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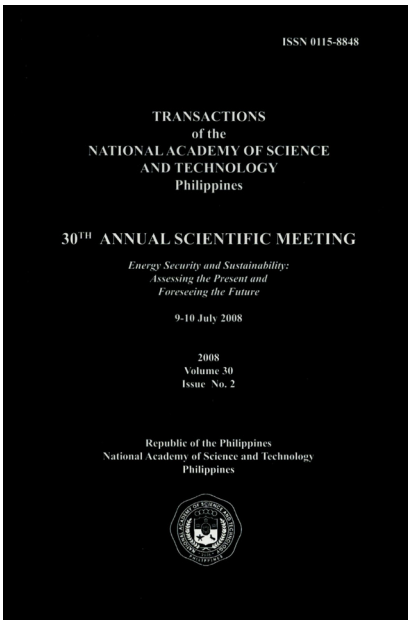

Philippine Energy Security Plan

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Republic of the Philippines

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Keynote Speech

PHILIPPINE ENERGY SECURITY PLAN

Angelo T. Reyes
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Republic of the Philippines

Thank you Madam Chairman, Secretary Alabastro, for that kind introduction and for making me appear more knowledgeable than I actually am. I only wish my wife Tessie could have heard your introduction so she would realize her low opinion of me is not universally shared. I suspect, though that there are a few husbands here today who share the experience of being frequently assured by their wives that, "You don't know anything!" Meron ba?

Anyway, more importantly, I must thank you, Secretary Alabastro. And your colleagues for the very important work you do at the Department of Science and Technology. As everyone should be aware, the DOST is a crucial and essential resource for those of us who labor in the energy sector. They are actually the ones who "know" things.

Allow me also to thank our host for the warm reception and the special arrangements made to ensure the success of this year's annual scientific meeting. I want also to extend my warmest greetings to all the participants here for giving utmost importance to this annual event. Thank you for being here. I believe your presence is an indication of your recognition that, whether we are in the private sector, academia, the non-profit organizations, or the government, we all share a responsibility to help develop real and long-term solutions to the country's most significant challenges, particularly with respect to energy which, as you know, underlies many other challenges.

This year's event, with the theme *"Energy Security and Sustainability: Assessing the Present and Foreseeing the Future,"* comes at a most relevant time since issues related to increasing energy demand, trailing supply, skyrocketing prices and apparently inadequate investments in the energy sector remain a matter of global concern.

Upon my assumption of the energy post in July 2007, I was directed by the President to prepare a 20-year Philippine Energy Plan. Incidentally, I was also entrusted with the stewardship of the Presidential Task Force on Climate Change, which is an indication of the realization that energy policy is intimately related to environmental policy. I know everyone here understands this. The energy choices we make affect not only our economic growth and development but also the kind of environment we will bequeath to our children. We need to

be constantly conscious of this. The updates 2007 Philippine Energy Plan (PEP) affirms the government commitment to pursue an energy independence agenda through a five-point reform package. The energy sector's agenda focuses on reaching a sustainable 60.0 percent energy self-sufficiency status by 2010 and creating a globally competitive energy sector.

I will be presenting you now a picture of the current state of the Philippine Energy Sector and a roadmap of where we ant to go in terms of the over-all energy program and power sector development.

The plans and programs I am presenting to you today are based on the outcomes of the Philippine Energy Summit last February and the Department of Energy's Strategic Planning Workshop, both of which were anchored on ensuring energy supply security, managing energy demand responsibly, and achieving sustainable development goals.

My presentation for today will run as follows:

First will be a brief review of the role of energy in economic development.

Next will be a picture of where we are now in terms of vital energy indicators, such as the mix of our energy supply resources, and where we stand in relation to significant milestones in sectoral energy development.

Next, I will present what we currently feel is the desirable energy state for the country. This will be shown in terms of strategic directions, plans and programs.

Finally, I will focus on the power sector development plan of the country. This will highlight the current power supply and demand situation and update you on the ongoing power market reforms.

We already know that energy is a crucial commodity without which there can be no progress and prosperity.

Energy is indispensable to our economic growth and to our nation's drive toward global competitiveness.

Universal access to energy is critical in helping reduce poverty and improve social equity.

And, finally, our energy choices reflect our environmental priorities.

Let me give you an overview of our current energy situation.

