



Philippines



The Philippines, officially known as the Republic of the Philippines, is an archipelagic country located in Southeast Asia with Manila as its capital city. The Philippine archipelago comprises 7,107 islands in the western Pacific Ocean, sharing maritime borders with Indonesia, Malaysia, Palau, the Republic of China (Taiwan), and Vietnam.

The Philippine power industry has three major, separate sectors: generation, transmission and distribution.

Generation used to be a monopoly of the National Power Corporation (NPC) until 1987 when the generation sector was opened to private investors. At present, a number of IPPs generate and sell electricity to NPC and other customers. Meanwhile, the passage of Republic Act No. 9136 or the Electric Power Industry Reform Act (EPIRA) of 2001, provided for the privatisation of NPC's generation and transmission assets, and the restructuring of the electricity supply industry.

The other monopoly business of NPC is the transmission of electricity to distributors and large industrial customers via government-owned medium and high-voltage wires.

Pursuant to the EPIRA, the National Transmission Corporation (TransCo) was created to assume NPC's transmission function, while the Power Sector Assets and Liabilities Management (PSALM) Corporation was created to take on the ownership of NPC's assets and liabilities; thus NPC was left with the O&M of its own power plants.



Photo: Bloomberg

Power Generation

The system peak demand of the country reached 8,987 MW for 2007. System peak demand in Luzon registered 6,643 MW, where TransCo's largest distribution utility customer, MERALCO, is being served.

For 2007, almost seventy-five percent of power in Luzon was transmitted to MERALCO franchise area. This comprises of supply coming from NPC-owned/contracted power plants and the three (3) Independent Power Producers (IPPs) supplying MERALCO.

Compared to the level in 2006, the system peak demand for the country grew by 3.1% in 2007.

System Peak Demand Forecast

The demand projection of the National

PROFILE

Capital	Manila	Installed Capacity	15,937 MW
Area	300,000 km ²	Population Electrified	96%
Population	88.57 million	Main Voltages (kV)	500, 350, 230, 138,
GDP	US\$161.984 Billion		115, 69
Currency	Philippine Peso	Natural Resources	natural gas, coal, hydro, renewables

Transmission Corporation (TransCo) follows the latest demand projections of the Department Of Energy (DOE), denoted as the Reference Case in the 2006 Philippine Energy Plan (PEP) Update. TransCo, the same with National Power Corporation (NPC), has submitted its own set of forecasts to the DOE.

The DOE consolidated these two inputs and termed the combined forecast under the PEP 2006 Update as the High Demand case. Generally, this set of forecasts gives higher demand growth rates than the DOE forecasts (Reference Case) but the levels are not very different. Inasmuch as the DOE has opted to adopt the 2006 PEP Update for the 2007 PEP Update, no new forecast has been required by the DOE for transmission development.

The DOE forecast made use of an aggregation of the demand projections from the Distribution Development Plans (DDPs) of distribution utilities (DUs) plus projections for directly connected non-utilities.

The own forecast of TransCo is based on econometric modeling with Gross Domestic Product as the primary explanatory variable. Both cases, however, show a radical decline in the demand forecast for Luzon owing to the very low projection of the Manila Electric Company, the largest DU and which demand covers around seventy five percent (75%) of the aggregate demand of the Luzon Grid.

Using the Reference Case as mentioned above, power demand for the country is expected to grow at an average compounded growth rate of 4.9% for the period 2006-2010; 5.1% for 2011-2015; or 5.0% for the 10-year period. Demand will increase from 8,629 MW in 2005 to 14,058 MW by 2015.

This set of demand forecasts is used by the DOE to develop the generation plan. TransCo, on the other hand, uses this forecast to determine the necessary transmission expansion. When it comes to transformer capacity additions, TransCo uses its own demand projection.

Energy and Demand Projections

Energy consumption is estimated to increase annually at an average of 4.2 percent to 4.6 percent in Luzon, 6.1 percent in Visayas and

6.3 percent to 6.7 percent in Mindanao (Table 1 below). Energy forecasts were calculated from the aggregated projected energy sales of all distribution utilities, directly connected customers, and embedded generators.

