

PHILIPPINES

1. GOALS FOR EFFICIENCY IMPROVEMENT

1.1. Overall Energy Efficiency Improvement Goals

The Philippine Government launched the National Energy Efficiency and Conservation Program (NEECP) in August 2004 in support of the implementation of energy efficiency plans and programs under its long term 2011–2030 Philippine Energy Plan. However, in FY 2011, the Government enhanced the implementation of energy efficiency under its new campaign theme the “*Bright Now! Do Right. Be Bright*”. This is to effectively promote and sustain the NEECP campaign program mainly to conserve energy and rationalize energy demand consumption. The NEECP’s comprehensive plan is to institute programs and measures to improved energy utilization across demand sectors of the economy specifically for electricity, petroleum products and other fossil fuel resources.

The overall goals of the NEECP are:

- 1) To help ensure adequate supply of energy by contributing to the national energy security of the country.
- 2) To curb the impact of oil price volatility on the economy, reduce carbon dioxide emissions and protect the environment
- 3) To improve energy utilisation by all energy demand sectors and achieve an estimated potential cumulative energy savings of 70,643 KiloTons of Oil Equivalent (KTOE), or at an annual average potential energy savings of 3,532 KTOE, at the end of the planning period in 2030.

These goals were highlighted in the 2008 Philippine Energy Summit and have been part of the government’s 20 year strategic plans and programs for 2011 to 2030.

Sectoral Energy Efficiency Improvement Goals

The Philippines sets sectoral quantitative goals which target 10% energy consumption reduction in the final energy demand in the commercial and government building, residential, industrial/manufacturing, power, transport and agriculture sectors.

1.2. Action Plans for Promoting Energy Efficiency

The Philippine National Energy Efficiency and Conservation Program is a comprehensive program promoting energy efficiency in the Philippines. Accordingly, the NEECP framework were consist of nine components focusing on the entire area of energy efficiency with specific actions to achieve its goals.

a) Objectives

The specific objectives of NEECP are:

- To reduce impact of the increase in prices of petroleum products and electricity through the implementation of energy efficiency and conservation measures
- To promote cost avoidance/savings for fuel and electricity without sacrificing productivity
- To help protect the environment
- To generate cumulative potential energy savings of about 70,643 KTOE equivalent to a deferred megawatt capacity of about 31,981 MW and with a CO₂ emission reduction by as much as 117.70 Million Metric Tons CO₂ for the planning period 2011-2030.

b) Applicable sectors

The NEECP contains a comprehensive set of measures that cover six sectors, namely: commercial and government building, industrial/manufacturing, residential, power, transport and agriculture.

c) NEECP Components

The NEECP consists of nine program components across six sectors including¹:

Component 1: *Social Mobilization, Information, Education and Communication Campaign*

Component 2: *Energy Efficiency Standards and Labelling Program*

Component 3: *Government Energy Management Program (GEMP)*

Component 4: *Energy Management Services/Energy Audits*

Component 5: *Voluntary Agreement Program*

Component 6: *Recognition Award Program*

Component 7: *Fuel Economy Run Program* (currently part of the IEC program; however, necessary to establish/generate significant data for a vehicle labelling program in the future)

Component 8: *Locally Funded Projects that promote Energy Efficiency and Conservation* include:

- Fuel Conservation and Efficiency in Road Transport (FCERT)
- Power Conservation and Demand Management (Power Patrol)

Component 9: *Foreign Assisted/Technical Assistance*. This component includes the following projects:

- “Philippine Industrial Energy Efficiency Project for the Philippines” -a UNIDO-GEF assisted funded project with the objective of introducing process system optimisation models in the industrial manufacturing facilities; to introduce and promote energy efficiency projects using financing windows of local banks; and, to establish Philippine Energy Management System based on ISO 50001 framework, through capacity building of industrial energy managers, local consultants and practitioners and energy service providers.
- Development Study on Energy Efficiency for the Philippines – a JICA technical assistance project aimed at on the development of energy efficiency and conservation policy framework for the country.
- Philippine Energy Efficiency Project (PEEP) - a USD 31 million ADB loan by the Philippine Government to promote energy efficiency conservation in households, government buildings, and public street lighting.

¹NEECP, answers of the Philippine Government from questionnaires for energy efficiency compendium, 2009.

Major EE&C Programs implemented in 2011 are as follows:

Consistent with its mandate, the DOE completed the following key activities in FY 2011:

Information-Education-Communication Campaign**a. Bright Now: Do Right. Be Bright. Campaign**

In December 1, 2011, DOE in partnership with the Philippine Information Agency spearheaded the coordination and execution for the unveiling of the new campaign dubbed as *Bright Now: Do Right. Be Bright*. Said campaign was launched in line with the Department's celebration of the National Energy Consciousness Month. The campaign aims to educate and empower Filipinos to be smart energy users.

The DOE is expected to conduct a nationwide Bright Now! Caravan to promote the new campaign of the department. The communication campaign for this new branding is set to be launched in 2012.

b. National Training-Workshop on Energy Efficiency and Conservation

The DOE through the Energy Efficiency and Conservation Division (EECD) in cooperation with the Development Academy of the Philippines (DAP) was able to finish 15 sessions of the National Training-Workshop on Energy Efficiency and Conservation held in key cities around the country with over 1,500 participants from industrial, commercial, transport, power sectors, and academe, among others.

