

2014



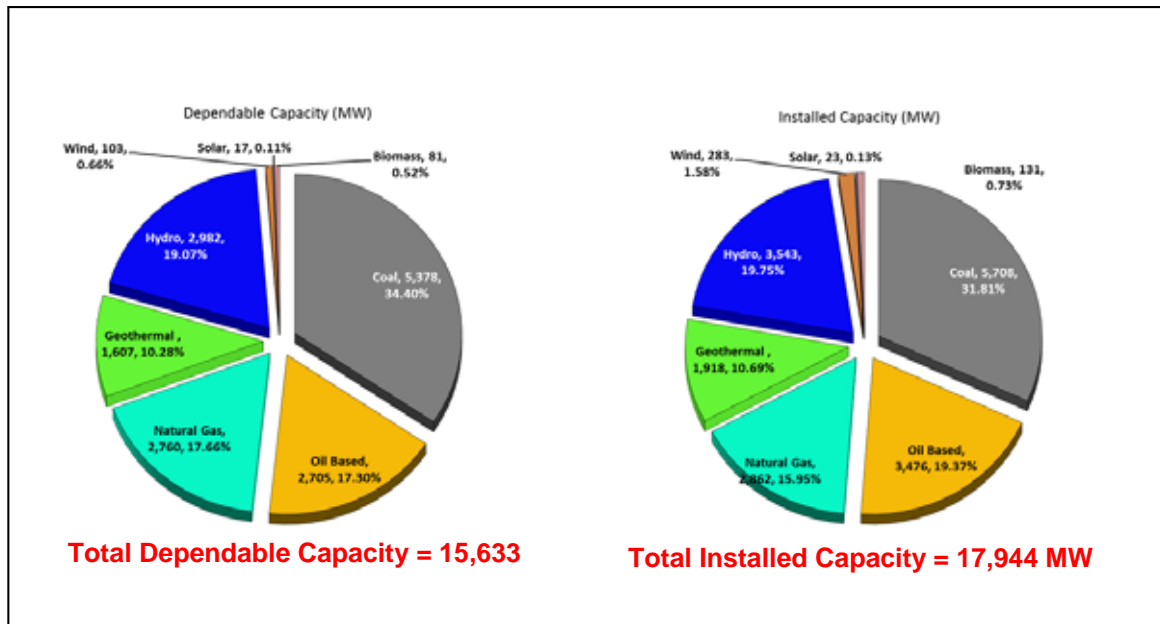
DEPARTMENT OF ENERGY
POWER SITUATION



A. INSTALLED AND DEPENDABLE CAPACITY

Total installed and dependable capacity in the country as of 31 December 2014 slightly increased to 17,944 MW and 15,633 MW, respectively due to the entry of new power plants in the three grids adding 557 MW to the installed capacity and 153 MW in dependable capacity.

Figure 1. Installed and Dependable Capacity



Source: List of Existing Power Plants as of December 2014

Installed capacity in Luzon totaled to 13,213 MW or 73.6% of the total installed capacity mix followed by Visayas with 2,520 MW or 14%. Mindanao has 2,211 MW or 12.3%. As of the breakdown of dependable capacity, 11,622 MW or 74.3% is accredited to Luzon grid, 2,160 MW or 13.8% is from Visayas, and 1,851 MW or 11.84% is from Mindanao.

In Luzon, new plants were commercially operational such as 18.9 MW Northwind Phase 3, 81 MW UPC Caparispisan wind, 150 MW EDC Burgos wind farm which are all in the Ilocos region and the 12 MW SCJI power Biomass plant in Nueva Ecija. In addition, the inclusion of the 140 MW Petron Refinery Solid Fuel-Fired Boiler (RSFFB) power plant in Limay, Bataan, 12.7 MW Lafarge diesel power plant and the 1.8 MW Communal-Uddiawan mini-hydro plant in Nueva Ecija resulted to an increase in installed capacity by 421 MW.

Moreover, the adjustments made in the dependable capacity of plants such as GN Power in Mariveles, Bataan, TMO Barges in Navotas, Bacman Geothermal Power Plant in Sorsogon due to improved dependable capacity as well the uprating of Binga Hydroelectric power plant in Benguet from 125 MW to 132 MW, unavailability of Botocan hydroelectric power plant in Laguna due to transmission line problem and the

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decline in dependable capacity of Montalban Methane Facility in Rizal and Bacavalley LFG in Laguna resulted to a 103 MW net increase in dependable capacity for Luzon.

Table 1: Comparison of Installed and Dependable Capacity, Luzon

FUEL TYPE	LUZON					
	Installed Capacity (MW)			Dependable Capacity (MW)		
	Dec-14	Mar-14	Difference	Dec-14	Mar-14	Difference
Coal	4,671	4,531	140	4,391	4,219	172
Oil Based	2,033	2,020	13	1,507	1,736	(229)
Natural Gas	2,861	2,861	0	2,759	2,759	0
Geothermal	844	844	0	692	607	85
Hydro	2,471	2,464	7	2,131	2,147	(16)
Wind	283	33	250	103	17	86
Biomass	50	38	12	39	34	5
TOTAL	13,213	12,792	421	11,622	11,519	103

Source: DOE List of Existing Power plants as of December 2014

The installed and dependable capacity in Visayas as indicated in Table 2, increased by 59 MW and 47 MW, respectively due to the commercial operation of the additional 9 MW SACASOL solar farm in San Carlos City and the 50 MW Nasulo Geothermal Power plant, both located in Negros Occidental.

Table 2: Comparison of Installed and Dependable Capacity, Visayas

FUEL TYPE	VISAYAS					
	Installed Capacity (MW)			Dependable Capacity (MW)		
	Dec-14	Mar-14	Difference	Dec-14	Mar-14	Difference
Coal	806	806	0	777	777	0
Oil Based	670	670	0	505	505	0
Geothermal	965	915	50	817	777	40
Hydro	11	11	0	11	11	0
Biomass	44	44	0	32	32	0
Natural Gas	1	1	0	1	1	0
Solar	22	13	9	17	10	7
TOTAL	2,520	2,461	59	2,160	2,113	47

Source: List of Existing Power Plants as of December 2014

In Mindanao, 124 MW and 102 MW were added to the installed and dependable capacity of oil-based and hydroelectric power plants. The grid additional capacity of 15 MW came from Mapalad Power Corporation (MPC)-Digos, 19 MW SoEnergy, 15 MW Mapalad Energy Generation Corporation (MEGC) Diesel plant, 15 MW Panaon Diesel plant and 8 MW Tandag Diesel plant of King Energy Generation Inc. (KEGI) for Oil-based plants, while additional 13.6 MW was added from Tudaya 1 and 2 Hydroelectric power plants in Davao del Sur. The 37.1 MW thermal plant from the directly-connected industry Philippine Sinter Corporation (PSC) also augmented the existing plants in Mindanao that supplies power to the grid.

