Impacts of Power Sector Reforms on Rural Electrification in the Philippines

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Ronaldo F. Corpus

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Abstract

Inspired by neo-liberal principles, waves of electricity industry reforms have swept the world over the last two decades. To a great extent, the traditional government-extended electrification service was transferred to the hands of private actors and market forces. While these reforms are expected to bring about efficiency gains as a result of market liberalization and private competition, the provision of electrification service to relatively poorer rural areas is less certain. In this light, it is of great interest in development studies to therefore understand the impacts of these reforms on the delivery of public service goals in cash-strapped developing countries like the Philippines.

Through assessments of relevant Philippine government data and case study findings, this thesis outlines how the restructured Philippine electricity industry has impacted on the accessibility, service quality and affordability of electrification, especially in rural areas. In a nutshell, electricity industry restructuring in the Philippines resulted in better delivery of public service goals to the rural beneficiaries, but not necessarily resulting from privatization, competition and deregulation that is fostered by a free market regime.

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Acronyms

ADB	Asian Development Bank
APT	Assets Privatization Trust
BAPA	Barangay Power Association
BOT	Build-Operate-Transfer
CCPSP	Coordinating Council for Private Sector Participation
COP	Committee on Privatization
CPPA	Cost of Purchased Power Adjustment
DA	Department of Agriculture
DAR	Department of Agrarian Reforms
DBM	Department of Budget and Management
DDP	Distribution Development Plan
DILG	Department of Interiors and Local Government
Disco	Distribution Utility
DOE	Department of Energy
DOF-PMO	Department of Finance-Privatization and Management Office
EC	Electric Cooperative
ECA	Energy Conversion Agreement
EPIRA	Electric Power Industry Restructuring Act
ERC	Energy Regulatory Commission
EREP	Expanded Rural Electrification Program
GDP	Gross Domestic Product
Genco	Generating Company
GOCC	Government Owned- and Controlled- Corporation
GRAM	Generation Rate Adjustment Mechanism
IPP	Independent Power Producers
IT/IS	Information Technology/Information Systems
JBIC	Japan Bank for International Cooperation
LGU	Local Government Unit
LRAC	Long-Run Avoidable Cost
MEDP	Missionary Electrification Development Plan
MERALCO	Manila Electric Company
MTPDP	Medium-Term Philippine Development Plan
NASECORE	National Association of Electric Consumers for Reforms
NEA	National Electrification Administration
NEDA	National Economic and Development Authority
NPC-SPUG	National Power Corporation-Small Power Utilities Group
PCGG	Presidential Commission on Good Government
PDP	Power Development Plan
PDU	Private Distribution Utility
PEP	Philippine Energy Plan
PIOU	Private-Investor-Owned Utilities
PIP/REP	Performance Improvement Program/Rehabilitation Efficiency Plan

PNOC-EDC	Philippine National Oil Company-Energy Development Corporation
PPA	Power Purchase Agreement
PSALM	Power Sector Assets and Liabilities Management Corporation
QTP	Qualified Third Party
RORB	Return of Rate Base
SARS	Severe Acute Respiratory Syndrome
TDP	Transmission Development Plan
TOU	Time of Use
Transco	National Transmission Company
TSC	Transition Supply Contract
UC	Universal Charge
UC-EN	Universal Charge for Environmental Purposes
UC-ME	Universal Charge for Missionary Electrification
WB/IMF	World Bank/International Monetary Fund
WESM	Wholesale Electricity Spot Market

Chapter I – Introduction

Electrification is recognized as playing a potentially significant contribution towards socio-economic upliftment of its beneficiaries. Considered as the most modern source of energy in most parts of the world, benefits of electrification include improving business and farm productivity, enhancing convenience of household tasks, and providing a more efficient form of household lighting. More particularly in rural areas of less developed countries, electricity provision opened opportunities to reduce poverty. In Bolivia and Malawi, both rural living standards and quality of life improved due to electrification (ESMAP, 2002). In India and Bangladesh, rural electrification increased the use of irrigation in agriculture, which helped reduce poverty incidence and improved the lives of beneficiaries, thereby transforming the low sense of peoples' powerlessness into increased empowerment (Ali & Pernia, 2003). Availability of electricity in some parts of Indonesia that enabled access to technology contributed directly to increased employment and incomes of the poor (Ali & Pernia, 2003). But despite energy being one of the largest sectors in the global economy, there are noted disparities in access to electricity with the developing countries in Asia sheltering almost two-thirds of the world's population that have not been reached by electricity services in their homes.

Electricity is considered as the most versatile form of energy. Consistent growth in electricity demand has been experienced worldwide as it became a necessity rather than a luxury. Especially for most developing countries, electricity provision along with other essential public infrastructures is viewed as a deciding factor that influences the investment decisions of the private sector. Because of its strategic economic importance, many governments deeply involved themselves in electricity provision (Sidorenko, et.al., 2002). As a consequence, governments became traditional service providers and owned as well as operated power generation plants, transmission grids and distribution systems through state-owned or government-controlled enterprises.

During the last two decades, however, the rise of neo-liberal philosophies introduced a presumably more efficient means for electricity provision. Worldwide waves of power sector reforms were implemented involving greater reliance on private actors and market forces. In industrialized countries, it is believed that the private sector could do a better job of running the electricity industry as proven in the transportation and telecommunications industries. Among the developing nations, the need to raise cash undeniably motivated their efforts towards power sector reforms (Bacon & Besant-Jones, 2001).

Developing countries joined the global trend in reforming their power sectors anchored on the perceived benefits of the neo-liberal prescriptions preached by the industrialized countries. The reforms expect the transfer of government onus in traditionally supporting electrification service provisions, especially in the areas of bulk electricity production and distribution, to private actors and market forces. While envisioned to free governments from considerable expenditure, privatization, market competition and deregulation are also expected to bring about efficiency gains which can in turn lead to economic growth and international competitiveness. Despite the perceived efficiency gains, however, it is argued that free market regimes tend to ignore social equity objectives mainly due to capitalistic profit motivations among private entrepreneurs especially in the context of the less developed nations. Business-as-usual practices dictate that the private sector would enter the market only if there is profit to make, most probably leaving the non-profitable or unviable areas unattended (Bhattacharyya, 1995).

One developing country that reformed its electricity industry recently is the Philippines (see Figure 1.1 for the map of the Philippines). Commonly referred to as the Pearl of the Orient, the country lies at the heart of southeast Asia. Consisting of 7,107 islands, its land area covers about 300,000 square kilometers. The archipelagic country is divided into 78 provinces (which are subdivided further into municipalities and villages) and 16 distinct regions. They are geographically clustered to form the country's three main island groups; namely Luzon, Visayas and Mindanao. Manila, the country's capital city,

is located at the National Capital Region (NCR) in Luzon. Cebu City in the Visayas and Davao City in Mindanao are also functioning as gateways for international trade.

According to the May 2000 census[1], the Philippines has a population of 76.5 million people with an average household size of 5 persons. Population is projected to reach about 82.7 million by 2004 at an annual growth rate of 2.4%. Among the main island groups, Luzon is the most populous sheltering about 56% of the total population. Mindanao comes in next with 24%, while the Visayas houses the remaining 20%. Luzon hosts the most populated regions of the country. Region IV (Southern Tagalog) has 15.4%, while the NCR and Region III (Central Luzon) follow with 13% and 10.5%, respectively. In contrast, the Cordillera Administrative Region (CAR, also in Luzon), the CARAGA Region (in Mindanao) and the Autonomous Region for Muslim Mindanao (ARMM) are the least populated with 1.8%, 2.7% and 3.2% of the total population, respectively. It may be interesting to note that about half of the total population is below 21 years old, and that 59.2% of the people (*i.e.*, those aged between 15 to 64 years old) are considered economically active or may be engaged in paid productive activities. In terms of literacy, 92.3% of the country's predominantly Christian people are able to read and write. The country has a democratic form of government (with its seat in the NCR) which was restored through the bloodless People Power Revolution in 1986.

Agriculture, industry and services are the main economic activities in the Philippines, with services as the leading growth sector (with 5.9% growth rate in 2003)[2]. While agriculture (including fisheries and forestry) maintained a modest growth of 3.9% in 2003, the growth of the industry sector softened in 2003 due to lower public construction. The country's gross domestic product (GDP) is placed at around ₱ 1.25 trillion (US$ 24 billion) while its gross national product (GNP) is estimated at ₱ 1.33 trillion (US$ 25.6 billion) as of May 2003. With the resulting per capita GNP of ₱14,366, the Philippines falls within the category of low-middle income economies in the world. As of end 2003, the country's foreign debt burden reached US$56.7 billion

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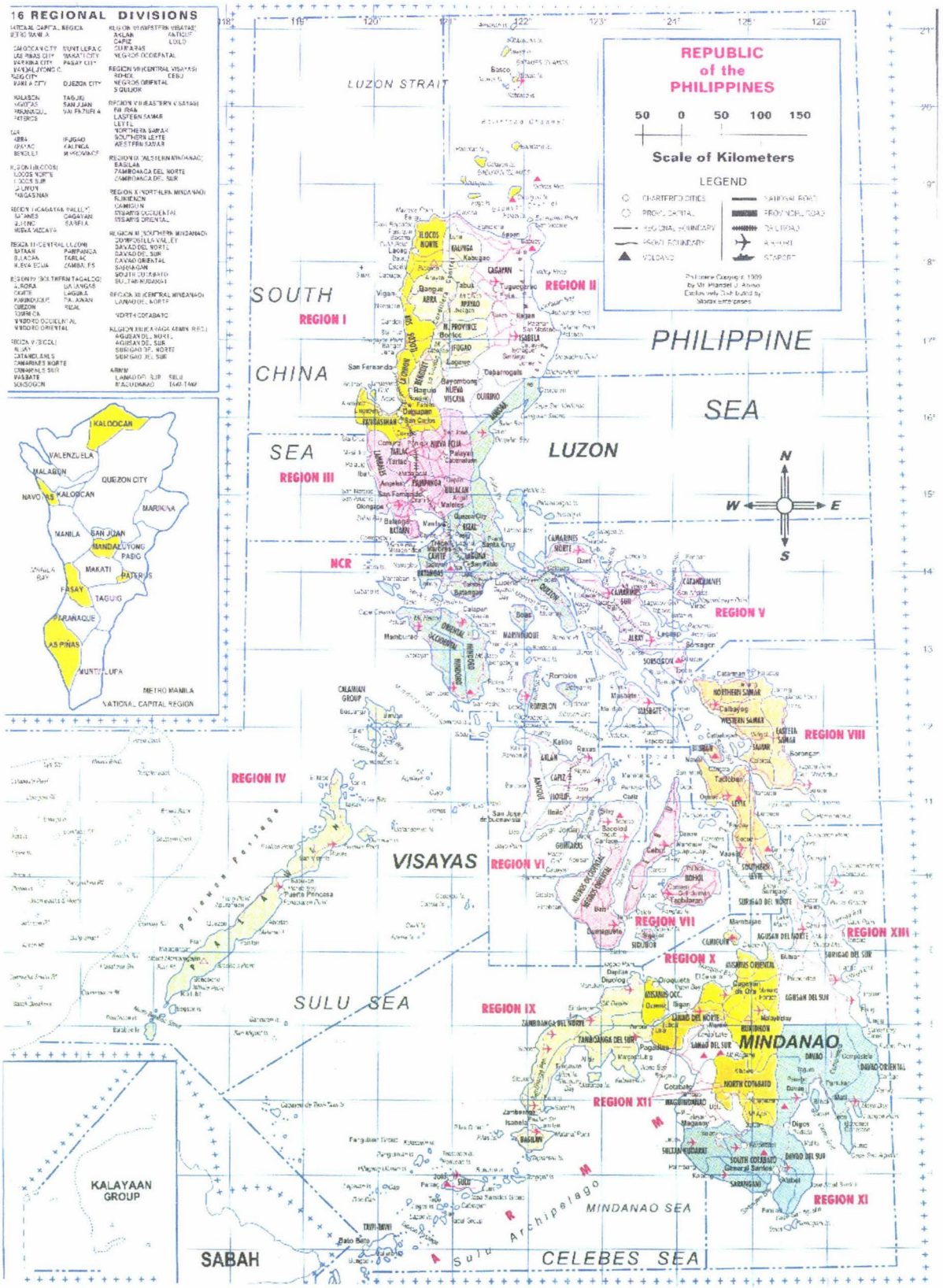
[1] done by the National Statistics Office, Republic of the Philippines

[2] all growth rate figures are sourced from the National Economic and Development Authority, the central planning agency of the country

(Dumlao, 2004). Based on the country's per capita poverty threshold of ₱13,913 as of 2000 from the National Statistics Office, 40% of the total population is considered poor. Poverty incidence is worse in rural Philippines at 47.4% compared to 20.5% in urban areas. It may be noted that these poverty incidence figures for 2000 deteriorated compared to 1997 corresponding data. The top three poorest regions are ARMM, Region V (Bicol in Luzon) and Region XII (Central Mindanao). As of 2002, 20% of the 15.9 million Filipino households have no access to safe drinking water while 21% do not have electricity at their homes.

Figure 1.1 - Map of the Philippines



Source: Slorax Enterprises (Philippine Copyright: 1999)

The Research Problem, Aims and Objectives

Saddled with persistent budget deficits due to poor economic performance coupled with the continuously increasing population demand for electricity, the Philippines acceded to power sector reforms in June 2001 with the enactment of the Electric Power Industry Restructuring Act (EPIRA). In this connection, it is of great interest in development studies to know whether the perceived benefits of EPIRA have really trickled down to the rural population of the Philippines as enunciated under the Act. In this light, there is a felt need to investigate and analyze the impacts of electricity industry restructuring in the Philippines on rural electrification particularly on whether the delivery of public service goals (*i.e., accessibility of service especially in remote and far-flung areas, service quality in terms of adequacy, reliability and continuity, and affordability of electric prices*) improved in the rural areas after the enactment of electricity industry reform law. This thesis will explore the proposition that economic efficiency in the electricity industry should be accompanied by social equity objectives in order to achieve better delivery of public service goals. To address the above research objective, central question and theoretical proposition, the investigation focused on finding the answers to the following queries:

a. Are there changes in electrification policies and their implementation, as well as organizational, institutional and operational aspects upon the enactment of the Philippine power sector reforms? What changes were instituted by the reforms towards private sector participation in rural electrification? What are their implications? How were they carried out?

b. Have the power sector reforms improved the quality of electricity service in terms of supply adequacy, reliability and continuity in the rural areas? If so, how was it being carried out?

c. As the main entities concerned in the delivery of electrification service to rural areas, have the reforms improved the performance of electric cooperatives? How and in what ways?

d. Have the reforms expanded the accessibility of service especially in remote and far-flung rural areas? How was it being implemented?

e. Have privatization, competition and deregulation of the electricity industry resulted in lower power rates especially in the rural areas? Why or why not?

Research Methodology

With emphasis of the research work on how the enacted power sector reforms affected service quality, accessibility of electrification service and affordability of the electric tariffs, this research thesis employed the case study approach. Relevant information/data were sourced from documentations (*e.g.,* administrative records/proposals, progress reports, letters, memoranda, legal issuances, formal studies, newspaper articles), archival records (*e.g.,* maps, charts, organizational records, survey data), key-informant interviews, direct observation, and participant-observation and site visits. Multi-sourcing of case study evidences was resorted to for purposes of data triangulation as well as complementation. Modes of analysis employed are pattern-matching between the predicted outcomes and empirical findings, explanation building with historical tracking, as well as time-series analysis of data collected.

Case study areas were purposely chosen to assess the cause and effect of the interventions introduced by the reforms within a real-life context. Two (2) case study areas were covered to verify the external validity of findings. Despite the time and budget limitations and the acknowledged weakness of having relatively few respondents, it is hoped that the data/information gathered from concerned rural electrification entities and the findings from the two selected case study areas could be generalized in relations to existing theories and ongoing debates presented in the following chapter given the flexibility of the case study approach for explorations. To avoid biased responses, efforts have been made to accurately balance the empirical evidence.

Through the courtesy of the National Economic & Development Authority (NEDA), preparatory fieldwork activities (*e.g.,* fine-tuning and reproduction of interview

questionnaires, setting and confirmation of appointments, drafting of request letters) and preliminary data/information processing and transcription were undertaken in a fieldwork base station with access to computers, photo-copying machine, facsimile machine and telephone lines. Initially, connections/acquaintances from the local consulting industry as well as from the Department of Energy were approached in order to identify and establish key contacts within relevant entities such as government agencies, concerned private sector firms and electricity end-consumers.

Due respect to the Philippine government protocol was observed. Courtesy visits to concerned high-ranking government officials and authorities were made first to secure clearance in accessing agency data/documents as well as in interviewing the identified focal persons/informants. Souvenir items (*i.e.*, Paua shells) were given out after the courtesy visits as a token of appreciation for the time spent with the researcher. Onward correspondences with identified key informants were then personally pursued, initially through telephone calls in order to secure appointments for interviews including the most convenient place and time to meet them. Depending on the participants' preference and availability, their cooperation was solicited either though formal request letters or verbal communications (*i.e.*, through the telephone, electronic mails and text messages).

To enjoin full cooperation, the research project was introduced to each of the willing research participants emphasizing, among others, the nature, objective and purpose of this case study research. In most cases, the information sheets and consent forms for the different research participants (copies attached as Appendices A to E) were discussed/explained with the key informants during the start-up portion of actual personal interviews. Each of the research participants were briefed about their rights, informed consent, data anonymity and confidentiality, as well as the use, safety and privacy of the information gathered. Meanwhile, the researcher exerted best efforts to maintain impartiality and neutrality, sensitivity to gender and class issues, and to minimize potential risks and harm to the participants and himself. Some informants, though, asked for time to go over the information sheets before agreeing to participate in the research. Flexible semi-structured interviews with key informants and agency

data/information browsing, note-taking and photo-copying were conducted. The focal persons contacted/interviewed were from the Department of Energy (DOE), National Electrification Administration (NEA), National Power Corporation-Small Power Utilities Group (NPC-SPUG), National Transmission Co. (Transco), Power Sector Assets and Liabilities Management Corp. (PSALM), Energy Regulatory Commission (ERC), Philippine National Oil Co.-Energy Development Corp. (PNOC-EDC), the private sector (*i.e.*, independent power producers), the Nueva Ecija I Electric Cooperative, rural electrification beneficiaries and local government officials (in the two case study areas and nearest urbanized settlements) and a cause-oriented non-government organization (*i.e.*, the National Association of Electric Consumers for Reforms or NASECORE). Also contacted were concerned personnel from the Department of Finance-Privatization and Management Office (DOF-PMO), the Coordinating Council for Private Sector Participation (CCPSP), the Departments of Budget and Management (DBM), Agriculture (DA), Agrarian Reform (DAR), Interiors and Local Government (DILG), and the National Economic & Development Authority (NEDA).

At first, the researcher thought that it would be easy to collect the needed information/data from "old familiar faces" with whom the researcher had once worked with (some of whom were even the researcher's former officemates/subordinates). Introductory meetings were very heart-warming and encouraging for research work, but as the fieldwork progressed, accessing them and agency data became difficult mainly because of their time constraints and current loyalty to their new respective agencies. It was noted that members of the "Energy Family (*i.e.*, DOE, NEA, NPC & PNOC)" within the government bureaucracy were observing a protocol before releasing data/information: *i.e., secure clearance first from higher authorities before the researcher is allowed access to data and interviews*. One key government informant was at first hesitant to participate since another researcher (who also posted as a student) actually used the collected agency data for consultancy work. Said informant only agreed to cooperate and participate in the research only after another government informant verbally endorsed the research project upon the request of the researcher.

Some scheduled interviews were postponed for later dates due to urgent errands from higher-ups. With respect to the private sector informants, information about business profitability and financing sources for their corporate social responsibilities towards rural electrification efforts were obtained through less formal means (*i.e.,* chats during consultative meetings wherein the researcher participated as an observer, or through casual telephone conversations or informal interviews) as these information are sensitive and confidential from their points of view.

One *barangay* and one *sitio* were selected as case study areas. A *barangay* is the smallest political unit in the Philippines while a *sitio* is a satellite cluster of settlement within a barangay. Prior to actual interviews of electricity end-consumers in the case study areas, reconnaissance surveys in the provinces of Nueva Ecija and Pampanga in Region III (Central Luzon) were undertaken in view of President Gloria Macapagal-Arroyo's recent statement that some rebel groups (*i.e.*, the New People's Army) had recently moved closer to Metro Manila. Delimited by budget and time for fieldwork, the researcher preferred to cover rural areas in the province of Nueva Ecija which is about 100 kilometers north of Metro Manila since some local folks or distant relatives could serve as local guides and/or research assistants. Identification and background investigation of potential case study areas were carried out by the researcher through interaction with local residents in the municipality of San Isidro (in Nueva Ecija) during their pastimes (*e.g.*, playing cards or billiards, karaoke singing). The two (2) case study areas (*i.e.*, Barangay Bagong Sikat in the municipality of Cabiao & Sitio Barangka, Barangay Pulo in the municipality of San Isidro) were finally selected with due consideration to the length of rural electrification service (*i.e.*, at least with electric service since 1998), accessibility, availability of local guides and the prevailing peace & order situation. Given the limited budget and the short timeframe allowed for the conduct of the case study, these selection criteria were drawn with the objective of ensuring that the respondents had experienced rural electrification service before and after the power sector reforms, that the area is reachable by wheeled vehicles for travel facilitation, that there are residents or mainstays in the study area who could accompany

the researcher in freely moving around the vicinity, and that the safety of the researcher and his companions is assured.

The researcher traveled daily to and from the selected study areas (using a hired vehicle) for a span of one week for each. Collecting information and perceptions of rural informants was done through systematic random sampling to minimize bias; *i.e.*, via interviews of households spaced 5 to 10 houses apart. Visits to the study areas were carried out only during daytime as an additional safety measure. Actual interviews of rural residents were conducted during slack times after lunch while the rest of the day was spent for transect walks and/or direct observations. There were tendencies though, especially during the first day of site visit, for people to crowd around the researcher in one household which resulted in multiple interviews but necessitating the conduct of separate direct observations of the interviewee's household. Such reaction of the rural informants had been triggered by the giveaway (*i.e.*, New Zealand-made ball pens) to those who are willing to be interviewed. The attached map of the country (see Figure 1.1) would provide the approximate geographic location of provinces/places mentioned in this thesis.

After this introductory chapter, Chapter II provides the relevant literature on power sector reform principles, the ideologies and concepts behind the reform and the emerging global and regional issues concerning rural electrification. Chapter III links the global and general issues to the Philippine rural electrification situation. After expounding on the importance of electrification in rural Philippines, it traces government efforts towards power sector reforms vis-à-vis the global trends and developments. Chapter IV discusses the impacts of the enacted electricity industry restructuring on the delivery of public service goals in the country. It relates the outcomes and updates on the implementation of the restructuring law as they relate to rural electrification efforts as well as the discussion and analysis of reform impacts on power supply reliability and system efficiency, accessibility to electricity service, and on electric tariffs at the national and regional levels. Chapter V looks at the impacts of the electricity industry reforms in the selected case study areas. It includes the discussion of changes in the

operating performance of the electric cooperative serving the electricity demands of the selected case study areas as well as the impacts of the electricity industry reform on the areas' electrification beneficiaries including their perceptions and experiences regarding the reforms. This thesis ends with a summary of the research findings, drawing conclusions thereon as well as recommendations and suggestions for further research.

Chapter II - Global Perspectives on Power Sector Reform

Introduction

Considered as the most versatile form of energy in most parts of the world, electricity is an essential input to economic growth and social development. Acclaimed benefits of electrification include improving business and farm productivity, enhancing convenience of household tasks, and providing a more efficient form of household lighting. More particularly in rural areas of less developed countries, electricity provision opened opportunities to reduce poverty. Case studies conducted in Bolivia and Malawi found that rural electrification improved both rural living standards and quality of life (ESMAP, 2002). In an Asian Development Bank policy brief, Ali & Pernia (2003) assessed that electricity contributes significantly to the growth of the rural sector in Asian countries. In Bangladesh and India, rural electrification raised the use of irrigation, thereby significantly reducing poverty incidence aside from the felt improvement in the lives of the beneficiaries, or a diminution in the sense of powerlessness and an increase in empowerment. In Indonesia, electricity that enabled access to technology contributed directly to increased employment and incomes of the poor, as well as poverty reduction through growth. In the People's Republic of China, 2.3 persons are brought out of poverty for every 10,000 Yuan investment in electricity development. Many countries considered energy policy a matter of national security because of its strategic economic importance (Sidorenko, et.al., 2002). In most cases, governments used public funds to involve themselves deeply in the electricity industry through state-owned monopolies that combined upstream and downstream activities such as power generation, transmission, distribution, and supply as well as power resource development, aside from the subsidy extended to the provision of electricity which is generally guaranteed by the state (Heretier, 2002).

Energy is one of the largest sectors in the global economy. Yet, regional disparities in access to electricity are alarming with the developing countries disadvantaged the most. Of the world's more than 6 billion people, 1.64 billion or 27.2% of the world's

population have no electricity in their homes, of which 1.63 billion or 99.4% are in the developing countries. Within the developing world, almost half or 1.04 billion people living in Asia have not been reached by electricity in their households (as shown in Table 2.1 below).

Table 2.1 - Electricity Access – Regional Aggregates

	Electrification Rate (%)	Population without Electricity (in millions)	Population with Electricity (in millions)
World	72.8	1,644.5	4,390.4
OECD	99.2	8.5	1,108.3
Transition Economies	99.5	1.8	351.5
Developing Countries	64.2	1,634.2	2,930.7
Developing Asia	*67.3*	*1,041.4*	*2,147.3*
Africa	*34.3*	*522.3*	*272.7*
Latin America	*86.6*	*55.8*	*359.9*
Middle East	*91.1*	*14.7*	*150.7*

Source: IEA World Energy Outlook in 2000: Energy and Poverty

On rural-urban disparity worldwide, only 76% of urban residents have been reached by electricity, while a mere 35% of rural residents have access to electricity in their homes on the average (Albouy & Nadifi, 1999). And these figures are expectedly worse in developing countries. The situation is further aggravated by the fact that about 75% of the household energy demand in developing countries is met by using inferior fuels like biogas, fuelwood, charcoal and kerosene (Sidorenko, et.al., 2002). Attempts to bridge these disparities, more particularly to increase access to electricity, spread worldwide over the last two decades. Influenced by neo-liberal principles involving increasing reliance on market forces and private actors, reforms on the provision of such an essential public infrastructure utility that had been traditionally extended by governments were instituted. Power sector reforms introduced by both industrialized and developing countries typically involve privatization and competition as accompanied by deregulation of utility markets, liberalization of supplier choice, electricity industry restructuring through the unbundling of vertically-integrated services[3], the establishment

[3] the splitting of the traditionally integrated electricity industry into different vertical segments

of wholesale electricity spot markets as well as the creation of independent entities responsible for the operation of the wholesale market, and transmission network including central dispatch systems (Philipson & Lee Willis, 1999).

It may be necessary to understand at this point that the provision of electricity exhibits natural monopoly characteristics, economies of scale and scope, presence of network externalities and lumpiness of investment due to technical constraints. The availability of natural resources, which are often publicly owned, is one important factor that determines the country's preference for basic energy source. Based on current planning practices, the required power generating capacity is calculated from the projected demand forecast for electricity which is largely influenced by economic growth. Given current engineering technology, electricity can not be practically stored, hence the amount flowing in the network must be continuously balanced with the load, and that a central dispatch system releases power based on least-cost principles. The transmission grid (mainly consisting of on-land and submarine high-voltage network of cables, transmission towers, automated systems for load scheduling, central control and dispatch, power stations and transformers, and ancillary systems like black-start plants and reactive power supply and automatic voltage regulators) which transports constant electricity from the generating source to large industrial consumers and distribution companies, has the properties of natural monopoly because it is uneconomical to replicate. Using the same reasoning, it may be argued that parts of the distribution networks such as capital-intensive step-down transformers and power substations, voltage control systems, and main distribution networks may also have monopolistic characteristics in view of their huge investment requirements.

Ideological Links and Perspectives

The 1980s to 1990s, known in development history as the debt crisis decade, saw the emergence of a new mainstream development theory called "neo-liberalism". Neo-liberalism is anchored on the ideological philosophies of free market and capitalism, plus much emphasis on private entrepreneurialism, individualism and profit maximization.

Since it trusted the market to work by itself as postulated by Adam Smith, neo-liberalism enforced a much less interventionist role of the state/government in economic affairs. It also envisioned that market liberalization, where private resources participate on a level playing field, would bring about greater economic efficiency. It is argued that the basic power sector reform strategies were consistently patterned after these economic principles and strategies of neo-liberalism, the most relevant of which are market liberalization and reduced state intervention.

Neo-liberalism was ideologically linked to the interests of the US and other industrial countries in expanding global capitalism into the developing Third World (Brohman, 1995:134). It was advocated by multilateral financing institutions such as the World Bank (WB) and the International Monetary Fund (IMF), the incumbent conservative governments of many Organization for Economic Cooperation and Development (OECD) countries, and the transnational corporations and political elites across the globe (McMichael, 1996). Since multilaterals were seen as the key vehicles in ordering the economic, social and political development after World War II as they became increasingly influential in shaping global development thinking and practice (Gore, 2000), the WB and IMF became instrumental in enforcing the new economic world order. By leveraging on the debt crisis, the shift in development goals from the national to global political and economic perspectives was effectively enforced among the debt-burdened Third World countries. As an instrument, the WB and IMF introduced structural adjustment programmes (SAPs) which focused on neo-liberal economic strategies involving supply-side economics, privatization of public corporations, free trade and minimal role for the state in economic development. When requested to provide assistance to debt-saddled governments, the WB/IMF along with other international economic agencies employed these strategies (Chossudovsky, 1998) which may be interpreted as a form of financial coercion. To institutionalize the shift, McMichael (1996) cited that the WB refocused its lending pattern from project loans to policy loans in 1983 to 1985 in order to support market-oriented economic growth strategies and redirected its lending to those adhering to or making greatest efforts in economic restructuring at the expense of the poor countries. It is also cited that debtor

governments which reduced their sizes and economic roles were rewarded with credit released in tranches (staggered portions) to ensure continuing compliance with loan conditions. Further, donor countries gave aid primarily because of their political, strategic and/or economic self-interests (Todaro, 1989) like in winning allies amidst the Cold War rivalry.

Despite positive outcomes, a number of criticisms have been made on the weaknesses of the free market approach in the context of the Third World, including the Philippines. As will be seen in this thesis, privatization and market competition has resulted in better profitability and greater operating efficiency, more efficient resource allocation, lower price of good and services, administrative expediency and savings in government expenditures (especially for developing countries), and innovative approaches and technology to some extent. But the free market approach seemed to have failed in developing countries as proven by the emergence of dominant market players, monopolies, price increases, poor service quality, and at worst, the neglect of social equity goals purportedly in pursuit of economic growth. It may be argued that these market failures are brought about by the profit-maximization, individualism and private entrepreneurialism. Specifically for the power sector, totally entrusting the electricity industry to the hands of the private power giants therefore might result in problems from monopolistic rents, neglect of the poor and environmental degradation. Nonetheless, it is hoped that power sector reforms could be crafted to avoid these detrimental possibilities.

Concepts Behind Power Sector Reforms

Like in any other public infrastructure, the peculiarities (*e.g.*, monopolistic elements, economies of scale, externalities, investment lumpiness) of electric service provision require condition-specific policies and strategies in order to enhance cost-effectiveness and system efficiency. But in general, power sector reforms instituted by both industrialized and developing countries embody the following concepts.

Vertical Unbundling

Prior to reforms, infrastructure utilities worldwide like the electricity industry typically integrated upstream and downstream activities for purposes of scale economies and allegedly better service quality. Power generation, transmission and distribution/supply were traditionally lumped together under one firm, usually government-owned. However, independent analyses confirmed that vertically integrated systems of electricity generators and distributors do not create efficiencies (ADB, 1998 as cited in DFAT, 1998). Empirical evidence from the 1960s to 1970s indicated that large vertically integrated public sector monopolies led to excessive investment in non-productive assets and inefficient production (DFAT, 1998). This is because there are components of the electricity industry such as bulk power generation and distribution which are competitive business segments. These are activities whose production costs can be more cheaply supplied by competing smaller decentralized firms provided they are allowed non-discriminatory access to the transmission network. Further, as the enterprise's size or network of operation expands, required additional activities such as metering and repairing faults as well as the establishment of regional offices tend to increase the service cost per unit output.

A popular approach employed in most power sector reforms that could effectively promote competition and improve resource allocation is the splitting of the traditionally integrated electricity industry into different vertical segments (DFAT, 1998). The unbundled non-monopolistic business segments could then be fully privatized and allowed to conduct business in a competitive environment. Though economies of scale may be sacrificed and the service quality may be compromised as a result of vertical unbundling, it is believed that the gains from commercial efficiency which results from better resource allocation would be passed on to consumers without government intervening in pricing or regulating the rate of return. The World Bank (1995) asserted that the introduction of competition prior to the privatization of infrastructure industries is vital to gain efficiency. If unbundling is done before privatization, it would increase competition and allow a more transparent and stable regime that ensures consumers of

more efficient and fairer outcomes. The strength of unbundling, however, relies on cross-ownership restrictions in order to eliminate conflicts of interest.

Privatization

Power sector reforms worldwide are anchored on the perceived benefits of privatization, competition and deregulation if the electricity industry is properly unbundled. While existing literature offers a number of definitions, privatization may be aptly defined as "the shifting of a function/responsibility, either in whole or in part, from the public sector to the private sector which involves increased reliance on private actors and market forces to take over such functions or responsibilities that had in recent years come to be regarded as properly within the governmental sphere" (Feigenbaum, et.al., 1999:1-2). In this context, the functions/responsibilities involved are the construction as well as the operation and management of essential utilities to produce goods/services for public consumption such as electric power, water, transportation, telecommunications, and social services (*e.g.*, housing, medical and educational support). Methods of privatization vary largely to include public-private partnership (with emphasis on using private resources), contracting out and voucher systems (where the private sector instead of government produces goods/services for a fee), deregulation (but with possible competition with government), franchise (or a regulated geographic monopoly), asset sale, and private sector donation (in terms of personnel, facilities and equipment) or volunteerism.

In linking utility ownership and productive efficiency, literatures on property rights, public choice and private monopolies collectively suggest that privately-owned utilities are relatively more efficient than their publicly-owned counterparts (Pollitt, 1995). Globally, electricity supply industries are being privatized based on the central argument that "private ownership of a firm leads to lower production costs than would be achieved under public ownership" (Pollitt, 1995:1), thereby expecting decreases in consumer prices. The property rights theory, which focuses on the incentives facing owners (such as the taxpayers for publicly-owned utilities and commercial investors for privately-owned ones), suggests that the restricted transferability of right or their inability to

capitalize on gains/losses reduces the incentives of taxpayers to minimize costs and monitor the performance of utility managers (Pollitt, 1995: 11-15). Public choice, which focuses on the incentives facing government managers (*i.e.*, bureaucrats and politicians), intensifies the above property right ideology by explaining that instead of managing the enterprise, bureaucrats are preoccupied in maximizing their office sizes and discretionary budgets while politicians are obsessed with popularity and patronage among voters (Pollitt, 1995:15-18). Ramachandran (1995) argues though that the real reason is that parties involved (usually government officials) lack the incentive to act.

Conversely, the private monopoly theory suggests that private regulated monopolies tend to over-invest in capital, while publicly-owned firms tend to have too much labor relative to the optimum, in any case resulting in resource allocation inefficiency (Pollitt, 1995:18-21). As a significant determinant of the profitability and productivity of an enterprise, privatization improves the performance of public enterprises as it contributes to locking in the gains achieved in reforming public ownership or in preparing a firm for sale, to detach the firm from the political process, and to shield the firm from interference by owners who have more than profit on their minds (Nellis, 1994). It is also argued that there is better profitability and operating efficiency under private ownership because of greater scrutiny and discipline imposed by the shareholders/capital markets and self-motivated supervision of board members on the managers, because of higher-quality and better compensated management with greater autonomy in reacting to market signals, because private firms are more susceptible to bankruptcy, liquidation, take-over and closure, and because of lesser political interferences that reduces operating efficiency (*e.g.*, overstaffing, undercapitalization).

Proponents of privatization contend that it promotes cost savings and administrative expediency in the management and provision of public goods/services (Higgins, 1999). More particularly for developing countries, it is seen as a source of finance. It is also claimed to a certain extent that privatization encourages high-quality and more effective output due to greater management flexibility and reduced red tape, helps dissolve unnecessary government monopolies, encourages innovative approaches and technology,

and tapers down government size and its growth. In general, these positive arguments are anchored on the philosophy that the private sector can make decisions more rapidly to assign the necessary resources in areas of greatest need because they are less bureaucratic compared to government agencies. Privatization may also be viewed as an incentive to improve efficiency and increase investment. Greater emphasis on efficiency leads to increased capital investment spending. Higher investment and efficiency lead to more output and employment, thus eventually improving economic development.

A number of empirical studies on privatization support these positive arguments, one of which is the study by Megginson, et.al. (1994) on the pre- and post-privatization financial and operating performance of 61 privatized companies in 18 countries (12 industrial & 6 developing) covering 32 industries from 1961-1990. Megginson, et.al. showed that after privatization, the sample firms became more profitable, increased their real sales and investment spendings, improved their operating efficiencies, reduced their debt levels, and increased dividend payments. Even for developing countries which are generally characterized by thin financial markets, weak regulatory bodies and poor implementing capacity, large public sector and the lack of entrepreneurs and good managers, the findings of Megginson, et.al. also basically hold true. Based on a study of the financial and operating performance of 79 firms (engaged in competitive and non-competitive markets) in 21 developing countries[4] that had fully or partially privatized during the period 1980-1992, Boubakri and Cosset (1998) found, on the average, 124% increase in profitability, 25% rise in sales efficiency ratio, 25% increase in productivity, 126% increase in capital spendings over sales, 5% decrease in debt-to-sales ratio, and 44% increase in dividend payments. Surprisingly, it was also observed that 58% of the sample firms exhibited a slight increase in employment by 1.3% on the average. It is important to note though that the findings of the Boubakri and Cosset study yielded more favorable results in countries with higher per capita income. Compared to upper middle-income countries, low-income and lower middle-income economies exhibited

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[4] *i.e.,* the 3 low-income economies of *Bangladesh, India and Pakistan*, the 7 lower-middle income economies of *Chile, Jamaica, Nigeria, Philippines, Thailand, Tunisia and Turkey,* and the 11 upper-middle-income economies of *Argentina, Brazil, Greece, Republic of Korea, Malaysia, Mexico, Portugal, Singapore, Taiwan, Trinidad & Tobago and Venezuela*

insignificant increases in profitability and efficiency levels. Post-divestiture increase in capital investments among firms is insignificant in non-competitive markets (*i.e.*, those with elements of monopoly) which suggest that competitive environments spur newly-privatized firms to increase capital spendings in both developing and industrial countries. Employment increase is more pronounced among firms involved in non-competitive industries (*i.e.*, basically public utilities), those under partial or revenue privatizations (*i.e.*, government sell minority ownership stake without surrendering voting powers) and those located in low-income and lower middle-income countries.

