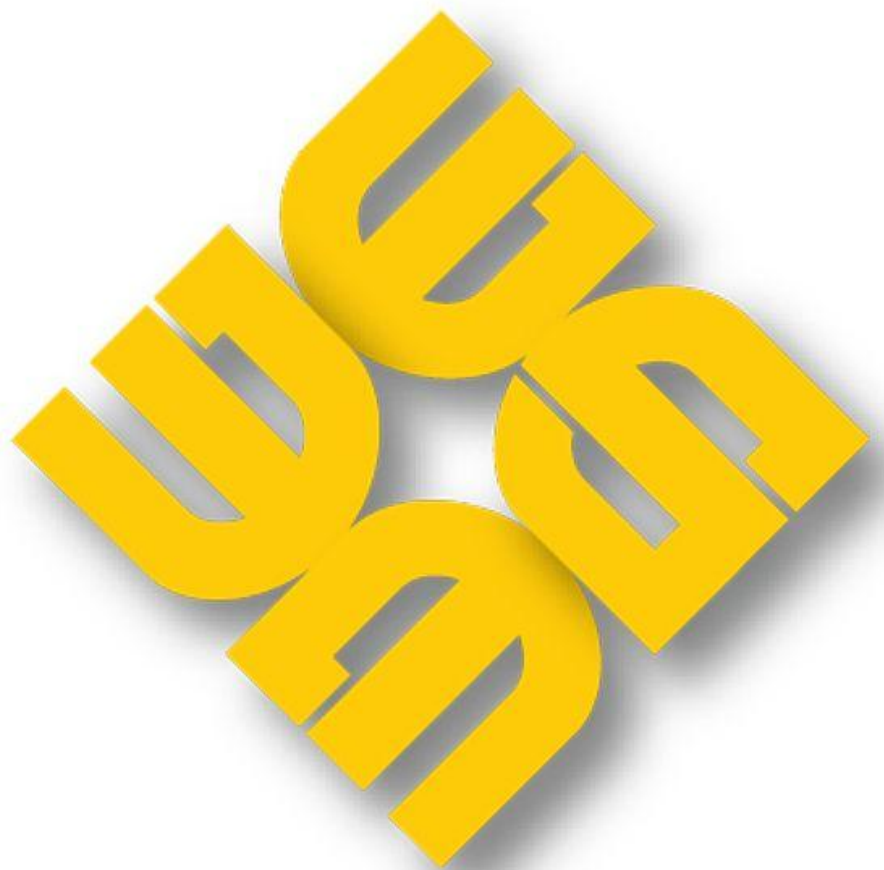


MONTHLY MARKET ASSESSMENT REPORT

For the Billing Period 26 July to 25 August 2011



DISCLAIMER: The information contained in this document is based on the electricity spot market data that are subject to continuous verification by the Philippines Electricity Market Corporation (PEMC). The same information is subject to change as updated figures come in. As such, the PEMC does not make any representations or warranties as to the completeness of this information. The PEMC, likewise accepts no responsibility or liability whatsoever for any loss or costs incurred by a reader arising from, or in relation to, any conclusions or assumptions derived from the information found herein.

Market Assessment Highlights

This Report highlights the results of the integrated Luzon and Visayas market operation for the period 26 July to 25 August 2011 and how the market performed compared with the previous billing month.

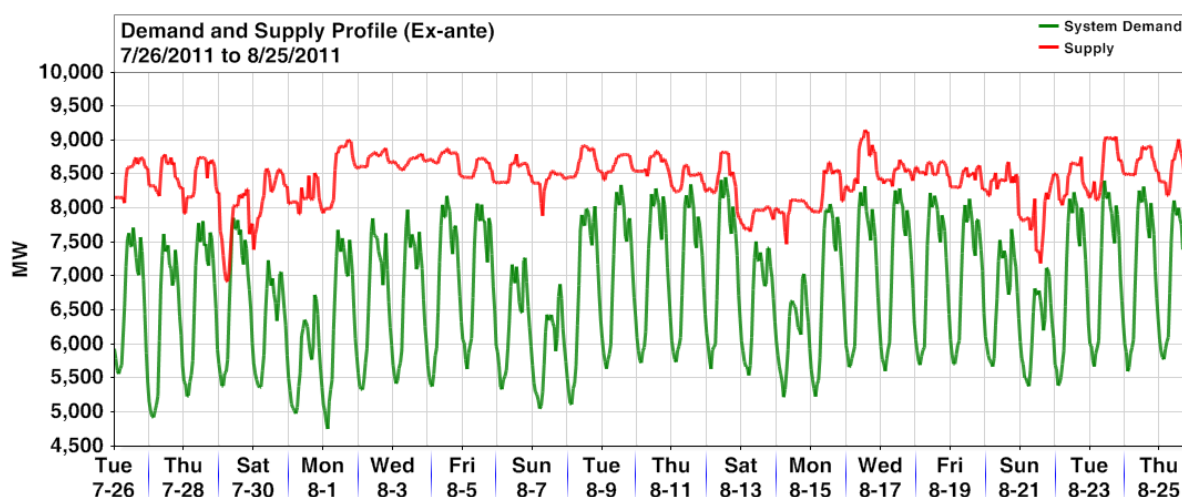
Supply and Demand Situation

The monthly average system demand¹ (ex-ante) in August 2011 decreased by 2 percent to 6,764 MW with the hourly demand ranging from a minimum 4,756 MW to a maximum 8,462 MW (*Table 1*). Colder weather conditions experienced during the month is seen as one of the factors that contributed to the decline in demand. Regional average demand in Luzon and Visayas decreased by the same percentage (5,825 MW to 5,711 MW in Luzon and 1,075 MW to 1,054 in Visayas). (*Table 2*).

The monthly average supply² during the period ranged from 6,926 MW to 9,156 MW. The monthly average supply indicated an increased from the previous billing month by 1.8 percent (8,288 MW to 8,438 MW) (*Table 1*). The increase in supply was observed on both regions. The average supply in Luzon grew by 2.2 percent (6,740 MW to 6,887 MW), the average supply in Visayas slightly increased by 0.7 percent (1,541 MW to 1,551 MW) (*Table 3*).

The resulting margin between the supply and demand in August was calculated at an average of 1674 MW (minimum at 67 MW and maximum at 3,407 MW). This was higher by 20.9 percent from the previous billing month's average margin of 1,384 MW (*Table 1*).

Figure 1. Demand and Supply (Ex-ante), August 2011



¹ The system demand is equal to the total scheduled MW of all load resources in Luzon and Visayas plus losses.

² The supply is equal to the total offered capacity of all generator resources in Luzon and Visayas adjusted for any security limit provided by the System Operator. Other constraints considered during MMS simulation such as generator offered ramp rates may result to lower supply.

Table 1. Demand and Supply Summary (Ex-ante), July and August 2011

	July 2011 (In MW)			August 2011 (In MW)			% M-on-M Change (Jul 2011 - Aug 2011)		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
Demand	8,773	4,951	6,904	8,462	4,756	6,764	(3.5)	(3.9)	(2.0)
Supply	9,468	6,362	8,288	9,156	6,926	8,438	(3.3)	8.9	1.8
Supply/Demand Variance	3,048	(155)	1,384	3,407	67	1,674	11.8	143.6	20.9

Note: The derived values were non-coincident.

Table 2. Regional Demand Summary (Ex-ante), July and August 2011 (Non Coincident)

	July 2011 (In MW)			August 2011 (In MW)			% M-on-M Change (Jul 2011 - Aug 2011)		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
Luzon	7,403	4,105	5,825	7,169	3,984	5,711	(3.2)	(2.9)	(2.0)
Visayas	1,419	712	1,075	1,365	767	1,054	(3.8)	7.7	(2.0)

Note: The derived values were non-coincident.

Table 3. Regional Supply Summary (Ex-ante), July and August 2011 (Non Coincident)

	July 2011 (In MW)			August 2011 (In MW)			% M-on-M Change (Jul 2011 - Aug 2011)		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
Luzon	7,882	4,923	6,740	7,624	5,347	6,887	(3.3)	8.6	2.2
Visayas	1,681	1,339	1,541	1,705	1,242	1,551	1.4	(7.2)	0.7

Note: The derived values were non-coincident.

