

Keeping the Energy Unit Index (EUI) as Philippine Heart Center Grows Philippine Heart Center

GGHH Agenda Goals

- **Energy**

Hospital Goal

- As a government institution, the hospital envisions to lead the national bureaucracy in environmental protection and conservation
- The hospital targets to ensure sufficient energy supply to sustain economic growth
- The hospital aims to establish and sustain the Energy Management Program to consistently improve efficient energy utilization and reduce energy demand
- The Philippine Heart Center intends to continually raise awareness on global warming and climate change
- The hospital aims to reduce energy consumption by 2.5% every year

Progress Achieved

The Philippine Heart Center realized accomplishments through implementation of various activities in different hospital components. Due to the implementation of these activities, Philippines Heart Center's energy consumption is at par with the Standard Building Power Density/Square Meter/Annum. Currently, the standard is at 400kWh/m²/annum based on ASEAN Energy Efficiency; Philippine Heart Center recorded 177.7132 kWh/m²/annum in 2014. This figure is less than half of the specified standard considering the development made within the hospital. The table below shows the electricity consumption of Philippine Heart Center from 2007 – 2014.

Table 1.0 Annual Energy Consumption and Corresponding EUI

Year	Electricity Consumption	EUI
2007	11,301,600	173.3939
2008	12,402,600	190.2859
2009	11,592,000	177.8493
2010	11,424,000	175.2718
2011	10,115,894	155.2023
2012	11,686,000	177.0205

2013	11,483,000	173.9454
2014	11,583,000	175.4602

*floor area (2007 – 2011) – 65,178.75 sq.m

*floor area (2012 – present) – 66, 014.95 sq.m

Committee and Policy Development

An Eco – Friendly Committee was created comprised of representatives from Engineering Department, Housekeeping Department, Infection Control Unit, Emergency Response Unit, Pulmonary Unit (Medical Department), Central Supply (Nursing Department) and Human Resources Department. The Committee was established last April 2012. The committee passed policies on energy conservation and green procurement to promote reduction in energy utilized and decrease carbon emission.

Acquisition of Energy Efficient Equipment

The hospital procured and utilized innovative energy efficient equipment. The equipment that was changed included: lighting, air conditioning units (ACU), motors and other office equipment.

York Optiview Control System aids in controlling and modulating temperature in ACUs. In addition energy saving devices were procured and installed in electric motors of 25 to 125 HP. The table below shows the reduction in energy utilization and cost by changing the traditional lighting to light emitting diode (LED).

Table 2.0 Energy Reduction in Lighting

Type of Light		Energy Consumption (in watts)		Number of Lights		Total Energy Consumption		Total Energy Reduction	Total Energy Cost Reduction
Previous	Current	Previous	Current	Previous	Current	Previous	Current		
Incandescent	CFL	40	7	1,000	3,000	40,000	**21,000 0	19,000	180.5
PAR 38	Loft PAR 38	100	18	200	200	20,000	3,600	16,400	155.8
Downlight Halogen	LED	50	3	200	200	10,000	600	9,400	89.3
Halogen Floodlights	Metal Halide Floodlight	400	50	100	100	40,000	5,000	35,000	332.5

Mercury Vapor Lamps	High Pressure Sodium	500	50	50	50	25,000	2500	22,500	213.75
T12 FL	T8 FL	36	28	15,960	18,000	574,560	**504,000	70,560	670.32
Magnetic Ballast	Electronic Ballast	36	28	15,000	15,000	1,200000	870,000	120,000	1140
Total									***2782.17

*Computation for Total Energy Reduction (Previous Light's Energy Consumption – Current's Light Energy Consumption)

*Computation for Total Energy Cost Reduction (Total Energy Reduction/1000kWh*Php10)

