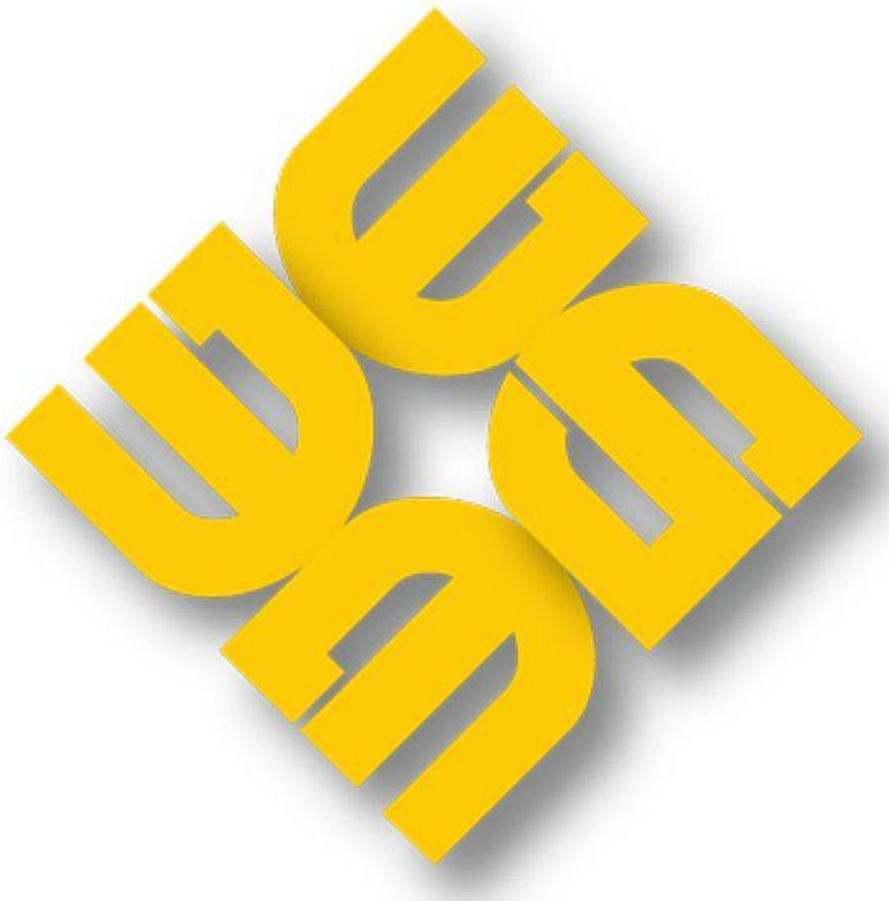
MONTHLY MARKET ASSESSMENT REPORT

For the Billing Period 26 October to 25 November 2011



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Market Assessment Highlights

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

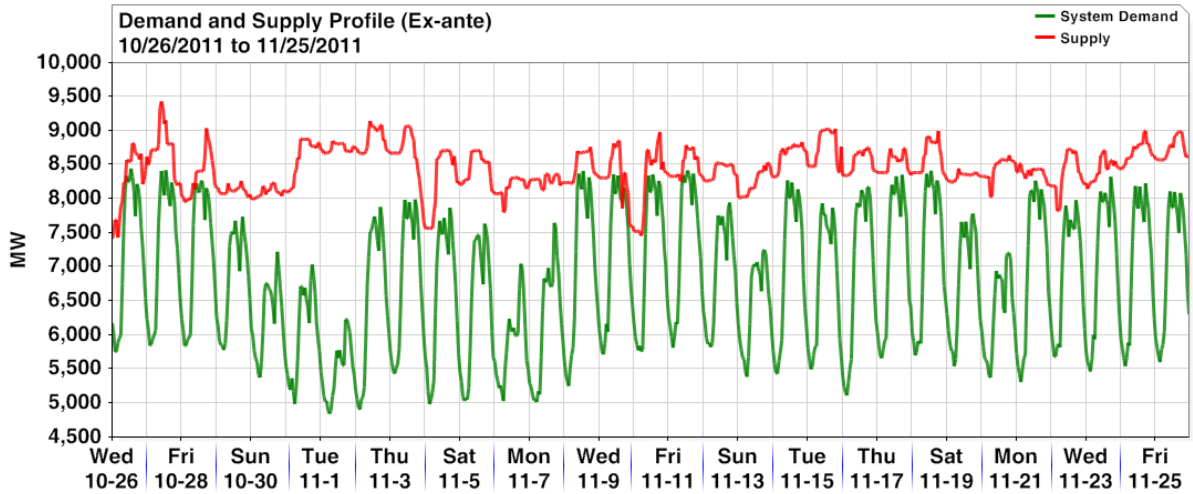
Supply and Demand Situation

The monthly average system demand[1] (ex-ante) in November 2011 slightly increased by 1.4 percent to 6,795 MW with the hourly demand ranging from a minimum of 4,845 MW to a maximum of 8,446 MW *(Table 1)*. Both regions showed an increase in demand. The regional average demand increased by 1.3 percent (5,643 MW to 5,718 MW) in Luzon and 1.5 percent (1,061 MW to 1,077 MW) in Visayas *(Table 2)*.

The monthly average system supply[2] also showed an increase from the previous billing month by 5.9 percent (7,909 MW to 8,460 MW) *(Table 1).* The monthly average system supply during the period ranged from 7,417 MW to 9,432 MW. The average supply in Luzon increased by 7.8 percent (6,498 MW to 7,003 MW) while the average supply in Visayas decreased by 2.4 percent (1,493 MW to 1,458) *(Table 3).* Lower level of capacity on outage and capacity gap contributed to the improvement in Luzon's supply condition. On the other hand, higher level of capacity on outage and capacity gap caused the decrease in the supply in Visayas.

The resulting margin between the supply and demand in November was calculated at an average of 1,665 MW (minimum of negative 100 MW and maximum at 3,838 MW). This was higher by 29 percent from the previous billing month's average margin of 1,289 MW *(Table 1)*.

Figure 1. Demand and Supply (Ex-ante), November 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), October and November 2011***

	October 2011 (In MW)			November 2011 (In MW)			% M-on-M Change (Oct 2011 - Nov 2011)		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
Demand	8,502	4,101	6,701	8,446	4,845	6,795	(0.7)	18.2	1.4
Supply	8,865	6,909	7,990	9,432	7,417	8,460	6.4	7.4	5.9
Supply/Demand Variance	3,725	(163)	1,289	3,838	(100)	1,665	3.0	38.4	29.2

Note: The derived values were non-coincident.

Table 2. ***Regional Demand Summary (Ex-ante), October and November 2011***

	October 2011 (In MW)			November 2011 (In MW)			% M-on-M Change (Oct 2011 - Nov 2011)		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
Luzon	7,153	3,332	5,643	7,110	4,041	5,718	(0.6)	21.3	1.3
Visayas	1,379	706	1,061	1,433	748	1,077	4.0	6.0	1.5

Note: The derived values were non-coincident.

Table 3. ***Regional Supply Summary (Ex-ante), October and November 2011***

	October 2011 (In MW)			November 2011 (In MW)			% M-on-M Change (Oct 2011 - Nov 2011)		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
Luzon	7,429	5,519	6,498	7,864	6,044	7,003	5.9	9.5	7.8
Visayas	1,628	1,272	1,493	1,669	1,178	1,458	2.5	(7.4)	(2.4)

Note: The derived values were non-coincident.

Plant Outages

Figures 2 and 3 below show the outage capacity by plant type considered during the ex-ante scheduling process (left Y-Axis) compared with the outage schedule based on NGCP-SO's CY2011 Grid Operating and Maintenance Program (GOMP).

