed of personnel from the Energy Efficiency and Conservation Public Sector Management Division (EPSMD) of the Energy Utilization Management Bureau (EUMB). The energy audit inspection was assisted by the following representatives from the University:

1. Mr. Ronnel C. Miciano – Coordinator, Auxiliary and General Services
2. Mr. John Ermar Alumisin – Admin Aide, Auxiliary and General Services

MinSU Calapan City Campus' compliance to the GEMP was measured using the DOE Rating System to evaluate its compliance level based on the three main categories namely, 1. Office Policy, 2. Best Practices for Electricity Conservation, and 3. Best Practices for Fuel Conservation.

II. Coverage of Preliminary Audit

Building/Facility Information	
No. of Buildings	Nine (9)
Total No. of Account Meters	Two (2)
Meter No.1	04-40440-1064
Meter No.2	04-40020-1049
Leased/Owned:	Owned

No.	Name of Building	Gross Floor Area (m ²)	Date Constructed	Total No. of Floor/s
1	BSED Building	1,176	n/a	2
2	Admin Building	1,620	n/a	1
3	I.T. Building	396	n/a	2
4	Criminology	694	n/a	1
5	College of Arts and Sciences	983	n/a	2
6	Library	800	n/a	2
7	Grandstand	702	n/a	1

Note: Buildings/Facilities that were subjected to the actual audit

III. Observation

A. EEC Professional and Issuance

- MinSU Calapan City Campus has no issuance yet for the designation of the Energy Efficiency and Conservation Officer (EEC Officer), and Energy Efficiency Focal Person (EEC Focal Person).
- MinSU Calapan City Campus has implemented a program that manages the operation schedule of all Air-conditioning Units (ACUs) to ensure optimal performance and prevent overloading of the transformers. This program is designed to reduce the load during peak hours when the demand for cooling is at its highest. By doing so, it helps to prevent power outages and ensure uninterrupted service.

B. Electricity Utilization

1. Lighting System

- The lighting system of MinSU Calapan City Campus comprises a total of three hundred fifty-six (356) fixtures. Almost half of these fixtures are Light Emitting Diode (LED) type.
- Using a lux meter, lighting level was generally observed to be below the recommended minimum lux level for working areas. Measurements in the offices ranged from 60-250 lux. While most areas are well-lit, this shows that the lux level in some areas are below the recommended lux level for offices/classroom.
- Daylight is being utilized in applicable areas.
- Lights are turned off when not in use.
- Curtains and blinds are installed to minimize cooling load from the windows.

2. Air-conditioning System

- Based on their submitted inventory, MinSU Calapan City Campus has a total of seventy-nine (79) ACUs, 80% of which are inverter wall-mounted, floor-mounted, and window-type ACUs.

- All units for procurement are inverter type in accordance with Energy Efficiency and Conservation Act, Inter-Agency Energy Efficiency and Conservation Committee (IAEECC) Resolution No. 3, series of 2021.
- During the inspection, it was observed that some ACUs were set at a thermostat setting lower than 24°C.

3. Office Equipment

- All computer monitors are using LCD/LED technology.
- Some computer monitors were programmed to turn off when not in use for a prolonged time.
- MinSU Calapan City Campus was unable to provide detailed inventory for their office equipment.

C. Fuel Utilization

- MinSU Calapan City Campus has two (2) diesel-fed service vehicles.
- Preventive maintenance is regularly conducted, with schedules, costs, etc. being properly documented.

D. GEMP System

- MinSU Calapan City Campus has no submissions yet to the GEMP System.

IV. Recommendations

A. EEC Office Orders and Issuances

- Continually update plans/programs/issuance relative to energy efficiency and conservation, and ensure strict implementation thereof.
- Regularly conduct information campaigns to all employees and students about energy efficiency and conservation measures.