Plant Outages

The capacity on outage in Luzon (during ex-ante) averaged 1,998 MW ranging from 1,519 MW to 3,272 MW. The monthly average outage capacity in August was higher by 30 percent than the previous billing month. (Figure 2 and Table 4)

Figure 2. Plant Outage Capacity, August 2011 - Luzon

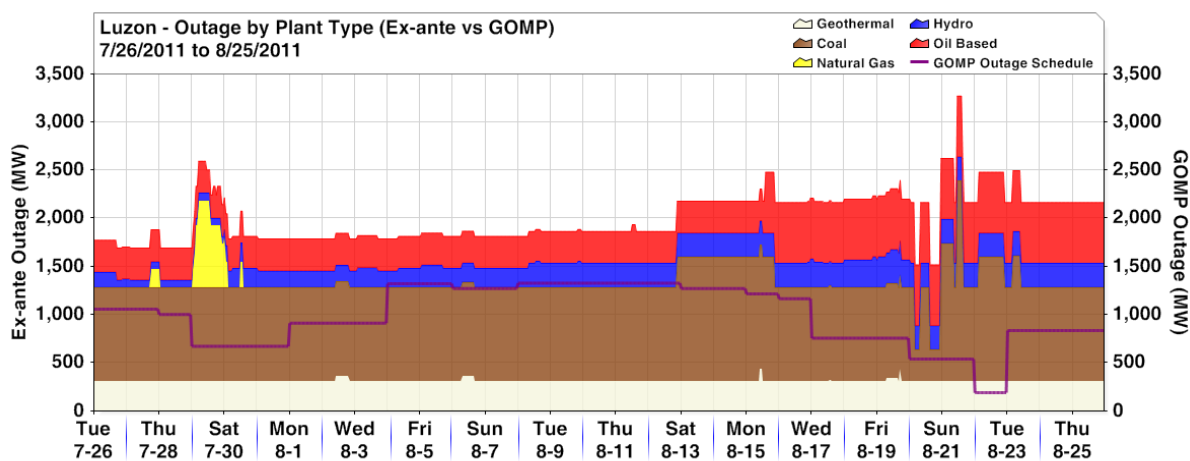


Table 4. Luzon Regional Outage Summary (Ex-ante), July and August 2011 (Non Coincident)

Resource Type	July 2011 (In MW)			August 2011 (In MW)			% M-on-M Change (Jul 2011 - Aug 2011)		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
Coal	1,223	0	408	2,083	330	1,020	70.3		149.8
Natural Gas	863	0	335	903	0	25	4.6		(92.4)
Geothermal	544	308	325	434	308	310	(20.2)	0.0	(4.6)
Hydro	241	76	110	354	76	215	46.7	0.0	94.6
Oil Based	682	332	353	632	242	432	(7.3)	(27.1)	22.5
TOTAL	3,182	906	1,532	3,272	1,519	1,998	2.8	67.7	30.4

Note: The derived values by resource type were non-coincident. The total values were derived based on aggregate hourly outage.

Table 5 below lists the outages of coal and natural gas plants in Luzon for the billing of month of August 2011.

Table 5. Major Plant Outages, Luzon, August 2011

PLANT NAME	DATE/TIME OUT	DATE/TIME IN	REASON
Coal			
Sual 2	22-Jul-11	20-Aug-11	Annual preventive maintenance
Sual 1	20-Aug-11		Maintenance Outage
Calaca 2	18-Jul-11		Forced Outage due to equipment-related concerns
Masinloc 1	12-Aug-11	15-Aug-11	Forced Outage due to equipment-related concerns
Masinloc 2	22-Aug-11		Forced Outage due to equipment-related concerns
QPPL	20-Aug-11	21-Aug-11	Forced Outage due to equipment-related concerns
Natural gas			
Ilijan A1	29-Jul-11	29-Jul-11	Forced Outage due to gas curtailment from SPEX
Ilijan B2	29-Jul-11	29-Jul-11	Forced Outage due to gas curtailment from SPEX
Sta.Rita 3	29-Jul-11	29-Jul-11	Forced Outage due to gas curtailment from SPEX
San Lorenzo 1	29-Jul-11	29-Jul-11	Forced Outage due to gas curtailment from SPEX

In Visayas, the capacity on outage averaged at 105 MW (minimum of 95 MW and maximum of 274 MW) (Figure 3, Table 6). The coal plants Cebu TPP I and 2 went on forced outage (Cebu TPP 1 on July 31 and August 11, and Cebu TPP 2 on August 5, August 15-17 and August 25 onwards) due to equipment related concerns.

Figure 3. Plant Outage Capacity, August 2011 - Visayas

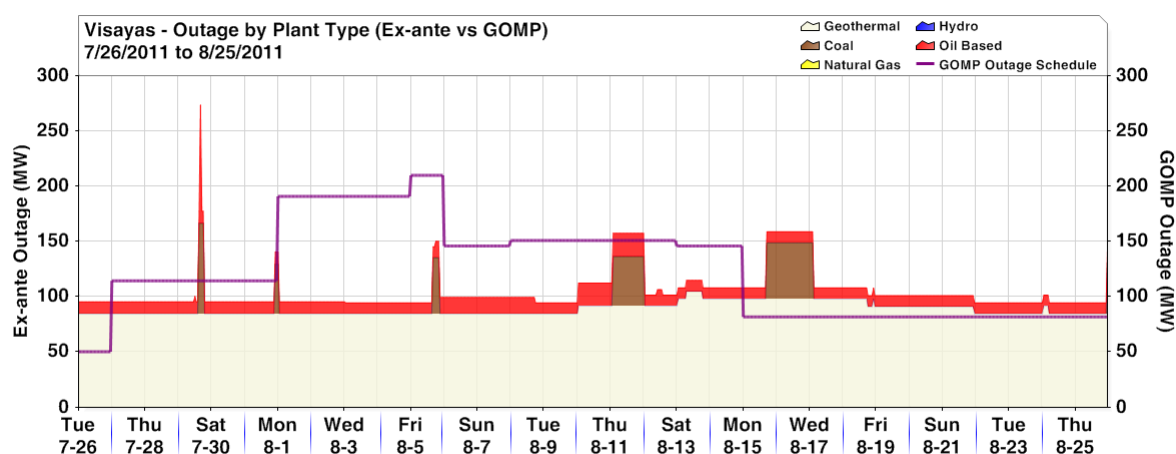


Table 6. Visayas Regional Outage Summary (Ex-ante), July and August 2011 (Non Coincident)

Resource Type	July 2011 (In MW)			August 2011 (In MW)			% M-on-M Change (Jul 2011 - Aug 2011)		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
Coal	51	0	3	82	0	5	61.4		78.6
Geothermal	160	35	91	105	85	89	(34.2)		(2.2)
Hydro	0	0	0	0	0	0			
Oil Based	44	11	12	107	10	12	146.0	(9.1)	(4.4)
TOTAL	171	46	105	274	95	105	60.4	105.2	(0.1)

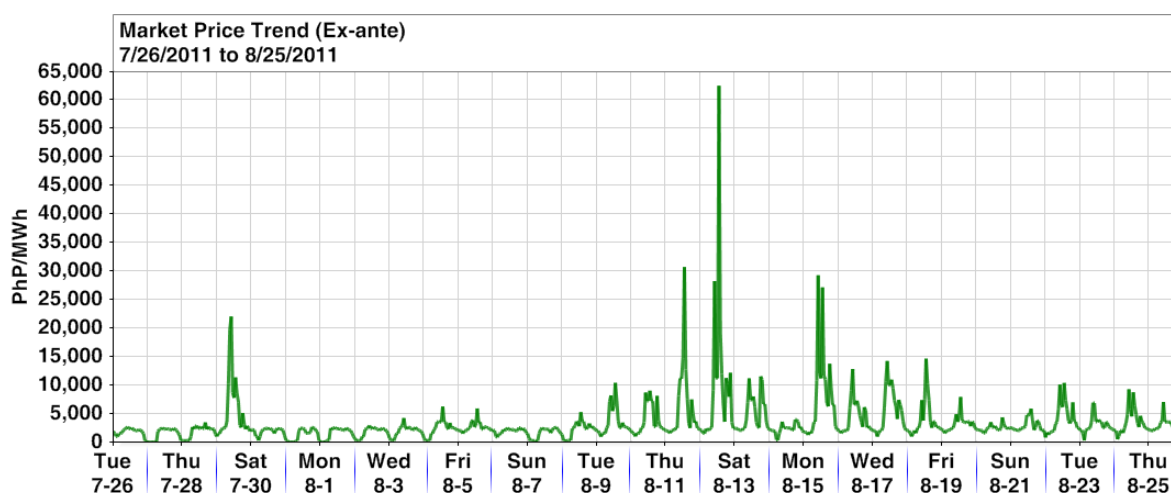
Note: The derived values by resource type were non-coincident. The total values were derived based on aggregate hourly outage.

Market Price Outcome

The monthly average price³ in August decreased by 17.8 percent to PhP3,688/MWh from PhP4,485/MWh in July with the highest price posted at PhP62,552/MWh on August 12th and lowest at PhP0.00/MWh. High prices were observed in the third week of the billing month, which were attributed, among others, to (i) higher demand level during the week, (ii) outages as well as generation limitation of coal plants, (iii) ramp limited offers of certain generators.

Looking at regional prices, the calculations showed similar decreasing price outcomes for Luzon and Visayas. The average price in Luzon decreased by 18 percent from PhP4,480/MWh to PhP3,672/MWh, while the average price in Visayas decreased by 16.2 percent from PhP4,513/MWh to PhP3,780/MWh (*Table 7*). Regional prices reached a high of PhP62,686/MWh in Luzon (August 12, 1400H) and PhP61,808/MWh in Visayas (August 12, 1100H). These price spikes are discussed later in this report.