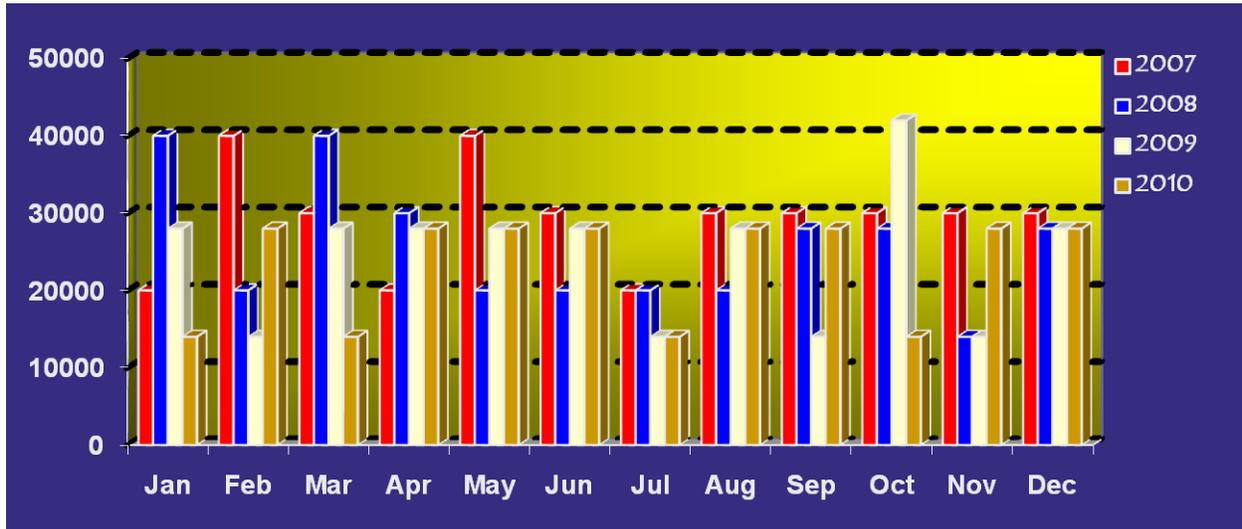
**current number of light is greater than the previous

***initial total saving in all replaced lights

In December 2015, the Philippine Heart Center Hospital had also installed 100 solar panels, which generate an average of 8,182 kWh/ month (49,092 kWh from January to June) of electricity observed and recorded during the first 6 months of operation. This enabled the hospital to have an energy cost reduction of USD \$1,654 (Php 77,729) / USD \$9,923 (Php 466,374) from January to June.

Fuel Conservation Program

Activities were implemented to reduce fuel consumption for transportation, heating and cooling water. Installation of heat pump to replace the boilers enables the hospital to bring down fuel consumption to 280,000 liters in 2010 contrast to 350,000 liters in 2007. The graph below presents the reduction in utilized fuel from 2007 – 2010.



The Issue

The Philippine Heart Center is foremost committed to providing our patients with quality care and service while protecting the environment and advocate for health justice. Adamantly deciding to choose practices and actions that are environment and patient-friendly helps uphold this commitment.

Philippine Heart Center recognizes that energy consumption entails significant impacts on the environment because of the carbon emissions. Reducing the present use of energy will greatly contribute to its environmental protection and sustainability. More importantly, the hospital's effort will assist in keeping patients safe and healthy through the lessened carbon footprint.

The rising cost of fuel and electricity also inspired the hospital to implement activities and practices that lessen energy consumption (fuel and electricity) and consequently costs. Moreover, the number of rooms were increased from 386 – 466. Consequently, the number of utilities and equipment were also greater than before. The demand to add more personnel also rose. The personnel numbers grow from 1,200 – 2,700 individuals. Additional specialized rooms (eg. laboratory, CT-MRI room) and an Annex building was also constructed.

Sustainability Strategy Implemented

The Hospital, Philippine Heart Center implemented Energy Efficiency Measures to address the energy consumption concerns of the Hospital. After the Eco – Friendly Committee was created; an Energy Conservation Memorandum was adopted. The memorandum highlighted frugality and responsibility in the consumption of energy. In addition, a Green Procurement Team was also formed to ensure that the purchases made were not just energy efficient but also environmentally - soundly produced.

Energy efficient equipment and energy saving devices were also acquired and installed in the hospital to lessen the energy demand. Some of these were: installation of solar panels, efficient air conditioning units, lighting and appropriate motor types for various equipment.