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Table 3: Comparison of Installed and Dependable Capacity, Mindanao

FUEL TYPE	MINDANAO					
	Installed Capacity (MW)			Dependable Capacity (MW)		
	Dec-14	Mar-14	Difference	Dec-14	Mar-14	Difference
Coal	232	232	0	210	210	0
Oil Based	773	663	110	693	605	88
Geothermal	108	108	0	98	98	0
Hydro	1,061	1,047	14	840	826	14
Solar	1	1	0	0	0	0
Biomass	36	36	0	10	10	0
TOTAL	2,211	2,087	124	1,851	1,749	102

Source: DOE List of Existing Power Plants as of December 2014

B. GENERATION

Generation of the entire country was recorded at 77,261 GWh in 2014. This is 2.65% or 1,995 GWh higher than 2013 generation at 75,266 GWh. This covers generation of the grid-connected plants from the three main grids as well as embedded and off-grid generations. Data are based on the submitted Monthly Operations Report (MOR) from the generation facilities operators.

As indicated in Table 4, coal-fired power plants remained the major contributor to the country's total generation followed by natural gas, geothermal, hydro and oil-based plants. Meanwhile, renewable energy-based plants such as wind, solar and biomass have meager share totaling to 0.47 % or 364 GWh of the total generation.

Table 4: 2014 and 2013 Comparative Gross Generation, Philippines

PLANT TYPE	PHILIPPINES					
	2014		2013		Difference	
	GWh	% Share	GWh	% Share	MWh	%
Coal	33,054	42.78	32,081	42.62	973	3.03
Oil-based	5,708	7.39	4,491	5.97	1,217	27.10
Natural Gas	18,690	24.19	18,791	24.97	(101)	(0.54)
Geothermal	10,308	13.34	9,605	12.76	704	7.32
Hydro	9,137	11.83	10,019	13.31	(882)	(8.80)
Wind	152	0.20	66	0.09	86	131.59
Biomass	196	0.25	212	0.28	(16)	(7.68)
Solar	17	0.02	1	0.00	15	1068.03
Total Generation	77,261		75,266		1,995	2.65

Source: DOE Power Statistics 2014

Power generation in Luzon (Table 5), was at 56,766 GWh or 73.47% of the total generation of the country for 2014. This is higher by about 3.55% than last year's generation of 54,820 MW. Coal plants still dominate the generation mix with a share of 48.17% or 27,346 GWh. On the other hand, Natural Gas plants contributed 32.92% or 18,686 GWh.

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Table 5: 2014 and 2013 Comparative Gross Generation, Luzon

LUZON GRID						
PLANT TYPE	2014		2013		Difference	
	GWh	% Share	GWh	% Share	MWh	%
Coal	27,346	48.17	25,756	46.98	1,591	6.18
Oil-based	2,342	4.13	1,601	2.92	742	46.34
Natural Gas	18,686	32.92	18,783	34.26	(98)	(0.52)
Geothermal	3,817	6.72	3,399	6.20	419	12.32
Hydro	4,357	7.68	5,156	9.40	(798)	(15.49)
Wind	152	0.27	66	0.12	86	131.59
Biomass	65	0.11	60	0.11	6	9.35
Total Generation	56,766		54,820		1,947	3.55

Source: DOE Power Statistics 2014

As the 7.2 magnitude Bohol earthquake and Typhoon Yolanda hit the Visayas during the latter part of 2013 (details in the Significant Incident), power generation in the region dropped by a small percentage at 0.77% from 11,100 GWh in 2013 to 11,014 GWh in 2014. This constitutes to 14.26% of the country's total generation. Contrary to Luzon, majority or half of the power generation in the Visayas came from geothermal power plants while the remaining half were generated from other sources as indicated in Table 6. In 2014, generation from coal decreased by 240 GWh due to frequent unexpected outages experienced by large coal plants such as KSPC, PEDC and CEDC.

Table 6: 2014 and 2013 Comparative Gross Generation, Visayas

VISAYAS GRID						
PLANT TYPE	2014		2013		Difference	
	GWh	% Share	GWh	% Share	MWh	%
Coal	4,449	40.40	4,690	42.25	(240)	(5.12)
Oil-based	766	6.95	796	7.18	(31)	(3.84)
Natural Gas	4	0.04	8	0.07	(4)	(45.37)
Geothermal	5,627	51.09	5,463	49.22	164	3.01
Hydro	35	0.32	37	0.33	(1)	(3.96)
Biomass	117	1.06	106	0.95	11	10.27
Solar	15	0.14				
Sub-Total Visayas	11,014		11,100		(86)	(0.77)

Source: DOE Power Statistics 2014

Power generation in Mindanao grew to 9,481 GWh which is equivalent to 12.27% of the total generation of the country. The improved operation of power plants in Mindanao resulted to a slight growth of about 134 GWh as shown in Table 7. Majority of this is credited to the operation of hydroelectric power plants which contributed 4,745 GWh or 50.05 % of the total generation in Mindanao. Next to hydro plants are the oil-based plants that responded to the tight supply condition of the grid in lieu of the baseload plants. Oil-based generation posted at 2,599 GWh or 27.42 % of the generation mix. This was attributed to the generation from embedded diesel plants within the distribution utilities in Mindanao. Coal generation dropped to 1,258 GWh or 13.26 % since the sole coal plant in Mindanao, the two units of STEAG Mindanao Coal-fired plant in Misamis Oriental, suffered generator turbine damage which caused the facility to be

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on forced outage starting the end of February 2014. Unit 2 was first restored on 8 May 2014 followed by Unit 1 on 1 June 2014.