Primary Energy Mix

The primary energy mix shows the shares of various energy sources in the country's day to day energy requirements for both power and non-power use (like transport). In 2006, the combined total amount of energy in our energy mix reached 38.74 million tons of oil equivalent (MTOE).

Imported oil remained as our major source of energy, accounting for 34.1 percent share in the supply mix. We have, however, decreased our use of imported oil slightly, supply dropping from13.94 MTOE in 2005 to 13.20

MTOE in 2006.

The share of natural gas in the supply mix stood at 6.5 percent, which translates to 2.53 MTOE. Almost all of this comes from Malampaya Gas Field Production.

The share of coal reached 13.7 percent or 5.32 MTOE, the bulk of which is sourced through importation.

Geothermal production increased by 5.7 percent from its 2005 level of 8.52 MTOE and accounted for 23.2 percent share in the supply mix.

Hydro's share in the mix improved form 2.09 MTOE in 2005 to 2.47 MTOE in 2006, equivalent to a 6.4 percent share in the mix.

Supply from other renewable energy sources – fuelwood, charcoal, biomass – reached 5.77 MTOE, of which fuelwood accounted for a 63.6 percent share.

Viewed in terms of the country's self-sufficiency level, the share of indigenous energy stood at 55.4 percent in 2006. The country's self sufficiency level in 2007 is expected to increase very slightly to 55.7 percent, with the share of imported oil and coal still accounting for a quite significant 44.3 percent in the supply mix.

Potentials for Energy Sources

To address our current dependence on expensive energy imports, we are pursuing a strong commitment to the development of renewable energy resources. As a country located in the tropics, renewable energy resources, as you well know, abound in the Philippines.

In fact, we are the world's second largest producer of geothermal steam, and we can boast of 4,406 megawatts of geothermal reserves.

For wind resources, a study conducted in 2003 showed that the country has a total of 76,600 megawatts of potential installed capacity from wind energy resources. We have the biggest potential for wind energy resources in Southeast Asia.

For hydro, the country's 888 mini-hydro sites have a potential capacity of 1,784 megawatts.

For energy from the sun, solar radiation nationwide averages between 5.0 to 5.1 kilowatts per square meter per day. Based on our studies, more than 70 percent of the country's land area can harness solar energy resources.

Biomass energy from agricultural wastes is also available. Ricehull has the potential for producing 277 megawatts of power and bagasse has the potential for 236 megawatts.

Lastly, based on some technical studies, we have ocean energy potential equivalent to 170,000 megawatts power. This figure included both ocean thermal energy and marine current energy resources.

Based on these resource potentials, let me now show you how much we

have achieved in terms of growth in our use of renewable energy. Topping the list is hydropower which now generates 3,367 MW of power. This is followed by geothermal which produces 25.3 MW of power, biomass produces 20.9 MW, and solar energy produces 5.2 MW.

Alternative Fuels

Alternative fuels for mobile applications consist of biofuels, compressed natural gas and auto-LPG. These help cushion the impact of the high prices of petroleum products and also help reduce pollution emissions. Our program on biofuels was given impetus with the signing of Republic Act 9367, or the Biofuels Act of 2006, in January 2007. The law mandates the use of biofuels in the transport sector and establishes the Philippine Biofuel Program to improve the investment climate for the production, distribution and utilization of biodiesel and bioethanol.

To date, current biodiesel production capacity is pegged at 287 million liters as a result of a steady increase in infrastructure support. Presently, we have nine DOE-accredited manufacturers all over the country and the accreditation of three more is on-going. In 2007, the mandatory 1.0 percent biodiesel blend displaced a total of 62 million liters of diesel consumption, which is equivalent to PhP 2 billion in foreign exchange savings.

For bioethanol, we now have a voluntary 10.0 percent blending and supplies of 10 percent bioethanol are available in 105 Seaoil stations nationwide and 39 Shell Stations in Manila. More local investments in the production of bioethanol are currently being made. As of April 2008, five bioethanol projects were endorsed by DOE and registered with the Board of Investments (BOI) under the existing Investments Priorities Plan (IPP), four bioethanol projects were undergoing BOI review while one project was endorsed to the Philippine Economic Zone Authority (PEZA). The total estimated annual capacity of the aforementioned projects is about 467.8 million liters.

As to the use of auto LPG, there are currently 12,000 converted vehicles running and some 19 government-accredited conversion shops operating nationwide. The compliance by these service providers to existing auto-LPG standards is monitored closely by the Department of Energy.