Focused on non-competitive markets, Galal, et.al. (1994) assessed the welfare consequences resulting from privatization. The assessment by Galal, et.al., on twelve (12) privatized public enterprises operating in Chile, Mexico, Malaysia and the United Kingdom revealed that, aside from the observed improvement in the performance levels of all firms in terms of profitability and productivity, 11 out of the 12 samples, or about 92%, had 'net' welfare gains to society (*i.e.*, consisting of governments, purchasers, workers, competitors and consumers). It may be noted though that emphasis on net effects connotes winners and losers in privatization wherein the poor consumers usually end up on the losing side. Another study which tested the validity of the argument that privatization benefits often come at a high cost to society was undertaken by La Porta and Lopes-de-Silanes (1997) on Mexico's privatization program. La Porta and Lopes-de-Silanes found that the newly-privatized Mexican firms quickly closed the profitability and efficiency gap with their private peers in terms of productivity gains (52%), layoffs (33%) and higher prices (15%). This proves that privatization favors the owners at the expense of the consumers in terms of higher rates and the workers who are displaced. Directly related to power distribution, Bagdadioglu (1996) has proven that privately-operated distribution utilities in Turkey generally possess better technical and scale efficiency than their publicly-ran counterparts based on a study of efficiency and ownership.

On the other hand, privatization has stalled in some countries because of the popular perception that it benefits only the rich and powerful or only foreigners (Bell, 1995).

Opponents of privatization argue that the primary focus of private providers on profit maximization compromises quality of service (Higgins, 1999) most especially in concession agreements for public utilities. Notably, it does not really substantially save taxpayers' money as Feigenbaum, et.al. (1999) argued that the introduction of market forces and private sector participation into the state affairs does not necessarily result in 'shrinking of the state'. State interventions merely take different forms as governments just shift roles from being service providers to regulatory police against private monopolies and corruption. Privatization does not also guarantee market competition as it can bring about private monopolies and corruption (Higgins, 1999) because incumbent players often remain in the best position to dominate the market especially after monopoly break-up. Besides, privatization has explicit political goals with consequential redistribution of costs and benefits to different groups (Nellis, 1994). While privatization diminishes the popularity and patronage of bureaucrats and politicians aside from decreased accountability and control over privatized services, governments are constrained in upholding their non-economic objectives (*e.g.*, in promoting social equity) when public enterprises are privatized.

Table 2.2 - Pros and Cons of Privatization

Pros	*Cons*
Better profitability and operating efficiency	Compromises service quality due to profit motive
Source of finance and administrative expediency	No substantial savings, just shifting of government roles
Encourages innovative approaches and technology	Does not guarantee market competition
More efficient resource allocation	Non-economic objectives and public service goals are set-aside

Competition

Perceived benefits of competition are based on the well-known law of supply and demand in economics, which basically states that the price of a commodity decreases as the number of competing producers supplying that commodity to the market increases, while prices fall as the demand decreases and that the market price of a commodity is

determined based on the equilibrium state between supply and demand. Effective competition exists where profits would be expected to fall after a small price increase. Competitive environments induce firms to improve productivity resulting in lower consumer prices and expanded variety of goods and services are expected. Market competition pressures firms to minimize production costs (including staff right-sizing) and encourages technological and managerial innovations (Sidorenko, et.al., 2002).

Competition, however, requires increased independent management and regulatory efficiency in order to address market power abuse, externalities such as potential industrial pollution and health hazard problems, information asymmetry and social distributive goals (equity). Anti-competitive behaviors within the same market may include price fixing, exclusionary practices, predatory pricing and market division (Sidorenko, et.al., 2002). Other undesirable vertical practices in a supplier-distributor chain cover exclusive dealing, price discrimination, and full-line forcing[5]. Economic theory suggests that an unregulated monopolist will price discriminate if possible to collect monopoly rents, thus causing deadweight welfare losses for the economy. Market power exists when a firm's unilateral action produces price changes. As competition's downside, long-run prices may not go down because of the private firms' principal objective of profit-maximization rationalizes the formation of strategic alliances in order to achieve economies of scale, and to absorb smaller competitors or form cartels to totally control the market (Sidorenko, et.al., 2002).

In a reformed power industry, competition is most manifested in the phases of power generation and retail wheeling/supply provided the industry players are allowed universal and non-discriminatory access to the transmission and distribution lines (Philipson & Lee Willis, 1999). Principles of economics predict that the spot market price of generated electricity will fall when the number of power generators rises[6], and that retail suppliers can select the cheapest power from the market for their clients given open distribution access. When electricity demand falls, spot prices will also fall.

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[5] *i.e.*, the obligation of the buyer to purchase a whole line of products rather than just particular product

[6] at least 7 competing players according to World Bank

However, excess system capacity may also develop when demand falls because of technological design constraints. During slack times, electricity production falls below the rated power generation capacity of 'based-load' plants[7] which can not easily be de-commissioned, hence increasing capacity reserves over and above the idle 'peak-load' plants[8]. Further, falling electricity prices may stimulate demand. In other words, the deregulated electricity supply market is expected to react to macroeconomic crises under a competitive environment. Strategic contracts, both for fuel supply to generators and long-term electricity to consumers which depend on spot prices, lose their values. The losers will be the equity providers, the speculators who took the price risk, and the debt providers since the same is a business risks normally shouldered by the private investors in the market. Singapore, Malaysia and Thailand have established competitive electricity spot markets recently, the Philippines by 2004, while China, India, Japan and South Korea have similar programs (AEN, 2000).

Deregulation

Regulation means that "government has control through the setting down of laws and rules that put limit on and define how a particular industry or company can operate", while deregulation may be defined as "the restructuring of the rules and economic incentives that government set up to control and drive the industry" (Philipson & Lee Willis, 1999: 173, 175). A regulated electric industry is mainly characterized by a monopoly franchise (*where government grants only one company the right to produce, move and/or sell electricity to consumers in a certain area usually over a defined time period*) with an obligation to serve (*e.g., the local power company must provide for the needs of all consumers in the franchise territory including those not financially viable as well as guaranteeing non-discriminatory service to all customers and extension of the grid to all places within the franchise area*) for a guaranteed rate of return (*i.e., the government/state guarantees the utility that its regulated rates will provide the latter with a reasonable profit margin based on its investments*) provided the franchised

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[7] *i.e.*, those plants catering to the average forecasted electricity demand, hence should operate continuously

[8] *i.e.*, those plants that are operated only in times of peak loading

company plays by the rules. These rules may include prescribed operating and business standard practices (*e.g.*, stringent limitations on building requirements, planning guidelines, financing restrictions) and least-cost operation principles (*e.g.*, government/state regulator defines the utility's allowable investments and expenditures that will be billed to the customers) (Philipson & Lee Willis, 1999).

In meeting social needs through electricity provision, regulation may not be necessarily negative (Philipson & Lee Willis, 1999). Since the technology during the late 19th up to early 20th century entailed very high initial capital investments, governments/states granted exclusive franchises with guaranteed profits in order to attract private investors in establishing a financially non-discriminatory electrification industry. It afforded governments and their business partners an acceptable risk-free way to finance the creation of an electric industry during the infancy of the electric era. Government/state need not invest in new and untried technology as the business sector took the risk in exchange for local monopolies, stable markets and an assured return on investments provided they conformed to prescribed guidelines and rules with respect to business conduct and operating practices such as least-cost operation, regulated rates and fair return on investments, set by oversight state/government regulators. The private sector enjoyed a legitimate local monopoly business without having to worry about competitors undercutting prices to gain market shares in building-up quality systems. Local leaders were assured of universal service and early consumers enjoyed a simplified buying process without being burdened with conflicting claims, standards and offerings of different power companies. More importantly, regulation obliged the provision of service to all consumers in sparsely populated far-flung and remote rural areas. However, the regulated electricity industry set-up did not last owing to technological improvement accompanied by changes in business, energy usage, ideologies and politics, which influenced the shift towards market liberalization.

The concept of deregulation, on the other hand, is anchored on the neo-liberalist principle of market-based competition with liberalization and privatization wherein the private electric utilities are afforded economic incentives to aspire for optimum

operating efficiencies as well as levels of customer service and satisfaction. Relying on the law of supply and demand, many economists and policy makers favor a deregulated regime over traditional regulation. It is widely held that the benefits of deregulation outweigh the costs it entails. Deregulation encourages "market competition which will probably result in modest cost reductions, and will foster increased customer choice and availability of many more energy services" (Philipson & Lee Willis, 1999:214). Walet (2001) views that deregulation in general is expected to bring about lower energy prices, better prices for end-users, more efficient energy companies and lower capital expenditure for governments. The prices of bulk electricity dropped almost everywhere competitive electricity pools were set up, most notably in Chile and Argentina ranging from 20-50% (Albouy & Nadifi, 1999). It is likewise expected that aside from lower consumer prices and improved industrial efficiency[9], the restructuring and liberalization of the power sector will eventually stimulate economic growth and global competitiveness (OECD, 1999:93-97). Deregulation is also expected to encourage innovative technologies and business approaches, as well as widened customer choice in terms of improved service. Evidence of the beneficial effects of liberal private sector entry to public-held industries suggests that "market forces produce a better allocation of resources and greater efficiency in the supply of services" (Newberry, 2002). Bacon & Besant-Jones (2001:333) agree by stating that power sector reforms will result in improvement in economic performance in terms of overall allocation of resources through the elimination of across-the-board subsidies which distort the energy consumption pattern and produce major economic losses in some countries. They add that the motive of profit-maximization in competitive industries under deregulation incentivates the more efficient use of inputs (*e.g.*, lowest cost combinations of inputs, actual input reduction), and that private firms will seek out new markets and special niches that are not appealing to mainstream firms. The overriding justification for deregulation is to improve performance or squeeze out inefficiencies by exposing the

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[9] *i.e.*, in terms of higher capital productivity arising from higher plant availability, improved operating efficiency, reduced excess capacity, and wider investment and technology choices, as well as labor productivity due to reduced overstaffing, sick leave and absenteeism

electricity industry, its players and customers to market-based prices (Rasenti, et. al., 2002).

From a Regulatory Regime to a Deregulated Market

For more than a century, the power sector experienced changes in ownership structure and regulatory approaches as driven by economic developments and technological advancements as reinforced by development theories and models which favored state-led strategies (Philipson & Lee Willis, 1999). Being the most versatile form of energy, electricity became a necessity rather than a luxury. Worldwide, consistent growth in electricity demand has been experienced. More particularly for developing countries, the oil price shocks of the 1970s and the debt crisis in the 1980s have triggered initial reform changes in the power sector. The electricity industry in the western world evolved from a very fragmented purpose-specific private ownership in the 1870s, later opened to public investments in the 1920s, to state-owned enterprises after World War II, competition in electricity generation and retail supply in the 1980s, and deregulation of electricity industries in the 1990s (OECD, 1999:19-25). The strategic importance of electricity in economic development coupled with the aim to prevent market abuse has compelled governments/states to establish substantial ownership interest in the electricity industry in many countries since the 1920s, thus the change from private to state-owned monopoly. In the 1990s, the model of independent power producers (IPPs) selling to a state-owned single-buyer spread across Asia, Central America and the Caribbean (Bacon & Besant-Jones, 2001:340). The widespread waves to liberalize, restructure and privatize electricity supply industries that spread across the world (Pollitt, 1995) have now expanded to a restructuring of the entire electricity industry to include generation, transmission, distribution, and supply/retail businesses.

What condition/s finally led to deregulation of the electricity industry? Philipson & Lee Willis (1999: 192-197) explained that the improvements in generation technology (*i.e.*, the invention of more efficient small Combined-Cycle Gas Turbines) along with the developments in computer/information technology during the first half of the 1980s

made the old capital-intensive giant power plants obsolete and much more expensive to construct and operate. Economic rationality among industrial and commercial users saw it better to either engage in self-generation using this more efficient technology for their electricity demands or demanded from the state/government to know why they can not shop around and change electricity suppliers to obtain the lowest priced power. Due to such technological improvement accompanied by changes in business, energy usage, ideologies and politics, there grew a worldwide trend toward electricity supply deregulation. Further, regulations became unnecessary since it had already served its primary purpose of developing the universal electricity infrastructure. Electric generators, transmission grids and other infrastructure have already been built and some have been paid for like in the US and Europe. The provision of the risk-free financing of electric system development under the regulatory regime became unimportant since electricity became a necessity rather than a luxury. The needed capacity additions in generation and transmission are only incremental in nature representing lower levels of risk and capital investments. Moves toward power sector reforms were also influenced by the principles of neo-liberalism. Developed countries more particularly England and US believed that the private sector could do a better job of running the electricity industry as evidenced in other industries such as transportation and telecommunications. Positive findings of numerous privatization studies commissioned by the World Bank to be conducted in many developed countries which attested to better profitability and efficiency under private ownership influenced the way of thinking among the academe, government policymakers and politicians.

Among the pioneers in the developing world (*i.e.*, Argentina & Chile), the need to raise cash for their governments undeniably motivated their power sector reform efforts in view of the perception that deregulation enhances the value of state-owned enterprise assets (Bacon & Besant-Jones, 2001). As deregulation is expected to bring about market competition, many people believed that competition will result in decreases in costs, better supply reliability and better customer value allowing consumers more options or increased control over their energy usage. Further, a competitive industry allegedly promotes focused and pro-active attention to customer needs in an anticipatory manner

and encourages innovation in terms of new technologies and business approaches. Theoretically, compared with the regulatory regime, the lack of competition does not incentivate electric utilities to improve on performance or take risks on new ideas (*e.g.*, electrical, electronic and computer technologies) that might increase customer value since the regulated electric utilities were guaranteed reasonable returns on their investments regardless of whether or not they improve their operating performance and/or upgrade their equipment fleet with new but cheaper technological alternatives. In some developing countries that embarked on electric industry restructuring, however, the continued focus of power generation companies to meet the growing demand resulted in poor consumer orientation or at worst ignored customer relations (ESMAP, 2002:8).

Bacon & Besant-Jones (2001:332) add that despite the good performance of some state-owned enterprises arising from nationalization efforts in Latin America, it was increasingly recognized that long period of state or government ownership, without the forces of competition or the incentives of the profit motive to improve performance, eventually leads to high costs, low service quality, poor investment decisions and lack of innovation in customers relations. In Europe, many publicly-owned monopoly utilities had been or being privatized (with the deregulation of their related utility markets) because of escalating public clamor that arose due to lack of productive efficiency, service innovation and failure to identify consumer demands (Heretier, 2002). It is claimed that the private sector inspired by the profit-maximization motive will offer many new solutions (*e.g.*, new power generation technology, computerization of dispatch systems, service standards, metering, billings and collections, cost recovery mechanisms) leading to the lowering of power costs.

In developing countries, power sector reforms had been designed to introduce competition and to use economic regulations of the wholesale and retail markets to promote competition while protecting public interests as well as fostering greater consumer voice and choice in the marketplace. The principal driving forces behind the reform in the electricity industry include the inability of the state sector to finance the needed expenditures for capital investments for generation, transmission and distribution

including their operating and maintenance costs, the desire to raise immediate revenue through the sale of assets from the sector, the poor performance of the government-run electricity sector in terms of high costs, inadequate expansion of access to electricity service for the population and/or unreliable supply, and the need to remove subsidies to the sector in favor of other pressing public expenditures (Bacon & Besant-Jones, 2001:332-335). It is also acknowledged that the restructuring of the power sector in developing countries is pushed by international financing institutions (IFIs) (*e.g.*, the World Bank/International Monetary Fund, the European Bank for Reconstruction and Development, the Inter-American Development Bank, and the Asian Development Bank) as they evolved to be advocates of both macroeconomic and power sector reforms influenced by the success of the pioneering endeavors in Chile, England and Wales, and Norway in the 1980s (Bacon & Besant-Jones, 2001:334,339). Not surprisingly however, strict compliance with loan covenants which listed reform targets and their achievement milestones are made conditions to the approval and release of reform loan tranches and other possible future project loans from these IFIs. While IFIs view compliance to loan covenants as a measure of the borrower's commitment to the enunciated reform process, it should be noted that as part of usual banking operations these IFIs would most likely approve loans or other reform-related assistance only after their due diligence efforts/studies to assure them the repayment of such loan/assistance save in cases of bilateral agreements, diplomatic responsibilities and political affiliations. An interview with one ranking official of Asian Development Bank (ADB) in 1996[10] revealed that as an IFI, the Bank simultaneously pursues the dual objectives of extending development assistance to its member countries and giving preferential business opportunities to its donors, hence, the prescribed engagement of goods and services from these donor member-countries. While it was explained that such policy is aimed at sustaining donor contribution to the Bank's pool of resources, it was quite alarming that around 20% of the project loans goes back in terms of consultancy fees aside from the mandatory purchase of project-related equipment/materials from eligible donor member-countries.

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[10] The author was engaged in a short-term regular technical assistance project on the effectiveness of expatriate consultants on ADB-financed projects in the Philippines.

Acclaimed Best Model and Other Country Reforms

Based on theoretical free market ideals, the fully comprehensive and competitive system of Victoria (Australia) may be one of the best models for the electricity industry. Through staged reforms, Victoria's electricity industry was transformed from a totally integrated state-owned utility (that single-handedly generated, transmitted and distributed/supplied electricity throughout the state) into distinctly separate private-owned generation, transmission and distribution businesses (DFAT, 1998). More importantly, Victoria's system allowed all its consumers to buy electricity from the distributor/retailer of their choice, which is a way of empowering them to command for better services assuming there is no information asymmetry (*i.e.*, relevant distributor/retailers' information are accessible for making an wise decision). The unbundling process saw the ownership transfer of generation assets to several private firms, distribution/retailing assets to five retail organizations competing for common customers, and the high-voltage transmission assets to a private concessionaire that is independent from either the generators or the distributors/retailers. Cognizant of the natural monopoly elements in transmission networks, a tight regulatory framework was instituted for controlling the rate of return for the concessionaire and the transmission wheeling prices. A wholesale electricity market was also created where private generators can sell and retailers can buy power at prices based on the demand and supply equilibrium determined at 30-minute intervals. A publicly-owned corporation was created to manage and control the wholesale market, as well as to prevent cross-ownership (between generation, transmission and distribution/retailing assets), and to ensure indiscriminatory access to the transmission and distribution networks to any user. The system solved the pre-reform problems of excess capacity and low labor productivity which eventually led to marked decrease in power prices and improved operational efficiencies. A typical household paid 9.2% less for electric bills and service interruption/outage levels was halved when the industry was reformed (DFAT, 1998:146).

Like Victoria, New Zealand and Australia (except Victoria) also transformed their electricity industry into a fully comprehensive and competitive system, the only difference was that the ownership and management of some components of their electricity industries still remained under public corporations. While deemed less efficient than private firms, publicly-owned corporations in the power sector allow governments to assert the non-economic social and political objectives. Other countries such as Singapore, the US, Chile and Peru had also fully privatized all components of their electricity industries, but opted to centralize all buying and selling transactions within one market place, thus following a wholesale competition model.

Thailand, as well as the Philippines, has a similar plan as Victoria's. Begun in 2000 and to be completed by 2004, its power market would be reformed with the deregulation of the generation and retail supply components to promote competition and improve efficiency (APERC, 2002). The Electricity Generation Authority of Thailand (EGAT), a three-state-owned enterprise, the Metropolitan Electricity Authority (MEA), and the Provincial Electricity Authority (PEA) would be privatized. A regulatory authority would be established and a power pool or electricity spot market would be set up. Consumers would be able to choose among competing market suppliers. Other countries like China and Malaysia also has plans to revise their monopsonic (*i.e.*, single buyer model) industry structure under public ownership. Though power industry structural reforms primarily involving unbundling is a priority of China, corporatization is preferred over privatization because the Chinese government wished to maintain public ownership (APERC, 2002). Malaysia likewise opted not to fully privatize its power supply industry with the state-owned Tenaga Nasional Berhad to continue its power generation and distribution functions. Malaysia's restructuring efforts is focused on the more efficient use of financial and technical resources to ultimately achieve competitive electricity prices for all consumers (APERC, 2002).

Problems with Power Sector Reforms

There are problems associated with electric industry restructuring, however. Among others, these include consequent environmental impacts, the settlement of stranded costs accrued by electric utilities, and the potential neglect of the sparsely populated rural areas (New Republic, 1998). Critical to the profitability of private investment in electricity generation is the fuel that runs the electric generators. As of the moment, coal (though hydropower and geothermal plants prove to be better in certain circumstances) appears to be the most economical fuel despite the application of proven mitigation measures like scrubbers and clean coal technologies. Coal combustion produces obnoxious by-products (*e.g.,* carbon monoxide, sulfur oxide, nitrogen oxide) that are hazardous to human health (*e.g.,* said by-products are known to cause cancer and respiratory ailments) and at the same time destructive to the environment (*e.g.,* global warming, ozone layer depletion, acid rain formation). It is argued that environmental concerns crop up mainly when the role of private investors is not carefully defined and monitored by concerned institutions (Albouy & Nadifi, 1999). As the environment includes people, the relocation of people affected by electrification projects and its implications cannot be overlooked as right-of-way acquisition has been a perennial problem for infrastructure construction in the Philippines (according to NEDA).

The issue on the stranded costs of electric utilities is quite sensitive. The decision to allow for the recovery of stranded costs should rest on whether they were incurred as a result of the regulatory process (*e.g.,* installing capital-intensive electric infrastructure projects pursuant to government-prescribed rules and regulations). The impacts of power sector reforms on customers and the economy crucially depends on how the issue of stranded costs is handled (Walden, 2000). If ratepayers are required to pay such costs, then impacts are mostly negative during the recovery period. If, however, stranded costs were incurred because of purely private business decisions or faulty financial judgments, then the respective investors should take the hit as in most countries that have restructured their electricity industries. Moreover, utilities with stranded costs might be at a disadvantaged end with the introduction of competition (Journal of Property

Management, 1997) since their prices would normally include the recovery charge for such costs.

As discussed in the early part of this chapter, the capitalistic profit-maximizing motive which governs business-as-usual decisions in private investments would put the financially non-viable rural areas and other far-flung and remote villages at the end of the electrification priority list (Bhattacharyya, 1995:384). If left on their own, private developers would most probably be more attracted to more profitable urban markets rather than less viable rural ones, thus paying little attention to, if not totally ignoring, access by those with lesser electricity consumption and lower capacity to pay. While such may be partly addressed through policy decisions[11], it should be borne in mind that "policy is basically politics and the institutions (that make policy decisions) are politically and legally structured" (Bhattacharyya, 1995:387). Particularly in the Philippines, Stubbs & Macatangay (2002:134) acknowledged that one of the most problematic socio-legal issues is "the iron grip of entrenched oligarchs on the legal and political institutions in the country". As seen quite commonly in Third World countries, the view of Frank (1970) that the dominant class in the central metropolis connives with the ruling elite in the peripheral satellite for capitalist interests holds true. This symbiotic alliance corroborates to satisfy the vested interests of the parties involved; *e.g.*, the dominant class is enabled to manipulate the socio-political relations to its advantage, while the ruling elite wins back favors or financial rewards which in turn may lead to strengthening of its grip over its territory. As many have opined, wealth means power and power leads to control. In this connection, it may also be worth-mentioning that Russian politicians (Modern Power Systems, 2002a) saw the need to be mindful of the effects of reforms on end-consumers since higher electricity rates may lead to loss of votes and patronage. While proponents of the deregulation argues that it would promote competition and give consumers a choice among suppliers, Swiss voters rejected the

[11] *e.g.*, missionary electrification subsidized from a universal levy, front-ending house installation cost, increased reliance on new and renewable energy sources for rural electrification

proposed electricity market law since deregulation is viewed as a possible cause of power shortages (Modern Power Systems, 2002b).

Walet (2001) also warned that since deregulated markets mean competition with other players, it is characterized by price volatility and increased risks especially on the part of the private sector participants. The private sector faces more risks under a deregulated environment because they have to be more active in marketing and sales to curve down profit uncertainty and to secure a firm client base or market share. Electricity price fluctuations are so common in deregulated electricity market because of the fierce competition for customers and market manipulations and abuse.

Relatedly, the global financing of deregulated markets poses threats to the success of power projects. Focusing on developing countries with thin financial markets, a case in point is the impact of the 1997 Asian financial crisis on the energy projects of international independent power providers (IPPs) that were contracted by most southeast Asian governments to supply the energy demands of their countries. Indonesia's IPP program slowed down as most of its power projects, including some which had already reached financial closure and begun construction, were either suspended or cancelled because the value of local counterpart funds became insufficient as a result of the 80% devaluation of the rupiah in 1997. The 1320-megawatt Tanjung Jati-B power plant in Central java was rescheduled to resume construction in 2002 (APERC, 2002). The 1230-megawatt Paiton I coal-fired power plant was not activated though already completed in 1999 pending the settlement of tariff and the long-term payment scheme (DFAT, 1998). Further, the payment obligations of Indonesia (as well as the Philippines) under IPP contracts which were denominated in US dollars soared as local currency decreased in value (DFAT, 1998). Malaysia faired better with power cost rising at only 10% since their IPP projects involved 90% local debt financing (DFAT, 1998). In Thailand, the devaluation of the baht made its projects unbankable under existing agreements forcing the Thai government to absorb some currency risks. In any case, the consumers are the ones adversely affected either by higher power costs or severe service interruptions. Besides, deregulation entails a more complicated scenario for electricity end-users and

local leaders. Electricity end-consumers are faced with the complicated buying process in view of the different supplier offerings, conflicting claims and standards. Undoubtedly, only those customers with the ability to access relevant various market informations will benefit the most from deregulation. On the other hand, local leaders are no longer guaranteed with universal service within their respective jurisdictions.

Further under a reformed electricity industry, subsidy schemes are being eliminated as they are argued to be socially regressive[12], thereby hindering sustainable growth (Albouy & Nadifi, 1999). However, the elimination of cross-subsidies instituted in the name of economic efficiency would hurt the residential consumers in terms of higher power rates especially in rural areas of developing countries because industrial and commercial customers are subsidizing residential consumers. Furthermore, since Philipson & Lee Willis (1999:212-213) remarked that the private sector investments are generally made only if the payback period is less than five (5) years, it could be expected that supply reliability might suffer due to the short-term focus on all construction, business decisions and other aspects of the power sector which is enforced by deregulation, privatization and competition.

Cook (1999:550) asserted that privatization or any forms thereof, as an attempt by countries to lessen political control over public utilities, does not necessarily mean effective competition in view of possible market manipulations and abuse, hence, the need for independent regulatory structures to protect the consumers from anti-competitive market behaviors and to provide incentives to firms to maintain efficiency. As Newberry (2002) concluded after his assessment of the California electricity crisis, "liberalized electricity markets may be politically unsustainable without careful design and regulation". Those overly pessimistic, on the other hand, argued that antitrust/regulatory agencies are not likely to succeed in promoting competition among electric utilities that are undergoing deregulation. It is claimed that market powers would only reinvent themselves to ascertain their dominance within the industry so that the

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[12] *e.g.,* inter-class cross-subsidies do not benefit the non-electrified poor population, energy subsidies discourage the development of cheaper substitutes

incentives to lower electricity costs or to invest in innovation are minimized (Shepherd, 1997). Though scale economies in the electricity industry is laudable, problems of capital scarcity, imperfections in market information and ineffectual competition policy not to mention "under the table deals" are likely to empower existing players. Liberalization of the electricity industry might result in higher prices if the markets are not made more contestable, transmission capacity is not expanded and adequate generation capacity is not ensured (Newberry, 2002).

Profitability vs. Affordability

It is argued that private sector interest in the provision of public utility goods and services largely depend on the profitability of private sector investments. Based on business management theories, the private sector would more likely enter the market to provide public goods and services if it stands to fully recover its provision cost plus a reasonable return on its own funds. Strictly speaking on a project basis, provision cost generally includes all expenditures related to the provision of a particular public good or service such as capital, land and labor. Critical from the private sector standpoint is the financing source for all these expenditures as the effective lending rate for the same would be included by the private firm in the pass-on rate of goods/services to end-consumers. At an agreed debt-equity ratio, external borrowings with fixed interest rates over a pre-determined repayment period are combined with private equity funds to finance a project. In economics, the reasonableness of the return on private equity is determined by the opportunity cost of investing such money to the next best financial venture elsewhere. For logical and practical reasons, the relatively stable money market investment options (*e.g.*, LIBOR, Treasury Bill rates) are often used as the benchmark for returns on private equity for the simple reason that the money invested is guaranteed to earn a fixed profit without the owners having to worry about running a business. Though decided on a rather subjective basis, the reasonable return on private equity funds incorporated in the full cost of utility provision is the deciding factor for private sector participation in public utilities provision. The pass-on rate of providing a utility service is calculated by applying the preferred return on private equity combined with

the opportunity cost of external borrowings on utility provision over a fixed period of cooperation.

But what about the affordability of the pass-on rate to the consumers? The affordability of utility services among consumers may be viewed differently depending on the utility usage. If the utility service is used as an input for the production of another commodity, the cost of input will be practically charged to the selling price of that commodity, either as goods or services. Then the affordability of the utility service becomes implicit because the selling price of the produced commodity will be the determining factor. It should be noted though that in competitive markets, new players might initially sell their outputs at rates below the true production cost in order to gain market share or to dispose excess inventories to minimize losses based on business-as-usual practices. On the other hand, if the utility service is used for final household consumption, then affordability becomes explicit since the capacity to pay of consumers is the determinant. In most European countries, 2-3% of income is spent for electricity on the average, while the corresponding figure for developing countries is 12%, yet majority of the poor are willing to pay the cost of modern energy because it is so much better than traditional fuels (Albouy & Nadifi, 1999). Some earlier studies revealed that even very poor households in developing countries have demonstrated a high willingness to pay for lumen consumption and have increased this consumption substantially in response to the much lower costs associated with electrification (Fitzgerald, et.al., 1990). Electricity (and water) has become price inelastic such that the consumer demand for electricity does not decrease despite price increases. Being necessities, all people need them in everyday life. In cases when the people could not afford to pay, concerned governments employ alternative funding schemes that would lower the financing cost of utility provision[13] in order to attain affordable service rates. In extreme scenarios, some people resort to electricity pilferage as experienced in certain poor communities in the Philippines.

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[13] *e.g.*, by allowing private access to government loans which have lower interest rates compared to commercial lending rates

Conclusion

As an attempt to reduce the disparity in electricity provision as well as to stimulate socio-economic growth, waves of power sector reforms engulfed the whole world over the last two decades or so. Enhanced by ideological and political perspectives, moves towards electricity industry reforms were influenced by technological advancement and economic developments in the industrialized western countries. With optimistic expectations from the resulting efficiency gains combined with pressures from international lenders as mouthpieces of the Western world, electricity industry reforms became appealing to developing countries primarily because of its potential to raise financial resources for their cash-strapped economies.

Reform outcomes/impacts though vary among the different stakeholders of the electricity industry. Governments realized some fiscal relief from providing sizable equity and capital and operating subsidies to related state-owned enterprises as traditionally done. The international business sector profitably ventured on greenfield investments in power and energy. More particularly in most developing countries, industrial and commercial electricity consumers can expect lower power rates due to inter-class subsidy elimination. Meanwhile, residential customers, especially in rural areas, are consoled with momentary tokens and the promises of labor income productivity gains from the expected reform-induced economic boost. The residents in non-electrified isolated and remote rural areas are left with the hope of finally being interconnected to mainstream development by having electric bulbs in their houses. It is also claimed that the power sector reforms will indirectly benefit the poor via the enabling of delivery mechanisms which expand electricity access and promote customer voice and choice, and the refocusing of the freed government fiscal resources to other high priority social expenditures.

As the Western world apparently enthused the Philippines to join the bandwagon of electricity industry reformers, a question that comes to mind is whether the Philippine power sector reform version can satisfactorily achieve economic efficiency with social

equity. Acknowledging that private sector participation in the electricity production, transmission and distribution is basically profit-motivated, it is important to investigate and analyze whether the public services goals such as expansion of electrification service, especially in remote and far-flung areas, power supply reliability and service quality and affordability of electric prices are compromised with the advent of privatization, competition and deregulation.

Chapter III – The Path to Reform

This chapter links the global/regional and general theory governing the shift toward market-based electrification to the Philippine rural electrification situation. It expounds on the importance of electrification in Philippine rural areas first, then historically traces government efforts towards power sector reforms vis-à-vis the global trends and developments. It ends with the discussion of the legislated power sector reforms in the country highlighting its principles and expected outcomes. (Please refer to the attached Philippine Regional Map [Figure 1.1] in the introduction to find the geographic locations of places cited hereunder.)

Socio-economic Importance of Electrification in Rural Areas

From the Philippine context, rural electrification is a preferred program for promoting economic development and social equity (ESMAP, 2002). Considered as the most modern source of energy in most parts of the world, benefits of electrification to rural areas include improving business and farm productivity, enhancing convenience of household tasks, and providing a more efficient form of household lighting. Rural electrification is also a critical factor to the country's development since electricity serves as an input to the production of final outputs that contribute directly to the beneficiaries' well-being as well as in the production of goods and services that people more directly desire. Electrification was also correlated with the lowering of birth rates in Southern Philippines (Herrin, 1979), arguably due to the extended opportunities for paid work and unpaid household activities that decreased the time for procreation. Ali & Pernia (2003) asserted, however, that while electricity positively influences the incomes of the poor through growth, its direct effects are unclear for the poorest and clearer for the upper quintiles suggesting that some minimum income level and complementary facilities are required to benefit from electricity.

Focusing on the developmental impacts of electrification in rural living, the recent electrification of Barangay Lon-oy, San Gabriel, La Union, which is sourced from a 15-

kilowatt (kW) micro-hydro power plant designed mainly for lighting purposes only, allowed public school teachers to work comfortably under bright electric lights doing their lesson plans or checking papers, provided family members more quality time for exchanging stories, singing or simply conversing before going to bed while tending their harvest (*e.g.*, peeling legumes and beans), gave broom-makers extended working hours until late evening, made bread-baking possible at early morning hours, and opened up other livelihood opportunities (Malanes, 2001). In Barangay Ngibat, Tinglayan, Kalinga, its 5-kW micro-hydro project aided in running a community rice mill which unburdened the women and children from pounding rice every morning and afternoon, hastened the work of the local blacksmith, and powered a sugarcane presser used in the manufacture of *basi* (or sugarcane wine) instead of the slow carabao-drawn wooden presser (Malanes, 2001).

Additional uses of electricity are envisioned with the ongoing Solar Power Technology Support (SPOTS) program of the Department of Agrarian Reform (DAR). According to DAR, electricity brought to agrarian reform communities would not only to light up homes, barangay halls and schools, but more importantly to run irrigation pumps, incubators, hatcheries and vaccine refrigerators to boost agricultural productivity and agri-business development.

A household survey was conducted in 1998 to estimate the returns of rural electrification on education, health, entertainment and leisure, convenience and protection, home business and agricultural production (ESMAP, 2002). It compared sample electrified and non-electrified households living in four (4) rural provinces in the Philippines (*i.e.*, Mt. Province, Nueva Ecija, Batangas & Camarines Sur). In general, the survey showed that while both household types spent about the same proportion (or 3.2%) of their income on lighting services (*i.e.*, P126 over P3935 for non-electrified, P248 over P7653 for electrified rural areas), the unserved respondents are much poorer and somewhat less educated than those with electricity. It was established that reading and studying time for

both adults and school-age children[14] is longer in an energized households than those in unenergized abodes despite the presence of television which can adversely affect time for education. Adults in energized dwellings have a higher level of education (*i.e.,* secondary level with an average of 9.5 years in school) than those in non-electrified houses (*i.e.,* elementary level with an average of 6.7 years in school). In terms of surveyed illness symptoms, it was revealed that households without access to electricity indicated a slightly higher incidence tally for coughing, wheezing, shortness of breath and intermittent fever, though a lower incidence rate for diarrhea compared to those already energized. Survey respondents agreed that TV and radio are great sources of news/information and significant sources of entertainment. The time spent on non-market home production and household chores (*e.g.,* washing clothes, cooking, child care, farm chores, collecting fuel wood, fetching water) is shorter with the use of electricity besides the fact that household chores can be accomplished even at night. Besides, a safer feeling at night was expressed due to the avoided use of kerosene lamps. Households that used electricity directly in their business (predominantly variety or *sari-sari* store) spent 4 hours longer of operations compared to those without access to electricity. It was also found that businesses in non-electrified households yield the lowest average monthly income, while those businesses that use electricity reap the highest monthly average. These findings fairly conclude that electricity plays a significant role in the development and profitability of micro-enterprises or home businesses in rural Philippines. Unexpectedly, electricity was found to have no effect on agricultural output or income within the surveyed areas.

As in most developing countries, the Philippine government has been traditionally involved in the provision of essential public infrastructure utilities such as electric power, transportation, telecommunications, and water supply and distribution to the general public. It is viewed that the quality and availability of these types of economic infrastructure are the deciding factors in determining the sustainability of economic development and as important factors that influence the investment decisions of the

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[14] *i.e.,* Per International Labor Organization definition, school-age children are those between 5-14 years old

private sector. Confronted with growing population pressure and persistent budget deficits, the government has to work double-time to compensate for its under-investment in infrastructure in the past. Considered as a serious planning constraint, the Philippine government has to come up with creative ideas to source money for public infrastructure projects.