Table 7: 2014 and 2013 Comparative Gross Generation, Mindanao

MINDANAO GRID						
PLANT TYPE	2014		2013		Difference	
	GWh	% Share	GWh	% Share	MWh	%
Coal	1,258	13.26	1,635	17.50	(378)	(23.10)
Oil-based	2,599	27.42	2,094	22.40	506	24.17
Geothermal	864	9.11	743	7.95	121	16.23
Hydro	4,745	50.05	4,827	51.64	(82)	(1.70)
Solar	1	0.02	1	0.02	0	4.45
Biomass	14	0.15	47	0.50	(33)	(70.18)
Total Generation	9,481		9,347		134	1.43

Source: DOE Power Statistics 2014

A. SYSTEM PEAK DEMAND

The system peak demand for Luzon grid for 2014 was recorded at 8,717 MW which occurred on 21 May 2014. This was 4.96 % or 412 MW higher than the recorded demand of 8,305 MW which happened in the same month last year. This was attributed to the high electricity consumption mainly from the air conditioning and other cooling equipment of the residential and commercial sector during the summer season.

The highest recorded coincident peak demand in Visayas for 2014 occurred on 27 May 2014 at 1,636 MW. This was 4.07% higher than the previous year's demand with 1,572 MW which occurred on May 2014. Demand in Visayas in 2014 had normalized after being hit by Super Typhoon Yolanda in 2013 wherein they experienced low demand. As depicted in Table 8, highest demand for Visayas came from the Cebu sub-grid with 52.69% share followed by Negros and Panay with an almost equal share at 16.29 and 16.16%, respectively while the remaining 14.86% came from the Leyte-Samar and Bohol sub-grids.

Table 8: Breakdown of the 2014 Highest Demand of Visayas at 1,636 MW as of 27 May 2014

Visayas Sub-Grid	2014 Peak Demand Breakdown (MW)	% Share
Cebu	861.83	52.69
Negros	266.41	16.29
Panay	264.32	16.16
Leyte-Samar	181.44	11.09
Bohol	61.69	3.77
Total Visayas Demand	1653.69	100.00

In Mindanao, the recorded highest demand including embedded loads was at 1,469 MW which occurred on 12 November 2014. It grew by 3.82% from 1,415 MW in 2013 despite the tight supply condition that caused curtailment/ rotating brownouts in the grid.

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Table 9: Comparison of 2013 and 2014 Peak Demand from Luzon, Visayas and Mindanao

GRID	Peak Demand (MW)				Deviation	
	2014	Date	2013	Date	MW	%
LUZON	8,717	14-May	8,305	13-May	412	4.96
VISAYAS	1,636	14-May	1,572	13-May	64	4.07
MINDANAO	1,469	14-Nov	1,415	13-Dec	54	3.82

Source: NGCP Daily Operation Report (DOR)

B. ELECTRICITY SALES

The Philippine electricity sales and consumption continued to manifest resiliency in 2014 amid lingering uncertainties in the global economy particularly the sluggish recovery in the euro area, recession in Japan and the destruction brought about by typhoons (Glenda, Luis, Mario, Ruby) that strike the country in 2014. The country's electricity sales and consumption moderately eased to 2.65% from 3.21% in 2013, buoyed by the steady outlook on the domestic economy as well as explicit industries, such as wholesale and retail trade, manufacturing, and real estate, renting and business activities, among others.

The growth of the country's Gross Domestic Product (GDP) grew by 6.1% in 2014, slower than the 7.2% expansion posted in 2013 due to lower government spending and the contraction in the agriculture sector. However, the expansion was boosted by the Industry and Services¹ sector, particularly, Trade and Real Estate, Renting & Business Activities, and by the accelerated performance of Manufacturing. The electricity sales established a solid performance, albeit at slower pace, grew by 2.36% in the year of wooden horse, from the previous year's 4.60%.

Table 10. 2014 and 2013 Comparative Electricity Sales and Consumption, Philippines

Sector	PHILIPPINES					
	2014		2013		Difference	
	GWh	% Share	GWh	% Share	GWh	% Growth Rate
Residential	20,969	27.14%	20,614	27.39%	355.15	1.72%
Commercial	18,761	24.28%	18,304	24.32%	457.04	2.50%
Industrial	21,429	27.74%	20,677	27.47%	752.18	3.64%
Others	2,186	2.83%	1,971	2.62%	215.11	10.91%
Total Sales	63,345	81.99%	61,566	81.80%	1,779.48	2.89%
Own-Use	6,646	8.60%	5,959	7.92%	686	11.52%
System Loss	7,271	9.41%	7,741	10.28%	-470	-6.08%
Total Consumption	77,261		75,266		1,995.62	2.65%