Meanwhile, the commercial operation of the CNG mother station in Tabangao, Batangas and the daughter refilling station in Biñan, Laguna inaugurated in October 2007 by the President jumpstarted the use of CNG in the transport sector. Currently, there are 22 buses plying the Batangas and Laguna to Manila routes. As a promotional campaign, the DOE launched its *Libreng Sakay sa NGV Program* from March 24 to April 6 with 11 of these buses serving the riding public from Batangas/Laguna to either Cubao of the Mall of Asia. About 6,900 commuters availed of the said program.

Activities in the Downstream Oil Sector

The downstream oil industry covers activities that include the transport of crude oil from local production sites, the importation of crude oil, the processing of crude in local refineries and the storing of its intermediate and refined products, the distribution of products to the different bulk plants/depots or to end-users through tankers/barges and pipeline (from Shell/Caltex in Batangas to Manila), and the transport of products from depots to retail outlets.

There are two refineries in the country – that of Petron in Bataan and Shell in Batangas. In addition, there are other bulk suppliers who rely on direct importation of finished products, namely: Chevron, PTT Philippines (Petroleum Authority of Thailand PTT), Total Phils (France), Petronas (Malaysia), Pryce Gases, Liquigaz (Netherlands), Unioil/Oilink, and Seaoil Philippines.

To date, the industry has a total of 861 players in the various downstream activities as shown in this slide.

Production/Demand Mix

Oil remains a major energy source for the country, especially for the transport sector which accounts for over 60.0 percent of the oil demand.

Among the petroleum products, diesel has the biggest share of the market (38.0 percent) as this is used by buses, trucks, jeepneys, private vehicles, and marine vehicles.

Premium gasoline constitutes almost 2/3 of total gasoline demand.

Regular gasoline is mainly used for motorcycles/tricycles, farm implements, and fishing vessels.

AVTurbo or jet fuel is in demand for transport between the islands and across countries.

Kerosene is mainly used for lighting and cooking in remote areas.

LPG constituted 11.0 percent of the total demand for petroleum in 2007.

On a regional basis, the National Capital Region expectedly accounted for the biggest oil demand, using up to 42.2 percent share of our total oil consumption. This was followed by North Luzon at 18 percent, South Luzon at 15 percent, Visayas at 13 percent and Mindanao at 12 percent. The total Luzon share is about 75.0 percent.

More than 84.0 percent of the total market is credited to the combined sales of Petron, Chevron and Shell. The other industry players got the remaining 16.0 percent of the market.

As for LPG, the country remains a net importer of this fuel. Imports account for 76.0 percent of domestic requirements. The total Luzon share in LPG use is about 80.0 percent, followed by Visayas at 11.0 percent and Mindanao at 8.0 percent. In terms of market share, the new players combined

outscored the big oil companies in this sector, supplying more than one-third of LPG demand.

We have set our sights on what we want to achieve in the energy sector within a reasonable period. I will now show you the strategic actions that we have thus far come up with to achieve our desired energy state.

Strategic Directions

To achieve the desired energy state, the plans and programs of the DOE will be guided along the following major strategic directions.

ENSURE CONSISTENT, COMPREHENSIVE, RESPONSIVE AND INTEGRATED ENERGY POLICY

As a vital ingredient to economic development, energy policies should take into consideration the needs and requirements of other sectors in the economy, such as transportation and communication, public works like sea and air ports and highways and food production.

IDENTIFY AND ACHIEVE THE OPTIMAL (OR BEST) ENERGY MIX

Putting in place appropriate policy and program interventions and assuming their successful implementation, we hope to attain an energy mix that will ensure stable, secure, sustainable, environment-friendly and reasonably-priced energy.

PROMOTE GREEN AND CLEAN ENERGY

Another strategic direction is to take into account the long-term effects of energy development on global warming. The problem of climate change gives compelling reason for the energy sector to develop cleaner energy alternatives and employ clean technologies.

INSTITUTIONALIZE SOCIAL MOBILIZATION AND MONITORING MECHANISMS

The fourth strategic direction is to harness the cooperation of all key stakeholders in carrying out energy programs aimed at promoting energy efficiency and conservation and energy security. This is important since energy development impacts on all other sectors of the economy and the society. Given the energy constraints that we face as a nation, behavior and lifestyles changes will undoubtedly be required of individuals, organizations, and communities. This underscores the vital role of social mobilization efforts in eliciting personal commitments and in building the necessary public support behind the country's energy agenda.