Three Waves of Privatization in the Philippines

Since the last two decades, the Philippines had been lagging behind economically compared to its Asian neighbors (Alonzo, 2000). Rising oil prices, deteriorating terms of trade, higher interest rates, dwindling foreign exchange reserves and slowed growth in its primary export markets experienced by the country in the early 1980s (Dohner & Haggard, 1994) had largely led to such poor economic performance. As convinced by the US and World Bank/IMF, the resulting persistent budget deficits coupled with the continuously increasing demand by the population forced the government to undertake neo-liberal structural adjustment measures for macro-economic stabilization. Though such adjustment measures had been recommended during President Ferdinand Marcos' rule (from 1965 to 1986), they were implemented only during President Corazon Aquino's regime (from 1986 to 1992) because these measures directly affect the interests of elites closely tied to Marcos (Dohner & Haggard, 1994). Primarily focused on sourcing money especially for the provision of capital-intensive public infrastructure, government think-tanks of the Aquino regime came up with the idea of private sector participation in public infrastructure. The transfer of government assets or provision of goods/services from the tax-supported and politicized public sector to the entrepreneurial initiatives and competitive markets of the private sector was believed to harness the benefits of competition, accountability and incentive if such privatization effort is complemented with clear policy guidelines, stable institutions, competent bureaucracy and political will. From the populist standpoint, better society means people having more choices in public service and more power to define and address their common needs. From the pragmatic viewpoint, prudent privatization will lead to cost-effective public services with better governance. Government-owned assets could be put to better use by

the private sector. Ideologically, less government intervention is needed because government decisions are political and less trustworthy than market decisions. Besides, the government could be relieved from large expenditure on public infrastructures.

While contracting out to private firms (as a form of privatization) the construction of public infrastructures, as well as the operations and management of some, was already being practiced pursuant to existing rules and regulations (*e.g.*, Presidential Decree No. 1594 of 1972 governing government infrastructure contracts, procurement guidelines by international financing institutions such as the World Bank and the Asian Development Bank), the Aquino government vigorously undertook efforts to involve foreign investors in the provision of public infrastructure. Despite the delayed implementation of most infrastructure projects due to poor government finances and political bickering among Aquino cabinet members (Alonzo, 2000), it might still be deemed to be a gallant attempt of the newly-restored democratic government to get the country back on its feet again out of what was left by the 20-year authoritarian rule of Marcos (from 1965 to 1986).

According to information provided by the Coordinating Council for Private Sector Participation (CCPSP or otherwise known as the 'Build-Operate-Transfer [BOT] Center'), the Philippines experienced three (3) overlapping waves of foreign private sector participation in the provision of public infrastructure/utilities. From 1986 to 1990, the first privatization wave might be primarily characterized by the divestment of all business-related assets of the government which were deemed not essential to government operations, especially those that emerged because of cronyism during the Marcos dictatorship. Among the reasons cited for divestment included the aims of enhancing efficiency in the provision of goods and services, broadening ownership base, developing capital markets, generation of substantial government revenues, and helping government focus its resources on priority expenditures (CCPSP). To legally enforce and facilitate government asset divestment, the Aquino government enacted Presidential Proclamation No. 50 dated December 1986 which mandated the creation of the Committee on Privatization (COP) and the Asset Privatization Trust (APT). The COP served as the central oversight agency for the privatization of all assets identified and

intended for disposal/sale including assets and properties recovered/sequestered by the Presidential Commission on Good Government (PCGG), while the APT was empowered to take title to and possession of, conserve, provisionally manage and dispose of assets transferred to it which have been identified for privatization or disposition. The functions and responsibilities of the COP and the APT were consolidated and transferred in December 2000 to the Privatization and Management Office under the Department of Finance (DOF-PMO) by virtue of Executive Order No. 323. Based on the DOF-PMO data, 266 government assets had been fully and/or partially disposed as of December 1991[15]. After ten (10) years of existence, the privatization of government assets had generated over ₱33.22 billion pesos (or about US$830 million @US$1=₱40). Undeniably, the proceeds from these sales aided the government in achieving budget surpluses during the successor administration of President Fidel Ramos (from 1992 to 1998).

The second wave was the direct involvement of foreign private sector through the Build-Operate-Transfer (BOT) scheme and its variants for public infrastructure projects. Basically, the BOT scheme involves the transparent solicitation of interested and qualified private parties in the financing, construction and operation (but not more than 50 years) of government-identified public infrastructure projects. The government believed that the private sector, especially those foreign-owned, has better capabilities (in terms of financial, technical and managerial aspects) to operate public infrastructures. As prompted by the power crisis in the early 1990s, the BOT coverage initially focused on electric power generation, but later on evolved to cover other infrastructure sub-sectors. The enabling legislation that provided the policy framework for tapping the capability of the private sector is Republic Act 6957 dated July 1990 (*a.k.a., the BOT Law*, as amended by Republic Act 7718 dated May 1994). Along with other sector-specific legislations, these policy frameworks paved the way for an institutionalized private sector participation in public infrastructure provision. The apparent success of the private sector in putting an end to the economically crippling long hours of blackouts

[15] Appendix F enumerates the top 45 government assets which were sold for more than ₱100 million each.

as well as in meeting the growing demand for power and further leading to medium-term supply security and reliability served as an impetus for other infrastructure sub-sectors to follow suit. These included BOT projects in transportation (*e.g.*, mass transit, railways, airport terminals and toll roads), water supply systems, solid waste management, tourism and information technology.

The third wave featured private sector participation in a wider range of social services or the so-called 'soft' government infrastructure (*e.g.*, postal services, health, housing and education). Such was tied to the re-engineering of government's role as public service provider within the context of being the enabler of civil society and subject to a thorough review/assessment of the present scheme of public service delivery to determine whether or not the same could be better managed by the private sector. Thus far, local/domestic investors dominated private sector participation in soft infrastructure provision. The Philippine Postal Services has already been corporatized, yet old undesirable practices in service delivery such as mail pilferage and delayed delivery are still observable. Private hospitals/clinics and colleges and universities have been increasingly outperforming public facilities related to health and education, but at a higher cost to their clients. Mass housing projects have been implemented by local private land developers, but mostly targeting the middle-income class.

Though the privatization initiatives were actually conceived during the Aquino regime (1986-1992), much had been achieved under the successor Ramos administration (1992-1998) in terms of restructuring, particularly the implementation of measures promoting liberalization, privatization, deregulation, and competition. Reasons for delayed reform implementation during the Aquino regime are being blamed to the occurrence of natural disasters (*e.g.*, the 1990 earthquake, the 1991 Mt. Pinatubo eruption), several coup attempts by rightist military elements, as well as vested interests and political bickering of those who helped dethrone the Marcoses which resulted in the moratorium of most public infrastructure construction (Alonzo, 2000). During the abbreviated term of President Joseph Estrada (1998-2001) and the current President Gloria Macapagal-Arroyo take-over administration, emphasis has been on the fine-tuning of rules and

regulations governing the participation of the private sector in public infrastructure as well as the streamlining of the BOT contract approval process (*i.e.*, project evaluation and review of contract agreements). As of June 2003, the private sector participated in public infrastructure provision through 68 BOT contracts involving the aggregate amount of US$ 20.74 billion. Of the 68 BOT contracts, 38 are currently operational, 19 have been awarded and/or are undergoing development, and 11 have been completed. Appendices G.1 to G.4 enumerate the operational, awarded either through public bidding or the unsolicited mode, and completed BOT projects per data from the CCPSP. It is noted from CCPSP data that for the power sector alone, the private sector has saved the government amounting to about $9.5 billion in 38 BOT power projects as of June 2003.

The Philippine Power Sector

Privatization experience in the Philippine power sector is not much different from the experiences in the other public infrastructure utilities in the country[16]. During the early 1900s when electricity was first introduced in the Philippines, private companies were involved in the development and control of electricity supply with the government regulating installation (ESMAP, 2002). Acknowledging the strategic importance of electricity in fueling socio-economic development, the National Power Corporation (NPC), a government owned- and controlled-corporation (GOCC), was created in 1936 to set up power generating facilities primarily utilizing the country's hydroelectric resources as well as to construct transmission grids. Of the 1750-megawatt (MW) total generating capacity by 1969, the private companies supplied 67% led by the Manila Electric Co. (MERALCO) contributing 990 MW, while NPC chipped in 585 MW. The government's continued emphasis on supply reliability and security as aided by the forced divestment of MERALCO from the power generation business during the Marcos rule eventually resulted in NPC monopolizing the generation of electricity as well as in the bulk transmission services. But with the change in government from an authoritarian rule to a democratic regime via the People Power Revolution in February 1986, the

[16] Development highlights of private sector participation in other public infrastructure utilities in the Philippines are found in Appendix H for reference

development plans of the Marcos regime were closely scrutinized by the successor Aquino government resulting in the mothballing of the controversial 600-MW Bataan Nuclear Power Plant (Stubbs & Macatangay, 2002). Despite the ensuing need to increase capacity as a result of the economic boom immediately following the restoration of democracy and the reduction in the existing hydroelectric capacity of NPC plants due to droughts as well as other reasons cited above, no power generating plant was constructed during the period 1987-1991 to replace the shelved nuclear project, thereby causing the country's power crisis during the early 1990s.

With the economically crippling electric service interruptions stretching for 8-12 hours daily, the Ramos administration was stimulated to vigorously invite private sector participation in power generation, thus marking the Philippines' enlistment to the Asian power gold rush (1990-1997). Aside from the BOT law, Executive Order No. 215 of 1992 (EO 215) was enacted to legally deregulate power generation activities acknowledging the financial capabilities and managerial expertise of foreign private companies. EO 215 also paved the way for the reestablishment in 1993 of the Department of Energy (DOE) upon the subsequent enactment of Republic Act 7638 (*a.k.a.,* the Department of Energy Act) to serve as the central government agency responsible for coordinating the implementation of energy development policies and programs.

In addition, the incumbent President was granted emergency powers by the Philippine Congress to enter into negotiated contracts for the construction, repair, rehabilitation, and maintenance of power plants and related facilities by virtue of the Electric Power Crisis Act of 1992. Invoking either EO 215 or the BOT Law, the NPC entered into several power purchase agreements (PPAs) and energy conversion agreements (ECAs where NPC supplies the fuel for power generation) with various international independent power producers (IPPs). Since the IPPs were contractually obliged to sell their outputs only to NPC, NPC's monopoly in power generation was effectively turned into *monopsony* (or single-buyer model). According to NEDA, the completion of six (6) fast-track power generation projects (*i.e.*, mainly barge-mounted diesel power plants)

with a combined capacity of 723 megawatts that were put on line ended the power crisis by 1993. As of late, NPC has entered into 46 PPAs/ECAs (per NEDA reckoning) with various IPPs either through the competitive bidding process or via the unsolicited mode, the bulk of which were entered during the Ramos administration (1992-1998). In terms of the present generating capacity, the aggregate IPP contribution stands at about 52% (or 7263 MW) providing more than half of the country's generating capacity to cater to the estimated electricity demand[17] of the entire country sufficient to fuel the economy until 2005 per NPC projections. In financial terms, the Philippines obtained about 10% (Albouy & Bousba, 1998) of the US$ 60.4 billion of the total investment in energy projects of private firms in East Asia and the Pacific during the 1990s (Izaguirre, 2000). Based on the latest information gathered from the BOT Center, about US$ 9.5 billion worth of private investments poured into the Philippine power sector through 38 BOT projects. The commitment to totally transfer power generation activities to the private sector was envisioned through the full privatization of NPC assets.

The entry of independent power producers (IPPs) in the electricity generation market undeniably solved the power crisis during the early 1990s as well as assured the reliability and security of electricity supply in the medium term. However, IPP contracts allegedly contained 'onerous' terms[18] which guarantee payment to the private generator whether or not power is produced. It was estimated that about 5000 MW of electricity is being paid for by consumers even if not actually generated (Batino, 2002). Aside, government contracts were said to be tainted with anomalous allegations of corruption and price padding. In a radio interview in 2001, the Secretary of the Department of Budget and Management (DBM) estimated that about 20% of the annual government budget is lost due to graft and corruption in government contracting alone. A recent Social Weather Station (SWS) survey on corruption supports this claim after finding that 57% of the 500 survey respondents (consisting of 214 large corporations and 286 small and medium enterprises) used bribes to secure public sector contracts (Lopez, 2003).

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[17] NPC estimates the electricity demand primarily based on the projected growth in gross domestic product.

[18] *e.g.*, minimum energy off-take, take-or-pay provision

Admittedly, the IPPs had spared the NPC from financing the construction of the needed power capacity additions, but NPC incurred financial losses because of the higher commercial rates charged by the IPPs that could not be automatically passed-on to its customers (*e.g.,* rural electric cooperatives, private distribution utilities, big industrial consumers and local governments) pursuant to the then existing tariff-setting regulations. It was only in 1994 that NPC was granted some relief, but to the dismay of the consumers, when the purchased power adjustment[19] was incorporated in the monthly electric bills.

The Philippine Government was likewise exposed to contingent liabilities arising from these IPP undertakings as some contracting risks (*e.g.,* force majeure, changes in law, some market risks) were covered by sovereign guarantees. Furthermore, the power generation cost of IPPs was found higher compared to NPC's. In 1996, the IPPs power generation cost was US$76 per megawatt-hour while that of NPC was only US$57 (Albouy & Bousba, 1998). More recent estimates of NEDA (in May 2000) confirmed that the average IPP generation cost is higher especially with the inclusion of the power generation components of the San Roque and Casecnan multipurpose projects[20].

Power transmission has elements of natural monopoly. In view of the high cost of constructing the high-voltage network, no private sector has dared to construct an alternative transmission backbone. Through foreign loans, the NPC had interconnected the major transmission grids of Luzon and the Visayas since 1998 enabling the transfer of the excess capacities from the Luzon IPPs and from the geothermal power plants of Leyte in Eastern Visayas to the supply-deficient Central and Western Visayan regions. With the increased demand in Central Visayas, the Leyte-Cebu and the Leyte-Bohol submarine cable cables need to be uprated at present. Meanwhile, the hydropower-dominated Mindanao grid remained alienated from the interconnected Luzon and Visayas transmission grids as the Asian Development Bank withdrew its financing

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[19] *i.e.,* price adjustment for bulk electricity to cover ungenerated power arising from the contractual obligations of NPC to independent power producers

[20] These multipurpose projects basically consist of power generation and irrigation components wherein the power generation component subsidizes the irrigation component.

assistance in 2000 due to NPC's precarious financial standing (with a debt-equity ratio exceeding 90%). For off-grid small islands and isolated areas, the power generation and electricity distribution is being undertaken by NPC's Small Power Utilities Group (NPC-SPUG) under its missionary electrification program as a social equity objective.

Subject to the rate-setting powers of an energy regulatory entity, electricity distribution is performed by the private investor-owned utilities (PIOUs) which dominate the urbanized areas and the electric cooperatives (ECs) for the rural areas. High-consumption industries and local governments are also allowed to directly connect to the high-voltage transmission lines of NPC for their electricity demands, though such direct connections were at times decried by some distribution utilities as prejudicial to their business franchises as reported to NEDA. Currently, there are 20 PIOUs (including one LGU-ran utility) and 120 ECs throughout the Philippines, all of which must obtain congressional franchises renewable every five (5) years prior to actual business operations. The biggest PIOU in the country is the Manila Electric Company (MERALCO) with a 9,337-sq.km. franchise area covering 22 cities and 89 municipalities in Metro Manila and the entire provinces of Bulacan, Rizal and Cavite, including some parts of other neighboring provinces (*i.e.*, Laguna, Quezon, Batangas and Pampanga). At a 97% electrification level, MERALCO's service area produces about 48% of the country's gross domestic product and is home to some 19 million people. With about 4 million service connections as of 2002, almost 91% are residential customers that consume about 36% of the company's electric sales (refer to Table 3.1 below).

Table 3.1 - MERALCO's Customer Profile

Customer Class	*No. of Service Connections*	*% of Total*	*Electric Sales (in M kWh)*	*% of Total*
Residential	3,566,268	90.87	8,151.9	35.72
Commercial	342,697	8.73	7,962.2	34.89
Industrial	11,660	0.30	6,561.8	28.75
Streetlights	4,144	0.10	146.4	0.64
TOTAL	*3,924,769*		*22,822.3*	

Source: MERALCO

As the largest PIOU in the country which draws about 70% of the total power generated in Luzon, MERALCO has been diversifying back since the mid-90s into the power generation business by constructing its own power plants[21] through its affiliate firms aside from buying significant shares in other IPP-operated power plants. Allegations of over-charging had been hurled by some cause-oriented groups at MERALCO because its electric bills included the company's payment for income tax, unrelated business assets and system's inefficiencies arising from illegal power connections and uncollected bills since 1994. In its decision on November 2002, the Supreme Court ordered MERALCO to refund to its consumers about ₱ 28 billion (or about US$540 million) due to the inclusion of income tax and unrelated assets to its electricity charges (Inq7.net, 2003a). The National Association of Electricity Consumers for Reforms (NASECORE, the biggest consumer group crusading against corruption) further decries why MERALCO always digs into the pockets of its consumers for expenses on distribution expansion projects instead of its stockholders.

Philippine Rural Electrification Revisited

In 1960, the Philippine government declared total electrification of the country as a national policy objective. Towards this end, the government awarded franchises to interested private firms to set up local distribution systems in rural areas with their power requirements sourced either through self-generation or from NPC (ESMAP, 2002). Though a sizeable number of small private distribution systems emerged throughout the country, most of them shut down in 1969 due to technical and financial problems, mainly due to lack of considerations to market size, area's growth potentials and political stability. Because of such early failures, the government embarked on a rural electrification program based on the cooperative model used in the United States as recommended by a donor-funded study (*i.e.*, US Agency for International Development). This resulted in the designation of the electric cooperatives (ECs) as the country's primary electricity provider in the rural areas with the passage of the Republic Act No.

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[21] *e.g.*, a coal-fired power plant in Quezon, two (2) natural gas-fed power plants in Batangas, and a diesel power plant in Bauang, La Union

6038 (*a.k.a.,* National Electrification Act of 1969). Same legislation also created the National Electrification Administration (NEA), which was later corporatized in 1973 by virtue of Presidential Decree No. 269. Under PD 269 of 1973, NEA was mandated to organize non-stock and non-profit electric cooperatives to provide electricity service to specific coverage rural areas. Aside from exercising supervision over the implementation of the government's rural electrification program, NEA provides the rural electric cooperatives with financial aids like subsidies/loans and loan conduiting, technical assistance on engineering matters and material procurement, and institutional services through trainings. NEA obtained foreign loans[22] to develop the local distribution networks and administrative offices of the electric cooperatives including their generating units, electrical equipment/materials, and even the development of small-scale industries in energized areas. Upon ownership transfer of completed facilities, the electric cooperatives were tasked to operate, maintain and expand their respective local distribution networks as well as collect tariffs from customers to defray their operating costs including loan repayment to NEA. Besides household use, electricity usage in the rural areas was expanded to cover schoolhouses, cold storage plants and rural water systems starting 1976. As self-reliance and self-sufficiency in energy became the thrust in 1977, the electric cooperatives were encouraged to develop mini-hydro (basically run-of-river system) and dendro-thermal (*i.e.*, fueled by charcoal made from Ipil-ipil wood) power projects using concessional loans obtained by NEA from France, Germany, United Kingdom & People's Republic of China.

However, a great diversity on performance had been observed among rural electric cooperatives in terms of service reliability, distribution system losses, finances and operating efficiencies resulting in the very sluggish expansion of rural coverage. After two decades of existence, 61% of the electric cooperatives were assessed to be in dire need of substantial remedial action or beyond rescue (ESMAP, 2002). NEA consultants generally attributed this to the politization of their operations and management. Because of political patronage and pressure, allegedly 30% of the power that the electric

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[22] *e.g.,* US Agency for International Development, World Bank, Asian Development Bank, French Protocol

cooperatives buy from NPC is lost due to inefficient distribution networks and pilferage (Cruz, 2002). One could easily discern the inefficiency of extending distribution line to a poultry/piggery farm or a rest house of the local chief executive including their relatives and close allies at the foot of a mountain or in the middle of nowhere. According to NEDA, these politically-influenced service connections were at times those that incur delayed payments, if they pay for the services at all, which led to poor collection efficiency and subsequently to the deterioration of the financial standing of the concerned rural electric cooperatives. As a consequence, the poor operations of the majority of the electric cooperatives culminated into NEA's bankruptcy in 1989. In response, the government introduced financial restructuring, institutional and policy reforms, and enforced stricter accountability in order to address the problem. NEA's capitalization was increased from ₱ 5 billion to ₱ 10 billion. Several rural electric cooperatives were merged to achieve economies of scale in order to ensure financial sustainability. In extreme cases, NEA took over the administration of some of them while NPC took over the operation of EC-owned generating plants (Alonzo, 2000).

NPC-Small Power Utilities Group (NPC-SPUG) has been by far the largest generator and distributor of power in isolated and off-grid areas through the so-called '*missionary electrification program*'. NPC-SPUG formally got involved in serving areas not connected to the main grids in 1988 when it took over the ownership and management of 30 power plants and the 69-kilovolt transmission lines from electric cooperatives. It may be noted that these areas were not commercially profitable in view of their low demands, sparse population, harsh geographical condition (*e.g.*, mountainous terrain) and scarce energy resource endowments. But pursuant to the total electrification policy of the government, NPC-SPUG was tasked to provide these areas with decentralized electrification service at subsidized rates as a matter of public service, hence considered missionary in nature. Other government agencies such as the Department of Agrarian Reform (DAR), the Department of Agriculture (DA), the Department of Interior and Local Government (DILG), and the Philippine National Oil Company-Energy Development Corporation (PNOC-EDC) have likewise installed small decentralized power generation with associated distribution systems mainly feeding on indigenous and

renewable energy sources (primarily solar and wind) relative to the mandates of these agencies with assistance of international financing institutions. Private sector involvement though had been very limited in rural electrification, the only notable of which is the rural electric service company (RESCo) established by Shell in the island of Palawan. As of end-2002 according to DOE, about 13% or 5,409 out of the 41,999 barangays all over the country remain unenergized. DOE claimed that the rural electrification efforts had come to its most challenging stage since majority of the unserved areas are in remote or far-flung places.

The Government Rural Electrification Program

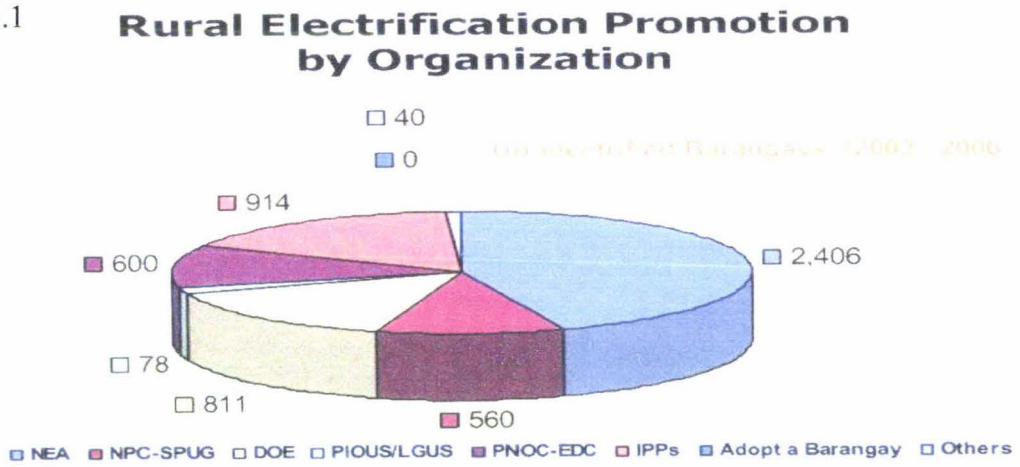
Cognizant of the socio-economic benefits of electrification in the rural areas, the Philippine Government revived its efforts by creating the *O'Ilaw* program under the stewardship of DOE to realistically facilitate the electrification of the 41,999 barangays scattered within the archipelago by 2006. Spearheaded by the DOE, *O'Ilaw* is a collaborative program involving various government agencies (*i.e.*, NEA, NPC, PNOC, DILG/LGUs, DA, DAR) and the private sector (*i.e.*, mostly IPPs) to contribute to the attainment of said government electrification target. Table 3.2 indicates the annual targets and accomplishments for rural electrification while Figure 3.1 shows the targeted contribution of these various rural electrification participants.

Table 3.2 – Rural Electrification Program

Year	Target Number	Actual Accomplishment	Remaining Unelectrified Barangay	Electrification Rate (%)
1999	900*	755	9,731	77
2000	1,621*	1,366	8,352	80
2001	1,353*	1,244	7,108	83
2002	1,636	1,699	5,409	87
2003	1,619		3,790	91
2004	1,258		2,532	94
2005	1,304		1,228	97
2006	1,228		0	100

* Based on President Joseph Estrada's Accelerated Barangay Electrification Program
Source: DOE

Figure 3.1



Source: DOE

Despite being the watered down version of the Accelerated Barangay Electrification Program (ABEP) of the administration of President Joseph Estrada (1998-2001) which originally targeted total electrification by 2004, some quarters still argued that President Gloria Macapagal-Arroyo's target is too ambitious considering the archipelagic geography of the country and the financial and operational constraints facing the government and the electric cooperatives. *O'Ilaw* nonetheless is highlighted under the Medium-Term Philippine Development Plan (MTPDP for 1999-2004, as updated in 2001) in recognition of the catalytic role of electricity on social and economic growth. The Plan's main sectoral objective is to electrify all barangays, especially in remote and marginalized areas, by providing them with adequate, reliable, efficient and reasonably-priced (*which used to be 'affordable' in the earlier MTPDP versions*) power supply through socially and environmentally compatible energy infrastructures. For isolated and remote places not connected to the grid, the strategy is to install/construct decentralized power generation system that utilize new and renewable energy sources such as solar, wind and micro-hydro as the same are considered to be the most cost-effective means of providing electrification service. The Plan also seeks to maximize the participation of the private sector in electrification projects. The government will also review the existing distribution mechanisms for a more reliable and reasonably-priced power in the rural

areas. An act mandating all electric cooperatives to organize Barangay Power Associations (BAPA) within their franchise areas is being prioritized for legislation[23] in order to strengthen the cooperatives and assure operational efficiency. By and large, the programs, policies and strategies rest on the effective implementation of an electric power industry restructuring act.

The Electricity Industry Restructuring Act

To accelerate the country's total electrification with adequate, reliable, efficient and reasonably-priced energy supply, the Philippine electricity industry was recently restructured with the passage of Republic Act No. 9136 (*a.k.a.,* the Electric Power Industry Restructuring Act [EPIRA]) in June 2001 after nine (9) years of congressional floor deliberations. The act provides the framework to transform the Philippine electric power industry from monopsony to wholesale market competition and retail wheeling, including the necessary privatization of the generation and transmission assets of NPC and the redefinition of the responsibilities of various government agencies and private entities. The Act mandates the creation of the Energy Regulatory Commission (ERC, thereby abolishing the Energy Regulatory Board) to promote competition, encourage market development, ensure customer choice and penalize abuse of market power in the restructured electricity industry, aside from its strengthened function on licensing private power generators and electricity suppliers/aggregators and rate-making powers over transmission and distribution franchisees. The ERC is also mandated to formulate the grid codes for transmission and distribution to be strictly followed by the concerned private entities.

To unbundle the vertically-integrated system, the Philippine electric power industry is to be divided into separate business sectors namely generation, transmission, distribution and supply to encourage private competition. While the generation and supply sectors are designed for open and market-driven competition, the transmission and distribution

[23] According to NEDA, the practice of pushing for a legislative agenda in the MTPDP which started during the Ramos administration was seen as a way of incorporating the people's sentiment on centrally-formulated development plans. It is however based on the assumption that the elected legislators truly represent the voice of the people.

sectors will be regulated common carrier businesses subject to the rate-making powers of the ERC because of their monopolistic elements. To eliminate monopsony in the generation business as well as to raise the needed cash, all assets of NPC will be privatized, except for the Agus & Pulangui hydropower complexes in Mindanao and the Caliraya-Botocan-Kalayaan (CBK) pump storage complex in Luzon whose ownership will be transferred to the Power Sector Assets and Liabilities Management Corporation (PSALM)[24], but to be continuously operated by concerned personnel from NPC in the interim. It was explained by one of the law legislators that the temporary exclusion (*i.e.*, until 2011 subject to congressional renewal) of the Mindanao hydropower plants and the CBK pump storage complexes from immediate sale was decided in view of the current isolation of Mindanao from the Luzon and Visayan transmission grids and the strategic regulatory function of the CBK pump storage project.

Aimed to lower electricity bulk prices as practiced in countries that have reformed their electricity industries, a wholesale electricity spot market (WESM) is envisioned to be operational by June 2004 wherein electricity sellers and buyers can transact under a competitive market environment. The WESM will determine the market-clearing price of power based on an established merit dispatch order for each time period (*i.e.*, on an hourly basis). It will be administered by an autonomous and independent market operator (initially consisting of DOE and industry participants) in order to avert conflict of interest. Open and non-discriminatory access to the transmission backbone and distribution wires by all electricity users is stipulated to enhance competition at the generation and supply/retail levels. Distribution of electricity to end-users will still be undertaken by duly franchised electric cooperatives, private distribution utilities, and local government units (LGUs), including other entities that may be authorized by the ERC. Recognizing potential anti-competitive market behavior in the generation business (as experienced in California) as well as to ensure long-term supply reliability, distribution utilities are allowed to source 90% of their total demand from private power generators through bilateral power supply contracts within the first five (5) years upon

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[24] an entity created under the EPIRA to manage the privatization of assets and the liquidation of liabilities of NPC

the establishment of the WESM. Distribution utilities are also allowed to source electricity from the distributor's affiliates or associated firms for not more than 50% of their total demand within the same period.

Provisions to prevent market power abuse and anti-competitive behavior may be highlighted at this point. Electricity suppliers/aggregators (but excluding duly franchised utilities) to contestable markets[25] need to be screened and licensed by ERC prior to business operations. Transmission operations will be temporarily handled by the National Transmission Company (Transco, an NPC spin-off company) which will be privatized later either through direct sale or concession arrangement to qualified private entities. To eliminate possible conflicts of interest in implementing open transmission access, no generation company and distribution utility including their subsidiaries, affiliates, stockholders or officials will be allowed to hold any interest in the transmission business, and vice-versa. Cross-ownership between generators and distributors is however allowed under the restructuring act, provided that no distribution company may own more than 30% of the installed generating capacity within a grid (*i.e.*, either in the Luzon, Visayan and Mindanao grid) and/or 25% of the national installed generating capacity. It was gathered that these limits were results of the compromise between the legislators and the dominant electricity industry players which proves the iron grip of entrenched oligarchs on the legal and political institutions in the country.

Aside from the perceived rate reduction arising from generation and retail competition, a host of other provisions are included in the reform act with the end in view of immediately reducing the power rates. First, a rate reduction of ₱0.30 per kilowatt-hour is mandated for all NPC residential consumers. Those consumers being served by other power generators will also benefit from the mandated reduction on a pro-rata basis depending on the NPC's share on the power purchase mix of the concerned distribution utility. As an illustration, if a distribution utility sources 90% of its power from NPC, then the rate reduction will be ₱0.27 per kilowatt-hour or 90% of the mandated rate

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[25] *i.e.*, consumers who have a choice of electricity supplier and consuming at least 1 megawatt. In contrast, *captive markets* are consumers without choice of supplier and consume less than 1 megawatt.

reduction. Second, the reform act mandates the thorough review and eventual renegotiation of power supply contracts of NPC with independent power producers (IPPs) and the Philippine National Oil Company–Energy Development Corporation (PNOC-EDC) with a view to amend grossly disadvantageous or onerous contract provisions as well as to remove any hidden costs or extraordinary mark-ups that increase end-user tariffs. Prospectively, this provision expects to reduce the cost of purchased power adjustment (CPPA) that has been passed-on to end-consumers since 1994. Since CPPA accounts for payment of electricity whether generated or not, the renegotiations will seek to reduce the guaranteed payments in light of the lower energy demand forecast due to the observed economic slowdown that was caused by the 1997 Asian financial crisis. Third, distribution utilities (Discos) are mandated to supply electricity in the least cost manner to their consumers. The Discos will be provided with a wider choice of suppliers from which to shop around for the cheapest bulk power source. They are also encouraged to pursue structural and operational reforms that will achieve economies of scale, improve system efficiencies and ensure reliable service. The fourth one is targeted only towards low-demand consumers in the form of a lifeline rate[26] which will be granted to the marginalized sector of society whether in the urban or rural areas. Those residential end-users consuming electricity below an established benchmark (to be determined by the ERC) will be subsidized by those consuming above said benchmark. This provision may be also deemed as a demand-side management strategy to influence power consumption behavior of consumers leading to more efficient energy usage. More particularly for consumers in the rural areas, the last one is the condonation of the outstanding loans of electric cooperatives used for their rural electrification programs. Rural electricity tariffs will decrease as the debt servicing for loan obligations of the cooperatives will be written off. The condonation will provide the electric cooperatives with a better financial position towards expanding service coverage.

To eliminate price distortions, thus making the electricity industry more efficient, existing cross-subsidies within grids, between grids and between classes of customers,

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[26] a subsidized rate given to low-income captive market end-users who cannot afford to pay at full cost for at least 10 years but renewable upon Congressional approval

except for the lifeline rate subsidy, will be gradually phased out by June 2004. However, a universal charge will be imposed on all electricity users including self-generating entities to raise funds needed to cover all forms of necessary expenditures arising from the industry restructuring. These expenditures include the shortfall in providing missionary electrification in unviable areas not connected to the grid, the environmental fund to be solely used for watershed rehabilitation and management, the payment of outstanding stranded debts/costs as a result of industry restructuring, all forms of remaining subsidies until totally eliminated until 2004, and the financial impact of the equalization of taxes and royalties applied to indigenous or renewable energy sources vis-à-vis imported fuels. To initially bankroll the settlement of liabilities brought about by the restructuring act, the national government will shell out ₱200 billion to cover portion of NPC's stranded contract costs and stranded debts/obligations, which will be recovered via the universal levy within 15-25 years depending on the decision of the ERC. For purposes of transparency and public accountability, the electric tariffs of NPC and the distribution utilities will be unbundled separating the costs for power generation, transmission, distribution, supply and other services.

Further, the electricity industry restructuring act contains pertinent provisions to further promote of rural electrification. It gives the electric cooperatives the option to convert into either stock cooperatives under the Cooperatives Development Act of the Philippines or stock corporations under the Corporation Code of the Philippines with the end in view to revolutionize their politicized operations and management. As complemented by the intended financial boost arising from the loan condonation provision, NEA will also help prepare the electric cooperatives for competition under the deregulated electricity market in open access and retail wheeling. With the increasing reliance on private actors, the act calls for greater participation of qualified third parties (QTPs) to provide electric service in remote and unviable villages for which the concerned franchised utility has failed to serve or unlikely to be served consistent with the total electrification target by 2006. Meanwhile, the NPC-Small Power Utilities Group (NPC-SPUG) will continue to provide power generation including associated delivery systems in areas that are not connected to the transmission grid through its

missionary electrification as the last resort. For clarity, the order of preference in electrifying unserved areas is the franchised electric cooperative first, then the private third party (QTP), and lastly the NPC-SPUG.

Conclusion

While the total electrification of the rural areas is a long-standing government policy for purposes of social equity and economic development, it took sometime for the country's legislators to pass the power sector reform act. As enforced by socio-economic circumstances and external pressures as well as the need for revenue, the Philippine power sector was restructured to foster market competition, deregulation, liberalization and privatization in the provision of the traditionally government-guaranteed electrification services. The poor financial performance of the government-owned NPC culminated due to the profit-maximization motives of private independent power producers as aggravated by inappropriate cost-recovery regulations as well as due to political interferences and natural mishaps.

On the rural electrification front, the politicized operations and management of rural electric cooperatives is being blamed for the delay in the total electrification of the country. Rescue measures were tried to no avail. But with the legislated restructuring of the Philippine electricity industry, it is expected that efficiency gains and social equity will be achieved within a regime of free market and fair competition. While industry players improved their operating and system efficiencies, the reform act promises better delivery of public service goals in terms of improved service quality, enhanced access to electrification service especially in remote areas, and reasonably-priced electricity for residential users.

Chapter IV – Impacts of Power Sector Reform

The impacts of the enacted electricity industry restructuring on the delivery of public service goals will be discussed in this chapter. This chapter starts with the recent outcomes and updates on the implementation of the restructuring legislation as it relates to rural electrification efforts. Then, reform impacts on power supply reliability and system efficiency, accessibility of electricity service, and on electric tariffs at the national and regional levels will be discussed and analyzed.

EPIRA Implementation Status

Republic Act No. 9136 or the Electric Power Industry Reform Act (EPIRA) which was signed into law on 08 June 2001 (and made legally effective on 26 June 2001) introduced reforms in the Philippine electricity industry such as wholesale and retail competition, open transmission and distribution access, the establishment of a wholesale spot market, rates unbundling, the disaggregation of the industry into generation, transmission, distribution and supply, plus the creation of the Energy Regulatory Commission (ERC), the Power Sector Assets and Liabilities Management Corporation (PSALM), as well as the organizational restructuring of the Department of Energy (DOE), the National Electrification Administration (NEA) and the operational unbundling of the National Power Corporation (NPC).