The capacity on outage in Luzon (during ex-ante) averaged 2,240 MW, ranging from 1,809 MW to 3,119 MW. The monthly average outage capacity in November was lower by 19 percent than the previous billing month. *(Figure 2 and Table 4)*

Figure 2. ***Plant Outage Capacity, November 2011 - Luzon***

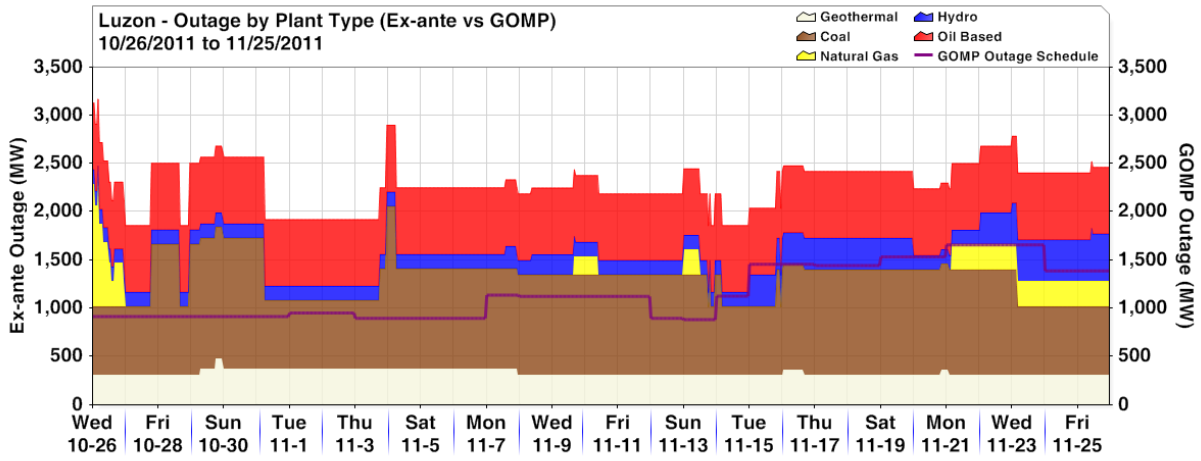


Table 4. Luzon Regional Outage Summary (Ex-ante), October and November 2011

Resource Type	October 2011 (In MW)			November 2011 (In MW)			% M-on-M Change (Oct 2011 - Nov 2011)		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
Coal	2,336	712	1,263	1,689	712	983	(27.7)	0.0	(22.2)
Natural Gas	1,723	0	314	1,310	0	71	(23.9)		(77.4)
Geothermal	533	308	331	485	308	330	(9.0)	0.0	(0.4)
Hydro	463	76	156	499	97	164	7.7	27.4	5.1
Oil Based	1,192	632	693	692	692	692	(41.9)	9.5	(0.2)
TOTAL	3,673	1,788	2,757	3,119	1,809	2,240	(15.1)	1.2	(18.8)

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 month of November 2011. Coal plant Pagbilao Unit 2 remained on maintenance outage during the month while the other coal plants, Sual Unit 1 and 2, Pagbilao Unit 2 and Calaca Unit 2 encountered forced outages due to various equipment-related concerns. The natural gas plant Ilijan, which was shutdown last October 19 in line with the Malampaya maintenance outage, went back online on October 26. A unit of Ilijan Block was again placed on outage on November 9-10 due to gas supply restrictions. Meanwhile, San Lorenzo Unit 2 was placed on outage starting November 21 for minor inspection.

Table 5. Major Plant Outages, Luzon, November 2011

Plant/Unit Name	Date/Time Out	Date/Time In	Outage Type	Reason
COAL				
Sual 1	2011-10-27 18:20:00	2011-10-28 14:56:00	Forced Outage	Unit main transformer tripped by over current relay
Sual 2	2011-10-28 23:53:00	2011-10-31 04:59:00	Unplanned Outage	Overhauling and blanking of its discharge and suction lines of boiler circulating pump 2A.
Sual 2	2011-11-03 21:59:00	2011-11-04 05:25:00	Forced Outage	Governor valve trouble
Calaca 1	2011-08-29 22:15:00		Forced Outage	Emergency shutdown due to suspected reheater leak.
Calaca 2	2011-11-03 17:12:00	2011-11-13 17:20:00	Forced Outage	Boiler tube leak
Calaca 2	2011-11-13 18:14:00	2011-11-13 19:07:00	Forced Outage	Troube at condensate pump
Calaca 2	2011-11-13 22:01:00	2011-11-14 02:21:00	Forced Outage	Trouble at pulverizer 1
Calaca 2	2011-11-14 02:50:00	2011-11-14 03:39:00	Forced Outage	Tripped due to turbine dropping
Pagbilao 1	2011-10-01 00:51:00		Planned Outage	Maintenance outage
Pagbilao 2	2011-11-15 19:13:00	2011-11-23 03:29:00	Forced Outage	Condenser tube leak
NATURAL GAS				
Ilijan A1	2011-10-19 22:35:00	2011-10-26 04:07:00	Planned Outage	Maintenance of Malampaya Gas Facilities until Oct. 26 2011
Ilijan A3	2011-10-19 22:57:00	2011-10-26 01:56:00	Planned Outage	Maintenance of Malampaya Gas Facilities until Oct. 26 2011
Ilijan B1	2011-10-19 23:36:00	2011-10-26 08:25:00	Planned Outage	Maintenance of Malampaya Gas Facilities until Oct. 26 2011
Ilijan B2	2011-10-20 00:12:00	2011-10-26 13:12:00	Planned Outage	Maintenance of Malampaya Gas Facilities until Oct. 26 2011
Ilijan B2	2011-10-26 14:27:00	2011-10-26 23:54:00	Forced Outage	Emergency shutdown due to intermidiate pressure drum level control valve trouble
Ilijan B2	2011-11-09 15:03:00	2011-11-10 09:12:00	Forced Outage	Malampaya gas restriction
Ilijan B3	2011-10-19 23:55:00	2011-10-26 11:39:00	Planned Outage	Maintenance of Malampaya Gas Facilities until Oct. 26 2011
Sta. Rita 4	2011-10-26 03:21:00	2011-10-26 04:51:00	Forced Outage	Burner temperature protection high
Sta. Rita 4	2011-11-13 00:47:00	2011-11-13 11:34:00	Planned Outage	Off-line compressor washing
San Lorenzo 2	2011-10-25 20:49:00	2011-10-26 23:28:00	Forced Outage	Trouble at hybrid burner temp protection
San Lorenzo 2	2011-11-21 04:34:00		Planned Outage	GT minor inspection

In Visayas, the capacity on outage averaged at 230 MW (minimum of 112 MW and maximum of 433 MW), which was 2.9 percent higher than the previous month *(Figure 3, Table 6)*.

Figure 3. Plant Outage Capacity, November 2011 - Visayas

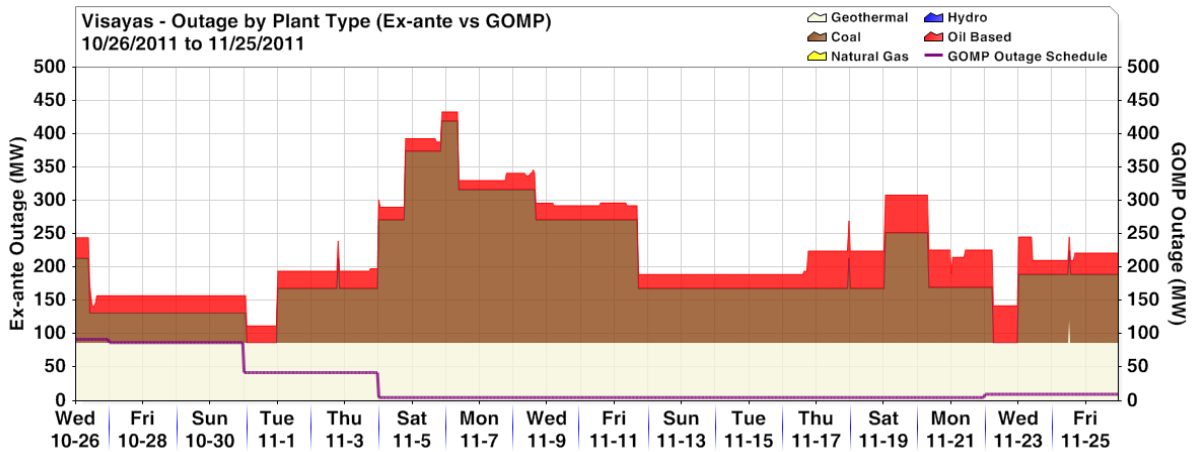


Table 6. Visayas Regional Outage Summary (Ex-ante), October and November 2011

Resource Type	October 2011 (In MW)			November 2011 (In MW)			% M-on-M Change (Oct 2011 - Nov 2011)		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
Coal	185	0	104	333	0	113	80.0		9.0
Geothermal	122	86	87	122	86	87	0.0	0.0	(0.2)
Hydro	0	0	0	0	0	0			
Oil Based	57	10	20	56	10	30	(1.8)	0.0	47.2
TOTAL	297	96	211	433	112	230	45.6	16.6	8.9

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

Table 7 below lists the outages of coal plants in Visayas for the billing of month of November 2011. CEDC Unit 1, which was scheduled to be on outage last August per GOMP, was placed on outage during the month for preventive maintenance. Also, KSPC Unit 2 was placed on outage for preventive maintenance although not included in the GOMP. Other coal plants/units encountered forced outages as well during the period.

