

**A STUDY OF GOVERNMENT
REGULATIONS IN THE PHILIPPINES:
POWER GENERATION
AND DISTRIBUTION**

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*Wilfredo Nuqui**

I. INTRODUCTION AND OBJECTIVES

The traditional role of the state as provider, enabler, and regulator has changed all over the world. Many states, including the Philippines's, embraced economic liberalization in the 1980s and even more so in the 1990s. Policy changes affected the financial, production and utilities sectors.

Electric-power generation and distribution (EPGD) was most affected. EPGD is a traditional instrument of economic growth increasingly tapped to serve regional development, social equity, and other objectives. The deregulation of the EPGD sector will promote greater investment, economy, and increased private-sector participation under a competitive and healthy environment; simplification and procedural streamlining regulations will be valuable to investors.

According to the Office of Energy Affairs (OEA), installed power-generating capacity as of end 1991 was 6,790 megawatt-hours (MGH) distributed as follows:

	Installed capacity	% Utilization
UTILITY		
National Power Corporation		
Oil/Diesel*	3,112.20	36.30
Hydro	2,132.00	27.52
Geothermal	888.00	74.43
Coal	405.00	55.28
Rural Electric Cooperatives		
Oil/Diesel*	69.83	0.84
Hydro	22.86	15.03
Sub-total	92.69	4.34
Private Utilities		
Oil/Diesel*	159.00	10.78
Sub-total	159.00	10.78
GRAND TOTAL	6,788.89	38.63

*Deputy Director-General, National Economic and Development Authority

These facilities include a variety of generating units such as 506 MW of land-based gas turbines, 6 MW of minihydro plants, and 12 MW of diesel generating units mainly on small islands. The energy-generation mix is 31.6 percent oil, 22.4 percent geothermal, 20.1 percent hydro, and 22.4 percent from other sources -- gas turbine (7.9 percent), coal (7.6 percent), and diesel (3.4 percent).

In terms of electric generation by grid, 76.1 percent is in Luzon, 14.7 percent in Mindanao, and 9.3 percent in the Visayas. Four projects involving an aggregate capacity of 1,222 MW are confirmed under the Government Private Power Generation Program. Expected to be operational by 1993 are the 300-MW Bataan combined-cycle plant, 12-MW Makban Binary Geothermal Plant, and 210-MW Mindanao Power Project. A 700-MW Hopewell Thermal Plant is expected to operate at half capacity in 1995 and projected to be fully operational by 1997.

The energy-generation plans seem impressive, but they mask a number of critical issues: (a) the inadequacy, unreliability, and high cost of power generation; (b) the lack of electricity in many rural areas and households, and for other potential users; and (c) structural and policy-induced impediments that prevent solving (a) and (b).

Given an estimated elasticity of power demand relative to GNP of 1.2-1.5, energy supply has failed to keep up with the average annual economic growth of 4.5 percent in 1986-90. The consequences are occasional but unpredictable and economically costly outages. The delayed installation of more cheaply sourced hydro and geothermal plants and the environmental deterioration of natural-energy sources has also resulted in more expensive electricity. NPC power tariffs increased by P0.22/kilowatt-hour (KWH) in January 1992 despite an appreciating peso and relatively cheaper oil-product inputs.

Rural electric distributors, notably rural electric cooperatives (RECs), which deliver electricity to 53 percent of all users, face problems similar to those of the government's National Power Corporation (NPC). In 1990, RECs suffered system losses of 21.7 percent, but had a collection efficiency of 90 percent and increased their amortization to NEA to P269 million from an average of P190 million/year in 1988-89. Many RECs confront financial losses, stalled expansion programs, and deteriorating customer service.

The economic-stabilization plan has slightly exacerbated an already difficult situation. Government provision of the required equity capital to its power-generation utility and the National Electrification Administration (NEA) is constrained by a restrictive public-sector budget-deficit target. Rate adjustments are circumscribed by political and social resistance. Official development assistance (ODA) intended for the public sector has to be shared with the private sector, which has lost access to foreign commercial credit. The share of investments in EPGD in total public-sector investments declined to 19 percent in 1986-90 from a high of 30 percent in 1975-85 or, as a proportion of GNP, from 2 to 1.2 percent. In sum, the EPGD sector is a victim of higher macroeconomic priorities, poor sector planning, and operating inefficiencies.

A comprehensive structural-adjustment program started in the early 1980s with financial and other reforms. The government introduced elements of a parallel reform program affecting EPGD: (a) the design of a least-cost power-development program; (b) the decision to adopt the long-run marginal-cost (LRMC) pricing principle; (c) the demonopolization and partial

privatization of electric-power generation; and (d) other reforms such as more market-related pricing of petroleum products.

For the EPGD sector to contribute to economic adjustment, government must examine existing policies, whether the product of legislated or administrative regulations (or both) that obstruct the increase in power supply: entry and production issues; reduction of the costs, by addressing allocative and operating efficiency issues; and the expansion of physical coverage, which involves access and equity. The roles and performance of NPC, NEA, and RECs should be redefined and improved by addressing institutional-arrangement issues. Underlying these broad issues are sectoral and other concerns such as the implications on foreign investments, the natural environment and host communities, and linkages with other macro, sectoral, and micro policies and objectives.

In a larger context, the fundamental issue is defining the regulatory role of the state in the economy in general, and the EPGD sector in particular. The government must refurbish its negative image through economic liberalization -- privatization and deregulation -- if its increasingly limited power to intervene is to be felt. A sound mix of market-friendly policies and human- and physical-capital investments demands an assessment of regulations governing the EPGD sector. EPGD output is not internationally tradeable; it is necessary to create domestic competition to secure privileges to operate and subject them to standards of performance in a controlled public-utility policy setting.

This paper has two objectives. The first is to examine the existing regulatory framework governing the EPGD sector and its broad macro and micro implications, including transmission mechanisms. The second is to identify certain issues and areas where deregulation, through increased reliance on market forces will strengthen the linkage and identify the propagation mechanisms between EPGD and industry, the informal and other sectors, in meeting national objectives. Other component studies deal with (a) macro-economic analysis, (b) monitoring, (c) agriculture, (d) natural resources and environment, (e) industrial and informal sectors, (g) social services, and (h) impacts on women.

This study consists of five parts. After the introduction, Part II reviews the economics of regulation, covering the basis for government economic intervention, the objective of regulation, the concepts and tools of economic regulation, the role of regulation in a development context, and the case for deregulation. Part III analyzes recent deregulation policies and measures in selected sectors -- agriculture, finance, transportation, and telecommunications -- and their general trends and implications, particularly in shaping a more competitive economic environment. Part IV presents a general framework for analyzing the economic and other issues in EPGD sector: linkage with energy-source development, electricity pricing, and institutional issues. Part V examines the regulatory environment in the EPGD sector and describes the roles of the major institutional participants -- the principal regulators and market players. It then comments on promotional policies and specific laws and administrative rules affecting entrants and incumbent producers and distributors, on factors affecting efficiency, on pricing, and on other regulations, such as safety and reporting. In particular, it analyzes the roles of the NPC, NEA, and RECs in the development of the EPGD sector.

II. REVIEW OF THE ECONOMICS OF REGULATION

A. The Basis for Government Intervention

Governments not only pursue political ideologies but also implement public policies needed to guide, correct, and supplement market conditions. The following are some reasons why public policy remains essential (Musgrave 1990; Krongkaew 1991).

- 1) The claim that the market mechanism leads to efficient resources use -- that is, produces what consumers want most and does so in the cheapest way -- is based on competitiveness and product markets: there must be no obstacle to free entry, and consumers and producers must have full market information. Government regulation or other forms of intervention may have to establish these conditions.
- 2) Public policy may be needed where competition is inefficient and wasteful due to decreasing costs.
- 3) The contractual arrangements and exchanges needed for market operation cannot exist without the protection and enforcement of a legal structure (Donges 1991).
- 4) Even if barriers to competition are removed, the production or consumption characteristics of certain goods cannot be provided by the market. Problems of mostly negative "externalities" arise, leading to "market failure" that requires correction through budgetary provisions, subsidy, tax penalty, or other means.
- 5) Social values may require adjustments in the distribution of income and wealth resulting from the market system and transmission of property rights through inheritance.
- 6) The market system, even in developed economies, does not necessarily bring about high employment, price stability, or the socially desired rate of economic growth. Public policy can cushion external shocks transmitted through open economies that often make the attainment of desired economic objectives difficult.
- 7) Public or social and private points of view on the rate of discount used in the valuation of future (relative to present) consumption may differ.

John Paul II's encyclical on economics, *Centesimus Annus*, argues for a "free economy" and state intervention only in exceptional circumstances to check the expansive ambitions of government. Such interventions must be as brief as possible to avoid taking away from society and business systems their functions and excessively enlarging the sphere of state intervention to the detriment of economic and civil freedom. This insight is based on the principles of giving priority to the individual, his free associations and society, and subsidiarity or minimum interference in the internal life of a community of lower order.

B. *The Objective of Regulation*¹

In justifying intervention through regulation, governments cite economic distortions and market failures, which result in misallocation of resources, excessive profits, decline in quality of goods and services, and exploitation of labor. Regardless of the motive, regulatory intervention can be justified from an economic standpoint only if the social benefits exceed the costs to the consumer. Specifically, government interventions should fulfill three basic functions:

- 1) allocation -- the government helps allocate public goods that the market fails to provide;
- 2) distribution -- the government helps adjust the distribution of income and wealth to ensure conformity with what society considers "fair" or "just";
- 3) stabilization -- the government helps maintain high employment, a reasonable degree of price-level stability, and an appropriate rate of economic growth, with allowances for effects on trade and the balance of payments.

In democratic societies, governments exercise various interventions to achieve these broad objectives through elected representatives.

The above account is the orthodox economic justification for government involvement in the economy (Musgrave 1990). A more recent rationale takes a deeper look at the meaning and ramifications of market failures as they provide a set of reasons for government activity. According to Stiglitz (1988) and Krongkaew, for example, six circumstances of market failure prevent the market from reaching Pareto optimality or efficiency.

- 1) *Failure of competition.* Resources are allocated inefficiently. When the market is not competitive because there are too few firms or too many barriers to entry arising from increasing returns to scale, a natural monopoly results. Then consumers suffer restricted output and higher prices.
- 2) *Public good.* Some goods are either not supplied by the market, or supplied in insufficient quantity because they are characterized by joint consumption and nonexcludability. Examples of these goods are national defense and navigational aids, which can only be provided by the government.
- 3) *Externalities.* Externalities are said to occur when the actions of one individual or firm affect other individuals or firms without appropriate costs or compensations applied to those actions. The occurrence of externalities, therefore, connotes allocative inefficiency which justifies government's interventions to "internalize" those externalities: that is, to put proper prices on those externalities, or control them with regulations.

1. This section and the next draw mostly on United Nations (1983); Krongkaew (1991); and Donges (1991).

- 4) *Incomplete markets.* There are certain goods and services that the private markets fail to provide even though the cost of providing them is less than what individuals are willing to pay: this is the case in incomplete markets. Insurance and loans fit the above description: the private market does not provide insurance for many important risks that individuals face, or for certain loans. As a result, the government may have to provide the facilities for bank-deposit insurance, and student loans for higher education, or agricultural or small-business loans.
- 5) *Information failures.* The private market may fail to provide complete information to consumers, thus creating inefficiency in the transaction. The government may step in to remedy the information failures (or inadequacies) on behalf of the consumers. But it may go beyond this since information is, in many respects, a public good. A weather report is a case in point.
- 6) *Unemployment, inflation and disequilibrium.* As high unemployment is the worst of market failures, government should steer the economy away from unemployment, inflation, and other economic disequilibria.

In a developing country, the government is justified in intervening in investment, capital-formation, infrastructure building, and services -- all of which will make private economic activities viable. Many governments in developing countries employ domestic-resource mobilization measures such as taxing one sector more than others or mobilizing foreign resources through foreign borrowings and transfers. Economic planning ensures that the measures are implemented in an orderly, systematic manner.

Development objectives do not necessarily cover only economic growth and expansion; they can include poverty alleviation, reduction of income inequality, environmental preservation, and enhancement of the overall "quality of life" (Krongkaew 1991). The approach, scope, technique, and organization for economic regulation vary among countries. In any case, caution must be exercised so that market failures do not result in government failures in regulation (WDR 1991).

The wide divergence in regulatory policies and approaches among countries is conditioned by ideological considerations of the role of the state, tradition, public attitude toward the value of competition and how to curb abuses, and what is considered the public interest. In addition to differences in approach and scope of regulation, there are significant contrasts in the regulatory techniques and organization. These range from independent regulatory bodies or commissions made up of neutral experts to legislative oversight bodies and regulatory agencies within, or closely supervised by, government. Thus, regulations are prescribed and enforced by state and local laws, the courts, state legislative and regulatory bodies, and local government units.

Since a regulatory administration enforces standards and follows procedures, its form and scope are strongly affected by the form and nature of the legal system. The legal and administrative systems, such as the civil service, affect the form of the regulatory agency, its manner of operation, and relationship to the rest of government. It also affects the kind of staff personnel hired, compensation, and their training.

In the US, whose jurisprudence influences that of the Philippines, regulation often provides the establishment of independent regulatory commissions, quasijudicial and quasilegislative

bodies. So as to uphold the principles of check and balance, and due process, judicial review of the bodies' actions is often required.

C. Concepts and Tools of Economic Regulation

Regulation has been defined as "the intentional restriction of choice by a party not directly involved in or performing, the regulated activity" (Mitnick 1980). More specifically, it involves activities which achieve the following: (a) affect the operating business environment of private enterprise, including market entry and exit, rate, price and profit structures, and competition; (b) control specific services or products through permit, certification, or licensing requirements as provided by law or policy; and (c) relate to the development, administration, and enforcement of national standards normally done by a designated public agency.

Control can be formally imposed through a defined scope of functions and authorities. Proper authority is often prescribed and conveyed through (a) corporate charters, (b) a franchise which often is legislated and with a timeframe, (c) the grant of certificate, permit or license, and (d) a certificate of public convenience and necessity (CPCN) as in the case of transport utilities.