Policy Thrusts

In terms of policy support, the energy family will work towards the following policy objectives:

ENSURE STABLE AND QUALITY SUPPLY OF ENERGY THROUGH:

- Intensifying the development and use of renewable energy and environment-friendly alternative resources and technologies;
- Accelerating exploration and development of indigenous oil, gas, and coal resources;
- Promoting energy efficiency and conservation programs; and
- Maintaining a competitive energy investment climate.

"Make energy prices reasonable and affordable; and implement social mobilization and monitoring mechanisms."

Strategic Actions: Alternative and Renewable Energy

In line with the strategic directions on clean and green energy, the DOE will promote the use of renewable energy and alternative fuels to increase their contribution to the overall energy mix.

Seen as a major action which the DOE has to work on intensively with concerned stakeholders is the immediate passage of the renewable energy bill.

On the other hand, the implementation of the National Biofuels Act and the Natural Gas Vehicle Program for Public Transport (NGVPPT) is expected to reduce our dependence on imported oil and impact on the country's economic performance through savings in fuel oil importations.

Under the National Biofuels Program, the DOE will issue guidelines for the registration and accreditation of biofuels producers, as well as initiate the conduct of studies on potential feedstocks for biofuels. Our PNOC-Alternative Fuels Corporation will aim to take the lead in the Jatropha research and development efforts in the ASEAN.

On the other hand, our NGVPPT Program envisions about 5,000 buses running on CNG by 2025. And by 2030, all of Batangas-Laguna-Manila buses will use CNG.

To promote investment opportunities in the renewable and alternative energy sources, a one-stop-shop for sustainable energy projects will be created. This effort will involve the codification of renewable energy standards, the creation of a renewable energy and alternative energy knowledge center, and the development of a monitoring and auditing system in cooperation with civil society groups.

Oil, Gas, Coal

The DOE will continue to promote investments in the upstream sector through the Philippine Energy contracting rounds. Plan are underway for the review of the PECR Guidelines to ensure its effectiveness in investment promotion.

We are also pushing for more investments to maximize the use of our local energy resources like oil, gas and coal. This can provide additional development income for certain local communities

Some of the strategies that we believe will facilitate the flow of foreign investments into the Philippine Petroleum sector include (1) promoting collaborative public-private sector partnerships; (2) streamlining the licensing process to facilitate the issuance of approvals, permits, certificates and clearances for the work programs of service contractors; (3) embarking on an intensive information, education and communication (IEC) campaign to improve the social acceptability of energy exploration and development activities; and (4) the putting up of a one-stop-shop to assist petroleum investors in addressing concerns such as government regulatory agency approvals, coordination with the local government units in the host communities, and dealing with environmentalists, NGOs and other interest groups.

Natural Gas

To expand the development of the Philippine natural gas industry, the DOE is pushing for the immediate passage of the downstream natural gas bill which will provide the impetus for the development of strategic infrastructure and boost the use of natural gas in both power and non-power applications. Furthermore, the DOE is promoting the establishment of a Philippine Natural Gas Institute which is intended to produce more local experts on natural gas exploitation and use.

Strategic Actions: Energy Efficiency and Conservation

Another major policy thrust of the government is its enhanced energy efficiency and conservation program. With pressing global issues such as high energy prices (with crude oil prices now hitting the 145 dollar mark) and understandable concerns for potentially catastrophic climate change, a massive program aimed at energy efficiency and conservation has to be immediately put into action and intensively promoted.

Thus the government, in close collaboration with the private sector, will continue to implement the national energy efficiency and conservation program, with sub-components as follows:

- Information, education and communication campaign;

- Government energy management program;
- Energy management program;
- Recognition awards system;
- Fuel economy promotion;
- Energy standards and equipment labeling program;
- Partnership/voluntary agreements; and
- Energy consumption monitoring of industrial, commercial and transport establishments.

An example of a priority program in this connection is the "Palit-ilaw" Program which encourages the use of compact fluorescent lamps or CFLs. The DOE is working for the calibrated phase-out of incandescent bulbs within one-year and their total replacement with more energy efficient CFLs.