Below are the venues for the National Training-Workshop:

- 1) February 17-18, 2011: Crown Galleria Plaza, Pasig City
- 2) March 2-3, 2011: Grand Men Seng Hotel, Davao City
- 3) March 16-17, 2011: Dynasty Court Hotel, Cagayan De Oro
- 4) March 30-31, 2011: Almont Inland Hotel, Butuan City
- 5) April 13-14, 2011: Bethel Guest House, Dumaguete City
- 6) April 27-28, 2011: Burnham Suites, Baguio City
- 7) May 11-12, 2011: L'Fisher Hotel, Bacolod City
- 8) May 25-26, 2011: Sarabia Manor Hotel, Iloilo City
- 9) June 8-9, 2011: Naga City
- 10) June 22-23, 2011: Cebu City
- 11) July 13-14, 2011: La Union
- 12) July 27-28, 2011: Angeles, Pampanga
- 13) August 10-11, 2011: Subic Holiday Villas, Subic Bay Freeport Zone
- 14) August 24-25, 2011: Island Cove Hotel and Leisure Park, Kawit, Cavite
- 15) September 7-8, 2011: Splash Mountain Resort, Los Baños, Laguna

c. Other IEC Activities

EECD staff served as resource speakers/lecturers in a total of 63 activities including forum, workshops, seminars, etc., that benefited around 3,900 participants from the government, private and transport sectors, households, academe, among others.

Government Energy Management Program

Another program being implemented by DOE is the Government Energy Management Program (GEMP), which is aimed at reducing the monthly consumption of electricity and

transport petroleum products by all government offices by at least 10 percent as embodied for compliance under Administrative Orders 103, 110, 110-A, 126 and 183.

Government offices have to submit their monthly fuel and electricity report to the DOE for consolidation of EECD. Currently, there are 590 government offices submitting their monthly report to EECD. Based on the consolidated reports of EECD, a total of PhP1.8 billion savings were obtained from September 2005 to December 2011. This is equivalent to around 206,931,528 kWh and 7,171,573.37 liters savings in electricity and fuel, respectively.

Energy Management Service / Energy Audit

Energy audit is a technical service provided for a fee by the DOE to manufacturing plants, commercial buildings and other energy-intensive companies. A team of engineers from the Department evaluate the energy utilization efficiencies of equipment, processes and operations of these companies and recommend energy efficiency and conservation measures to attain energy savings.

Energy audit services of the Department help companies or establishments determine their energy use patterns and identify energy conservation in all energy-consuming sectors (continuing program).

In 2011, eight (8) buildings were audited by the EECD team, namely: Sunlife Financial Inc., Dunlop, San Carlos Seminary, Hotel del Rio, UP Diliman Quezon Hall, UP Technology Management Center, La Salle Greenhills, The Wharf, and Tranco.

Recognition Award: The Don Emilio Abello Energy Efficiency Award

The DOE recognizes the importance of the active participation of the private sector in its EE&C initiatives. To encourage this, DOE together with its partner organizations, organize the annual Don Emilio Energy Efficiency Awards (DEAEEA) to give recognition to companies with significant energy savings achieved through the implementation of energy efficient technologies and measures. The much coveted award was named after Don Emilio Abello who is the Father of Enercon Movement in the Philippines and the brainchild of the Philippine Enercon Program. This recognition long started in 1982, a year after the demise of the Enercon Movement Chairman in 1981.

In 2011, 59 industrial and commercial establishments, 33 energy managers and two (2) power-generating plants received honours for their significant contribution in the government's energy efficiency and conservation (EE&C) initiatives at the annual Don Emilio Abello Energy Efficiency Awards (DEAEEA) held at the Meralco Multipurpose Hall, Ortigas Avenue, Pasig City on December 6, 2011.

This year resulted in an aggregate savings of around 92 million liters of oil equivalent (LOE) corresponding to 3.6 billion pesos or avoidance of 148,000 metric tons of carbon dioxide.

From the winners of 2010 DEAEEA, the DOE through EECD then evaluated nominees for the 2011 ASEAN Best Practices Competition Award for Energy Management in Industry and Building held in Brunei Darussalam. Five (5) out of the 10 Philippine entries bested other nominees from other ASEAN countries and were hailed as winners and runners up in the competition.

Philippine Energy Efficiency Project

The EECD is the primary unit in charge with the implementation of the Philippine Energy Efficiency Project (PEEP), which aims to demonstrate the societal benefits of implementing

EE&C projects in the commercial, residential and public sectors resulting in the reduction of both the demand for electricity and the emission of greenhouse gases.