Table 7. Major Plant Outages, Visayas, November 2011

Plant/Unit Name	Date/Time Out	Date/Time In	Outage Type	Reason
COAL				
CEDC 1	2011-11-01 00:24:00	2011-11-20 12:04:00	Planned Outage	PMS
CEDC 2	2011-10-06 12:16:00	2011-10-26 09:07:00	Planned Outage	PMS
Cebu TPP1	2011-10-18 00:13:00	2011-10-31 14:07:00	Unplanned Outage	Manual cut out. PMS.
Cebu TPP1	2011-11-02 18:19:00	2011-11-02 19:12:00	Forced Outage	Turbine trip protection indication
Cebu TPP1	2011-11-05 20:15:00	2011-11-08 15:42:00	Forced Outage	FDF Problem
Cebu TPP1	2011-11-17 22:17:00	2011-11-17 23:02:00	Forced Outage	Due to condenser tank level high
KSPC 1	2011-11-04 16:30:00	2011-11-11 16:30:00	Forced Outage	Unstable MVAR - affected by the tripping of 230kV Talisay - Compostela L1 and 2.
KSPC 2	2011-11-04 01:10:00	2011-11-06 08:58:00	Planned Outage	PMS
KSPC 2	2011-11-23 00:04:00		Planned Outage	Annual PMS
PEDC 2	2011-11-19 00:02:00	2011-11-22 05:32:00	Unplanned Outage	To repair the drum level control valve

Market Price Outcome

Coming from a significant increase in the previous billing month, the monthly average price[3] in November decreased by 25.2 percent to PhP5,089/MWh with the highest price posted at PhP44,262/MWh and lowest at PhP0.00/MWh. Notwithstanding, the monthly average price in November was recorded the second highest for this year.

Looking at regional prices, the calculations also showed a decrease in the price outcomes for Luzon and Visayas. The average price in Luzon decreased by 28 percent from PhP6,976/MWh to PhP5,019/MWh, while the average price in Visayas decreased by 7.4 percent from PhP5,895/MWh to PhP5,461/MWh *(Table 8)*. Regional prices reached a high of PhP46,669/MWh in Luzon and PhP43,359/MWh in Visayas.

[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.

Figure 4. Market Price Trend, November 2011

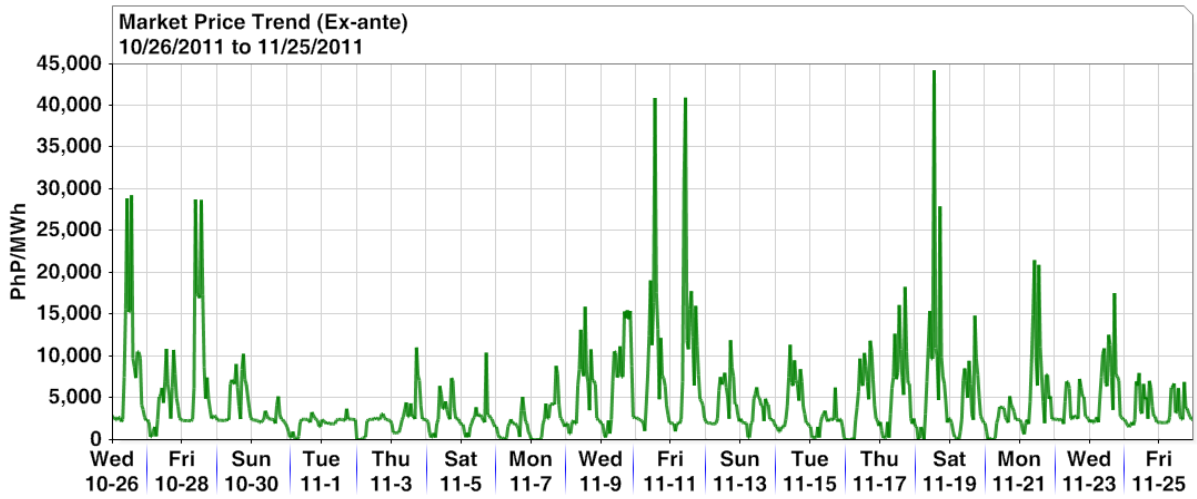


Figure 5. Market Price Trend - Luzon, November 2011

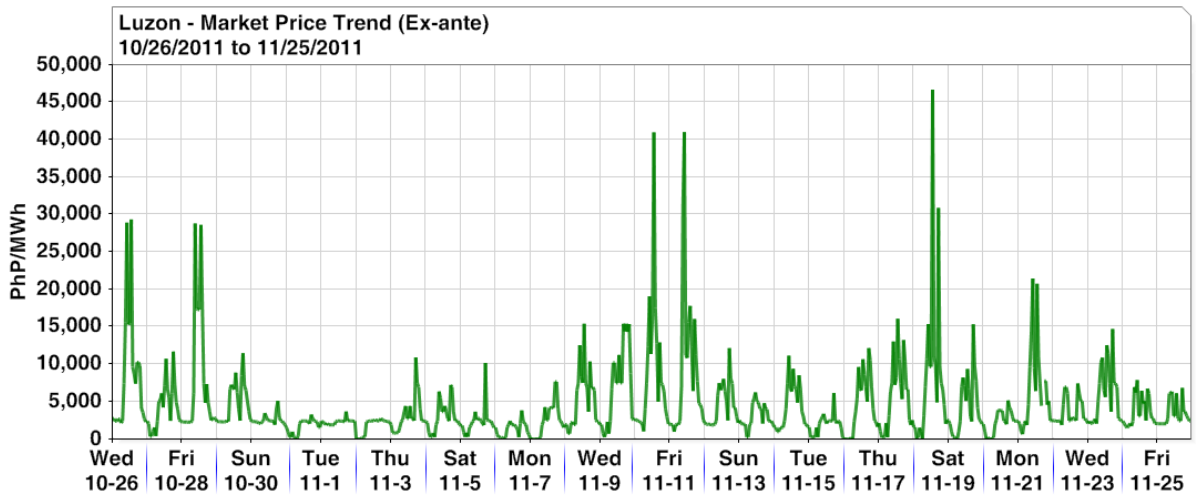


Figure 6. Market Price Trend - Visayas, November 2011

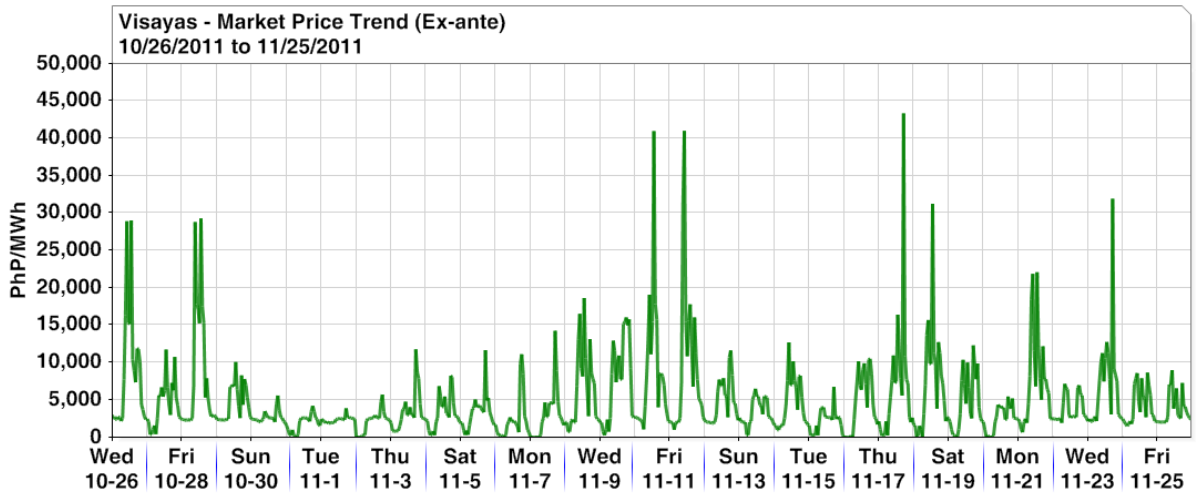


Table 8. ***Market Price Summary, October and November 2011***[4]

	October 2011 (In PhP/MWh)			November 2011 (In PhP/MWh)			% M-on-M Change (Oct 2011 - Nov 2011)		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
Luz-Viz	47,583	0	6,803	44,262	0	5,089	(7.0)		(25.2)
Luzon	51,507	0	6,976	46,669	0	5,019	(9.4)		(28.0)
Visayas	48,174	0	5,895	43,359	0	5,461	(10.0)		(7.4)

As shown in Figure 7 and Table 9, the frequency of market prices falling at the price levels of PhP10,000/MWh and above decreased in November. Correspondingly, the frequency of market prices at levels below PhP10,000/MWh increased.