Figure 4. Market Price Trend, August 2011

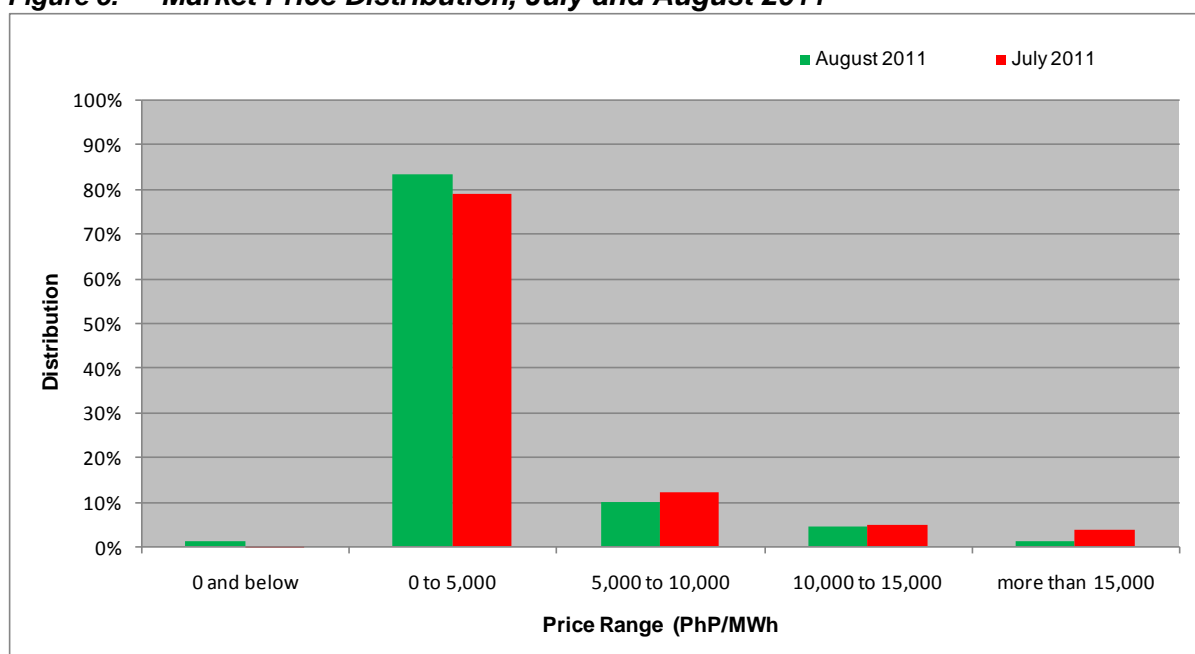


³ The market prices were represented by the following: (i) ex-ante load weighted average price (LWAP) for trading intervals without pricing error during ex-ante, (ii) ex-post LWAP for trading intervals with pricing error during ex-ante but without pricing error during ex-post, (iii) LWAP based on the market re-run result for trading intervals with pricing error both during ex-ante and ex-post, (iv) administered price for loads for trading intervals under market intervention, and (v) estimated load reference price (ELRP) for trading intervals where the ERC-approved Price Substitution Mechanism (PSM) was applied.

Table 7. Market Price Summary, July and August 2011

	July 2011 (In PhP/MWh)			August 2011 (In PhP/MWh)			% M-on-M Change (Jul 2011 - Aug 2011)		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
Luz-Viz	34,841	0	4,485	62,552	0	3,688	79.5		(17.8)
Luzon	34,841	0	4,480	62,686	0	3,672	79.9		(18.0)
Visayas	59,083	0	4,513	61,808	0	3,780	4.6		(16.2)

The frequency of market prices falling within the price levels of PhP5,000/MWh and below increased from 79.1 percent of the time in July to 84.8 percent in August. Correspondingly, prices falling within PhP5,000/MWh to PhP10,000/MWh decreased from 12.3 percent to 9.8 percent. The frequency of prices above PhP10,000/MWh also decreased from 8.6 percent to 5.4 percent. (Figure 5 and Table 8).

Figure 5. Market Price Distribution, July and August 2011**Table 8. Market Price Distribution, July and August 2011**

Price Range (PhP/MWh)	% Distribution	
	July. 2011	August. 2011
0 and below	0.1	1.2
0 to 5,000	79.0	83.6
5,000 to 10,000	12.3	9.8
10,000 to 15,000	4.9	4.3
more than 15,000	3.8	1.1

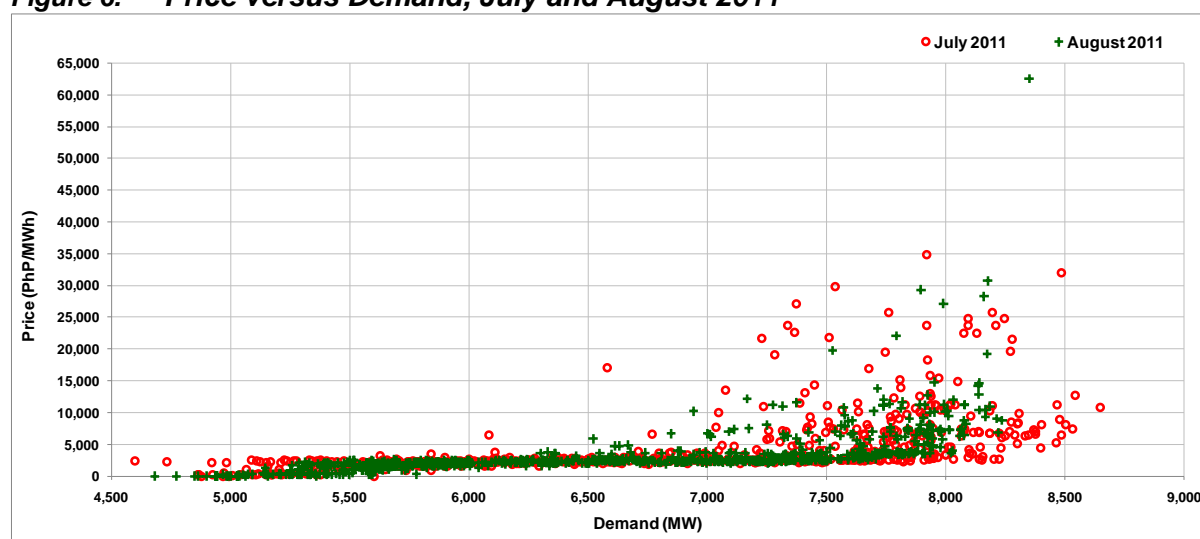
Similar with the previous month's results, the average price in Luzon was 2.9 percent lower than the average price in Visayas (Table 9).

Table 9. Regional Price Summary, July and August 2011

	Luzon (In PhP/MWh)			Visayas (In PhP/MWh)			% Difference		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
August 2011	62,686	0	3,672	61,808	0	3,780	(1.4)		2.9
July 2011	34,841	0	4,480	59,083	0	4,513	69.6		0.7

Figure 6 shows the correlation of the hourly prices and demand in August 2011 and the previous billing month of July. In general, both periods showed significant positive relationship between price and demand, however, the correlation was higher in August. Similarly, with respect to prices above PhP10,000/MWh, it is noted that the correlation between price and demand was higher in August.

Figure 6. Price versus Demand, July and August 2011



High Price Analysis

August 12, 1100H

The ex-ante market price in this trading interval cleared at the bid cap of PhP62,000/MWh with hydro plant Ambuklao as marginal generator (*RTD schedule of 53.2 MW*). However, this high clearing price will only impact the Visayas region considering that a localized pricing error (*i.e. N-1 contingency violation at MERALCO substations in Araneta, Duhat and Zapote*) is issued for Luzon during the ex-ante. The ex-post market price cleared a lower price of PhP20,542/MWh (*oil-based plant TPC 1 as marginal generator*).

It was noted that Ambuklao offered its entire capacity at PhP62,000/MWh (one block offer). Ambuklao, however, cited this reason for its offer “SS TEST – BID FOR NO DISPATCH”.

Tight supply and demand condition was experienced during the trading interval. The aggregate ex-ante demand was 8,421 MW. The supply was limited, among others, by (i) existing outage of coal plants Sual Unit 2 and Calaca Unit 2, (ii) limited offer of coal plant Masinloc Unit 2 due to equipment-related concern, and (iii) ramping limitation on offer of oil-based plant Limay Block B and hydro plant San Roque,. The aggregate ex-post demand was lower at 8,335 MW, which contributed to the lower market price outcome during ex-post.

August 12, 1400H

The ex-ante market price in this trading interval cleared at the bid cap of PhP62,000/MWh with hydro plant Ambuklao as marginal generator (*RTD schedule of 23.7 MW*). Similarly, the ex-post price cleared at PhP62,000/MWh with the same marginal generator.

Unlike the outcome in trading interval 1100H, although a localized pricing error (*i.e. N-1 contingency violation at MERALCO substations in Araneta, Duhat and Zapote*) is issued for Luzon during the ex-ante, the Luzon will also bear the high clearing price of PhP62,000/MWh.

Likewise, tight supply and demand condition was experienced during the trading interval. The aggregate ex-ante demand for this interval was about 8,462 MW. The supply was also limited, among others, by (i) existing outage of coal plants Sual Unit 2 and Calaca Unit 2, (ii) limited offer of coal plant Masinloc Unit 2 due to equipment-related concern, and (iii) ramping limitation on offer of oil-based plant Limay B and hydro plant San Roque,. The aggregate ex-post demand was higher at about 8,493 MW, hence, market price during ex-post cleared at the same level.

Pricing Errors and Market Intervention

The regional application of PEN, PSM and MI is summarized in Table 10. The market results showed pricing errors occurring in Luzon at about 39 percent of the time or 288 trading intervals during the ex-ante process, which was primarily due to the violation of the contingency (N-1) requirement at MERALCO interchange substations in Zapote, Duhat and Araneta. Meanwhile, system-wide pricing errors were issued in 3 trading intervals due to undergeneration conditions, base case constraint violations and artificial load dropping (Value of Loss Load) at the MERALCO interchange substations (Zapote, Duhat and Araneta).

The ex-post market results, on the other hand, indicated system pricing errors in 3 trading intervals due to base case constraint violations.