Equipment and devices are timely and routinely checked and maintained. This ensures that the devices and equipment are optimally working and, as a result, use only the energy it requires to operate.

The employees of the hospital are also oriented regularly and periodically to the policies, programs and activities the hospital is implementing. The timely orientations encourage acknowledgement and cooperation towards the executed policies and activities of the hospital.

Implementation Process

In April 2012, the Eco-Friendly Committee was established. It was also around this time when the Energy Team was formed. After the formation of the committee, an audit of the present equipment, appliances and other energy consuming materials was undertaken. Several meters were installed separately to monitor electricity consumption specific to a particular area. The audit was followed by a review of present policies in relation to energy usage which include electricity and fuel consumption. The review of policies and audit of energy consumption took one year to finish.

Procurement and installation of energy efficient equipment and materials took place after the audit and review. Several energy consumption strategies were also implemented, such as, installation of HVAC units, heat pumps and solar panels.

Management and employees were routinely informed of the changes and developments of the programs and activities. Management were briefed on the program or activity cost-benefit projection while the employees were oriented on the safety benefits of the new equipment.

Memorandum reiterating energy related policies and strategies were given to employees apart from the quarterly Information, Education and Communication (IECs) conducted with them.

Monitoring electricity and fuel consumption monthly and annually are conducted to gauge the effectiveness of the programs and activities implemented. Existing stocks of materials (eg. lights) are also looked at to see which other equipment and appliances may be replaced to gain better energy efficiency.

Tracking Progress

Philippine Heart Center measures its progress on Green Procurement Program through the following indexes:

Policies: Policies are constantly reviewed, developed, adapted and implemented. These are reviewed every two years

Energy Consumption: Electricity and fuels utilized are monitored monthly and annually.

EUI: Electricity utilized per unit square area.

Saving: Monetary savings from innovations, such as, the transition from boilers to heat pumps and the installation of solar panels, are monitored.

Challenges and Lessons Learned

Top Management support is significantly important in carrying out any program or activity within the hospital. The decisions on policies, programs, activities and development such as installation of innovative equipment are from them. A supportive Management encourages the Eco – Friendly Committee to work beyond their designated duties for the hospital, patient and environment’s betterment.

However, improving the time allotted by the whole Eco-Friendly Committee may further improve the function and services being given by the team. In certain times, with the amount of work assigned to the members of the committee, finding time to collaboratively work among members and the departments being represented is difficult.

It will also be easier to gather and train second-liners that may continue the work of the existing members of the team should there be turn – overs and / or the need for retirement arise. Furthermore, needed training and orientation to enhance and update skills and knowledge of the committee members may also be easily conducted.

At the time being, two of the greatest challenges the committee and the hospital is experiencing are the compliance of patients and their visitors and the treatment and phase – out of polychlorinated biphenyls (PCBs) in generators and powerbanks of the hospital electrical system.

These are being addressed through continuous orientation and review of alternatives, respectively.

Next Steps

The Philippine Heart Center aims to continually improve their program in energy saving through upgrade of programs and policies. The hospital will also continue to replace appliances such as lights and computer monitors in phases.

In terms of installation of new structures, the PHC is aiming to construct an energy efficient building (for parking) and their own autoclaving unit. The parking area will be solar powered. Locating the autoclaving unit within the hospital premises will reduce carbon emissions from transportation of properly segregated wastes for treatment and disposal. The hospital’s monitoring will also include carbon emissions through the energy utilized. It is also their plan to improve other indexes to evaluate effectiveness of the program. Furthermore, the Philippine Heart Center will aim to address concern on electrical system which contain equipment with PCBs such as their generators and powerbanks. They will ensure the PCBs it houses receives proper treatment and eventually phase – out with the identification of possible alternatives.

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Demographic Information

The Philippine Heart Center, a semi-government hospital is a 382 – bed tertiary care center. There are 21 nursing units. This includes 53 Intensive Care Unit (ICU) beds, 3 hybrid operating rooms, 24 suites, 56 private rooms, 74 semi – private rooms, 3 adult service wards, a presidential suites, pediatric service ward and a auditorium. MRI, CT- Scan and Physical Rehabilitation Services, are also provided.

Links

www.phc.gov.ph

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