B. Electricity Saving Measures

1. Lighting System

- Replace conventional lamps with LED in accordance with IAEECC Resolution No. 2, s. 2021; and consider the installation of lamps that could meet the illuminance level prescribed in the Guidelines on Energy Conserving Design of Buildings. (<https://www.doe.gov.ph/energy-efficiency/guidelines-energy-conserving-design-buildings-2020-edition-0>)
- Use task lighting in work areas whenever practicable to improve illumination level.
- Compute for the Lighting Power Density (LPD) of the entire facility. LPD is measured in watts per square meter (W/m²) or energy consumed by the lighting system divided by the size of a space. It determines how much lighting is utilized in a certain area.

- Formulate programs for the maintenance of lighting systems and ensure implementation thereof. Dust build-up could potentially block almost 50% of the illumination.

2. Air-conditioning System

- Provide and maintain a comfortable room temperature for office and classroom areas, not lower than 24°C. For packaged ACUs, thermostat settings should not be lower than 24°C.
- Replacement of non-inverter/conventional ACUs to inverter type pursuant to IAEECC Resolution No. 3, series of 2021. Approximately 30% less energy is being consumed by inverter types compared to conventional ACUs.
- Designate a staff who would ensure the turning on of AC units at 9:00 am and turning off of AC units at 4:00 pm, or ensure that the use of AC units is within the prescribed 7 hours. Make sure to turn off ACUs after class in the classroom and avoid using them during breaks or off hours.
- Installation of signages indicating the recommended schedule for operation and thermostat setting of AC units in strategic locations of the office.
- Installation of wall thermometers to determine the room temperature in various areas of the building.

3. Office Equipment

- Switch off all electrical appliances when leaving the premises. Unplug all electrical appliances to avoid phantom loads.
- Educate and encourage employees and students to be energy-conscious and to offer ideas about how energy can be saved.

C. Fuel Saving Measures

- Maintain judicious use of vehicle; plan and schedule to avoid unnecessary trips.
- Strictly follow the preventive maintenance program to avoid major breakdowns.
- Keep records of vehicle odometer readings and fuel consumption monthly to determine vehicle mileage and maintain regular preventive maintenance.
- Update all campus drivers to continue practicing anti-idling and driving at a speed. Idling happens when the vehicle's engine is running but not in motion. One hour of idling could utilize about one liter of wasted fuel.
- For future reference, request for replacement of vehicles more than 7 years if it has already traveled 175,000 km (Section 9.1.1 of National Budget Circular no. 446 series of 1995).

D. GEMP System

- Utilize the GEMP System (<https://gemp.doe.gov.ph/>) and manual (<http://tinyurl.com/3tkhup9e>) for the submission of documents and requirements such as: 1. Designation of EE&C Professionals, 2. Issuance on EE&C measures, 3. Electricity and Fuel Consumption, and 4. Inventory of lightings, ACU and office equipment, in compliance with the GEMP using the log-in credentials:
 - Username: **SUC1164-126**
 - Password: **password123**

V. Energy Performance and Savings

A. Electricity

As prescribed in the GEMP, a government agency should submit electricity consumption reports from 2015 onwards. MinSU Calapan City Campus submitted their electricity consumption in 2023. However, the submitted data is only in Php consumption records. Due to the unavailability of complete 2015 data nor the establishment of a new base year period per vehicle, no analysis of the electricity cost reduction was made for the year 2023.

For reference, electricity consumption reduction per meter account/service vehicle respectively can be computed by subtracting the total consumption in 2023 from the total consumption of the base year period (default year: 2015). The difference shall determine whether there has been cost reduction (positive value) or overutilization (negative value).

B. Fuel

MinSU Calapan City Campus submitted fuel consumption reports for the two (2) service vehicles from March 2021 to July 2023. However, upon review, it was found that some of the monthly fuel consumption data was missing from the reports. As the necessary data from 2015 was not available, and there was no updated base year per vehicle, it was not possible to conduct an analysis of fuel reduction for the year 2023.

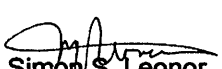
For reference, fuel consumption reduction per vehicle can be computed by subtracting the total fuel consumption in 2023 from the total consumption of the base year period (default year: 2015). The difference shall determine whether there has been fuel reduction (positive value) or overutilization (negative value). It is recommended for MinSU Calapan City Campus to maintain inventory and records of all vehicles and their respective fuel consumption from the base year period (default year: 2015) to the present; and submit them in the GEMP System.