Upon the enactment of the EPIRA, a revised electricity industry relationship has emerged as shown in Figure 4.1. With government implementing the Act, the industry participants may be distinctly grouped into two (2) parts: the deregulated wholesale electricity spot market (WESM) and the regulated transmission and distribution businesses. The WESM consists of the generating companies or the privatized NPC power plants and the independent power producers including PNOC-EDC as power merchants, as well as the electricity suppliers/demand aggregators[27] which purchase and resell bulk electricity from the WESM on a group basis. The regulated transmission and

[27] a person or entity engaged in consolidating electric power demand of end-users in the contestable market

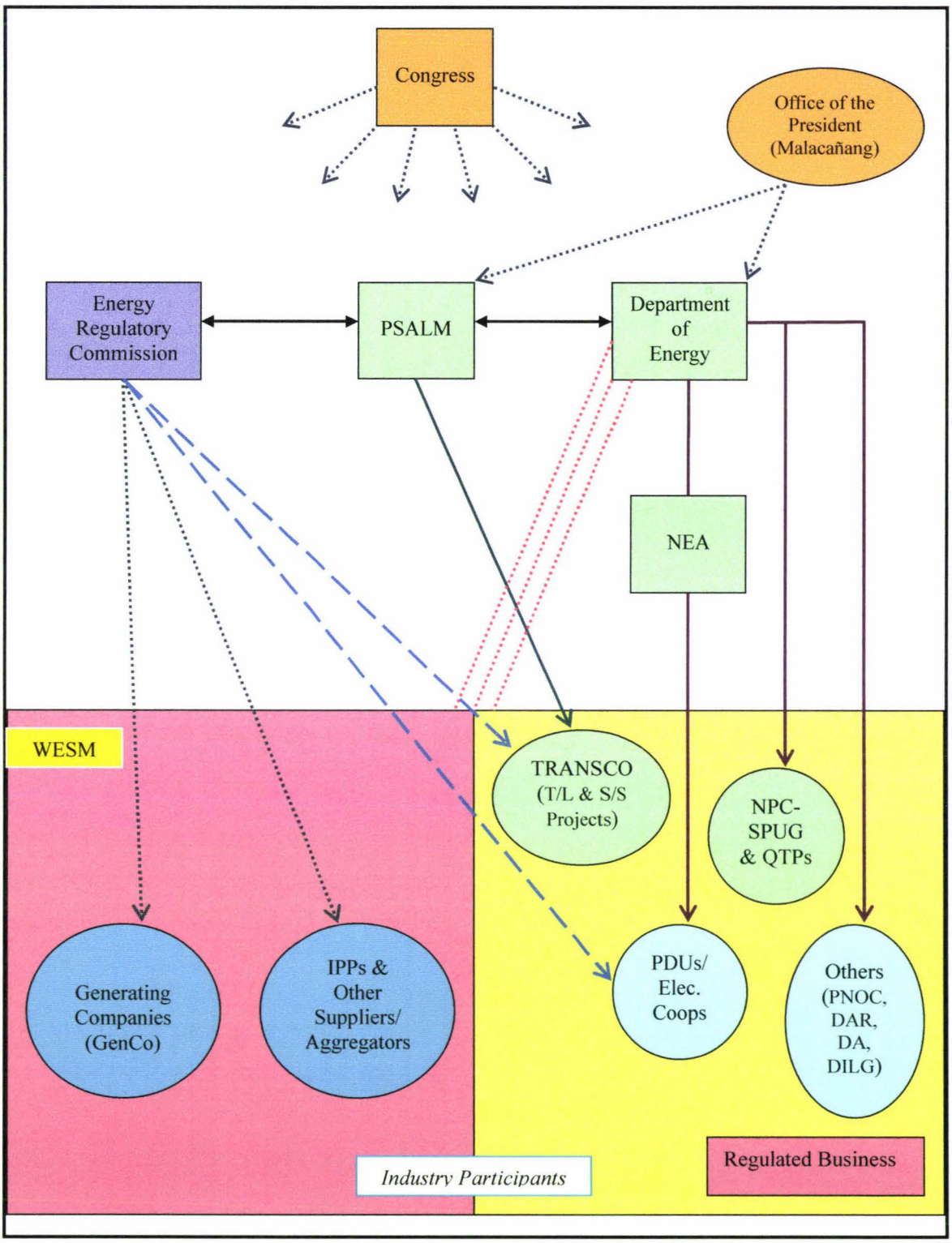
distribution businesses include the transmission company (Transco), the electricity distributors (*i.e.*, private-owned distribution utilities and electric cooperatives) and other government agencies providing isolated power systems (*e.g.*, NPC-SPUG, PNOC, DA, DAR, DILG). In terms of implementing the reform act and monitoring its progress, DOE exercises oversight functions over the restructured electricity industry through the issuance of policy guidelines as approved by the Office of the President (*i.e.*, Malacañang) and the Philippine Congress. Also, DOE maintains administrative supervision over NEA and NPC-SPUG, and coordinates with other government agencies (*i.e.*, PNOC, DA, DAR, DILG, LGUs) relative to parallel rural electrification undertakings for consistency and comprehensiveness of government efforts. On electricity industry regulations, ERC stands at the helm. With its vested powers, it is mandated to ensure the compliance of the power merchants and the electricity suppliers/aggregators with respect to market rules/regulations and licensing requirements. ERC also regulates Transco, the private distribution utilities and electric cooperatives with its rate-making powers. With the mandated ownership transfer, PSALM exercises control over Transco until its privatization where PSALM will still own the transmission assets while the private sector manages/operates the business. Over-aching the revised electricity industry structure is the close coordination between DOE, ERC and PSALM. Such coordination is envisioned to attain coherence in the promulgation and execution of electricity industry policies and regulations. Subject to the clearance/approval of Malacañang, DOE periodically reports to the Philippine Congress regarding the implementation status of the EPIRA for information and appropriate action.

Overall, the intent of the reforms is for government to relinquish its interest in bulk electricity generation with the privatization of NPC assets and to delimit itself on regulatory roles for the well-functioning of the competitive electricity industry, thus promoting better private-public sector partnership in electricity provision. The functions of PSALM, Transco and the other government entities are but transitory in nature pending the emergence of a fully private sector-led electric power industry. Meanwhile, the government also strives to marry market efficiency with its social equity objectives

by providing electrification service in areas where the private sector will most probably not enter, thus tantamount to public-private partnership in infrastructure provision.

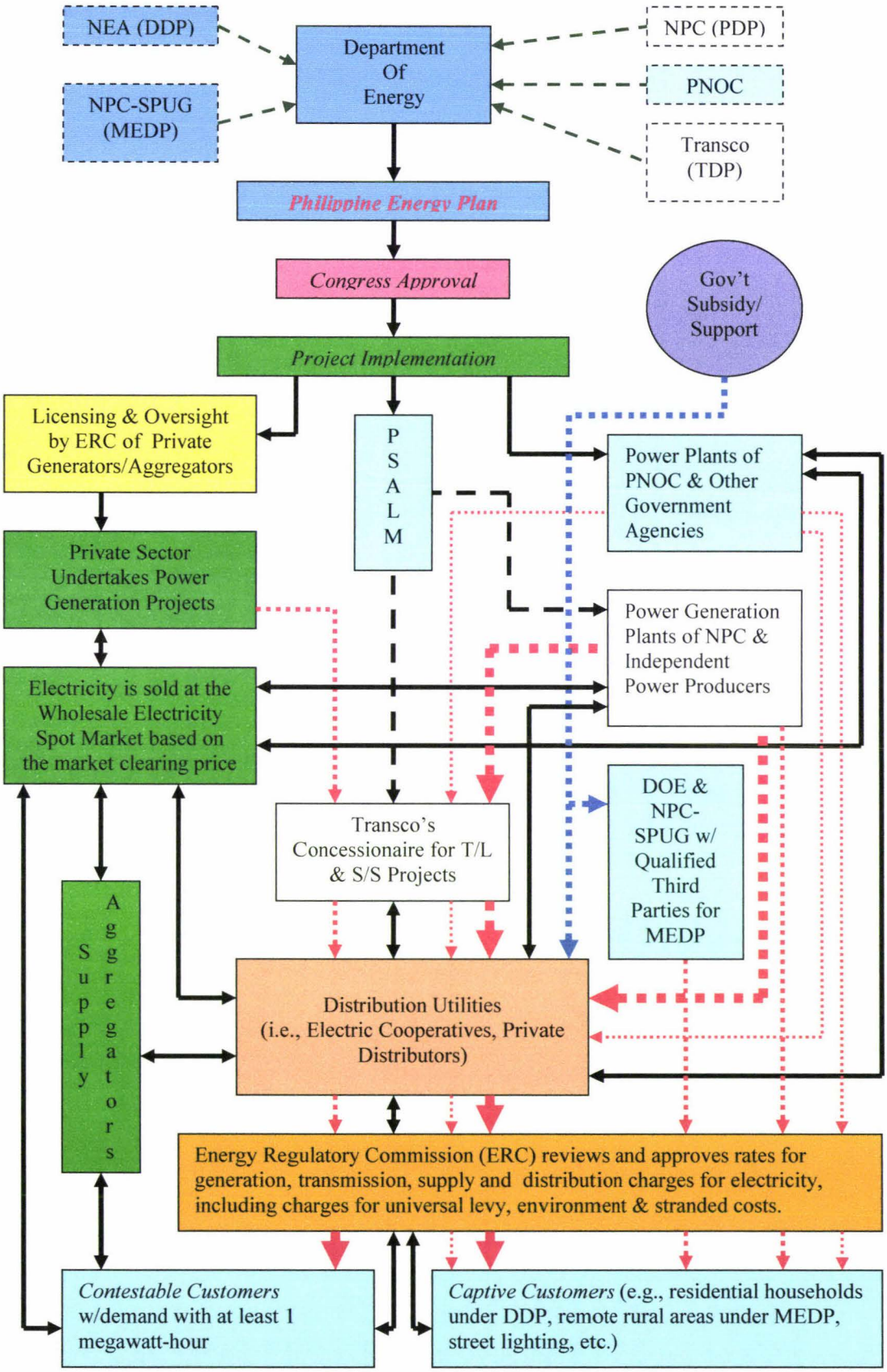
Figure 4.2 details the transactions among the electricity industry participants (*in black lines*) and the electricity flow (*in red lines with flow volume depending on line thickness*). Emanating from the duly-approved plan formulated by the DOE, generation capacity additions are undertaken by both the private sector and concerned government entities which they can sell either to the wholesale electricity spot market (WESM) or directly to distribution utilities like electric cooperatives, or for any other special purpose. In servicing the electricity demand of their customers (both for contestable and captive markets), the electric cooperatives may buy their supply either from the spot market, from the private generators, or through supply aggregators/brokers which also buy from the spot market, whichever yields the least cost. Except for missionary electrification projects and other purpose-specific similar government undertakings, the electricity produced is transmitted through the main backbone network of Transco. The required backbone transmission upgrades are pursued by Transco. While the Energy Regulatory Commission (ERC) exercises oversight supervision and licensing powers over the private generators and the supply aggregators, electricity at the WESM is sold at market-clearing price based on prevailing daily demand and supply balances and in due consideration of the dispatch merit order for generating electricity. The selling price of the demand aggregators/power brokers are also not regulated by the ERC, thereby making their buyers solely responsible for searching the cheapest source of bulk electricity. As the distribution business is subject to regulations, the pass-on rates of electric cooperatives to their customers will have to be reviewed and approved by ERC prior to their imposition through the unbundled electric tariffs. Government subsidies (*in blue lines*) may still be extended to electric cooperatives through the National Electrification Administration while financial support is given to missionary electrification projects of the NPC-Small Power Utilities Group through the universal charge.

Figure 4.1 – Revised Electricity Industry Relationship



Source: DOE as modified by the author

Figure 4.2 - Revised Transaction Flows under the EPIRA



Source: the Author

Despite continuing efforts to encapacitate the plantilla positions of the restructured entities, substantial EPIRA implementation milestones were accomplished. The major milestones that had been achieved in implementing the mandates of the reform act are chronologically presented in Table 4.1. The 30-centavo per kilowatt-hour NPC rate reduction had been effective since August 2001. Specifically for rural residential customers, the ERC had approved the corresponding rate reduction for the condonation of rural electrification loans of 112 electric cooperatives as of September 2003 (*A fuller discussion on loan condonation will be dealt with later in this Chapter*). The Philippine Grid and Distribution Codes were promulgated by ERC in December 2001 which prescribed the transmission and distribution rules and standards at N-1 contingency[28] for the strict compliance of concerned participants in the deregulated electricity industry. The Implementing Rules and Regulations of the EPIRA were promulgated in February 2002 to lay down in details how the law will be put into practice for the guidance of all industry participants. For customer-related concerns, ERC had operationalized its consumer affairs service since February 2002, while most probably all of the electric cooperatives and private distribution utilities had established their own consumer help desks as of September 2003. ERC also issued the guidelines on fines and penalties in May 2002, and the certificate of compliance for 21 private generating companies in June 2002. To raise a catch-all fund for all types of act-related expenditures, ERC approved under the universal charge the costs for environmental/watershed management purposes in the amount of ₱0.0025 per kilowatt-hour and the missionary electrification subsidy at ₱0.0373 per kilowatt-hour on April 2003 and June 2003, respectively. That portion of the levy associated with the equalization of taxes and royalties still have to be decided upon by ERC. Also, the ERC prefers to look into the amount which will be charged for the recovery of the stranded debts[29] of NPC, and the stranded contract costs[30] of NPC and the distribution utilities after the completion of the NPC privatization process.

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[28] *i.e.*, electricity will still flow even if one line is down

[29] any unpaid financial obligations of NPC which have not been liquidated by the proceeds of the sales and privatization of NPC assets

[30] the excess of the contracted cost of electricity under eligible contracts over the actual selling price of the contracted energy output of such contracts in the market

Table 4.1 - EPIRA Implementation Milestones

Activity/Process	*Date Accomplished*
Implementation of the ₱0.30/kWh Mandated Rate Reduction for NPC residential consumers	August 2001
ERC Promulgation of the Philippine Grid and Distribution Codes	December 19, 2001
Operationalization of ERC-Consumers Affairs Service Establishment of Consumer Desks of Distribution Utilities	February 2002 103 ECs & 17 PIOUs as of September 2002
Promulgation of EPIRA Implementing Rules and Regulations by the Joint Congressional Power Commission (JCPC)	February 27, 2002
ERC Guidelines for Rural Electrification Loan Condonation Issuance of Executive Order No. 119 by Malacañang promulgating the Program for ECs' Loan Condonation EC Submission of Performance Improvement Plans and Rehabilitation & Efficiency Plans ERC Approval of Rate Reduction due to Loan Condonation	May 17, 2002 August 28, 2002 Since December 2002 112 ECs as of September 22, 2003
ERC Issuance on Certificates of Compliance for 21 Generation Companies (Genco)	June 26, 2002
Adoption/Promulgation of the WESM Rules (including spot market pricing methodology) Establishment of Philippine Electric Market Corp. (PEMC) as the autonomous group market operator in the interim Demonstration Testing of WESM Rules Acquisition of IT/IS and hiring of Management Consultant for the WESM	June 2002 (pricing methodology under ERC review) November 19, 2003 (incorporation with SEC) (rescheduled) Ongoing (pending ADB concurrence on consultancy bid evaluation and technical bids for IT/IS)
Completion of the Review of NPC Contracts with Independent Power Producers (IPPs) Renegotiation of NPC-IPP Contracts	July 5, 2002 Ongoing
Approval by Malacañang of the Privatization Plan for NPC Generation Assets and Transmission Co. (Transco) through concession agreement Public Biddings for Transco Concessionaire (two bidding failures) Privatization of NPC Assets	October 4, 2002 July & August 2003 (bilateral negotiations ongoing) Ongoing
Submission to ERC of Unbundled Rate Applications from NPC, NPC-SPUG, 120 ECs, 19 PDUs & 1 LGU-managed distribution utility ERC Decision on Unbundling Applications Revised NPC generating tariff based on Long-Run Avoidable Cost (LRAC) and Time of Use (TOU) methodologies	Since December 2001 Approved NPC, NPC-SPUG, 32 ECs & 2 PDUs unbundled rates as of September 2003 October 2003 (NPC new rates @ ₱2.4692/kWh in Luzon & @₱2.1258/kWh in Visayas)
ERC Approval for Universal Charge to cover Environmental Purposes (@P0.0025/kWh) ERC Approval for Universal Charge to cover Missionary Electrification (@P0.0373/kWh)	April 2, 2003 June 26, 2003

Source: DOE

On NPC Privatization

Aimed to correct the existing monopsonic electricity supply set-up as well as to enhance the flow of private finance and broaden the ownership base of power generation and transmission under a regime of free market and fair competition, the privatization plan for NPC generating, transmission, and sub-transmission assets[31] was approved in October 2002. For the purpose, EPIRA mandated PSALM to liquidate all assets of NPC to pay its liabilities, the balance of which will be covered under the universal charge/levy. According to the privatization plan, the generation assets will be sold to interested private entities through public competitive bidding, the operations and management of transmission assets will be bid out for concession because of their monopolistic nature, and the sub-transmission assets via direct sale to concerned distribution utilities. Consistent with experts' analysis that an independent transmission model is essential for competitive generation market development, the Joint Congressional Power Commission Resolution 2002-1 stipulated that the Transco privatization should precede the sale of NPC generating assets.

However, the success of the bidding for the operation and management of the transmission network by a private concessionaire looks unpromising as potential investors are wary about the attractiveness of the "open access transmission service (OATS)" tariff that is yet-to-be-decided upon by ERC, the stiff opposition of Congress on the transferability of transmission franchise[32], and waning investor interest in the light of security risks posed by the recent Iraq war and the SARS epidemic. In two public biddings held in July and August 2003 for the Transco concession contract, only one company showed interest. Based on existing laws/regulations governing competitive bidding for public infrastructure (*i.e.*, the BOT Law, as amended), any competitive

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[31] facilities related to power delivery system below the transmission voltages and based on the functional assignment of assets including but not limited to step-down transformers used solely by load customers, associated switchyard, control and protective equipment to improve customer power factor, overhead lines, other assets linking the transmission and distribution systems, and the land where such facilities are located

[32] The Franchise Bill which proposes to automatically grant exclusive franchise to the winning Transco concessionaire is still pending in the Senate Committee on Public Service.

bidding involving only one bidder is considered a failed bid and that direct negotiations with the lone complying bidder may be pursued only after two bidding failures. While Congress initially expressed reservations in resorting to direct negotiations explaining that such is just a mere option rather than a final solution, PSALM & DOE are currently negotiating with the lone interested party for purposes of expediency should Congress finally approve to pursue direct negotiations.

NPC's power generating assets were strategically lumped together to form several spin-off generating companies (Gencos). Their privatization is critical not just because of the much-needed proceeds but more importantly because the privatization of 70% of NPC's generating assets in Luzon and in Visayas is one of the conditions for implementing retail competition and open access pursuant to the EPIRA. Though the approved privatization plan aims to complete the activity within the shortest possible time while optimizing proceeds, the marketability of these Gencos, however, also looks uncertain. From the private sector perspective, the current portfolio of 67 existing transition supply contracts (TSCs) of NPC with electric cooperatives and private distribution utilities do not appear to be attractive in view of the ERC-approved ₱0.30 per kilowatt-hour average cut on the NPC supply charge. Likewise, the prevailing over-capacity coupled with the electricity distributors' penchant[33] for signing up with their own independent power producers does not enhance the privatization of the Gencos. Potential investors are believed to be pinning their business decisions on the physical assets of the power plants, the financial returns based on the ensuing sales contract and the individual plant's relative position in the dispatch protocol of Transco. Notwithstanding, PSALM has lined up the initial sale of Genco assets with the issuance of the invitations to bid for eight (8) power plants from December 2003 to March 2004. On the sale of sub-transmission assets, Transco is preparing the guidelines on the classification and market valuation of the sub-transmission assets, including the survey of distribution utilities' intention to participate and the financing scheme to lighten up the payment on the part of interested utilities.

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[33] Per the EPIRA, up to 90% of demand of the distribution utilities can be sourced through bilateral supply contracts, of which 50% may be sourced from their affiliates.

On the Wholesale Electricity Spot Market

EPIRA is based on the premise that the natural interplay of market forces and private actors will result in truly competitive and market-based bulk electricity prices. The commercial operation of a wholesale electricity spot market (WESM) is expected by June 2004; hence, the price impacts of market competition cannot be assessed at the moment. Thus far, the DOE has been doing its best to meet the mandated target date. Upon the promulgation and adoption of the WESM rules in June 2002, the WESM-Technical Working Group (WESM-TWG) created by virtue of DOE Department Circular No. 2002-03 dated July 22, 2002 composed of government and industry participants have collaborated in drafting the guidelines, procedures, methodologies and manuals in preparation for the commercial operation of the WESM. As submitted by the WESM-TWG on 26 June 2003, the spot market price determination methodologies are currently under review by ERC. While the procedures/methodologies for market fees structure, ancillary service arrangements and emergency scenarios are being finalized for ERC approval, the procedures/methodologies for market dispatch protocol, metering registry and data processing, billing settlement, and internal accounting as well as the manuals for market and system operations, and metering registry and data processing are being formulated.

To pave the way for the establishment of an autonomous market operator as called for in the reform act, the Philippine Electric Market Corporation (PEMC) consisting of electricity industry players has been incorporated in November 2003. PEMC will take-over from the Transco the administrative supervision of the WESM one year after its commercial operation (*i.e.*, 2005). For the spot market operations, the procurement and installation of the WESM market management system (*i.e.*, IT/IS software and hardware) including project management consultancy via international competitive bidding are nearing completion. The technical bid evaluation results for the turnkey procurement of the IT/IS for the WESM has been submitted to the financing entity (*i.e.*, Asian Development Bank) for concurrence. Pending ADB approval, the contract negotiations with the winning project management consultant is expected to be

completed soon. The demonstration market which aims to provide a web-based study tool to facilitate hands-on training was rescheduled pending the enhancements on the dispatch engines and market network model.

On Rates Unbundling

Power rates need to be unbundled in order to ensure transparency and reasonableness of electricity prices as well as for full public accountability to achieve greater operational and economic efficiency. Prior to the EPIRA regime, electric bill consisted only of basic electricity charges and the automatic adjustment for purchased power as well as for foreign currency fluctuations and wage increases. Upon effectivity of the law, the basic rate was to be disaggregated into charges for generation, transmission, system, distribution, supply, metering services, and universal charge, with the mandated NPC power rate reduction and lifeline rate as separate bill items (see Table 4.2). Effectively however, the cost of purchased power adjustment (CPPA) which has been burdensome for electricity consumers since 1994 is still incorporated in the monthly electric bills of end-users under a new nomenclature called the Generation Rate Adjustment Mechanism (GRAM).

Table 4.2 - Revised Electric Billing Structure

Previous Billing Structure	*Unbundled Billing Structure*
Basic Power Rate (for generation, transmission, distribution and other services)	Generation Charges (generation system + franchise and benefit to host communities + foreign exchange cost)
Cost of Purchased Power Adjustment (for IPP contractual obligations)	Transmission system charge
Foreign exchange adjustment cost	Supply Charge
Wage adjustment cost	Distribution Charge
	Metering Charge (fixed monthly retail customer charge + metering system)
	System Loss Charge
	Universal Charge (for missionary electrification and environmental rehabilitation cost, plus NPC stranded debt and contract cost, distribution utilities' stranded contract cost and equalization of taxes and royalties upon approval by ERC)
	Other Charges/Adjustments (power act rate reduction, lifeline rate discount or subsidy, taxes)

Source: ERC & DOE, EPIRA

As of December 2001, NPC, NPC-SPUG, all the electric cooperatives and the private distribution utilities have submitted to ERC their applications for rate unbundling. By September 2003, the ERC had decided on the unbundled rates of NPC, NPC-SPUG, thirty-two (32) electric cooperatives, and two (2) private distribution utilities. A glance at the ERC-approved unbundled rates for residential customers in 32 electric cooperatives shows that there will be rate reduction in twenty (20) electric cooperatives but rate increases in twelve (12). According to one informant who wished to be anonymous, the mixed outcome is mainly due to the reflection of the true cost of electric service as a result of the elimination of the price-distorting inter-grid and intra-grid cross subsidies, more particularly in stand-alone island grids and less populated franchise areas which are subsidized by the income-earning main grids through NPC[34]. Appendix I lists the electric cooperatives with ERC-approved unbundled rates and their corresponding dates of approval.

The biggest conglomeration of electricity consumer groups in the Philippines (*i.e.*, the National Association of Electricity Consumers for Reforms) contends though that there should not be any difference between the original and the unbundled electricity rates since the unbundling provision of the restructuring act is mainly for transparency purposes. Aside, it is also informed that a group of electric cooperatives in Luzon has signified their disagreement with the resulting unbundled electric tariffs by filing a motion for reconsideration before the ERC regarding the approved rates, thus postponing the implementation of unbundled tariffs in some franchise areas.

Impacts on Power Adequacy and Reliability

While electricity demand in rural Philippines is largely dependent on the power supplied by the NPC, ensuring the satisfaction of the country's total power requirement rests with the DOE. EPIRA amended DOE's original mandate to highlight the formulation of policies for the planning and implementation of a comprehensive energy program for the efficient supply and economical use of energy, and to provide a mechanism for the

[34] NPC rates prior to EPIRA includes subsidy for the less viable NPC missionary electrification projects for isolated or island grids.

integration, rationalization and coordination of the various energy programs of the government. The law entrusted to DOE the hands-on formulation of the Power Development Plan (PDP), Transmission Development Plan (TDP), Distribution Development Plan (DDP), and the Missionary Electrification Development Plan (MEDP) for greater public accountability. Using a chronological electric power production costing simulation computer software package (*i.e., PROSYM*) and in close collaboration with the NPC's Generation Planning Unit, DOE had come up with the 2004-2013 PDP. Tabulated below (see Tables 4.3 to 4.5) are the confirmed and indicative plant line-ups and relevant activities designed to meet the electricity demand for the period 2004-2013 for Luzon, Visayas and Mindanao. Confirmed projects include those plants/activities that have already underwent through the usual government approval process and with firmed-up funding sources (*e.g.*, Asian Development Bank and Japan Bank for International Cooperation) plus those initiated by interested private sectors. The indicative ones (in *Italics*) are those derived from the rigorous demand forecasting methodologies/procedures and pipelined in the future for the private sector to take on.

Table 4.3 - Plant Line-Up for the Luzon Grid

Year	*Plant Addition*	*Capacity (in MW)*
2004	Kalayaan 3 & 4	350
	Makban Geothermal Rehabilitation	95
	Tiwi Geothermal Rehabilitation	120
2006	PNOC-EDC Wind Power	40
	North Wind Power*	25
2008	*Peaking Plant*	*150*
2009	*Baseload Plant*	*300*
	Peaking Plant	*300*
2010	*Baseload Plant*	*1200*
	Peaking Plant	*150*
2011	*Baseload Plant*	*900*
2012	*Baseload Plant*	*600*
	Peaking Plant	*150*
2013	*Baseload Plant*	*900*
	Peaking Plant	*150*
	* private sector initiative	

Source: DOE

Table 4.4 - Plant Line-Up for the Visayan Grid

Year	*Plant Addition*	*Capacity (in MW)*
2004	Upgrading of Leyte-Bohol Interconnection Transfer of Pinamucan Diesel Power Plant Panay Diesel Power Plant*	35MW to 100MW 110 40
2005	Upgrading of Leyte-Cebu Interconnection Northern Negros Geothermal Project Palinpinon Geothermal Power Plant Victorias Bio-energy*	200MW to 400MW 40 20 50
2008	*Cebu Peaking Plant*	100
2009	*Cebu Peaking Plant* *Panay Midrange Plant*	100 50
2010	*Cebu Peaking Plant* *Bohol Peaking Plant* *Panay Peaking Plant*	50 50 50
2011	*Cebu Peaking Plant* *Panay Midrange Plant*	150 50
2012	*Cebu Midrange Plant* *Negros Midrange Plant* *Panay Midrange Plant*	50 50 50
2013	*Cebu Peaking Plant* *Negros Midrange Plant* *Panay Baseload Plant*	50 50 50
	* private sector initiative	

Source: DOE

Table 4.5 - Plant Line-Up for the Mindanao Grid

Year	*Plant Addition*	*Capacity (in MW)*
2005	Peaking Plant	100
2006	Mindanao Coal Plant	200
2009	*Baseload Plant* *Peaking Plant*	150 50
2011	*Baseload Plant* *500MW Leyte-Mindanao Interconnection*	150
2013	*Baseload Plant* *Peaking Plant*	50 50

Source: DOE

For transmission planning pursuant to the Grid and Distribution Codes for the Philippine electricity industry, the Transmission Development Plan (TDP) formulation takes into consideration the demand projections and the resulting generation expansion plan as well as the location of both the committed and indicative power plants. In close coordination

with the Transco, the DOE had generated the transmission requirements (see Table 4.6) for each main island grid to ensure the coordinated development of a reliable, adequate, secure, stable and economic system for the delivery of electricity from all resources to all end-users.

Table 4.6 - Transmission Program

	Transmission Lines (in circuit-kilometers)	*Reactor/Capacities (in MVAR)*	*Sub-Station (in MVA)*
LUZON GRID	*5,072*	*40*	*20,235*
On-going	1111	25	1000
For implementation	929	-	-
Indicative Projects	3032	15	19235
VISAYAN GRID	*2,458*	*838*	*3,030*
On-going	361	425	1180
For implementation	944	150	470
Indicative Projects	1153	263	1380
MINDANAO GRID	4,524	343	3,250
On-going	488	143	1050
For implementation	1318	-	1150
Indicative Projects	2718	200	1050

Source: DOE

For electricity distribution concerns, the DOE formulated the rural electrification plan based on the submission and due validation of the individual electrification plans of the electric cooperatives (ECs), private investor-owned utilities (PIOUs) and the NPC-SPUG. The viable barangays or areas named by the ECs and the PIOUs are automatically lumped together under the Distribution Development Plan (DDP) and will be funded by the concerned distribution utility. Those barangays or areas declared by the ECs and PIOUs as unviable are clustered into the Missionary Electrification Development Plan (MEDP) after the DOE and NEA have verified that the franchised distribution utility as well as the adjoining ones are incapable of providing electrification service to these areas and that no other distribution utility is interested to serve them. The isolated barangays or remote areas identified by the NPC-SPUG also qualify for the Missionary Electrification Plan (MEDP). A sizeable portion of the MEDP is envisioned to be undertaken by qualified third parties (QTPs) through enhanced public-private

partnership. The remaining portion of the MEDP will be prioritized for implementation as the same will be supported by the universal charge. Aiming to minimize political interventions in ranking candidate unviable areas for missionary electrification, the prioritization exercise is based on a set of transparent criteria (see Table 4.7) that are designed to balance economic efficiency and social objectives.

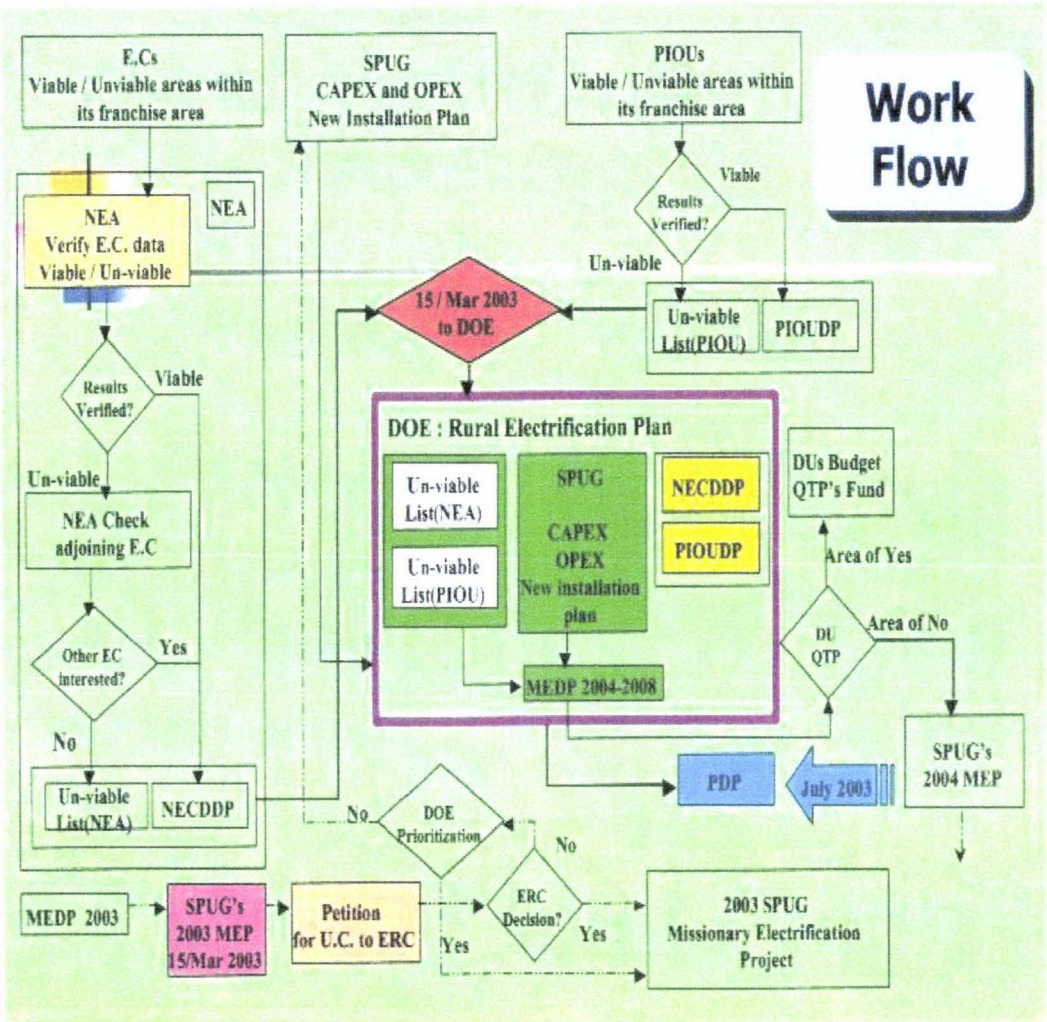
Table 4.7 - Prioritization Criteria for New Missionary Electrification Projects

Criteria	*Indicator*	*Weight*
Low level of energization	Access to electricity by families and by province	20%
Eradication of Poverty	Poverty incidence of families by province	15%
Economic efficiency	Connection cost per household	50%
Regional equity	GRDP per capita per household	10%
New and renewable energy	90 points if new and renewable energy will be used	5%

Source: DOE

In terms of funding the MEDP, the priority in utilizing the universal charge for missionary electrification (UC-ME) had been set forth. As approved by ERC, the legitimate expenditures to be funded from the UC-ME in the order of priority are: (1) operating subsidy requirement for existing NPC-SPUG projects at their current service levels; (2) capital expenditures for new electrification projects as identified and proposed, and (3) capital expenditures and operating subsidy components required in the expansion of service levels and/or geographical coverage for areas currently serviced by NPC-SPUG. Based on the 2003 MEDP and the projected capital and operating expenditures, NPC-SPUG estimated that ₱0.1576 per kilowatt-hour will be sourced from the universal charge for missionary electrification, about 31% of which is earmarked for new rural electrification projects. Figure 4.3 below illustrates the process flow adopted in the formulation of the DDP and the MEDP.

Figure 4.3 – DDP/MEDP Formulation Process



Source: DOE

To build up the capacity of the DOE for the new tasks at hand, technical assistance from the Japanese Government (*i.e.*, through Japan Bank for International Cooperation) has been secured to cover, among others, demand forecasting, generation planning, and transmission planning and evaluation. However, ensuring the reliability of future bulk power supply and transmission capacities vis-à-vis the projected demand may not be sufficient to ascertain that electricity reaches rural destinations. In this light, the impacts of the power sector reforms on the performance of electric cooperatives as primary service providers in the rural areas need to be highlighted as well.

Reform Impacts on Electric Cooperatives

As the prime distributor of electricity in the rural areas, changes on the operating performance of electric cooperatives are also looked into to determine whether or not the reforms have resulted in improvements that will usher in better service delivery to their rural electrification beneficiaries. Among the performance indicators, gross revenue, collection efficiency, system loss level and service interruption are the most common in gauging operations and system efficiency of electric cooperatives in the country. While it would have been much more informative if data on other performance indicators such as profit margins, capital expenditures and operating and maintenance expenses were obtained, the search for the same was delimited by budget and the short fieldwork timeframe as the data could be obtained only from individual electric cooperatives during the fieldwork duration. Besides, profit seems not much of a concern since the electric cooperatives are of a non-profit and non-stock business nature. Nevertheless, these most common indicators fairly indicate the operating performance of the electric cooperatives given the mandates of the power sector reforms.

Gross Revenue

As electricity rates of non-profit electric cooperatives are fixed by a regulatory body, gross revenue fairly indicates electricity demand growth for specific franchise areas and the cooperatives' performance as well in terms of being able to meet the increasing demand. As shown in Table 4.8, the national average of monthly gross revenue is observed to be continuously increasing for the period 1996 to 2002 but with observed decelerated growths in 1999 and 2002. On a regional perspective, electric cooperatives in Region V, one of the poorest regions in the Philippines, suffered the worst setback with negative growth rates for monthly gross revenue during the same years. NEA informants explained that such deceleration is attributable to the booms and busts of the local economic activities in the franchise areas that could have happened with or without the power sector reforms. Electric cooperatives in Region X proved to be the most resilient ones.