PEEP has three key components such as: 1) Energy Efficiency in Government Buildings; 2) Efficiency Initiatives in Buildings and Industries; and, 3) Communication and Social Mobilization. The project involves the retrofitting of 35 government office buildings; replacement of incandescent bulbs with energy efficient compact fluorescent lamps (CFLs) in the residential sector out of the 5million CFLs procured in 2010; installation of 223 LED Solar Home System, a Lamp Waste Management Facility; replacement of incandescent traffic lamps with Light-Emitting Diode (LED) in 159 traffic lights intersection, retrofitting of more than 3,000 inefficient lamps with energy efficient lighting system in Burnham Park and Wright Park in Baguio City and Public street lighting in major roads in Cagayan De Oro City.

With these, the government is expected to obtain 313 Gigawatt-hours (Gwh) savings on electricity equivalent to PhP 1.2 billion annually, 10 to 20 percent reduction in the overall energy consumption in retrofitted government office buildings and an annual emission avoidance of 169,000 tons of CO₂.

The budget of PEEP is US \$ 46.5 Million of which \$31 Million is funded from an ADB loan, \$1.5 Million from an ADB grant, and \$14 Million is the counterpart fund from the Philippine government. The International Institute for Energy Conservation (IIEC) was contracted in March 2010 to serve as Project Implementation Support (PIS).

Herewith below are the major project developments under PEEP for FY 2011:

(Note: Most of the project components herein reported are all completed in the first quarter of 2012)

a. Energy Efficiency in Government Buildings

i. Retrofit of Government Office Buildings

The goal of this component is to reduce energy wastage in government office buildings due to inefficient lighting equipment. Older model fluorescent lamps, incandescent bulbs and inefficient magnetic ballasts will be replaced by energy efficient alternatives – new T5 fluorescent lamps, CFLs and electronic ballasts, respectively. This component is consistent with Administrative Order No. 183, which mandates all Government departments, bureaus, offices, agencies and instrumentalities to use Energy Efficient Lighting Systems (EELs) in order to reduce energy consumption by a minimum of 10% relative to 2005 figures.

Accomplishments: As of December 2011, 10 out of the 35 government buildings targeted for retrofitting under PEEP were validated to be completed while the rest are still ongoing. The completed buildings are the following: National Dairy Authority, Securities and Exchange Commission, National Housing Authority, Philippine Information Agency, Department of Environment and Natural Resources, Environmental Management Bureau, Philippine Institute of Volcanology and Seismology, National Telecommunications Commission, Mines and Geosciences Bureau, and National Food Authority. Based on the contract with the service provider, the completion date of this component is on January 31, 2012.

ii. Nationwide Residential Lighting Program

The objective of this component is to reduce energy peak demand by replacing inefficient incandescent bulbs with efficient CFLs in the residential sector. The tasks under this component include: distribution of CFLs to eligible consumers in Metro Manila and to

participating distribution utilities (DUs) and Electric Cooperatives (ECs) nationwide; collection, recording and storage of incandescent bulbs (IBs); and disposal of the IBs.

For the Light Emitting Diode (LED) for Off-Grid Household component, the objective is to evaluate the use of LED lights in place of kerosene, candles and other non-electric alternatives. The tasks under this component include the procurement of a variety of LEDs for general lighting, distribution through identified channels, the conduct of customer satisfaction surveys and reporting.

Accomplishments: Lot 1: At the end of 2011, 2,554,605 CFLs were distributed in Metro Manila, Bulacan and some areas in CALABARZON while 150,400 were allotted for beneficiaries of the National Housing Authority, Department of Social Welfare and Development and DOE.

Meanwhile, 1,640,289 CFLs were also shipped to Mindanao through 33 Electric Cooperatives and two (2) DUs for distribution in 2010 that ended in December 2011. Also, 224,370 CFLs were distributed to large distribution utilities in Visayas and Mindanao.

A total of 4,569,664 CFLs were distributed under Lot 1 with remaining 430,336 still for distribution. As for the disposal of the collected incandescent bulbs, the process of procuring the service provider in Visayas and Mindanao is ongoing.

Lot 2: As for the CFL distribution to district and party-list representatives, bid documents were finalized for the procurement and delivery of 3.6 million CFLs. Invitation to bid was published and consequently, the first pre-bid conference was held on December 14, 2011 at Department of Budget and Management-Procurement Service.

As of December 2011, 91 copies of the Memorandum of Agreement between the DOE and the 285 district and party-list representatives were signed.

Moreover, the financial evaluation for the LED for off-grid Households in Palawan, Antique and Davao del Norte is ongoing. Two hundred twenty-three (223) households will benefit from this subcomponent.

iii. Public Lighting Retrofit Program

This component aims to demonstrate energy savings through the adoption of efficient lighting technologies for public lighting. It also strives to promote compliance with the Roadway Lighting Guidelines to standardize the specifications for public lighting nationwide. This component will target the cities of Baguio and Cagayan de Oro. Included in the project scope are: 1) demonstration of a range of EE technologies in public lighting; 2) replacement of mercury vapour lamps and fluorescent tube lights (FTLs) with high pressure sodium vapour lamps for street lighting; and, 3) the replacement of IBs in existing traffic lights with LEDs.

Accomplishments: Both retrofitting of public park lighting in Baguio City and street lighting in Cagayan de Oro were completed in 2011.

