

**2009**

**POWER SECTOR SITUATIONER**



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## 2009 POWER SECTOR SITUATIONER

### I. Capacity

The country's installed capacity in 2009 totalled 15,610 MW. Coal-fired power plants remain the dominant source with a share of 27.4 percent, closely followed by hydro with a share of 21.1 percent. The capacity of oil-fired power plant was reduced to 3,193 MW from 3,353 MW in 2008 due to the expiration of contract with NPC of the 15 MW Panit-an Modular Genset in Capiz and the 116 MW Subic Diesel plant in Olongapo, Zambales. Other fuels, such as natural gas, geothermal and new RE have a share of 18.1 percent, 12.5 percent and 0.41 percent, respectively.



The installed capacity of new RE has increased due the commissioning of the 1 MW Methane Land Fill Gas in Luzon, the 21 MW First Farmers Biomass Cogeneration and the 8.3 MW San Carlos Bioenergy in Visayas.

Total dependable capacity was 13,319 MW, which is 85.3 percent of the total installed capacity. The changes of the dependable capacity in three major grids were due to derating of some power plant units. Table 1-1 shows the installed and dependable capacity by source and per grid.

**Table 1-1: 2009 Installed and Dependable Capacity**

PLANT TYPE	LUZON			
	Capacity (MW)		Percent Share (%)	
	Installed	Dependable	Installed	Dependable
Coal	3,849	3,450	32.4	33.7
Oil Based	1,984	1,617	16.7	15.8
Natural Gas	2,831	2,700	23.9	26.4
Geothermal	886	431	7.5	4.2
Hydro	2,280	1,999	19.2	19.5
Wind	33	33	0.3	0.3
Biomass	1	1	0.0	0.0
<b>TOTAL</b>	<b>11,863</b>	<b>10,230</b>		

PLANT TYPE	VISAYAS			
	Capacity (MW)		Percent Share (%)	
	Installed	Dependable	Installed	Dependable
Coal	196	153	10.8	11.0
Oil Based	615	426	33.9	30.6
Geothermal	964	792	53.0	56.9
Hydro	13	13	0.7	0.9
Biomass	29	9	1.6	0.6
<b>TOTAL</b>	<b>1,818</b>	<b>1,392</b>		

PLANT TYPE	MINDANAO			
	Capacity (MW)		Percent Share (%)	
	Installed	Dependable	Installed	Dependable
Coal	232	210	12.0	12.4
Oil Based	594	485	30.8	28.6
Geothermal	103	98	5.4	5.8
Hydro	998	902	51.8	53.2
Solar	1	1	0.1	0.1
<b>TOTAL</b>	<b>1,929</b>	<b>1,697</b>		

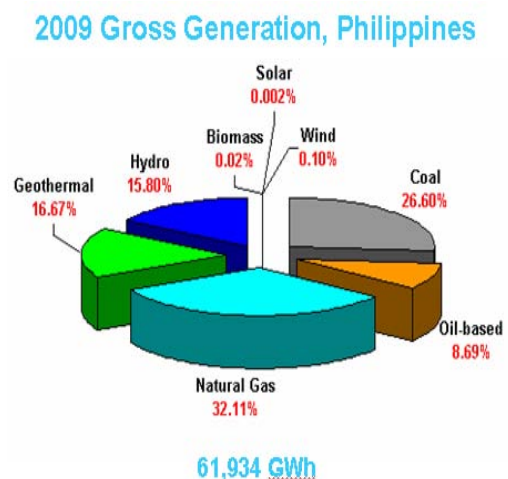
PLANT TYPE	PHILIPPINES			
	Capacity (MW)		Percent Share (%)	
	Installed	Dependable	Installed	Dependable
Coal	4,277	3,813	27.4	28.6
Oil Based	3,193	2,528	20.5	19.0
Natural Gas	2,831	2,700	18.1	20.3
Geothermal	1,953	1,321	12.5	9.9
Hydro	3,291	2,914	21.1	21.9
Wind	33	33	0.2	0.2
Solar	1	1	0.0	0.0
Biomass	30	10	0.2	0.1
<b>TOTAL</b>	<b>15,610</b>	<b>13,319</b>		

The data for the dependable capacity of each power plant was based on the Monthly Operations Report submitted to the DOE and was counter check from the Daily Operation Report of the NGCP. In July 2008, the DOE conducted a survey to gather data on power plant capacity in accordance with internationally accepted definition for the purpose of harmonizing data being used for power planning, policy development and implementation.