Table 4.8 - ECs' Average Monthly Gross Revenue (in Philippine thousand pesos)

	1996	1997	1998	1999	2000	2001	2002
LUZON							
Region I	121111	146244	151729	201813	237702	291626	308040
CAR	41550	50120	58527	67228	79976	98394	101088
Region II	76389	92752	114040	119153	136002	170365	166740
Region III	198077	241291	300892	325314	374016	458952	459752
Region IV	152755	190709	240474	252764	299114	385631	371266
Region V	127201	162378	195242	188210	217542	269070	225679
VISAYAS							
Region VI	178387	207762	250218	266583	321334	397196	380596
Region VII	88226	105517	121473	132597	156990	195986	200607
Region VIII	71158	86475	108112	112906	132987	161556	154010
MINDANAO							
Region IX	71585	85230	101240	108691	124862	143879	159330
Region X	57132	62922	76404	81440	92235	108857	115922
Region XI	48312	54851	66446	69096	80741	96001	98641
Region XII	73135	82892	101141	96678	112580	132546	159607
ARMM	22960	26534	30775	30537	33158	29535	31829
CARAGA	55130	62011	75601	72162	84490	95900	104012
Philippine Average	92207	110513	132821	141678	165582	202366	202475
Growth Rate/Yr	-	*19.9%*	*20.2%*	*6.7%*	*16.9%*	*22.2%*	*0.1%*

Source: NEA (1996-1998 & 1999-2001 Rural Electrification Chronicles, 2002 database)

Collection Efficiency

As a measure of how well the electric cooperatives are realizing revenues from the distribution business operations, the collection efficiency of electric cooperatives at the national level averaged 93.22% over the period 1996 to 2001 (regional breakdown for 2002 onwards are not yet available). Based from the latest general statistics of NEA as of end 2002, the average collection efficiency at the national level is estimated at 95%. Table 4.9 below indicates the collection efficiency levels of electric cooperatives on a regional basis for the period 1996-2001. It may be noted that all the electric cooperatives suffered from poorer collection in 1998 owing to the impact of the 1997 Asian financial crisis with those cooperatives in Region VII, the Central Visayas Region whose socio-economic profile is basically entrepreneurial, experiencing the worst. Electric cooperatives in the Autonomous Region for Muslim Mindanao (ARMM, the poorest

region in the country) have the lowest collection efficiency levels with a decreasing trend mainly due to the precarious peace and order condition in the area[35].

Table 4.9 - ECs' Collection Efficiency (Percentage based on Monthly Average)

	1996	1997	1998	1999	2000	2001
Region I	93.0%	95.5%	95.0%	96.3%	95.8%	97.0%
CAR	93.4%	96.4%	96.0%	96.2%	95.4%	96.2%
Region II	92.0%	92.9%	92.8%	94.7%	93.9%	94.7%
Region III	84.4%	85.8%	86.0%	88.8%	89.9%	91.3%
Region IV	95.3%	95.6%	95.1%	95.4%	97.4%	95.7%
Region V	86.1%	90.2%	86.5%	87.8%	87.4%	89.7%
Region VI	94.1%	94.6%	94.4%	96.0%	95.6%	94.8%
Region VII	97.5%	96.8%	88.1%	97.4%	97.8%	97.8%
Region VIII	94.5%	94.4%	91.6%	94.9%	95.0%	92.6%
Region IX	95.8%	96.8%	97.3%	97.8%	99.8%	97.0%
Region X	93.1%	94.5%	93.6%	94.6%	93.4%	93.3%
Region XI	94.7%	95.3%	92.7%	95.7%	98.7%	98.3%
Region XII	97.5%	95.8%	95.0%	97.3%	96.0%	94.7%
ARMM	77.4%	77.7%	74.3%	73.7%	72.9%	69.3%
CARAGA	97.3%	96.3%	95.0%	96.4%	95.1%	94.3%
Philippine Average	*92.5%*	*93.2%*	*92.1%*	*93.9%*	*94.1%*	*93.5%*

Source: NEA (1996-1998 & 1999-2001 Rural Electrification Chronicles)

It may also be noted that the average collection efficiency for the Philippines dipped slightly in 2001 at 93.5% but reached its all-time high by 2002 at 95%. While collection level depends management as well as on location-peculiar circumstances such as size and location, socio-economic activity and household income, and peace and order situation in the franchise area, NASECORE, the country's biggest consumer group, believed that the 2001 dip in collection was caused by the reactions of consumers to rising power rates as a result of the imposition of purchased power adjustment arising from NPC contracts with independent power producers. The attainment of the all-time high collection efficiency level in 2002 is attributed by DOE and NEA to the efforts of the electric cooperatives in fulfilling their Performance Improvement

[35] Sporadic armed conflicts as well as the concentration of Muslim fundamentalists' settlements in ARMM was the result of disputes over land-ownership in Central Mindanao which began in the early 1960s when the Muslim-dominated areas in the island was opened as a land of promise for Christian relocators. Some Muslim separatist groups (*e.g.*, Abu Sayaf) have also resorted to armed banditry and kidnap-for-ransom activities.

Program/Rehabilitation Efficiency Plans (PIP/REPs) as a condition to the condonation of their loans as provided for under the EPIRA.

System Loss

System loss level indicates how efficient the distribution system is being operated from the engineering and managerial standpoints. It includes power losses due to natural dissipation of electricity as it passes through the distribution wires and station use as well as due to non-technical losses arising from electricity pilferage or non-revenue illegal connections. For practical purposes, system loss is calculated as the difference between the power purchased by the concerned cooperative and the power it sold to its customers over the same time period; hence the lower the system loss means better operating efficiency. Over the period 1996 to 2002, average system loss at the national level slightly improved from 17% in 1996 to 16% in 1997 through 2000, and to 15% in 2001 and 2002. Among the fifteen (15) regions in the country as of 2002, the Autonomous Region for Muslim Mindanao (ARMM) registered the worst monthly average system loss at 25% which actually deteriorated over the 7-year period. This is attributed to the high incidence of electricity pilferage by NEA. ARMM is followed by Region V at 20% and Region III at 18% during the same year. The more efficient electric cooperatives are in Region XI with a collective monthly average system loss of 10%, followed by those in Region VII with 12%, and then those in Region X with 13% in 2002. Table 4.10 shows a tabulation of average monthly system losses per region.

It may be noted that for the period 1997 to 2000, the average system loss at the national level stagnated at 16% and only improved further to 15% in 2001 and 2002 when the electricity reform law was enacted. An anti-pilferage law was passed in 1994, but evidently its impacts/effects on system loss reduction tapered off since 1997 to 2000. It may be argued that the system loss reduction beginning 2001 is not a mere coincidence after the electric industry reform act was made legally effective. The DOE attributed the system loss reduction to the improvement in the operating efficiency of the electric cooperatives as a result of fulfilling their commitments embodied in the Performance Improvement Program/Rehabilitation Efficiency Plan enforced by the government as a

condition for the mandated loan condonation. However, the current system loss level is still far from the acceptable standards (*i.e.*, 10% for technical losses only according to DOE standards) implying that there is still room to further improve on technical inefficiencies and/or that electricity pilferage is rampant within the country.

Table 4.10 - ECs' System Losses (Percentage based on monthly averages)

	1996	1997	1998	1999	2000	2001	2002
Region I	21%	20%	18%	17%	16%	15%	16%
CAR	15%	15%	16%	15%	15%	13%	14%
Region II	19%	18%	19%	18%	15%	15%	15%
Region III	26%	26%	25%	23%	20%	18%	18%
Region IV	17%	16%	14%	14%	15%	14%	15%
Region V	19%	19%	20%	21%	21%	21%	20%
Region VI	16%	16%	14%	14%	14%	14%	15%
Region VII	12%	11%	11%	11%	11%	11%	12%
Region VIII	18%	17%	16%	16%	15%	16%	16%
Region IX	17%	15%	16%	14%	14%	14%	15%
Region X	13%	11%	12%	12%	14%	12%	13%
Region XI	11%	11%	11%	11%	11%	10%	10%
Region XII	15%	14%	15%	14%	14%	15%	15%
ARMM	20%	21%	24%	23%	24%	23%	25%
CARAGA	14%	13%	13%	15%	14%	14%	15%
Philippines	*17%*	*16%*	*16%*	*16%*	*16%*	*15%*	*15%*

Source: NEA (1996-1998 & 1999-2001 Rural Electrification Chronicles, 2002 database)

Correlating the collection efficiency and system loss data, it is noted that the regions that yielded the highest collection efficiency levels are the same regions that recorded the lowest system losses. These regions are located in growth hubs where people have relatively higher per capita income. Region XI (Southern Mindanao) with Davao City as its economic center has an established economic trading link with Brunei, Indonesia and Malaysia. The entrepreneurial Region VII (Central Visayas) with Cebu as its queen city caters to Asian (mostly Japanese and Taiwanese) tourists and businessmen. On the other hand, the regions with worst collection efficiency levels are also those with highest system losses. These regions are among the poorest areas within the country aside from being conflict-riddled and calamity-prone. The sporadic armed conflict left ARMM underdeveloped. Region V (Bicol Region) lost its copra export potential due to frequent devastating typhoons, while Region III (Central Luzon), ones the rice granary of the

country, had not arisen to its feet after the Mt. Pinatubo eruption in 1991. This goes to show that good management of electric cooperatives alone does not guarantee good operating performance.

Service Interruption (in Region III)

What matters more to rural end-users with respect to electric service provision is the continuous availability of power in their premises since outages disrupt the attainment of the socio-economic benefits of electrification. Outages or service interruptions are either caused by the failures at the power supply side including transmission or at the distribution side. A NEA informant claimed that there is a marked improvement with respect to service interruption nationwide after the reform act was passed in terms of decreases in the number of outage hours in 2002 compared to the corresponding 2000 figures[36]. As explained by same informant, this is attributable to the increased public scrutiny on the NPC/electricity generators which stimulated them to operate more efficiently as well as on the performance improvements in operating efficiency that was enforced by the reform act on the electric cooperatives. To illustrate, the recorded outage hours for Region III, wherein the selected case study areas are located, are shown in Table 4.11.

For service interruption due to NPC fault, the number of outage hours for the region was shortened by a total of about 320 hours. For outages due to local distributors fault, on the other hand, outage hours decreased by a total of about 514 hours. There are, however, some cooperatives in Region III that experienced longer outages in 2002. Among the reasons cited by the NEA informant for increased NPC outages are transmission line breakdown within the electric cooperatives' franchise area due to insufficient wire carrying capacity and to some extent pilferage. On the other hand, the delayed compliance of concerned electric cooperatives to their PIP/REP commitments was cited for the observed increased local outages.

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[36] At the time of research work, only the service interruption data for 2000 and 2002 are available. While admittedly insufficient for historical trending, the data sets are deemed adequate since the observations therein were gathered before and after the reforms.

Table 4.11 - Outages Report for Electric Cooperatives in Region III

Cooperative	NPC	Fault	Distributor	Fault
	2000 Outage hours	*2002 Outage hours*	*2000 Outage hours*	*2002 Outage hours*
NEECO I	59.6	18.9	405.5	178.9
NEECO II	124.6	85.9	429.8	193.0
NEECO III	161.7	175.4	329.8	466.4
PELCO I	55.3	161.1	320.4	530.9
PELCO II	448.7	149.3	789.7	847.7
PELCO III	113.2	146.1	581.6	20.8
PENELCO	no data	148.6	no data	no data
PRESCO	33.0	107.1	47.3	27.5
SAJELCO	no data	102.4	no data	no data
TARELCO I	487.7	105.1	292.0	288.5
TARELCO II	43.9	72.6	110.9	92.0
ZAMECO I	131.4	70.8	129.1	197.0
ZAMECO II	65.2	61.4	195.2	274.9
Region III Total	*1,724.2*	*1,404.6*	*3,631.3*	*3,117.5*

Source: NEA Operations Division

Impacts on Rural Electrification Access

The EPIRA aims to meet the total electrification targets in order to stimulate economic growth and development in the countryside. Pertinent provisions in the reform act leading to the attainment of this socially-oriented goal include, among others, the condonation of the rural electrification loan of electric cooperatives (ECs) with an end in view to improve the financial viability of ECs so as to increase their capacity in expanding operations to the remaining unenergized areas, providing each EC with the option to convert into either a stock cooperative or a stock corporation to enhance and/or revolutionize their operations, opening up the ECs' declared unviable areas to qualified third parties for service delivery, and adopting a cost recovery rate setting methodology for these unviable areas. The enshrined strategy of increasingly relying on private sector participation in rural electrification under the reform act can not be overemphasized.

Indeed, electrification access to rural barangays, the smallest socio-political unit in the Philippines, was expedited by the reform act. The electric cooperatives as well as the private sector and the concerned government entities were aided in catching up with the

government target as indicated in Table 3.2. As of mid 2003 (see Table 4.12), the electrification level for the entire country based on the franchise area coverage of concerned service providers has reached 89%, (or 37,286 barangays out of the 41,999 total) which closes in fast to the 91% end-2003 target. From the electric cooperatives' service areas, 87% or 31,516 out of 36,228 barangays has been energized. For the combined contribution of the private sector and the concerned government entities, only one (1) barangay within their jurisdiction has not been served.

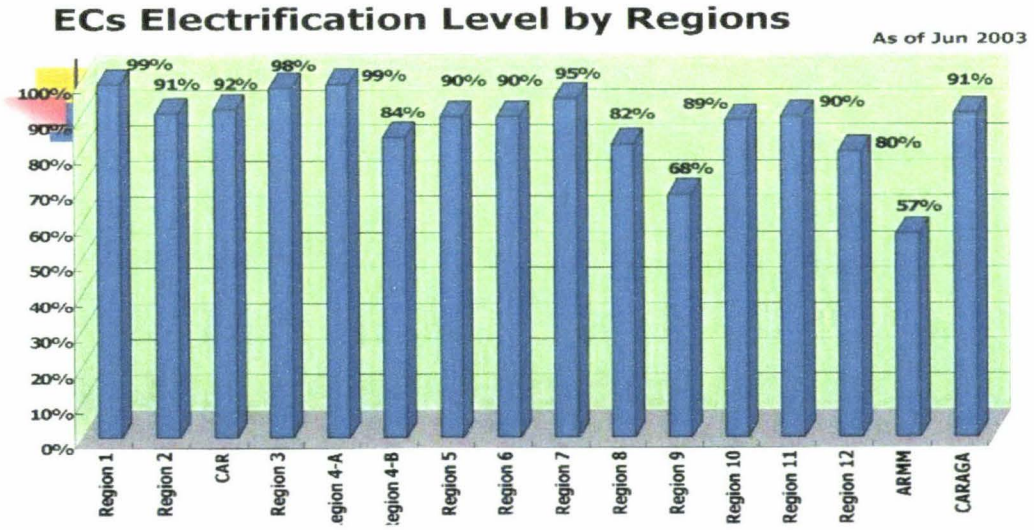
Table 4.12 - Barangay Electrification Level (National Total)

Provider	Coverage	Electrified	Electrification Level	Remaining
Electric Coops	36,228	31,516	86.99%	4,712
Private Sector/Govt	5,771	5,770	99.98%	1
TOTAL	41,999	37,286	88.78%	4,713

Source: NEA

Figure 4.4 shows the electrification level of the country at the regional level as of June 2003. The Ilocos Region and the Southern Tagalog (mainland provinces) Region posted the highest electrification level, while the Autonomous Region for Muslim Mindanao (ARMM) registered the lowest.

Figure 4.4



Source: DOE

After the effectivity of the EPIRA, no electric cooperative has converted into either a stock cooperative or stock corporation. Yet, the corrective institutional mechanism (as shown in Figure 4.3) which was set up consistent with the reform law abetted to narrow the gap between targets and actual accomplishments. Table 4.13 shows the cumulative accomplishments of the electric cooperatives in energizing their respective barangays in the three (3) main grids from 1996 to mid 2003.

Table 4.13 - Cumulative Number of EC-Energized Barangays by Main Grid

	1996	1997	1998	1999	2000	2001	2002	2003*
Luzon	12020	12272	12575	12831	13247	13723	14548	14593
Visayas	7038	7283	7653	7882	8397	8831	9382	9674
Mindanao	5142	5339	5841	5828	6235	6561	7010	7249
Philippines	24200	24894	26069	26541	27879	29115	30940	31516
% of Total	*66.80%*	*68.71%*	*71.96%*	*73.26%*	*76.95%*	*80.37%*	*85.40%*	*86.99%*
Barangays Energized	543	694	1175	472	1338	1236	1825	576

* As of June 2003
Source: NEA (1996-1998 & 1999-2001 Rural Electrification Chronicles, 2002 & 2003 databases)

A more telling evidence on the positive impact of the reforms is the big increase in the barangay electrification rate[37]. Pertinent documents from NEA revealed that the country's electrification rate increased since 1998, from an average of about 500 barangays in 1987-1997, to around 1000 for the period 1998-2000 and then further to over 1500 after the effectivity of EPIRA. The doubling of the electrification rate in 1998 to 2000 is attributable to the *O'llaw* Program. Key informants from DOE and NEA attribute the tripling of the electrification rate starting 2001 to the all-out support, deeper commitment and more vigorous coordination among the electricity industry players as well as the reorganization of involved entities and the availability of new funding options under the restructured industry. This is coupled with the change in government's rural electrification strategy from a radiating approach (*i.e.*, rural electrification emanates from communities hosting power projects) to a "shot-gun" approach in which

[37] *i.e.*, number of barangays energized per year. The decrease in the cumulative number of energized barangays in Mindanao by 1999 is attributed by NEA to the devastating attack of dissident groups in Zamboanga del Sur, Region IX.

electrification service is provided where it is undeniably needed. For the period July 2002 to July 2003, a total of 1,525 barangays were electrified per the report of DOE as shown in Table 4.14.

Table 4.14 - Expanded Rural Electrification Program

Provider	July 2002 - June 2003 Target	July 2002 - June 2003 *Accomplishment*	July 2003 - June 2004 Target
Electric Cooperatives	594	*596*	480
NPC-NEA	46	*46*	16
NPC-SPUG	71	*70*	140
DOE	167	*169*	216
PNOC-EDC	185	*185*	237
IPPs	453	*453*	434
Others	6	*6*	-
TOTAL	1,522	*1,525*	1,523

Source: DOE (EREP Secretariat)

To trace how the reform act brought about the increase in barangay electrification rate, it is informed that the DOE transformed the *O'Ilaw* Program into the Expanded Rural Electrification Program (EREP) in line with the EPIRA policy declarations. Per interview with concerned DOE personnel, the EREP[38] negotiated with the independent power producers (IPPs) to take on the electrification of unserved barangays which the franchised distributors could not energize and at the same time implemented new mechanisms and innovative approaches to enhance operational efficiency and sustain services. In a more holistic and sustainable manner, the EREP is able to more effectively integrate and more efficiently manage all electrification programs/projects funded under the DOE's Barangay Electrification Program, DOE's Energy Regulation 1-94 Electrification Funds (*i.e.*, support to communities hosting energy projects), NEA Subsidy, IPPs, PNOC-EDC, NPC-SPUG Missionary Electrification, official development assistance (*e.g.*, multilateral, bilateral, Global Environment Fund), and the electrification projects of other government agencies.

[38] The EREP consists of representatives from DOE, NPC-SPUG, NEA, PNOC, PNOC-EDC, DOF and NEDA.

From the remaining 4,713 unserved barangays, the EREP has identified a thousand unviable barangays for possible qualified third parties (QTPs) participation (according to NPC). But considering that the cost of providing such electrification services (ranging from ₱ 1 to 1.5 million per barangay per DOE estimates) can be very prohibitive due to low population densities and low demand levels in the rural barangays, the DOE is contemplating to grant one time up-front capital subsidies for new electrification projects to be undertaken by the QTPs. As a selection criterion during the public bidding process for these declared unviable areas, it is proposed that the contract be awarded to the QTP whose bid contains the lowest subsidy level in terms of capital expenditures. For the rest of the MEDP comprising about 3,700 unserved barangays, the MEDP formulated by the DOE in close coordination with NEA and NPC-SPUG have detailed the policies and strategies on how to provide electric service including associated delivery systems through missionary electrification[39]. Since the MEDP rationalized that the sustainability and gains derived from the use of the universally charged fund can be optimized if the end-users' capacity to pay is enhanced, the integration of livelihood programs with individual missionary electrification projects has been initially identified with a view to creating work opportunities and subsequent demand growth. NEA will identify potential livelihood projects, while DOE will source the funds to support these livelihood projects (according to the EREP point person).

It may also be emphasized that aside from the 100% barangay electrification target by 2006, the EREP also aims to provide 90% of the households with electricity by 2017 (annual breakdown not available) realizing that with the 88% electrification level, only around 69% of the 53 million total rural population actually enjoyed electrification service. This is due to the fact that government declares a barangay to be energized when at least ten (10) households is served through grid connection, or twenty (20) households via decentralized electrification systems. Nonetheless, the discrepancy is being acknowledged and hoped to be addressed by giving more emphasis on *sitio* or satellite village electrification. With respect to private finance for rural electrification, attention is

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[39] It is missionary in a sense that the service is extended to unviable areas as a matter of public policy.

also drawn to the information gathered during the interview/s with some concerned personnel that the money spent for barangay electrification by independent power producers (IPPs) as well as PNOC is limited to only 10% of their operating capitals and that the same is tax deductible. To some extent, other IPPs agreed to front-end similar expenditures provided that the government recoups the same. Apparently, the private entities are extending their corporate social responsibilities at no cost on their part.

Impacts on the Price of Electricity

EPIRA has provisions that are aimed to make electricity tariffs more reasonable if not lower. As indicated at the beginning of this Chapter, the mandated ₱ 0.30 per kilowatt-hour reduction and the condonation of electric cooperatives' (ECs) loan resulted in reduction in electricity rates especially for residential consumers living in the rural areas. While with an outright application, some quarters claim that the mandated NPC rate reduction is a mere token to soften the impact of the mandated elimination of inter-class subsidy from industrial and commercial consumers to residential end-users in the name of economic efficiency. By mid 2001 up to the first quarter of the succeeding year, more IPP power generation projects were completed whose contractual obligations resulted in higher purchased power adjustment cost (CPPA) that is being passed-on to electricity consumers. In view of the growing public clamor for increasing electricity prices, President Gloria Macapagal-Arroyo issued a directive in May 2002 pegging the purchased power adjustment to be passed-on to consumers at ₱ 2.50 per kilowatt-hour.

With respect to loan write-off, the government required performance improvements and/or commitments on the part of the recipient electric cooperatives. Guidelines for rate reduction due to EC loan condonation was released by ERC in May 2002, and strengthened by the issuance of Executive Order 119 (EO 119) in August 2002 which promulgated the program for condonation of EC loans used for previous rural electrification programs. EO 119 required each electric cooperative to submit a 180-day performance improvement programs and rehabilitation efficiency plans (PIP/REP). Upon review of the EC submissions (*4 ECs did not comply*), ERC ordered 72 ECs to

submit a 5-year PIP/REP, 25 ECs to submit 100-day recovery plan and 19 ECs to submit 100-day survival plan. As of September 2003, the ERC has issued provisional authorities to 112 ECs condoning their loans for rural electrification program which brought about corresponding electricity tariff reductions in the rural areas ranging from ₱0.0121 to ₱0.7642 per kilowatt-hour as shown in Appendix J.

Pending the WESM operationalization, NPC privatization and rates unbundling which are expected to bring about operational and economic efficiency resulting in reasonably-priced electricity rates, the ERC instituted in May 2003 an adjustment mechanism for electricity prices called the Generation Rate Adjustment Mechanism (GRAM) which effectively replaced NPC's fuel and purchased power adjustment cost as well as that of the distribution utilities on a quarterly basis. Considering all the above interventions, NEA reports as of September 2003 revealed that the average system rate for rural residential customers decreased two (2) years after the enactment of the power sector reforms as shown in the Table 4.15.

Table 4.15 - Average System Rates of Electric Cooperatives (in Peso/kWh)

	1996	1997	1998	1999	2000	2001	2002	2003*
Luzon								
Region I	4.06	4.39	4.76	4.96	5.22	5.87	5.55	4.75
CAR	4.46	4.90	5.45	5.57	5.90	6.50	6.15	5.37
Region II	4.10	4.38	4.74	4.85	5.18	5.84	5.58	5.10
Region III	3.81	4.12	4.51	4.65	4.90	5.53	5.26	4.68
Region IV	4.29	4.38	4.64	4.78	5.07	5.95	6.00	5.56
Region V	4.35	4.63	5.05	5.17	5.39	6.05	5.93	5.54
Visayas								
Region VI	4.05	4.23	4.53	4.69	5.14	5.94	5.82	4.84
Region VII	3.69	3.86	4.15	4.17	4.67	5.82	6.13	5.53
Region VIII	4.29	4.33	4.62	4.67	4.94	5.67	5.15	4.96
Mindanao								
Region IX	2.67	2.74	3.01	3.15	3.38	3.67	3.84	3.29
Region X	2.75	2.88	3.25	3.36	3.64	3.84	3.99	3.58
Region XI	2.51	2.55	2.90	3.05	3.29	3.54	3.77	3.11
Region XII	2.48	2.54	2.87	2.93	3.17	3.44	3.75	3.23
ARMM	3.88	3.92	4.12	4.26	4.43	6.09	6.84	4.92
CARAGA	3.29	3.40	3.66	3.94	4.25	4.72	5.06	4.33
PHILIPPINES	*3.65*	*3.82*	*4.15*	*4.28*	*4.57*	*5.23*	*5.25*	*4.59*

* as of September 2003

Source: NEA (1996-1998 & 1999-2001 Rural Electrification Chronicles, 2002 & 2003 databases)

Nationwide, the average system rate dipped by about 12% from ₱ 5.23 per kilowatt-hour in 2001 to ₱ 4.59 per kilowatt-hour in 2003. It may be noted though that in 2002, a year after the EPIRA took effect, the national average system rate slightly increased by 2 centavos per kilowatt-hour owing to the increases in rates experienced by eight (8) out of the fifteen (15) regions in the country. According to NEA, such increases are mainly brought about by the elimination of inter-grid and intra-grid subsidies as called for by the EPIRA notwithstanding the pegging of NPC's purchased power adjustment to ₱ 2.50 per kilowatt-hour in May 2002. Adversely affected by such subsidy elimination are the residential consumers of all electric cooperatives in Mindanao as well as those in Southern Tagalog (Region IV) and in Central Visayas (Region VII). The first three quarters of 2003 appear to be a better year for residential consumers as the rate reduction due to EC loan condonation was implemented.

In its pursuit to reflect the true cost of power generation under the deregulated regime, the ERC approved in October 2003 new pricing methodologies of NPC called the Long-Run Avoidable Cost(LRAC)[40] and the Time of Use (TOU)[41] to replace the Return on Rate Base (RORB)[42] methodology. As a consequence, NPC generation rates in Luzon increased by 34 centavos to ₱ 2.4692 per kilowatt-hour, while that in the Visayas increased by 33 centavos to ₱ 2.1258 per kilowatt-hour. Electricity price in Mindanao remains the same as its grid is still not interconnected to the Luzon and the Visayan grids. While these new pricing methodologies will correct the asset-based RORB, the impacts of the LRAC and the TOU on electricity tariffs at the consumer level have not been felt pending the approval of and the reconsideration of already approved unbundled rates of electricity distributors. Once, these new pricing methodologies are implemented,

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[40] Long-Rung Avoidable Cost (LRAC) refers to the average cost of power generation based on the future capacity mix (existing capacities plus planned capacity additions) which reflects the most efficient power generation units capable of supplying incremental electricity demand.

[41] Time of Use (TOU) refers to a power tariff that is based on the period of consumption such as peak and off-peak periods.

[42] Return on Rate Base (RORB) is a pricing methodology wherein profit is based on assets. Under RORB, industry players will tend to increase their assets rather than improve on efficiency since profit is computed based on assets, thereby making it an inappropriate pricing methodology under a deregulation regime.

electric tariffs may still be predictable within the short term (*i.e.*, per annum) since the average power production cost based on existing capacities and planned plant additions are regularly updated and adjusted for a fixed premium during peak demand hours, aside from the fact that the same will only be implemented upon the approval of ERC. Electric tariffs are expected to be volatile/variable upon the commercial operation of the WESM where bulk electricity price is derived from the hourly equilibrium of the demand and supply fluctuations.

Another Round of Price Reduction?

Another EPIRA provision that is expected to reduce bulk power generation cost is the review and renegotiation of NPC contracts with independent power producers (IPPs). The IPP contracts, most of which were entered during the power crisis in the early 1990s, was identified in the past as one of the reasons for the high power rates in the country. Because of the urgency in installing additional generation capacity, private investors were able to negotiate for certain provisions[43] that guarantee returns acceptable to their companies' creditors/stockholders. As the 1997 Asian financial crisis dampened the robust electricity demand forecast upon which the guaranteed capacity payments were based, there grew a clamor to review these IPP contracts. EPIRA provided the legal basis to undertake review and renegotiation of IPP contracts with the owners and investors of the concerned generation companies. The mandated review of the IPP contracts which was completed by an Inter-Agency Committee consisting of DOF, DOJ & NEDA in July 2002 revealed that only six (6) contracts are acceptable, two (2) contracts require remedial policy issues but are financially sound, twenty-two (22) contracts need some remedial financial renegotiations, and five (5) contracts have both

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[43] *e.g.*, (1) minimum energy off-take [MEOT], take-or-pay, contracted capacity, all of which entitles payment to private generator for an agreed power generation level irrespective of whether electricity is actually generated or not

(2) performance undertaking which guarantees that the contractual obligations of NPC carry the full faith and credit of the government and that the government ensures that NPC will be able to discharge all its obligations as they fall due

(3) fuel risk as NPC is responsible for the procurement, quality assurance and price

(4) buy out provisions especially in cases when the buy out price is higher than the actual market value of the plant involved

legal and financial issues. According to PSALM, the renegotiation of the IPP contracts including the fuel supply agreements of NPC is estimated to generate savings of about US$ 1.03 billion at present values, which will reduce NPC's stranded contract cost that will be passed on end-users through the universal charge by about ₱ 0.15 per kilowatt-hour. Per the September 2003 update from the PSALM, twenty-five (25) out of the thirty-five (35) IPP contracts have been largely resolved but the power rate reduction resulting from IPP contract renegotiations still has to be reviewed and approved by the ERC. After complete renegotiation of the IPP contracts, a private-led IPP administrator will be selected to take over from PSALM the management of these IPPs as they participate in the wholesale electricity spot market.

Conclusion

Consistent with power sector reforms instituted worldwide, the Philippine electricity industry has been restructured under the principles of vertical unbundling, privatization, competition and deregulation with government shifting its role from being a service provider to industry regulator. The Electric Power Industry Restructuring Act has resulted in better delivery of public service goals. The mandated power sector restructuring revised the power industry to make it more responsive to neo-liberal development philosophies which are aimed to achieve efficiency gains while embodying social equity objectives in the law.

Especially towards rural electrification, independent regulations and effective management were instrumental in implementing the required corrective mechanisms that are geared towards ensuring power supply reliability, enhancing access to electricity service especially in isolated and unviable areas, and to make electricity prices more reasonable if not lower. While the process of formulating development plans for power supply, transmission and distribution is almost similar with that in the pre-reform era, the mandated transfer of such function to the DOE advocated greater public accountability, transparency and integrity. The enhanced public-private partnership and the improvement in the operating efficiency of the electric cooperatives as the prime

electricity distributor in the rural areas translated into the higher barangay electrification rate as compared to pre-reform levels. With the partial implementation of tariff-related provisions under the EPIRA, the residential electricity rates decreased despite the elimination of inter-class subsidies. Further tariff changes are expected with the finalization of the IPP contract renegotiations and the NPC asset privatization process which are expected to reduce the stranded contract cost and stranded debts that will be passed-on to end-consumers through the universal charge. However, impending rate increases are in the offing with the application of a new pricing methodology for bulk electricity. The impact of the privatization, competition and deregulation on electricity tariffs may only be realized upon the commercial operation of the spot market. This notwithstanding, it is imperative to investigate the impacts of the electricity industry reforms within a real-life context where they were applied. In this connection, the following chapter will explore how the power sector reforms affected the primary rural electricity providers and how the rural beneficiaries perceived and experienced the interventions.

Chapter V – Case Study for Reform Impacts

This chapter looks at the impacts of the electricity industry reforms in the selected case study areas to relate the findings from the preceding chapter to real-life scenarios. It starts by looking at how the power sector reforms affected the operating performance of an electric cooperative being the main entity concerned in the delivery of electrification service to rural areas. This chapter then goes on to discuss the impacts of the electricity industry reform on the delivery of public service goals and how these impacts were perceived and experienced by rural electrification beneficiaries. Peoples' perceptions and experiences about the reforms are included as well.

The Nueva Ecija I Electric Cooperative (NEECO-I)

Operating as a non-profit and non-stock electric cooperative with a large number of member-clientele, the Nueva Ecija I Electric Cooperative provides 24-hour electricity service to the selected case study areas namely Barangay Bagong Sikat in Cabiao, and Sitio Barangka, Barangay Pulo in San Isidro, both in the province of Nueva Ecija. Based on information gathered from NEECO-I, its franchise area is 51,206 hectares which covers five (5) municipalities and 97 barangays[44] that house 317,149 people whose predominant way of livelihood is agriculture. Except for the municipality of San Antonio with the population density of about 67 heads per hectare, the rest of the population is evenly scattered within the 80% of the franchise area at around 5 heads per hectare (or 500 people per sq. kilometer). Though such population density may be deemed high compared to some other countries, the density level is nonetheless considered sparse based on Philippine standards. Figure 5.1 shows the map of NEECO-I's franchise area, with blue and red arrows pointing the locations of Barangay Bagong Sikat and Sitio Barangka, respectively.

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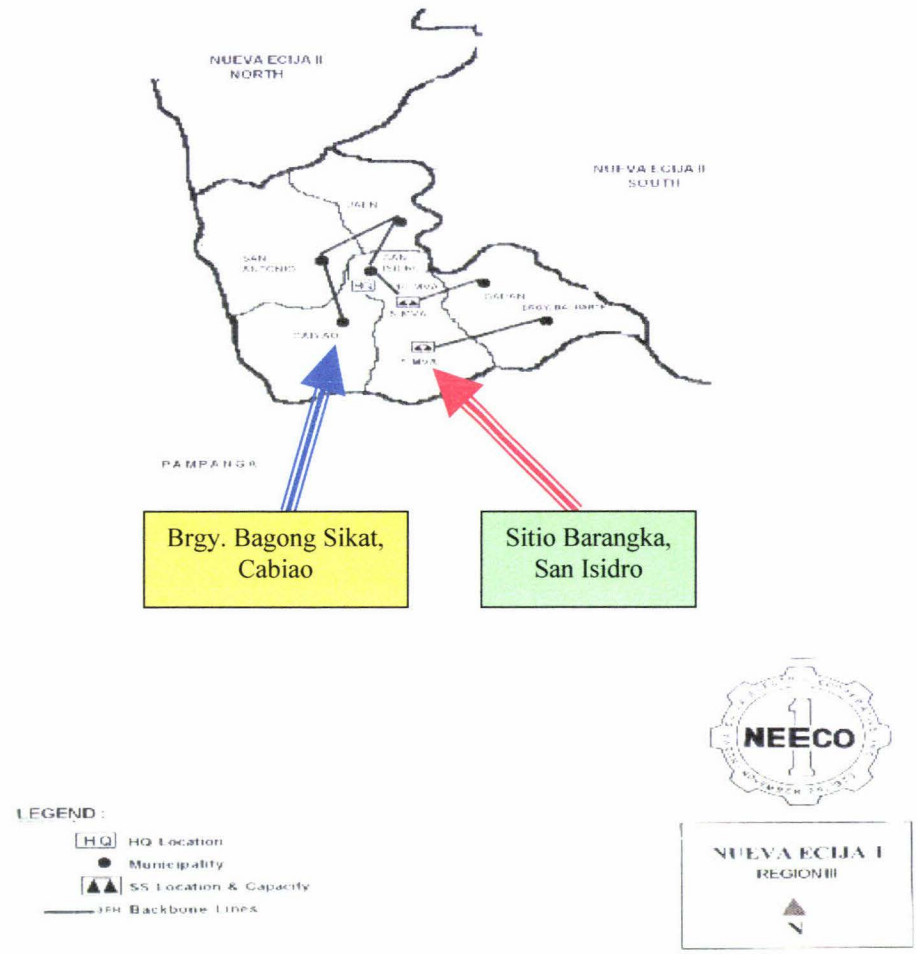
[44] The number of barangays under NEECO-I used to be 99, but one barangay was rightfully transferred to another electric cooperative in the nearby province of Pampanga, while two neighboring barangays were merged into one.

Figure 5.1 – NEECO I Franchise Area



Source: NEA (1996-1998 Rural Electrification Chronicle)

Based on data gathered from NEECO-I (see Table 5.1), all barangays within its franchise area have been energized since 1999. With respect to customer reach, its total number of service connections is 56,546 covering about 95% of its potential clientele as of mid 2003. Of these service connections, 54,783 or about 97% are residential customers, while the remaining 3% consists of the aggregate for commercial, industrial, irrigation and other end-users. Some customers though have more than one electric meter

explaining why the actual number of connections exceeds the actual number of present clients in two municipalities (*i.e.*, San Antonio and Cabiao). As mandated by law, NEECO-I, like all other electric cooperatives, is under direct supervision of the National Electrification Administration (NEA) and is recipient of management training seminars which are geared lately towards wholesale and retail competition and open access. It experienced annual management changes for the last six (6) years upon the recommendations of NEA. Its sole supplier of electricity is NPC, now through a transition supply contract agreement after the passage of the EPIRA pending the full implementation of wholesale electricity competition and open access. Its pass-on rate to electricity consumers is regulated by the Energy Regulatory Commission (ERC).

Table 5.1 – Electrification Status of the Nueva Ecija I Electric Cooperative

Municipality	*Membership*		*Actual Number of Connections*				
	Potential	Actual	Residential	Commercial	Industrial	Irrigation	Total
Jaen	9922	9476	9028	165	17		9210
San Antonio	11631	10803	10627	242	7		10876
San Isidro	8486	8274	7822	171	20		8013
Cabiao	11665	10702	11023	200	18		11241
Gapan	17814	17291	16283	668	68	9	17028
Total	*59518*	*56546*	*54783*	*1446*	*130*	*9*	*56368*

Source: NEECO-I

NEECO-I sales/gross revenue grew over the years since it started operating in 1974. For the period 1998 to 2002, electricity sales grew at an average annual rate of about 12% with an average annual sale of ₱ 306 million. But overall, the electric cooperative has been performing poorly for at least the past six (6) years. Despite a very high collection efficiency[45] which averaged at 99.42% (which is way above the national average of 93.22%) over the five-year period as well as considering the annual government subsidy of ₱ 8.3 million it enjoyed, NEECO-I incurred financial losses until 2001. The worst year was 2000 when the recorded loss reached almost 20% of gross revenues. It was only in 2002 that NEECO-I made a big turn around by posting a net profit of about ₱20

[45] Collection efficiency is taken as the percentage of actual collection over recorded sales. Some figures are above 100% because payments for outstanding accounts in the previous years are counted only during the year of actual payment.

million. NEECO-I attributed this past dismal financial performance to operating inefficiency as evidently shown by the incurrence of high non-power costs[46] as well as high system losses. For the period 1998 to 2002, its non-power costs grew at about 11% per annum from about ₱42 million in 1998 to around ₱64 million in 2002. The average annual non-power cost estimated at ₱ 53 million represents about 17% of the average annual sales. The biggest chunk of non-power costs is administrative/general expenses[47] which accounted for 42% (on annual average) of non-power costs over the five-year period, while consumer account expense[48] and regular distribution O & M expense averaged at 30% and 28%, respectively, within the same period. Its capital expenditures averaging at ₱ 7 million per annum is very insignificant at only about 2% of its average annual sales. On the other hand, average annual debt servicing obligations (*i.e.*, to NPC for power supply and to NEA for its loans) at ₱ 265 million is significantly high at almost 87% of average annual sales (see Table 5.2).