Figure 7. ***Market Price Distribution, October and November 2011***

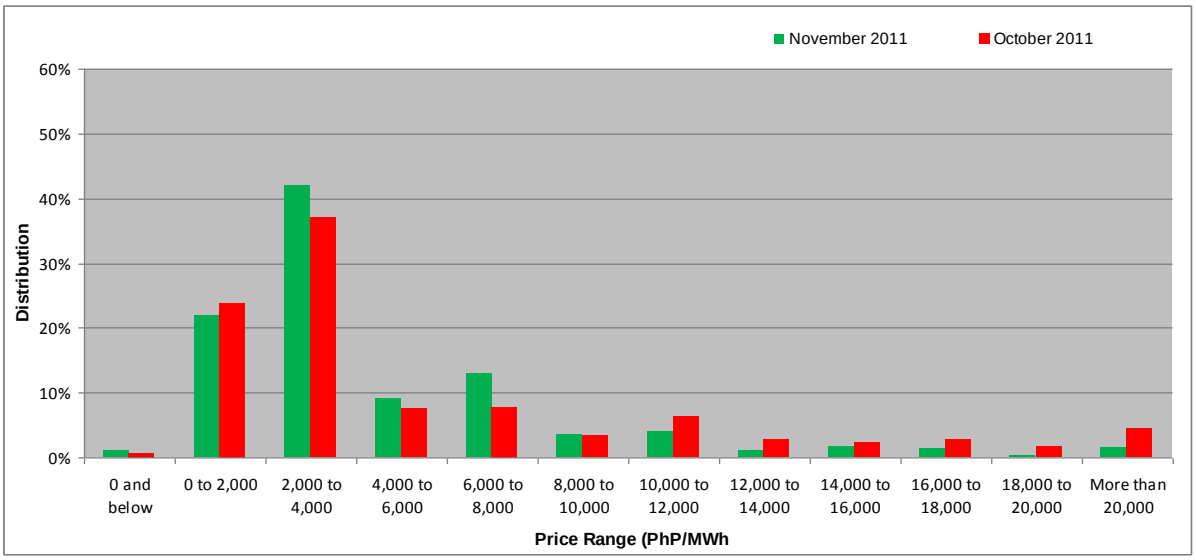


Table 9. ***Market Price Distribution, October and November 2011***

Price Range (PhP/MWh)	% Distribution	
	October 2011	November 2011
0 and below	0.6	0.9
0 to 2,000	23.9	21.9
2,000 to 4,000	36.9	41.9
4,000 to 6,000	7.5	9.0
6,000 to 8,000	7.8	13.0
8,000 to 10,000	3.3	3.5
10,000 to 12,000	6.3	3.9
12,000 to 14,000	2.6	0.9
14,000 to 16,000	2.4	1.7
16,000 to 18,000	2.6	1.3
18,000 to 20,000	1.7	0.3
More than 20,000	4.4	1.5

In contrast to the previous month's results, the average price in Luzon in November was 8.8 percent lower than the average price in Visayas *(Table 10)*.

Table 10. ***Regional Price Summary, October and November 2011***

	Luzon (In PhP/MWh)			Visayas (In PhP/MWh)			% Difference		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
November 2011	46,669	0	5,019	43,359	0	5,461	(7.1)		8.8
October 2011	51,507	0	6,976	48,174	0	5,895	(6.5)		(15.5)

[4] Incorporated the change in prices resulting from the change in PEN-PSM declaration on October 28 as used in the final settlement.

High Price Analysis

High prices were noted to have occurred in periods when the margin between supply and demand is relatively low. The forced outages of major coal and natural gas plants, as discussed in previous section, contributed to the tight supply and demand condition in certain periods during the month. The capability limitation of coal plant Sual Unit 2 (at 480 MW) on November 5-20 due to governor valve trouble and natural gas plants Ilijan Blocks A and B, Sta. Rita Units 2 and 3 and San Lorenzo Unit 1 on November 9-10 also contributed to said periods of tight supply condition.

In particular price spikes above PhP40,000/MWh occurred on November 10 (1400H), November 11 (1100H), November 17 (1800H) and November 18 (1400H).

November 10, 1400H

In this trading interval, PSM was applied during ex-ante due to the constraint at the Bauang-BPPC line. The resulting unconstrained MCP was PhP40,000/MWh (with oil-based plant Bauang as unconstrained marginal generator) and the estimated load reference price was PhP44,262/MWh. Meanwhile, undergeneration condition was experienced during ex-post, thus, was subjected to a market re-run. The market re-run prices cleared at PhP28,000/MWh (with oil-based plant Bauang as marginal generator).

Aside from the plant outages and limited capabilities as discussed above, the low dispatch schedule of Limay Block B due to low offered ramp rates, although it offered a capacity of 270 MW, had also affected the supply in this trading interval.

November 11, 1100H

The same market results as above were observed during this trading interval. PSM was applied during ex-ante due to the constraint at the Bauang-BPPC line. The resulting unconstrained MCP was PhP40,000/MWh (with oil-based plant Bauang as unconstrained marginal generator) and the estimated load reference price was PhP40,991/MWh. Undergeneration condition was experienced during ex-post, thus, was subjected to a market re-run. The market re-run prices cleared at PhP15,000/MWh (with oil-based plant Bauang as marginal generator).

Aside from the plant outages and limited capabilities as discussed above, the low dispatch schedule of Limay Block B due to low offered ramp rates and hydro plants availability had also affected the supply in this trading interval.

November 17, 1800H

The ex-ante market price in this trading interval cleared at PhP40,000/MWh with oil-based plant Bauang as marginal generator *(RTD schedule of 171.6 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 and Zapote)* was issued for Luzon during the ex-ante. The ex-post result was subjected to a market re-run due to an undergeneration pricing error and the market re-run prices cleared at PhP17,000/MWh *(oil-based plant PB 101 as marginal generator)*.

Plant outages and limited capability of Sual coal power plant contributed to the increase in market price. The low dispatch schedule of San Roque hydro power plant due to low offered ramp rates likewise affected the supply in this trading interval, although it offered a capacity of 400 MW.

November 18, 1400H

The ex-ante market price in this trading interval cleared at PhP30,000/MWh with oil-based plant Bauang as marginal generator *(RTD schedule of 152 MW)*. A localized pricing error *(i.e. N-1 contingency violation at MERALCO substations in Araneta and Zapote)* was issued for Luzon during the ex-ante, hence, will be settled using the ex-post prices. The ex-post prices cleared at PhP45,000/MWh with the same marginal generator (oil-based plant Bauang). The ex-post prices cleared at a higher price level due to higher demand.

Aside from the plant outages and limited capability of Sual, the low dispatch schedule of Limay B and San Roque due to low offered ramp rates, had also affected the supply in this trading interval.

Pricing Errors and Market Intervention

The summary of the issuance of pricing error notice (PEN) and application of the price substitution methodology (PSM) is shown in Table 11.

The market results showed pricing errors occurring in Luzon at about 30 percent of the time or 222 trading intervals during the ex-ante process (same level as that of the previous month), which was primarily due to the violation of the contingency (N-1) requirement at MERALCO interchange substations in Zapote and Araneta. Meanwhile, system-wide pricing errors were issued in 15 trading intervals due to undergeneration *(generation deficiency)* conditions, artificial load shedding (value of lost load) at MERALCO loads in Zapote and Araneta, and input data concerns.

The ex-post market results, on the other hand, indicated system-wide pricing errors in 17 trading intervals due to undergeneration conditions and input data concerns.

During ex-ante, the PSM was applied for the whole system (Luzon and Visayas) in 38 trading intervals due to constraints at various transmission lines in Luzon and Visayas. PSM was also applied for the whole system in 8 trading intervals during ex-post due to constraints at transmission lines in Visayas.