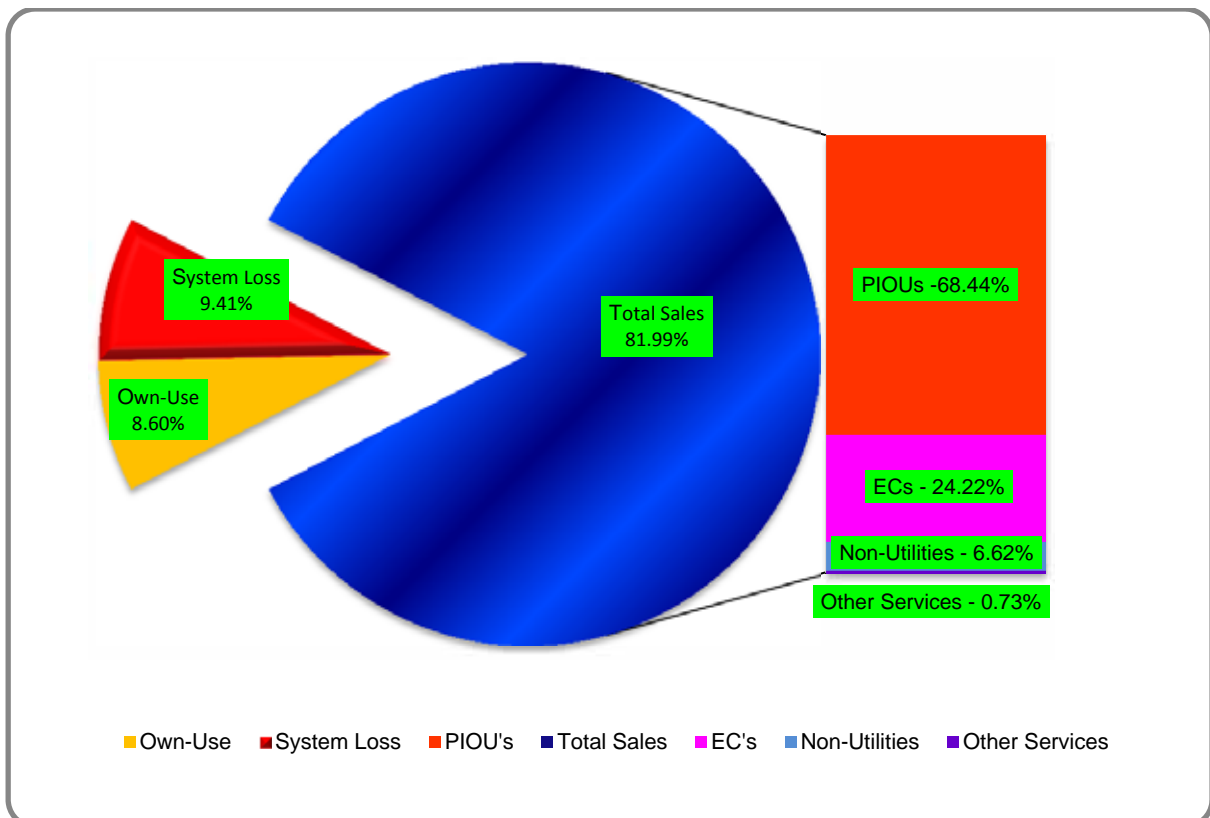
Source: DOE

¹ Philippine Statistical Authority Makati, National Accounts, <http://www.nscb.gov.ph/>

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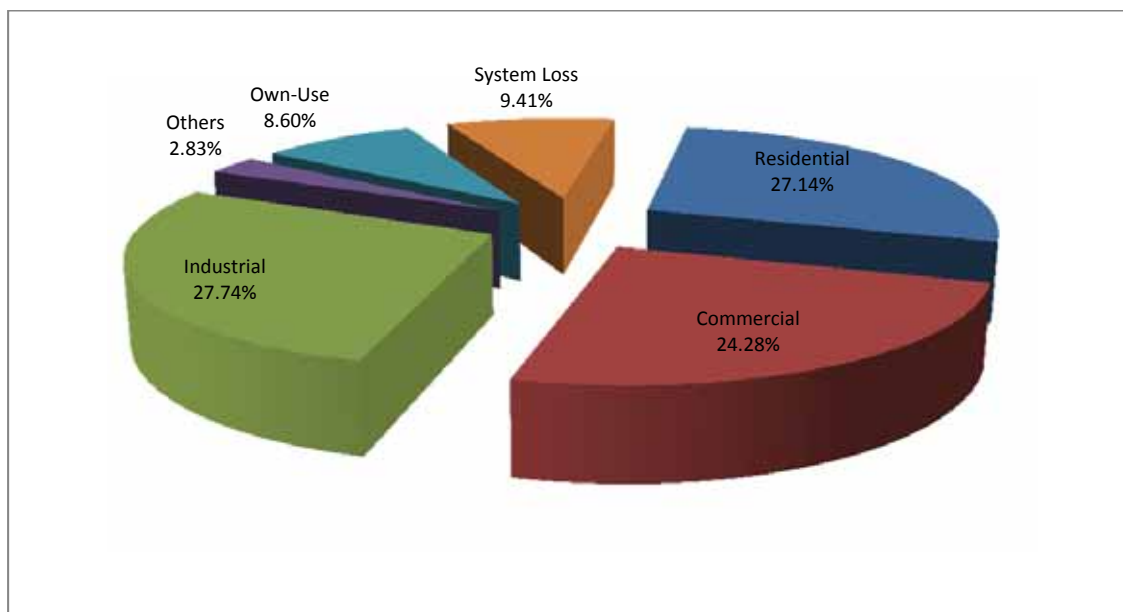
In spite of slowdown in the growth of household consumption led by higher consumer prices, particularly food prices due to tight domestic supply conditions caused by weather-related production interruptions, delays in the delivery of supplies instigated by port congestion and changes in transportation policies, notwithstanding the losses from natural disasters in 2014, the total electricity sales and consumption all over the country still posted a notable figure of 77,261 GWh in 2014 from 75,266 GWh in 2013. Out of these total sales and consumption, 43,351 GWh or 68.44 % was contributed by Private Investor Owned Utilities (PIOU's), while 15,340 GWh or 24.22 % was from the Electric Cooperatives. Non-utilities and Other Services were 4,190 GWh or 6.62%, 464 GWh or 0.73%, respectively. Total sales accounted to 63,345 GWh, corresponding to 81.99% share to total consumption. "Own-use" of power plants and distribution utilities accelerated further by 686 GWh (11.52%) from 5,959 GWh in the previous year to 6,646 GWh in 2014. It is noted that "Losses" from generator, transmission and distribution has been on the downward trend since 2013, accounted for 7,270 GWh or 9.41% as shown in Figure 3.

Figure 1. 2014 Electricity Sales and Consumption



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Figure 2. 2014 Electricity Sales & Consumption by Sector, Philippines



On a per grid basis, Luzon grid ranked the highest in terms of growth in electricity sales and consumption by 3.15% in 2014, albeit lower than the 4.56% increase recorded in 2013. The domestic natural calamities as well as the pigging activity for Ilijan pipeline scheduled on 11 July 2014 (2200H) to 13 July 2014 (2200H) for the purpose of inspecting its integrity, as well as to clean the debris in the pipeline were the major factors that contributed to the slower growth in Luzon's electricity sales in 2014.

On the other hand, the growth rate in the Mindanao electricity sales and consumption resulted to 1.43% in 2014, lower than the year-ago rate of 2.41%. Although still in expansion mode, the experienced slowdown of the Mindanao grid was may be attributed to the Market Intervention that has been issued by the NGCP due to insufficient supply brought about by the grid-wide Mindanao black-out that was affected by sudden break down of STEAG Unit I & Unit II on 27 February 2014 but was eventually synchronized to the grid on 30 May 2014 and 08 May 2014, respectively.

Meanwhile, despite of the adverse effects of typhoon Yolanda on crop production and businesses in 2013 and 2014, Visayas grid still registered growth, representing a robust increase of 1.06% over the previous year from the recorded growth of 1.11% in 2013. The expansion was boosted by the continued collaborative programs/efforts of the government and support of private sectors to the reconstruction in areas affected by Yolanda, Bohol Earthquake, and other smaller disasters in the grid.