Regulation is only one of the four major modalities by which governments intervene. The others are promotion, direct management, and planning. Governments offer a wide range of incentives and subsidies, such as tax holidays, cheap credit, and protective tariffs to promote selected sectors and industries. In other countries, in addition to or in lieu of regulation, governments themselves own and manage various economic activities either directly or through public-sector enterprises. In many developing countries, governments are involved in planning socioeconomic development although many centrally planned economies are now shifting toward some variants of market-oriented economic systems.

D. Regulation in the Development Context²

Regulation, either in its control (negative) or promotional (positive) form, has direct bearing on economic development. The literature on the economics of regulation, which used to be theoretically oriented, has been enriched by recent experience in the Pacific region (see Japan Committee for Pacific Economic Outlook Report 1990). The theoretical, rationale, and practical experiences are dominated by four arguments: (a) avoidance of unfair monopolistic practices and opportunistic behavior; (b) protection of infant industries; (c) minimization of the ill-effects of excessive and often-destructive competition; and (d) promotion of public safety and health and protection of the environment. Conversely, a large body of research and arguments calls for structural adjustment by combining standard macroeconomic policy reforms and deregulation.

The argument for monopoly assumes that because of the huge capital involved and to achieve economies of scale it is socially desirable to have just one or a few firms operating. To be sure, industries with natural monopoly characteristics are not all subject to economies of scale. In most cases, it is possible and efficient to separate networks of economic activities where regulation is justifiable from other operations that can be opened to competition.

2. This and following sections draw mainly on Harris (1991).

Deregulation seeks to break monopolies by vertical or horizontal disintegration, such as through the structural separation of the energy-development, electric-power generation, transmission, and distribution components of an electric power system. For instance, electric-power generation can be deregulated while continuing the regulation of transmission as a common carrier and local distribution through a geographically dispersed system of franchised or licensed monopolies. This model can have an analogous application in the telecommunications and airline sectors where local distribution and operation can be directly separated from major trunkline operation.

In cases where a monopoly is supported by policy, whether the facilities are publicly owned or not, the right to operate can be bidded out regularly to create positive tension and adequate competition. In cases where the monopoly is granted to a private operator, its ownership structure can be democratized through public listing of its shares. Monopoly conditions, therefore, can be governed by various forms of public and private ownership and management arrangements. Conversely, antitrust legislation can make such acts as price-fixing and market division illegal by applying either the "per se" or "rule of reason" principle.

The argument for protecting infant industries, sometimes called "industrial targeting," which is most applicable for tradeables, provides for either tariff or nontariff barriers. This argument, however, has lost much theoretical appeal due to the success of open economies in dealing with greater international interdependence and managing external shocks by encouraging export-oriented and world-competitive industries.

Excessive competition and attendant price-cutting may result in poor services and products. They are likely to occur in industries where entry is easy, exit or disposition of assets difficult, and marginal costs very much below average costs (Harris 1991). It can also take place in an industry where fixed costs may be high but marginal costs low. Under such circumstances, firms can not make sufficient profits, public health and safety are jeopardized, and old facilities and equipment not likely to be replaced. The purpose of regulation, which emphasizes control on entry and pricing, manages competition, ensuring profitable operations and better service.

That government should promote public health, safety and the environment is a given. The major challenge in safeguarding these social goods is in setting adequate and enforceable standards, particularly in a developing economy where stringent and costly standards can discourage new investments. Regulatory bodies in many developing countries will not or can not assess ex-ante and ex-post conditions, enforce standards, or monitor compliance, especially in industries where technology is rapidly advancing or new technology is about to be introduced, such as in nuclear energy or telecommunications.

E. The Case for Deregulation

Harris defines deregulations as wholesale change in public policies toward an industry, with greater reliance on market forces and competition and less reliance on administrative guidance. Some argue that deregulation is not an end in itself, but a means of freeing individual creativity, stimulating private initiatives, and widening the range of consumer options (Donges 1991).

Deregulation in various countries has created firms and workers who are either winners or losers. Safety regulations should be improved to mitigate excessive competition. The experience of the US and other countries warn those embarking on deregulation to carefully manage the following: (a) potential changes in demand (changing relative prices) and composition of supply (shifts in factor substitution); (b) the process of transition; and (c) the effects on the balance of payments, labor skills, and the need for training and social safety nets for those adversely affected.

The World Development Report (WDR 1991) recognizes the complexity of pacing and sequencing stabilization policies that often include some form of deregulation, such as decontrol of prices and user rates. While swift reforms may neutralize the resistance of adversely affected groups, more gradual reforms may allow time to address their concerns.

In recent years, state economic managers, even those in previously centrally planned economies, have come to value competition. The WDR highlights some of the current thinking, noting that some exchange-rate, trade, and pricing policies are harmful. Industries are especially hurt by barriers to entry and exit, price controls, and administrative allocation of credit. The report further argues the following: (a) competitive markets are still the best way to efficiently organize the production and distribution of goods and services; and (b) governments must provide a legal and regulatory framework that will address market failures and inadequacies. The report also notes the dramatic success of the synergy between investments in human and physical capital on the one hand, and an open and competitive policy environment on the other.

III. RECENT DEREGULATION IN SOME SELECTED SECTORS

Electric-power generation (EPG) is a major component of integrated energy planning and development, with profound macroeconomic implications. It has a two-way relationship with other sectors: those providing such inputs as physical infrastructures, energy resources, credit, etc.; and industries and households availing of its output. Public policies and deregulation measures in such sectors as agriculture, natural resources, public utilities, and finance have direct or indirect implications on EPG.

A. Agriculture

Deregulation in agriculture since the early 1980s sought the phasing out of price and quantitative controls as well as levies and taxes, and elimination of barriers to entry. The results of such deregulation are as follows: (a) lifting of the copra export ban and export taxes on coconut oil and other agricultural products; (b) abolition of monopsonistic arrangements in sugar and coconut trading; (c) liberalization of fertilizer importation and distribution; (d) removal of retail price ceilings on rice, poultry products and pork; (e) opening of import trade in wheat, wheat products, and animal feeds to the private sector; (f) changing the primary function of the National Food Authority from nongrain activities to price stabilization of rice and corn; (g) ending direct lending programs and the consolidation of separate commodity-specific funds into the Comprehensive Agricultural Loan Fund; and (h) institutional reforms affecting various agencies involved in agriculture (Balisacan 1991).

Balisacan argues, based on a methodology using household income and expenditure, that the benefits of the deregulation in agriculture, expressed in terms of the reduction in overall measured poverty in agriculture, could have been substantial. However, he pointed out, high population growth has contributed to environmental degradation of agricultural areas and exerted downward pressure on real wages. The effects of this factor on farm incomes and poverty should be distinguished from the generally positive effect of agricultural-deregulation policy.

B. Financial Sector

Financial liberalization took place in 1980 and 1986. The 1980 financial reforms sought to foster competition in the financial markets and improve the availability of medium- and long-term funds to the industrial sector (Lamberte 1991). The reforms touched pricing policies for various financial assets and the structure of the financial system. Interest-rate ceilings on all types of deposits and loans were lifted.

Meanwhile, differentiation among banks was reduced so that banks of different types could compete with each other. Rules on equity investments in allied and nonallied activities were relaxed so that financial institutions could compete in various areas of banking and finance either through their own departments or affiliates. Minimum capital requirements for the different bank categories were raised to strengthen banks in this new competitive environment. The reforms, while noteworthy, had mixed results due to the negative effects of external shocks, the domestic economic crisis, and absence of complementary reforms.

In 1986, the Aquino government initiated a series of financial reforms involving the following: (a) more liberal bank entry and branching; (b) increased inter-bank competition with the encouragement of a higher paid-up capital requirement for universal banks (P1 billion), ordinary commercial banks (P500 million), and thrift banks (up to P50 million) in order to accept foreign-currency deposits; (c) improved prudential policies and regulations by the Central Bank (CB) to address insider abuse, etc.; (d) adoption of a uniform, market-oriented rediscount rate by the CB, which effectively ended its selective credit-control policy; and (e) the definition of a clearer role for government financial institutions (GFIs), e.g., wholesale banking by Development Bank of the Philippines (DBP) to avoid competition with the private bankers, and the privatization of the Philippine National Bank (PNB).

Lamberte's analysis of financial liberalization from 1977 to 1988 reveals several things.

- 1) Commercial banks have been allocating credit inefficiently to other sectors. For example, the ratio of loans outstanding to the gross value-added in electricity, gas, and water has been declining.
- 2) The Philippines had the highest lending rate on bank loans and the most volatile real interest rates in the ASEAN region in 1977-88.
- 3) Access of small or marginal borrowers to bank credit remains limited due to nonprice credit rationing arising from inadequate or imperfect information.
- 4) Remaining special-credit programs should focus on a few sectors, such as export-oriented industries.

5) The debt-securities or bond markets remain underdeveloped.

The proportional reduction of commercial credit to the electricity, gas, and water sectors could have stemmed from the relatively larger demand of these sectors for foreign loans and the lack of incentives to expand due to inappropriate policies, such as legal and administrative restrictions on new entry and utility rates, and market constraints.

C. Transportation

In transportation, the one-airline policy for international and domestic operation was revoked on 16 August 1986, allowing the entry of other air carriers, particularly in domestic operations where the need is most acute. On 8 October 1990, the Land Transportation, Franchising and Regulatory Board (LTFRB) allowed upgrading of existing bus fleets by airconditioning up to 100 percent of regular units. Summary procedures are now being adopted in the review of applications for additional units under subsisting certificates of public convenience and necessity (CPCNs). Cargo-handling services in each of the 15 government ports were demonopolized on 21 June 1990. In the meantime, privatization of Philippine Airlines was implemented after the national government assumed its foreign debt to enhance the corporation's market value.

On 12 November 1990, MARINA fully or partially decontrolled various transport-fare rates either by deregulating the first- and second-class shipping passenger fares and the rates of livestock, transit and refrigerated cargoes, and by setting a +/- 15-percent fare range for third-class passengers. On 14 December 1990, LTFRB allowed a +/-15-percent fare range on interurban bus services except in Metro Manila. Trucking freight rates are no longer set by the LTFRB.

LTFRB has further delegated to its Regional Managers the authority to (a) approve fare rates for motorized tricycles, and (b) decide on certain cases involving interregional petitions for dropping and substitution. MARINA is at present assessing the possible effects of the partial decontrol of the fork-tariff system and the total deregulation of cargo rates on low-cargo density routes, vessel selection, and the liner industry structure.

DOTC is pushing for a law that will abolish the distinction between private (T) and for hire (TH) trucks to deregulate entry, route allocation, and pricing restrictions. It is also pushing for the removal of the 3-percent common-carrier tax (CCT) for public road-transport vehicles and replacing it with a road-user tax.

D. Telecommunications

The DOTC and National Telecommunication Commission (NTC) are pursuing a policy of practicable deregulation through the gradual reduction of burdens and requirements (e.g., barrier to entry and price control) and the devolution of regulatory powers to regional offices and local government units (LGUs).

Satellite communication via satellite earth stations and very small aperture terminals (VSATs), and cellular mobile telephone services have been opened up to allow the freer entry of service providers catering to telecommunication users. Long-distance voice services have likewise been demonopolized. The Secretary of Justice also reportedly ruled that Executive Order

(EO) 546 authorizes NTC to issue operating permits to radio and television broadcasting operators without the prior expressed grant to franchise by Congress.

In order to facilitate deregulation, DOTC also issued Circular 90-248 which provides for the following:

- 1) Interconnection of all facilities offering public telecommunication services based on NTC standards and guidelines governing transmission, switching and signalling interfaces, revenue-and-cost sharing and other matters;
- 2) Promotion of rapid communication in all regions under the Municipal Telephone Act of 1989 (RA 6849) with the grant of the right of first option to qualified private operators to set up public calling stations; and
- 3) Sharing with the private sector ODA which was previously available only to the public sector. RA 6957 (Build-Operate-Transfer Law) complements this policy by enabling interested investors to get access to long-term credit and foreign exchange.

Meanwhile, a new bill on telecommunication deregulation (SN 1353) is being pursued to provide for the following:

- 1) Deregulation of value added and enhanced services, wireless services, and international-service rates;
- 2) The promotion of at least two operators to put up and maintain a national tool or backbone system with adequate capability to provide voice, record, and data services;
- 3) Replacement of the 12-percent return-on-operating-assets rule with a more realistic market-based rate; and
- 4) Withdrawal of government in the direct operation of telecommunication services.

DOTC is formulating the implementing guidelines for the privatization of government-owned and acquired telecommunications assets, which could broaden the ownership of the national-backbone transmission network to a manageable number.

E. Trends and Implications

It is too early to assess the results of deregulation measures in various sectors, particularly in transportation and telecommunications. However, certain trends, conditions, and implications, including those arising from liberalization and deregulation in the agriculture and financial sectors, are noticeable. *First*, relaxation of entry conditions encourages a more liberal rate-setting policy due to the general decline or stability of utility rates occasioned by greater competition. This trend, however, has not been observed in the banking sector in the form of higher deposit rates or lower lending rates due to the persistence of an informal cartel among banks and the remnants of financial repression, such as intermediation taxes.

Second, the public will more readily accept deregulation of utility rates if or when energy, other input supplies, and prices are stable. *Third*, public policies can help manage the transition process by, for example, extending ODA-sourced credits to utilities and other sectors undergoing rehabilitation or acquiring new equipment.

Fourth, deregulation in some sectors, such as finance, should be complemented by parallel reforms in the productive sector. Otherwise, credit and other resources will not necessarily flow or be allocated most efficiently. Domestic credit will not go to EPG if entry is highly restricted. The reallocation of resources is likewise a function of the cross elasticity and time path of adjustment of different sectors to macro and sector-specific policy changes, deregulation, and other stimuli. Conversely, freer entry to EPG will not lead to full tapping of domestic credit if loan rates are high or if the debt-security market is constrained by restricted competition.