During ex-ante, the PSM was applied for the whole system (Luzon and Visayas) in 14 trading intervals. Luzon had six trading intervals with PSM application during ex-ante. During ex-post, the PSM was applied for the whole system in two trading intervals. The application of PSM were brought about by the (i) constraint at Negros - Panay submarine cable, (ii) constraint at Calauan – Makban A 230kV Line due to the N-1 contingency applied at the Araneta – Sucat 230 kV Lines, and (iii) constraint at New San Manuel – Pantabangan 230kV Line due to the N-1 contingency applied at San Manuel 600 MVA transformers. Table 10 below shows summary of the PEN, PSM and MI.

Table 10. PEN, PSM and MI Summary, July and August 2011

	Luz-Viz		Luzon		Visayas		Total	
	Freq.	% of Time	Freq.	% of Time	Freq.	% of Time	Freq.	% of Time
PEN (RTD)	3	0.4	288	38.7		-	291	39.1
PEN (RTX)	3	0.4		-		-	3	0.4
PSM (RTD)	14	1.9	6	0.8		-	20	2.7
PSM (RTX)	2	0.3		-		-	2	0.3
MI						-		-

HVDC Scheduling and Price Separations

The occurrence of price separation between Luzon and Visayas regions increased in August (35 and 34 trading intervals during ex-ante and ex-post, respectively), which was attributed to the SO-imposed limitation in the transfer capability of the Leyte-Luzon HVDC (*Table 11*).

Table 11. Summary of HVDC Limits Imposed by NGCP-SO and Results of HVDC Schedules (Ex-ante and Ex-post), August 2011

Results of HVDC Scheduling	HVDC Limit during Ex-ante (Visayas/Luzon)				HVDC Limit during Ex-post (Visayas/Luzon)			
	(No. of Trading Intervals)				(No. of Trading Intervals)			
	150/100	150/200	150/440	Total	150/100	150/200	150/440	Total
Visayas to Luzon	22	61	626	709	21	61	628	710
Limit Not Maximized	3	45	626	674	3	45	628	676
Limit Maximized ¹	19	16		35	18	16		34
Luzon to Visayas	3	-	32	35	3		31	34
Limit Not Maximized	3		32	35	3		31	34
TOTAL	25	61	658	744	24	61	659	744

Notes: 1\ with price separation

Table 12. Summary of HVDC Limits Imposed by NGCP-SO and Results of HVDC Schedules (Ex-ante and Ex-post), July 2011

Results of HVDC Scheduling	HVDC Limit during Ex-ante (Visayas/Luzon)				HVDC Limit during Ex-post (Visayas/Luzon)				
	(No. of Trading Intervals)				(No. of Trading Intervals)				
	0/0	150/100	150/440	Total	0/0	150/100	150/440	440/440	Total
Visayas to Luzon		20	648	668		13	639	1	653
Limit Not Maximized		14	648	662		10	639	1	650
Limit Maximized ¹		6		6		3			3
Luzon to Visayas		1	37	38		6	47		53
Limit Not Maximized		1	37	38		6	46		52
Limit Maximized ¹							1		1
No Flow ¹	12			12	12				12
TOTAL	12	21	685	718	12	19	686	1	718

Notes: 1\ with price separation

Price Setting Plants⁴

As shown in Figure 7, 21 plants from Luzon have been considered as price setters across all price levels in August. The top five frequent price setters during the month include the coal plants Masinloc (at 36%), Pagbilao (at 33%) and Sual (at 28%), hydro plant San Roque (at 28%) and natural gas plant Kepco Ilijan (at 10%). Masinloc, Sual and Pagbilao were also the most frequent price setters in July.

In Visayas (*Figure 8*), 18 plants have been considered as price setters across all price levels. The coal plants KSPC (at 30%), CEDC (at 14%) and TPC (Sangi) (at 10%) and geothermal plant Leyte A (at 22%) remained the four most frequent price setters in Visayas. The coal plant PEDC (at 10%) completes the top five price setters in Visayas.

⁴ A generator trading node is considered as a price setter when its last accepted offer price is between 95% to 100% of its nodal price. A generating plant is considered as price setter if at least one of its trading nodes was price setter in a given trading hour. The percentages stated in the price setting discussion represent the percent of time that a given plant was considered as price setter during the billing month.

Figure 7. Price Setting Frequency Index (Luzon Plants), July and August 2011

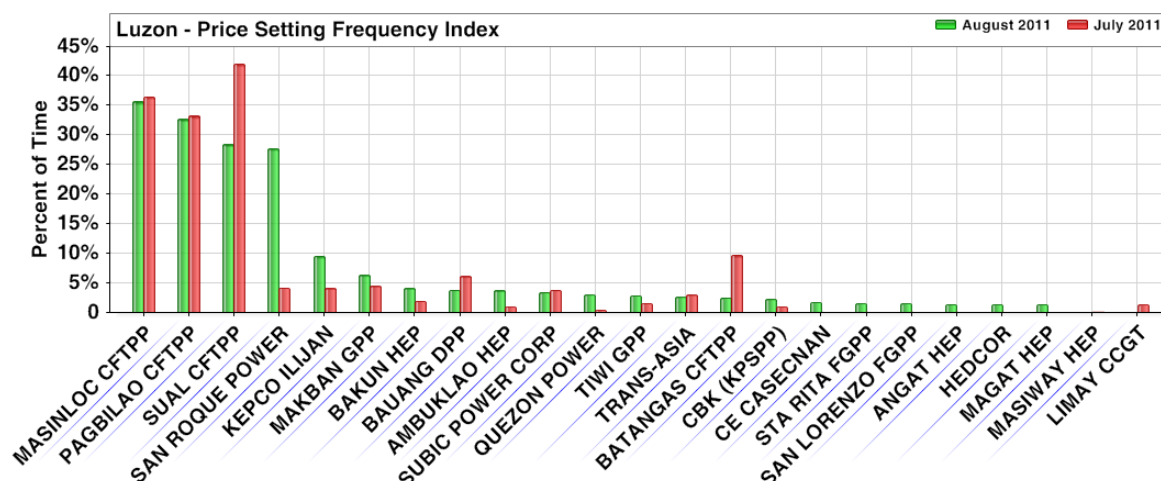
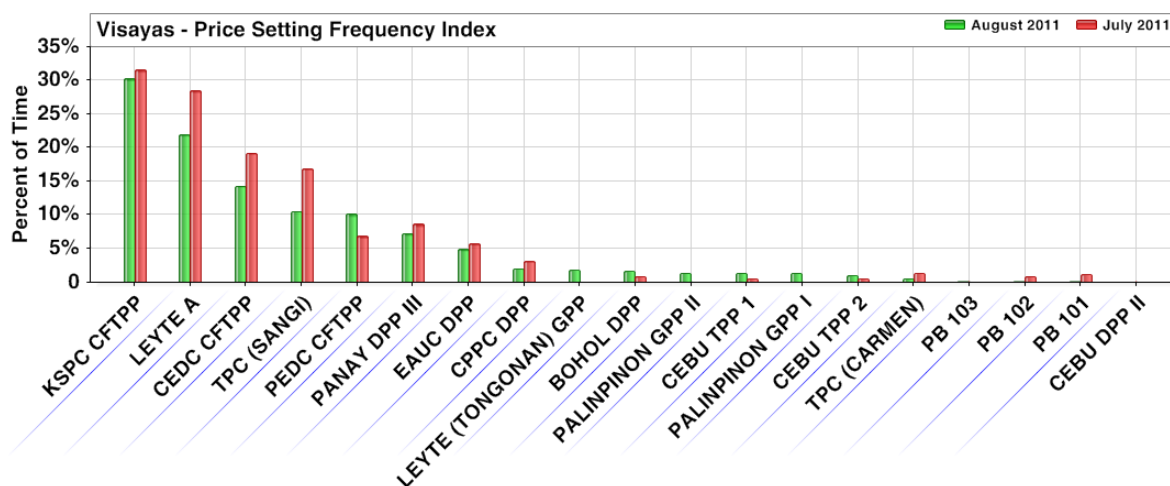
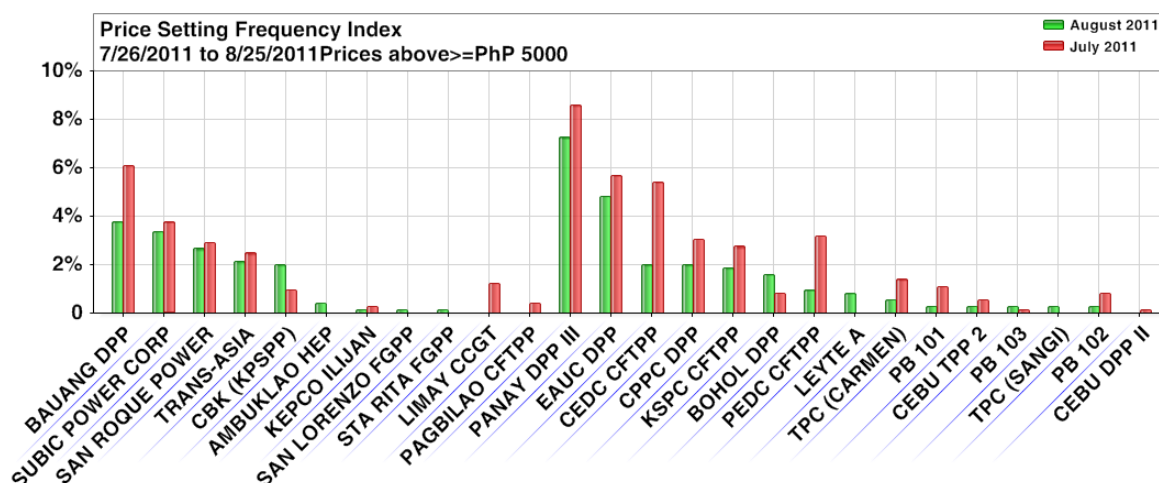