## II. Electric Power Generation

### A. Gross Power Generation by Plant Type

Gross generation in 2009 reached 61,934 Gwh, 1.8 percent higher than 60,821 GWh in 2008. Generation from fossil fuels (oil, coal and natural gas) went up by 3.9 percent from 40,193 GWh in 2008 to 41,744 GWh in 2009. On the other hand, generation from renewable energy went down by 2.1 percent due to the decreased production from hydro and geothermal energy by 0.6 percent and 3.71 percent, respectively. Energy production from wind recorded an increased of 5.0 percent while solar declined by 4.0 percent.



In 2009, biomass contributed a total of 13.7 GWh from the newly built Biomass power plant, such as, the 1 MW Land Fill Gas directly supplying MERALCO, the distribution utility in Luzon; the 21 MW First Farmers Biomass Cogeneration, and the 8.3 MW San Carlos Bioenergy both located in Negros grid. Table 1-2 shows the total Philippines 2009 and 2008 comparative generation by plant type.

Table 1-2: 2009 and 2008 Comparative Generation, Philippines

PHILIPPINES						
PLANT TYPE	2009		2008		Difference	
	GWh	% Share	GWh	% Share	GWh	%
Coal	16,476	26.6	15,749	25.9	727	4.6
Oil-based	5,381	8.7	4,868	8.0	512	10.5
Natural Gas	19,887	32.1	19,576	32.2	311	1.6
Geothermal	10,324	16.7	10,723	17.6	(399)	(3.7)
Hydro	9,788	15.8	9,843	16.2	(55)	(0.6)
Wind	64	0.1	61	0.1	3	5.0
Biomass	14	0.0			14	n/a
Solar	1	0.0	1	0.0	(0)	(4.0)
<b>Total Generation</b>	<b>61,934</b>		<b>60,821</b>		<b>1,113</b>	<b>1.8</b>

Natural gas-fired remains the dominant producers of electricity in Luzon grid, accounting for 44.2 percent of the total generation in 2009, a slight increase of 1.6 percent compared to 2008 level. The natural gas limitation imposed from 16 February to 12 March 2009 due to the leak encountered in one of the inlet gas heater of the Malampaya onshore gas plant affected the generation of the natural gas-fired plants during the said period. However, this does not affect the standing of natural gas to have the biggest share in generation since 2005. Generation from coal-fired power plant increased by 4.4 percent to 14,091 GWh compared to 2008 generation. This can be attributed to decreased generation from geothermal power plant.

The share of geothermal power generation in Luzon grid declined by 5.7 percent compared to 2008 generation. The reduction was attributed to the following: 1) shutdown of Bacman plant (150 MW) since May 2009; 2) Tiwi geothermal plant Unit 1 (59 MW) was out on the month of January 2009 due to low steam feed supply and some force outages on the last quarter of 2009, 3) Tiwi geothermal plant Unit 2 (59 MW) was on outages from September to December 2009 due to cooling tower repairs, and 4) Makban geothermal plant Unit 4 (63.2 MW) was on annual overhauling from June to August 2009

Hydroelectric energy contributed 5,549 GWh or 12.3 percent share of the mix. (Table 1-3).

Table 1-3: 2009 and 2008 Comparative Generation, Luzon Grid

LUZON GRID						
PLANT TYPE	2009		2008		Difference	
	GWh	% Share	GWh	% Share	GWh	%
Coal	14,091	31.3	13,504	30.6	588	4.4
Oil-based	1,864	4.1	1,928	4.4	(64)	(3.3)
Natural Gas	19,887	44.2	19,576	44.3	311	1.6
Geothermal	3,516	7.8	3,730	8.4	(214)	(5.7)
Hydro	5,549	12.3	5,400	12.2	149	2.8
Wind	64	0.1	61	0.1	3	5.0
Biomass	3	0.0			3	n/a
<b>Total Generation</b>	<b>44,975</b>		<b>44,200</b>		<b>775</b>	<b>1.8</b>