Table 11. PEN, PSM and MI Summary, November 2011

	Luz-Viz		Luzon		Visayas		Total	
	Freq.	% of Time	Freq.	% of Time	Freq.	% of Time	Freq.	% of Time
PEN (RTD)	15	2.0	222	29.8	4	0.5	239	32.1
PEN (RTX)	17	2.3		-	1	0.1	18	2.4
PSM (RTD)	38	5.1		-		-	38	5.1
PSM (RTX)	8	1.1		-	1	0.1	9	1.2
MI								

Note: The column “Total” refers to the total number of trading intervals with PEN, PSM or MI (system-wide or regional)

HVDC Scheduling

In November, constraint in the Leyte-Luzon HVDC occurred in 7 trading intervals during ex-ante and 15 trading intervals during ex-post. The constraints occurred in relevant trading intervals where the transfer capability of the HVDC from Luzon to Visayas was maximized during the scheduling processes. *(Tables 12 and 13)*

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

Results of HVDC Scheduling	HVDC Limit during Ex-ante (Visayas/Luzon) (No. of Trading Intervals)				HVDC Limit during Ex-post (Visayas/Luzon) (No. of Trading Intervals)			
	150/0	150/100	150/440	Total	150/0	150/100	150/440	Total
Visayas to Luzon	-	2	625	627	-	2	623	625
Limit Not Maximized		*2*	*625*	*627*		*2*	*623*	*625*
Luzon to Visayas	1	8	107	116	1	8	109	118
Limit Not Maximized	*1*	*7*	*102*	*110*	*1*	*6*	*97*	*104*
Limit Maximized [1\]		*1*	*5*	*6*		*2*	*12*	*14*
No Flow [1\]	1			1	1			1
TOTAL	2	10	732	744	2	10	732	744

Notes: 1\ with price separation

Table 13. Summary of HVDC Limits Imposed by NGCP-SO and Results of HVDC Schedules (Ex-ante and Ex-post), October 2011

Results of HVDC Scheduling	HVDC Limit during Ex-ante (Visayas/Luzon) (No. of Trading Intervals)				HVDC Limit during Ex-post (Visayas/Luzon) (No. of Trading Intervals)			
	0/0	150/200	150/440	Total	0/0	150/220	150/440	Total
Visayas to Luzon	-	2	462	464	-	2	452	454
Limit Not Maximized			*462*	*462*			*452*	*452*
Limit Maximized [1\]		*2*		*2*		*2*		*2*
Luzon to Visayas	-	-	16	16	-	-	26	26
Limit Not Maximized			*12*	*12*			*19*	*19*
Limit Maximized [1\]			*4*	*4*			*7*	*7*
No Flow [1\]	224			224	224			224
TOTAL	224	2	478	704	224	2	478	704

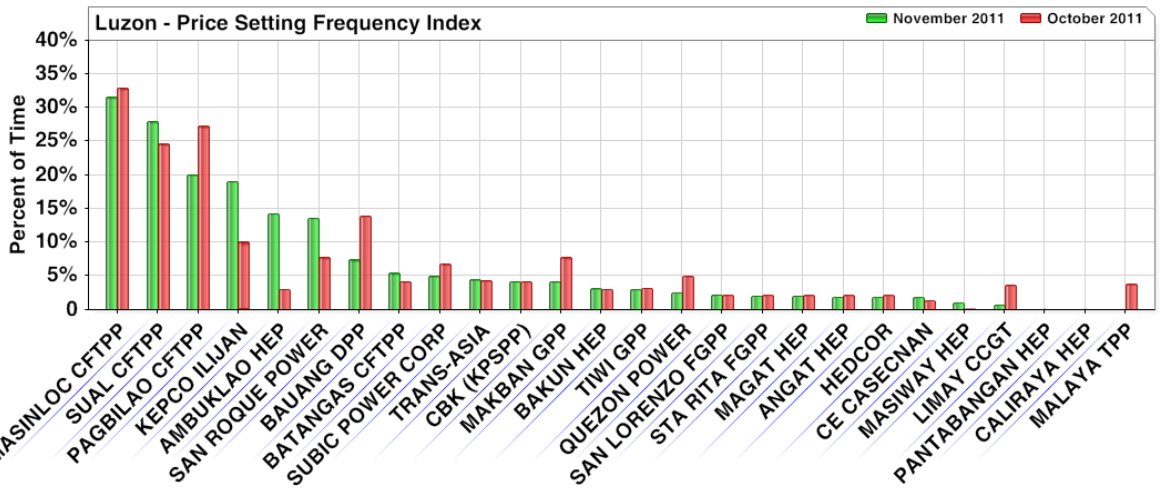
Notes: 1\ with price separation

Price Setting Plants[5]

As shown in Figure 8, 23 plants from Luzon have been considered as price setters across all price levels in November. The top six frequent price setters during the month include the coal plants Masinloc (at 32%), Sual (at 28%) and Pagbilao (at 20%), natural gas plant Kepco Ilijan (at 19%) and hydro plants Ambuklao (at 14%) and San Roque (at 14%). The coal plants Masinloc, Sual and Pagbilao remain the top three frequent price setters.

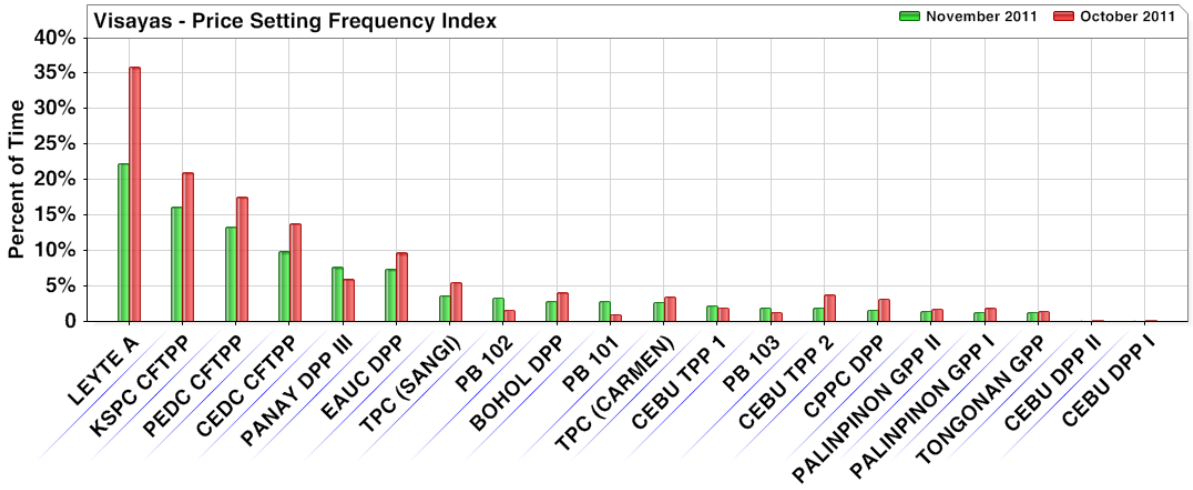
In Visayas *(Figure 8),* 20 plants have been considered as price setters across all price levels with the geothermal plant Leyte A (at 22%) and coal plants KSPC (at 16%), PEDC (at 13%), CEDC (at 10%) as most frequent price setters (same as previous month's results).

Figure 8. Price Setting Frequency Index (Luzon Plants), October and November 2011



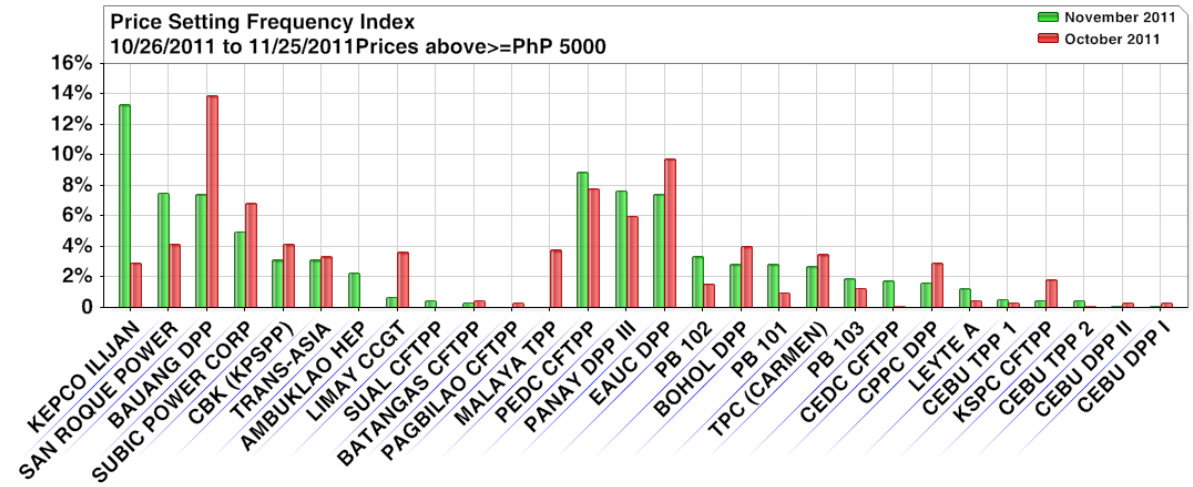
[5] A generator trading node is considered as a price setter when its last accepted offer price is between 95% to 100% of its nodal price. A generating plant is considered as price setter if at least one of its trading nodes was price setter in a given trading hour. The percentages stated in the price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