Figure 8. Price Setting Frequency Index (Visayas Plants), July and August 2011



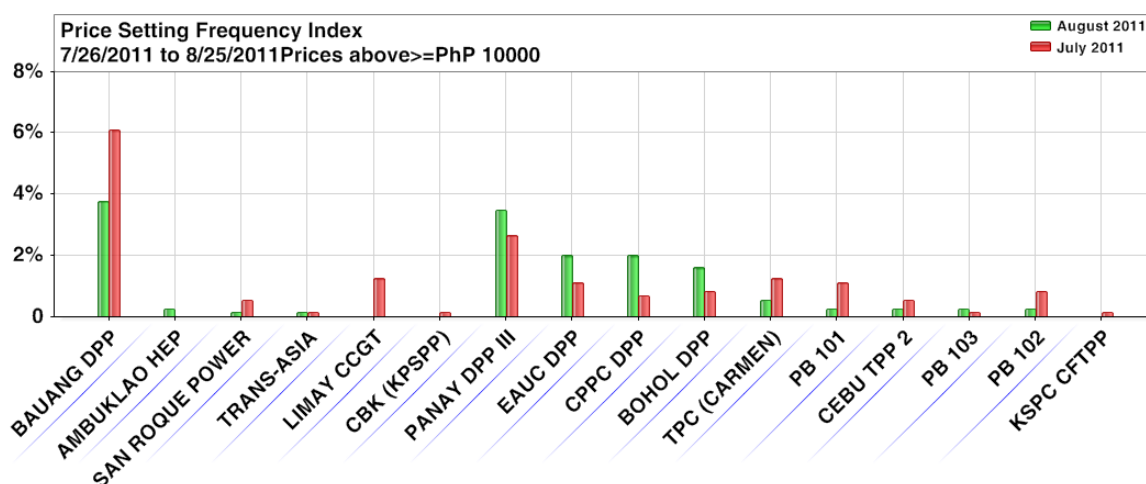
Looking at the PHP5,000/MWh and above price range, the number of price setters increased to twenty-two (23) plants, composed of nine (9) plants from Luzon and fourteen (14) plants from Visayas (Figure 9). The oil-based plants Bauang (at 3.7%), Subic-Enron (at 3.3%), and hydro plant San Roque (at 2.6 %) topped the price setting plants from Luzon. Meanwhile, the oil-based plants Panay III (at 7.2%), EAUC (at 4.8%), and CPPC (at 2%) and coal plant CEDC (at 2%) were the top price setting plants from Visayas.

Figure 9. Price Setting Frequency Index (PhP5,000 and Above), July and August 2011



The price setters at the price levels of PhP10,000/MWh and above were reduced to three (3) plants from Luzon and nine (9) plants from Visayas (Figure 10).

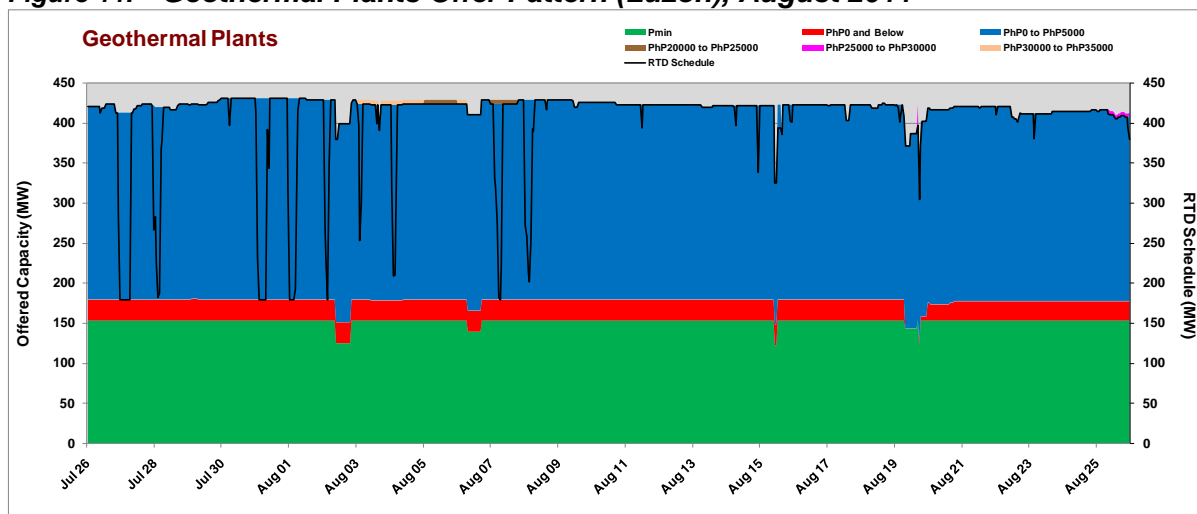
Figure 10. Price Setting Frequency Index (PhP10,000 and Above), July and August 2011



Generator Offer Pattern

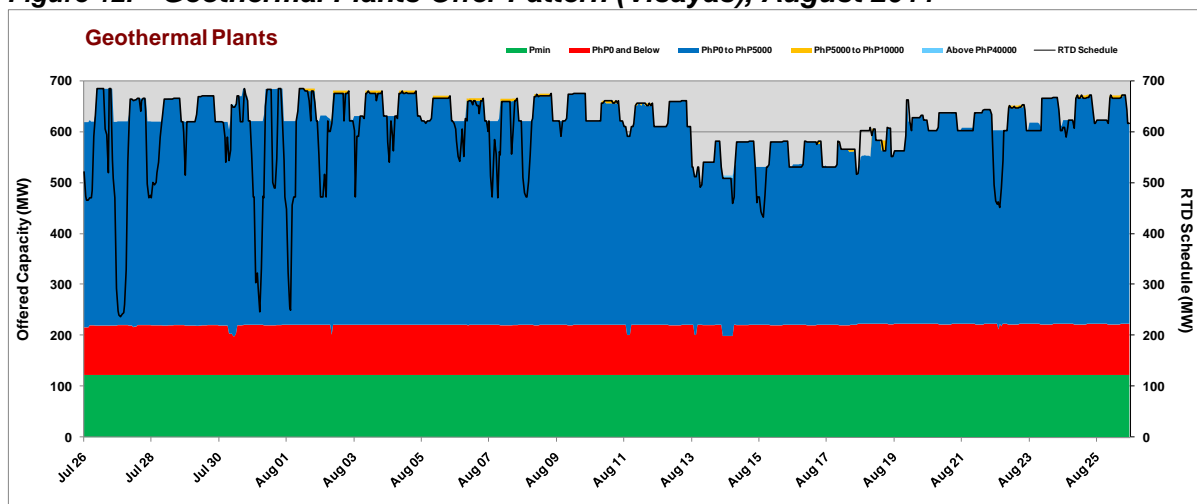
The offer prices of the geothermal plants in Luzon generally remained below PhP5,000/MW, except on August 3-7 and 25 where offer prices reached PhP10,00/MW and above for a 5 MW offered capacity. (Figure 11).

Figure 11. Geothermal Plants Offer Pattern (Luzon), August 2011



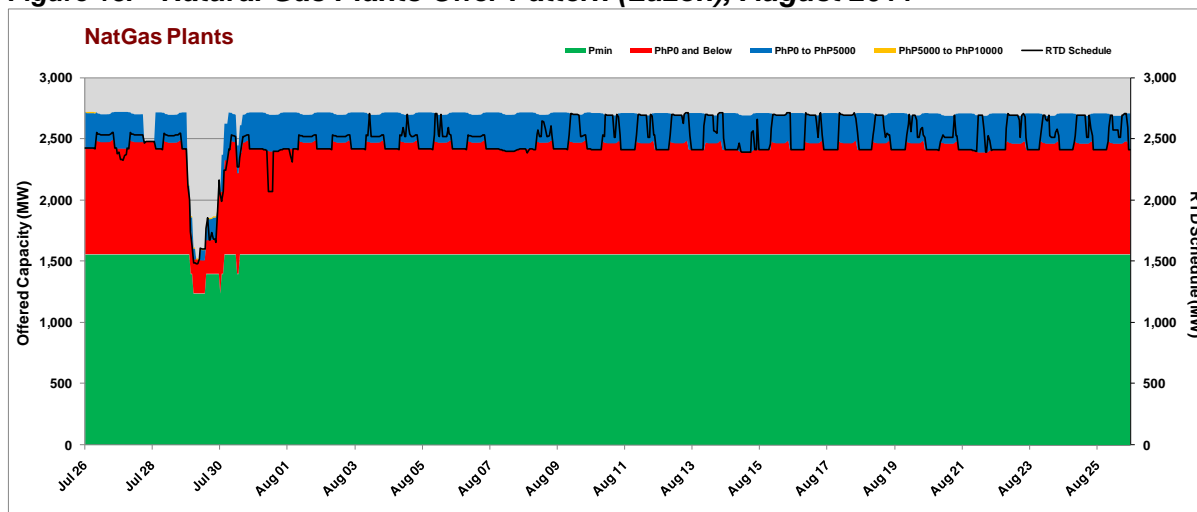
The offer prices of geothermal plants in Visayas remained below PhP5,000/MW, although the peak and offpeak variation in capacity offer was still evident during the period (Figure 12). Reduction in the offered capacity of the Visayas geothermal plants (i.e. Leyte A) was observed in August 13-19.