Table 5.2 - NEECO-I Financial Data (in Pesos)

	1998	1999	2000	2001	2002
Sales/Gross Revenue	251,162,136	261,125,562	278,496,963	352,695,059	387,652,410
Monthly Sales	20,930,178	21,760,463	23,208,080	29,391,255	32,304,367
Actual Collection	241,845,018	264,047,418	280,918,091	353,915,113	381,690,108
Collection Efficiency	96.3%	101.1%	100.9%	100.3%	98.5%
Subsidy	8,300,000	8,300,000	8,300,000	8,300,000	8,300,000
Non-Power Cost	41,689,329	48,883,174	51,778,720	60,591,299	63,943,426
Capital Expenditures	3,229,161	5,196,305	7,681,896	12,360,878	5,487,217
Debt Servicing (to NPC & NEA)	213,266,932	240,894,484	261,709,032	305,775,526	301,030,554
Net Profit	(8,040,404)	(22,626,545)	(31,951,557)	(16,512,590)	19,528,911

Source: NEECO-I

[46] Non-power costs include the expenses for distribution operations and maintenance, consumer account and administrative/general account.

[47] Administrative/general expenses cover employees' salaries/benefits, office space rentals/amortization, utilities payment, maintenance of office and equipment/service vehicles.

[48] Consumer account expense includes the costs for orientation seminars and customer call responses, among others.

The recorded system losses of NEECO-I are among the highest in the entire country which averaged at about 31% over the five-year period with extreme records of 41% in August 1988 and 16% in July 2002 (refer to Table 5.3 below). Noting that DOE's standard for technical losses is 10%, electricity pilferage is calculated at about 21% of total sales. NEECO-I mainly attributed its financial losses to pilferage by its customers. As a measure to arrest such illegal act, NEECO-I implemented pole metering[49] (as shown in Photograph 5.1 below) even before the enactment of the electricity industry reforms resulting in annual decreases in system loss levels. The loosely-hanged live wires are also noticeable.

Photograph 5.1 – Pole Metering

It may be argued though that efforts to reduce system losses became more effective upon the enactment of the electricity industry restructuring. Examination of the NEECO-I's system loss data revealed that the average annual decrease in system losses at 2.78% for

[49] Electric meters are installed on poles along the roadways instead of installing them within the house premises.

the period 1998-2000 almost doubled at 5.43% upon the implementation of the reforms in 2001. It can therefore be argued that the pre-reform pole metering initiative was strengthened by better efficiency enforced by the reforms. This is accentuated by the experienced 7.15% system loss reduction in 2001 from the 3.05% reduction during the previous year. The net profit posted by NEECO-I in 2002 is claimed by NEECO-I to have been largely attributed to system loss reduction as complemented by the reduction in debt servicing obligations arising from the mandated condonation of its rural electrification loans.

Table 5.3 - NEECO-I System Losses (in percentage of 24-hr service)

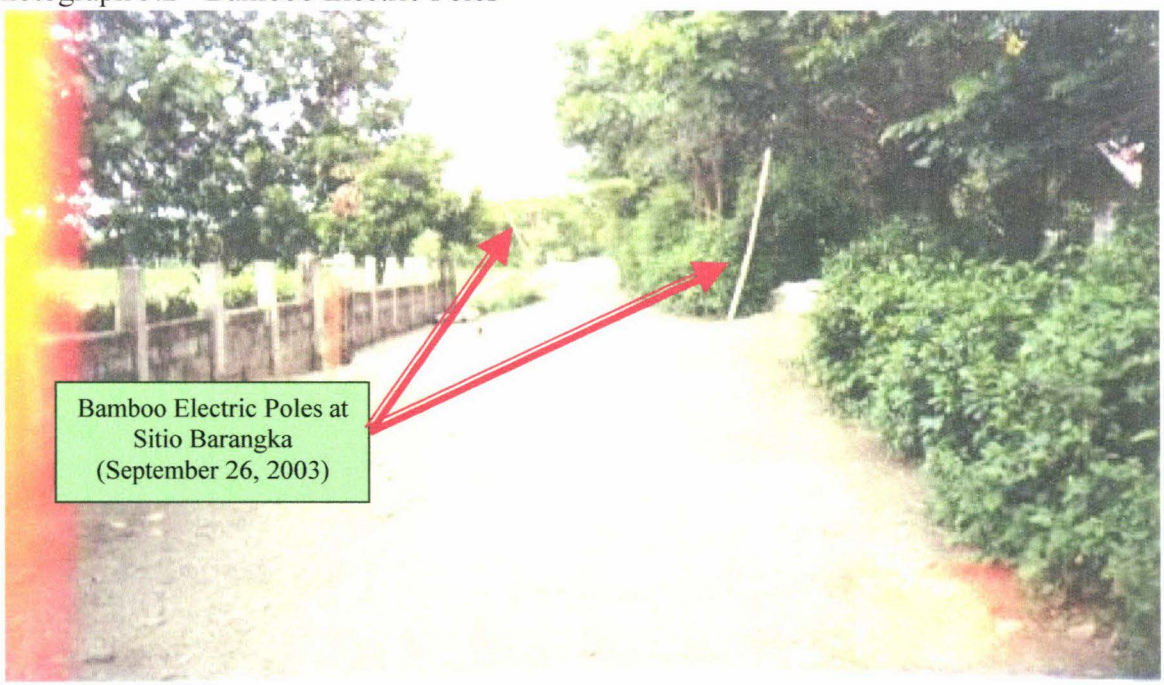
	1998	1999	2000	2001	2002
January	38.81	36.92	36.92	27.62	22.41
February	38.03	39.95	39.77	26.55	21.56
March	38.03	37.60	33.28	30.80	22.21
April	36.38	36.07	36.72	28.11	27.20
May	37.24	34.31	36.17	27.47	22.01
June	36.49	33.18	31.34	25.02	23.96
July	37.87	33.08	28.08	23.98	16.19
August	40.61	33.43	30.91	24.46	23.06
September	38.50	34.59	30.55	23.76	19.96
October	39.98	36.82	29.93	22.61	21.77
November	39.96	37.76	28.53	20.82	21.77
December	36.85	34.92	29.82	25.00	19.63
Annual Average	***38.23***	***35.72***	***32.67***	***25.52***	***21.81***

Source: NEECO-I

Another manifestation of the impacts of the reforms is on reduced outage level. NEECO-I records on service interruptions which reflect power supply reliability at the level of the rural end-consumers, showed a great improvement in 2002 (refer to Table 5.4). For the period 1998 to 2001, forced interruptions attributable to NPC plant and transmission line breakdowns averaged about 51 hours per year with the longest recorded in 1999 at 61 hours, compared to only about 19 hours in 2002. NEA reported that there are only six (6) occasions of NPC outages in 2002, compared to more than 50 frequencies in the previous years. The government attributes improved performance in power generation to increased public scrutiny on the power generators as encouraged under the reform act, which emanated from the breakdown of the biggest private-owned plant (*i.e.*, the 1200-

MW Sual Coal-Fired Power Plant) that caused Luzon-wide blackouts in 1999 and 2000. On the other hand, recorded local interruptions or outages due to power supply and load imbalance within the local distribution network showed similar positive trend. For 1998-2001, local outages posted an average of 449 hours per annum, with the highest recorded in 2000 at 520 hours, compared to only 178 hours in 2002. There are 326 reported local brownouts reported in 2000 alone for NEECO-I's franchise area. Such improved a bit to 232 frequencies reported in 2002. NEECO-I indicated that the most common cause of local outages is the short-circuiting of the distribution network when tree branches touch the loosely hanged live wires (see Photograph 5.1) or the toppling down of non-weather resistant electric poles[50] (see Photograph 5.2 below) during inclement weather conditions. Other causes cited include network over-loading and pilferage (*e.g.*, stealing copper conductors from the distribution lines). These cited causes indicate how fragile the local distribution network of NEECO-I is. NEECO-I, however, did not give data on service interruptions arising from pre-arranged maintenance activities, and does not have plans for local network wiring rehabilitation in the near future.

Photograph 5.2 - Bamboo Electric Poles



[50] *e.g.*, bamboo electric poles are commonly used in the interiors of rural areas

Table 5.4 - NEECO-I Service Interruptions (in hours)

	1998		1999		2000		2001		2002	
	(A)	(C)	(A)	(C)	(A)	(C)	(A)	(C)	(A)	(C)
January	1.02	26.67	7.40	43.56	1.91	19.23	1.18	32.82	1.92	4.45
February	0.28	16.93	7.80	13.58	1.69	5.72	1.00	145.40		17.88
March	11.27	37.32	1.00	18.00	7.57	26.28	3.35	21.73		11.92
April	0.58	5.88	2.19	13.87	2.69	19.69	1.80	36.20		10.45
May	1.03	14.88	3.75	9.38	8.75	30.53	0.07	38.12	2.17	20.03
June	5.07	34.97	12.03	44.82	0.15	148.80	2.25	77.63		14.25
July	10.24	15.23	0.41	13.95		54.60		41.50		17.15
August	4.08	55.16	1.83	24.09		54.60		31.75	13.93	12.42
September	15.13	7.70	10.30	6.59	5.98	74.12		17.08		13.62
October	0.12	55.43	0.38	13.04	22.73	54.97	0.17	22.87	0.83	29.82
November	7.05	13.39	4.33	37.87	1.93	6.70	5.40	15.23		21.98
December	2.24	31.60	9.17	206.59		25.05	15.53	33.23	0.03	4.42
Total Hours	*58.11*	*315.16*	*60.59*	*445.34*	*53.40*	*520.29*	*30.75*	*513.56*	*18.88*	*178.39*

A – forced interruption
B – pre-arranged outages due to regular maintenance activities
C – outages due to power supply and load imbalance
Source: NEECO-I

Since 1999, all the 97 barangays within NEECO-I's franchise area are reported to have been energized. But such report rather fails to account for the number of people served considering NEA's definition of energization (as discussed in the preceding chapter), thus not all barangay residents enjoy the electric service more particularly those settled in the sitios. Roughly, about 25,000 people or 9% of the population still do not enjoy the benefits of electrification at present. Admittedly, the attendant cost of service connection (*e.g.,* for meter deposit, drop line, house wiring/installation) impedes extension of services especially to the poor rural households. In line with its commitment to the total rural electrification goal under the power sector reforms, NEECO-I intends to allow staggered payment/installment aside from extending loans to potential customers after they have undergone orientation seminars dealing with NEECO-I operations and finances as well as on the responsibilities of customers. This is however subject to availability of funds according to NEECO-I.

As an innovation that is consistent with a pending legislation, Barangay Power Associations (BAPAs) ran by the local consumers within a barangay themselves were

organized to help ensure the timely payment of electric bills of all the defaulting member-consumers of NEECO-I. The BAPA's operating funds are derived from the initial contributions of its member-consumers and augmented by a small add-on to the basic rate of NEECO-I. Worthy to note are instances when the concerned BAPA front-ends/advances the monthly obligations of the some rural households because they can pay their bills only during the harvest seasons. Only a few of the barangays within the NEECO-I franchise, however, have established and successfully operated BAPAs. Among the 97 barangays, 36 BAPAs have been organized of which only ten (10) are operational.

With respect to reform impacts on electricity prices, the average system rate of NEECO-I decreased to ₱ 4.27 per kilowatt-hour in mid 2003 after it peaked at ₱ 6.07 per kilowatt-hour in 2001 as a result of the combined effects of the mandatory rate reductions, induced performance improvement and executive intervention. Inasmuch as the unbundled rates of NEECO-I has not been approved yet by ERC, its monthly electric bills to end-consumers consist of the basic charge which remained at ₱ 3.952 per kilowatt-hour since August 1998, plus charges for the cost of purchased power adjustment (CPPA) since July 1994, and wage adjustment claim (WAC, but only until March 2003). Based on the review of the residential monthly electric bills, the CPPA charge had peaked in 2001 in view of the increase in the number of maturing contractual obligations of NPC to the IPPs[51] that is being passed by NPC to its customers like NEECO I. It tapered off in May 2002 when President Gloria Macapagal-Arroyo pegged the PPA charge at ₱ 2.50 per kilowatt-hour. But as mandated under the reform act, the electric tariff of NEECO-I for its rural residential consumers now includes the ₱ 0.30 per kilowatt-hour mandated power act reduction starting August 2001, the ₱ 0.3152 per kilowatt-hour rate reduction due to loan condonation starting August 2003, and the additional universal charge for missionary electrification (UC-ME) and environmental management (UC-EN) in the total amount of ₱ 0.0193per kilowatt-hour since March

[51] *i.e.*, since more IPP power plants were put on stream, the contractual payment obligations of NPC will be higher even if power is not actually generated

2003. The net rate reduction of ₱ 0.5959 per kilowatt-hour translates to an average monthly household savings on electricity expenses of about ₱ 65[52]. The price impacts of the wholesale electricity spot market and the IPP contract renegotiations on the pass-on rates of NEECO-I have yet to be seen.

Recognizing the need to improve its operating efficiency in preparation for wholesale and retail competition as well as open access, NEECO-I strives, pursuant to its commitments as embodied in its Rehabilitation Efficiency Plan for loan condonation, to reduce its non-power cost to not more than ₱ 1.3 million per month from more than ₱ 5 million per month, to shorten its average collection period from 45 to 36 days, to decrease its system losses from about 22% to 18%, to limit its customer/employee ratio to 200, and to settle its obligations with NEA (at ₱1.5 million per quarter) and with NPC (by paying its current bill plus 1 month buffer fund). With respect to other pertinent provisions of the EPIRA, NEECO-I has not nominated any of its unenergized barangays or portions thereof to be opened for qualified third party providers because all of its 97 barangays are already deemed energized. As in the case of the other electric cooperatives, NEECO-I does not have any plans to convert into a stock corporation or stock cooperative yet. Concerned NEECO-I respondent argued that the cooperative system is the best means to offer its member-clientele the lowest price of electricity service. When asked about interest in participating in the spot market, said respondent expressed hesitation in view of foreseen uncertainties attendant to the competitive electricity market like vulnerability of prices to foreign exchange rate fluctuations and profit-motivated maneuvers of private generators as well as the required added leg work needed in transacting with spot market players. Given the option, NEECO-I respondent is inclined to obtaining bilateral contract agreement rather than through the spot market in order to ensure the continuity of electricity supply for its franchise area. The electricity industry restructuring law, however, limits the electric cooperatives' to source a maximum of 90% of its total energy requirement through bilateral supply contracts for the first five (5) years upon the establishment of the wholesale electricity spot market.

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[52] According to NEECO-I, the average electricity consumption of households in the franchise area is 110 kilowatt-hour per month and about 30% to 40% lower in rural barangays and sitios.

Hence, NEECO-I would be inevitably forced to transact with the spot market unless the restructuring law is repealed accordingly.

The Case Study Barangay and Sitio

Barangay Bagong Sikat, Cabiao

Based on the data gathered and supplemented by direct observations, the following information briefly describes Barangay Bagong Sikat. Barangay Bagong Sikat is the least populated of the 23 barangays of the municipality of Cabiao. Its land area is about 5,200 hectares with a population of 880 people housed in 220 rural households. The average family size is 4.75 persons per households, with men as predominant head of the family[53]. Historically, the area has been the relocation area of rebel returnees from a movement associated with the Communist Party of the Philippines. Though Barangay Bagong Sikat falls under the jurisdiction of the municipality of Cabiao, it is physically isolated from the urbanized center of Cabiao by the Pampanga River (also called *Rio Chico*). Wheeled vehicles have to go around the neighboring municipalities of San Isidro and San Antonio and by passing through an access road over an earth levee. Some people though ride paddled boats to cross the river towards the town center if the river current allows. An overflow bridge that will link the barangay to the municipal center of Cabiao has been under construction for the last ten (10) years, and the local chief executive blamed political interests as the main culprit for its long-delayed completion.

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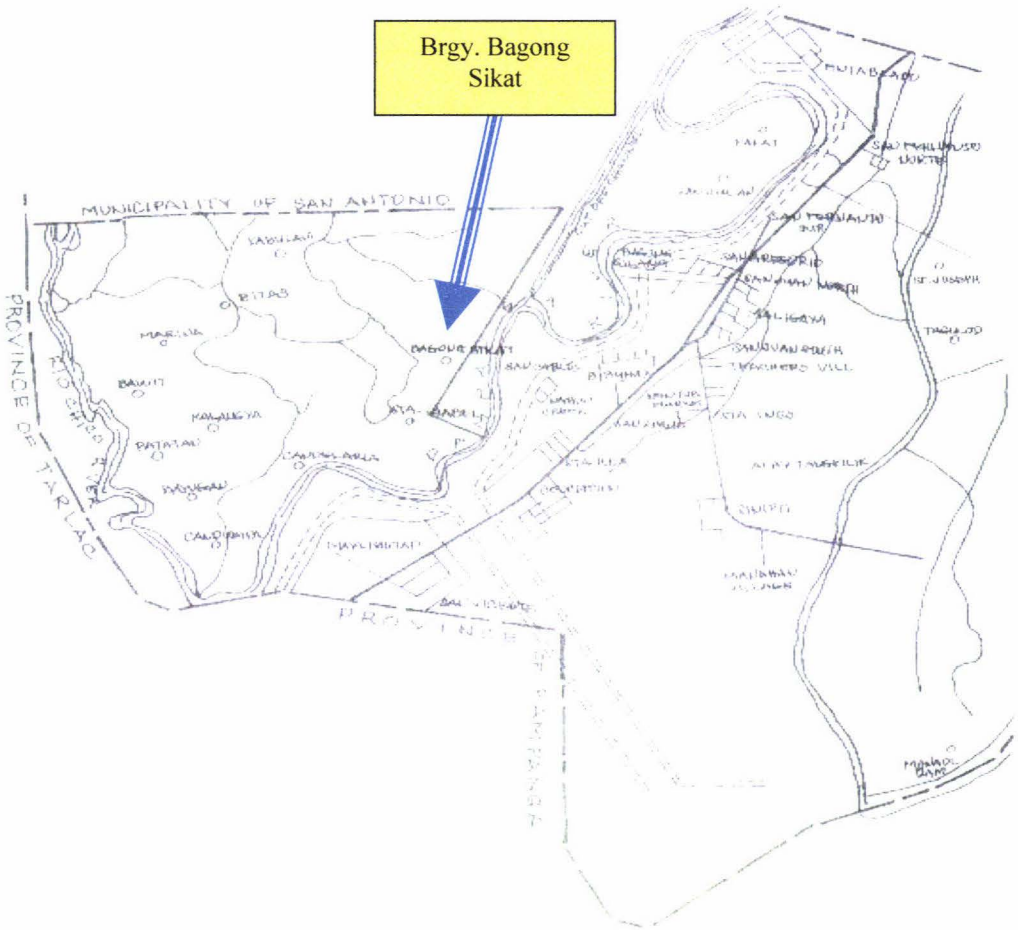
[53] In Philippine context, head of family is defined as the spouse who supports the family. Filipino culture and tradition presupposed though that it is the role of the males to earn a living for their families.

Figure 5.2 - Map of the Municipality of Cabiao



Source: Office of the Municipal Mayor, Cabiao, Nueva Ecija

Most households source potable water from individual shallow wells using pitcher-type mechanical pumps. The more affluent households have electrical pumps with pressure tanks that feed piped water connections within their premises for 24-hour water availability. Telephone service is not yet available in the barangay. The barangay has a

three-classroom public elementary school with an adjunct day-care unit. The predominant mode of land transport to and from the barangay is the tricycle[54] stationed at San Antonio town proper. Due to the bad road conditions (see Photograph 5.3 below), very few tricycles ply the 8-km. route and at a high fare of ₱200 per trip. The fare looks reasonable considering the condition of the access road leading to Barangay Bagong Sikat as shown in the photograph below.

Photograph 5.3 - Barangay Access Road

With a relatively flat terrain ranging from 0% to 3% and a tropical climate, almost all of the entire land area is cultivated to rice, corn and sugarcane. It is informed that most of the residents own the land they cultivate and that some residents have their own farm tractors. Other residents resort to freshwater fishing for additional livelihood, while others are gainfully employed in the municipal center. Based on the house-to-house interview conducted, majority of the respondent senior residents (*i.e.*, family head and spouse) only finished elementary education, but their children attained high school level education with some completing college degrees (mostly nursing graduates). Overseas

[54] Tricycle is basically a motorbike with an attached sidecar for passengers.

remittances, of children working mostly in Japan, greatly augment the income of the concerned families. This partially explains the great disparity in socio-economic status among the resident families. All respondent residents own their houses and the small track of land on which their abode stand. Dwelling structures are mostly semi-concrete in nature, though there are a few dilapidated *nipa* huts and nice concrete bungalows.

Twenty-four (24) hour electricity service in Barangay Bagong Sikat is provided by the NEECO-I since 1994 from a 220-volt line extension from the Cabiao sub-station to the individual meters of the rural households. An active Barangay Power Association (BAPA) created in 2000 and ran by member-consumers has assured the updated payment of the monthly electric bill of the whole barangay since then. Barangay Bagong Sikat was even cited as one of the most updated payers of NEECO-I. The operating funds of the BAPA were raised from initial contributions of member-consumers and augmented by charging an additional ₱ 0.10 per kilowatt-hour consumption over the NEECO-I basic rates. The BAPA ascertained the continuous availability of electricity within the entire barangay especially those households of poor families who can only settle their accumulated bills during harvest seasons. Attached as Appendix K is the tabulation of pertinent data/information from Barangay Bagong Sikat during the fieldwork.

Twelve (12) households (HH) in Barangay Bagong Sikat were interviewed, one (1) of which is still unelectrified. Their average monthly income is estimated at ₱ 8,892 ranging from ₱ 2,200 to ₱ 40,000. It may be noted that five (5) out of the 12 samples, or about 42%, earn not more than US$ 2 a day, which gives an indication of the poverty level within the area. Average monthly expense is about ₱ 4958 and ranges from ₱ 1,000 to ₱ 10,000. Among the 11 energized households, their monthly expenditures for electricity averaged at ₱ 526, representing 10.6% and 5.9% of the monthly average expenses and monthly average income, respectively. On the other hand, the unelectrified household spends ₱ 151 per month for kerosene lamp lighting, batteries/dry cells for radio and coal for flat iron, which represents 15.1% and 6.9% of its monthly expense and monthly income, respectively. Table 5.5 shows the monthly income, expense and power

bills of the 12 household respondents. It may be noted that the empirical figures for the proportion of electricity expenditures to income are almost double of the corresponding data derived during the 1998 ESMAP survey as discussed in Chapter III.

Table 5.5 – Income, Expense and Power Bill of Respondents in Bagong Sikat

	Monthly Income	Monthly Expense	Monthly Power Bill	Bill/Expense	:	Bill/Income
HH 1	11400	10000	700	7.0 %	:	6.1 %
HH 2	6900	6000	220	3.7 %	:	3.2 %
HH 3*	2200	1000	151	15.1 %	:	6.9 %
HH 4	5000	3000	350	11.7 %	:	7.0 %
HH 5	2200	1500	140	9.3 %	:	6.4 %
HH 6	12000	9000	780	8.7 %	:	6.5 %
HH 7	40000	10000	2800	28.0 %	:	7.0 %
HH 8	12000	7000	700	10.0 %	:	5.8 %
HH 9	3000	2000	160	8.0 %	:	5.3 %
HH 10	3500	3000	180	6.0 %	:	5.1 %
HH 11	3500	3000	100	3.3 %	:	2.9 %
HH 12	5000	4000	180	4.5 %	:	3.6 %
Average	8892	4958	526	10.6 %	:	5.9 %

* Still unelectrified
Source: Fieldwork Data

All interviewed electrified households have lighting fixtures and televisions. 91% (or 10 out of 11) have electric fans, 73% (or 8 out of 11) have radios and flat irons, 55% (or 6 out of 11) have entertainment machines (either DVD, VCD or VHS), while all other types of electrical appliances (*e.g.*, refrigerator, karaoke machines, rice cooker, electric stove, washing machine) are used by no more than 27% of the respondents. All the energized households interviewed appreciated the benefits of electrification on education, recreation, comfort, convenience and security due to better lighting. It is observed that the barangay's younger generation has attained higher educational level than their predecessors, though arguably brought about by electrification alone. Doing household chores are also made possible even at night or during early mornings. A certain Pepito Campos (interviewed on 9 Sept. 2003) eloquently expressed that electricity allowed his three children more time to study their lessons, enabled him to play his favorite songs after the day's work, and that his refrigerator prolonged the shelf life of his ailing wife's medicines. The lamentations of those without electricity could not be overlooked as they represent how the non-beneficiaries missed out. The spouse in

the unelectrified household, named Ceferina Tukay (interviewed on 10 Sept. 2003), exclaimed that her time for sewing aside from performing regular household chores is delimited by natural lighting at home. She also expressed her fears whenever she leaves a lighted kerosene lamp in the sala to brighten up her husband's way around the house when he comes home late at night. On livelihood, electrification enabled the establishment of a small battery recharging station mainly for the benefit of some rural folks in catching fish. One enterprising household ventured into producing ice for the preservation of fresh water catch.

The very high prevalence of television (including radios) among the respondent households was associated with access to information (as newspaper seldom reach the barangay), but more obviously for entertainment or recreation with the observed 55% prevalence of DVD/VCD/VHS packages. When asked about the potential conflict between educational and recreational benefits, one respondent said children are only allowed to watch television after doing their school homeworks/assignments. The high preference of electric fans was mainly for cooling purposes especially during humid summer months as well as for fending off mosquitoes and other insects. Those without electric fans sleep under mosquito nets.

As unanimously conveyed by the barangay respondents, the application of other electrical appliances is dictated by reasons of economics and affordability. The regular use of electric stove for cooking (at least three times a day for one to two hours each use) is more expensive than using stoves fueled by liquefied petroleum gas (LPG), kerosene or firewood. One of the elderly woman in the barangay even boasted the tastiness of her cooking using firewood. The 73% prevalence of flat iron among the respondent households was affordable since the appliance is used only occasionally. Still, a certain Virgilio Yanga (interviewed on 12 Sept.2003) uses empty liquor bottle to iron the creases out of his maong (denim) pants after washing, though his house is already connected to the grid. Most of the respondents can not afford to buy refrigerators, freezers and washing machines.

When asked, all of the respondents were not aware of the power sector reforms implemented by the government. Only three (3) respondents had little knowledge about the purchased power adjustment (PPA) and their interest in learning about it is driven by the PPA's adverse impact on their monthly bills. These respondents decried that the PPA comprise nearly 50% of their electric bills in 2001. In a more general sense, all the interviewed end-users felt that electricity rates increased over the period 1998 to 2001. It is true that electricity prices increased until 2002 but decreased in 2003 as shown in Table 4.15. After discussions with respondents, it was gathered that such perception is taken in comparison to the stagnating value of their household incomes. The recent decrease in residential electric tariff resulting from the reform law is too minimal to be felt by the households since the accrued weekly savings can not even buy one kilo of rice that one family consumes daily. However, 73% (or 8 out of 11) of the respondents with electrification service expressed appreciation in service level improvement during the past two years while 27% felt service level was just the same, 82% (or 9 out of 11) attested to fewer service interruptions (5 of whom observed lesser appliance breakdown due to voltage fluctuations), and 73% of the respondent households experienced better customer relations with the franchised distributor. Overall, these findings confirmed the improvement in NEECO-I's operating performance. Some respondents offered suggestions on how to further improve electricity service within the barangay premises. These include the replacement of old step-down transformers, the realignment of distribution lines so as not to touch tree branches/leaves, and the bracing and/or replacement of makeshift bamboo electric poles located in the barangay interiors against harsh weather conditions. Besides, leaning wooden transmission posts like the one shown in the Photograph 5.4 below needs urgent attention before things get worse.

Photograph 5.4 - Leaning Post

Only four (4) respondents expressed their personal views on the barriers to service access, and they all cited the cost of service connection which is estimated to be at least ₱2000 to cover the meter deposit, drop line from post to individual house meter and house wiring including labor expenses aside from expenses to be incurred in applying (including follow-on activities) at the NEECO-I head office in the municipality of San Isidro. While three out of these four respondents were able to stretch out their budgets to pay the service connection cost, the remaining one resorted to borrowing with interest plus his carabao as collateral. The expenses incurred and time lost in traveling to and from NEECO-I's head office in Barangay Malapit, San Isidro at times discouraged them in pursuing service connection. For a poor person like Ceferina Tukay, it would take longer time to raise the money needed. Her application has been pending for two (2) years now since she had only settled the ₱ 400 meter deposit. Besides, the trips to undertake follow-on required activities (*e.g.*, attending applicants' seminars, buying the needed wiring materials) proved to be very grueling for her frail 62-year old body. Hopefully, NEECO-I's plan to allow staggered payment of service connection costs materializes.

Sitio Barangka, Barangay Pulo, San Isidro

In conjunction with the total electrification of the country, the government also focuses on "*sitio*" or satellite village electrification in order to reach all Filipino households. Sitio Barangka, located in Barangay Pulo which is the southernmost village in the municipality of San Isidro, is bordered by the neighboring provinces of Pampanga and Bulacan in the south and the least populated sitio of Barangay Pulo. With an estimated land area of about 1,000 hectares, it has a population of only 260 persons sheltered in 54 houses that are lined along the creek (*i.e.*, Sapang Malimba). Historically, the area started as a resting ground for peasant farmers but later developed into a satellite village as these farmers opted to live closer to the rice fields/farms they till. A narrow unpaved farm-to-market road links the sitio to the municipal road leading to the urbanized center of San Isidro. The predominant mode of land transport to and from the sitio is also the tricycle stationed at San Isidro town proper and can be hired for ₱50 per trip. All households source their water from individual shallow wells using pitcher-type mechanical pumps. Telephone service is not yet available in the sitio. Figure 5.3 shows that location of Sitio Barangka in the municipality of San Isidro, Nueva Ecija.

"*Sakada*" or contract farming is the main source of livelihood in the sitio, where the landed owners provide the land and the working capital (for farm inputs such as seedlings, fertilizers and pesticides) while the sitio settlers contribute physical labor for an agreed portion of the harvest. A few sitio residents engaged themselves in employment (*e.g.*, sash factory) or small business (*i.e.*, "*sari-sari*" or variety store) for livelihood. Still others resort to fresh-water fishing to augment their daily sustenance. Nine (9) out of 13 (or 69%) of the dwelling structures are semi-concrete in nature. All interviewed residents own their houses but not the small track of land on which their houses stand.

Figure 5.3 - Map of San Isidro

Source: Office of the Municipal Mayor, San Isidro, Nueva Ecija

The average size of the predominantly male-headed households in Sitio Barangka is 4.81 persons. On educational attainment, 77% (or 10 out of 13) of the interviewed family heads and spouses had only finished the elementary level. Only one (1) household head finished a college degree. Most of the children are still of the school-going age. Only one (1) child is pursuing tertiary/college education while some have stopped studying after completing either the elementary or high school level mainly due to financial constraints. One of the respondents, a certain Danilo Garcia (interviewed on 23 Sept. 2003), commented that his current income as a farmer could hardly support the elementary

education of his four children. Among the thirteen (13) interviewed households, the average monthly income is estimated at ₱ 4,269 ranging from ₱ 3,000 to ₱ 8,500 (*one respondent did not divulge monthly income*). As an indication of poverty level in the sitio, it may be noted that almost all the respondents earn just US$2 a day. Such income level is typical of sakada farmers in rural Philippines and the close range indicates similarity in simple rural living standards elsewhere in the country. Average monthly household expense is computed at ₱ 3,238 and ranges from ₱ 2,500 to ₱ 4,500. Monthly expenditures for electricity averaged at ₱ 385, representing 11.18% and 7.82% of the monthly average expense and monthly average income, respectively (see Table 5.6).

Table 5.6 - Income, Expense and Power Bill of Respondents in Sitio Barangka

	Monthly Income	Monthly Expense	Monthly Power Bill	Bill/Expense	:	Bill/Income
HH 1	3500	2500	100	4.0 %	:	2.9 %
HH 2	5000	3000	400	13.3 %	:	8.0 %
HH 3	(info denied)	2600	150	5.8 %	:	-
HH 4	3000	2500	100	4.0 %	:	3.3 %
HH 5	4000	3000	350	11.7 %	:	8.8 %
HH 6	3500	3000	150	5.0 %	:	4.3 %
HH 7	5000	4500	650	14.4 %	:	13.0 %
HH 8	5000	3000	300	10.0 %	:	6.0 %
HH 9	6000	4000	1000	25.0 %	:	16.7 %
HH 10	8500	3500	500	14.3 %	:	5.9 %
HH 11	3500	3000	700	23.3 %	:	20.0 %
HH 12	5000	4500	500	11.1 %	:	10.0 %
HH 13	3500	3000	100	3.3 %	:	2.9 %
Average	4269	3238	385	11.2 %	:	7.8 %

Source: Fieldwork Data

Again, it is worth noting that the proportion of electricity expenditure to income of electrified households more than doubled compared to the corresponding data derived during the 1998 ESMAP survey. Combining this information with the figures derived from Barangay Bagong Sikat to get their average for purposes of comparing it with the 1998 ESMAP surveyed average data, we come up with the following tabulation (see Table 5.7).

Table 5.7 – Bill versus Income in the Case Study Areas

	Household Income (in ₱) (electrified)	Household Income (in ₱) (unelectrified)	Electric Bill (in ₱)	Bill/Income
Bagong Sikat	8892		526	5.9%
		2200	151	6.9%
Barangka	4269		385	7.8%
Average (2003)	6580.5		455.5	6.9%
ESMAP (1998)	7653		248	3.2%
		3935	126	3.2%

Based on the above tabulation of average figures at nominal prices, it is observed that relatively poorer dwellers of Sitio Barangka spent a higher portion of their incomes for electricity compared to the residents of Barangay Bagong Sikat though with approximately equal household sizes. Sitio dwellers spent 7.8% or ₱ 385 out of ₱ 4269 while barangay residents spent 5.9% or ₱ 526 out of ₱ 8892 per month. The lower nominal value of electricity spending in the sitio is attributable to lesser electrical appliances as the households could not afford to buy. It could be deduced then that poor people becomes poorer with electrification service. The point at which poor people would switch off from electrification service could not be ascertained, however, as the same would depend on individual preferences. At worst, the switch off could be triggered when electricity expenses devour the family budget for the very basic essentials such as food, shelter and clothing.

The succeeding argument may eliminate the need for determining the switch off threshold in rural Philippines. As deduced in the preceding paragraph, electrification makes living condition in rural Philippines worse over time. For electrified households, the proportion of electricity expenditure over income increased by more than double at 116% (from 3.2% in 1998 to 6.9% in 2003). Over the same period, average income decreased by 14% (from ₱ 7653 to ₱ 6580.50) while electric bills increased by 84% (from ₱ 248 to ₱ 455.50). For unelectrified households, the increase in proportion is the same at 116%, but the decrease in income is worse at 44% (₱ 3935 to ₱ 2200) while the increase in the cost of electricity substitute (*e.g.*, kerosene, coal and candle) tapered off

at 20% (from ₱ 126 to ₱ 151). This means that rural people in the Philippines suffer a greater loss without electricity. While the household samples for both the 1998 ESMAP survey and this fieldwork may not accurately represent rural Philippines, these simple correlations suggest that it is better to have electricity that not – raising a situation analogous to the case of choosing the lesser evil.

All of the thirteen (13) interviewed households have been electrified, the first dating back since 1972. All of these households have lighting fixtures, radios, televisions and electric fans, while 92% (or 12 out of 13) have flat irons. Only two (2) households have entertainment packages (*i.e.*, either VHS or karaoke) and only one (1) has a rice cooker. There are no other electrical appliances within the visited households. As conveyed by most of respondents, they do not have the money to buy and maintain other electrical appliances such as refrigerators and electric range/stoves. With their basic complement of electrical appliances, though, all the household residents appreciated the benefits of electrification on access to news/information and entertainment, on health, on comfort and convenience in doing household chores, and on education to some extent. For the household income earners, the television and radio sets are found to be good sources of relaxation during their lunch breaks and after the day's work in the farm, if not playing card games or chatting while drinking local gin with fellow sitio dwellers. A certain Ponciano Molina (interviewed on 25 Sept. 2003), a 52-year old farmer, never missed the noontime variety show "Eat Bulaga" for good laughs and entertainment. For some spouses and elderly women, tuning in to their favorite local radio stations lightens up their daily routines around the house. A 58-year old respondent housewife (interviewed on 25 Sept. 2003) said that she tunes to her favorite AM radio station every after lunch to listen to soap operas that give her inspirations in life.

On health benefits, the electric fans have been very effective in providing air circulation around the house and in chasing off mosquitoes and other flying insects. The 92% prevalence of flat iron among these households was mainly for pressing school uniforms of children. As in Barangay Bagong Sikat, the potential conflict between educational and recreational benefits of electrification was resolved by allowing children to watch

television only after doing their school homeworks/assigned lessons and household chores. They, however, stressed that the insufficiency of family income to sustain sending children to school is the main obstacle to education. To some extent, the fathers seek the help of their young sons in doing farm labor, while mothers delegate some household chores especially taking care of younger siblings to their daughters. Ponciano Molina narrated that he used to take his 16-year old son on early mornings to feed the carabaos. Inside their house, his 9-year old daughter was taking care of her baby sister while the mother was doing the dishes after lunch.