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Table 11. 2014 Electricity Sales & Consumption of Distribution Utilities, by Grid

TYPE OF DISTRIBUTION UTILITIES	LUZON	VISAYAS	MINDANAO	PHILIPPINES
Electric Cooperatives (EC'S)*				
Residential	4,079	1,775	1,936	7,790
Commercial	1,704	757	863	3,324
Industrial	975	589	1,296	2,860
Others	552	361	453	1,366
Total Sales	7,311	3,482	4,547	15,340
Own-Use	20	13	10	43
System Loss	1,080	461	703	2,244
Total	8,411	3,956	5,260	17,627
Private Investors Owned Utilities (PIOU's)				
Residential	11,225	996	959	13,179
Commercial	14,398	545	494	15,437
Industrial	10,918	1,845	1,634	14,397
Others	215	70	53	338
Total Sales	36,756	3,455	3,140	43,351
Own-Use	59	6	2	68
System Loss	2,489	306	209	3,004
Total	39,305	3,767	3,351	46,423
Non-Utilities/Directly Connected	3,046	790	354	4,190
Other Services	128	1,218	24	1,369
Plant Station Used	4,961	1,215	360	6,535
Transmission Losses	1,638	(653)	132	1,117
Total Electricity Sales & Consumption	57,489	10,292	9,481	77,261

*Includes off-grid sales and consumption

Non-utilities includes Ecozone, Industrial and Government served by the National Grid

Other services includes energy delivered to other generator

Source: DOE

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Table 12. 2014 and 2013 Comparative Electricity Sales of Distribution Utilities, by Sector, by Grid

Luzon	2014	2013	% Growth Rate
<i>Residential</i>	15,304	15,056	1.65%
<i>Commercial</i>	16,103	15,510	3.82%
<i>Industrial</i>	14,939	14,379	3.90%
<i>Others</i>	895	859	4.17%
Total Sales	47,241	45,803	3.14%
Own-Use	5,040	4,550	10.79%
System Loss	5,208	5,383	-3.25%
Total Consumption	57,489	55,736	3.15%
Visayas	2014	2013	% Growth Rate
<i>Residential</i>	2,770	2,735	1.28%
<i>Commercial</i>	1,302	1,446	-9.99%
<i>Industrial</i>	3,214	3,137	2.47%
<i>Others</i>	753	550	37.02%
Total Sales	8,039	7,868	2.18%
Own-Use	1,234	1,055	16.90%
System Loss	1,019	1,260	-19.16%
Total Consumption	10,292	10,183	1.06%
Mindanao	2014	2013	% Growth Rate
<i>Residential</i>	2,895	2,823	2.54%
<i>Commercial</i>	1,357	1,348	0.65%
<i>Industrial</i>	3,275	3,161	3.61%
<i>Others</i>	538	563	-4.30%
Total Sales	8,065	7,895	2.16%
Own-Use	372	355	4.83%
System Loss	1,044	1,097	-4.89%
Total Consumption	9,481	9,347	1.43%
Philippines	2014	2013	% Growth Rate
<i>Residential</i>	20,969	20,614	1.72%
<i>Commercial</i>	18,761	18,304	2.50%
<i>Industrial</i>	21,429	20,677	3.64%
<i>Others</i>	2,186	1,971	10.91%
Total Sales	63,345	61,566	2.89%
Own-Use	6,646	5,959	11.52%
System Loss	7,271	7,741	-6.08%
Total Consumption	77,261	75,266	2.65%

Note:

-Own Use includes Distribution Utilities company used and Power Plants Station Used.

-System Losses includes Distribution Utilities losses and Transmission losses (substation used, transformation and other unaccounted losses).

-Others includes public buildings, street lights, irrigation, energy recovered and others not elsewhere classified.

Source: DOE

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Table13. Sectoral Share to 2014 Electricity Sales & Consumption, by Grid

Luzon	Total (GWh)	% Share to Total Sales	% Share to Total Consumption
<i>Residential</i>	15,304	32.40%	26.62%
<i>Commercial</i>	16,103	34.09%	28.01%
<i>Industrial</i>	14,939	31.62%	25.99%
<i>Others</i>	895	1.89%	1.56%
Total Sales	47,241	100%	82.17%
Own-Use	5,040		8.77%
System Loss	5,208		9.06%
Total Consumption	57,489		100.00%
Visayas	Total (GWh)	% Share to Total Sales	% Share to Total Consumption
<i>Residential</i>	2,770	34.46%	26.92%
<i>Commercial</i>	1,302	16.19%	12.65%
<i>Industrial</i>	3,214	39.98%	31.23%
<i>Others</i>	753	9.37%	7.32%
Total Sales	8,039	100%	78.11%
Own-Use	1,234		11.99%
System Loss	1,019		9.90%
Total Consumption	10,292		100.00%
Mindanao	Total (GWh)	% Share to Total Sales	% Share to Total Consumption
<i>Residential</i>	2,895	35.89%	30.53%
<i>Commercial</i>	1,357	16.82%	14.31%
<i>Industrial</i>	3,275	40.61%	34.55%
<i>Others</i>	538	6.68%	5.68%
Total Sales	8,065	100%	85.07%
Own-Use	372		3.92%
System Loss	1,044		11.01%
Total Consumption	9,481		100.00%
Philippines	Total (GWh)	% Share to Total Sales	% Share to Total Consumption
<i>Residential</i>	20,969	33.10%	27.14%
<i>Commercial</i>	18,761	29.62%	24.28%
<i>Industrial</i>	21,429	33.83%	27.74%
<i>Others</i>	2,186	3.45%	2.83%
Total Sales	63,345	100%	81.99%
Own-Use	6,646		8.60%
System Loss	7,271		9.41%
Total Consumption	77,261		100.00%

Source: DOE

❖ Industrial Sector

The electricity sales for the industrial customers comprised 21,429 GWh or 27.74% of total electricity sales in 2014, implying an increase of 3.64% from 20,677 GWh in 2013.

The electricity sales of the industry sector in Luzon continued to trend higher, consistent with a moderate growth by 3.90% in 2014 from 14,379 GWh in 2013 to 14,939 GWh in 2014, driven primarily by the increased production of food and beverage, electrical machinery, automotive, and consumer electronics.

Similarly, the full-year growth in industry sector was driven also by the impressive performance of the Mindanao industrial customers, posting a significant increase of 3.61% in 2014. The robust growth was boosted by the strong performance of manufacturing industry in the Mindanao grid. The growth in industry sector was likewise driven by the increase in nickel mining and stone quarrying activities in the grid.

