

# 2008 ENERGY SECTOR ACCOMPLISHMENT REPORT

The Department of Energy (DOE) has anchored its policy and program directions to address the formidable challenge of ensuring the country's energy security. This is in the light of the recent spikes and downturn in oil prices prompting the energy sector to seek for viable alternatives to oil. While largely, oil remains the primary fuel to feed the rising world energy demand, doubts have been cast on the sustainability of oil production as the world reaches the so-called looming peak oil state. Oil reserves are seen gradually depleting and this has caused economies to be more innovative in exploring their own indigenous sources and some are even looking beyond their shores for alternative solutions.

## **INCREASE RESOURCES OF INDIGENOUS FOSSIL FUELS**

### Oil and Gas

- One of the most significant strides in the local oil industry is the entry of two foreign investors-namely the Exxon Mobil for Sulu Sea exploration and Blade Petroleum for Cadlao Block, Northwest Palawan.
- A total of six petroleum service contracts have been awarded recently through the Philippine Energy Contracting Round scheme. The contracts that cover areas located in the basins of Cagayan, Agusan-Davao, Visayas and Central Luzon will bring in about US\$ 88 million in investments.
- Oil production from the Galoc Field commenced in October 2008 which will provide around 20,000 barrels a day for the first 90 days of its commercial operation. This translates to 6 percent of the country's daily oil demand.
- Six exploration wells were likewise drilled in 2008, including two oil discoveries in Yakal-1 and Tindao-1 wells located in offshore northwest Palawan.



### Coal

- Four Coal Operating Contracts have been awarded to help boost the development of local coal resources. These contracts are located in Calatrava, Negros Occidental; Bayawan, Negros Oriental; Danao City, Cebu; and Siay, Zamboanga Sibugay. The DOE likewise issued 20 small-scale coal-mining permits (SSCMP) mostly in Zamboanga.
- Total production of local coal has reached 3.95 million metric tons translated to about PhP 50 billion or US\$ 1.2 billion in foreign exchange savings.



## **AGGRESSIVELY DEVELOP RENEWABLE ENERGY**

The landmark accomplishment of the year is the passage of Republic Act 9513 or the Renewable Energy Act of 2008, which is expected to spur investments in the renewable energy sector.

### Geothermal

- The Philippines remains to be the second largest geothermal producer for power generation in the world with total installed capacity of 2,027 MW.
- Four geothermal service contracts were signed and awarded for the exploration and development of Biliran Province; Amacan, Compostela Valley; Mabini, Batangas and Kalinga, Kalinga Province. With the development of these areas for power generation, it is expected to generate an additional capacity of 160 MW with an estimated initial five-year investment of US\$ 29.78 million.



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## Wind Energy

- The country remains the top wind producer in Southeast Asia with our 25-MW wind turbines located in Bangui, Ilocos Norte. The recent addition of 8 MW commissioned in August 2008 brought the country's installed capacity of wind power to 33 MW.



## Solar Energy

- The 1-MW grid-connected centralized solar photovoltaic power plant in Cagayan de Oro City is one of the largest in the region. Off-grid areas in the countryside were also lit up with solar photo-voltaic installations which to date number to about 42,531 units nationwide.

## Hydro Energy

- The country has a total installed capacity of 3,289 MW of hydropower energy. Recently, the DOE has issued five mini-hydro operating contracts with total capacity of 13.5 MW and 17 reconnaissance permits. It is also monitoring the operation of 21 existing mini-hydro projects, as well as the construction of five mini-hydros.

## Biomass Energy

- The one-megawatt La Suerte Rice Hull Cogeneration Plant in San Manuel, Isabela were commissioned in April 2008 to provide



environment-friendly energy resources. In the pipeline are seven biomass projects which have been endorsed for BOI registration.

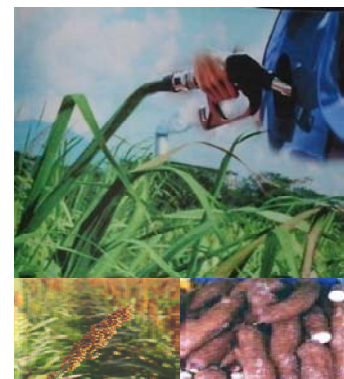
## **INCREASE USE OF ALTERNATIVE FUELS**

### Biodiesel

- Actual biodiesel production capacity of 64.5 million liters was realized through the present eleven accredited manufacturers all over the country, namely: Chemrez Inc., Senbel Fine Chemicals, Romtron Phils. Inc., Pure Essence International Inc., Freyvonne Milling Services, Golden Asian Oil International Inc., Mt. Holly Coco Industrial Company Limited, Rasza Agro Produce Corporation, Bio-energy Corp., Tantuco Enterprises and Lipi Tech, Inc.