In Visayas grid, gross generation from geothermal energy was recorded at 6,199 GWh, a decrease of 3.5 percent from the 2008 level. This was due to the outages of Leyte Geothermal Power Plant (LGPP) Unit 1 (37.5 MW) on 25 February to 31 March 2009 and May to August 2009. LGPP Unit 3 (37.5 MW) experienced derated capacity due to limited steam

supply from March to April 2009. Oil-based plant compensated the declined of generation from geothermal plant which resulted to an increased of 12.0 percent, to 1,864, GWh in 2009 (Table 1-4).

**Table 1-4: 2009 and 2008 Comparative Generation, Visayas Grid**

VISAYAS GRID						
PLANT TYPE	2009		2008		Difference	
	GWh	% Share	GWh	% Share	GWh	%
Coal	822	9.4	746	8.6	76	10.2
Oil-based	1,864	21.4	1,665	19.2	199	12.0
Geothermal	5,985	68.6	6,199	71.7	(214)	(3.5)
Hydro	42	0.5	40	0.5	2	5.9
Biomass	11	0.1			11	n/a
<b>Sub-Total Visayas</b>	<b>8,724</b>		<b>8,650</b>		<b>75</b>	<b>0.9</b>

Generation from hydroelectric plant in Mindanao declined by 4.7 percent, to 4,196, GWh in 2009. The sustained fault in Abaga-Agus 2 138 KV line isolated the Agus 1 (80 MW) and Agus 2 Unit 1 (60 MW) to the grid on the month of January 2009. Also, some units of hydroelectric plant experienced forced outages, such as, Agus 5 Unit 4 (53.7 MW) from July to August 2009, Pulangi 4 Unit 1 (85 MW) and Unit 3 (85 MW) in May 2009 and November 2009, respectively. Generation from Oil-based plants compensated the decrease generation from hydro with energy production recorded at 4,196 GWh or 20.1 percent of the mix (Table 1-5).

**Table 1-5: 2009 and 2008 Comparative Generation, Mindanao Grid**

MINDANAO GRID						
PLANT TYPE	2009		2008		Difference	
	GWh	% Share	GWh	% Share	GWh	%
Coal	1,563	19.0	1,499	18.8	63	4.2
Oil-based	1,652	20.1	1,275	16.0	377	29.6
Geothermal	823	10.0	794	10.0	29	3.7
Hydro	4,196	51.0	4,402	55.2	(206)	(4.7)
Solar	1	0.0	1	0.0	(0)	(4.0)
<b>Total Generation</b>	<b>8,235</b>		<b>7,972</b>		<b>264</b>	<b>3.3</b>

## B. Gross Power Generation by Ownership

Gross generation of NPC and NPC-IPP plants declined in 2009 compared to its 2008 level. With the turned-over of NPC plants 747.5 MW Tiwi-Makban to AP Renewables last June 2009, 168.5 MW Panay Diesel and Bohol Diesel to SPC Power Corporation, 0.8 MW Amlan HEP to ICS Renewables and the 305 MW Palinpinon-Tongonan geothermal power plants to Green Core Geothermal Inc., the generation from NPC plants declined by 23.5 percent from 12,743 GWh in 2008 to 9,745 GWh in 2009. Likewise, the transfer of administration of NPC-IPP plants, such as the 1,294 MW Sual Coal-fired plant to San Miguel Energy Corp. in December 2009 and the 764 MW Pagbilao Coal-fired plant to Therma Luzon Inc. in November 2009 resulted to the declined of NPC-IPP generation by 2.1 percent. This development in privatization in turn increased the shares of Non-NPC plants, from 32.3 percent in 2008 to 39.3 percent in 2009 (Table 1-6).