From the energy forecasts, the peak demand was calculated using the average historical load factor. Using the same peak demand projections in the PDP 2006 Update, the peak demand average annual growth rate (AAGR) in Luzon is projected at 4.0 percent to 4.3 percent, 5.7 percent to 6.0 percent in Visayas, and 6.0 percent to 6.5 percent in Mindanao (Table 2 below).

Electricity tariffs

Section 36 of the Electric Power Industry Reform Act of 2001 (EPIRA) mandated the unbundling of rates and functions of the generation, transmission and distribution sectors of the electricity supply industry. Pursuant to the EPIRA, NPC's power rates were unbundled between generation and transmission rates, and thus began NPC's unbundled regime on September 26, 2002.

"Unbundling" means separation, which refers to the business activities and rates of the different sectors of the electricity supply industry, namely, the generation, transmission and distribution sectors. To start off this process, pursuant to the EPIRA, the National Transmission Corporation (TransCo) was created as a separate entity to take on the transmission business of NPC. Meanwhile, NPC is now left only with its generation business.

Consequently, NPC and about 120 distribution utilities nationwide, such as private utilities and electric cooperatives, were required to "unbundle" their power rates to show the various costs associated with the electricity services provided by these sectors. The main purpose of unbundling, therefore, is to ensure transparency in the pricing of electricity.

Effective September 26, 2002, NPC's unbundled power rates are now made up of two main components – the Basic Charges composed of the RORB-TOU rates and the FBHCC, and the Cost Adjustment Mechanisms such as the GRAM and ICERA.

Unlike the bundled rates which include

generation and transmission charges, NPC's current Basic Charges are now costs related purely to the generation of electricity. The Basic Charges are composed of the following:

Return-on-Rate Base (RORB) with Time-of-Use (TOU) pricing – to cover for costs of service such as operating costs plus a reasonable return, duly approved by the Energy Regulatory Commission (ERC) based on CY 2004 and 2002 levels;

Franchise and Benefits to Host Communities Charges (FBHCC) – to cover for costs incurred by NPC as mandated by laws and other promulgations pertaining to host communities of NPC-owned power plants and NPC-IPPs.

Meanwhile, the cost adjustment mechanisms are composed of the following:

Generation Rate Adjustment Mechanism (GRAM) – to cover for the change in NPC's operating costs due to the changes in prices of fuel and cost of power purchased from IPPs;

Incremental Currency Exchange Rate Adjustment (ICERA) – to cover for the change in NPC's foreign disbursements due to the changes in foreign currency exchange rates, particularly the US Dollar and Japanese Yen.

The GRAM is a mechanism prescribed and approved by the ERC to replace the PPCA and FCA, while the ICERA replaced the FOREX. Both the GRAM and ICERA are purely pass-through costs and do not in any way contribute income to NPC.

Regulation for the Second Regulatory Period (2006-2010)

One of the reform agenda of the Electric Power Industry Reform Act of 2001 or EPIRA (Republic Act 9136) is the establishment and enforcement

of a performance based regulation¹ for transmission and distribution utilities. This new regulation must ensure a reasonable price of electricity and the removal of cross subsidies, and must be non-discriminatory and promote efficiency.

To this end, the Energy Regulatory Commission (ERC) adopted the Transmission Wheeling Rate Guidelines (TWRG2) as the alternative regulation to the return on rate base (RORB). Under the TWRG, the ERC established the methodology and the pricing principles that will be used to in setting and regulating the maximum transmission wheeling rates, the annual rate verification and adjustment of tariff rates, the regulatory processes and timelines, and the performance indicators, performance targets and reporting arrangements.

Basically, the performance based regulation is governed by the price control formula

$$\text{MART} = [\text{MART}_{-1} \times \{1 + \text{CWI} - \text{X}\}] - \text{Kt} - \text{RBRT}$$

and adjusted for performance against the regulated quality and reliability standards or the Performance Incentive Scheme (PIS).