The public lighting in Baguio was inaugurated on August 19, 2011 at Burnham Park attended by His Excellency President Benigno S. Aquino III. It has potential savings of 193,446 kWh per year equivalent to Php 2.93 million annual cost savings and reduction of 87.0507 tons of CO₂.

Meanwhile, the retrofitting of street lighting in Cagayan de Oro has potential energy savings of 900,720 kWh per year equivalent to PhP 9 Million annual cost savings and reduction of 405.324 tons of CO₂.

For the retrofitting of 159 traffic light intersections with LEDs in Metro Manila, the contract was awarded to DY Infotech Innovation Corporation signed on November 8, 2011. This subcomponent is expected to result in the savings of 1,572,507 kWh per year equivalent to PhP 15.72 million and reduction of 707.628 tons of CO₂.

b. Efficiency Initiatives in Buildings and Industries

i. Super ESCO

The PEEP is establishing a Super-Energy Service Company (ESCO), to overcome the barriers to the implementation of Energy Efficiency projects in the public and private sectors. The principal objective of this component is to draw upon the vast experience of the project team to provide the technical assistance and support to the Super-ESCO to enable it to implement ESCO projects in the public sector and facilitate the creation of a sustainable market for private sector ESCO Operations.

Status: This component was cancelled in April 2011. The fund allocated for this sub-component was allocated to fund retrofitting of 100 additional government buildings under Component 1 and retrofitting of additional 88 public traffic light intersections in Metro Manila. Thus, total government building proponents would be about 135 and total traffic light intersection for retrofitting is 247.

ii. Efficient Building Initiative

The goal of this component is to reduce energy consumption and greenhouse gas emissions in the building sector in the Philippines through a unified Green Building Certification System. This component will accelerate the implementation of the building rating system by streamlining existing initiatives into a single nascent system. The expected output of this subcomponent is the development of software for BERDE rating system and the certification of 10 buildings by March 2013.

Accomplishments: After the bidding procedures, the Philippine Green Building Council (PHILGBC) emerged as the most qualified organization to serve as DOE's partner for the development and implementation of Efficient Building Rating System. The contract was awarded to PHILGBC in September 2011. A Memorandum of agreement between DOE and PHILGBC was also signed on December 8, 2011.

Other Activities

a. DOE-JICA Development Study On EE&C For The Philippines

In 2011, the DOE through EECD forged an agreement with the Japan International Cooperation Agency for the conduct of the Development Study on Energy Efficiency and Conservation for the Philippines.

To strengthen all these efforts, DOE is now working towards the institutionalization of the EE&C measures in the country by drafting the Energy Efficiency and Conservation (Enercon) Bill. The passage of the Enercon Bill will set the pace for a stronger and more holistic EE&C program in the Philippines with the active involvement of other government organizations and the private sector.

As of December 2011, JICA study team completed four missions and is scheduled to go back to the Philippines for the fifth and last mission in January 2012. Stakeholders meeting were held to obtain recommendations and pertinent inputs from concerned agencies. As a result, the proposed bill has gained the endorsements of Congresswoman Maria Evita Arago and Senator Teofisto Guingona III. Further, the bill was presented to the Energy Committee of the House of Representatives chaired by Congresswoman Henedina Abad in November 2011.

b. Memorandum Of Understanding with the International Copper Association Southeast Asia (ICASA) and the United Nation Environment Programme (UNEP)

A Memorandum of Understanding was forged between DOE and the International Copper Association Southeast Asia, which involves the conduct of the Baseline Market Study on Air Conditioning Use in Government Agencies and Government-Owned and Controlled Corporations (GOCCs) in Metro Manila. This was signed on May 17, 2011.

The specific objective of the project is to study and disseminate acceptable and feasible financing options towards the replacement of old and inefficient room air conditioning units by or procurement of new and more efficient ones that meet or exceeds the new minimum energy standards among government offices and buildings.

Results of the study were presented during the October 4, 2011 Inception Workshop at Crowne Plaza Hotel, Ortigas Avenue, Pasig City. In 2012, government buildings will be selected for the installation of new and efficient air conditioning units as part of the validating procedure for the study.

c. Promotion Of Energy Efficiency And Conservation In South East Asia Project (ASEAN PROMEEC) for the Philippines with The Asean Center For Energy (ACE) and The Energy Conservation Center Of Japan (ECCJ)

The DOE, in cooperation with ACE and ECCJ, is implementing the ASEAN PROMEEC for the Philippines with the following objectives: 1) to determine through conduct of surveys the actual status of energy efficiency and conservation (EE&C) implementation; 2) to identify barriers to the implementation of EE&C; and 3) to formulate measures to improve EE&C practices. The project also aims to develop skills that will be instrumental in improving the implementation of EE&C in the commercial and industrial sectors.

Forty-nine (49) participants from commercial and industrial establishments attended the PROMEEC Seminar for Major Industry on October 14, 2011 at the Makati Palace Hotel in Makati City.