Meanwhile, despite of the devastation brought about by the series of natural disasters that hit the country in the last quarter of 2013, the electricity sales of the industry sector in Visayas improved further, albeit at a slower pace compared to the other grids due to weather-related disruptions brought by the consecutive typhoons and torrential rains which constrained industrial production and agricultural production. Electricity sales from industry sector in Visayas increased by 2.47% year-on-year in 2014, slower than the 3.46% expansion in the previous year.

❖ Residential Sector

The electricity sales for residential sector expanded further in 2014 by 1.72%, slightly lower compared to 4.67% in 2013, led by slowdown in the growth of household consumption. On the other hand, higher temperature during the summer months led to increased usage of air cooling appliances supported by the 21% uptick in sales of consumer air-conditioners, as well as refrigerators in 2014. The drivers of this positive momentum include sales from first-time buyers and the replacement market with increasing popularity of inverter technology, continued rise in commercial projects and improving profitability of the domestic refrigeration business as cost reductions and investments in high-margin products have gained traction.² Likewise, growth in the sector was supported by the brisk real estate and renting activities led by increased number of energized housing units since the

²Raul Joseph A. Concepcion, Chairman and CEO, CONCEPCION Industrial Corp. (CIC)/Business World Online/www.ccac.com.ph/

residential real estate market in the Philippines particularly in Luzon was back on track.

The electricity sold to Luzon residential sector has maintained its growth momentum, albeit at a slower pace growing by 1.65% in 2014 from 5.56% in 2013. The moderate increase in Luzon grid's sales for the residential sector affected the whole country and was immensely fuelled by the higher temperature during the summer months which led to increased usage of air cooling appliances. In addition, the expansion was also driven largely by the gained momentum of the household consumption and exports on the expenditure side that significantly pushed the consumption growth on the household utilization of electronic appliances for food preparation and recreation. At the same time, the favorable business, positive consumer sentiments and robust household spending provided further boost to the residential electricity sales in the country, supported by stable inflation, higher overseas Filipinos remittances, and improved employment conditions.

In Mindanao, electricity sales rate increased by 2.54% in 2014 from 2.11% in 2013 or an equivalent of 2, 895 GWh from the year-ago level of 2, 823 GWh.

On the other hand, sales of electricity in Visayas were flabbier than of the other two grids. Visayas residential customers posted a slower growth of 1.28% in 2014 from 2.52% rise in overall residential sales for Visayas in 2013 due to the remaining uncertainties in supply and demand conditions in some areas in the island after the onslaught of typhoon Yolanda in the southern areas of the Visayas grid.

❖ **Commercial Sector**

Commercial consumption increased at markedly lower rate from the resilient growth performance of 2.50% in 2014 to a modest growth of 2.96% in 2013. Similar to the previous year, sales in the commercial sector was propelled by the expansion in service sector led by real estate services sub-sector, specifically, business outsourcing (BPO) and casinos along with trade and private services sub-sectors.

Similarly, improved commercial energy sales in Luzon in 2014 were mainly associated with the growth in private services and real estate services sub-sector parallel to the increase in cooling load due to the striving domestic investment, supported by the growth pace of business process outsourcing, hotels and restaurants, wholesale and small-scale trade and retail establishments, import and export trading.

The uptick in electricity sales inflation for the commercial sector for Luzon was likewise underpinned by increased new business and rising employment led by the brisk performance of the real estate activities, renting and business activities engaged in transport, storage and communication, trade and repair of motor

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vehicles, personal and household goods and the recovery of the trading, activities towards the end of the year. Further, the resilient continued demand for services sector such as laundry services, medical and health services, educational services, hotels and restaurants, spas and beauty parlors, remained the main driver of growth of electricity sales to the commercial sector.

Meanwhile, commercial sector in Visayas grid which account for 16.19% of total Visayas electricity sales, dropped by 9.99% to 1,302 MW from 1,446 GWh in the previous year due to the adverse effects of super typhoon Yolanda that hit the country in 2013 which further reduced market optimism.

On the other hand, commercial sector in Mindanao grid rebounded by 0.65% in 2014 from a 6.79% contraction in the previous year. The increase in the sector was driven by the expansion in all sub-sectors, led by real estate, renting, trade and other commercial activities such as beverage and basic non-mineral business in the grid, reversing the subtle contraction recorded in 2013. Mindanao's economy grew by an average of 8% wherein the service sector contributed largely consistent with the increase on the number of newly constructed malls and commercial establishments brought by rare occurrences of natural or manmade adversities as compared to 2013, wherein its growth was decelerated by the after effects of Typhoon Pablo and the Zamboanga siege in 2012.

Likewise, the escalation can also be attributed to the interpretation of the RSEC interpretation of the RSEC-WR which prescribed new customer segmentation into just three segments, i.e. residential, low voltage, high-voltage. This was promulgated based on the ERC Resolution No. 20, Series of 2009, entitled, "*A Resolution Adopting the Rules for Setting the Electric Cooperative's Wheeling Rates*" and the promulgation of ERC Resolution No. 08, Series of 2011, entitled "*A Resolution Adopting the Rules Governing the Tariff Glide Path Pursuant to Article VII of the Rules for Setting the Electric Cooperative's Wheeling Rates*".

❖ Others

"Others" refer to public buildings, street lights, irrigation, agriculture and "others not elsewhere classified". This group continued to post double-digit growth at faster pace by 10.91% from 1,971 GWh in 2013 to 2,186 GWh in 2014.

The brisk increase in the performance of the "other" sector was fuelled by the substantial improvements in government spending together with the remarkable performance in infrastructure in 2014 such as public buildings and street lights due to the sustained government capital expenditure. The rebound of agriculture, hunting, forestry and fishing sector due to the healthy growth of the economy in the whole year of 2014 also contributed to the performance of "Other" sector.

❖ Own-Use and System Loss

Total system loss accounted to 7,271 GWh, corresponding to 9.41% share to total consumption. The contraction on the Losses, which posted a 6.08% dropped in 2014 from 7,741 GWh in 2013 due to the increasing network efficiency and improved pilferage management by adopting appropriate standards and technology, and enhancing management reforms such as reducing electricity use through activities that promotes electric energy efficiency relative to demand side management.

Meanwhile, utilities' own-use for office and station use of the power plants expanded timidly by 11.52% from 5,959 GWh in 2013 to 6,646 GWh in 2014.