Twenty-four (24) hour electricity service in Sitio Barangka is also provided by NEECO-I from a 220-volt line extension from the Malapit main station to the individual meters of the rural households. A Barangay Power Association (BAPA) exists in Barangay Pulo but it does not seem to be operating well in Sitio Barangka. Some households are delayed in paying their monthly electric bills by about 40 days according to NEECO-I. Pilferage may have been rampant in the area as electric meters were installed in the NEA posts along the sitio road rather than on the house walls (as seen in Photograph 5.1). Respondents were not asked about this sensitive issue since the local guide related earlier an incident wherein a sitio resident wielding a bolo chased a NEECO-I lineman who tried do dismantle the former's illegal tap/connection.

When asked, all of the respondents were also not aware of the electricity industry reforms implemented by the government. Only two (2) respondents have little knowledge about the cost of purchased power adjustment (CPPA) as they only learned about it from the poblacion. While only these two (2) claimed that the CPPA ate a big chunk of their monthly electric bills, all the respondents interviewed decried the increasing electricity rates. Similar to that unearthed by the residents of Barangay Bagong Sikat, the perception of the residents of Sitio Barangka was taken vis-à-vis the decreasing level and buying power of their household incomes. Besides, all respondents belittled the insignificant value of net rate reduction resulting from the reform law. One Elmer Cardano (interviewed on 26 Sept. 2003), a civil engineering graduate working in a sash factory, chuckled about the ₱50 he accrued as monthly saving in electricity bills

since it was not even enough to buy his daily consumption of Juicy Fruit (chewing) gum. Nonetheless, 77% (or 10 out of 13) of the respondents expressed appreciation in service improvement during the past two years, 92% (or 12 out of 13) attested to fewer service interruptions (2 of whom attested to lesser appliance breakdown to voltage fluctuations), and 69% of the interviewed households claimed better customer relations with the enfranchised distributor. Only Elmer Cardano offered suggestions on how to improve service delivery within the sitio. He suggested that the distribution line should be realigned to avoid line grounding with tree branches and the replacement of bamboo electric poles with sturdier ones. Four (4) out of the 13 respondents offered their personal views on the barriers to electrification service access, and they all recalled the difficulties they faced in raising the money for service connection. Ponciano Molina related his ordeal with a loan-shark which only made his finances more miserable later. Attached as Appendix L is the tabulation of pertinent data/information from Sitio Barangka during the fieldwork.

Conclusion

The foregoing case studies has elucidated the impacts of the power sector reforms on a primary distribution utility and how they trickled down to its rural electrification beneficiaries. Combined with some own initiatives, the commitment elicited by the conditions for loan condonation largely stimulated NEECO-I to improve its operating efficiency towards better delivery of electrification service within its franchise area. The reforms tasked NEECO-I to operate more efficiently in order to decrease system losses, shorten service interruptions, and sustain an almost excellent collection efficiency. NEECO-I realized better financial health in the process which may provide an opportunity to accelerate electrification service expansion/access to those people who are still unserved within its service area. In the interim, residential electricity tariffs decreased in nominal terms as a result of the mandated reforms. While further rate reductions are still in the offing, the price impacts of privatization and competition in bulk electricity production is yet to be realized since the wholesale electricity spot market will only commercially operate in mid 2004. NEECO-I management though is

apprehensive on the applicability of market forces and private actors in power supply generation and in providing electrification service to its rural franchise given their profit-oriented motives.

The interviewed rural residents of Barangay Bagong Sikat and Sitio Barangka acknowledged the benefits of rural electrification on access to recreation/entertainment primarily, as well as to information, education, comfort/convenience/security, and to livelihood to a certain degree. Generally, they have also commended NEECO-I's improved level of service after the electricity industry reform act was passed. A great majority of them appreciated the better customer relations and the fewer outages they experienced since mid 2002 though not knowing what the reform is all about. Blatantly however, the interviewed end-users in the study areas decried the increasing cost of electricity especially during mid 2001 when more IPP projects were completed. Apparently, such view is contextually related to their capacity to pay given the decreasing market value of their household incomes. With respect to electrification access, the prohibitive cost of service interconnection as well as the travel cost and time lost is deemed by some interviewed residents as an obstacle to electrification access. Meanwhile, the innovative consumer-ran barangay power association proved to be a good instrument in satisfying both the objectives of the rural power distributor and its end-consumers. NEECO-I realizes updated payments to sustain viability in operations while all end-users are guaranteed electricity service in their homes whether payment is delayed or not. The barangay power associations proved to be exceptionally beneficial when end-consumers cooperate.

Chapter VI – Conclusions

Electrification has potentially invaluable contributions to make towards the socio-economic upliftment of people, especially in the rural areas. It has been proven that electricity provides the rural population with better opportunities to additional livelihood, education, health, entertainment, protection and convenience and in order to make them more economically productive members of society. For the Philippines, rural electrification is the preferred program for promoting economic development and social equity especially for the countryside. But as the country increasingly lacked the capability to sustain its traditional support to the total electrification policy, a more efficient and politically-acceptable alternative way of extending electrification service was needed. To solve the problems besetting the Philippine power sector especially on rural electrification, the Electric Power Industry Restructuring Act (EPIRA) was passed in mid 2001 embracing the neo-liberal principles of privatization, competition and deregulation. With its enactment, the local electricity industry was expected to gain economic efficiency while at the same time assuring the satisfaction of consumers' interests.

Undeniably, the EPIRA brought about improvements in the delivery of public service goals in the interests of the Filipino rural masses. Within the restructured electricity industry, the formulation of power, transmission and distribution development blueprints was entrusted to the government in order to ensure adequate, reliable and efficient electricity supply in the rural areas with greater accountability, transparency and integrity while allowing envigorated public scrutiny. The government is gearing up to see the realization of these blueprints in cooperation with private enterprises through the provision of economic incentives under the deregulated market regime. The reform act has greatly expedited rural electrification access especially in isolated areas through corrective mechanisms, innovative approaches and enhanced public-private partnerships. With about 25% expected to be undertaken by qualified third parties, future missionary electrification project line ups are now drawn transparently based on established criteria to free the prioritization process from political interference and patronage. The act has

also caused the electric cooperatives as primary electricity providers in the rural areas to improve their quality of service, operating efficiency and customer relations though in an apparently mandatory manner. It became mandatory in the sense that only provisional authorities were granted to electric cooperatives until the commitments they were seemingly forced to pledge in their respective performance improvement programs and/or rehabilitation efficiency plans for loan condonation purposes has been satisfactorily met.

Further, residential electricity rates have decreased as of the moment due to the reform-mandated reductions and a complementary Presidential directive. But it is quite uncertain in the near future if electric tariffs will decrease or increase with the pending finalization of the IPP contract renegotiations and the forthcoming application of the new pricing methodologies for bulk electricity production (*i.e.*, the LRAC and TOU) as well as the imposition of stranded contract costs, stranded debts, and royalties/tax equalization measures applied to indigenous or renewable energy sources under the universal charge. Since the full price impact of private competition in bulk electricity production may only be validated roughly at least two years after the wholesale electricity spot market has commercially operated, a follow-on research thereon is deemed in order. Meanwhile, it can be presumed that said impact on residential power rates will only be small within the next five years considering that the electric cooperatives are allowed to source 90% of their electricity requirements from bilateral power supply contracts with private generators. However, it may be more likely expected that the supply price of bulk electricity from these bilateral private generators may be higher than the spot market clearing price in compensation for the assured longer-term availability of power and the avoidance of intricacies entailed by the daily transactions with the marketplace.

It is argued therefore that privatization, competition and deregulation had not actually caused the better delivery of public service goals experienced by the residential end-consumers. It was only the incorporation of social equity objectives in the EPIRA that made such outcome/impact possible. Electricity being a public good and a political

commodity, the EPIRA was crafted in such a way to meet the total electrification of the country. The immediate reduction in residential electricity prices was not brought about by market competition and deregulation, but by mandated rate reductions and a complementing executive directive. The improvement in the operating performance of the electric cooperatives leading to service level enhancement was caused by the time-bound conditions imposed relative to the loan condonation provision. The three-fold increase in barangay electrification rate was not a result of the natural interplay of private actors and market forces but by government's 'persuasive negotiations' with the independent power producers (IPPs) and other concerned entities to take active part in the total electrification of the country. Besides, the IPPs may not even be spending a single centavo in extending electrification service to remote barangays and sitios in the name of corporate social responsibilities. But from the perspective of the electric cooperatives, gains in economic efficiency as accompanied by socially-oriented goals contributed to the timely achievement of government annual targets for total electrification. In this regard, the country's legislators and government implementors may be commended for successfully interweaving non-economic objectives within a deregulated market regime.

The adverse reactions of the case study electric cooperative cannot be overlooked. As may be shared by other rural distribution utilities in the Philippines, the apprehension of NEECO-I to participate in the wholesale electricity spot market poses a concern with far-fetching implications. While the cooperatives may be uneasy with the additional workload entailed in transacting with the spot market, their apprehension more importantly acknowledges the perception that private sector participates in public infrastructure undertakings mainly for profit purposes, and that private generators may engage in anti-competitive market behaviors which undermines the spot market clearing price for bulk electricity. The latter suggests that the rural electricity distributors have a low level of trust and confidence in the free market system. They may have a point. As proven in the recent past, the Philippine experience with the IPPs, whose contracts embodied guaranteed payments or minimum energy off-take provisions, supports this apprehension. These soon-to-be spot market players took advantage of the dire need of

the country during the power crisis years to ask for onerous contract terms to satisfy their creditors. It took no less than a republic act to provide a legal basis to review and renegotiate these allegedly disadvantageous IPP contracts. Some IPP owners even invoked the supremacy of international contract rules and regulations over domestic laws to defend their claims. Also, the way how the IPP contributors to rural electrification managed their corporate social responsibilities further substantiates the argument. While being dependent on the size of operations in the country, IPP expenses for their social responsibility of energizing host barangays are tax deductible or can be totally recouped if front-ended for other areas. And if their financing portfolios are examined, it will be no surprise if a considerable portion of their capitalization comes from the very volatile stock market whose ownership can change hands in a flick of a finger. With the use of dummy names, how can the cross-ownership safeguards of the EPIRA be effectively monitored and enforced then?

Though cross-ownership limits had been set forth under the reform act, it must be borne in mind that such limits were a mere product of compromises between the legislature and the dominant industry players. Well-entrenched and domineering market participants may use their influences over and/or alliances within the legal system and the political institutions to railroad lop-sided amendments to the EPIRA favoring their desires for mutual benefits. In this connection, the EPIRA provisions on independent management and regulatory efficiency should be supplemented by independent third party checks and balances in order to effectively prevent the unregulated private bulk electricity suppliers from engaging in rent-seeking strategies aimed at maximizing profits and controlling the wholesale electricity spot market. These possibilities call for more vigilance and objectiveness in implementing the market rules by the private sector-led spot market administrator, as well as by the government implementors and the electricity consumers in general. This triangulating check and balance mechanism will uplift the Philippines' poor record on law implementation and enforcement.

Related to their apprehensions towards privatization, electric cooperatives were also reluctant to convert either into stock cooperatives or stock corporations. Casting aside

the fear for losing jobs, they claimed that the cooperative system is the best means to offer its member-consumers the lowest price for electricity service inasmuch as electric cooperatives are not-for-profit in nature. However, the politicized management of electric cooperatives was being blamed for their generally poor operating efficiencies. It is asserted that in a cooperative system, member-owners do not have the incentive to take actions towards better operating performance simply because they do not expect to receive economic returns for their minimal membership fees/contributions. The electric cooperatives may have also failed to realize, or intentionally ignored, the fact that private ownership imposes greater scrutiny and discipline to attain better allocation of resources, as well as helps detach the cooperative from the political process or from any other politically motivated interferences. While the barangay power associations may be a cooperative system in essence, they seem to be functioning well in some areas but rendered useless in others. This is mainly because of the natural *ningas-cugon* (*i.e.*, short-lived) attitude among Filipinos. But perhaps this short-lived flicker of enthusiasm can be turned into an eternal flame of cooperation if economic incentives satiate the hungry breadbaskets of the poor rural member-consumers. It may also be argued that the "choice and voice" of the poor captive consumers will remain outstanding until the geographic monopoly franchise of electric cooperatives is opened to other rural electric service entities. How can consumers wisely choose and exercise their rights if there is only one electric cooperative supplying their demand?

The perception of the interviewed rural residents about the increasing electricity tariffs (despite the actual nominal decrease in power rates) vis-à-vis their poverty level and the opportunity cost of electricity to them should also be taken seriously. While the perception was taken in comparison with the stagnating value of household incomes, it suggests that the market-based pricing undermines the affordability of electrification service to the residential end-consumers especially those living in poor and far-flung rural areas. It should be remembered that market pricing mechanisms commands full-cost recovery, and that electricity is a price-inelastic commodity. Hence, those potential end-users whose incomes are insufficient will most likely miss out the benefits of electrification and be left unattended. Those already interconnected but with shrinking

budgets may resort to electricity pilferage or other illegal activities in order to sustain the service. This dilemma may be solved by either increasing the income of the consumers or reducing the production cost of generators, or a combination thereof depending on prevailing circumstances. The integration of livelihood activities with electrification projects as thought of by the government may be a laudable solution as it increases the end-users' capacity to pay. But if the additional household income to be earned is still not enough to cope with rising electricity tariffs, a complementary reduction in production cost should be resorted to. An option for the participating private sectors, assuming they have reached optimum operating efficiency, is to lower the opportunity cost of capital. With the help of the government and the cooperation of the community of international lenders, this can be done by allowing private generators to use the proceeds of low-interest bilateral or multi-lateral government loans into their financing portfolios. With such financing enhancement, the pass-on price of electricity is expected to be much lower compared to when commercial borrowings are used.

Missionary electrification is a special case in this connection as they encompass poor people living in isolated islands and far-flung areas that are not connected to the grid. Despite the institutionalized mechanism to electrify these areas, further study is recommended to determine how to provide sustainable missionary electrification service without mandatorily soliciting subsidies from other end-users through the universal levy. This proposed study should come up with alternative solutions ranked based on their advantages and disadvantages, thus necessitating quantitative analysis. It is also recommended that a complementary quantitative research be undertaken regarding electricity provision to the poor segment of the Filipino society. It is suggested that the research be focused on the statement: "It is better for poor people to have electricity even if it makes them poorer". It is expected that this research will be able to establish some sort of a threshold or benchmark beyond which people will choose not to be provided with electricity service as well as to put a price on convenience or preference.

In closing, it can be said that all power sector reforms are unique in their own ways as they try to address particular circumstances with particular solutions depending on the prevailing ideological and political perspectives. As free market regimes tend to ignore the non-profitable, non-economic social objectives can be integrated if there is political will. But no matter how well crafted power sector reforms may be, challenges will arise.

Appendix A

Information Sheet for Government Officials

School of People, Environment and Planning
Massey University, Turitea Campus
Palmerston North, New Zealand

Research Title: ***Impacts of Power Sector Reforms on Rural Electrification in the Philippines***

1. Name of Researcher : Ronaldo F. Corpus
   Name of Supervisors : Dr. Donovan Storey
   Dr. Barbara Nowak

2. How to contact researcher : ronniecorpus@yahoo.com
   How to contact supervisors : D.Storey@massey.ac.nz
   B.S.Nowak@massey.ac.nz

3. Nature and Purpose of Study :

   This study is a 100-point paper being undertaken by the researcher to complete the degree of Masters in Philosophy (major in Development Studies) at Massey University.

   Power sector reforms in the Philippines have only been recently legislated in June 2001. Among others, the reforms entailed the restructuring of the electricity industry, deregulation/liberalization for market competition, private sector participation and commercialization. This case study research is being conducted in order to find out the impacts of the power sector reforms on the rural electrification efforts of the Philippine government. It is informed that this research work is mainly for thesis (and its publication) purposes only.

4. What will be asked of the participating government officials?

   - rural electrification policies, policy changes instituted after the power sector reforms and how were they carried out
   - prioritization criteria for rural electrification (e.g., who decides which unserved barangay should be energized first, when is a barangay deemed electrified)
   - different entities contributing to rural electrification, role delineation
   - entity performance before and after reforms (e.g., organizational, institutional and operational aspects)
   - adequacy/continuity/reliability of electricity supply especially to the rural areas (i.e., demand-supply scenarios, blackout/brownout frequencies, voltage

fluctuations, plant and transmission line downtimes for the 3 main grids with regional breakdown if possible

- system efficiency and security (e.g., system losses, reserved power levels, market abuse, power failure incidences)
- access especially to remote and far-flung areas, and affordability of electricity tariffs vs. consumers' capacity to pay (electricity tariffs vs. wage rates at national and regional levels)
- comments leading to better delivery of public service goals

5. Anonymity and confidentiality

   - The researcher will exercise best efforts to ensure all participants that the data/information gathered will be kept anonymous and confidential.
   - Information gathered from any one informant will not be shared to others without prior consent.
   - The names, designations and the name of the entity/organization of the research participants/key informants will not be revealed in the thesis unless the researcher is permitted to do so by the concerned parties. If they wish not to be acknowledged, the relevant information gathered will be cited incognito.

6. The participants have the right

   - to decline to participate
   - to refuse to answer any particular question
   - to withdraw from the study any time
   - to ask any question about the study
   - to withhold the informant's identity (i.e., name and agency), if requested
   - to willfully provide information in aid of the research
   - to access the summary of study findings upon its completion

Appendix B

Information Sheet for the Private Sector Participants

School of People, Environment and Planning
Massey University, Turitea Campus
Palmerston North, New Zealand

Research Title: ***Impacts of Power Sector Reforms on Rural Electrification in the Philippines***

1. Name of Researcher : Ronaldo F. Corpus
   Name of Supervisors : Dr. Donovan Storey
   Dr. Barbara Nowak

2. How to contact researcher : ronniecorpus@yahoo.com
   How to contact supervisors : D.Storey@massey.ac.nz
   B.S.Nowak@massey.ac.nz

3. Nature and Purpose of Study :

   This study is a 100-point paper being undertaken by the researcher to complete the degree of Masters in Philosophy (major in Development Studies) at Massey University.

   Power sector reforms in the Philippines have only been recently legislated in June 2001. Among others, the reforms entailed the restructuring of the electricity industry, deregulation/liberalization for market competition, private sector participation and commercialization. This case study research is being conducted to learn and to be better informed about how the private sector reacted to the power sector reforms especially in the extension of electrification services to remote and far-flung rural areas in the Philippines. It is informed that this research work is mainly for thesis (and its publication) purposes only.

4. What will be asked of the participating private sector entities?

   - familiarity with the power sector reforms
   - role in the rural electrification efforts of the government before and after the reforms
   - organization and decision-making structure
   - business performance before and after the reforms in terms of among others service delivery capabilities, rate of expansion coverage and operating efficiency (i.e., system losses, voltage levels, collection efficiency, debt/sales ratio,

customer/sales ratio, sales/employee ratio, profitability or financial standing, levels of capital expenditures)
- fulfillment of social service obligations in terms of adequacy/continuity/reliability of electricity supply especially to the rural areas (e.g., scheduled maintenance downtimes, voltage regulations)
- regulations on rural service extension and pricing mechanisms before and after the reforms
- comments leading to better delivery of public service goals

5. Anonymity and confidentiality

- The researcher will exercise best efforts to ensure all participants that the data/information gathered will be kept anonymous and confidential.
- Information gathered from any one informant will not be shared to others without prior consent.
- The names, designations and the name of the entity/organization of the research participants/key informants will not be revealed in the thesis unless the researcher is permitted to do so by the concerned parties. If they wish not to be acknowledged, the relevant information gathered will be cited incognito.

6. The participants have the right

- to decline to participate
- to refuse to answer any particular question
- to withdraw from the study any time
- to ask any question about the study
- to withhold the informant's identity (i.e., name and agency), if requested
- to willfully provide information in aid of the research
- to access the summary of study findings upon its completion

Appendix C

Information Sheet for the Rural Electrification Beneficiaries

School of People, Environment and Planning
Massey University, Turitea Campus
Palmerston North, New Zealand

Research Title: ***Impacts of Power Sector Reforms on Rural Electrification in the Philippines***

1. Name of Researcher : Ronaldo F. Corpus
   Name of Supervisors : Dr. Donovan Storey
   Dr. Barbara Nowak

2. How to contact researcher : ronniecorpus@yahoo.com
   How to contact supervisors : D.Storey@massey.ac.nz
   B.S.Nowak@massey.ac.nz

3. Nature and Purpose of Study:

   This study is a 100-point paper being undertaken by the researcher to complete the degree of Masters in Philosophy (major in Development Studies) at Massey University.

   Power sector reforms in the Philippines have only been recently legislated in June 2001. Among others, the reforms entailed the restructuring of the electricity industry, deregulation/liberalization for market competition, private sector participation and commercialization. Mainly for thesis (and its publication) purposes only, this case study research is being conducted to learn about the good and bad things brought about by the power sector reforms on rural electrification in the Philippines. It is further informed that participating rural electrification beneficiaries should not expect policy changes as a result of this research work since the same is solely for academic purposes.

4. What will be asked of the participating rural electrification beneficiaries?

   - social and economic profile
   - awareness on rural electricity source and distributor, level of consumer satisfaction
   - familiarity with the power sector reforms, its principles and application
   - benefits of electrification (e.g., on daily living and livelihood) compared to the circumstances/conditions prior to reforms

- adequacy/continuity/reliability/security of electricity supply before and after the reforms (e.g., blackout/brownout frequencies, appliance breakdown due to voltage fluctuations)
- accessibility and affordability of service before and after the reforms
- comments leading to better delivery of public service goals

5. Anonymity and confidentiality

   - The researcher will exercise best efforts to ensure all participants that the data/information gathered will be kept anonymous and confidential.
   - Information gathered from any one informant will not be shared to others without prior consent.
   - The names, designations and the name of the entity/organization of the research participants/key informants will not be revealed in the thesis unless the researcher is permitted to do so by the concerned parties. If they wish not to be acknowledged, the relevant information gathered will be cited incognito.

6. The participants have the right

   - to decline to participate
   - to refuse to answer any particular question
   - to withdraw from the study any time
   - to ask any question about the study
   - to withhold the informant's identity, if requested
   - to willfully provide information in aid of the research
   - to access the summary of study findings upon its completion

Appendix D

Consent Form (*English Version*)

Project Title:
Impacts of the Power Sector Reforms on Rural Electrification in the Philippines

1. I have read the Information Sheet and/or have the researcher explained to me the study to my full understanding. My questions have been answered to my satisfaction and I understand that I may ask further questions at any time.

2. I understand that participation in the project is voluntary and that withdrawal from the study is possible any time should I choose to do so.

3. I understand that participation in the project is confidential and that no material information relating to me will be directly reported in the field research findings.

4. I understand and believe that all information I give through the interview will be kept confidential.

5. I also understand that a summary of the research findings will be made available through the researcher upon request once the study is completed.

6. I agree to participate in this research fieldwork under the conditions set out in the Information Sheet. In addition, I may choose to sign this consent form.

_____ _____

(Signature and name of participant) **(date)**

_____ _____

(Signature and name of researcher) **(date)**

Appendix E

Consent Form (*Local Language Version*)

Pamagat ng Proyekto:
Mga Epekto ng Reporma sa "Power Sector" sa Elektripikasyong Pang-Rural sa Pilipinas

PAHINTULOT

1. Nabasa ko ang Talastas Kaalaman at/o maayos na naipaliwag sa akin ng mananaliksik ang pakay o sadya ng naturang pag-aaral para akin itong lubusang maunawaan.. Lahat ng aking mga katanungan ay mahusay na natugunan at maaari pa akong magdagdag ng katanungan naisin ko anumang oras.

2. Nauunawaan kong ang paglahok sa proyekto ay kusang-loob at ang pag-urong sa paglahok ay maaari anumang oras na aking gustuhin.

3. Nauunawaan kong ang paglahok sa proyekto ay konpidensyal at walang anumang inpormasyong materyal tungkol sa akin ay tahasang ilalathala sa resulta ng pagsasaliksik.

4. Nauunawaan at naniniwala ako na lahat ng inpormasyon/kaalaman na aking ibinigay sa panayam ay mananatiling konpidensyal.

5. Nauunawaan ko rin na maaari akong humingi ng buod ng resulta ng pag-aaral na ito buhat sa mananaliksik sa pagtatapos nito kung aking nanaisin.

6. Pumapayag akong lumahok sa pagsasaliksik na ito batay sa mga kondisyon na nakasaad sa Talastas Kaalaman. Maaari rin akong lumagda sa Pahintulot na ito kung aking nanaisin.

_____ _____

(Lagda at pangalan ng inpormante) **(petsa)**

_____ _____

(Lagda at pangalan ng mananaliksik) **(petsa)**

Appendix F

Top 45 Privatized Government Assets

Government Asset Fully or Partially Disposed	*Amount in million Pesos*
Agro-Industrial Development Corporation (Silay-Saravia)	240.0
Asia Brewery	188.3
Bukidnon Sugar Company	730.0
Cagayan Sugar Corporation	464.0
Carruf Development Corporation	100.1
Cebu Plaza Hotel Corporation	328.0
Continental Manufacturing Corporation	198.4
Crown Fruits & Cannery Corporation	137.6
Davao Sugar Central Company	188.2
Davao Union Cement	216.2
Delta Motors Corporation	959.8
DMG (B)	120.2
Eastern Textile Mills	106.7
First Philippine Holding Company	1,210.7
Floro Cement	508.9
Hi-Cement Corporation	151.8
Hilongos Development Corporation	330.0
Hotel Mirador Inc.	132.0
Iligan Cement	230.9
Isarog Pulp & Paper Company	100.0
Island Cement Corporation	503.0
Mabuhay Vinyl Corporation	299.2
Marbella Club (Manila)	237.2
MERALCO	114.7
MERALCO Foundation, Inc.	2,123.1
Midland Cement Corporation	171.8
National Development Corp. – Asia Industries, Inc.	130.5
National Development Corporation – Galleon Shipping	237.3
Nonoc Mining & Industrial Corporation	7,111.0
Pacific Cement	138.0
Pamplona Redwood Veneer, Inc.	419.6
Passi Sugar Central, Inc.	211.2
Peggy Mills	149.2
PhilAsia Foods	236.9
Philippine Blooming Mills	114.6
Philippine Polyamide Industrial Corporation	156.5
Philippine National Bank Complex	3,096.6
Prime White Cement Corporation	134.0
Resorts Hotel Corporation	120.3
Sanpiro Realty & Development Corporation	248.6
Texfiber Corporation	213.5
Union Industries, Inc.	180.9
United Planters Sugar Mill	500.0
Universal Cement Corporation	150.8
Universal Textile, Inc.	115.7

Source: PMO-DOF

Appendix G.1

List of Operational BOT Projects

Operational Projects	*Sector*	*Agency*	*Project Cost (in US$ million)*
Bakun Hydro Power Plant	power	NPC	83
Bataan EPZA Diesel Plant	power	NPC	31
Bauang Diesel Power Plant	power	NPC	200
Benguet Power Mini-Hydro	power	NPC	22
Bohol Provincial Electric System	power	Bohol Provincial Government	5
Cavite EPZA Diesel Plant	power	NPC	22
General Santos Diesel Power Plant	power	NPC	60
Iligan City Diesel Plants I & II	power	NPC	100
Ilijan Natural Gas Combined Cycle Power Plant	power	NPC	960
Leyte-Cebu Geothermal Power Plant	power	PNOC-EDC	305.5
Leyte-Luzon Geothermal Power Plant	power	PNOC-EDC	676.5
Limay Combined Cycle Gas Turbine Power Plant, Blocks A & B	power	NPC	648
Makban Binary Geothermal Plant	power	NPC	33
Malaya Thermal Power Plant	power	NPC	250
Mindanao Diesel Power Barges	power	NPC	335
Mindanao I & II Geothermal Plants	power	PNOC-EDC	151.9
Naga Thermal Plant Complex	power	NPC	60
Navotas Gas Turbine 4	power	NPC	40
Pagbilao Coal-Fired Power Plant	power	NPC	888
Pinamucan Diesel Power Plant	power	NPC	120
San Roque Multipurpose Project	power	NPC	1,141
Sual Coal-Fired Power Plant	power	NPC	1,200
Subic Diesel Power Plant	power	NPC	120
Zamboanga Diesel Power Plant	power	NPC	110
Light Rail Transit No. 3 (MRT 3)	transport	DOTC	655
Manila-Cavite Toll Expressway	transport	Public Estates Authority (PEA)	131
Metro Manila Skyway (Stage 1)	transport	Phil. Nat'l Const. Corp. (PNCC)	419
Civil Registry System	info. tech.	Nat'l Statistics Office (NSO)	65
Database Infrastructure & Information	info. tech.	Land Transportation	75

Technology System		Office (LTO)	
Bohol Water Supply System	water	Bohol Provincial Government	14.4
Casecnan Multipurpose Project	water	Nat'l Irrigation Administration (NIA)	650
Clark Water Supply & System	water	Clark Dev't Corp. (CDC)	55
Metropolitan Waterworks and Sewerage System (MWSS) Privatization	water	MWSS	7,000
Subic Water & Sewerage System	water	Subic Bay Metropolitan Authority (SBMA)	120
Dapitan Public Market	property development	Quezon City Government	1.3
Mandaluyong Marketplace	property development	Mandaluyong City Government	23
Pabahay sa Riles (Housing Project along the Railroad Tracks)	others	Phil. Nat'l Railway (PNR)/Nat'l Housing Authority (NHA)/Housing & Urban Devt Coordinating Council (HUDCC)	400
Samal Island Resort Estate Development	others	Dept. of Tourism (DOT)	15
Total for Completed/Operational Projects			17185.6

Source: CCPSP

Appendix G.2

List of BOT Contracts Awarded Through Public Bidding

Awarded Publicly Bid Projects (government-identified)	*Sector*	*Agency*	*Project Cost (in $M)*
Binirayan Administrative & Commercial Center	property development	Antique Provincial Government	3.8
Bocaue Public Market & Commercial Center	property development	Bocaue, Bulacan Municipal Government	5
Hemodialysis Center Project	health	Dept. of Health (DOH)	1.4
Land Titling Computerization Project	info. tech.	Land Registration Authority (LRA)	82
Machine Readable Passports & Visas	info. tech.	Dept. of Foreign Affairs (DFA)	50.3
Manila North Luzon Tollway	transport	DPWH	370
Matnog Integrated Bus Terminal	property development	Matnog, Sorsogon Municipal Government	4.4
Mindanao Coal-Fired Thermal Plant	power	NPC	310
Roxas Boulevard Commercial Center	property development	Roxas, Isabela Municipal Government	1
Southern Tagalog Arterial Road	transport	DPWH	73
Tarlac Public Market	property development	Tarlac City Government	3.88
Total for Publicly Bid Projects			904.4

Source: CCPSP

Appendix G.3

List of BOT Contracts Awarded Through the Unsolicited Mode

Awarded Unsolicited Projects (proposed by proponents)	*Sector*	*Agency*	*Project Cost (in $M)*
Caliraya-Botocan-Kaliraya Project	power	NPC	450
NAIA International Passenger Terminal 3	transport	DOTC/Manila Int'l Airport Authority (MIAA)	440
Redevelopment of Port Irene	transport	Cagayan Export Zone Authority	84
San Pascual Cogeneration Power Plant	power	NPC	400
South Luzon Tollway Extension	transport	DPWH/PNCC	478
Talisay City Hall Building Project	property development	Talisay City Government	4
Thermal Coating & Printing Plant	others	Phil. Charity Sweepstakes Office (PCSO)	9
Total for Unsolicited Projects			1865.0

Source: CCPSP

Appendix G.4

List of Completed BOT Projects

Completed Concessions	*Sector*	*Agency*	*Project Cost (in $M)*
Ambuklao Hydro Power Plant	power	NPC	95
Binga Hydro Power Plant	power	NPC	143
Calaca, Batangas Diesel Power Barges	power	NPC	78
Clark Airbase Diesel Plant	power	NPC	4.5
Engineering Island Power Barge	power	NPC	30
Gas Turbine Power Barges	power	NPC	168
Navotas Diesel Power Barge 1 & 2	power	NPC	110
Navotas Gas Turbine 1-3	power	NPC	40
North Harbor Diesel Power Barges	power	NPC	78
Subic, Zambales Diesel Power Plant I	power	NPC	4
Toledo Cebu Coal Thermal Plant	power	NPC	35
Total for Completed Projects			785.5

Source: CCPSP

Appendix H

Highlights on Private Sector Participation in Other Public Infrastructure in the Philippines

a. Transport Sector

On land transport, the Department of Public Works and Highways (DPWH), which is responsible for the construction and maintenance of roads, bridges, flyovers, interchanges and other transport infrastructure, contracts out most construction and repair works to private firms pursuant to pertinent rules and regulations (*e.g.*, PD 1594, as amended, for locally funded projects, and WB or ADB procurement guidelines for foreign assisted ones). Though right-of-way acquisition problems continued to impede project implementation, the participation of private firms generally speeded up construction works, thus facilitating the movement of people and goods. In terms of tollroads, the Philippine National Construction Co. (PNCC, a government-owned entity) maintains and operates the North and South Luzon Expressways. The private sector participation is focused on tollroad projects that are financially viable such as the 'Skyway' (a PNCC-Citra joint venture project). As it is constructed over the South Luzon Expressway (SLEx), the Skyway appears to be an elevated passing lane or by-pass highway which is predominantly used by private cars and air-conditioned passenger buses. So far, its completed length is about 8 kilometers short of the original design most probably due to inadequate financial resources of the joint venture. Its present access ramps are occupying one lane per way of the SLEx which contributes to traffic jams especially during rush hours, thus contradicting the project's main aim of traffic decongestion. According to DOTC, the present route of the Skyway was originally planned for the more efficient elevated light rail mass-transit system (*i.e.*, LRT Line 6), but for some reasons, the multi-lane two-way elevated road was prioritized for implementation by the Ramos administration.

The Department of Transportation and Communications (DOTC) sets the policies and regulations concerning the operation of public transport utilities. In coordination with the Board of Investments, liberalization in road transport resulted in fleet modernization in taxi and provincial bus operations to the benefit of the riding public. Elevated light-rail transits (LRTs) along main urban thoroughfares have benefited the riding public in terms of shorter travel time and convenience but at a higher price compared to the regulated rates for passenger buses (except for air-conditioned units) and jeeps. A private consortium constructed the MetroRail Transit system (MRT 3) along the infamous Epifanio delos Santos Avenue (EDSA is the site of two People Power Revolutions in February 1986 and January 2001) via the BOT scheme. Transport by commuter rail, however, has not been significant in inter-urban travel since the existing railway system needs urgent rehabilitation. The privatization of the operating rail assets of the Philippine National Railways (PNR, a DOTC-attached agency) as recommended by a foreign-assisted study still awaits implementation.

On sea transport, the deregulation of the shipping industry which started in 1992 liberalized the market for competition with the opening of previously monopolized routes, the removal of limitations on the importation of vessels and the dismantling of the one port-one cargo handling system according to DOTC. The widely-acknowledged cartel in domestic shipping through the Confederation of Inter-island Shipping Operators which had captured the regulator (the Maritime Industry Authority, an attached agency of the DOTC) was also dismantled (Alonzo, 2000). Because of deregulation, sea transport fares decreased, domestic shipping companies bought more vessels, and many foreign shipping companies are also exploring prospects in domestic shipping. Yet, maritime safety needs to be given more attention in light of tragic sea accidents, the latest of which is the 25 May 2003 collision at Manila Bay of MV San Nicolas and Super Ferry 12 killing at least 25 persons (Inq7.net, 2003b).

On air transport, the Department of Transportation and Communications (DOTC) regulates private airline operations through the Air Transportation Office (ATO) and the Civil Aeronautics Board (CAB). Main airports are owned by the government and operated by separate airport authorities (*e.g.*, the Manila International Airport Authority for the Ninoy Aquino International Airport [NAIA]). DOTC has also solicited the participation of private investors in constructing airport facilities through the BOT mode, one of which is the controversial contract for the construction of Terminal 3 for the NAIA that was nullified by the Supreme Court on the grounds of being contrary to public policy (San Juan, 2003a). The Philippine Airlines (PAL) is still the dominant airline in the commercial aviation market more particularly for servicing domestic routes despite the repeal of the single-airline government policy in 1988 (Alonzo, 2000). The 1995 liberalization policy of the government allowed the entry of new airlines resulting in open competition which generally offered lower air fares to customers. Since the air transport operators are now allowed to raise fares without approval from the CAB, some new private operators tend to run their business using old and cheaper aircrafts to maximize their profits as in the case of Air Philippines (which was grounded for using 'flying coffins') (according to DOTC). Further, the institutional set-up was caught unprepared in handling the liberalized environment in aviation especially the safety considerations given the increased aircraft fleet. The lack of coordination and the seemingly overlapping functions between the Air Transportation Authority (ATO) and the Civil Aeronautics Board (CAB) could not be overemphasized.

b. Telecommunications Sector

Prior to the telecommunications industry's liberalization in 1993, the sector (consisting of services such as local and long distance telephone services, international gateway facilities, record carrier services, mobile telephone and radio services, and paging services) was virtually monopolized by one private dominant firm, the Philippine Long Distance Telephone Company (PLDT). Although more than 70 duly-franchised telephone companies operated in the entire country before then, all (except PLDT) had limited scale of operation that is confined within small towns and cities (Alonzo, 2000). To open up the sector to competition, an executive order was issued in 1993 mandating the compulsory interconnection of all telecommunications carriers for a universally accessible nationwide telecommunications network and encouraging greater private

sector investment in the sector (according to DOTC and NEDA). The universal access scheme allowed the smaller telephone companies access to remote locations using PLDT's backbone and gateway facilities. The adopted service area policy subdivided the whole country into 11 service areas among eighth (8) new telecommunications carriers such that at least two service providers compete in one service area at arms length (*i.e.*, effectively PLDT and the other). To limit government's role as regulator of the sector, the Philippine Telecommunications Act of 1995 promoted the privatization of government telecommunications facilities (except the public calling offices in unprofitable portions of the archipelago where there is no private sector interest) through public bidding (according to DOTC). Under the liberalized regime, National Telecommunications Commission (NTC), a quasi-judicial government agency, sets the rules and guidelines relative to the establishment as well as operation and maintenance of telecommunications services and facilities, the parameters for negotiations between key competitors, as well as adjudicates disputes between franchised companies which cannot reach an agreement to resolve their differences (NTC, DOTC).