Similarly, the DOE will develop, promulgate, and implement, together with the DTI-BPS, a minimum energy performance standard that will lead to the eventual phase out of the least efficient lamps in the market by 2010.

The DOE, together with its partners in the private sector, non-government organizations, and the academe, is also working for the immediate passage of the Energy Conservation Bill. This is intended to institutionalize energy efficiency as a way of life for every Filipino.

Investment Options

Ensuring a stable and quality supply of energy is a paramount concern and we believe we can only achieve this by:

- Maintaining a competitive energy supply that meets the quality and safety standards of government;
- Providing a level playing field in the conduct of business; and
- Encouraging the entry of investments in energy marketing and distribution and energy infrastructure by putting in place market-based incentives.

Electricity Costs

To make our electricity prices reasonable and affordable, we have outlined the following thrusts:

- Pursue full privatization of the remaining generation assets of the National Power Corporation including the contracted energy outputs;
- Accelerate implementation of open access and retail competition, starting in the economic zones;
- Ensure better targeting of subsidies for the poor;
- Facilitate the attainment of industry competitiveness;
- Implement demand side management; and
- Intensify public sector involvement in the reform process.

Oil Prices

Of course, our current most urgent concern, which was also aired by almost all of the participants in the course of the recently-concluded Energy Summit, is the high oil prices. To mitigate the effects of high oil prices, we are undertaking both immediate and long term measures.

These measures include: (1) the use of oil tax revenues for pro-poor projects; (2) reviewing the taxation schemes for petroleum crude and its products; (3) providing discounts and subsidies to vulnerable sectors, such as the rural and urban poor, small fisher folk and farmers, for their basic needs like food, shelter, and education; and (4) eradicating "*kotong and kolorum*" in the transport sector.

Social Mobilization

As earlier mentioned, the need to mobilize the entire society toward the achievement of energy sector goals was highlighted during the recent energy summit. The issue raised is, how to generate and sustain public awareness and action on specific energy issues such as energy efficiency. The lack of adequate, readily-available information and a clear policy framework remain real obstacles to mobilizing the public.

The strategies that we believe will institutionalize social mobilization and monitoring mechanism in the energy sector include the strengthening of various stakeholders' participation in the planning, implementation, and monitoring of energy plans and programs through a convergent cross-sectoral platform. Primarily, the aim is to eventually develop a mind and behavior switch that will enable the various publics to conscientiously adopt the efficient use of energy as a way of life.

Power Development Plan

I will now go into the Department's perspective in terms of its power development plan.

The 2007 Power Development Plan (PDP) provides a comprehensive summary of current developments in the power sector. This plan takes into account current fiscal and macroeconomic challenges. It also takes into account some key factors such as the commercial operation of the WESM, the priority infrastructure projects in the "super regions", and the government's commitment to intensify global competitiveness through reasonable electricity rates.

With the sector's dynamic characteristics, industry players need to be guided along the policy and program direction toward the full implementation of the reform program that aims to establish a more effective, competitive, and

responsive electricity market.

The country's total installed capacity as of end-2007 is 15,937 MW. This level was 1.2 percent higher than the previous year's level of 15,619 MW. In tern\ms of capacity mix, fossil fuel-based plants remain the dominant source with coal topping the list and accounting for a 26.4 percent share or 4.177 MW. This is followed by oil with 22.7 percent share. In terms of indigenous energy resources, hydroelectric power provided the highest share with 20.6 percent, while natural gas and geothermal plants contributed 17.8 percent and 12.3 percent, respectively. Wind and solar power on the other hand contributed a mere 0.2 percent to the mix.

For 2006, the country's total dependable capacity was 13,186 MW or 86.0 percent of the 15,937 MW total installed power output. **Dependable capacity** is defined as the maximum output that a power plant can provide under adverse conditions for a specified period of time, taking into consideration the plant's wear and tear conditions. Wind-based plants can only provide approximately 36.0 percent of their maximum output. In the case of hydroelectric power plants, their operational capability is highly dependent on the availability of water. Thus, dependable capacity is expectedly high during the rainy season and low during the dry months.

In terms of transmission resources, TRANSCA now covers a total length of 20,236 kilometers (ckt-km) for the whole Philippines. TRANSCO also administers an aggregate substation capacity of 24,489 megavolt-ampere (MVA).

In terms of generation mix, natural gas has the highest share of 32 percent, followed by cal with 28 percent.