Simply put, the regulated revenue for 2007 or the MART is defined by the previous year's approved revenue or MART-1 adjusted to reflect the weighted consumer price index/ foreign exchange rate and the efficiency factor of 1% or the 1+CWI-X factor; the over/ under recovery for the over/ under collected revenue or the Kt; and the revenue from unregulated businesses or the RBRT.

Computation of tariffs

The ERC-approved NPC Effective Selling Rates in

FORECASTS AND VARIATIONS	2009 ENERGY SALES FORECAST	2008 ENERGY SALES FORECAST
Luzon	7,552 GWh	7,252 GWh
Visayas	1,364 GWh	1,289 GWh
Mindanao	1,525 GWh	1,440 GWh
Philippines	10,441 GWh	9,981 GWh

Primary Energy Supply Mix 2007:	
Local Oil	26.67%
Local Coal	5.7%
Natural Gas	4.3%
Nat Gas	4.5%
Hydro Power	4.8%
Geothermal	21.5%
Biomass	16.0%
Solar, Wind, Mini-hydro	0.2%
CME	01%
Imported Oil	31.8%
Imported Coal	11.0%
Total	100.0%

Luzon, Visayas and Mindanao as of May 2008 are Php4.0683/kWh, Php2.9056/kWh and Php2.6941/kWh, respectively. The average generation charge of a customer, however, depends on its demand pattern based on the RORB-TOU Rates.

Pursuant to the EPIRA, cross-subsidies in electricity tariffs within a grid, between grids and/or classes of customers were phased out. Inter-Grid cross-subsidies were already phased out on September 2002; Intra-Grid on October 2005; and Inter-Class on October 2005.

Further, pursuant to the EPIRA, a socialized pricing mechanism called "lifeline rate" for marginalized end-users was set by the Energy Regulatory Commission, which shall be exempted from the cross-subsidy phase-out for a period of ten (10) years, unless extended by law. Currently, Distribution Utilities and Electric Cooperatives provide lifeline rates for those households consuming less than 100 kWh per month.

Supply-Demand Profile

This section provides information on the dependable capacity, required capacity, and committed and indicative power projects in Luzon, Visayas and Mindanao for the planning



period 2006-2014.

Dependable capacity refers to the maximum capacity a power plant can sustain over a specified period modified for seasonal limitation less the capacity required for station service and auxiliaries. It changes due to various factors affecting the actual operational conditions of the power plants.

Because of this limitation, allowances for the planned/scheduled outage rate, forced outage rate, de-rating, water inflow of hydro plants, and other conditions were considered in the calculation of the power supply demand outlook. Such procedure allows to reflect the real dependable capacity of the power system.

Required capacity represents the amount of generating capacity required to meet the demand including the required reserve margin of 23.4 percent. On the other hand, the additional or indicative capacity required is based on the results of generation planning software simulations.

Reserve pertains to the extra generating capability that an electric utility needs above and beyond the peak demand level required to supply to meet the demand.

Reserve margin is the difference between the dependable capacity of a utility system and the anticipated peak load for a specified period. The reserve margin (RM) approved by the Energy Regulatory Commission (ERC) in Luzon and Visayas is 23.4 percent, composition of which is 2.8 percent for load following and frequency regulation, and 10.3 percent each for spinning and back-up reserves.

For Mindanao, the ERC-approved RM is 21.0 percent, of which 2.8 percent is load following,

9.1 percent is spinning reserve and, additional 9.1 percent for back-up reserve.

The country's aggregate dependable capacity in 2006 was 13,638 MW. By 2007, it was 13,013 MW. For the period 2006-2014, a total of 3,917.3 MW capacities are to be added in the system to meet the country's power requirements. Of this, 517.3 MW will come from committed power projects whereas the 3,400 MW will be supplied by indicative power projects.

To date, there are 14 indicative projects with a total capacity of 2,534 MW. The three projects to be located in Luzon will have a combined capacity of 1,750 MW. The six potential projects in Visayas will have a total capacity of 390 MW while the five indicative projects in Mindanao will yield 394 MW.

National Power Corporation (NPC)

The National Power Corporation (NPC), a government-owned and -controlled corporation, provides bulk electricity to the country's Luzon, Visayas and Mindanao grids as well as the small island grids.