Table 1-6: 2009 and 2008 Comparative Generation by Ownership

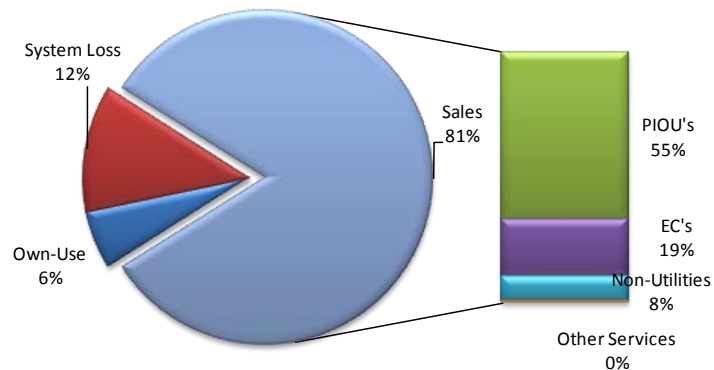
PHILIPPINES	2009		2008		CHANGES	
	GWh	% Share	GWh	% Share	GWh	Percent (%)
<b>NPC</b>	9,745	15.7	12,743	21.0	(2,998)	(23.5)
<b>NPC-SPUG</b>	474	0.8	448	0.7	26	5.8
<b>NPC-IPP</b>	27,400	44.2	27,972	46.0	(572)	(2.0)
<b>Non-NPC</b>	24,315	39.3	19,658	32.3	4,657	23.7
<b>Total Generation</b>	<b>61,934</b>		<b>60,821</b>		<b>1,113</b>	<b>1.83</b>

### III. Electricity Sales and Consumption

The total electricity sales all over the country posted a slight increase of 3.4 percent from 49,206 GWh in 2008 to 50,868 GWh in 2009. These comprised of sales from Private Investor Owned Utilities (PIOU's), at 33,853 GWh or 66.6 percent and sales from Electric Cooperatives, Non-utilities and Other Services at 11,768 GWh or 23.14 percent, 4,935 GWh or 9.7 percent and 311 GWh or 0.61 percent, respectively. Total sales accounted for 50,868 GWh or 82.1 percent of total consumption. "Own-use" of power plants and distribution utilities was pegged at 3,524 GWh or 5.69 percent, while losses from generator, transmission and distribution accounted for 7,542 GWh or 12.18 percent of the total consumption (Fig 1-1).

Figure 1-1. Electricity Sales and Consumption

On a per grid basis, Visayas recorded the highest growth in electricity sales at 6.3 percent, Luzon at 3.40 percent and Mindanao at 1.1 percent.



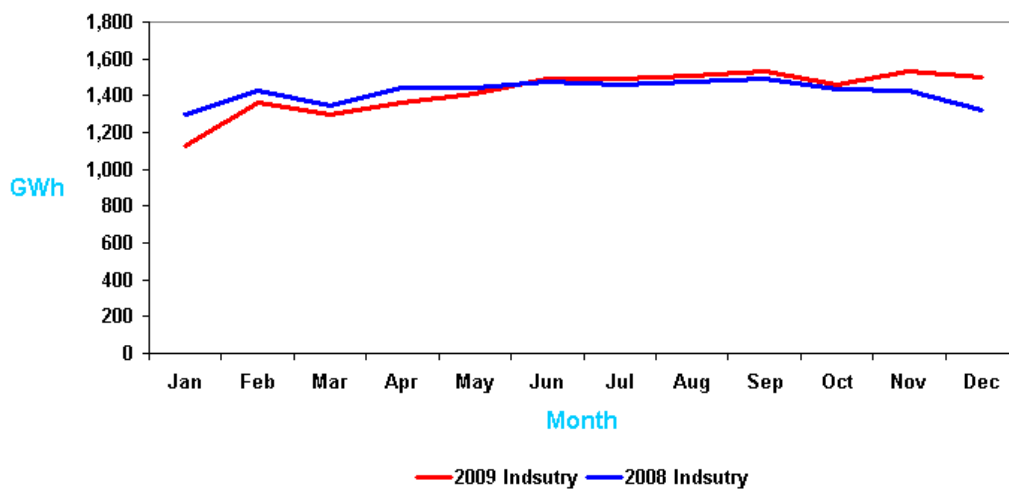
#### A. Industrial

Electricity sales to the industrial sector comprise 33.6 percent or 17,084 GWh to total electricity sales, a measly 0.31 percent higher than 17,031 GWh in 2008. Electricity sold to the industrial sector in Luzon registered a low growth of 1.93 percent, while significant increase was observed in the Visayas grid with 6.0 percent. On the other hand, Mindanao grid which was affected by the recent economic crisis plunged to negative 10.2 percent.