Figure 9. Price Setting Frequency Index (Visayas Plants), October and November 2011



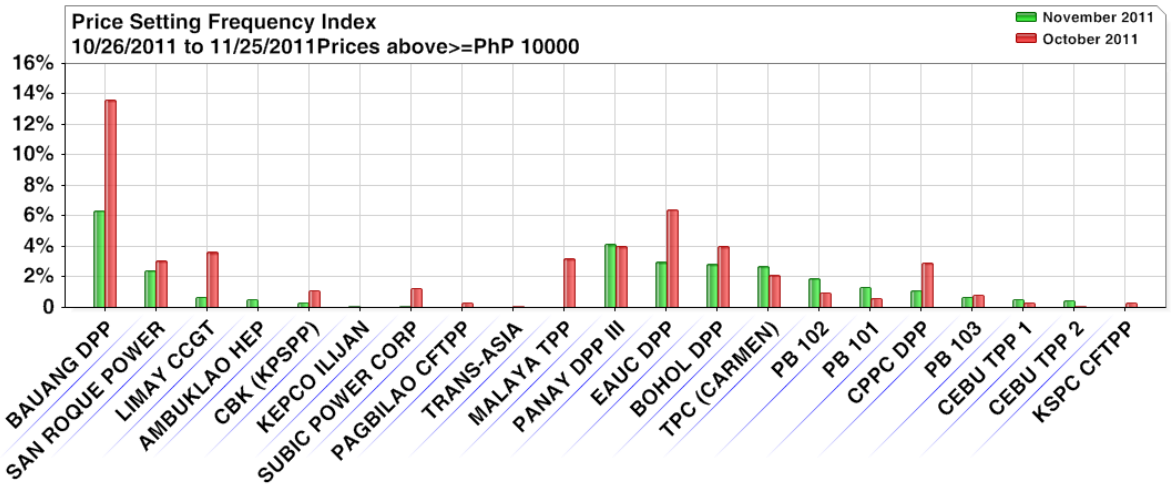
Looking at the PhP5,000/MWh and above price range, 26 plants have been considered as price setters composed of ten (10) plants from Luzon and sixteen (16) plants from Visayas *(Figure 10)*. The natural gas plant Ilijan (at 13%), hydro plant San Roque (at 8%), and oil-based plants Bauang (at 7%) and Subic (at 5%) topped the price setting plants from Luzon. Meanwhile, the coal plant PEDC (at 9%), and oil-based plants Panay DPP (at 8%) and EAUC (at 7%) were the top price setting plants from Visayas.

Figure 10. Price Setting Frequency Index (PhP5,000 and Above), October and November 2011



The number of price setters at the price level of PhP10,000/MWh and above was reduced to 17 plants, seven plants from Luzon and 10 from Visayas *(Figure 11)*.

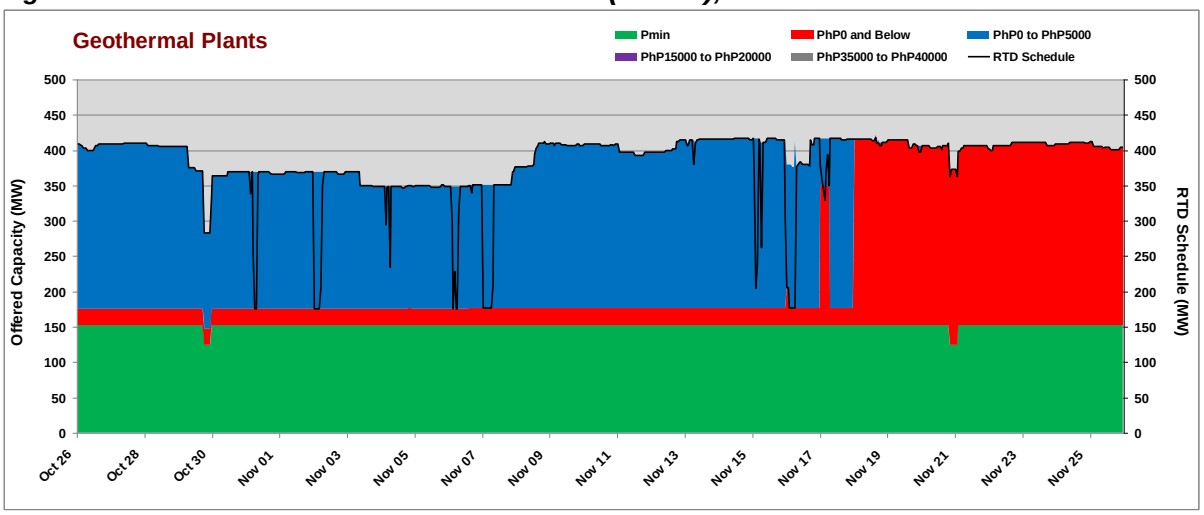
Figure 11. Price Setting Frequency Index (PhP10,000 and Above), October and November 2011



Generator Offer Pattern

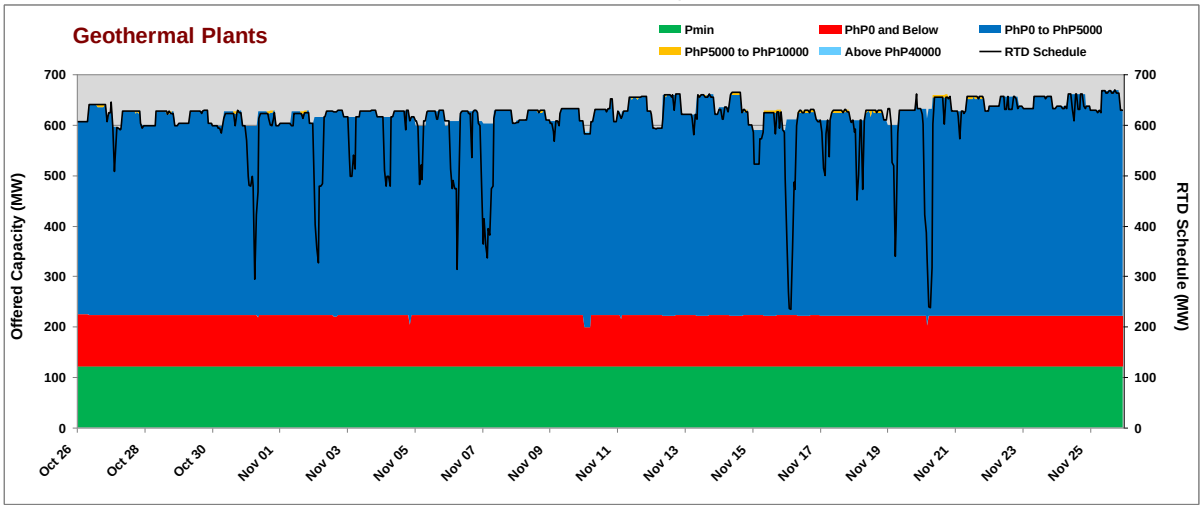
The offer prices of the geothermal plants in Luzon remained below PhP5,000/MW *(Figure 12)*.