### Bioethanol

- Actual production of local ethanol from Leyte Agri Corp. reached about 800 thousand liters. Under construction is the San Carlos Bioenergy Project with a capacity of 30 million liters per year and will start commercial operations by first quarter 2009. And while the mandatory 5.0 percent ethanol blend still takes effect in February 2009, a voluntary 10 percent blending or E10 is now available in 273 gasoline stations nationwide (120 Seaoil, 107 Shell, 14 Petron, 22 Chevron and 10 Flying V). To date, there are also 8 projects in the pipeline which are expected to bring in



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total production capacity of 316 million liters.

### Auto-LPG

- There are now about 14,000 converted vehicles running on LPG and 165 Auto-LPG dispensing stations operating nationwide. To ensure the safety and security of the riding public, the compliance of operators to existing auto-LPG Philippine National Standards is strictly monitored by the DOE and other concerned agencies, such as (1) DPNS 04:2006 – Road Vehicles/Automotive LPG Components; and (2) DPNS/EPNS UNECE 67:2006 – Motor Vehicles Using LPG in the Propulsion System.

### Compressed Natural Gas (CNG)

- There are 24 CNG-fed buses plying along the Batangas and Laguna to Manila routes. The commercial operation of the CNG mother station in Tabangao, Batangas and the daughter refilling station in Biñan, Laguna in April 2008 jumpstarted the use of CNG in the transport sector.



### **STRENGTHEN ENERGY EFFICIENCY AND CONSERVATION PROGRAM**

- The need to change the way we use energy is one of the fundamental steps in enhancing our quest for energy security. Our efforts in instituting energy efficiency and conservation measures include activities such as energy audits in industrial and commercial establishments

which yielded fuel displacement of 2.00 million liters of oil equivalent and translated to PhP 50 million savings for 2008.

- The country likewise realized fuel displacement of almost 90.00 million liters of oil equivalent by the end of 2008 which translates to PhP 2.70 billion through the Recognition Award Programs such as the Don Emilio Abello Efficiency Awards.
- On the other hand, the Government Energy Management Program contributed 38.9 MMLOE fuel displacement and savings of PhP 1.2 billion for the period of September 2005.
- As part of advocacy under the Philippine Efficient Lighting Market Transformation Project, the DOE signed a Memorandum of Agreement with the DILG and DPWH for the implementation of the following guidelines: (1) Energy Conserving Design of Buildings; (2) Efficient Lighting; and, (3) Roadway Lighting.

### **ENSURE SUSTAINABLE AND RELIABLE SUPPLY OF ELECTRICITY**

#### Power Development

##### **Power Generation Mix**

- The country's power generation mix grew by 4.6 percent from 56,784 gigawatt-hours in 2006 to 59,612 gigawatt-hours in 2007.
- The main bulk of the country's power needs was supplied by natural gas and coal-fired power plants.
- Natural gas-fired power plants increased its share from 29 to 32 percent in 2007 while generation from coal-fired power plants was the second biggest source in 2007 posting a 28 percent share.

##### **Power Sector Situationer (Generation & Transmission)**

- As of December 2008, the country's total installed capacity stood at 14,739

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MW of which 13,022 MW is dependable: 9,858 MW in Luzon, 1,482 MW in Visayas and 1,682 MW in Mindanao.

- In terms of capacity mix, coal registered the biggest share with 29 percent followed by hydro at 22 percent, natural gas at 19 percent, geothermal at 13 percent, gas turbine at 7 percent, diesel at 5 percent and oil thermal at 4 percent.
- Wind and solar made up less than 1 percent of the total capacity.

### ***Luzon Supply Situation and Demand Projection***

- Luzon's dependable capacity is 9,858 MW with coal dominating the capacity mix with 31 percent share followed by natural gas (26 percent), hydro (21 percent), oil thermal (7 percent), gas turbine (6 percent), both geothermal and diesel (5 percent) each and wind (less than 1 percent).
- The critical period is seen to begin in 2010 with a shortfall of 51 MW as a result of the scheduled retirement of two power plants, namely: the 30 MW Hopewell gas turbine in 2009 and 645.83 MW Malaya Thermal in 2010.
- There is a projected 4.4 percent annual growth rate in electricity demand from 6,925 MW in 2008 to 10,208 MW in 2017.
- Completed the San Manuel-Concepcion-Mexico 230kV Transmission Line Project in October 2008. The project increases the capacity of the transmission corridor of the power generation of hydroelectric plants in North Luzon.
- Completed the Concepcion-Clark 230kV Transmission Line Project (Stage 1) in August 2008. The project provides reliable facilities in serving the power requirements of Texas Instruments in Clark.
- Energization of a total of 230 MVA additional substation capacity at

various substations needed to meet the growing demand.