Figure 12. Geothermal Plants Offer Pattern (Visayas), August 2011



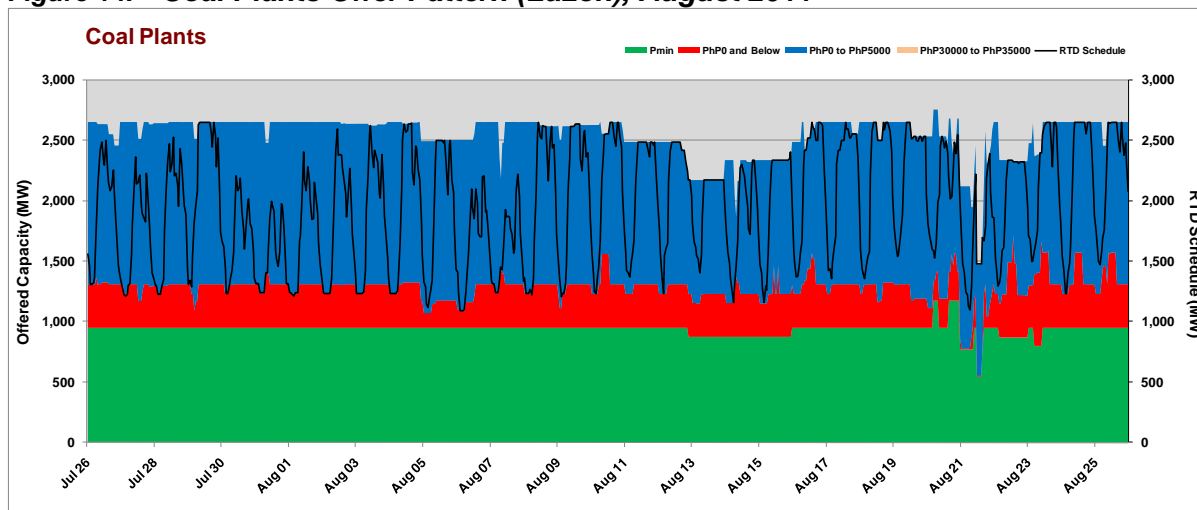
The offer prices of the natural gas plants in Luzon generally remained below PhP5,000/MW. The capacity offer decreased on July 29 due to plant forced outages from Ilijan Block A and B, Sta.Rita Unit 3, and San Lorenzo Unit 1 (Figure 13).

Figure 13. Natural Gas Plants Offer Pattern (Luzon), August 2011



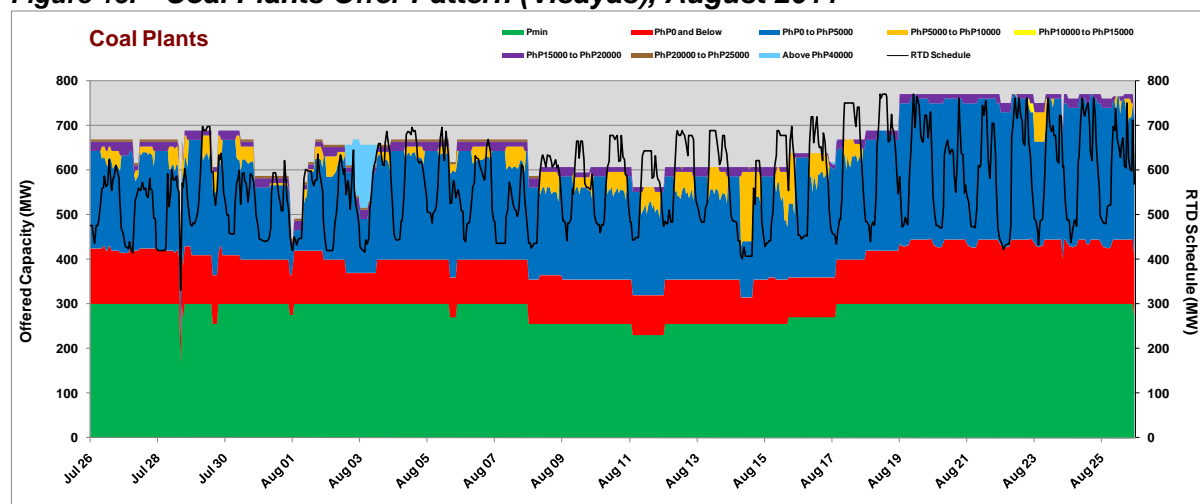
Similarly, the offer prices of the coal plants in Luzon generally remained below PhP5,000/MW (Figure 14).

Figure 14. Coal Plants Offer Pattern (Luzon), August 2011



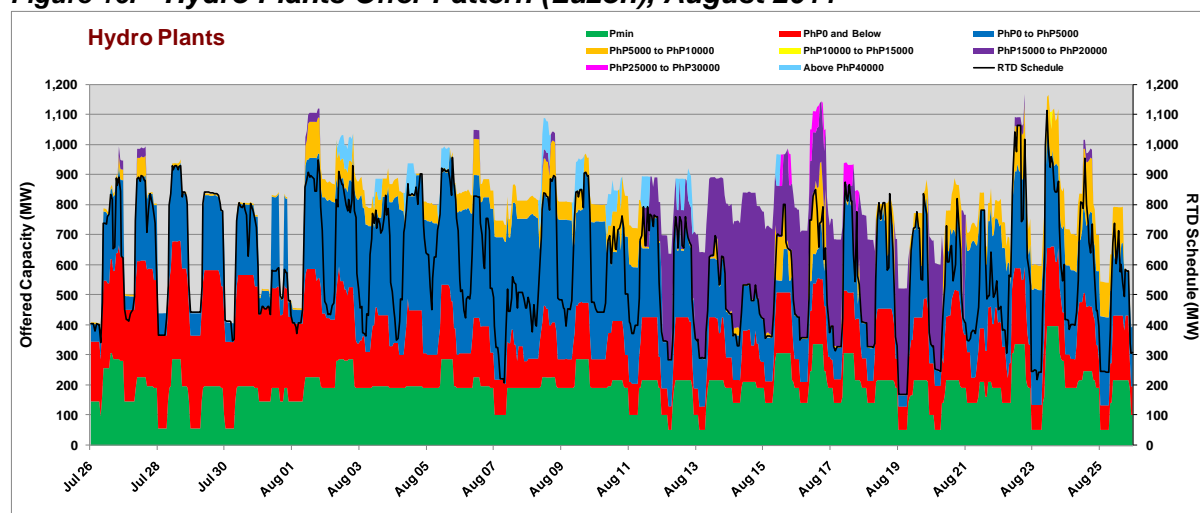
The capacity offer of coal plants in Visayas increased by August 19 attributed to the increase in the capacity offer of PEDC, which have accordingly considered the capacity of its Unit 2 (82 MW). About 5% of the offered capacity of coal plants in Visayas (average of 35 MW) were priced above PhP5,000/MW, reaching as high as PhP60,000/MW (Figure 15).

Figure 15. Coal Plants Offer Pattern (Visayas), August 2011



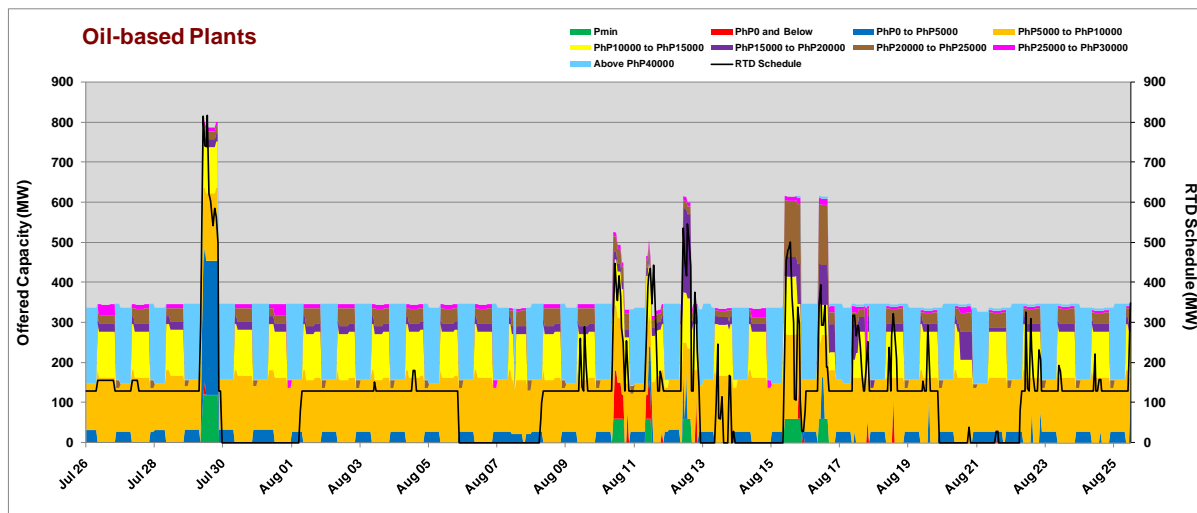
The aggregate hourly offer pattern of hydro plants in Luzon remained highly volatile in terms of capacity and price (Figure 16). The capacity offers ranged from 346 MW to 1169 MW while the offer prices ranged from negative PhP1.0/MW to PhP62,000/MW. The offered capacity of hydro plants in Luzon increased in August compared with the previous billing month.