Fifth, political will to pursue and popular acceptance of deregulation and other economic-liberalization initiatives is imperative.

Sixth, external pressures and conditions -- such as those imposed by the International Monetary Fund (IMF) and World Bank in exchange for adjustment loans, e.g., Agricultural Input loan and Energy Sector loan -- also involuntarily facilitate deregulation, although probably with less positive impact if only grudgingly carried out.

The 1992 Local Government Code devolves to LGUs a number of services and promotional and regulatory functions such as granting of franchises, taxation, etc. There is some risk of reverting to a decentralized regulation-oriented regime if LGUs do not exercise their functions with a more open attitude, particularly in simplifying policies and rules, and creating a more favorable investment climate for the private sector.

IV. A GENERAL FRAMEWORK

This section provides a framework for analyzing the implications of public intervention policies, including regulations on the electric-power system or network and subsequently, on households.

A. Policy Instruments and Constraints

Five policy instruments can, if properly orchestrated help develop an optimal energy management strategy: (a) physical controls such as load sharing; (b) technical methods, such as use of cost-effective technologies; (c) direct investment projects; (d) education and promotion; and (e) pricing, taxes, subsidies and other incentives (Kumar and Munasinghe 1987). On the other hand, there are chief constraints: (a) a poor institutional framework; (b) inadequate policy instruments; (c) lack of analytical tools, such as electric-pricing model; and (d) insufficient manpower and other resources, particularly of the regulatory body. The broad implications of these strategies, policies, and constraints are analyzed below.

B. *The Electric Power System*³

An electric-power system should supply consumers -- households, institutions, and industries -- at the power level, time, place, and quality of service that they desire. Quality of service includes reliability, safety, and other factors.

A simplified power system operates as follows. Initially, the output from a generation plant is fed into transmission facilities whose main components are power transformers, high-voltage transmission lines, and transmission substations. At the transmission substations, the voltage can be stepped up to extra high and electric power carried further by transmission lines. It is then fed into another substation which can reduce the voltage before feeding the electric power through transmission lines to the distribution facilities, which are mainly distribution substations, primary feeders, distribution transformers, and secondary lines.

The voltage of the electric power received from the transmission facilities is reduced at the distribution substations, which are located near the load points or centers. Primary feeders evacuate power flows from distribution-station bus bars to distribution transformers where the voltage is reduced again. The consumer receives electric power from a secondary distribution line, a service inlet, and a meter.

Even such a simple system requires many complicated components from generation or injection point to load or extract point. A power system is generally much more complex, with many generating points linked to many load points through an interconnected transmission network. The distribution facilities or a single load point, however, can serve thousands of consumers.

C. *Maximizing Power System Benefits*

In general, the process of maximizing net benefits for the power system as a whole can be decomposed into four modules. First, given the existing power-system configuration and the load and energy demands associated with an electricity tariff forecast, alternative system-expansion plans and their costs can be simulated. Second, the least-cost system-expansion plan is determined along with the associated long-run marginal cost of supply. Third, given the energy demands used in determining the least-cost expansion plan, cost-benefit analysis is undertaken to judge the economic viability of the least-cost investment plan. Fourth, the marginal cost of supply is compared with the electricity-tariff forecast to revise the latter on the basis of which a new load and energy demand forecast is prepared, incorporating the tariff change.

The process described above is repeated until an investment plan emerges where electricity tariff and LRMC are equal. An efficient and economically viable power-sector investment plan will emerge where the interaction of the demand forecast, investment decision, and the accompanying LRMC of supply is explicitly accounted for.

3. This section draws on Ali (1991).

This approach has to undergo a second stage in order to reflect financial, political, and other social factors in the computed-tariff levels.

Financial criteria based on (a) a target financial rate of return on existing assets or future investments and (b) self-financing by the utility, i.e., ratio of internally generated funds available after operating expenses and debt service to capital expenditures, must address practical problems. These include asset revaluation and the distribution of the revenue burden.

A practical, although not economically efficient, method is retaining the basic structure of LRMC tariff and vary the rate by equiproportional changes among users. The other is applying the Barmol-Bradford inverse-elasticity rule that provides that the greatest (or least) divergence from strict LRMC occurs for the consumer group and rating period where the price elasticity is lowest (or highest). It is the most satisfactory adjustment procedure from the viewpoint of economic efficiency (Munasinghe and Rungta 1984).

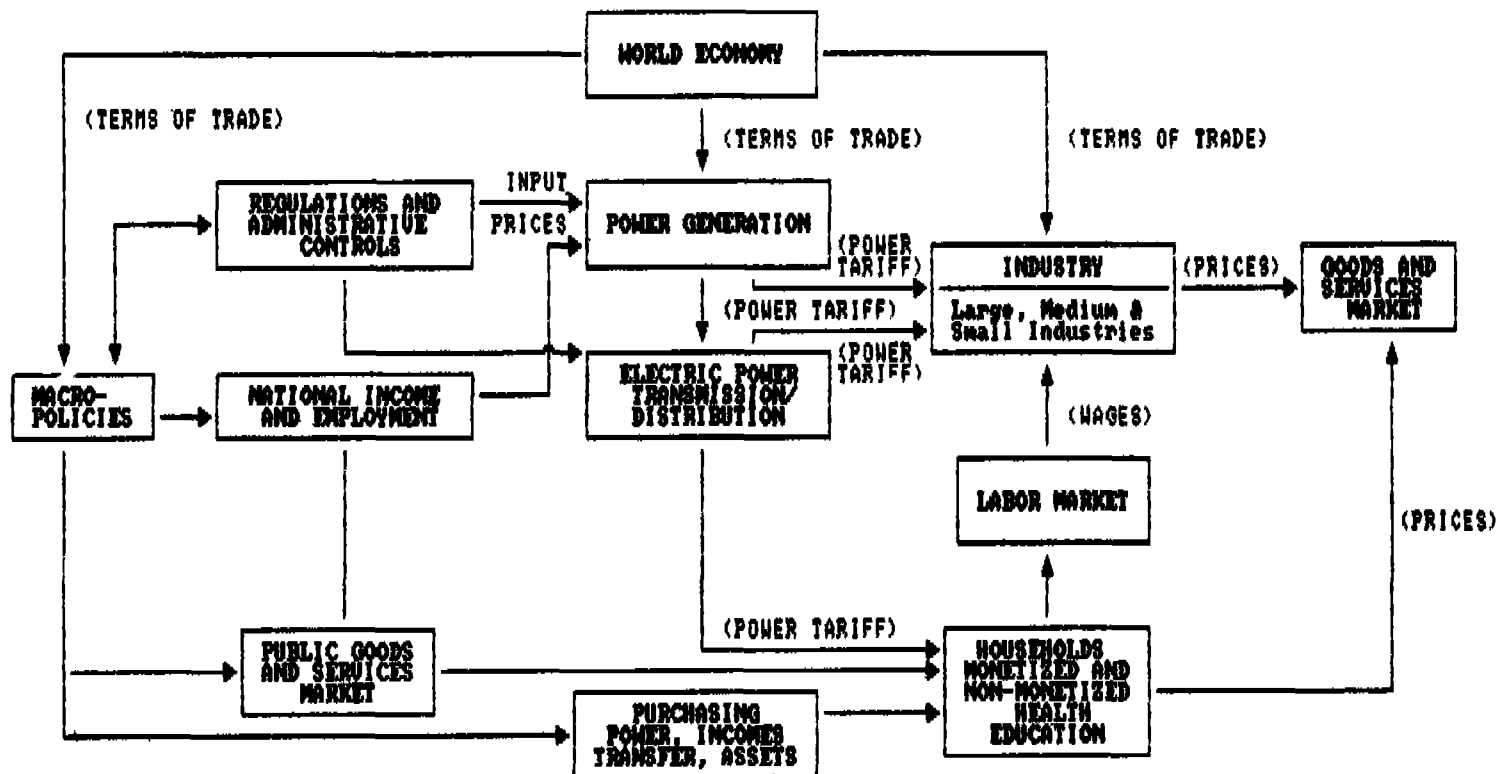
In general, therefore, the pricing of generated electricity is dictated by efficiency, equity, and cost recovery or rate of return objectives. Cost factors include the source mix, time of day, and the location and type of consumer. Efficiency considerations are the need to use energy judiciously, the need to be internationally competitive, and the official policy on the role of electricity pricing in managing demand and promoting certain sectors, such as low-income households and small-scale and rural-based industries. Equity is pursued through administered pricing of petroleum products with bias toward power generating and other industries producing basic goods and services, and subsidizing electricity to low-income households or localities. Financial and other performance targets must consider both equity and efficiency objectives in its pricing structure.

D. External Environment and Macroeconomic Policies

Changes in the world economy have direct effects on electric-power generation (EPG) through availability (supply), reliability, and prices of imported energy inputs, especially oil and coal. On the other hand, EPG is also affected by macroeconomic policies and the regulatory framework. In turn, power generation and distribution directly and indirectly affect households. These effects and transmission mechanisms can be analyzed within the diagrammatic framework described in Fig. 1.

Macroeconomic policies responding to external shocks impinge on EPG via the effects on the exchange rate, level, and structure of the tariff system, interest rate, level and allocation of public revenues, and other variables. These have major implications on the cost of fuel and other inputs to the EPG sector. Changes in the tariff structure and level of duties on the energy sector have direct implications on the cost of power and industrial-protection system. For instance, a flexible exchange-rate policy, a tight monetary policy, and a low budget-deficit policy -- the standard components of an economic stabilization program -- could adversely affect the price of imports, access to domestic credit, and government equity advances or subsidies, particularly to public utilities. In the latter case, public-sector entities or projects would compete among themselves for government funding, especially if there are no compensatory revenue-generating initiatives, such as new taxes, improved tax collections, and higher corporate cash generation.

FIGURE 1
Micro Impact of Regulatory Environment via
Power Generation and Distribution on
Heterogenous Households with Institutional Dimension



Government will give priority to public-sector projects with the highest economic and social return and implemented by public entities with the best track record of corporate management and project implementation. The availability and accessibility of public goods and services to households, therefore, are influenced by the allocation of the national budget by agency, location, and type of goods and services generated.

E. EPG and Regulations

EPG is further affected by laws, administrative controls, promotion policies, and other related factors which, for the most part, regulate the following: (a) entry of new firms; (b) capital requirements; (c) promotional and facilitative policies, i.e., access to cheap credit and lower tariff duties on energy inputs; (d) public safety and health; and (e) technical and environmental requirements.

National laws often limit foreign ownership in strategic industries, such as those involving natural resources and national security, like public utilities. Some laws limit private-property rights, commercial transactions, and other forms of relationships involving individuals and institutions. The 1987 Constitution limits foreign-ownership participation in natural-resource exploration, development, and utilization activities to Filipino citizens, or corporations or associations whose capital is 60-percent Filipino-owned. Moreover, the modalities for such participation are limited to coproduction, joint venture, or production sharing for a maximum of 50 years.

In the case of domestic energy exploration and development, which is a critical upstream activity for EPG, the initial capital requirements are substantial as are the risks involved. The investment risks would normally include noncommercial discoveries, long recoupment period, unstable national policies affecting cost recovery and financial return, host community and other sources of resistance, and unfavorable market conditions. The "reservoir risks" are those arising from the unsustainability of energy-source supplies due to environmental decay and poor extraction methods. Investment and reservoir risks can be minimized by such schemes as the extension of fiscal incentives and long-term supply contracts among governments (through taxpayers), energy developers, and users based on alternative sharing arrangements with respect to risks, costs, and income. Such undertakings as build-and-operate plans may carry take-or-pay provisions that encourage a stable production of electric power. Other investment-guarantee schemes, such as Multilateral Investment Guarantee Agreement (MIGA) and Overseas Private Insurance Corporation (OPIC), also encourage risk-taking by private investors if the host government accedes to them.

F. Backward Linkages of EPG on Energy Source Development

The nature of some indigenous energy sources has major economic and social implications especially on communities, households, occupational groups, and labor skills affected. Hydro, geothermal, and dendro sources of energy are usually located in natural habitats where upland dwellers, cultural communities, and other socioeconomic groups depend on natural resources for their livelihood and sustenance. Hence, the manner in which the land-based habitat is affected -- by deforestation and soil erosion, for example -- and the extent of the occupants' involvement in its protection and development through watershed protection, reforestation, and

food production will directly affect their labor-participation rate, economic, health, and other social conditions.

In the case of coal-fired and other thermal plants, which are often located near water systems, fish sanctuaries will likely be disturbed by changes in water temperature and quality. Airborne sulphur and ash emissions from coal-fired plants are a potential health hazard. In this case either policy action, such as giving low priority for coal or a technological option, i.e., washing and advanced beneficiation of natural resources offer some solution. All these cases have obvious economic implications for those extracting natural resources and for local communities.

In some cases, communities living in energy-development project sites must be physically resettled. Based on World Bank experience (Cernea 1990), construction projects designed without any provision for resettlement have sometimes led to economically unjustified relocation. The Bank now requires that the costs of resettlement (both compensation for lost assets and cost of redevelopment measures) be included in the overall project costs and in the rate-of-return calculation. Social-science studies indicate a key link between civil-engineering solutions and social engineering of project design and implementation. For instance, there are significant trade-offs between dam height and power-generation benefits, and scale of population displacement.

Resistance can be minimized if the central government shares royalty payments of energy-source developers with local governments and communities in the form of a host-community fee. The manner in which affected communities react and use external resources for coping is critical.

Where resettlement is unavoidable, the host population should be consulted. Ethnic antagonism can make some sites undesirable, while the presence of trading or cultural networks can make some sites advantageous. Extra investment for basic services are necessary to prevent impoverishment and the environmental consequences of induced overpopulation.