VI. Conclusion

The MinSU Calapan City Campus was able to achieve an 87% rating in terms of compliance with the GEMP during the conduct of the actual energy audit. The rating manifests a high level of awareness and compliance relative to EEC as verified by its designation of EEC Officer/focal person and best practices observed during the preliminary audit. These efforts towards EEC may help achieve target reductions in energy consumption of its facilities in compliance with the GEMP. Key areas for improvement are the official issuance on EEC Measures that all employees should observe as well as the data management of consumption reports.

As a way forward, the DOE – Energy Audit Team recommends to strengthen their EEC measures by providing policy issuances to achieve at least 10% energy reduction as the main objective of the GEMP. The representatives of the MinSU Calapan City Campus have pro-actively complied with the documentary requirements of the GEMP and they have already provided some data on the GEMP system. We recommend to continually update the monthly electricity and fuel consumption reports through the GEMP online system.

Prepared by:


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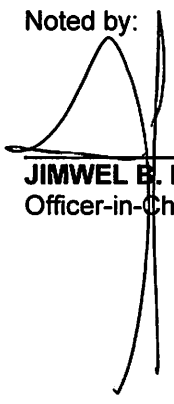

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DEPARTMENT OF ENERGY
GOVERNMENT ENERGY MANAGEMENT PROGRAM
ENERGY AUDIT INITIAL RATING

Name of Government Office: Mindoro State University - Calapan City Campus
Agency Code: SUC-53-473-42-4203-1164-000126
Address: Brgy Masipit, Calapan City, Oriental Mindoro
Date & Time of Spot-check: January 25, 2024 (9:00 AM)

Result

87.0%

SCORE

★★★★

RATING

B

GRADE

Office Policy

Perfect
Score %

Agency's
Score %

5	3.0
5	5.0

- 1.) Designation of Enercon Officer
- 2.) Office issuances on energy conservation

Best Practices for Electricity Conservation

5	4.0
5	4.0
2	2.0
5	5.0
5	5.0
5	5.0
N/A	N/A
5	5.0
N/A	N/A

- 1.) Use of efficient lighting lamps such as LED, CFL, Slim type Fluorescent and others
- 2.) Use of efficient equipment such as appliances with Inverter Technology, LED displays and others
- 3.) Utilizing daylight whenever possible
- 4.) Room temperature not lower than 24°C
- 5.) Aircon operation are scheduled from 9:00 AM to 4:00 PM
- 6.) Keeping the air conditioned room sealed from air infiltration
- 7.) Setting the ACU at "Fan Mode" during lunch break between 12:00 NN to 1:00 PM
- 8.) Turning off lights, computers, appliances, and other equipment when not in use
- 9.) Using stairs instead of elevator when going up or down one (1) floor

Document Records for Electricity Conservation

5	4.0
5	2.0

- 10.) Inventory list of Lightings, ACUs and other office equipment
- 11.) Monthly Electricity Consumption Report five (5) years from the present year with the latest copy of electricity bill

Best Practices for Fuel Conservation

10	8.0
5	5.0
5	5.0

- 1.) Implementation of Fuel Conservation Program
- 2.) Performing Preventive Maintenance Schedule (PMS) of official service vehicles
- 3.) Avoiding idling of engines while waiting and/or parking

Document Records for Fuel Conservation

5	5.0
5	3.0
5	5.0
5	5.0

- 4.) Inventory list and assignment of government service vehicles to a particular official
- 5.) Monthly Fuel Monitoring Report five (5) years from the present year
- 6.) Records of daily entry and dispatch of service vehicles from motorpool
- 7.) Records of Trip Tickets for each service vehicle

Energy Audit Team:

SSA / RAL

AAPR /

Received by:

Ronnel C. Miciano

Coordinator For Auxiliary & General Services

Date: January 25, 2024 (9:00 AM)