Objectives of Power Sector Reforms

Power sector reforms are intended to provide for more **competition in the generation sector.** One goal of developing a competitive electric power market is to create a permanent framework for private sector participation in the generation business. There are two major market-related reforms currently being implemented for the electric power industry. These are: (1) the establishment of the wholesale electricity spot market which provides a mechanism for power producers to make available their excess daily capacity to bulk power users and traders; and (2) the introduction of open access and retail competition in the electricity market, which will allow power producers to sell their power directly to consumers and develop a price-responsive retail market in the country. These reforms are expected to exert downward pressure on electricity prices.

The commercial operation of WESM started in Luzon on 26 June 2006. To date, 34 generators and 16 distribution utilities have participated in the market with 3,217,295 megawatt-hours of total volume traded. These included spot transactions and volumes covered by bilateral power supply contracts. At

this time, the Philippine Electricity Market Corporation (PEMC) is currently assessing and preparing for the launching of the Visayas WESM.

Total electrification of the country has always been one of the government's priority thrusts. The DOE is bent on meeting the 100 percent barangay electrification target by 2009. This will help alleviate poverty in the countryside and make way for improved labor productivity, living standards, health services, education and family life. In this connection, the government has institutionalized private sector participation (PSP) in rural and missionary areas through its qualified third party (QTP) program. These QTPs – as stipulated in the Electric Power Industry Reform Act (EPIRA) of 2001 – are accredited private sector parties who undertake to provide electricity services to unviable and remote areas that are not covered or reached by franchised distribution utilities.

Our barangay electrification level as of 31 March 2008 reached 96.69 percent with the energization o 40,590 barangays. That leaves only 1,390 barangays yet to be connected. The remaining barangays are targeted to be electrified by the end of 2009.

Power Sector Reforms Update

The era of open access and retail competition in the Philippine Electricity Industry has moved closer to realization with the formal approval by the Board of Power Sector Assets and Liabilities Management Corporation (PSALM) of the 2008 sale schedule for the remaining generation assets of the National Power Corporation. Given this schedule, it is expected that the privatization of at least 70 percent of NPC's generation assets will have been achieved by the end of 2008. This will remove one of the two remaining preconditions specified in the EPIRA law for the implementation of open access and retail competition.

PSALM is likewise stepping up the transfer of the management and control of at least 70 percent of the total energy output of power plants under contract with NPC to private IPP administrators. The appointment of such independent administrators is expected to accelerate by September 2008. Upon completion, this will remove the final obstacle to open access and retail competition.

The privatization of the transmission facilities of TRANSCO was also successfully bidded out last December 12, 2007.

Proposed Measures to Power Sector Challenges

One of the challenges to energy supply sufficiency is that the EPIRA no longer allows NPC to put up new power plants or incur new obligations with independent power producers (IPPs). This means that all new generating

plants must be built by the private sector. Among the measures that have been identified to expedite the process of setting up new power plants by the private sector are for distribution utilities to quickly firm up their power supply requirements and for the environmental review of prospective power plants to be done according to Philippine laws within a short period of time.

It is recognized of course that promoting the greater use of renewable energy in the power grid requires renewable energy projects to overcome the challenges of economic competitiveness and the intermittent and seasonal nature of such resources. To meet the challenge of removing barriers to entry in the renewable energy sector, the following measures have been identified:

- Accelerate passage of a renewable energy bill;
- Require distribution utilities to establish at least cost portfolio of power supply contracts that include renewable energy options; and
- Integrate environmental costs in the power rate regulation methods.

That was a long presentation. I would have wanted it to be shorter but I thought it important for the scientist and technology experts gathered here to be brought fully up to date on what is happening in the rapidly changing energy sector. I thought is important because I believe that your help is absolutely required for this country to meet the formidable challenge of producing enough energy at reasonable cost to allow us to achieve our developmental goals. Compounding this challenge is the need to meet our rapidly increasing energy demand in an environmentally responsible way.

I am confident, however, that with the support of a group such as this, we can build on the little successes we have thus far achieved and improve our chances to realize our desired future. I believe that it must be our scientists and engineers – not our politicians - who must come together and show the rest of us the way forward, what it is we must do for the good of this country. I believe it is you who the rest of the country must look to, to innovate and lead. For my part, I am fully prepared to follow.

Thank you all for allowing me to speak to you this morning.

Maraming salamat and Mabuhay!