G. Other Regulatory Factors

Energy-source development, EPG, and distribution of electricity involve public safety, environmental integrity, and interconnection of facilities. Various regulatory institutions p73 are involved and clearances, such as locational and environmental clearances, required before and during project implementation. The clearances have implications on the quality of service and return on investments through the cost of design, technical compatibility of projects, and revenue-sharing arrangements with operating systems. On the other hand, it is possible that low government or private-sector funding will unwittingly encourage certain cost-cutting measures, negatively affecting the quality and reliability of service. The ability of regulatory agencies to assess the technical, environmental, economic, and social costs as well as benefits of proposed projects will be critical in the early acquisition of operating permits and effective monitoring of performance, particularly where new technologies -- geothermal, solar and nuclear-sourced power generation systems -- are involved.

EPG is normally pursued through public monopolies, as in Thailand. The conceptual and practical basis for encouraging more power generators is a function of the economies of scale

within both the power system as a whole and its individual components, price of electricity, and the quality of service provided by the monopoly or existing generators. In the Philippines, EO 215 encourages cogeneration of electric power by the private sector with the NPC considering the latter's avoided costs, which may involve build-operate-and-own (BOO) and BT schemes. These determinants, in turn, are influenced by macroeconomic policies and the regulatory framework as well as by the quality of corporate and project management.

Public opinion or perception of the efficiency of services delivery is a key factor in the success of government policy. National security considerations may likewise favor a more open and competitive system to avoid dependence on a monopoly or a few utilities. Antitrust and similar laws may further discourage the same owners or overlapping ownership of various stages of energy-source development.

The performance of electric power utilities is usually measured using financial, technical, and service coverage indicators. Technical indicators include reliability and efficiency of utilities. Hence, there is a wide range of public-utility policies which affect (a) distributive equity or impact on various income groups and occupational groups among different and within the same income classes; (b) economic efficiency; (c) the utility's need to finance expansion and quality improvement; and (d) other macroeconomic objectives such as effects on inflation and regional development. The structure and level of prices of energy inputs and costs of generated outputs have far-reaching allocative-efficiency and social-equity effects.

H. Electric Power Distribution (EPD)

The main issues of electric power distribution (EPD) -- unlike those of energy-source development and EPG -- are institutional arrangements for service coverage, mode of distribution and pricing, and, especially in the Philippines, the availability and reliability of power supply. EPD is normally distributed either by public or private utilities in service areas defined by their respective franchises and operating permits. The right to operate can be acquired either through a franchise provided by specific legislation or a certificate of public convenience and necessity (CPCN) issued by a regulatory agency or both. Final users, whether industries or households, connect through these distributors. On the other hand, direct connection of major industrial or institutional users to the PG utility is technically feasible and may be more efficient at a certain voltage level and load-factor, minimizing costly transmission losses arising from multiple-distribution stages. Direct connection of consumers to the EPG utility, however, may prevent small-size distributors of electricity from attaining certain levels of technical efficiency and financial viability due to a decreased load.

Households are directly affected by energy-source development, electric-power generation, and electric-power distribution through the following: (a) the nature, source, and relative prices of fuel households use; (b) demand of industries for labor which households supply; (c) availability and prices of goods and services which industries produce; and (d) availability of public goods and services. The impact on households is further conditioned by their observed response to electric-power rate increases as measured by elasticities of demand relative to price and income and cross elasticity of fuel substitutes, such as electricity and fuelwood.

The income elasticity of household energy demand is generally less than unity. It is higher for low-income groups and therefore has a significant distributive effect. This often leads to differential pricing of various energy products in favor of fuel products and electricity used mainly by poor households (kerosene and subsidized electricity) and by industries (bunker fuel and diesel oil).

In 1974, MERALCO introduced a price subsidy for the first 200 MWH as a form of socialized pricing, reducing it to the first 50 MWH in 1990. Philippine industries have suffered as a result and lost their international competitiveness. The same subsidy induced consumers to maximize the use of electricity. But since electricity has strong linkages with the rest of the economy, having a mean elasticity with respect to the gross domestic product of 0.457 (Alejo 1983), the use of electricity pricing as a means of redistributing income could compromise economic growth (Francisco 1987).

The demand of industries for labor depends on the direct and indirect effects of energy-price changes on such industries. The effects, in turn, depend on the energy intensity of industries, interfuel substitution and substitutability between energy and other factors of production. The long-run substitution effects are higher than the short-run. Based on OECD studies (Kumar and Munasinghe 1987), the elasticity of substitution between labor and energy ranged widely from 0.6 to 2.2 depending on the degree of aggregation, estimation period, and estimation procedure. The values of cross-price elasticities of interfuel substitution are generally lower at the household than the industry level due to the high capital costs of shifting arising from changing relative prices. Besides, the savings derived from energy substitution must be weighed carefully against the output and employment effects not only on the entire but also specific stages of industrial operation. In rice processing, for instance, mechanization arising from the availability of electric power has different effects on output and employment, particularly in threshing and milling. Over-reliance on manipulating prices in favor of such targeted sectors as farmers or rural communities can also have unintended negative effects since better-off households in these occupational groups and communities stand to benefit.

Alejo's study, which simulated the effects of an increase in tariff rate on crude petroleum for 1973-79 shows that employment marginally increased in the long run despite the negative short-run effect, presumably manifesting the effect of substitution of labor for energy and despite a decline of gross domestic product. Francisco, noting the positive correlation between temperature and the demand for electricity, argues the use of time-off day or seasonal pricing to reflect the scarcity value of electricity. He speculates that lower electricity bills at night may offset overtime and night premium payments and more labor might be employed given a fixed stock of capital and equipment in the economy.

The recent phenomenon of power outages as long as 12 hours a day has short- and long-run implications on industries, other institutions, and households.

First, the introduction of gas-turbine and other oil-based generating plants which have shorter installation periods will mean higher generating costs and electricity prices. Instead of being used as reserves or to meet peak loads, they contribute to the base power load. Some hydro-based electric-generating plants, such as Caliraya, which use pumped water during

off-peak periods may be uneconomic when using oil-based power. The cost of pumping water into a higher-elevation reservoir may outweigh the benefits of hydro-generated electricity.

Second, power supply can be rationed in several ways: shifting mobile generating plants i.e., bringing electric power barges to power-short areas; rotating power interruption on an announced schedule; implementing voluntary load-curtailement programs (VLCP) among heavy users; and introducing penalty rates during peak periods. VLCP schemes require discipline. Time-based pricing demands special electric meters and would be politically difficult to carry out in times of power shortage. Users who can not afford electricity back-up systems may cope by rescheduling work hours.

Third, users, including households, are resorting to buying electric generators. Large industries have a potential advantage relative to smaller ones. Although overall industrial competitive advantage suffers, smaller industries, which are usually labor intensive, may have less room to adjust, either in sourcing alternative power or rescheduling operations; power outages thus work against employment generation.

Fourth, those who can not adequately respond to the lack of electricity and its attendant problems are suffering losses: cancellation of export orders; poor product quality; and payment for overtime work.

Those who lose their jobs will have to rely on the usual safety nets -- social security and advance leave payments. Increased economic activity arising from the production, processing, and sale of alternative fuels such as LPG is one of the few positive results of the power outages. The discovery of natural gas in the Philippines is a timely and positive development.

I. EPD and Public Goods and Services

The availability of public goods and services is affected by EPG and other aspects of energy development through their macroeconomic effects, such as inflation and employment. Thus, energy pricing should consider its effects on government fiscal operations so that unsustainable deficits do not develop due to fiscal subsidies to EPG.

The key factors affecting the price of goods and services by EPG are industrial capacity to cut power costs, pricing policy, market structure, and elasticity of demand of households for various industrial goods and services. The extent to which industries pass on the rate changes to households depends on their pricing policies -- whether at full cost or through marginal pricing -- and their prominence given the market structure. The extent to which these factors affect household welfare is further influenced by the individual household's maximizing behavior on the consumption of goods and services, such as food and education, through the provision of labor services and income from government.⁴

J. Institutional Factors

Institutional arrangements play a major role in managing the EPG sector and its component programs and raising their social and private benefits. Many households directly tap other

4. See Lamberte et al. (1991) for a more elaborate treatment of the macro effects of public policies on households.

sources of energy such as wood and can be mobilized to promote sustainable practices especially in communal properties and thus prevent irreversible resource depletion. The legal framework of private-property rights, particularly the right of access to communal and public properties, also critically determines the household's ability to improve its welfare. The system of property rights should define who may use the resource, and the duration, extent, and conditions of use consistent with the generation of returns from sustainable use (de los Angeles 1990).

Furthermore, various ownership and management structures of firms have similar social implications. These structures include the standard corporate model, such as private-utility operations, where decisions are controlled by the major stockholders, and the cooperative model, where all members exercise equal voting rights, such as RECS. Depending on the model and sources of equity, groups or individuals will exert varying efforts and influence and derive benefits accordingly.

Within a broader institutional context, the regulatory structure should be as simple and unified as possible. This will result in a single set of policy directions, avoid policy inconsistencies common in multiple and overlapping regulatory jurisdictions, and facilitate implementation decisions regarding, for instance, securing a license and submitting performance-monitoring reports. A progressive personnel career development and training program to build capability to match new technologies will stabilize regulatory institutions or arrangements. In a pluralistic society, a system of regionally dispersed energy generation and distribution units with broad-based ownership is favored. But it will have to be reconciled with such factors as the sustainability of the cooperative model (where volunteerism and government assistance in the form of subsidies and training are key inputs), scale economies, local demand, and other considerations.

V. REGULATION OF THE POWER GENERATION AND DISTRIBUTION IN THE PHILIPPINES

A. Institutional Arrangements

The Aquino government changed the institutional structure of the energy sector. Its most drastic move was the abolition of the Ministry of Energy. At present, the key public institutions are the Energy Coordinating Council (ECC), Office of Energy Affairs (OEA), National Power Corporation (NPC), Philippine National Oil Corporation (PNOC), National Electrification Administration (NEA), Energy Regulatory Board (ERB), and the Environmental Management Bureau (EMB).

The ECC was created in September 1988 by EO 338 to strengthen and institutionalize the coordination among the different institutions in the energy sector, particularly those formulating policies, plans, and programs. The Council is chaired by the Presidential Adviser on Energy Affairs; its members are the OEA executive director, NPC and PNOC presidents, and NEA administrator. The OEA serves as the technical secretariat to the ECC.

The OEA was created by Executive Order No. 193 and is responsible for the formulation, planning, monitoring, implementation, and coordination of policies and programs in the field of energy. Its basic function is to ensure a continuous, adequate, and economic supply of energy

and ultimately achieve energy self-reliance through intensive exploration and development of indigenous energy resources, and through the judicious conservation and efficient use of energy. The OEA, therefore, must coordinate extensively with PNOC, NPC, NEA, ERB, and EMB in formulating sector policies.

The ERB is a quasijudicial body established in May 1988. It is responsible for setting and regulating the prices of petroleum products. The ERB also regulates capacity expansion of refineries, rates of private electric utilities, except NPC and electric cooperatives, and their operation. The Board may also regulate the importing, exporting, shipping, transporting, processing, refining, marketing, and distribution of all energy resources. The Board is composed of a chair and three commissioners who are all Presidential appointees. The Board's decisions are binding and implemented immediately, appealable only to the Supreme Court.

Except for a few private utilities, the NPC was the sole generator of electric power until September 1989 when EO 215 allowed private-sector participation in power generation. Created under RA 6395 in September 1971, the NPC's primary responsibility is to develop the country's power grids and generating capability. NPC facilities are organized into three separate systems: Luzon, Mindanao, and the Visayas. While Luzon and Mindanao have their own grids, the Visayas system includes four relatively independent grids: Cebu, Negros and Panay, Leyte, and Bohol.

NPC is allowed to realize a maximum rate of 10 percent annually based on its rate base of net operating assets plus two months of working capital. The rates of NPC are fixed by its Board and were subject to review by the defunct Public Service Commission and now by ERB. NPC rates, however, are highly influenced by the ECC and Office of the President and may be reviewed by ERB if complaints are filed and request for hearing is obtained.

An adequate, reasonably priced, reliable electricity supply, and nationwide electrification by developing power-generation plants using indigenous energy sources remain critical components of current national policies. As the sole government agency engaged principally in the generation, transmission, distribution, and wholesale of electric power, the NPC enjoys some tax and duty exemptions. It is also exempt from the Central Bank peso-block-account requirement for its commercial and Paris Club loans under the second round of restructuring agreement. It draws equity contribution from the national government, its sole owner, and has access to ODA, which effectively lowers its capital and operating expenses. At the end of 1990, its authorized capital was P50 billion, paid-in capital P16 billion, and actual capital P36 billion. It received P9.55 billion additional equity in 1980-90.

The NPC avails of program and project loans from multilateral financing institutions such as World Bank and Asian Development Bank to ensure the availability of foreign-exchange funding for projects and specific investment activities. However, these institutions require NPC to generate a minimum of 8-percent rate of return on rate base (RORB) through their loan covenants.

PNOC is the main institutional arm of the government in energy-resource development and the petroleum industry. It was established in November 1973 by PD No. 334, the result of the buy-out of ESSO Philippines, Inc. a subsidiary of ESSO Standard Eastern, Inc. and Bataan

Refining Corporation, the biggest crude-oil refinery in the country. Through PD 334, the PNOC has built up government capability in the major areas of oil trade, refining and manufacturing, marketing, shipping, transport, and storage, as well as in exploration and development of geothermal and coal resources. At present, PNOC competes with two foreign oil-refining and marketing companies (Shell and Caltex), the foreign Philippine Geothermal Inc. (PGI), and a number of domestic coal-mining companies. Petrophil, PNOC's marketing subsidiary, is the country's leading oil-marketing firm. In times of petroleum-supply crises, it has been able to stabilize local supplies of petroleum by entering into direct government-to-government supply agreement with oil-producing countries.

The NEA was created by RA 6038, as amended by PDs 269 and 1645, to provide nationwide electrification by providing technical and financial support for rural electric cooperatives (RECs). NEA has helped establish about 140 RECs; 119 are operating, serving 1,301 towns and cities, 21,314 barangays, and more than 3 million households, or 52 percent of the population. By the end of 1991, about 65 percent of the population had access to electricity. The original 1972 target was total electrification by year 2000. However, the NEA's effectiveness has been undermined by several factors, one of which was NEA's involvement in activities unrelated to electrification, such as the establishment of livelihood projects in rural areas and a number of unsuccessful experiments in renewable-energy sources, such as dendrothermal projects. In addition, low load, poor maintenance, political patronage, and management inefficiency pushed many financially stricken RECs to the brink of insolvency. The sale to the private sector of RECs is now a public policy. In 1986-90, NEA availed of government subsidy amounting to P480 million.