Figure 12. Geothermal Plants Offer Pattern (Luzon), November 2011



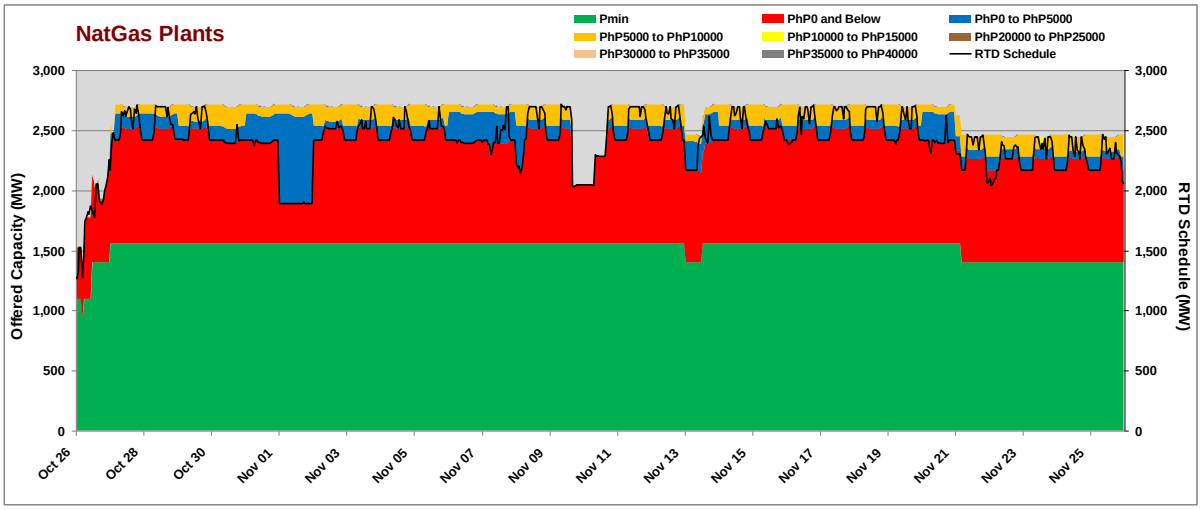
Likewise, the offer prices of the geothermal plants in Visayas remained below PhP5,000/MW, but still showed a peak-offpeak variation in the offered capacity *(Figure 13)*.

Figure 13. Geothermal Plants Offer Pattern (Visayas), November 2011



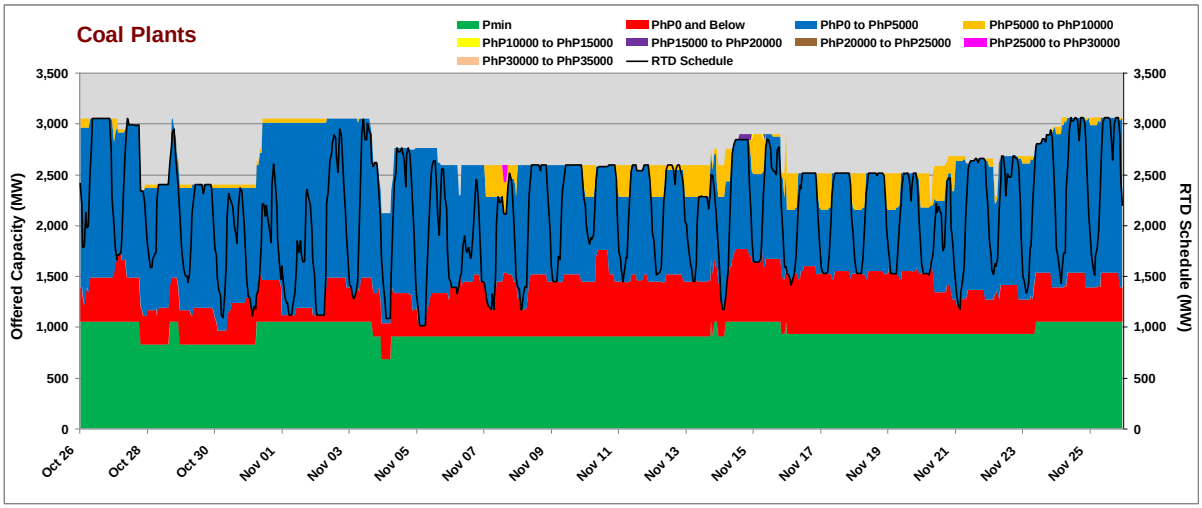
About 96% of the offered capacities (average of 2,506 MW) of natural gas plants were priced at PhP5,000/MW and below. The other 4% of the offered capacities (average of 96 MW) were priced above PhP5,000/MW *(Figure 14)*. As discussed earlier, the natural gas Ilijan was the most frequent price setter at price levels of PhP5,000/MWh to PhP10,000/MWh during the billing month.

Figure 14. Natural Gas Plants Offer Pattern (Luzon), November 2011



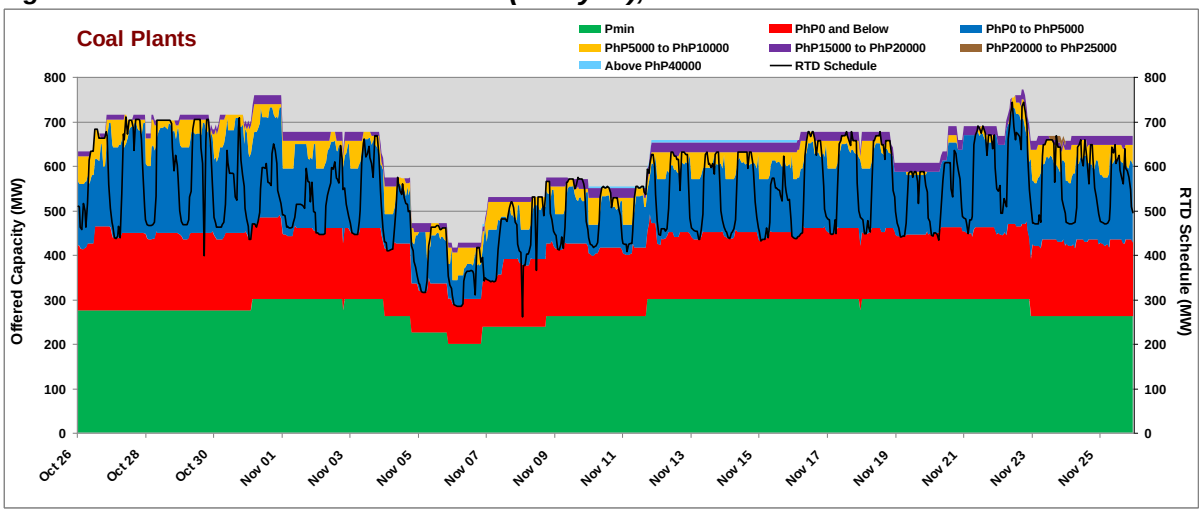
About 3% of the offered capacities of coal plants in Luzon (average of 80 MW, maximum of 488 MW) were priced above PhP5,000/MW *(Figure 15)*.

Figure 15. Coal Plants Offer Pattern (Luzon), November 2011



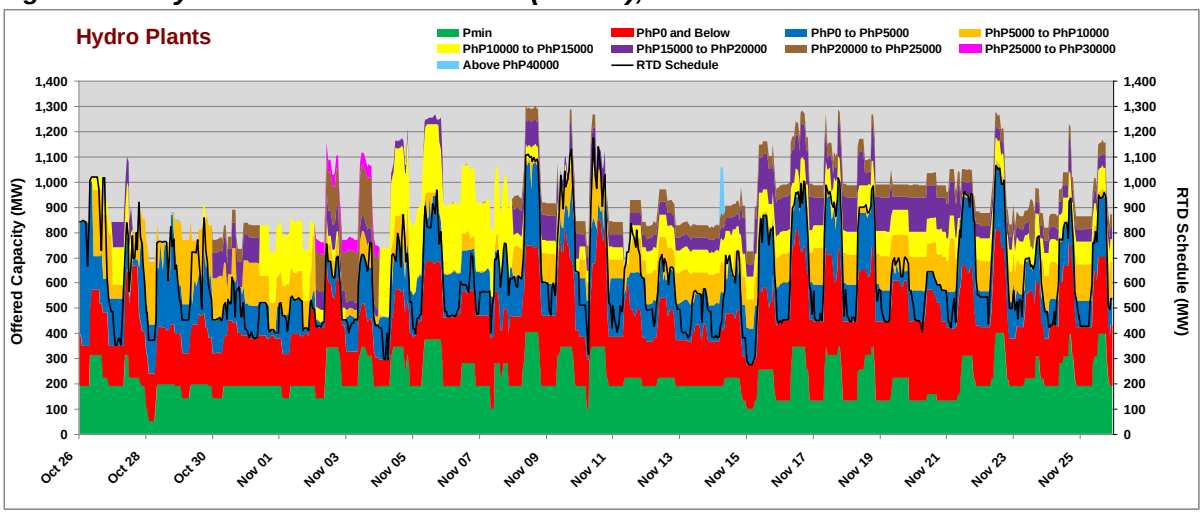
About 92% of the offered capacity of coal plants in Visayas (average of 589 MW) were priced below PhP5,000/MW. The other 8% of the offered capacities (average of 50 MW) were priced above PhP5,000/MW, reaching as high as PhP62,000/MW *(Figure 16)*.