Figure 16. Hydro Plants Offer Pattern (Luzon), August 2011



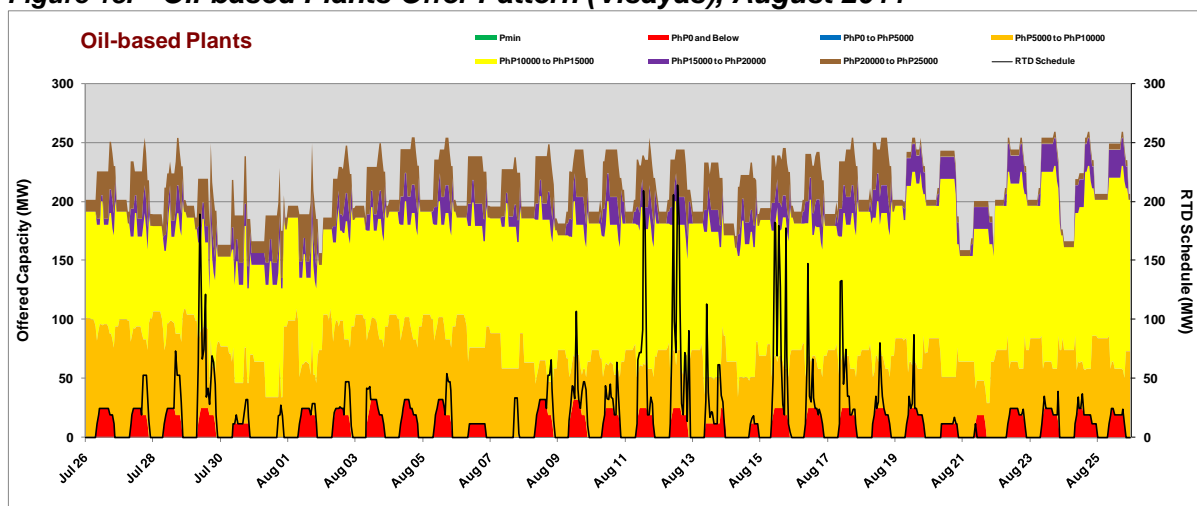
The oil-based plants Bauang DPP, Subic DPP, and Trans-Aisa have consistently submitted offers during the billing month. On the other hand, Limay CCGT occasionally submitted offers, while, Malaya TPP have not offered in the market.

Figure 17. Oil-based Plants Offer Pattern (Luzon), August 2011



The capacity and price offers from oil-based plants in Visayas ranged from 157 MW to 259 MW and PhP0.00/MW to PhP20,543/MW, respectively (Figure 18).

Figure 18. Oil-based Plants Offer Pattern (Visayas), August 2011



Capacity Factor

Based on registered capacity, calculations showed a decrease in the capacity factor of coal (*attributed to plant outages*) and an increase in the capacity factor of hydro (*brought about by the increase in capacity offer*) as shown in *Figure 19 and table 13*.

Figure 19. Capacity Factor (Luzon Plants), August 2011

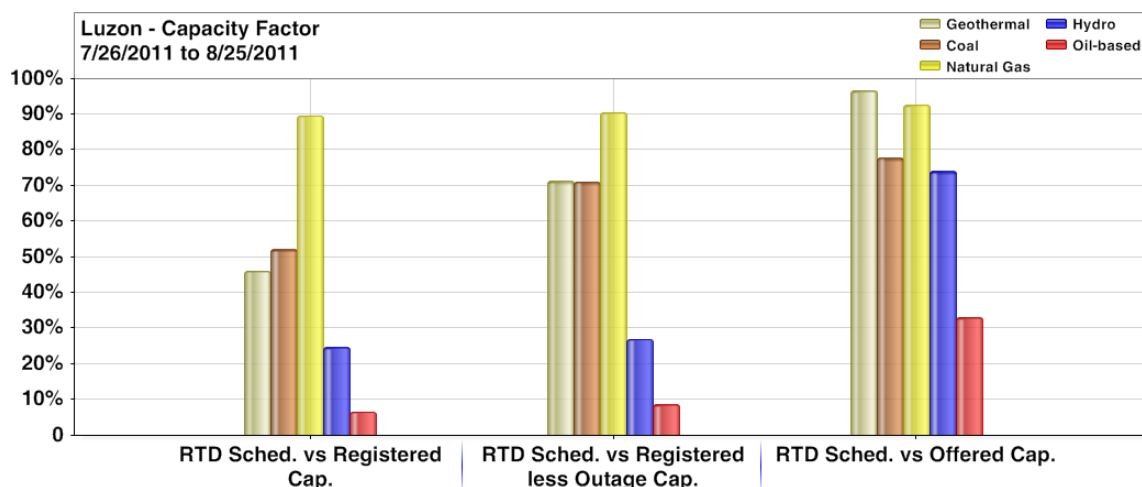


Table 13. Summary of Capacity Factor by Plant Type in Luzon, July and August 2011

Plant Type	RTD Sched. vs Registered Cap.			RTD Sched. vs Registered less Outage Cap.			RTD Sched. vs Offered Cap.		
	July 2011	August 2011	%Change	July 2011	August 2011	%Change	July 2011	August 2011	%Change
Coal	64%	52%	-19%	71%	71%	-1%	79%	78%	-2%
Natural Gas	82%	90%	10%	93%	90%	-3%	96%	93%	-4%
Geothermal	47%	46%	-1%	74%	71%	-4%	98%	96%	-2%
Hydro	20%	25%	23%	21%	27%	29%	94%	74%	-21%
Oil-based	6%	7%	8%	8%	9%	15%	34%	33%	-2%

Table 14. Capacity Factor Data by Plant Type in Luzon, August 2011

Plant Type	Total RTD Sched. (MW-Hr)	Total Registered Cap. (MW-Hr)	Total Registered less Outage Cap. (MW-Hr)	Total Offered Cap. (MW-Hr)	Capacity Factors		
					Registered Cap.	Registered less Outage Cap.	Offered Cap.
	(A)	(B)	(C)	(D)	(A / B)	(A / C)	(A / D)
Coal	1,473,140	2,832,408	2,073,166	1,894,266	52%	71%	78%
Natural Gas	1,842,463	2,056,046	2,037,132	1,990,800	90%	90%	93%
Geothermal	301,781	654,497	423,705	312,846	46%	71%	96%
Hydro	441,348	1,797,355	1,637,651	596,338	25%	27%	74%
Oil-based	88,746	1,351,848	1,030,170	269,085	7%	9%	33%

The calculations indicated decreases in the capacity factors of coal, geothermal and oil-based plant in Visayas (*Figure 20 and Table 15*).

Figure 20. Capacity Factor (Visayas Plants), August 2011

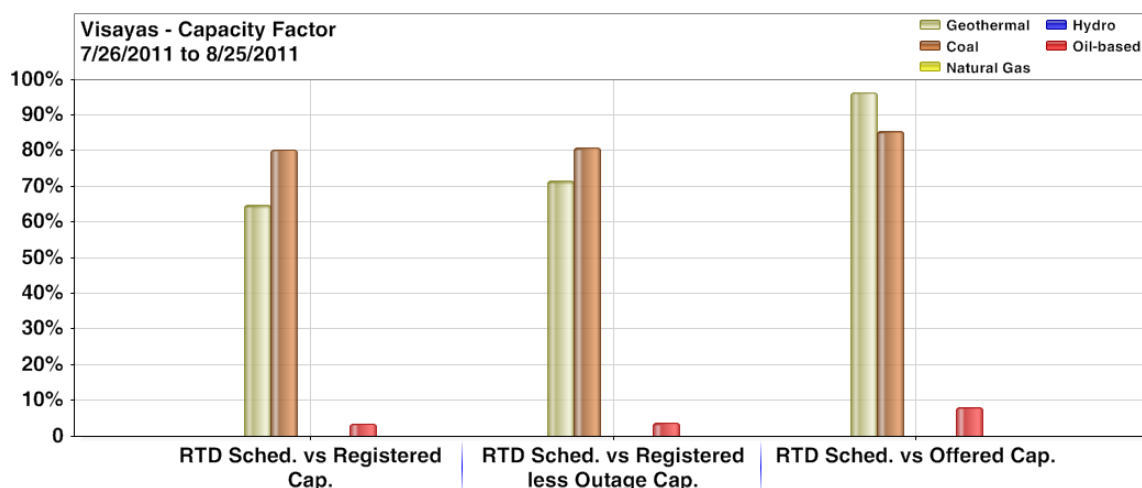


Table 15. Summary of Capacity Factor by Plant Type in Visayas, July and August 2011

Plant Type	RTD Sched. vs Registered Cap.			RTD Sched. vs Registered less Outage Cap.			RTD Sched. vs Offered Cap.		
	July 2011	August 2011	%Change	July 2011	August 2011	%Change	July 2011	August 2011	%Change
Coal	81%	80%	-1%	81%	81%	0%	87%	85%	-2%
Geothermal	66%	65%	-2%	73%	72%	-3%	97%	96%	0%
Oil-based	5%	4%	-26%	5%	4%	-26%	12%	8%	-30%