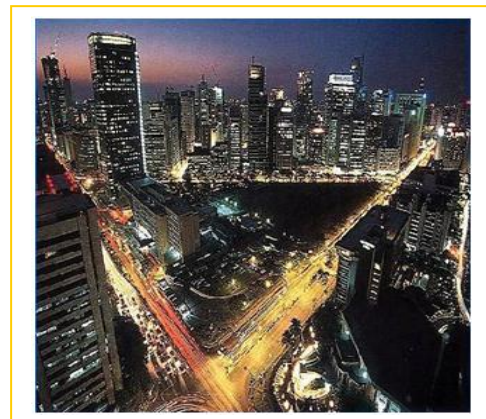
Reflecting the impact of external shocks on economic growth, a negligible increase in the electricity sales were attributed immensely to the substantial weakening of the manufacturing and beverages industries.<sup>1</sup> The effect of the global financial crisis affected the performance of electrical equipment manufacturing, such indicators as industrial output growth rate fell substantially. Likewise, for new products, output growth is declining and import as well as export volume plummeted. Most of the manufacturing company industries did not expand. This may be attributed to business losses which were increasing industry wide and declining profit margins. In addition, majority of the industry have reduced their loads which resulted in repressed electricity sales, although 2009 posted minimal increment in the latter part as compared to 2008 data (Figure 1-2).

Figure 1-2: 2009 and 2008 Monthly Electricity Sales for Industrial Sector, Philippines



## B. Commercial

Commercial sector posted an increase of 4.39 percent. For the past six years, average annual growth rate of electricity sales to the commercial sector recorded at 4.9 percent as compared to residential and industrial sectors at 2.26 percent and 2.00 percent, respectively. Electricity sales to the commercial sector in 2009 increased by 3.76 percent in Luzon, 4.82 percent in Visayas and 11.36 percent in Mindanao compared to the previous year.



<sup>1</sup> NSCB Fourth Quarter 2009 Gross National Product & Gross Domestic Product by Expenditure Shares/ Gross National Product & Gross Domestic Product by Industrial Origin. Posted 28 January 2010

Commercial sector accelerated slightly since the services sector still the lead contributor to Gross Domestic Product (GDP).

One of the major contributors to the sector's growth was private services and recreational services, which include laundry services, spas, beauty parlors and other related services; medical and health services; hotels and restaurants; and educational services. The continuing demand for such services justified the constant increases of electricity sales to the commercial sector. This can be correlated to the expansion of small-scale trade and retail establishments, particularly shopping malls throughout the country.

### C. Residential

Electricity sales to the residential sector resulted to 17,504 GWh or 34.41 percent of the total electricity sales. Such sales increased by 5.16 percent from 16,644 GWh in 2008. Specifically, Luzon grid posted 4.62 percent increase, from 12,236 GWh in 2008 to 12,801 GWh in 2009.



Meanwhile, the twin devastation brought by typhoons Ondoy and Pepeng in the country during the last quarter of the year also decelerated the growth of electricity sales in the Capital and Central part of the Luzon grid. Significant increases in electricity sales were observed in the Visayas and Mindanao grid with 4.82 and 7.34 percent growth, respectively. With the effect of global financial crisis to the industrial sector, electricity sales to residential customers are again the top consumer of electricity in total Philippines compared to year 2007 and 2008 were the industrial sector leads in terms of electricity consumption.

The main drag for the growth observed in the residential sector was attributed to the slight increased utilization of electricity for household activities such as food preparation, recreation and use of cooling system during summer months.

Meanwhile, on the expenditure side, the insipid growth in Personal Consumption Expenditure (PCE) as consumer spending accelerated slightly in the fourth quarter of 2009<sup>2</sup> can also be correlated to the conservative expansion of the electricity sales in the residential sector.