Part of this activity is the conduct of energy audit training attended by representatives from DOE Luzon and Visayas Field Offices. An energy audit was likewise conducted at Fuji Electric Philippines and Amherst Laboratories on October 10 to 13, 2011 aimed at assessing the application of energy conservation technologies in their respective sites requiring energy efficiency improvement.

d. Joint United Nations Industrial Development Organization-Department of Energy-Department of Trade And Industry Industrial Energy Efficiency Project

On March 25, 2011, the United Nations Industrial Development Organization granted funds for the Industrial Energy Efficiency Project for the Philippines to be implemented by DOE through EECD and DTI-Bureau of Product Standards.

This project aims to introduce ISO 50001 Energy Management Standard framework and system optimization approach for improvement of industrial energy efficiency; to enhance financing capacity in support for industrial energy efficiency project; and, to address institutional and technical barriers through capacity building interventions and support on demonstration projects.

As of December 2011, UNIDO has hired personnel for the Project Management Unit and housed them within DOE office. A project manager was likewise selected from a pool of applicants interviewed last year.

e. EECD Strategic Planning Workshop

EECD conducted its Strategic Planning Workshop on June 14 to 16 at Island Cove Resort, which resulted in the crafting of the Division's Work and Financial Plan for the second semester of 2011. EECD likewise formulated its mission, vision and values that are significant in the accomplishment of its mandate.

Way Forward

1. Implementation of the joint UNIDO-DOE-DTI Industrial Energy Efficiency Project
2. Finalization of the Enercon Bill
3. Nationwide Bright Now! campaign caravan
4. Validation of ICASEA Study
5. APEC Peer Review on Energy Efficiency on February 6 to 10, 2012
6. Develop energy benchmark for the commercial and government buildings and the manufacturing industry sectors
7. Enhance Standard and Labeling program through product testing and research of the DOE's lighting and appliance testing laboratory and to consider accreditation of private testing laboratories and to encourage private sectors/entities participation to move investment in this new business industry area.
8. Intensify promotion of heat rate improvement in power plants
9. Establishment of energy labels for all new vehicles regarding the fuel mileage rating
10. Expand promotion of the Energy Efficiency and Conservation Program and Energy Consumption Monitoring in large seaborne vessels such as passenger and cargo ships; power generation plants; and power distribution utilities.

d) Financial resources and budget allocation

The annual budgetary requirement of the DOE in the promotion of energy efficiency and conservation increased from Php 12 million pesos (USD 279,000) in 2012 to Php 25 million pesos (USD 581,000) in 2013. The significant increase was attributed to the dynamic intervention of the government to reach a wider numbers of energy users to inculcate the good values formations, best practices and technological development update.

e) Method for monitoring and measuring effects of action plans

- Monitoring of activities through monthly and quarterly accomplishment reports
- Action plan measured through percentage use of annual budget fund
- Other activities monitored and measured through the submission of a Quarterly Energy Consumption Report and Annual Energy Conservation Program reports of private companies (commercial, government buildings, and industrial sector).

Surveys, statistics compilation, end-use information, reporting and trend analysis are all being undertaken, and databases are being developed to assist in program evaluation and policy formulation. The Department of Energy-Energy Utilization Management Bureau (Energy Efficiency and Conservation Division) (DOE EUMB-EECD) has the duty to implement

monitoring and reporting system. The following are government-initiated activities aimed at monitoring the energy consumption as well as reportorial compliance :

- Under DOE Circular 93-03-05, companies consuming 1 million litres of oil equivalent are required to submit quarterly energy consumption reports. In addition, companies consuming 2 million litres of oil equivalent or more annually are required to submit an annual energy conservation program to the DOE
- Quarterly Energy Consumption Reports submitted by establishments (commercial, industrial and transport) are entered in a National Energy Consumption database for monitoring and data evaluation processing
- Under the Government Energy Management Program (GEMP), government buildings are required to submit a Monthly Electricity and Fuel Consumption Report as per Presidential directives Administrative Orders 110, 126.
- Fuel Mileage Rating Data are being generated under the 'Fuel Economy Run' for future Vehicle Labelling Program.

f) Expected results

For FY 2012, the following are the expected major results of energy efficiency programs of the DOE at the end of this year:

- To be able to meet revised target of 313 Gwh of electricity saving under the Philippine Energy Efficiency Project (PEEP) by 2013.
- To post a savings of more than PHP 1.6 billion (USD 32 million), based on FY 2011 results of the recognition award program (Don Emilio Abello Energy Efficiency Award).
- To increase promotion of EE&C awareness campaign in major energy demand sectors such in the commercial, industrial, household, transport and power sectors.

g) Future tasks

- Establish energy benchmarks in the manufacturing and building sectors;
- Promote and establish an accreditation system for energy auditors and energy managers;
- Intensify promotion of heat rate improvement in power plants;
- Establish an energy label for all new vehicles (relative to fuel mileage rating);
- Expand the promotion of energy efficiency and conservation program as well as energy consumption monitoring in large seaborne vessels (passenger ships, cargo/tanker ships); Power generation plants, and power distribution utilities;
- Expand reportorial requirements for the industrial, commercial and transport sectors to include establishments consuming more than 500,000 litres of oil equivalent annually;
- Promote green building rating system through energy efficiency concepts and the development of appropriate policy framework;
- Develop and submit to the 15th Philippine Congress proposed Philippine energy conservation policy or Enercon Bill;
- Develop web-based energy consumption database monitoring system to monitor energy consumption and annual energy conservation programs of all demand sectors consuming more than 500,000 liters of oil equivalent annually or 2 million Kwh of electricity and these include industrial, commercial, government buildings, power, transport and Medium size Enterprises (MEs) sectors.