Democratization and globalization pushed the Philippine government to liberalize its telecommunications industry (Dong-Yeob Kim, 2002). The liberalization policy ushered in the entry of other private players into the once impenetrable monopolized industry, and transformed the telecommunications sector into a dynamic business teeming with aggressive competition, mergers, strategies, and counter-strategies that the key players will be hurling against each other. Liberalization has greatly improved the telephone density as well as encouraged technological advancements for the benefit of the consumers and the industry as a whole (Alonzo, 2000). The giant PLDT was pressured to launch a program to address the backlog in land-based telephone demand mainly due to the competition posed by the new entrants. However, the services may have been priced higher than the true market prices in view of the very limited number of players per service area. Further, the recent purchase of sizable PLDT shares by one of the new industry player (*i.e.*, Smart Communications) discriminated to some extent the access of other players to PLDT's backbone and gateway facilities in terms of delayed interconnection of calls/messages. While the technological advancements brought about by the liberalization of the telecommunications industry have leapfrogged information/messages across the more than 7,100 islands throughout the country, the same may have even abetted illegal activities, for the example, the use of satellite phones by the leader of Abu Sayyaf (a kidnap-for-ransom Islamic separatist group in Southern Philippines) in its criminal operations.

c. Water Sector

Water supply and distribution services for the five (5) cities and 32 municipalities in Metro Manila, Rizal, and parts of Cavite and Bulacan involving the delivery of an average of 2,700 million liters per day to some eight (8) million people used to be provided by the Metropolitan Waterworks and Sewerage System (MWSS, a government corporation). In 1997, the MWSS entered into concession agreements with two (2) private corporations dividing on an east and west orientation the operations including the development of new sources, rehabilitation of the distribution lines and servicing 90% of MWSS debt obligations, while MWSS still owns the source, treatment and distribution

facilities, with the government (through the new MWSS Regulatory Office) exercising regulatory power over prices and operations (according to NEDA, MWSS-RO). Immediately upon privatization, the price of water service tremendously decreased. For the west franchise under concession with Maynilad Water Services, Inc. (MWSI), water tariff dropped by about 44% from ₱ 8.78 to ₱ 4.96 per cubic meter. The east franchise under concession with Manila Water Company, Inc. (MWCI) exhibited a much greater decrease of about 74% from ₱ 8.78 to ₱ 2.32 per cubic meter. Water tariffs may be observed to be increasing over the years, but such resulting rates could have been higher without privatization since the same were primarily caused by the worsening peso-dollar exchange rate as applied in paying of MWSS loans. Further, the government was relieved from the financial burden entailed by the operations and maintenance of the water supply and distribution system.

Water Tariff History (in Peso/cubic meter of consumption)

Year	West Franchise	East Franchise
Under MWSS up to 1996	8.78	8.78
1997-1998	4.96	2.32
1999	5.80	2.61
2000	6.13	2.76
2001	10.79	4.22
2002	15.46	10.06

Source: MWSS-Regulatory Office (August 2003)

Not surprisingly, former MWSS employees opposed privatization for fear of layoffs. This issue was settled after the two companies absorbed most of the old personnel and gave substantial early retirement benefits to those who opted to quit (Alonzo, 2000). MWSS privatization likewise stirred speculations of service discrimination more particularly at the east franchise area whose private concessionaire happened to be a land/subdivision developer as well. Since water is a strategic commodity, consumers residing within the properties of the concessionaire were allocated preferential attention in an effort to increase land values (according to NEDA). Recently, the west franchise area private concessionaire has been ordered by an international arbitration panel to post a US$150 million performance bond after hearing the allegations from both the private party (*i.e.*, the Maynilad Water Services, Inc.) and the MWSS (San Juan, 2003b). The Maynilad Water Services, Inc. invoked the termination of its 25-year agreement after failing to get the rate increase it sought. MWSS counterclaimed that the concessionaire failed to infuse the required additional funding support from its stockholders amounting to US$80 million in equity and failed to make any progress in reducing system losses (or non-revenue water arising from pipeline leaks and illegal connections) as called for in the concession agreement.

For the rest of the country, individual households in more densely populated cities and towns are provided with piped water services by local water districts (according to NEDA). The Local Water Utilities Administration (LWUA), a government-owned corporation responsible for sourcing and providing 'soft' loans and technical assistance,

assists in the formation of water districts in such cities and towns. For the less densely populated areas and regions where the setting up of commercial water districts is not viable, the Department of Public Works and Highways (DPWH), in coordination with the Department of Interiors and Local Government (DILG) assist the concerned local government units (LGUs) in developing water sources such as wells and springs, and communal faucet systems, as well as in enhancing the capabilities of LGUs to implement/operate their own water supply systems.

Other than the MWSS Concessions, LWUA proposed two (2) water supply projects via the BOT mode. One is the Bulacan Central Bulk Water Supply Project which aimed to supply bulk water to eight (8) water districts in the province of Bulacan. However, the BOT contract agreement was terminated in February 2003 prior to the implementation of the project for reasons beyond the control of the contracting parties. For more than one year after signing the contract, the BOT project failed to secure the final approval from the Office of the President and that the recipient water districts failed to complete their pipeline networks that will distribute the bulk water to their coverage areas. The other project involves the operation and development of the Legaspi City Water District as proposed under the contract-add-operate-transfer (CAOT) scheme. Approval of the contract was put on hold in view of the need for a proper regulatory authority for the project and the parametric formula for automatic tariff adjustment. After three (3) years of pending approval, the private proponent withdrew its unsolicited proposal since the financial viability of the project has already been significantly altered.

Appendix I

List of Electric Cooperatives with ERC-Approved Unbundled Rates

Name of Electric Cooperative (EC)	*Previous Rate*	*Unbundled Rate*
Region I (Ilocos Region)		
Ilocos Norte Electric Cooperative, Inc. (INEC)	4.6798	4.6958
Ilocos Sur Electric Cooperative, Inc. (ISECO)	4.6259	4.3942
Cordillera Autonomous Region (CAR)		
Ifugao Electric Cooperative, Inc. (IFELCO)	6.5449	5.6161
Mt. Province Electric Cooperative, Inc. (MOPRECO)	5.9331	5.7550
Region II (Cagayan Valley)		
Batanes Electric Cooperative, Inc. (BATANELCO)	3.6000	5.9693
Cagayan I Electric Cooperative, Inc. (CAGELCO I)	4.3760	4.3584
Cagayan II Electric Cooperative, Inc. (CAGELCO II)	5.3060	5.1065
Nueva Vizcaya Electric Cooperative, Inc. (NUVELCO)	5.0709	4.8917
Quirino Electric Cooperative, Inc. (QUIRELCO)	4.2135	6.0313
Region III (Central Luzon)		
Pampanga I Electric Cooperative, Inc.(PELCO I)	4.7847	4.5106
Peninsula Electric Cooperative, Inc. (PENELCO)	4.3962	4.3789
Zambales I Electric Cooperative, Inc. (ZAMECO I)	4.6935	4.8057
Region IV (Southern Tagalog)		
Batangas I Electric Cooperative, Inc. (BATELCO I)	4.7346	4.4145
Busuanga Electric Cooperative, Inc. (BISELCO)	6.9154	6.5770
First Laguna Electric Cooperative, Inc. (FLECO)	4.9127	4.5242
Occidental Mindoro Electric Cooperative, Inc. (OMECO)	6.2050	5.6649
Region V (Bicol Region)		
Camarines Norte Electric Cooperative, Inc. (CANORECO)	5.0413	4.8794
Camarines Sur I Electric Cooperative, Inc. (CASURECO I)	5.6910	5.3256
Camarines Sur II Electric Coop., Inc. (CASURECO II)	4.5273	4.2852
First Catanduanes Electric Cooperative, Inc. (FICELCO)	6.4284	7.7570
Ticao Island Electric Cooperative, Inc. (TISELCO)	5.5593	7.2237
Region VI (Western Visayas)		
Iloilo I Electric Cooperative, Inc. (ILECO I)	4.6040	4.7061
V-M-C Rural Electric Cooperative, Inc. (VRESCO)	5.0133	5.0321
Region VII (Central Visayas)		
Bantayan Electric Cooperative, Inc. (BANELCO)	7.3330	7.4034
Cebu I Electric Cooperative, Inc. (CEBECO I)	4.3653	4.3394
Cebu II Electric Cooperative, Inc. (CEBECO II)	4.3648	4.4054
Province of Siquijor Electric Coop., Inc. (PROSIELCO)	8.1925	7.9725
Region VIII (Eastern Visayas)		
Leyte IV Electric Cooperative, Inc. (LEYECO IV)	5.0994	5.2294
Region IX (Western Mindanao)		
Zamboanga del Sur II Electric Coop. (ZAMSURECO II)	3.7263	3.2464
Zamboanga del Norte Electric Cooperative, Inc. (ZANECO)	3.4280	3.6657
CARAGA Region		
Siargao Island Electric Cooperative, Inc. (SIARELCO)	5.4849	5.4714
Region XII (Central Mindanao)		
South Cotabato I Electric Coop., Inc. (SOCOTECO I)	3.1641	2.9782

Source: NEA & ERC as of September 2003

Appendix J

Rate Reductions due to Loan Condonation

No.	*Name of Electric Cooperative*	*Loan Condonation* Rate Reduction	ERC Approval Date
Region I (Ilocos Region)			
1	Central Pangasinan Electric Coop. (CENPELCO)	pending	
2	Ilocos Norte Electric Coop. (INEC)	(0.07390)	21-Mar-03
3	Ilocos Sur Electric Coop. (ISECO)	(0.08750)	21-Mar-03
4	La Union Electric Coop. (LUELCO)	(0.08160)	21-Mar-03
5	Pangasinan I Electric Coop. (PANELCO I)	(0.14760)	21-Mar-03
6	Pangasinan III Electric Coop. (PANELCO III)	pending	
Cordillera Autonomous Region (CAR)			
7	Abra Electric Coop. (ABRECO)	(0.27920)	5-Jun-03
8	Benget Electric Coop. (BENECO)	(0.10030)	5-Jun-03
9	Ifugao Electric Coop. (IFELCO)	(0.45210)	5-Jun-03
10	Kalinga-Apayao Electric Coop. (KAELCO)	(0.23670)	12-Aug-03
11	Mountain Province Electric Coop. (MOPRECO)	(0.28930)	5-Jun-03
Region II (Cagayan Valley)			
12	Batanes Electric Coop. (BATANELCO)	(0.10270)	12-Aug-03
13	Cagayan I Electric Coop. (CAGELCO I)	(0.56600)	3-Jun-03
14	Cagayan II Electric Coop. (CAGELCO II)	(0.18650)	3-Jun-03
15	Isabela I Electric Coop. (ISELCO I)	(0.08360)	3-Jun-03
16	Isabela II Electric Coop. (ISELCO II)	(0.10340)	3-Jun-03
17	Nueva Vizcaya Electric Coop. (NUVELCO)	(0.69200)	12-Aug-03
18	Quirino Electric Coop. (QUIRELCO)	(0.54580)	3-Jun-03
Region III (Central Luzon)			
19	Nueva Ecija I Electric Coop. (NEECO I)	(0.31520)	19-Jun-03
20	Nueva Ecija II Electric Coop. (NEECO II)	(0.17640)	19-Jun-03
21	Nueva Ecija South Electric Coop-NEA Mgt Team	pending	
22	Pampanga Rural Electric Service Coop. (PRESCO)	(0.08160)	8-Jul-03
23	Pampanga I Electric Coop. (PELCO I)	(0.15780)	8-Jul-03
24	Pampanga II Electric Coop. (PELCO II)	(0.17310)	8-Jul-03
25	Pampanga III Electric Coop. (PELCO III)	(0.07460)	19-Jun-03
26	Peninsula Electric Coop. (PENELCO)	(0.08910)	8-Jul-03
27	San Jose City Electric Coop. (SAJELCO)	did not submit PIP/REP	
28	Tarlac I Electric Coop. (TARELCO I)	(0.22100)	19-Jun-03
29	Tarlac II Electric Coop. (TARELCO II)	(0.22570)	19-Jun-03
30	Zambales I Electric Coop. (ZAMECO I)	(0.05040)	19-Jun-03
31	Zambales II Electric Coop. (ZAMECO II)	(0.29090)	19-Jun-03

Region IV (Southern Tagalog)			
32	Aurora Electric Coop. (AURELCO)	(0.30000)	4-Jun-03
33	Batangas I Electric Coop. (BATELEC I)	(0.15300)	4-Jun-03
34	Batangas II Electric Coop. (BATELEC II)	(0.24100)	10-Mar-03
35	Busuanga Electric Coop. (BISELCO)	(0.33760)	22-Sep-03
36	First Laguna Electric Coop. (FLECO)	(0.52700)	4-Jun-03
37	First Quezon Electric Coop. (QUEZELCO I)	(0.16080)	10-Mar-03
38	Lubang Electric Coop. (LUBELCO)	(0.53090)	21-Jul-03
39	Marinduque Electric Coop. (MARELCO)	(0.19440)	21-Jul-03
40	Occidental Mindoro Electric Coop. (OMECO)	(0.13820)	4-Jun-03
41	Oriental Mindoro Electric Coop. (ORMECO)	(0.07140)	10-Mar-03
42	Palawan Electric Coop. (PALECO)	(0.06920)	22-Sep-03
43	Quezon II Electric Coop. (QUEZELCO II)	(0.12500)	21-Jul-03
44	Romblon Electric Coop. (ROMELCO)	pending	
45	Tablas Island Electric Coop. (TIELCO)	(0.13610)	10-Mar-03
Region V (Bicol Region)			
46	Albay Electric Coop. (ALECO)	(0.11050)	5-Jun-03
47	Camarines Norte Electric Coop. (CANORECO)	(0.05270)	1-Apr-03
48	Camarines Sur I Electric Coop. (CASURECO I)	(0.76420)	1-Apr-03
49	Camarines Sur II Electric Coop. (CASURECO II)	(0.06140)	1-Apr-03
50	Camarines Sur III Electric Coop. (CASURECO III)	(0.36560)	2-Sep-03
51	Camarines Sur IV Electric Coop. (CASURECO IV)	(0.49480)	1-Apr-03
52	First Catanduanes Electric Coop. (FICELCO)	(0.19650)	5-Jun-03
53	Masbate Electric Coop. (MASELCO)	(0.12340)	2-Sep-03
54	Sorsogon I Electric Coop. (SORECO I)	(0.25200)	5-Jun-03
55	Sorsogon II Electric Coop. (SORECO II)	(0.32410)	5-Jun-03
56	Ticao Island Electric Coop. (TISELCO)	(0.71410)	2-Sep-03
Region VI (Western Visayas)			
57	Aklan Electric Coop. (AKELCO)	(0.04070)	9-Jul-03
58	Antique Electric Coop. (ANTECO)	(0.18840)	10-Mar-03
59	Capiz Electric Coop. (CAPELCO)	(0.09020)	4-Mar-03
60	Central Negros Electric Coop. (CENECO)	(0.07490)	9-Jul-03
61	Guimaras Electric Coop. (GUIMELCO)	(0.18280)	30-May-03
62	Iloilo I Electric Coop. (ILECO I)	(0.09220)	10-Mar-03
63	Iloilo II Electric Coop. (ILECO II)	(0.11030)	10-Mar-03
64	Iloilo III Electric Coop. (ILECO III)	(0.13560)	30-May-03
65	Negros Occidental Electric Coop. (NOCECO)	(0.19780)	30-May-03
66	V-M-C Rural Electric Service Coop. (VRESCO)	(0.21700)	9-Jul-03
Region VII (Central Visayas)			
67	Bantayan Electric Coop. (BANELCO)	(0.09460)	17-Mar-03
68	Bohol I Electric Coop. (BOHECO I)	(0.10260)	17-Mar-03
69	Bohol II Electric Coop. (BOHECO II)	(0.22430)	9-Jul-03
70	Camotes Electric Coop. (CELCO)	(0.14490)	9-Jul-03
71	Cebu I Electric Coop. (CEBECO I)	(0.02200)	9-Jul-03
72	Cebu II Electric Coop. (CEBECO II)	(0.01660)	17-Mar-03
73	Cebu III Electric Coop. (CEBECO III)	(0.01210)	10-Sep-03

74	Negros Oriental I Electric Coop. (NORECO I)	(0.05056)	9-Jul-03
75	Negros Oriental II Electric Coop. (NORECO II)	(0.03480)	17-Mar-03
76	Province of Siquijor Electric Coop. (PROSIELCO)	(0.36520)	9-Jul-03
Region VIII (Eastern Visayas)			
77	Biliran Electric Coop. (BILECO)	(0.21330)	7-May-03
78	Don Orestes Romualdez Electric Coop. (LEYECO I)	(0.02074)	5-Aug-03
79	Eastern Samar Electric Coop.(ESAMELCO)	(0.19830)	7-May-03
80	Leyte II Electric Coop. (LEYECO II)	(0.05620)	7-May-03
81	Leyte III Electric Coop. (LEYECO III)	(0.32580)	5-Aug-03
82	Leyte IV Electric Coop. (LEYECO IV)	(0.21830)	5-Aug-03
83	Leyte V Electric Coop. (LEYECO V)	(0.04410)	7-May-03
84	Northern Samar Electric Coop. (NORSAMELCO)	(0.02100)	5-Aug-03
85	Samar I Electric Coop. (SAMELCO I)	(0.12100)	10-Sep-03
86	Samar II Electric Coop. (SAMELCO II)	(0.40020)	7-May-03
87	Southern Leyte Electric Coop. (SOLECO)	(0.58440)	5-Aug-03
Autonomous Region for Muslim Mindanao (ARMM)			
88	Basilan Electric Coop. (BASELCO)	(0.60100)	19-Jun-03
89	Cagayan de Sulu Electric Coop. (CASELCO)	did not submit PIP/REP	
90	Lanao del Sur Electric Coop. (LASURECO)	did not submit PIP/REP	
91	Maguindanao Electric Coop. (MAGELCO)	(0.10790)	19-Jun-03
92	Siasi Island Electric Coop. (SIASELCO)	did not submit PIP/REP	
93	Sulu Electric Coop. (SULECO)	(0.16650)	10-Sep-03
94	Tawi-Tawi Electric Coop. (TAWELCO)	(0.08700)	18-Jul-03
Region IX (Western Mindanao)			
95	Zamboanga City Electric Coop. (ZAMCELCO)	(0.37700)	19-Jun-03
96	Zamboanga del Norte Electric Coop. (ZANECO)	(0.12900)	27-Aug-03
97	Zamboanga del Sur I Elec. Coop. (ZAMSURECO I)	(0.10000)	19-Jun-03
98	Zamboanga del Sur II Elec. Coop. (ZAMSURECO II)	(0.16010)	27-Aug-03
Region X (Northern Mindanao)			
99	Bukidnon II Electric Coop. (BUSECO)	(0.12620)	7-May-03
100	Camiguin Electric Coop. (CAMELCO)	(0.12980)	7-May-03
101	First Bukidnon Electric Coop. (FIBECO)	(0.17200)	1-Apr-03
102	Lanao del Norte Electric Coop. (LANECO)	(0.12140)	7-May-03
103	Misamis Occidental I Electric Coop. (MOELCI I)	(0.25030)	1-Apr-03
104	Misamis Occidental II Electric Coop. (MOELCI II)	(0.21140)	1-Apr-03
105	Misamis Oriental I Electric Coop. (MORESCO I)	(0.13440)	7-May-03
106	Misamis Oriental II Electric Coop. (MORESCO II)	(0.33000)	1-Apr-03
Region XI (Southern Mindanao)			
107	Davao del Norte Electric Coop. (DANECO)	(0.08660)	3-Jun-03
108	Davao del Sur Electric Coop. (DASURECO)	(0.06430)	22-Sep-03
109	Davao Oriental Electric Coop. (DORECO)	(0.38100)	3-Jun-03

Region XII (Central Mindanao)			
110	North Cotabato Electric Coop. (COTELCO)	(0.08990)	7-Jul-03
111	South Cotabato I Electric Coop. (SOCOTECO I)	(0.06870)	7-Jul-03
112	South Cotabato II Electric Coop. (SOCOTECO II)	(0.02485)	3-Jun-03
113	Sultan Kudarat Electric Coop. (SUKELCO)	(0.05300)	7-Jul-03
CARAGA Region			
114	Agusan del Norte Electric Coop. (ANECO)	(0.08390)	1-Apr-03
115	Agusan del Sur Electric Coop. (ASELCO)	(0.32030)	1-Apr-03
118	Dinagat Island Electric Coop. (DIELCO)	(0.17060)	7-May-03
117	Siargao Electric Coop. (SIARELCO)	(0.15910)	1-Apr-03
116	Surigao del Norte Electric Coop. (SURNECO)	(0.22620)	27-May-03
119	Surigao del Sur I Electric Coop. (SURSECO I)	(0.24530)	1-Apr-03
120	Surigao del Sur II Electric Coop. (SURSECO II)	(0.38280)	27-May-03

Source: Energy Regulatory Commission

Appendix K

Matrix of Fieldwork Information: Barangay Bagong Sikat, Cabiao, Nueva Ecija

	HH 1	*HH 2*	*HH 3*	*HH 4*	*HH 5*	*HH 6*	*HH 7*
No. of Family Members in the Household	3	5	2	4	8	7	6
Livelihood/Way of Earning a Living	Farm	Farm	Farm	Farm	Farm	Farm & Employment	Employment
Highest Educational Attainment							
Family Head	Elem. Grad.	Elem. Grad.	Elem. Grad.	Elem. Grad.	Elem. Grad.	HS Grad.	Elem. Grad.
Spouse	Elem. Grad.	Elem. Grad.	Elem. Grad.	Elem. Grad.	1st-yr HS	HS Grad.	-dead-
First Child	BS Nursing	HS Grad.	HS Grad.	Elem. Grad.		HS Grad.	BS Nursing
Second Child	HS Grad.	In HS	-	in HS	College 3rd-yr HS	HS Grad.	in College
Third Child	in HS	Elem. Grad.	-	-	HS Grad	HS Grad.	in College
Next Children	-	in Elem.	-	-	in HS /Elem.	HS Grad.	BS Nursing
Monthly Income	11400	6900	2200	5000	2200	12000	40000
Monthly Expenses	10000	6000	1000	3000	1500	9000	10000
Monthly Electricity Bill	700	220	(151)	350	140	780	2800
% of Electric Bill Over Expense	7.00%	3.67%	-42.10%	11.67%	9.33%	8.67%	28.00%
% of Electric Bill Over Income	6.14%	3.19%	-19.14%	7.00%	6.36%	6.50%	7.00%
Dwelling Description							
Material	concrete	concrete	semi-concrete	semi-concrete	wood	semi-concrete	concrete
No. of Bedrooms	2	2	1	2	-	2	3
Property	owned	owned	owned	owned	owned	owned	owned
Electrical Appliances in the Household?	*HH 1*	*HH 2*	*HH 3*	*HH 4*	*HH 5*	*HH 6*	*HH 7*
Lighting Fixtures	Yes	Yes	kerosene	Yes	Yes	Yes	Yes
Radio	Yes	X	Battery	X	Yes	Yes	Yes
Karaoke	Yes	Yes	X	Yes	X	X	X
Television	Yes	Yes	X	Yes	Yes	Yes	Yes
DVD, VCD, VHS, Betamax	Yes	Yes	X	Yes	X	X	Yes
Refrigerator	Yes	X	X	X	X	X	Yes
Flat Iron	Yes	Yes	coal	Yes	Bottle	Yes	Yes
Electric Fan	Yes	Yes	X	Yes	X	Yes	Yes
Rice Cooker	Yes	X	X	X	X	Yes	Yes
Electric Stove	Yes	LPG	wood	LPG	wood	LPG	Yes
Turbo Broiler	Yes	X	X	X	X	X	X
Freezer	Yes	X	X	X	X	X	X

Air-Conditioner	X	X	X	X	X	X	Yes
Water Pump/Booster	Yes	X	X	X	X	X	X
Others	vacuum cleaner washing machine					washing machine	

	HH 1	***HH 2***	***HH 3***	***HH 4***	***HH 5***	***HH 6***	***HH 7***
Year When Household was Energized	1994	1994	not yet	1994	1994	1994	1999
Familiar with Power Sector Reforms?	No	PPA Only	No	No	No	No	PPA only
Benefits Derived?	***HH 1***	***HH 2***	***HH 3***	***HH 4***	***HH 5***	***HH 6***	***HH 7***
On Education	Yes	Yes	-	Yes	Yes	Yes	Yes
On Access to Information	Yes	Yes	-	Yes	Yes	Yes	Yes
On Entertainment or Recreation	Yes	Yes	-	Yes	Yes	Yes	Yes
On Health and Nutrition	Yes	Yes	-	-	-	Yes	Yes
On Livelihood Opportunities*	Yes*	Yes*	-	-	-	-	-
In Doing Household Chores	Yes	Yes	-	Yes	Yes	Yes	Yes
On Comfort, Convenience & Security	Yes	Yes	-	Yes	Yes	Yes	Yes
Consumer Satisfaction	***HH 1***	***HH 2***	***HH 3***	***HH 4***	***HH 5***	***HH 6***	***HH 7***
Hours of Electric Service	24	24	-	24	24	24	24
Interruption Frequency	fewer	fewer	-	same	fewer	fewer	fewer
Voltage Fluctuations	lesser	lesser	-	-	-	lesser	lesser
Price of Electricity	higher	higher	-	higher	higher	higher	higher
Customer Relations w/ Distributor	better	better	-	better	better	better	same
Barriers to Access	cost	cost	-	-	-	-	cost
Do you think the above improved recently?	Yes	Yes	-	No	Yes	Yes	Yes
Suggestion for Improvement	*fix poles against grounding* * ice-making	*change transformers* *battery recharging		*fix poles against grounding*		-	-

Appendix K – *(continued)*

	HH 8	*HH 9*	*HH 10*	*HH 11*	*HH 12*	**Average**
No. of Family Members in the Household	4	5	5	4	4	**4.75**
Livelihood/Way of Earning a Living	Employment	Farm	Farm	Farm	Farm & Fishing	
Highest Educational Attainment						
Family Head	BSIME 2nd-yr	Elem. Grad.	Elem. Grad.	HS Grad.	Elem. Grad.	
Spouse	College	Elem. Grad.	Elem. Grad.	-dead-	Elem. Grad.	
First Child	in HS	In Elem.	in Elem.	in Elem.	in HS	
Second Child	In Elem.	In Elem.	in Elem.	in Elem.	in Elem.	
Third Child		In Elem.	Pre-school			
Next Children						
	HH 8	*HH 9*	*HH 10*	*HH 11*	*HH 12*	
Monthly Income	12000	3000	3500	3500	5000	**8892**
Monthly Expenses	7000	2000	3000	3000	4000	**4958**
Monthly Electricity Bill	700	160	180	100	180	**526**
% of Electric Bill Over Expense	10.00%	8.00%	6.00%	3.33%	4.50%	**10.61%**
% of Electric Bill Over Income	5.83%	5.33%	5.14%	2.86%	3.60%	**5.91%**
Dwelling Description						
Material	semi-concrete	semi-concrete	concrete	nipa	semi-concrete	
No. of Bedrooms	2	1	2	1	2	
Property	owned	owned	owned	owned	owned	
Electrical Appliances in the Household?	*HH 8*	*HH 9*	*HH 10*	*HH 11*	*HH 12*	
Lighting Fixtures	Yes	Yes	Yes	Yes	Yes	
Radio	Yes	X	Yes	Yes	Yes	
Karaoke	X	X	X	X	X	
Television	Yes	Yes	Yes	Yes	Yes	
DVD, VCD, VHS, Betamax	Yes	X	X	X	Yes	
Refrigerator	Yes	X	X	X	X	
Flat Iron	Yes	X	Yes	X	Yes	
Electric Fan	Yes	Yes	Yes	Yes	Yes	
Rice Cooker	X	X	X	X	X	
Electric Stove	LPG	wood	kerosene	kerosene	kerosene	
Turbo Broiler	X	X	X	X	X	
Freezer	X	X	X	X	X	
Air-Conditioner	X	X	X	X	X	
Water Pump/Booster	X	X	X	X	X	
Others						
	HH 8	*HH 9*	*HH 10*	*HH 11*	*HH 12*	
Year When Household was Energized	1995	2000	1998	1998	1995	
Familiar with Power Sector Reforms?	PPA only	No	No	No	No	

Benefits Derived?	***HH 8***	***HH 9***	***HH 10***	***HH 11***	***HH 12***
On Education	Yes	Yes	Yes	Yes	Yes
On Access to Information	Yes	Yes	Yes	Yes	Yes
On Entertainment/Recreation	Yes	Yes	Yes	Yes	Yes
On Health and Nutrition	Yes	-	Yes	-	-
On Livelihood Opportunities*	-	-	-	-	-
In Doing Household Chores	Yes	Yes	-	Yes	-
On Comfort, Convenience & Security	Yes	Yes	Yes	Yes	Yes

Consumer Satisfaction	***HH 8***	***HH 9***	***HH 10***	***HH 11***	***HH 12***
Hours of Electric Service	24	24	24	24	24
Interruption Frequency	fewer	Fewer	fewer	fewer	same
Voltage Fluctuations	lesser	-	-	-	-
Price of Electricity	higher	higher	higher	higher	higher
Customer Relations w/ Distributor	better	same	better	better	same
Barriers to Access	cost	-	-	-	-
Do you think the above improved recently?	Yes	No	Yes	Yes	No
Suggestion for Improvement	-	*Service improvement*	-	-	*fix poles against grounding*

Appendix L

Matrix of Fieldwork Information: Sitio Barangka, Barangay Pulo, San Isidro, Nueva Ecija

	HH 1	*HH 2*	*HH 3*	*HH 4*	*HH 5*	*HH 6*	*HH 7*
No. of Family Members in the Household	6	4	5	2	6	7	4
Livelihood/Way of Earning a Living	Farm	Sash Worker	Farm	Farm	Farm	Farm	Farm & Store
Highest Educational Attainment							
Family Head	Elem Grad	BSCE	Elem Grad	Elem Grad	HS Grad	Elem Grad	HS Grad
Spouse	Elem Grad	Elem Grad	HS Grad	Elem Grad	Elem Grad	Elem Grad	HS Grad
First Child	in Elem.	in HS	In Elem.	-	in College	in HS	in HS
Second Child	in Elem.	in HS	In Elem.	-	in HS	in HS	in HS
Third Child	in Elem.	-	In Elem.	-	in HS	in Elem.	-
Next Children	in Elem.	-	-	-	in Elem.	in Elem.	-
Monthly Income	3500	5000	-	3000	4000	3500	5000
Monthly Expenses	2500	3000	2600	2500	3000	3000	4500
Monthly Electricity Bill	100	400	150	100	350	150	650
% of Elec. Bill Over Expense	*4.00%*	*13.33%*	*5.77%*	*4.00%*	*11.67%*	*5.00%*	*14.44%*
% of Elec. Bill Over Income	*2.86%*	*8.00%*	-	*3.33%*	*8.75%*	*4.29%*	*13.00%*
Dwelling Description							
Material	wood	semi-concrete	concrete	semi-concrete	wood	semi-concrete	wood
No. of Bedrooms	2	2	3	1	2	3	2
Property	owned	owned	owned	owned	owned	owned	owned
Electrical Appliances in the Household?	***HH 1***	***HH 2***	***HH 3***	***HH 4***	***HH 5***	***HH 6***	***HH 7***
Lighting Fixtures	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Radio	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Karaoke	X	X	X	X	X	X	X
Television	Yes	Yes	Yes	Yes	Yes	Yes	Yes
DVD, VCD, VHS, Betamax	X	X	X	X	X	X	X
Refrigerator	X	X	X	X	Yes	X	X
Flat Iron	Coal	Yes	Yes	Yes	Yes	Yes	Yes
Electric Fan	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Rice Cooker	X	X	X	X	X	X	X
Electric Stove	wood	LPG	kerosene	wood	kerosene	kerosene	LPG
Turbo Broiler	X	X	X	X	X	X	X
Freezer	X	X	X	X	X	X	X

Air-Conditioner	X	X	X	X	X	X	X
Water Pump/Booster	X	X	X	X	X	X	X
Others							
Year When Household was Energized	2001	1993	1993	1991	1985	1984	1982
Familiar with Power Sector Reforms?	No	PPA only	No	No	No	No	No
Benefits Derived?	***HH 1***	***HH 2***	***HH 3***	***HH 4***	***HH 5***	***HH 6***	***HH 7***
On Education	Yes	Yes	Yes	Yes	Yes	Yes	Yes
On Access to Information	Yes	Yes	Yes	Yes	Yes	Yes	Yes
On Entertainment or Recreation	Yes	Yes	Yes	Yes	Yes	Yes	Yes
On Health and Nutrition	Yes	Yes	Yes	Yes	Yes	Yes	Yes
On Livelihood Opportunities	-	Yes	-	-	-	-	Yes
In Doing Household Chores	Yes	Yes	Yes	Yes	Yes	Yes	Yes
On Comfort, Convenience & Security	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Consumer Satisfaction	***HH 1***	***HH 2***	***HH 3***	***HH 4***	***HH 5***	***HH 6***	***HH 7***
Hours of Electric Service	24	24	24	24	24	24	24
Interruption Frequency	fewer	fewer	fewer	same	fewer	fewer	fewer
Voltage Fluctuations	-	lesser	-	-	-	-	-
Price of Electricity	higher	higher	higher	higher	higher	higher	higher
Customer Relations w/ Distributor	same	better	better	-	better	better	Same
Barriers to Access	no money	cost	-	-	-	-	No money
Do you think the above improved recently?	No	Yes	Yes	No	Yes	Yes	Yes
Suggestion for Improvement	-	*fix D/L lines* *Change posts*	-	-	-	-	-

Appendix L – *(continued)*

	HH 8	***HH 9***	***HH 10***	***HH 11***	***HH 12***	***HH 13***	**Average**
No. of Family Members in the Household	5	5	4	4	5	5	**4.77**
Livelihood/Way of Earning a Living	Farm & Fishing	Farm	Farm & Employment	Farm	Farm	Farm	
Highest Educational Attainment							
Family Head	Elem Grad	Elem Grad	Elem Grad	Elem Grad	Elem Grad	Elem Grad	
Spouse	Elem Grad	Elem Grad	Elem Grad	Elem Grad	Elem Grad	Elem Grad	
First Child	HS Grad	Elem Grad	Elem Grad	HS Grad	Elem Grad	in HS	
Second Child	HS Grad	Elem Grad	in HS	HS Grad	HS Grad	in HS	
Third Child	HS Grad	in Elem	-	-	in HS	in Elem	
Next Children	-	-	-	-	-	-	
	HH 8	HH 9	HH 10	HH 11	HH 12	HH 13	
Monthly Income	5000	6000	8500	3500	5000	3500	**4269**
Monthly Expenses	3000	4000	3500	3000	4500	3000	**3238**
Monthly Electricity Bill	300	1000	500	700	500	100	**385**
% of Elec. Bill Over Expense	*10.00%*	*25.00%*	*14.29%*	*23.33%*	*11.11%*	*3.33%*	**11.18%**
% of Elec. Bill Over Income	*6.00%*	*16.67%*	*5.88%*	*20.00%*	*10.00%*	*2.86%*	**7.82%**
Dwelling Description							
Material	semi-concrete	concrete	concrete	wood	semi-concrete	concrete	
No. of Bedrooms	2	2	2	2	3	2	
Property	owned	owned	owned	owned	owned	owned	
Electrical Appliances in the Household?	***HH 8***	***HH 9***	***HH 10***	***HH 11***	***HH 12***	***HH 13***	
Lighting Fixtures	Yes	Yes	Yes	Yes	Yes	Yes	
Radio	Yes	Yes	Yes	Yes	Yes	Yes	
Karaoke	X	Yes	X	X	X	X	
Television	Yes	Yes	Yes	Yes	Yes	Yes	
DVD, VCD, VHS, Betamax	X	Yes	X	X	Yes	X	
Refrigerator	X	X	X	X	Yes	X	
Flat Iron	Yes	Yes	Yes	Yes	Yes	Yes	
Electric Fan	Yes	Yes	Yes	Yes	Yes	Yes	
Rice Cooker	X	X	X	Yes	X	X	
Electric Stove	LPG	LPG	LPG	kerosene	LPG	kerosene	
Turbo Broiler	X	X	X	X	X	X	
Freezer	X	X	X	X	X	X	
Air-Conditioner	X	X	X	X	X	X	
Water Pump/Booster	X	X	X	X	X	X	
Others							

Year When Household was Energized	1981	1976	1975	1975	1972	1972
Familiar with Power Sector Reforms?	No	PPA only	No	No	No	No
Benefits Derived?	***HH 8***	***HH 9***	***HH 10***	***HH 11***	***HH 12***	***HH 13***
On Education	Yes	Yes	-	-	Yes	Yes
On Access to Information	Yes	Yes	Yes	Yes	Yes	Yes
On Entertainment/Recreation	Yes	Yes	Yes	Yes	Yes	Yes
On Health and Nutrition	Yes	Yes	Yes	Yes	Yes	Yes
On Livelihood Opportunities	-	-	-	-	-	-
In Doing Household Chores	Yes	Yes	Yes	Yes	Yes	Yes
On Comfort, Convenience & Security	Yes	Yes	Yes	Yes	Yes	Yes
Consumer Satisfaction	***HH 8***	***HH 9***	***HH 10***	***HH 11***	***HH 12***	***HH 13***
Hours of Electric Service	24	24	24	24	24	24
Interruption Frequency	fewer	fewer	fewer	fewer	fewer	fewer
Voltage Fluctuations	-	lesser	-	-	-	-
Price of Electricity	higher	higher	higher	higher	higher	higher
Customer Relations w/ Distributor	better	better	better	better	-	better
Barriers to Access	no money	-	-	-	-	-
Do you think the above improved recently?	Yes	Yes	Yes	Yes	No	Yes
Suggestion for Improvement	-	-	-	-	-	-

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