In 1987, EMB succeeded the National Environmental Protection Council (NEPC), the National Pollution Control Commission (NPCC), and the Environment Center of the Philippines (ECP). The EMB is mandated to do the following: (a) recommend policies and progress for environmental-management pollution control, including statutory requirements; (b) formulate quality standards for water, air, land, and noise; (c) formulate rules and regulations for the disposal of wastes and toxic substances; (d) guide its regional offices in implementing policies and programs, standards, and projects; and (e) liaise with the legislative, public, and other government agencies involved in environmental matters. EMB is a bureau under the Department of Environment and Natural Resources (DENR) and undertakes ecological studies, p73 conducts EIA, and issues and enforces ECCs. The enforcement of antipollution laws is pursued further by the Pollution Adjudication Board, an attached agency of the DENR.

The failures of environmental-protection activities in the past prompted the following natural-resources and environmental-quality management steps.

- 1) Adoption and implementation of the Philippine Strategy for Sustainable Development (PSSD) according to Cabinet Resolution No. 37, 29 November 1989. PSSD aims to achieve and maintain economic growth without depleting natural resources or degrading environmental quality.
- 2) Enactment by Congress of the Toxic Substances and Hazardous and Nuclear Waste Control Act (RA No. 6969).

- 3) Strengthening of the Environmental Impact Assessment (EIA) system. PD 1586 institutionalized the EIA system to forecast the impacts of critical development projects on the environment and to determine preventive or mitigating measures.
- 4) Establishment of standards for air and water quality and prescribed guidelines for land-use management, natural-resources management, and conservation, utilization of surface and ground waters, and waste management consistent with PD 1132.

RECs are non-stock and non-profit, registered under RA 6038 as amended by PDs 269 and 1645 or organized under the Philippine Non-Agricultural Cooperative Act whether converted under PD 260 or not. RECs may generate, manufacture, purchase, acquire, accumulate, and transmit electric power and energy, and distribute, sell, supply, and dispose of electric energy for the mutual benefits of its members and patrons and of other entities requiring its services. RECs are generally exempt from paying taxes, duties and, to a certain extent, fees that may be required for their operations. In addition, RECs are normally given preference in the sale of NPC electric power. Direct connection of large customers to NPC is covered by an NPC-Board of Investment agreement and subject to rules and conditions of the ERB. (See Annex A on ERB Resolution 91-22).

B. The Regulatory and Promotional Environment

Energy-power generation and distribution (EPGD), including energy-source development, are the subject of a number of laws, policies, administrative rules, and regulations governing the following: (a) entry and ownership in the various components of the electric-power sector, from energy-source development to electricity distribution; (b) access to inputs and financial and fiscal treatment of power utilities; (c) input pricing and costs; (d) electricity pricing; (e) public safety; (f) exit; and (g) other regulations. Other regulations include compliance requirements with technical standards using efficiency and reliability-of-service indicators, such as transmission and distribution-system losses and other government directives, like lifetime tariffs.

Entry and Ownership.⁵ Article XII (National Economy and Patrimony) of the 1987 Constitution provides that the exploration, development and utilization of natural resources shall be (a) under state supervision, (b) through co-production, joint venture or production-sharing agreements with Filipino citizens or corporations at least 60 percent Filipino-owned for 25 years at most and renewable for not more than 25 years, and (c) through technical or financial assistance in the case of foreign-owned corporations. The provision is implemented by the Foreign Investment Act of 1991 (RA 7042) through the Foreign Investment Negative List A (where foreign ownership is limited by the Constitution and specific laws) and PD 8, as amended by PD 1857 which introduced the service contract approach in oil exploration and development (in lieu of the concession system under RA 387).

5. Structural barriers to entry are not covered. These include scale economies and excess capacity, absolute advantages, high capital requirements, and imperfect capital markets and predatory pricing (SGV Consulting 1992).

The OEA oversees the granting and implementation of service contract agreements, a function of the former Ministry of Energy. The OEA also planned and formulated the 1986-90 Power Development Program. Service contracts and similar schemes avoid the constitutional limit on foreign-equity participation on energy-resource development and provide greater flexibility in risks and profit-sharing between government and private investors.

Significantly, RA 7042 and its implementing rules and regulations (a) remove the preapproval requirement of the Board of Investments under Book II of EO 226 or the Omnibus Investment Act for enterprises not seeking BOI incentives, prior to registration with the Securities and Exchange Commission (SEC), (b) reduce other registration requirements and simplify the process, (c) reduce the reporting requirements, and (d) time-bounds [puts a limit on the period for action] processing of applications and clearances.

In the case of EPGD utilities, entry and operation conditions are generally governed by the Public Service law (CA 146, as amended) which the ERB administers for electric light and power plants or private electric and power utilities which fall under the category of industrial public services. In addition, the NEA and its Board acting as the National Electrification Commission grants authority for the operation of RECs.

The institutional model for EPGD has major implications for the financial viability of operating units. In particular, the one-member-one-vote, nonprofit principle underlying the cooperative model is potentially inconsistent with efficient management and reinvestment objectives. These operating objectives are critical to the attainment of a wider coverage of rural electrification unless massive government subsidy is provided.

The equipment, generating and producing units, type and quality of services to be rendered and, in general, the manner of operation of private utilities and RECs, must conform with their certificates of public convenience and necessity, the Philippine Electrical Safety Code, and international electrical- and mechanical-engineering standards. These requirements would normally include (a) standard nominal voltage and metering, (b) schedule of rates, i.e., basic rates and other allowable adjustments covering power cost and currency-exchange rate where foreign loans are involved, and (c) logbook of operations.

Under Section II of Article 12 of the 1987 Constitution, the issuance of a franchise, certificate, or other form of authorization for the operation of a public utility shall (a) be limited to Filipino citizens or corporations, and b) neither be exclusive in character nor for a period longer than 50 years. It shall further be subject to amendment, alteration, or repeal by Congress when the common good so requires. Equity participation in public utilities is to be encouraged. The Constitutional provision may not, however, be an absolute bar to entry. The Supreme Court ruled in a decision dated 11 July 1989 (*Albano vs. Reyes* 175 SCRA 264) that "franchises issued by Congress are not required before each and every public utility may operate." The same Constitutional provision does not necessarily imply that only Congress has the right to grant such authorization. For instance, the authority to grant franchise to transport operators has been given to the Land Transportation Franchising and Regulatory Board. This ruling remains the subject of debate and is not looked upon with favor by most members of Congress.

At present, DOTC still requires a Congressional franchise of private telecommunication carriers who wish to bid for public contracts to operate telecommunication facilities. Franchise holders must pay a franchise tax in addition to income and other taxes. The Constitution further provides that the participation of foreign investors in the governing body of any public utility enterprise shall be limited to their proportionate share in its capital and that all the executive and managing officers of such corporation or association must be Filipino citizens.

RA 6957 (governing BOT and build-and-transfer or BT schemes) permits BOT and BT participants to engage in power generation, distribution, electrification, and related functions to operate through a utility franchise granted to the lowest bidder.

EO 215 allows the private sector to generate electric power subject to an electricity off-take and pricing agreement with the NPC and NEA and other franchise electric utilities based on OEA guidelines. It is often argued that NPC should make transparent its computational guidelines for estimating its off-take tariff and avoided cost for all types of plants in order to facilitate private-sector co-generation and interconnection decisions.

Notwithstanding the demonopolization of power generation, some provisions of the guidelines of EO 215 remain restrictive and may need to be reviewed. For instance, a private-sector generation facility (PSGF) is limited to the largest generating-unit size or 10 percent of the coincident demand of the NPC grid. Likewise, PSGF providing block-power production facilities can not supply directly to electric distributors without interconnecting with NPC. This condition preserves NPC's role as the strategic planner for the grid. Thus, the private sector is limited to providing supplementary reserve power or peaking power supply instead of being encouraged to provide viable alternative base power plants to NPC grids. In this connection, the proposed 700-MW Pagbilao coal thermal plant to be put up by the private sector, which will add to NPC's base capacity, is a positive development. Significantly, NPC is now encouraging lease-and-operate agreements with the private sector in some of its existing plants, such as MIESCOR's rehabilitation and operation of the Ambuklao plant. EO 215 discourages and RA 6957 prohibits a national-government guarantee of foreign financing of infrastructure facilities. These regulations reduce the flexibility of potential BOT operators to a few models of financial cooperation among usual participants, i.e., project proponents, banks, suppliers and the national government or LGU considering that a government financing guarantee is normally a part of the risk sharing arrangement underlying the BOT model.

OEA must more actively promote co-generation with interconnection instead of being a passive arbiter and monitor. RA 7156 or the Mini-Hydroelectric Power Development Law further encourages the private sector to participate in power generation and help ease power shortages.

NEA's performance used to be heavily biased toward expanded area coverage of rural electricity.⁶ Efficiency in operations is increasingly being given a higher priority. Moreover, the selective take-over of RECs under the privatization program is being pursued consistently with the policy of allowing private-sector lease of some NPC plants. NEA must, however, reconcile its

6. Private electric utilities are addressed here. They are subject to the ERB regulatory framework and are less problematic than RECs.

promotional and lending roles with its regulatory role. For instance, the occasional designation of NEA personnel as cooperative managers in problem cooperatives tends to discourage entrepreneurial development in the long-run and generates a conflict of interest. NEA must be more than a receiver.

Access to Inputs. The ability of EPGD operators to provide viable services is influenced by the policy and regulatory regime -- unhindered access to energy sources, imported equipment, and finance, for instance -- affecting their inputs.

There are few administrative restrictions to such inputs. NPC and RECs, for example, often enjoy tax exemptions and subsidies under existing laws subject to the endorsement of the Fiscal Incentives Review Board and availability of appropriations through the Tax Expenditure Fund in case budgetary subsidies are required.

The importation of coal is subject to ERB clearance to encourage the use of indigenous sources. ERB also regulates the importation of refined petroleum products to encourage local refinery utilization. The importation of electric generator sets by nonutilities is occasionally liberalized through tariff and tax exemptions to address recurring power shortages. Importation of products covered by the Progressive Export Program for Consumer Electronic Products will be liberalized once tariff adjustments are introduced.

On 9 October 1991, NEDA approved guidelines for private-sector access to ODA (with sharing of concessionality) through conduit government institutions to avoid restrictions imposed by the Foreign Borrowings Act (RA 245). The guidelines give preference to electric generation and distribution and five other sectors subject to their high priority rating as supportive of the Development Plan, their economic viability, and the consideration that they are economically viable but not financially feasible. For instance, the ASEAN-Japan Development Fund provides long-term credit through the DBP and conduit private banks. The energy sector also benefits from some limited government-wide research on energy development, such as renewable resources and conservation. At present NEA provides concessional financing to RECs at about 12-percent interest with 15 to 20 years to pay (with a reasonable grace period) and allows restructuring of RECs' loans on a case by case basis.

Under the provisions of the Omnibus Investments Code of 1987 (EO 226), preferred areas of economic activities listed in the Investment Priorities Plan (IPP) are entitled to some incentives. The 1991 IPP included power generation and distribution under the following qualifications.

- 1) Power generation: up to 100-percent foreign ownership if the project is classified as pioneer, i.e., uses nonconventional fuels or source of energy such as geothermal, solar, wind power, biomass, etc., or technology not commercially tried in the Philippines. A plant should have a generating capacity of at least 50 MW to be connected to the NPC grid system. The 50-MW cut-off should be reviewed for technical and economic efficiency considerations and consistency with EO 215, particularly with respect to the largest allowable generating unit for interconnection with NPC. A former Secretary of Energy, Geronimo Velasco, reportedly contended that electricity from self-generated power sources is cheaper

than what can be purchased directly from MERALCO because of the latter pricing and cost structure.

- 2) Electric distribution in less-developed areas: up to 40 percent foreign-owned (as a public-utility project).

The incentives for the first project category are as follows: (a) income-tax holiday for three years for expansion projects, four years for new but nonpioneer projects, and six years for pioneer projects and those located in less-developed areas; (b) tax and duty-free importation of capital equipment up to 12 August 1992; (c) tax credit on domestically fabricated capital equipment up to 12 August 1992; and (d) employment of foreign nationals. The second type of project is entitled to the same incentives except the income-tax holiday. Incentives are being considered for extension under the proposed 1992 IPP.

Input Pricing and Costs. The pricing of energy inputs and electricity is governed principally by the following: (a) provisions of the service contract (in the case of foreign-owned corporations) affecting energy-source development (e.g., geothermal steam); BOT contract as authorized under the BOT law (RA 6957) and Private Sector Generation Facility agreements under EO 215; (b) pricing policy on petroleum products, which generally favors diesel oil and kerosene -- used most often by industries and low-income households, respectively; (c) tax and other nontax privileges of energy users (e.g., NPC and RECs); (d) other laws (e.g., Local Government Code); and (e) electricity-pricing policy as practiced by NPC and regulated by the ERB and the National Electrification Commission (NEC).

PD 8, as amended, is perceived as unfavorable to private service contractors due to the mandated government share and the exploration and "reservoir" risks involved. This handicap is, however, largely addressed by the BOT law. For instance, the BOT contract of NPC with Hopewell (operation of a gas turbine plant at Navotas) guarantees the private contractor a fixed monthly "energy fee" and an additional energy fee based on the actual amount of energy generated in exchange for Hopewell, guaranteeing a reliable power supply of 200 MW and at a power price lower than NPC's "avoided cost," which is what the cost to NPC would be if it were to build and operate the power plant using its own resources.

As regards the prices of petroleum products used as EPG inputs, such as bunker and diesel oil, the existing policy puts the burden of oil-price increments on less-essential fuel products, like gasoline. This policy, including the special fiscal and financial accommodations granted to NPC and NEA, has implications for electricity pricing, cost recovery, and investment programs of EPGD utilities. It is a key instrument of the policy on national incomes and price.