### ***Capacity Addition***

- The committed projects include Northwind Power Phase II commissioned in August 2008, the 40.2 MW Makban Unit 6 to come on stream by 2009 and the 600-MW coal-fired GN Power by 2011.
- A total of 3,000-MW indicative capacities will be required for the private sector to put up until 2014 to meet the grid's projected electricity demand.

### ***Visayas Supply Situation and Demand Projection***

- Dependable capacity stood at 1,482 MW with the supply mix composed of the following: geothermal (57 percent), oil (31 percent), coal (10 percent), and hydro (1 percent). The grid covers five islands interconnected via transmission lines that include: 440 MW Leyte-Luzon, 400-MW Leyte-Cebu, 100-MW Leyte-Bohol, 200 MW Cebu-Negros and 100 MW Negros-Panay.
- The electricity demand in Visayas is seen to increase at an annual average of 4.6 percent. Peak demand in 2008 is estimated at 1,177 MW reaching 1,770 MW in 2017.
- While the system reserve in Visayas grid shall experience a shortfall starting 2009 with a deficit of 25 MW, the current capacity can still cover the peak demand for that period.
- Beginning 2013, the Visayas grid becomes critical with the retirement of the 48-MW Cebu Land-Based Gas Turbine (LBGT) in 2011.
- Completed the Negros-Cebu Interconnection Upgrading Project in August 2008. The project aims to increase the power transfer capability of the existing facilities interconnecting the Negros and Cebu islands, thereby enhancing the reliability and stability of



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the Visayas grid and the same time optimizing the utilization of indigenous power coming from Leyte.

- Energization of a total of 230 MVA additional substation capacity at various substations needed to meet the growing demand.

### ➤ **Capacity Addition**

- The committed capacities of 332 MW consist of the following land-based gas turbine (LBGT): 12-MW Northern Negros geothermal power plant by 2009, 100 MW DMCI coal-fired plant and 100 MW Nasulo geothermal power plant by 2010, and the 200 MW KEPCO coal fired by 2011.
- Starting 2009-2017, a total of 500 MW indicative capacities will be needed to address the shortfall.

### **Mindanao Supply Situation and Demand Projection**

- Mindanao's dependable capacity is 1,682 MW with hydropower contributing the leading share of 54 percent, diesel (28 percent), coal (12 percent), geothermal (6 percent) and solar (1 percent).
- With thinning reserve margin, the critical period starts in 2011. The electricity demand in Mindanao is seen to increase at an annual average of 4.3 percent.
- Peak demand in 2008 is estimated to increase from 1,325 MW to 1,932 MW in 2017.
- Energization of a total of 230 MVA additional substation capacity at various substations needed to meet the growing demand.

### ➤ **Capacity Addition**

- To come on stream are the total committed capacities of 100 MW: these are the 42-MW Sibulan hydro plant (2009), 50-MW Mindanao geothermal III (2010)

and 8-MW Cabulig hydro plant (2010).

- A total of 600 MW indicative capacities will be required up to 2014 to meet the rising demand in the region.

### **Implement Power Sector Reforms**

#### ***Privatization of NPC Assets and TransCo Concessionaire***

- As of December 2008, the government has successfully bid out more than 70 percent of generating capacity in Luzon and the Visayas grids (the level required under the EPIRA, and subject to determination by the ERC) bring us closer to open access and retail competition. This includes the successful bidding for the Tiwi-Makban package in July, the Panay-Bohol plant package in November and the Amlan plant in December. The TransCo concession was awarded to the National Grid Corporation of the Philippines. The TransCo Franchise Law (R.A. 9511) was enacted on 01 December 2008, and became effective on 20 December 2008.

#### ***Operation of Wholesale Electricity Spot Market (WESM) in Luzon***

- Peak demand in Luzon reached 6,681 MW in June 2008 representing an increase of 1.4 percent compared to the May 2007 peak demand of 6,590 MW. Historically, May is the peak month in Luzon, however, as a result of the early typhoons and torrential rains encountered by the country during that month, there was no increase in peak demand in May 2008 but was rather moved to June 2008.
- In terms of energy volume, the transacted volume in the market increased by 2.7 percent to 41,120 GWh in comparison to 4,045 GWh for 2007.

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- Significant improvement in energy offers was observed as monthly average energy offers increased by 8.8 percent to 5,990 MW in comparison to the 2007 monthly average energy offer of 5,507 MW.
- The monthly average spot market volume decreased to 14 percent in 2008 as compared to 15 percent in 2007. The total spot market energy volume for 2008 totaled 5,739 GWh which is equivalent to a total spot market value of Php 22,537 million.
- As of December 2008, the cumulative average buying price in the market reduced by 6.4 percent to Php 4,770/MWh in comparison to December 2007 cumulative average buying price of Php 5,098/MWh.
- In terms of monthly average energy contribution for 2008, natural gas plants contributed the highest at 45.3 percent followed by coal plants at 28.8 percent. On the other hand, hydropower plants contributed at 12.5 percent followed by geothermal plants at 10.3 percent, oil-based plants contributed at 2.9 percent and wind energy plant contributed at 0.1 percent.

