

José Alberto Acevedo, Under Secretary for Electricity, Ministry of Energy, Mexico Decision-Making Support Committee for Mexico's Nuclear Power Program

Mr. Chairman, Members of the Board, Ladies and Gentlemen,

It gives me great pleasure to have been given the opportunity to attend the annual conference of the WNA as a speaker. A reasonable normative ideal for public policy is to organize an energy industry such that the country's development today does not occur at the expense of the future. In Mexico we are working to make sure that the current generation needs are met without compromising the ability of future generations to meet their own needs. Although Mexico and other countries that are generously endowed with natural resources would seem to have a nature-given advantage in economic development, some of the fastest growing economies are those with virtually no natural resources. With this in mind, Mexico's Ministry of Energy is working to shift electricity policy away from the current emphasis of evaluating least-cost alternatives for electricity generation, as mandated by Law¹, to evaluating alternative generating portfolios and strategies that will allow us to hedge some of the risks involved in over dependency on a single fuel or supplier.

Entering the 21st century, Mexico's energy sector is at a crossroads. Although our state-owned oil company, Petroleos Mexicanos (PEMEX) is currently the 9th largest integrated oil company in the world, and the third largest producer of crude oil², proved reserves are equivalent to only 10 years of production.³ There are still large unexplored areas, but it has been estimated that approximately 55% of the prospective resources are found in the deep waters of the Gulf of Mexico, for which larger capital investments will be needed.

It is within this uncertain future in our hydrocarbon industry that we have set our hopes to cope with the increasing needs of our electricity sector on fossil fuels. Within the next 10 years, we have estimated that Mexico's electricity demand will grow at a yearly average growth rate of 5%, followed by a growth of 4.1% for the period 2016-2026. In 2005, the composition of electricity generation capacity for public service (not including self-supply) was 46,534 MW, of which more than 65% was based on fossil fuels (fuel oil, diesel and natural gas). And, although for the current investment programme our dependency on fossil fuels will fall to 60%, our dependency on natural gas will increase to 48%.

This composition is based on policy decisions made in the mid 1990's when higher environmental standards were put

in place and low natural gas prices, available capacity in the natural gas network and combined cycle technology all added up to an increasing dependency on natural gas that made sense at the time. However, looking at forecasts of Mexico's natural gas balance, with a deficit of 1.7 bcf's of natural gas in the year 2014, it would seem that a fundamental shift in energy planning in Mexico is needed to ensure sustainability, incorporating into the analysis factors that have been overseen, such as environmental impacts, intergenerational equity and security of supply

For this purpose, in May 10th, Minister Fernando Canales created the Decision-Making Support Committee for Mexico's Nuclear Power Program. Coordinated by the Ministry of Energy (SENER), it is an interdisciplinary group made up of members of our electric utility, the Federal Electricity Commission (CFE), the Nuclear Regulatory Commission (CNSNS), the Nuclear Research Institute (ININ) and the Electricity Research Institute (IIE). In order to advance nuclear power development in the long run, incorporate a wider fuel policy agenda and meet the problems of radioactive waste in a way that it is acceptable to the general public, the Committee adopted a three line strategy.

First, a Subcommittee for Portfolio Diversification is working in developing objective criteria that will allow our electric utility to develop an energy portfolio that includes hitherto overlooked concepts related to national security, optimal risk related to fuel sources, price volatility, etc. Second, a Subcommittee for Additional Nuclear Capacity that is analysing the economics, the technical aspects of third generation reactors, nuclear safety and regulation, the nuclear fuel cycle and education and training for our nuclear workforce. Finally, a Subcommittee for Waste Management is working on the technical and political aspects to create the National Radioactive Waste Management Company.

As I mentioned in the beginning of my presentation, we have to be able to cope with increasing fuel costs and a reduction of domestic supply. For base load, important increases in coal-fired plant will also be needed given the growth in demand, but the role of nuclear power in the generation mix will necessarily come into play. Nuclear technology has evolved as operational experience has accumulated. State-of-the-art nuclear power plants are more efficient and safer than those that CFE has been operating successfully for the past fifteen years. Additionally, institutional capacity is available in Mexico, but we are dangerously close to losing

¹ Article 36Bis of the Public Service Electricity Act.

² Based on PIW 2004 Rankings, December 2005, Petroleum Intelligence Weekly

³ 2005 production levels and proved reserves in accordance with the definition under Rule 4.10(a) of Regulation S-X under the U.S. Securities Act of 1933

all the experience gained, as our ageing workforce is close to retirement. As the Director General of the IAEA, Dr. Mohamed ElBaradei commented in a meeting that was recently held in Mexico City, we pay for all the costs of nuclear energy that could be used for a much larger programme, but are only using it for two nuclear reactors.

In the past four months, the Committee has been working in an comprehensive document with a set of recommendations that will allow the new Mexican government that comes into office on December 1st to set the stage for a public debate, as there still remain uncertainties and unresolved issues for nuclear power in Mexico. There are concerns about safety, investment costs and waste disposal, and the industry is still fighting a legacy of fear about accidents and radiation, although recent media coverage has been largely positive. We believe that gaining public acceptance is necessary to embark in this endeavour, for which there must be open and factually-based information that the government will have to make available throughout the whole process.

Our findings so far state that a more diversified fuel mix will be made up of approximately 10,000 additional MWs of nuclear capacity. Although combined cycle technology will increase accordingly, it will do so at a lower pace. We will remain at the forefront of geothermal capacity, and the first steps towards a more comprehensive use of our renewable resources have already been taken, including a regulatory framework and the necessary monetary incentives.

At this stage, Mexico is looking into third generation reactors for additional nuclear capacity. The Committee has been evaluating the different technologies available, but we will open a bidding process that will ensure open competition and the best price available. Although the sites for this future power plants have not been determined yet, we estimate that our best case scenario will allow commercial operation of the first two new reactors in 2015 and 2016. If energy demand forecasts are correct, we will see additional nuclear capacity every three years until 2025.

However, a number of challenges still lie ahead. As I have already mentioned, although our institutional capacity is in place, we need to be able to foster knowledge transfer from our ageing workforce to a new generation of nuclear specialists and operators. Our Nuclear Regulatory Commission will need to grow accordingly, as there has been a stalemate in its growth since the mid 1980`s. But to this we need to work closely with the universities and the scientific community, as there has been a shortage of students interested in the nuclear field which has prompted the universities to close their graduate studies programmes. Without clear prospects in the job market to specialists, and ageing research installations, our programme has to incorporate the necessary budget and support of other government entities in order to be sustainable.

However, I do not see any reason why the nuclear industry should not have a promising future ahead of it. In Mexico we see that without nuclear energy it will not be possible to guarantee predictable and economic electricity production. Additionally, nuclear power also helps us to save the environment and mitigate the effects of climate change. But we have to work for to ensure nuclear's future. Both safety levels and the economics of the production of existing units must be improved to prove to the public that it is, and will continue to be, a reliable source of energy. This will require continuous investments in nuclear power, good housekeeping in the plants and high standards amongst the staff of CFE and the regulator.

Ladies and gentlemen, the renaissance of the nuclear industry provides an unprecedented good opportunity for all of us. Mexico's Ministry of Energy will continue increasing exchanges and cooperation with the world nuclear community, making joint efforts to improve the exchange of information and experiences. We are currently at a juncture, a technological evolution, a demographical challenge and ever increasing budget constraints, but we believe that the steps we are taking shall succeed in enhancing the role of nuclear power in our strategy for safe, clean, reliable energy.

Thank you for your attention.