The Local Government Code (LGC) of 1991 has several provisions affecting the operations and viability of the EPGD sector:

- 1) Sec. 289 Chapter 2: local government units (LGUs) shall have a share of 40 percent of the gross collection derived by the national government from the preceding fiscal year from the utilization and development of the national wealth, e.g., royalties and share arising from coproduction, joint venture, and production sharing agreements, on top of their internal-revenue allocations;

- 2) Sec. 291 Chapter 2: LGUs shall have a share based on the preceding fiscal year from the proceeds derived by any government agency or corporation engaged in the utilization of the national wealth based on 1 percent of the gross receipts of the preceding calendar year or 40 percent of all taxes, royalties and other fees they would have paid if not otherwise exempt, whichever is higher;
- 3) Sec. 294 Chapter 2: the proceeds of the share of LGUs shall finance local development and livelihood projects, provided that 80 percent of the proceeds derived from the development and utilization of hydrothermal, geothermal, and other sources of energy shall be applied solely to cover the cost of electricity in the LGU where such source of energy is located;
- 4) Sec. 26 Chapter 3: it shall be the duty of every national government agency or corporation authorizing or involved in the planning and implementation of any project to consult LGUs, NGOs, and other sectors to explain the goals of the project, its environmental and ecological impact, and to take measures to prevent or minimize the adverse effects; and
- 5) Sec. 193 Chapter 5: unless otherwise provided under the Code, tax exemption or incentives enjoyed by all persons, whether natural or juridical, including government-owned or controlled corporations, except local water districts, cooperatives duly registered under RA 6938, nonstock and nonprofit hospitals and educational contributions, are hereby withdrawn. This particular provision needs clarification since it may conflict with more specific laws providing unique incentives to EPGD operators.

In addition, the LGC, under Book II Title One confers power to LGUs to create other sources of income subject to some common limitations. This means that they cannot impose income tax, except when levied on banks and other financial institutions.

Given these LGC provisions, it is expected that LGUs and affected communities will become more receptive to the hosting of EPGD projects due to their sharing of royalties and other incomes if the utilization of national wealth is involved and their participation in the pre-implementation consultations and planning.

The scope of specific taxing power of provinces, particularly those which may affect the EPD sector include the following:

- 1) a tax on business enjoying a franchise, at a rate not exceeding half of 1 percent of the gross annual receipts for the preceding calendar year within its territorial jurisdiction; and
- 2) a tax on transfer of real property ownership at half of 1 percent of the total consideration involved or the fair market value, whichever is higher.

Electricity Pricing. Section 1 of Article XII of the 1987 Constitution provides for the equitable distribution of opportunities, income, and wealth. Moreover, Section 7 of Article X entitles LGUs to an equitable share in the process of the utilization and development of the

national wealth within their respective areas, including further sharing with the inhabitants by way of direct benefits.

At present, the pricing of electric power by NPC is different for each grid and essentially reflects grid-generating costs. The NPC charter further provides that a uniform schedule p73 of rates shall apply to all customers that fall within the same classification in an interconnected system. Moreover, these costs are passed on to distributors such as the RECs and private electric utilities and large customers directly connected to NPC, based on an existing agreement with the BOI and the rules and guidelines of ERB.

Thus, large industrial loads should be connected with electric distributors if the latter meet certain technical and financial standards. The ERB Resolution 91-22 financial standards are as follows: (a) there is no outstanding debt with NPC; (b) the debt-service ratio is not below 1.25 (i.e., for every peso of debt, the net income of the utility before interest is P1.25 or higher); (c) the operating-expense ratio is 95 percent or less; and (d) the average collection period is 45 days or less. Systems losses should not exceed 14 percent initially, and later 10 percent in five years. The transition period to meet these ERB requirements is one year. The NEC is expected to or must now prescribe similar standards to be applicable to RECs.

The differential-pricing approach underlying the multigrid system penalizes poor households in less developed regions that do not have cheap power sources. The only way for them to enjoy comparatively cheap power is through cross-subsidy from other users in the same grid or from the government.

With the LGC's implementation in 1992, the share of LGUs pursuant to Section 7, Article X of the 1987 Constitution can be provided through at least two modalities. First, a uniform nationwide power tariff may be considered with the share of beneficiary LGUs in the national wealth being used by affected communities to subsidize members, consistent with Section 294 chapter 2 of the LGC. This will require either a revision of the charter of the NPC regarding the multigrid system or the technical interconnection of all grids. The second is to maintain the electricity-differential grid-pricing approach with local communities enjoying cheap energy sources which reflects their share of the utilization of the national wealth, i.e., hydro and geothermal sources in their locality. In both options, power rates should reflect the implications of providing the share of the national wealth to LGUs, in the form of lower-cost power supply to entitled communities. This, however, is not significant since the value of the share of LGUs in the national wealth in 1992 is estimated at only about P380 million.

In addition to the existing rules and regulations on electric pricing, the NPC charges PASAR and PHILPHOS in Leyte, where the national government has equity and loan guarantee risks P0.977/KwH lower than electric cooperatives (P1.63/KwH) due to a previous Presidential directive. RECs operating in the mainland (in contrast to island cooperatives) were also formerly subject to a government-directed P2.50/KwH rate ceiling.

Any changes in power rates must also consider the eventual implementation of a 1987 Cabinet decision to restructure power rates based on long-run marginal cost (LRMC), provide lifeline rates to poor communities, and correct distortions between rates in the Visayas and those in Luzon and Mindanao. The proposed power-rate restructuring, which will be reflected mainly

in NPC rates, upholds the wholesaler-retailer concept wherein franchise rights will be protected through a rate differential between utilities and nonutilities.

C. Specific Policies and Regulations

NPC was the country's sole generator of electric power until September 1989 when EO 215 allowed the private sector to participate in power generation. Created under RA 6395 in September 1971, the NPC's primary responsibility is to develop the country's power grids and generating capability.

NPC is allowed to realize a maximum rate of 10 percent annually based on revalued net fixed assets plus some working capital. NPC rates are highly influenced by the ECC and Office of the President; NPC rates may be reviewed by ERB. In practice, NPC targets a minimum 8-percent rate of return on rate base, a 1.3 gross internal cash generation to debt service ratio (debt coverage) and a 20-percent self-financing ratio, i.e., net internal cash generation as a proportion of capital expenditures. The first requirement has been temporarily reduced to a 6.5-percent RORB instead of 8 percent by official foreign creditors to accommodate NPC's present circumstances.

In 1990, NPC's financial performance deteriorated resulting in net losses of P65 million and a debt-service ratio of 0.9-1.0 and a current ratio below 1.0. While its cash generation was positive owing largely to debt rescheduling, 100 percent of its capital expenditures was financed from loans. Its financial problems were due to insufficient tariff adjustments, lower increases in power sales, and higher costs arising from higher oil prices, and the devaluation in 1990.

Rural Electric Cooperatives (RECs). Unlike private electric utilities, RECs have access to concessional NEA loans and FIRB- approved limited tax subsidies. The following cost factors are considered in the determination of REC rates: (a) cost of a REC's generated power or purchased power from NPC; (b) operation and maintenance costs; (c) interest and other charges on long-term debt; (d) provision for reinvestment; and (e) provision for actual power losses or a 25-percent allowance, whichever is lower.

RECs are not subject to rate-of-return criteria as they are supposed to be nonprofit. Their costs, however, are underrecovered due to many reasons, including the extent that allowable schedules of electric rates do not reflect true depreciation costs based on actual replacement value of their assets. Like NPC, RECs must absorb power and transmission losses beyond that allowed by their approved schedules of rates and performance standards or as agreed with the NEC. There are also doubtful accounts receivable to reckon with. In 1985-90, NEA's average collection efficiency was 21 percent on current accounts and 16 percent on arrears. Some tax-exemption privileges of government-owned or controlled corporations previously authorized under EO 93 have been effectively withdrawn, while some, as in the case of cooperatives per Memorandum Order No. 65 dated 21 January 1987, took effect on July 1987.

NPC and RECs must contend with often-inadequate national- government appropriations for the Tax Expenditures Fund to pay for tax subsidies, as evidenced by the issuance of Certificate of Entitlement to Subsidy(ies) by the Fiscal Incentives Review Board. Under the Cooperative Code of the Philippines (RA 6938), RECs are given three years from 10 March 1990 to register

with the Authority to be eligible for tax- and duty-exemption privileges. It is not clear whether this privilege has been superseded by the LGC and amends EO 93.

NPC and NEA are faced with serious financing problems. While NPC remains profitable in general, it does not have enough internal resources to implement the power-development program. This situation is due mainly to the nonimplementation of the LRMC pricing policy approved by the Cabinet, delays in tariff adjustments and ODA availment as a result of judicial appeals, and slow project approvals, respectively, and bureaucratic inefficiencies.

The repayment rate of RECs to NEA; for instance, is only about 72 percent. NEA has a huge inventory of unutilized and deteriorating assets, such as minihydro and dendrothermal equipment, some of which were acquired through foreign loans. A bail-out program was approved by the Cabinet on 10 January 1991 to address the problem of cost underrecovery. The plan consists of (a) write-off of receivables from remote and nonviable RECs, (b) relief from past nonenergy related obligations, and (c) assumption by the national government of all NEAs' foreign loans and conversion of the same into equity as they fall due.

The bail-out program will involve the conversion of NEA foreign loans to national-government equity and the transfer of NEA's nonperforming assets to the national government.

Other Regulations. Other regulations affecting the EPGD sector are the imposition of technical standards, labor laws, local ordinances, and other procedures.

Plants must follow environmental laws in the interest of public health and safety. They must acquire an environmental compliance certificate from the EMB based on an environmental impact assessment and consultations with affected communities. A condition often required by EMB is certification that the technology is environmentally acceptable in the source country. EMB also requires the setting up of environmental-guarantee funds, as in the case of the proposed CALACA II project, to address the social and other costs of environmentally sensitive projects. The setting up of guarantee funds may require some guidelines in the monetization of environmental externalities using any or a combination of the damage-cost, control-cost, and willingness-to-pay approaches and based on the "polluter pays" principle.

Proposed EPGD projects requiring foreign-loan financing, including those funded by NPC and NEA, must undergo review and appraisal by the Investment Coordination Committee of the NEDA Board. These projects must be financially and economically viable and endorsed by the Regional Development Council where the projects are to be located.

VI. CONCLUSIONS

The state performs provider, enabler, and regulatory roles regardless of its political ideology. The provider role is underpinned by the need to produce public goods and, in many instances, to address the needs of the poor. As an enabler, the state promotes private participation in economic activities. As regulator, it discourages unacceptable individual and corporate behavior. The pursuit of political normalization-cum-economic liberalization as a national strategy demands a

review of this three-fold role of the state. Moreover, such review ought to address and consider both the macro and micro implications of the final decision.

In the Philippines, economic instability adds another dimension to the review of the state's roles. The government has comparatively fewer resources to fund or carry out its traditional activities and must pass some of them on to the private sector. The state's regulatory aspect must especially undergo review. To encourage privatization, the state should relax market-related regulations and concentrate on nonmarket-related regulations that will improve public safety, ensure compliance with performance standards on monopolies, and protect the natural environment. It must avoid using as a reason to intervene any signs of market imperfection which, for the most part are likely to be the transition costs of economic adjustment or regulations themselves.

The review of regulations must address legal and other government restrictions which discourage sound macroeconomic policies and impede their positive transmission to consumers. Market-oriented deregulation must be comprehensively pursued across all sectors and accompanied by other modes of liberalization, such as decentralization, if private initiatives are to be freed and resources allocated efficiently. Only a systematic review and pursuit of regulations will allow deregulation to result in efficiency gains.

The trends of the 1980s and 1990s were and are mixed: there are fewer regulations now in industry, agriculture, finance, and utilities; on the other hand, there are more regulations affecting the natural environment. Similarly, legal and administrative requirements on public consultations, whether on proposed policies or investment projects, are now imposed and dictated by political realities.

To be sure, there remains a wide scope for further reforms and implementation of fewer restrictions in many sectors. For instance, the implementation of the LRMC principle in the power sector has yet to take place. Legal restrictions on rates of returns, particularly in the utilities sector, would require review in the light of the BOT law to encourage greater private investments. On the other hand, the removal of barriers to entry -- demonopolization and less government direct ownership -- are the most advanced liberalization measures so far. As greater competition is allowed, restrictions on pricing and rates of return common in the utilities sector will have to be relaxed, otherwise liberalization efforts will become irrelevant.

Households, whether as consumers or providers of labor, have been affected differently depending on where restrictions have been removed. In the case of regulations on public safety and the natural environment, trade-offs often exist between immediate investments and jobs and safer but costlier projects. Conflict resolution with compensation mechanisms is critical in addressing such trade-offs, preferably outside the ambit of the judiciary to avoid unnecessary legal complications.

The process of setting up new regulations and dismantling those that have lost their utility value is akin to the management of structural-adjustment programs. Speed, sequence, and other aspects of the process need special attention and calibrated implementation. At the same time, some aspects and effects of externalities would require more analytical work to minimize unintended effects.

Three major issues affect the future role and development of the EPGD sector: entry and production; allocation and operation access and equity; and institutional-arrangement issues.

Entry and production issues relate to expanding electric supply by addressing regulations which hamper productive capacity: entry conditions; financial and fiscal incentives; pricing; and other related concerns. Entry regulations have been substantially loosened. RA 7042 (Foreign Investment law), EO 215 (Power Co-generation law), and RA 6947 (BOT law) offer improved entry conditions through the delegated grant of franchises and policy of providing a fair rate of return to private investors. Some of the major remaining hindrances are the discouragement of financial guarantee by the national government of BOT projects and the mandatory interconnection with NPC grids of PSGF. Serious consideration is now being given to the private sector take-over of distressed cooperatives. On the other hand, there are fewer fiscal incentives available to NPC and RECs unless they avail of the Tax Expenditure Fund and the latter register with the Cooperatives Development Authority.