As of 2007, our own plants and contracted IPPs total 9,986 MW, equivalent to 67% of the country's total installed generating capacity. Further, we accounted for 70% of the country's total gross generation, and served about 300 bulk power customers nationwide.

Notwithstanding the divestment and privatisation of our assets and IPP contracts, NPC performs missionary electrification through our Small Power Utilities Group (SPUG), responsible for providing power generation and associated power delivery systems in areas that are not connected to the main grids.

Further, NPC manages under existing arrangements, an environmental charge equivalent to a portion of our energy sales, intended solely for the rehabilitation and management of watersheds nationwide.

National Transmission Corporation (TransCo)

The National Transmission Corporation (TransCo) is a government-owned and controlled corporation created in 2001 by the Electric Power Industry Reform Act.

National Transmission Corporation Historical System Peak Demand, in MW				
Year	Luzon	Visayas	Mindanao	Philippines
2000	5,450	746	939	8.70
2001	5,646	861	954	6.01
2002	5,823	842	995	9.15
2003	6,149	923	1,131	7.70
2004	6,323	955	1,177	8.43
2005	6,479	967	1,149	6.69
2006	6,466	997	1,228	6.79
2007	6,643	1,102	1,241	6.71
2008 (As of May)	6,663	1,112	1,190	8.14
Average Annual Compounded Growth Rate				
2001-2007	2.87	5.73	4.07	6.09

It assumed the National Power Corporation's electrical transmission functions which include the planning, construction and centralized operation and maintenance of high-voltage transmission facilities, grid interconnections and ancillary services.

TransCo has been operating separately from NPC since March 1, 2003. It has the unique and crucial role of linking power plants owned by NPC and independent power producers (IPPs) to the country's 123 distribution utilities and electric cooperatives which in turn deliver electricity to end-users.

Through the relentless efforts of TransCo's efficient, globally competitive functional groups, the entire Luzon grid – the country's largest and most populous island hosting the biggest power consumers – has been blackout-free since May 21, 2002.

With its employees constantly guided by the corporate values of competence, honesty, and integrity in public service, TransCo's electricity customers and other stakeholders are assured only of high-quality service.

As mandated by EPIRA, the national government remains committed to privatize all transmission assets to reform the power industry and boost power delivery services to customers. The Power Sector Assets and Liabilities Management Corporation (PSALM) manages the sale, disposition, and privatisation

of these transmission assets based on terms and conditions which shall optimize the assets' value and sale prices.

Background

- Started operating independently in March 1, 2003
- Handles the planning, construction and centralized operation and maintenance of high-voltage transmission facilities, grid interconnections and ancillary services.
- A regulated monopoly which uses performance-based regulation through a revenue cap

Assets (As of 2007)

- Approximately 20,129 circuit-kilometers of transmission lines including a submarine cable system, considered the first of its kind in Asia
- 131 substations
- Approximately 24,732 Mega Volt Amperes substation capacity
- About \$2.5 billion in assets (based on the last valuation; a third-party revaluation is being undertaken this year)

Operations

- Dispatches power through the National Control Center (NCC), a state-of-the-art system capable of communicating in real time with other control centers in other regions

RATE COMPONENT	MARCH 2006	MARCH 2007	INCREMENT/DECREMENT
Generation Charge	4.94	4.58	(0.36)
Transmission Charge	0.74	0.92	0.18
System Loss Charge	0.63	0.61	(0.02)
Distribution Charge	0.67	0.65	(0.02)
Supply Charge	0.22	0.21	(0.01)
Metering Charge	0.11	0.11	0.00
Currency Adjustment	0.08	0.00	(0.08)
Taxes	0.62	0.65	0.03
Others	0.02	0.02	0.00
GRAND TOTAL	8.03	7.75	(0.28)



Photo: Bloomberg

- Delivered 110,234 megawatt-month of power in 2004
- System in Luzon has “N-1” capability, or the ability of the power grid to withstand the loss of a major line without any power customer experiencing a brownout
- The Luzon grid – the country’s largest and most populous island hosting the biggest power consumers – has been blackout-free since May 21, 2002.