Notwithstanding the severe impact of the global economic contraction and global financial uncertainties on the domestic economy, the demand for services of our OFWs continued to increase as their deployment growth contributed to the huge growth of Net Factor Income from Abroad (NFIA).<sup>3</sup> The continued inflow of remittances of the country's OFWs in 2009 were

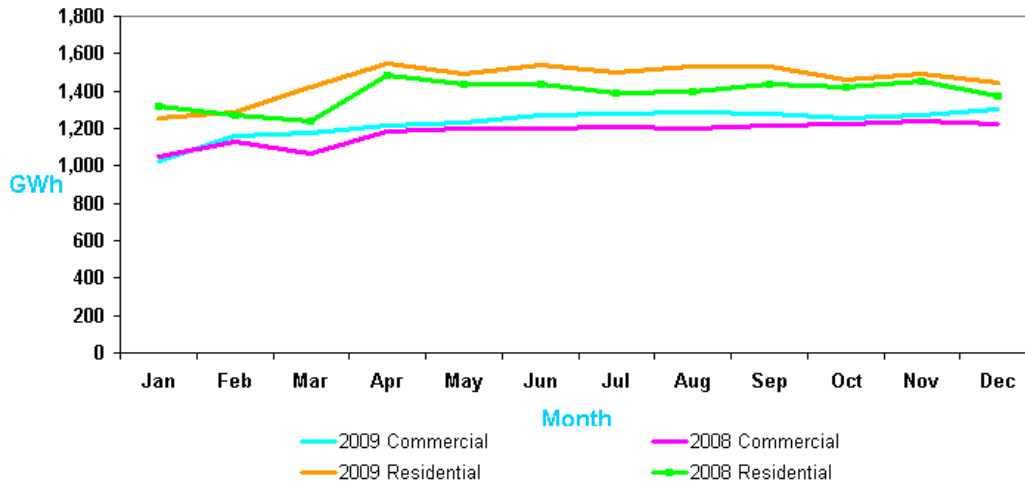
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<sup>2</sup> NSCB Fourth Quarter 2009 Gross National Product & Gross Domestic Product by Expenditure Shares/ Gross National Product, Posted 28 January 2010

<sup>3</sup> NSCB Fourth Quarter 2009 Gross National Product & Gross Domestic Product by Expenditure Shares/ Gross National Product, Posted 28 January 2010

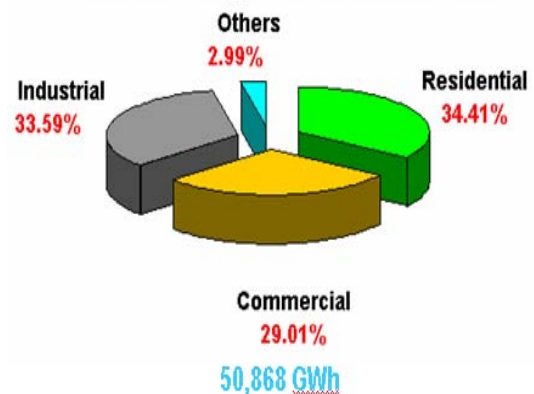
drastically contributed to the consumer spending power on basic commodities and necessities such as electricity, water, food, clothing, transport and communication. Figure 1-3 showing the 2009 and 2008 monthly electricity sales of residential and commercial sector.

Figure 1-3: 2009 and 2008 Monthly Electricity Sales for Residential & Commercial Sector, Philippines



Significant increases were observed in other uses such as public buildings, street lights, irrigation and “others not elsewhere classified” as sales for this sectors went up by 9.21 percent, from 1,395 GWh in 2008 to 1,524 GWh in 2009 (See Figure 1-4, Total Sales by Sector).

Figure 1-4: 2009 Electricity Sales by Sector



#### IV. Own Use and System loss

Total percentage share of system losses continued to from 7,680 GWh in 2008 to 7,542 GWh in 2009. Meanwhile, utilities’ own-use for office and housing remained on a downtrend, registering a double-digit drop at 10.4 percent from 3,935 GWh in 2008 to 3,524 GWh in 2009 (Table 1-6).