Private utilities, on the other hand, have better access to ODA through relending windows of government financial institutions and BOI fiscal incentives under certain conditions, e.g., if they generate at least 50 MW. Pricing, however, remains regulated and a highly political matter. It is complicated by poor service by the NPC and RECs and by increased costs from a higher oil-based fuel mix thus making rate increases difficult to justify.

Main regulations on allocation and operation have to do with compliance with environmental and utility-operating standards. New entrants are faced with a stricter environmental-assessment process under The Philippine Environmental Impact Statement System (PD 1586) and host-community acceptance requirements such as consultations and compensation. Incumbent utility operators also need to comply with financial and technical standards of operation as imposed by ERB on private electric utilities and those planned by the NEC for application to RECs. Enforcement of said standards has, however, been less rigid due to the difficulty faced by most electric distributors, notably RECs. A more reasonable transition period and standards of performance are required. Moreover, the financial standards should consider utility pricing and other constraints like nonimplementation of the LRMC pricing policy and weak market demand due to the economic slowdown.

Access and equity issues must address the conflict between cost recovery and the need to assist poor households with subsidized electricity within the context of a more defined policy on the role of the supply and pricing of electricity to different regions and end-users. Meralco has reduced its electricity subsidy. Nonetheless, the extent of power rate subsidy given through cheaper electricity to households and other users outside the MERALCO franchise area remains unresolved. This is hindered by the lack of large industrial users in rural areas which can provide cross-subsidy to small users. The practice of power cross-subsidy rates further complicates the peculiarities of the grid pricing policy. But it is somewhat moderated by the sharing of national wealth as provided for by the LGC. Pricing issues are complex and have wider financial, fiscal, and social implications. Thus far, rural households have benefitted to the extent that electricity rates have not proportionately adjusted to increases in generation and distribution costs and do not reflect revaluation of assets of utility distributors, whether RECs or private utilities.

On institutional-arrangement issues, a number of observations can be derived. First, OEA should be more active and aggressive in reforming energy policy so as to improve the regulatory environment and act as promoter and arbitrator of BOT energy projects. It must continue to encourage and support the refining of the least-cost power-development program (PDP) of NPC and the proposed rural-electrification master plan (REMP) of NEA. There is no reason why OEA cannot exercise strong leadership as the abolished Ministry of Energy did. The PDP and REMP must clarify the locations and type of projects where private co-generators can participate, whether as provider of base or peaking loads, or distributors.

ERB should regulate both private utilities and NPC. (The latter's pricing decisions are subject to ERB hearings.) NEA must clarify its regulatory role on RECs and reconcile it with its promotional role to avoid conflict of interest. But it should be guided by a clearer national-policy statement on the role of RECs in providing rural electricity, including the appropriate financial, technical and pricing conditions. The expanded-area-coverage approach as a promotional policy, particularly in rural areas, must be reconciled with the cost-recovery principle which underlies sound utility pricing.

NPC and NEA must also undergo institutional strengthening and financial rehabilitation for the following: (a) improving their investment planning and implementation capabilities to reduce systems losses; (b) overhauling their pricing structure along the LRMC principle to become more financially viable; and (c) raising the competence of their manpower and quality of their operating systems. The ECC will have to seek the full commitment of the national government through the Government Corporate Monitoring and Coordinating Committee, of NPC, and NEA to implement such program. The NEA bail-out plan and the preparation of the REMP and a similar plan for NPC are major steps in this direction. The reorganization and depoliticalization of NEA are addressed in the proposed Rural Electrification Act of 1991.

ANNEX A**ERB RESOLUTION NO. 91-22**

WHEREAS, on January 21, 1987, the President and the Cabinet approved a set of policy reforms for the power sector, which, among other things, mandated the establishment of technical and financial indicators and standards to be used as bases for determining the continuance or discontinuance of direct power connection of industries to the National Power Corporation;

WHEREAS, the Energy Coordinating Council (ECC) subsequently endorsed to the Energy Regulatory Board, for adoption and implementation, a set of financial and technical standards which had been formulated in consultation with various government and private agencies/entities concerned;

WHEREAS, the Board has requested various industries/groups, which will be affected by these financial and technical standards particularly those that are directly connected to the National Power Corporation (NPC), to submit their respective comments/views thereon for consideration by the Board;

WHEREAS, there is an absolute need to adopt and implement these standards in order to facilitate the determination of the power distributors qualified to service large industrial customers and, consequently, the transfer of said large industrial loads directly connected to NPC to the local electric distributors under this Board's jurisdiction.

NOW, THEREFORE, be it resolved, as this Board hereby resolves, to adopt and implement, **AS IT HEREBY ADOPTS AND IMPLEMENTS**, the following financial and technical standards for electric utilities under the Board's jurisdiction to be used as bases for determining whether direct connection of industry to NPC is no longer necessary in the franchise area of the specific electric utility, together with the prescribed data monitoring format:

I. FINANCIAL STANDARDS

Section 1. Definition of Financial Indicators.

1. Outstanding Debt to NPC (ODNPC): Total outstanding or overdue accounts to NPC excluding restructured debts and receivables from government accounts.

Standard is set at no outstanding debt to NPC.

2. Debt Service Capability Ratio (DSCR):

$$\text{DSCR} = \frac{\text{Net Income (before interest) plus Non-Cash Charges}}{\text{Interest plus Principal Payments on All Loans}}$$

Standard is at least 1.25

3. Operating Expense Ratio (OER):

$$\text{OER} = \frac{\text{Operating Expenses plus Cost of Available Power less Taxes}}{\text{Revenues from Sale of Electricity}}$$

Standard is 95 Percent or less.

4. Average Collection Period (ACP):

$$\text{ACP} = \frac{\text{Customers Accounts Receivables less Government Accounts}}{\text{Revenues from Sale of Electricity}} \times 365 \text{ days}$$

Standard is 45 Days or less.

Section 2. Weights are given to the different financial standards since the different financial indicators are not of equal importance in the determination of financial capabilities of electric utilities in taking over industries directly connected to NPC, viz;

INDICATORS	STANDARDS	WEIGHTS
-----	-----	-----
ODNPC	NOODNPC	50%
DSCR	1.25 or more	25%

OER	95% or less	10%
ACP	45 days or less	15%

In order to pass the financial standards, utilities should at least obtain a 75% passing mark. Those that do not pass one of the above standards must be within 10% of the standards.

II. TECHNICAL STANDARDS

SECTION 1. Efficiency standards are set for private utilities. Minimum and preferred standards are given, with the preferred standard to serve as targets that must be achieved within a reasonable period of time.

SECTION 2. Percentage system losses is defined as:

$$\% \text{ System Losses} = \left(1 - \frac{\text{Total Kwh Sales}}{\text{Net System Input (Kwh)}} \right) \times 100\%$$

Where:

Net System Input = Purchased Power plus Utility
Generation less Utility's Own Use

SECTION 3. Standards for Private Utilities

	% Power Losses -----
Minimum Standard	14%
Preferred Standard	10%

III. IMPLEMENTATION

Section 1. (a) On the issue of direct power connection to NPC, primary consideration shall be given to the technical capability of electric distributors to serve large industrial loads, the financial and technical standards shall serve as secondary considerations for the transfer of directly connected industries to franchised distributors.

(b) These financial and technical standards shall gradually be implemented, allowing for a transition period of one year from the effectivity thereof. Within this period, electric distributors are expected to attain at least the minimum standard of efficiency, as well as the financial benchmarks presented.

(c) The preferred standard of efficiency should largely be met in 5 years time from the adoption of the minimum standards. Efforts towards this end should be coupled with continuous government incentives and penalties, as well as strict monitoring and implementation of financial and technical standards.

These standards shall be reviewed regularly to guarantee the continued applicability and usefulness of the approved performance measures and benchmarks.

IV. DATA MONITORING AND COLLECTION FORMAT

Section 1. To ensure data consistency across all distributing utilities, the attached data monitoring and collection format is hereby prescribed for compliance by all utilities concerned.

Let copies of this Resolution be furnished the agencies/entities concerned for their information and guidance.

This resolution shall take effect fifteen (15) days after its publication in the Official Gazette or in a newspaper of general circulation in the country.

Pasig, Metro Manila, December 6, 1991.

(SGD) REX V. TANTIONGCO
Chairman

(SGD) ALEJANDRO B. AFURONG
Member

(SGD) OSCAR E. ALA
Member

(SGD) ARNALDO P. BALDONADO
Member

(SGD) BAYANI V. FAYLONA
Member

Annex B
Major Economic Relations Affecting Electric Power Generation and Distribution

Activity/Condition	Regulatory Area	Regulatory Law, Rules and Policies	Regulators
1. Energy Resource Development			
a. Participants limited to at least 40% Filipino corporations	Entry and ownership licensing	1987 Constitution, RA 7042	Securities and Exchange Commission (SEC), Board of Investments (BOI)
b. Service contracting through co-production, joint venture and production sharing when natural resources are explored, extracted and developed	Exploration and development instrument	1987 Constitution, PD 87, PD 1875	Office of Energy Affairs (OEA), SEC
2. Electric Power Generation			
a. Co-generation by private entities subject to interconnection and power off-take agreement with NPC, i.e., minimum load and fuel pricing	Entry and ownership licensing	EO 215	National Power Corporation (NPC), OEA, Energy Regulatory Board (ERB)
b. Securing of franchise to operate	- do -	1987 Constitution, RA 6957	OEA, Congress
c. Environmental clearance, setting up of environmental fund, and economic and financial viability	Certificate to operate	PD 1586, RA 7160	Regional Development Councils (RDCs), Environmental Management Bureau (EMB), local communities, NEDA Board
d. ODA, BOI incentives, government subsidies and financing	Access to fiscal incentive, tax subsidies and credit	EO 226, EO 93, NEDA Board (Oct. 9, 1991 decision)	BOI, FIRM, DBP, NEC
e. Prohibition of government guarantee of private debts	Access to credit	EO 215, RA 6957	Department of Finance, Central Bank
f. NPC operation	Utility operating standards	RA 6395, PD 40, Loan agreements GCNCC	Office of the President Creditors

3. Electric Power Distribution

a. Setting up of rural electric cooperatives and private utilities	Entry and operation	CA 146, RA 6308 as amended by RA 269, RA 6938	NEC, NEA, ERB
b. Direct connection to NPC of large industries with loads of at least 2 MW and 69 KV more	Utility operation	BOI-NPC-WEA Agreement	BOI, ERB, WEA, NPC
c. Financial operation of electric utility distributors	Taxation, i.e., payment of local franchise tax and share of national wealth to local governments Technical operating standards	Internal Revenue Code, RA 7160 ERB Resolution No. 91-92, NEC/WEA Standards	DOF, LGUs ERB, WEA

4. Electric Power Pricing

a. NPC Grid Pricing	Differentiated pricing by grid and similar pricing of each customer within each grid	RA 6395	NPC, ERB
b. Electricity pricing by private electric utilities	Output pricing	ERB Resolution No. 91-92, WEA Standards	ERB, WEA
c. Attainment of minimum rate of return	Cost Recovery	ERB Resolution No. 91-92, RA 6395, PD 40 and Loan agreements	NPC, ERB, NEC Creditors

5. Liquidation and Disposition of Assets

a. NPC and other electric utilities	Exit	Loan agreements/covenants with creditors	SEC, Creditors
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Table 1
Electricity, Gas and Water Gross Value Added, 1980-90 at Current Prices
(in thousand pesos)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
ELECTRICITY	3423	4403	5958	8162	11815	14357	14894	14338	17865	18995	21429
Generation (NPC)	2285	3076	4084	6037	9780	11264	11432	10129	13112	13786	15859
Distribution (MERALCO, NEA, ERB)	1138	1326	1873	2125	2034	3093	3462	4209	4752	5208	5570
GAS	42	88	40	26	31	70	39	40	41	42	41
WATER	339	453	578	765	932	1339	1708	1934	2213	2710	2925
Metro Manila (MWSS)	206	275	341	382	506	855	1188	1357	1548	1851	2012
Outside Metro Manila (LWUA)	133	177	233	315	352	390	412	476	549	710	755
Private Waterworks System (NWRB)	.	.	3	67	74	94	107	100	115	148	157
ELECTRICITY, GAS AND WATER*	3806	4944	6576	8954	12779	15767	16642	16313	20119	21747	24396

* Sum of components may not add up due to rounding off of total

Source: National Statistical Coordination Board (NSCB).