C. SIGNIFICANT OUTAGES³

LUZON

- Calaca Unit 2 (300 MW) – on extended planned outage from 31 December 2013 to 14 May 2014;
- Pagbilao Unit 1 (382 MW) – on extended planned outage from 10 June to 14 July 2014;
- Pagbilao Unit 2 (382 MW) – on planned outage from 29 July to 22 August 2014;
- Masinloc Unit 2 (315 MW) – on forced outage due to series of boiler tube leaks from 17 March to 18 April 2014;
- Sual Unit 1 (647 MW) – on scheduled maintenance from 25 September to 25 October 2014;
- Sual Unit 2 (647 MW) – on scheduled maintenance from 29 August to 29 September 2014;
- GNPowerr Unit 1 (326 MW) – on extended planned outage from 25 December 2013 to 28 March 2014; on forced outage since 26 October 2014;
- GNPowerr Unit 2 (326 MW) – on forced outage due to generator excitation trouble from 5 September to 3 October 2014;
- Malaya Unit 1 (300 MW) – on forced outage due to high vibration trouble since 21 March 2014;
- Ilijan Block A and B (1,200 MW) – extended planned outage during the PIGging activity from 11 to 13 July 2014;
- Ilijan A2 (200 MW) – on forced outage since 23 December 2014;
- Sta Rita Module 40 (265 MW) – on forced outage due to power transformer trouble from 27 February to 19 July 2014;

³ Based on submitted Grid Operating Program (GOP) Revision 4 of National Grid Corporation of the Philippines (NGCP) as of 31 December 2014

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- Kalayaan Unit 1 (180 MW) – on scheduled maintenance from 1 July to 11 September 2014; and
- Magat Unit 1 (90 MW) – on half-life refurbishment from 12 January to 11 June 2014

VISAYAS

- PB 103 (32 MW) – on deactivated shutdown due to damaged mooring site and barge hull following passage of TY Yolanda since 8 November 2013;
- Unified Leyte – Upper Mahiao GPP (136 MW) – on forced outage due to 26 January 2014 earthquake near Leyte from 26 January to 4 February 2014;
- CEDC Unit 2 (82 MW) – on forced outage due to leaking feedwater control valve from 20 July to 5 August 2014;
- KSPC Unit 1 (100 MW) – on scheduled maintenance from 5 to 22 July 2014;
- KSPC Unit 2 (100 MW) – on scheduled maintenance from 28 September to 20 October 2014;
- PEDC Unit 2 (82 MW) – on scheduled maintenance from 30 January to 15 February 2014;
- CASA Bio (15 MW) – on forced outage due to end of milling season from 11 May to 31 October 2014;
- FFHC Bio (21 MW) - on forced outage due to end of milling season from 2 May to 15 August 2014;
- FFHC Bio (21 MW) - on forced outage due to end of milling season from 15 April to 23 August 2014;
- UMPP Unit 3 (34 MW) – on forced outage from 22 October to 1 December 2014;
- TGPP Unit 1 (37.5 MW) – on forced outage from 2 November to 28 December 2014;
- MGPP Unit 1 (60 MW) – on forced outage from 8 October to 11 November 2014 and 13 November 2014 to 4 January 2015;
- UMPP Unit 3 (34 MW) – on forced outage from 22 October to 1 December 2014;
- PGPP 2 U3 (20 MW) – on forced outage from 29 July to 21 December 2014; and
- CTPP (105 MW) and CDPP 1 (43.8 MW) – on deactivated shutdown since late September 2014 due to turnover to Salcon Power Corporation

MINDANAO

- STEAG Mindanao Coal-fired Power plant Unit 1 (105 MW) – on forced outage due to plant control system trouble from 27 February to 30 May 2014;
- STEAG Mindanao Coal-fired Power plant Unit 2 (105 MW) – on forced outage due to plant control system trouble from 27 February to 7 May 2014;
- PB 117 Unit 1 (50 MW) – on emergency shutdown due to high exhaust gas temperature from 8 July to 13 September 2014;

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- Agus 2 Unit 1 (60 MW) – on scheduled maintenance from 8 November to 20 December 2014;
- Agus 6 Unit 2 (25 MW) - on series of forced outage from 29 January to 15 March 2014 (High thrust bearing temperature), 19 April to 7 June 2014 (emergency shutdown due to unusual sound from the excitation unit), 10 June to 16 October 2014 (governor system problem);
- Agus 6 Unit 3 (50 MW) – on extended planned outage from 17 February to 15 May 2014;
- Agus 6 Unit 5 (50 MW) – on forced outage from 1 October to 7 November 2014;
- Agus 7 Unit 1 (27 MW) – on planned outage from 1 to 15 December 2014 and on forced outage from 16 to 23 December 2014; and
- Agus 7 Unit 1 (27 MW) – on forced outage from 1 to 11 December 2014

D. 2013-2014 SIGNIFICANT INCIDENTS IN THE POWER SYSTEM

- **15 October 2013 – Bohol Earthquake**

An earthquake of tectonic origin with a magnitude of 7.2 occurred in Region VII at about 8:12 a.m, 15 October 2013 with an epicenter at Carmen, Bohol Province. This caused region-wide outages in Bohol, Cebu and Negros. Power plants such as Central Azucarera de San Antonio (CASA) and Panay Energy Development Corporation (PEDC) in Iloilo as well as the Cebu Thermal Power Plant 2 (CTPP2) and Cebu Energy Development Corporation (CEDC) in Cebu, went on outage due to vibration caused by the earthquake but went back on normal operation on the same day.

Unfortunately, majority of the supply which is coming from the Leyte grid (mainly from Unified Leyte Geothermal Power Plant) thru the submarine cable connecting Bohol and Leyte was cut off due to the earthquake.

- **08 November 2013 – Super Typhoon Yolanda/Haiyan**

On November 8, 2013, Super Typhoon Yolanda (International Name: Haiyan) cut a devastating path across the central Philippines, which made a landfall at Guiuan, Eastern Samar. It has a storm strength of category 5 - highest and the strongest tropical cyclone to ever make a landfall. It has a sustained wind speed at 195 miles per hour and wind gusts up to 235 miles per hour. This natural calamity caused severe damages to the power system in Visayas. In the transmission side, NGCP accounted 566 transmission structures (248 towers and 318 poles) that were damaged by the typhoon. Also there were 7 substations that were damaged in Visayas.