1.3. Institutional Structure

a) Name of organisation

The Department of Energy as a National Government Agency (NGA) was created by virtue of Republic Act 7638 or the Department of Energy Act of 1992. The Department's mandate is to prepare, integrate, coordinate, supervise and control all plans, programs, projects and activities of the Government relative to energy exploration, development, utilization, distribution and conservation thereof.

Moreover, pursuant to Republic Act 9136 otherwise known as the Electric Power Industry Reform Act of 2001, in addition to DOE's existing powers and functions, its mandate has been expanded to include supervision over the restructuring of the electricity industry, thereby amending its powers and functions. However, relative to reforms on energy efficiency and conservation, herewith are some of the applicable Sections and as quoted as follows: *Sec. 37(a) Formulate policies for the planning and implementation of a comprehensive program for the efficient supply and economical use of energy consistent with the approved national economic plan and with policies on environmental protection and conservation and maintenance of ecological balance, and provide a mechanism for the integration, rationalization, and coordination of the various energy programs of the Government; Sec. (d) Ensure the reliability, quality and security of supply of electric power; and Sec. (l) Formulate and implement programs, including a system of providing incentives and penalties, for the judicious and efficient use of energy in all energy-consuming sectors of the economy.*

The Energy Efficiency & Conservation Division (EECD) under the Department of Energy-Energy Utilization Management Bureau has been mandated to formulate national policies, plans and programs related to energy efficiency and energy conservation. The Division's public services covers demand sectors that includes government buildings, industrial/manufacturing, commercial, residential, transport, agriculture and the power sectors. As such, EECD is the governments' focal coordinator for EE&C that implements the National Energy Efficiency and Conservation Program (NEECP). In addition, DOE has three regional offices, the DOE-Luzon Field Office, DOE-Vizayas Field Office and the DOE-Mindanao Field Office. These offices also implement energy efficiency and conservation programs in conjunction with the plans and programs of the EUMB-EECD.

b) Status of organisation

The DOE as one of the National Agencies under the Executive Department of the Office of the President of the Republic of the Philippines implement plans and programs pertaining to energy matters of the country.

In terms of manpower complement there is no more than 60 personnel which are directly involved in the implementation of energy efficiency and conservation. In the matter of promotion of energy efficiency and conservation program nationwide, the role and functions of the three (3) DOE field offices (Luzon Field Office, Vizayas Field Office and Mindanao Field Office) is crucial in attaining, the DOE as an organization, its overall national target goals. Reaching appropriate targets sectors in key cities around the country have been done through intensified awareness information, education and communication (IEC) campaign which is part and parcel of the target particulars drawn in the national energy efficiency execution plan of the country.

Moreover, to widen the reach of IEC campaign nationwide, the DOE tapped the services of other government offices such as the Philippine Information Agency (PIA), Development Academy of the Philippines (DAP) and the University of the Philippines-National Engineering Center (UP-NEC) to handle critical IEC matters targeting the household, industrial/manufacturing, commercial, transport, and power sectors.

Also, the DOE's umbrella organizations just like of the National Electrification Administration (NEA) support CFLs distribution in the island of Mindanao through its 33

member Electric Cooperatives (ECs). There are likewise two (2) other Private Distribution Utilities (PDUs) who voluntarily cooperated to similarly distribute CFLs in their franchise areas.

c) Roles and responsibilities

The following are the roles and responsibilities of the Energy Efficiency and Conservation Division:

- 1) Promote national energy efficiency and conservation awareness campaign program in all energy demand sectors;
- 2) Formulate policy recommendations on the promotion of energy efficient technology for adoption and application in the country and recommend incentives;
- 3) Develops and implement energy efficiency and conservation plans and programs for adoption and implementation by the government, industrial/manufacturing, commercial, residential, and transport sectors, and electric power industry.
- 4) Maintains and enhances computerized national energy database for the government, industrial/manufacturing, commercial, power, and the transport sectors.
- 5) Conduct sectoral performance monitoring and evaluation of energy consumers based on adopted/established parameters;
- 6) Develops and prepares energy utilization indices for the government, industrial/manufacturing, commercial, residential, power and transport sectors;
- 7) Conduct recognition program on best energy efficiency and conservation practices;
- 8) Promote Minimum Energy performance Standard (MEPS) in all energy consuming equipment and devices and enhance Energy Management Standard (EMS) system in the industrial and commercial and government building sectors.

d) Covered sectors

The sectors covered under the national Energy Efficiency and Conservation Program includes the household, commercial buildings, government buildings, industrial/manufacturing establishments, transport industry, and the power sectors.

e) Established date

The Energy Utilization Management Bureau-Energy Efficiency and Conservation Division (EUMB-EECD) has been established after upon the enactment of Republic Act 7638 of 1992 an act which created the Department of Energy.

f) Number of staff members

The EECD had a plantilla positions of eighteen 18 personnel. The EECDs' Organizational structure showed that it had two sections and these are the Energy Management and Consultancy Section (EMAS) and the Technology Promotion and Assessment Section (TPAS) with a personnel distribution of eight personnel per section.