Table 2
Electricity, Gas and Water Gross Value Added, 1980-90
at Constant 1985 Prices, 1980-88

	1980	1981	1982	1983	1984	1985	1986	1987	1988
ELECTRICITY	11629	13364	16577	14757	15644	14357	16376	17078	18351
Generation (NPC)	8209	9525	12020	10493	12916	11264	12843	12852	13763
Distribution (MERALCO, NEA, ERB)	3419	3838	4556	4264	2727	3093	3533	4225	4587
GAS	63	103	6 (16,992)	18	70	39	48	53	
Electricity and Gas									
WATER	697	738	783	1042	1195	1339	1434	1468	1475
Metro Manila (MWSS)	462	495	545	656	810	855	1230	1289	1298
Outside Metro Manila (LWUA)	235	242	237	322	331	390	189	163	162
Private Waterworks System (NWRB)				64	53	94	14	15	14
ELECTRICITY, GAS AND WATER*	12389	14205	17367	15783	16857	15767	17850	18595	19880

* Sum of components may not add up due to rounding off of total

Source: National Statistical Coordination Board

Table 3
Gross Energy Generation by Grid and by Energy Source, 1980-90
 (in million kilowatt hours)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
PHILIPPINES	15086	15988	17413	18682	18666	18757	19263	20895	22944	24087	24799
Oil-Based	8507	9494	10016	11514	8536	6713	6970	9183	9546	10075	11541
Hydro	3502	3724	3751	2964	5167	5514	5989	5235	6212	6473	6047
Geothermal	2077	2770	3586	4093	4540	4945	4586	4516	4842	5316	5470
Coal	0	0	60	111	423	1585	1718	2061	2344	2223	1741
GENERATION MIX (%)	100	100	100	100	100	100	100	100	100	100	100
Oil-Based	63.0	59.4	57.5	61.6	45.7	35.8	36.2	43.7	41.6	42.0	46.5
Hydro	23.2	23.3	21.5	15.9	27.7	29.4	31.1	24.9	27.1	27.0	27.4
Geothermal	13.8	17.3	20.6	21.9	24.3	26.4	23.8	21.5	21.1	22.0	22.1
Coal	0.0	0.0	0.3	0.6	2.3	8.4	8.9	9.9	10.2	9.0	7.0
LUZON	13115	13666	14398	15294	14655	14449	14756	16030	17439	18222	18822
Oil-Based	9173	8894	9011	10145	7787	5825	6328	8376	8829	9150	10328
Hydro	1873	2033	1832	1274	2519	2869	2956	1961	2588	2599	2370
Geothermal	2069	2739	3555	3875	4125	4284	3900	3710	4024	4444	4495
Coal	0	0	0	0	224	1471	1572	1983	1998	2029	1629
VISAYAS	321	503	777	1057	1177	1343	1467	1693	1876	1999	2051
Oil-Based	304	464	676	719	551	561	624	800	703	922	955
Hydro	9	8	10	9	12	7	11	9	9	11	9
Geothermal	8	31	31	218	415	661	686	806	818	872	975
Coal	0	0	60	111	199	114	146	78	346	194	112
CEBU GRID	178	257	439	503	516	478	542	638	737	808	804
Oil-Based	178	257	379	392	317	364	396	560	391	614	692
Coal	0	0	60	111	199	114	146	78	346	194	112
NEGROS GRID	35	100	151	203	220	244	260	323	381	422	463
Oil-Based	28	77	126	146	58	0	1	0	0	0	0
Hydro	4	3	3	3	4	3	4	2	2	3	2
Geothermal	3	20	22	54	158	241	255	321	379	419	461
PANAY GRID	84	112	112	135	134	150	173	200	238	241	215
Oil-Based	84	112	112	135	134	150	173	200	238	241	215
LEYTE GRID ^{*/}	5	11	48	187	278	441	457	490	474	476	514
Oil-Based	0	0	39	23	21	21	26	5	35	23	0
Geothermal	5	11	9	164	257	420	431	485	439	453	514
BOHOL GRID	19	23	27	29	29	30	35	42	46	52	55
Oil-Based	14	18	20	23	21	26	28	35	39	44	48
Hydro	5	5	7	6	8	4	7	7	7	8	7
MINDANAO	1650	1819	2238	2331	2834	2965	3040	3272	3629	3866	3926
Oil-Based	30	136	329	650	198	327	18	7	14	3	258
Hydro	1620	1683	1909	1681	2636	2638	3022	3265	3615	3863	3668
AGUS GRID	1822	1759	2169	2255							
Oil-Based	2	76	260	574							
Hydro	1820	1683	1909	1681							
ISOLATED GRIDS	28	60	69	76							
Oil-Based	28	60	69	76							

^{*/} Reflects Leyte-Samar system starting 1986.

Source: National Power Corporation (NPC).

Table 4
Energy Sales by Grid and by Customer Type, 1980-90
(in million kilowatt hours)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
PHILIPPINES	14033	14918	16000	17083	17089	17140	17645	19337	21180	22244	22915
Utilities	11506	12337	13353	14356	13813	13804	14213	15658	17291	18219	19242
Industries	2037	2048	2213	2445	2793	2872	2955	3173	3330	3509	3326
Misc. Load	490	533	434	288	395	464	477	506	559	516	347
SALES MIX (%)	100	100	100	100	100	100	100	100	100	100	100
Utilities	82	83	83	84	81	81	81	81	81	82	84
Industries	15	14	14	14	17	17	17	16	16	16	15
Misc. Load	3	3	3	2	2	2	2	3	3	2	1
LUZON	12164	12690	13126	13908	13245	13136	13461	14720	16078	16795	17368
Utilities	10496	10970	11579	12457	11739	11632	11915	13033	14269	14915	15641
Industries	1185	1205	1134	1180	1123	1049	1075	1188	1256	1370	1450
Misc. Load	483	515	413	271	383	455	471	499	553	510	277
VISAYAS	292	456	700	933	1020	1173	1261	1490	1644	1768	1818
Utilities	241	363	517	657	667	743	892	1082	1248	1373	1393
Industries	48	89	178	270	349	426	365	403	392	391	357
Misc. Load	3	4	5	6	4	4	4	5	4	4	68
CEBU GRID	163	240	395	461	465	433	466	573	650	718	725
Utilities	116	150	219	284	296	316	424	510	584	643	648
Industries	46	88	174	175	167	115	40	61	64	73	32
Misc. Load	1	2	2	2	2	2	2	2	2	2	45
NEGROS GRID	32	82	142	176	174	196	207	268	322	360	362
Utilities	31	81	140	162	151	181	195	254	308	346	343
Industries	0	0	1	13	22	14	11	13	14	13	18
Misc. Load	1	1	1	1	1	1	1	1	1	1	1
PANAY GRID	75	105	101	122	123	134	156	182	214	224	231
Utilities	75	105	101	122	123	134	156	182	214	224	231
Industries	0	0	0	0	0	0	0	0	0	0	0
Misc. Load	0	0	0	0	0	0	0	0	0	0	0
LEYTE GRID^{*/}	5	11	40	148	234	384	401	429	416	419	449
Utilities	4	9	36	64	74	88	89	102	104	117	145
Industries	0	0	2	82	159	295	311	326	311	302	304
Misc. Load	1	2	2	2	1	1	1	1	1	0	0
BOHOL GRID	17	20	23	26	24	26	31	38	42	47	51
Utilities	14	18	21	24	23	24	28	34	38	43	27
Industries	2	1	1	1	1	2	3	3	3	3	3
Misc. Load	1	1	1	1	0	0	0	1	1	1	21
MINDANAO	1577	1772	2174	2248	2741	2831	2923	3127	3458	3681	3729
Utilities	769	1004	1257	1242	1407	1429	1406	1543	1774	1931	2208
Industries	804	754	902	995	1326	1397	1515	1582	1682	1748	1519
Misc. Load	4	14	15	11	8	5	2	2	2	2	2

^{*/} Reflects Leyte-Samar grid starting 1986.

Source: National Power Corporation.

Table 5
Statement of Financial Operations of NPC and NEA, 1981-90
(in million pesos)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991 ^y
	NPC	NEA	NPC	NEA	NPC	NEA	NPC	NEA	NPC	NEA	NPC
I. TOTAL RECEIPTS											
1. Operating receipts											
a. Sales of goods/services	6345	160	6685	59	17623	66	16354	124	24125	758	7564
b. Current subsidies	0	0	0	0	0	0	0	0	0	0	0
2. Other receipts	2100	0	755	0	1423	10	913	30	4266	568	121
II. CURRENT EXPENDITURES											
1. Operating Expenditures											
a. Personnel Cost	4856	80	5368	40	9904	51	9416	63	12259	116	1607
b. Others	4886	90	5368	43	6223	233	4752	30	11350	86	267
2. Other current expenditures	507	30	2528	0	2373	233	4752	357	5707	8740	1215
a. Interest payments	n.a.	n.a.	n.a.	0	n.a.	0	0	0	0	0	0
b. Tax payments to NG	n.a.	n.a.	n.a.	0	n.a.	0	0	0	0	0	0
c. Interest on NG advances	n.a.	n.a.	n.a.	0	n.a.	0	0	0	0	0	0
d. Dividend payments	294	0	579	0	n.a.	0	102	0	499	0	0
e. Other expenditures	8184	567	4073	657	5365	256	1683	162	3236	11940	785
III. CAPITAL EXPENDITURES											
1. Acquisition of fixed assets	8184	0	4073	0	4037	0	2729	0	2705	0	1217
2. Change in inventories	n.a.	n.a.	0	0	0	0	-666	0	562	0	505
3. Other capital expenditures	0	567	0	857	529	0	0	162	0	267	0
IV. CAPITAL TRANSFERS											
V. INTERNAL CASH GENERATION	2798	90	-501	4	1028	-278	2081	0	8404	-373	1764
VI. FINANCING DEFICIT (-)/SURPLUS(+)	-3366	-467	-5474	-653	-3756	-668	-668	-411	-4527	-408	-48
VII. NET EXTERNAL FINANCING	1501	-146	3343	324	3513	351	2332	-184	35	-306	-184
1. Gross External Financing	n.a.	n.a.	4483	425	6345	523	4274	146	1619	40	8485
2. Repayments & Amortization	n.a.	n.a.	1140	101	2452	172	1942	840	1784	348	861
VIII. NET DOMESTIC FINANCING	1685	638	2131	329	3547	427	699	706	-4562	804	-444
1. Net Govt. Equity	1776	0	2131	199	1184	132	712	20	59	278	568
2. Net Govt. Net Lending	n.a.	n.a.	0	0	1115	555	57	996	-1502	878	723
3. Net Domestic Bank Credits	107	265	0	130	286	-128	-1427	-311	-487	10	168
4. Other Net Dom. Financing	0	368	0	0	942	5	1667	0	-2652	-160	227

^y As of March 1991.

Source: Government Corporate Monitoring and Coordinating Committee (GCMCC)

Table 6
NPC Financial Performance, 1980-90

FINANCIAL INDICATORS	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
I. Measures of Profitability (%)											
1. Net income to net operating revenue	8.55	7.06	2.43	6.43	7.43	6.09	4.33	5.59	8.44	8.08	(0.25)
2. Net income to networth	4.04	3.35	1.01	3.05	4.13	3.72	2.21	2.71	4.69	4.79	(0.19)
3. Net income to total assets	1.38	1.20	0.37	0.87	1.07	1.02	0.57	0.70	1.25	1.21	(0.04)
4. Net income to rate base	4.40	3.67	1.19	3.41	3.47	2.40	1.26	1.48	2.36	2.48	(0.10)
5. Return on rate base	6.78	6.23	4.47	8.18	9.92	8.54	7.59	7.12	7.89	7.92	6.02
6. Net income to invested capital	1.60	1.46	0.43	1.04	1.29	1.31	0.69	0.85	1.93	1.88	(0.06)
7. Net income to equity	5.41	4.94	1.43	4.57	6.99	6.96	4.27	5.30	11.90	10.75	(0.56)
II. Measures of assets use											
1. Assets turnover	0.17	0.19	0.17	0.17	0.17	0.17	0.14	0.13	0.14	0.15	0.17
2. Receivable turnover	10.45	8.26	8.14	7.30	6.78	5.74	3.76	4.94	8.69	8.32	8.16
3. Inventory turnover	7.07	6.27	7.10	5.88	6.88	8.58	8.60	9.94	7.53	5.42	5.81
4. Fixed assets turnover	0.51	0.52	0.49	0.54	0.47	0.40	0.29	0.27	0.29	0.31	0.38
III. Measures of Liquidity											
1. Current Ratio	1.51	0.87	0.91	0.68	0.43	0.37	0.57	0.61	0.96	1.13	0.71
2. Quick Ratio	0.77	0.54	0.64	0.43	0.29	0.26	0.50	0.52	0.71	0.73	0.49
3. Days sales in receivable	34.00	44.00	44.00	49.00	53.00	63.00	95.00	73.00	41.00	43.00	44.00
4. Days funds held in stock	51.00	57.00	51.00	61.00	52.00	42.00	42.00	36.00	48.00	66.00	62.00
IV. Measures of Long Term Financial Risks											
1. Interest Coverage	1.92	1.85	1.28	1.57	1.40	1.30	1.16	1.22	1.37	1.38	0.99
2. Debt-service coverage ratio	1.89	1.85	1.60	1.20	1.41	1.28	0.90	0.87	0.91	0.85	1.47
V. Measures of Long Term Financial Position											
1. Fixed assets to long term debts	0.81	0.84	0.74	0.58	0.74	0.95	0.91	0.90	1.31	1.22	1.04
2. Fixed assets to total prop. capital	0.97	0.88	0.83	0.93	1.37	1.67	1.79	1.85	2.04	1.82	2.19
3. Fixed assets to total assets	0.38	0.35	0.33	0.30	0.40	0.47	0.50	0.49	0.52	0.47	0.45
VI. Measures of Use of Debts											
1. Debt to equity ratio	1.55	1.49	1.50	2.11	2.45	2.58	2.57	2.70	3.0	1.94	2.85

Sources: National Power Corporation.

Table 7
Average NPC Power Rates, 1980-90
(P/KWH) 1/

GRID	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
PHILIPPINES	0.3423	0.4166	0.4299	0.5790	0.8754	1.0835	0.9548	0.9038	0.8354	0.9381	1.1263
LUZON	0.3641	0.4480	0.4670	0.6152	0.9740	1.2062	1.0552	0.9793	1.0031	0.9877	1.2049
VISAYAS	0.4078	0.4982	0.5444	0.7244	0.9980	1.0401	0.9063	0.8671	0.9252	1.0385	1.2424
CEBU	0.4520	0.5640	0.6090	0.7320	0.1010	1.0718	0.9479	0.8502	0.9430	1.0710	1.2703
NEGROS	0.3290	0.5260	0.5400	0.6550	0.8580	1.1531	1.0366	1.0936	1.0932	1.1028	1.3133
PANAY	0.4310	0.5250	0.5630	0.7190	1.1660	1.1185	0.7756	0.7322	0.8000	1.0714	1.2735
LEYTE SAMAR	0.2750	0.2810	0.5300	0.6130	0.7930	0.9583	0.8550	0.8248	0.8462	0.9045	1.1153
BOHOL	0.3400	0.4240	0.4590	0.6640	0.9540	1.1154	0.7742	0.6579	0.7857	1.0851	1.2841
MINDANAO	0.1644	0.1800	0.1859	0.2996	0.3740	0.5205	0.5086	0.5657	0.6252	0.6689	0.7043

1/ Based on adjusted rates to reflect actual billing to customers.

Source: National Power Corporation.

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