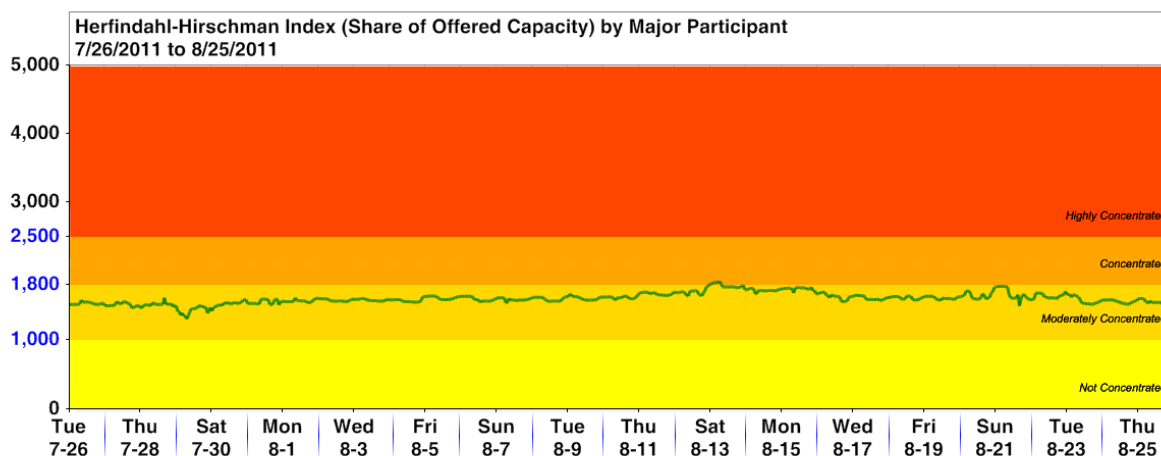
Table 16. Capacity Factor Data by Plant Type in Visayas, August 2011

Plant Type	Total RTD Sched. (MW-Hr)	Total Registered Cap. (MW-Hr)	Total Registered less Outage Cap. (MW-Hr)	Total Offered Cap. (MW-Hr)	Capacity Factors		
					Registered Cap.	Registered less Outage Cap.	Offered Cap.
	(A)	(B)	(C)	(D)	(A / B)	(A / C)	(A / D)
Coal	423,393	527,558	524,028	496,043	80%	81%	85%
Geothermal	448,946	693,259	627,351	466,298	65%	72%	96%
Oil-based	12,956	368,861	360,219	159,616	4%	4%	8%

Market Concentration

The Herfindahl-Hirschman Index (HHI) calculated based on offered capacity by Major participants' grouping indicated a moderately concentrated market condition during the period (Figure 21).

Figure 21. Hourly HHI based on Offered Capacity by Major Participant Grouping, August 2011

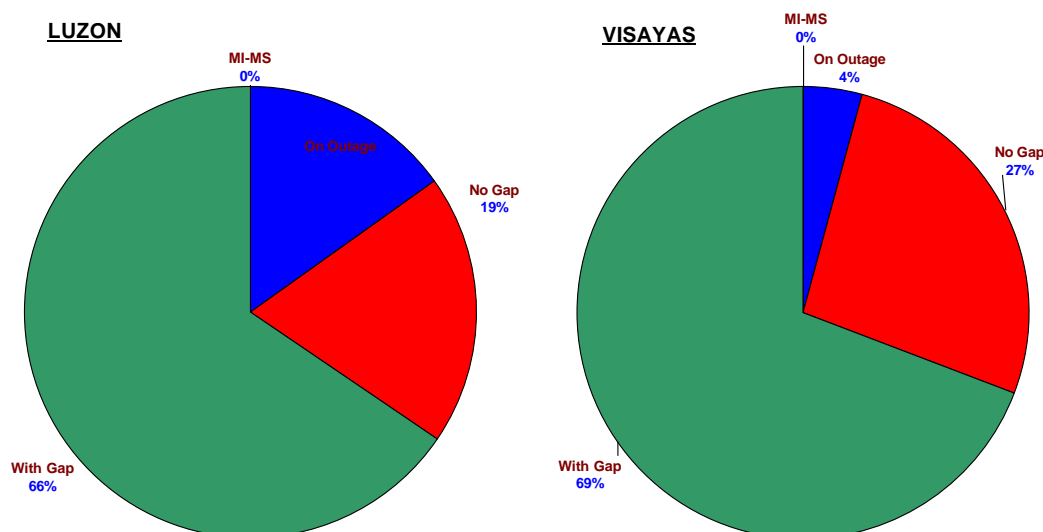


Compliance Monitoring

Compliance to Must Offer Rule

Continued non-compliance with the must-offer rule by generator trading participants was observed throughout the covered period. Figure 22 shows a high percentage of capacity gap⁵ at around 66 percent and 69 percent of the total generator resource-hours⁶ in Luzon and Visayas, respectively.

Figure 22. Summary of Compliance Monitoring to Must Offer Rule, August 2011

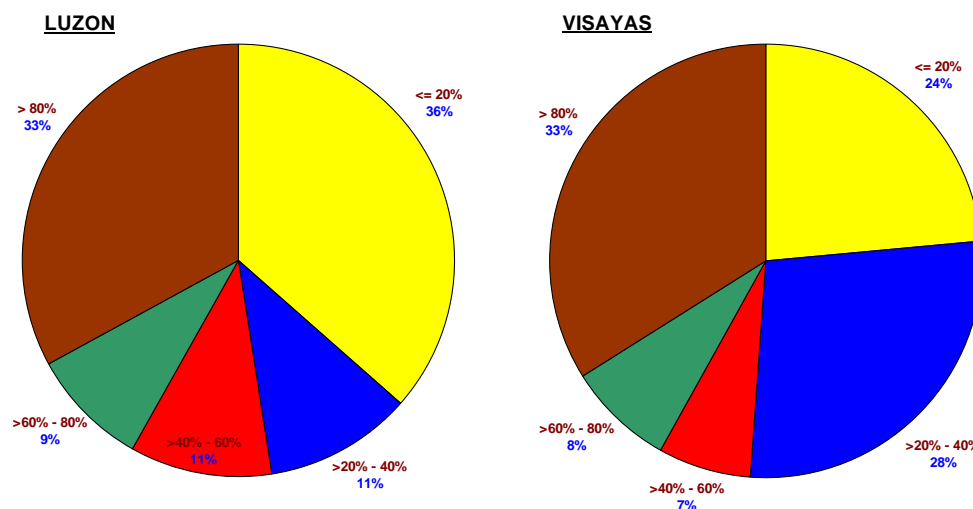


⁵ Capacity gap - registered capacity less outage capacity less offered capacity, calculated for each generator resource node per trading hour.

⁶ Total generator resource-hours - calculated as the number of registered generator resource nodes multiplied by the total trading hours in the billing month.

Figure 23 shows the proportion of the capacity gap to the registered capacity⁷ net of outage capacity⁸ and the corresponding frequency distribution of the generator resource-hours with capacity gap. It shows that the proportion of the capacity gap above 80% constitute about 33% and 33% of the relevant generator resource-hours in Luzon and Visayas, respectively.

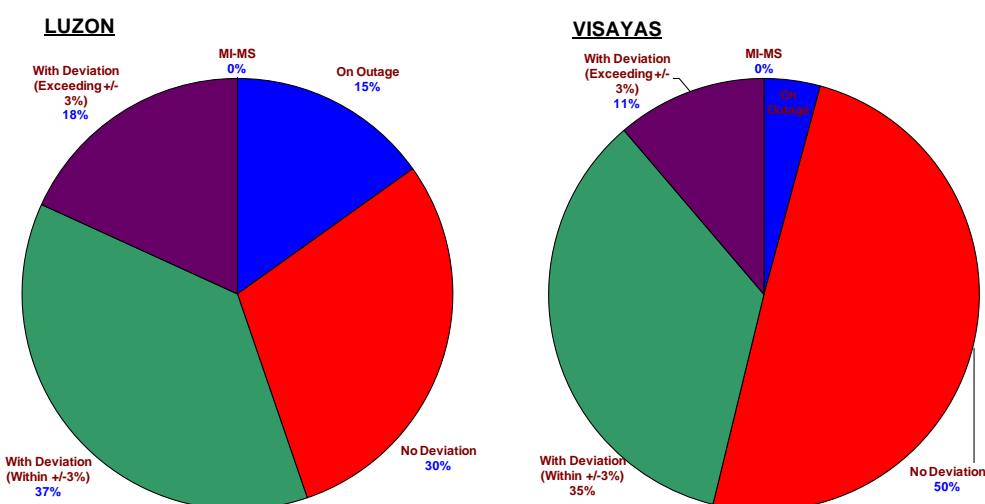
Figure 23. Distribution of Observed Capacity Gap, August 2011



Compliance to RTD Schedule

Figure 24 shows that around 18 percent and 11 percent of the total generator resource-hours in Luzon and Visayas, respectively, have deviations between the RTD schedule⁹ and actual dispatch¹⁰ exceeding the $\pm 3\%$ tolerance limit¹¹ in the billing month of August 2011.

Figure 24. Summary of Compliance Monitoring to RTD Schedule, August 2011



⁷ Registered capacity - capacity of each generator resource node registered with the market.

⁸ Outage capacity - validated outage capacity of each generator resource node per trading hour.

⁹ RTD schedule - target loading level of each generator resource node at the end of the trading hour.

¹⁰ Actual dispatch - actual loading of each generator resource node at the end of the trading hour (based on minute 59 snapshot data).

¹¹ $\pm 3\%$ tolerance limit - initial dispatch tolerance limits adopted per PEM Board Resolution No. 2005-15.

The summary of dispatch deviations exceeding the $\pm 3\%$ in terms of percent deviation and frequency distribution is shown in Figure 25. Majority of the dispatch deviations were within $\pm 20\%$ at about 71 percent and 70 percent of the relevant generator resource-hours in Luzon and Visayas, respectively. Likewise noted was the frequency of dispatch deviations exceeding 80 percent at 15 percent and 18 percent in Luzon and Visayas, respectively.

Figure 25. Distribution of Observed Deviation, August 2011