1.4. Information Dissemination, Awareness-raising and Capacity-building

a) Information collection and dissemination

General information about NEECP is readily available to the consumers. For example, the Standards and Labeling Program of the Department of Energy can be easily accessed at the official website of the DOE. For labels of selected appliances such as refrigerators and freezers, CFL lamps and linear fluorescent lamps, a yellow label tag and specification of the unit inscribed on the box designate that it passed government minimum energy labelling requirements.

b) Awareness-raising

The purpose of the dissemination program in *Component 2: Energy Efficiency Standards and Labelling Program* is to increase public awareness of EE&C and support for popularising energy-efficient appliances in the domestic retail market. In recent years, the EE&C promotion and dissemination program has been conducted frequently in the public media.

The conduct of energy efficiency and conservation seminars in the commercial, residential and industrial sectors contributed significantly to the dissemination of proven energy efficient technologies available in the market, including service companies and financial institutions that support energy efficiency. Awareness-raising campaign programs are centred on the following areas: (a) fuel conservation and efficiency in road transport; (b) power conservation and demand management in the commercial, residential, school and industrial sectors; (c) energy efficient technology promotion in all demand sectors; and (d) provide tips for saving energy in all demand sectors.

c) Capacity-building

A range of training courses, workshops, publishing technical documents for energy efficiency knowledge and assessment addressing all nine components have been developed and are being implemented under the NEECP. These include training courses on energy auditing, capacity-building for EE&C units, and so on. Personnel of EUMB-EECD are being activated through attendance in local as well as overseas training programs provided by foreign institutions. The areas of capacity development are Energy Auditing Techniques, Energy Management, Energy Conservation Opportunities, Co-Generation, and so on.

1.5. Research and Development in Energy Efficiency and Conservation

The Philippines has had very limited policy on research and development on energy efficiency and conservation. Under this item, the DOE's programs on energy research, development and demonstration are limited to the Philippine Energy Efficiency Project, funded under a loan agreement between the Philippine government and the Asian Development Bank. This is an example of an energy efficiency demonstration project which intended to promote efficient lighting system, including the establishment of a lamp waste management facility and promotion of Energy Service Companies (ESCOs), among others.

2. MEASURES FOR ENERGY EFFICIENCY IMPROVEMENTS**2.1. Government Laws, Decrees, Acts**

- DOE Memorandum Circular No. 93-03-05 Series of 1993 (Energy Consumption Monitoring)
- Executive Order No. 123, Series of 1993 (Power Conservation and Demand Management)
- Executive Order No. 472, Series of 1998 (Fuel Conservation in Road Transport)
- Administrative Order No. 103, Series of 2004 (Adoption of Austerity measures - Fuel and Electricity)
- Administrative Order No. 110, Series of 2004 (Institutionalization of Government Energy Management Program)
- Administrative Order No. 126, Series of 2005 (Directing the Enhanced Implementation of the Government Energy Conservation Program)
- Administrative Order No. 183, Series of 2007 (Directing the Use of Energy Efficient Lighting/Lighting Systems in Government Facilities)

- Guidelines on Energy Conserving Designs of Buildings (2007) (note: this guideline is a reference document of the National Building Code.).

a) Applicable sectors

All of above-mentioned legal documents issued by the government apply to government and commercial buildings, households, industrial facilities, and transport facilities.

b) Financial resources and budget allocation

The regular budget allocated for EECD include Maintenance and other Operating Expenses (MOOE) which is about Php 5 Million pesos. On the other hand, the Locally Funded Project (LFP) for FY 2012 had a budget approval of about Php 12 Million Pesos. However, for the FY 2013 budget, the new requested budget has been doubled to around Php 25 Million pesos.

Expected results

All of the policies indicated above are meant for wider IEC awareness campaign, project support implementation, and energy consumption monitoring. Accomplishment reports and reporting compliance by the concerned sectors under these policies are expected regularly.

2.2. Regulatory Measures

2.2.1. Minimum Energy Performance Standards and Labelling

a) Name

- 1) Mandatory Energy Efficiency Labelling is only applied to home appliances and devices and equipment, such as refrigerators and freezers, window-type air conditioners, compact fluorescent lamps, linear fluorescent lamps, and so on.
- 2) Guidelines on Energy Conserving Designs of Buildings (this guideline has been a referral code of the National Building Code).

b) Applicable sectors

For the Minimum Energy Performance Standard (MEPS) it applied only to selected home appliances such as window type air-conditioners, Refrigerators, and CFLs. Most of these are for household use.