Majority of distribution utilities in Visayas, as well as in Bicol and MIMAROPA regions, suffered immensely during the devastation of the typhoon. There were

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also power plants that incurred damages from the strong wind of the typhoon, as follows:

- Tongonan Geothermal and Unified Leyte (Cooling towers of the Malitbog, Tongonan and Mahanagdong Power Plants have sustained damages including Admin building and control rooms; and
 - PB 103 in Estancia, Iloilo (detached mooring causing damage to hull and oil spill to the area)
- **11 November to 10 December 2013 – 30-day Malampaya Off-shore Gas field Turn-around**

The Malampaya Turnaround is a preventive maintenance schedule. Specifically, this is intended for the replacement of the obsolete Safety Instrumented System (SIS) and Fire and Gas System on SWP. It also includes additional works such as implementation of changes to enable production of new wells for Malampaya Project 2 and, completion of critical electrical tie-ins for the depletion compressors. Original schedule was 01 November to 01 December 2013 but was moved to a new schedule of 09 November to 08 December 2013. This was further moved to a later date, 11 November to 10 December 2013. The two-day deferment was caused by trouble that might cause to the shipment of equipment and personnel to the off-shore gas field during the Super Typhoon “Yolanda” (Haiyan) that hit Central Visayas on 08 November 2014.

This activity on Malampaya off-shore gas field caused tight supply condition in the Luzon grid. Ilijan Block A operated at a limited capacity of 420 MW due to biodiesel operation then went on planned outage from 05 to 10 December 2013 due to 5-day nozzle cleaning in preparation for the gas operation. On the other hand, Block B was out for Maintenance from 12 November to 12 December 2014. Available units of Sta Rita and San Lorenzo power plants operated using alternate fuel during the turnaround. Aside from these outages of natural gas power plants, there were other outages that occurred within the turnaround period that alleviated the tightness of supply in Luzon:

- GNPower Unit 2 (Forced outage from 12 to 19 November 2013 due to turbine vibration correction)
- Calaca Unit 1 (Forced outage from 26 October to 15 November 2013 due to low condenser vacuum)
- Pagbilao Unit 2 (Planned outage from 31 August to 26 November 2013)

Several coal-fired generating units also suffered boiler tube leak during the latter part of the turnaround causing severe supply shortage in the Luzon grid and high offer price of peaking power plants in the Wholesale Electricity Spot Market (WESM). The coal-fired power plants that went on forced outage due to boiler tube leak are as follows:

- GNPower Unit 2 (Forced outage from 27 November to 08 December 2013);

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- Pagbilao Unit 1 (Forced outage from 28 November to 12 December 2013);
- Pagbilao Unit 2 (Forced outage from 28 November to 13 December 2013);
- and
- Masinloc Unit 1 (Forced outage from 06 to 08 December 2013)

With these outages, the electricity price for November and December of Meralco was greatly affected. The rate of Meralco, which comprises almost 70 percent demand in Luzon, in December spiked on account of higher generation charge for power purchased from WESM. Meralco had to buy more power from the spot market due to tight supply brought about by the Malampaya maintenance and the simultaneous outages of some power plants.

The average WESM price ballooned to P33.216 per kilowatt hour (kWh) in November and P36.08 per kWh in December, against only P13.74 per kWh in October. The High Supreme Court (SC) issued a Temporary Restraining Order (TRO) on Meralco's record high price increase in its December generation charge of P3.44 per kilowatt-hour to P9.10 per kWh.

In effect, the Supreme Court (SC) ordered Meralco to revert to its old generation charge of P5.67 per kWh. With the rate hike of over P4 per kWh on hold, Meralco faces roughly P10 billion in payables to energy suppliers, of which P6 billion is due to the Philippine Electricity Market Corp., the operator of the WESM.

- **27 February 2014 – Mindanao Blackout**

On 27 February 2014, Mindanao experienced a grid-wide blackout due to a demand and supply imbalance causing underfrequency (UFR) due to the combination of events of unwanted loss of generation of 2 x 105 MW STEAG Mindanao Coal-fired Power Plant caused by unprecedented plant control system trouble, defective equipment of Agus 1 Hydroelectric power plant and insufficient Automatic Load Drop (ALD) at Off-Peak scenario.

Repair of Unit 1 (105 MW) was completed on 08 May 2014 and Unit 2 (105 MW) went online on 01 June 2014.

- **12 July 2014 – PIGging activity for Ilijan Pipeline**

Due to the compromised integrity of the Ilijan pipeline supply natural gas, the National Power Corporation, in coordination with the other stakeholders such as Shell Philippines Exploration B.V, KEILCO, DOE, NGCP, PSALM to conduct a "pigging" activity to check if there were abnormalities such as leaks, malformation or dents within the pipeline. An instrument called PIG, which stands for Pipeline Intelligence Gauge, was inserted in the pipeline and traveled from Tabangao on-shore gas facility to the Ilijan power plant. This activity will be the first pigging of the said pipeline after it was constructed 12 years ago.

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The PIGging activity for Ilijan pipeline was finalized and on scheduled on 11 July 2014 (2200H) to 13 July 2014 (2200H) for the purpose of inspecting its integrity, as well as to clean the debris in the pipeline. Due to this activity, the Luzon grid experienced Red alert on 12 July 2014, Saturday, due to generation deficiency caused by limited capacity of Ilijan, coupled by outages from Masinloc Unit 1, Calaca Unit 2, Pagbilao Unit 1 and GN Power Unit 2.

- **15-16 July 2014 – Typhoon Glenda/ Rammasun**

Typhoon Glenda (International Name: Rammasun) hit the Luzon particularly Bicol region, Southern and Central Luzon as well as Metro Manila. It had 250 kph wind and caused Php 38 billion damage to agriculture and infrastructure⁴.

Power supply from power plants such coal plants of Pagbilao and QPPL as well as natural gas plants like Ilijan, Sta Rita and San Lorenzo were compromised because of the passage of the typhoon. Around 90% of Meralco's franchise area is experiencing power outage brought about by downed poles, lines and outages of transmission lines due to Typhoon Glenda according to NGCP.

E. REFERENCES

DOE List of Existing Power Plants as of December 2014

NGCP Daily Operations Report (DOR)

NGCP Grid Operating Program (GOP) revision 3 for 2014, dated 14 October 2014

⁴Data gathered from the last update by National Disaster Risk Reduction and Management Council (NDRRMC) as of September 16, 2014