### ***Creation of Technical Working Group to Lower Power Rates***

- The country has institutionalized the power sector multi-stakeholders' dialogue resulting in the reduction of Php 1.03 per kilowatt hour for high-load economic zone locators and the lowering of power rates in four economic zones, the Cavite Economic Processing Zone (CEPZA), Mactan Economic Processing Zone (MEPZA), Subic Clark Export Processing Zone (SCEPZA) and Baguio City Economic Zone (BCEZ).

### ***Rural Electrification***

- As of December 2008, about 40,993<sup>1</sup> barangays out of 41,980 have been energized bringing the barangay electrification level to 97.51 percent. Electricity access was also extended to some 1,066 *sitios* and *puroks* nationwide.
- Together with the National Electrification Administration, the “*Countdown to the 8<sup>th</sup> Million Consumer Connection*” was launched in Iloilo on 05 June 2008. Upon meeting this milestone, 69 percent of the total consumers were served all over the country, out of the potential 11.58 million or an increase of 2 percent from last year's level of 67 percent.

### ***PROMOTE CONSUMER WELFARE AND FAIR BUSINESS PRACTICES***

#### **Downstream Oil Industry**

The DOE, together with the Presidential Task Force on the Security of Energy Facilities and Enforcement of Energy Laws (PTF-SEFEELS) implemented the strict monitoring of the following activities:

- Inspection of LPG and gasoline stations, as well as refineries and bulk plants to check compliance with quality standards of petroleum products and facilities
- Ensuring security of vital energy activities such as on-going oil exploration activities particularly the Malampaya field in close coordination with the Armed Forces of the Philippines.
- Prevention of the destruction of power transmission lines in Mindanao by mobilizing community stakeholders

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<sup>1</sup> Excluding NEA figures.

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- and re-activating two special CAFGU companies.
- Regular conduct of the multi-stakeholders' dialogue to avert nationwide transport strikes which could disrupt public order.
- Formulation of quality standards for products which facilitated the introduction of E10 now available ahead of the 2009 mandate as earlier mentioned.
- Coordination with the Bureau of Customs for the use of marker systems in petroleum products to deter oil smuggling.

### ***DIVERSIFY LONG-TERM ENERGY OPTION***

#### **Nuclear Energy**

- As part of the long-term nuclear power development program, a Task Force on Nuclear Power Program was instituted by DOE with the primary objective of coming up with a Nuclear Development Program for the country.
- Early in January 2008, the International Atomic Energy Agency (IAEA) Mission visited the country to help in assessing the possibility of rehabilitating the mothballed Bataan Nuclear Power Plant in Morong, Bataan or the putting-up of a new one. Among the recommendations include the need for an extensive review and evaluation of the BNPP particularly its structure and facilities.

### ***PROMOTE ENVIRONMENTAL SUSTAINABILITY***

#### **Presidential Task Force on Climate Change (PTFCC)**

- Formulation of "Philippine Response, Strategic Framework and Action Plan on Climate Change".
- Conduct of regular tri-media campaigns to promote public awareness on environmental protection

- Coordination with the Department of Education on integrating climate concepts in the curriculum.

### ***INSTITUTIONALIZE SOCIAL MOBILIZATION IN ALL ENERGY INITIATIVES***

- To harness multi-stakeholder cooperation and support to the country's energy agenda, the DOE spearheaded the conduct of the first-ever Philippine Energy Summit, which assembled over 3,000 representatives from all sectors of society. With *\$100 per barrel: crisis or an opportunity* as theme, this event came up with immediate, short, medium and long term measures to mitigate the impacts of soaring world oil prices.
- As a concrete result, a private sector-led initiative known as the SWITCH movement launched in mid-July this year, demonstrated how ordinary Filipinos and specific sectors of society can collectively contribute in addressing the consequences of high oil prices and climate change. The movement has five areas of focus, namely: (1) from inefficient to efficient energy practices; (2) from petroleum-based fuels to alternative fuels and cleaner technologies in the transport sector; (3) from kerosene to renewable energy sources for lighting; (4) from fossil fuel-based technologies to renewable energy technologies in power generation; and (5) from centralized energy planning to more participative energy planning.
- Nationwide public consultation series on the draft Philippine Energy Plan 2008-2030 which gathered comments from various stakeholders from both government and private sector and generated policy and program recommendations to address local energy issues and concerns were conducted during the second half of the year.