For the Guidelines on the Energy Conserving Design In Buildings, it is applicable only to the Building Sector. The regulatory function and imposition as requirement rest to the Local Government Units through the City or Municipal Building Officials.

c) Outline

The purpose is to establish compliance with mandatory labelling of selected home appliances, to adopt minimum design requirements in the design of buildings, and to specify minimum standard requirements for the design and construction of lighting in roadways.

d) Financial resources and budget allocation

For the year 2011, the budget allocated is more than 1 million USD to complete the new appliance testing facilities which includes testing equipment which had a significant share and chunk of the entire allocated budget. The expansion of the facility shall include a new calorimeter room, and other testing area for lighting and household appliances.

Expected results

- Compliance by home appliance manufacturers and importers of Airconditioners, Refrigerators and Freezers, CFL and linear fluorescent lighting, among others;
- Compliance by the building designers and architects and users (consumers) of energy using equipment and devices;
- Compliance by the local government units (LGUs) in rehabilitating inefficient roadway lighting especially in parks and streets and/or passage of local ordinance

regulating issuances of building permits to comply with the provisions set forth on energy efficiency guidelines in buildings.

2.3. Voluntary Measures

Under this program, measures include promotion of the car-less day and carpooling. The aim is to promote fuel conservation and reduce pollution and traffic congestion in the economy, and a voluntary agreement is arranged between the DOE and the industrial establishment under the so-called Partnership for Energy Responsive Companies.

2.4. Financial Measures Taken by the Government

2.4.1. Tax Scheme

Currently, tax incentives is regulated by the Board of Investment-Investment Priority Plan (BOI-IPP) and limited only to the *Green Growth Projects*. However, in the early part of 2012, considerations were given to include for possible approval by the Office of the President some energy-efficient facilities as in the likes of District Cooling/Heating, Thermal Storage Plant Facility, Co-Generation facility, Smart-Grid, among others.

Low-Interest Loans

Financial loans for energy efficiency improvement programs are being provided by local commercial banks in cooperation with other foreign financial and lending institutions such as the World Bank-IFC, Asian development Banks as well as local banks.

2.4.2. Subsidies and Budgetary Measures

The DOE does not provide any financial subsidies to any private or even to other government entities for efficiency improvements or projects.

2.4.3. Other Incentives

The non-incorporation of tax incentives into the BOI-IPP also does not provide any incentive scheme for import duties on energy efficiency products. Energy Audits by the DOE for Walk-through Audits are charge free however detailed audits have applicable charges and fees. Generally, there are no incentives given by the government in terms of energy efficiency improvements and importation of energy efficiency products.

Recognising the company for reducing its energy consumption (energy consumption performance improvement) through application of appropriate energy conservation measures, programs and projects implemented are recognised under the Don Emilio Abello Energy Efficiency Award as mentioned previously. Financial requirements of this program are shared by the members of the Technical Working Group, which is composed of the oil companies, other government energy agencies, private energy organisations and other stakeholders in the energy sector. The amount to implement this program ranges from PHP 300,000–350,000 (USD 6,000–7,000). It is expected as a result an average energy saving of not less than Php 1 billion pesos (or USD 20 million) can be achieve.

2.5. Energy Pricing

Generally, energy pricing is market-based (oil pricing is deregulated under the Philippine Oil Deregulation Law, for example). However, the pricing mechanism for electricity tariffs in the Philippines is controlled by the government (Energy Regulatory Commission—ERC).

In the transport sector, the almost daily increases in the price of transport fuel (gasoline and diesel) require vehicle owners, fleet operators and other business sectors to open up their options for the application of energy conservation measures—carpooling, stopping of long engine idling, regular maintenance, and trip-scheduling, among others. Residential, commercial and industrial sectors opted for the energy efficient lighting system, such as compact fluorescent lamps and slim-type fluorescent lamps. The introduction of the Yellow

Label Tag for refrigerators and freezers and air conditioners also helps in the promotion of the government's energy efficiency and conservation program.

2.6. Other Efforts for Energy Efficiency Improvements

2.6.1. Cooperation with Non-Government Organisations

Cooperation with non-governmental organisations is limited to capacity-building through seminars and workshops on energy efficiency and conservation. The DOE cooperates in some major EE&C awareness raising program campaign with the Energy Practitioners Association of the Philippines (ENPAP).

2.6.2. Cooperation through Bilateral, Regional and Multilateral Schemes

ASEAN Regional Cooperation efforts focus on the ASEAN-Promotion of Energy Efficiency and Conservation (ASEAN-PROMEEC) cooperation initiative. It includes the ASEAN Award for Energy Management for major Buildings and Industries, The ASEAN Award for Best Competition in Buildings, ASEAN Energy Manager Accreditation System (AEMAS), and ASEAN Labelling Program.

Other cooperation were established between the DOE and JICA on the Development Study of Energy Efficiency and Conservation for the Philippines as well as technical cooperation between the DOE and the UNIDO-GEF on Philippine Industrial Energy Efficiency Project.

2.6.3. Other Cooperation/Efforts for Energy Efficiency Improvements

The Philippines is a member of the Association of Southeast Asian Nations (ASEAN) and is involved in various working groups, including the Energy Efficiency and Renewable Energy Network. Moreover, the Philippines is designated as a lead economy for the working group on biofuels for transport and other uses in the EAS-Energy Cooperation Task Force (ECTF).

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