Table 1-6: 2009 and 2008 Comparative Generation, Sales and Losses, Philippines

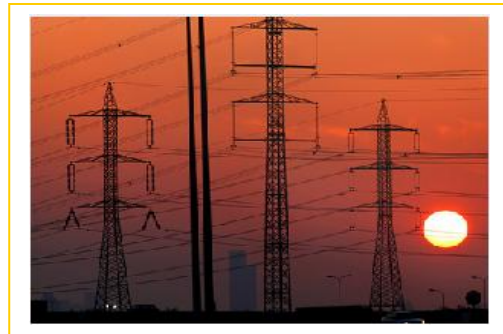
Total Philippines	2009	2008	Changes	
	GWh	GWh	GWh	%
Gross Generation	61,934	60,821	1,113	1.8
Sales	50,868	49,206	1,662	3.4
Own-Use and Losses	11,066	11,614	(548)	(4.7)
Own-use	3,524	3,934	(410)	(10.4)
Power loss	7,542	7,680	(138)	(1.8)

The generated figures implies substantial improvement in the performance of the utilities, partly as a result of the efforts in recent years to reduce the System Losses which includes Distribution Utilities losses and Transmission losses such as substation used, transformation and other unaccounted losses. In addition, the innovative ideas concerning the system development and the significant strides made in managing the Utilities' own-use were considered to be efficient enough to sustain such operation.

## V. System Peak Demand

### A. Luzon Grid

Peak demand in Luzon was recorded in 26 May at 6,928 MW brought about by hot weather condition with a temperature reaching 36 °C. This was 3.8 percent higher compared to the 2008 level of 6,674 MW. MERALCO, which comprised 70 percent of the total demand in Luzon grid, posted an increase of 2.5 percent, from 4,790 MW in 2008 to 4,910 in 2009.



The high demand in Luzon was also due to the expansion in the operation of the existing customers in Subic Enerzone Development Corporation, i.e. Hanjin Heavy Industries, and the entry of Texas Instrument in Clark. Likewise, the demand coming from customers classified under the Cement, Chemical, Steels and other Metals industries posted positive growths (Table 1-8).

### B. Visayas Grid

Coincidental peak demand in Visayas grid was recorded at 1,241 MW, an increase of 5.5 percent compared to the 2008 level in spite of the power supply problem being experienced particularly in Negros and Panay. The entry of Balamban Enerzone Corporation in January 2009 with an average demand of 26.5 MW and the increased in the demand of Carmen Copper Corporation both located in Cebu contributes to the positive growth of the region. In sub-grid level, Cebu as the load center in the Visayas has the highest demand of 559 MW in 2009. (Table 1-7).

Table 1-7: 2009 and 2008 Comparative Coincident Peak Demand by Sub-grid, Visayas

GRID	DEMAND, 2009		DEMAND, 2008		CHANGES	
	MW	% Share	MW	% Share	MW	%
Cebu	559	45.03	522	44.38	37	7.1
Negros	215	17.34	218	18.51	-2	(1.1)
Panay	223	18.01	203	17.29	20	9.9
Leyte-Samar	188	15.14	182	15.44	6	3.5
Bohol	56	4.48	52	4.39	4	7.8
<b>Visayas</b>	<b>1,241</b>		<b>1,176</b>		<b>65</b>	<b>5.5</b>

### C. Mindanao Grid

Electricity demand in Mindanao grid rebound this year at 1,303 MW, posting a significant increased of 8.3 percent from 2008 level, compared to the 3.0 percent contraction in 2008 vs. 2007. Demand from most of the distribution utilities in Mindanao have positive growth in 2009, particularly demand coming from Davao Light and Power Company, Davao Norte Electric Cooperative, Cotabato Electric Cooperative and South Cotabato II Electric Cooperative.

Table 1-8: 2009 and 2008 Comparative Peak Demand by Grid

GRID	PEAK DEMAND, MW		CHANGES	
	2009	2008	MW	%
LUZON	6,928	6,674	254	3.8
VISAYAS	1,241	1,176	65	5.5
MINDANAO	1,303	1,204	99	8.3
<b>PHILIPPINES</b>	<b>9,352</b>	<b>8,965</b>	<b>387</b>	<b>4.3</b>

Note: Non coincident peak for total Philippines