Figure 16. Coal Plants Offer Pattern (Visayas), November 2011



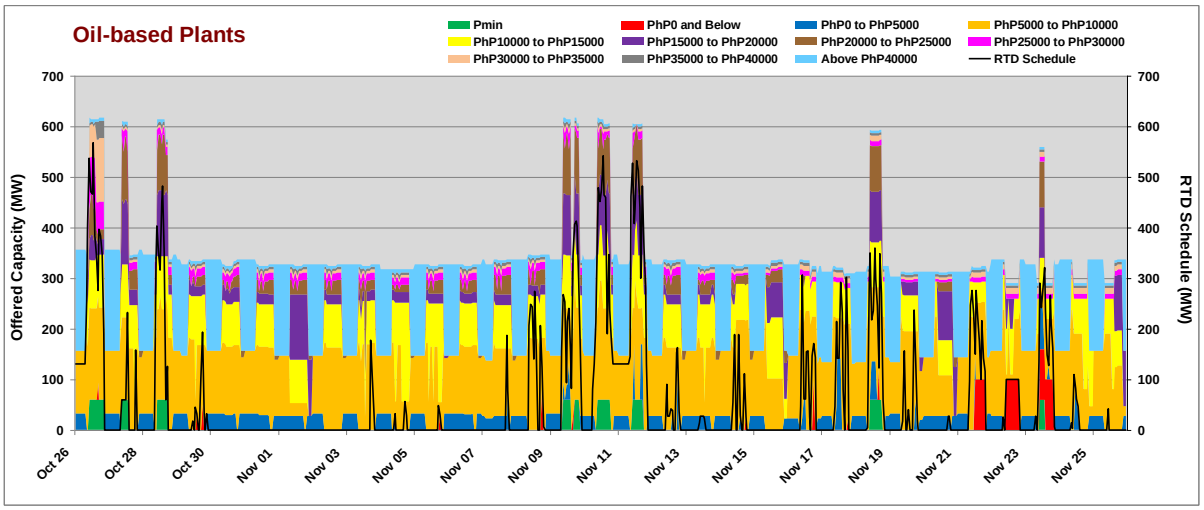
The volatility in terms of capacity and price offers of hydro plants was evident during the billing month *(Figure 17)*. The capacity offers ranged from 650 MW to 1,302 MW while the offer prices ranged from negative PhP250/MW to PhP62,000/MW. On the average, the capacity offers of hydro plants in Luzon during the billing month was higher than the previous month (from 831 MW to 941 MW).

Figure 17. Hydro Plants Offer Pattern (Luzon), November 2011



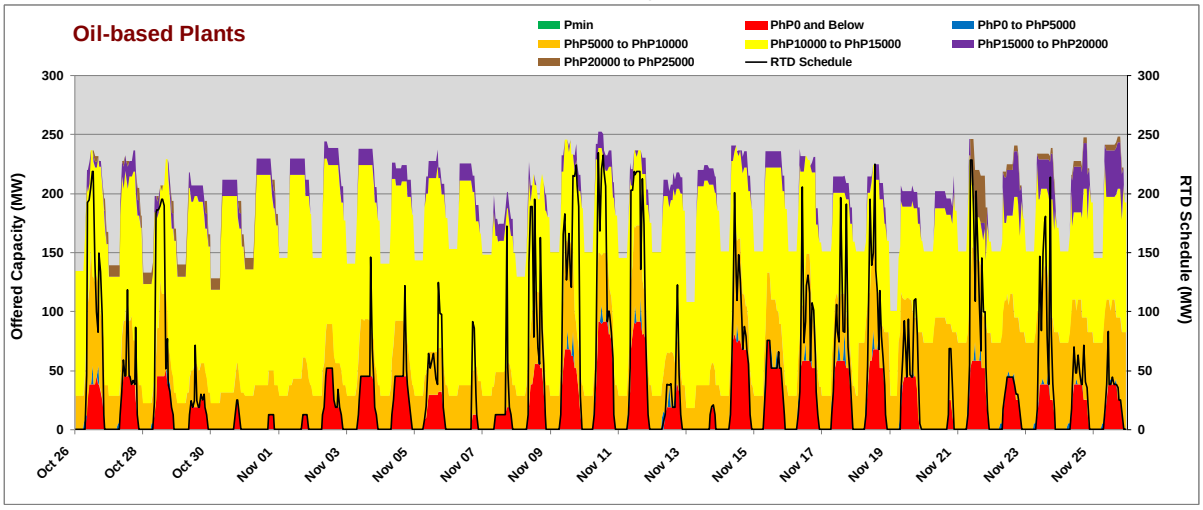
The offered capacity of the Luzon oil-based plants ranged from 290 MW to 617 MW while the offer prices ranged between PhP0.00/MW and PhP62,000/MW. The Limited or non-submission of offers from oil-based plants in Luzon accounts to about 31% of the capacity gap in the region. *(Figure 18).*

Figure 18. Oil-based Plants Offer Pattern (Luzon), November 2011



The capacity and price offers from oil-based plants in Visayas ranged from 101 MW to 252 MW and PhP0.00/MW to PhP24,243/MW, respectively *(Figure 19)*.

Figure 19. Oil-based Plants Offer Pattern (Visayas), November 2011



Capacity Factor

In contrast to the previous month, the calculations showed a decrease in the capacity factor of oil-based plants in November attributed to lower dispatch schedule *(Figure 20 and Table 14)*. The capacity factor of hydro plants in Luzon also decreased during the billing month.

Figure 20. Capacity Factor (Luzon Plants), November 2011

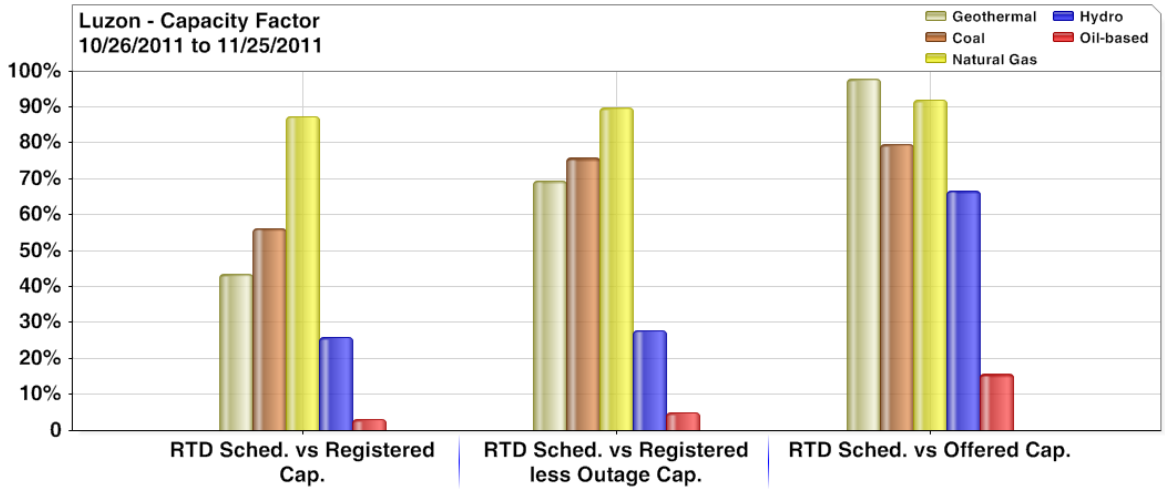


Table 14. Summary of Capacity Factor by Plant Type in Luzon, October and November 2011

Plant Type	RTD Sched. vs Registered Cap.			RTD Sched. vs Registered less Outage Cap.			RTD Sched. vs Offered Cap.		
	October 2011	November 2011	%Change	October 2011	November 2011	%Change	October 2011	November 2011	%Change
Coal	52%	56%	8%	78%	76%	-2%	81%	80%	-1%
Natural Gas	81%	87%	8%	91%	90%	-1%	94%	92%	-2%
Geothermal	43%	43%	1%	69%	70%	1%	96%	98%	2%
Hydro	32%	26%	-20%	35%	28%	-19%	94%	67%	-29%
Oil-based	9%	3%	-65%	14%	5%	-65%	36%	16%	-57%

Table 15. Capacity Factor by Plant Type in Luzon, November 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	1,594,092	2,832,408	2,100,949	2,003,795	56%	76%	80%
Natural Gas	1,791,009	2,048,306	1,995,438	1,945,946	87%	90%	92%
Geothermal	284,668	654,497	409,116	291,194	43%	70%	98%
Hydro	467,700	1,798,843	1,677,158	700,364	26%	28%	67%
Oil-based	40,837	1,333,248	818,400	261,543	3%	5%	16%

The calculations also showed a decrease in the capacity factors of the oil-based in Visayas due to lower dispatch schedule *(Figure 21 and Table 16).*

Figure 21. Capacity Factor (Visayas Plants), November 2011

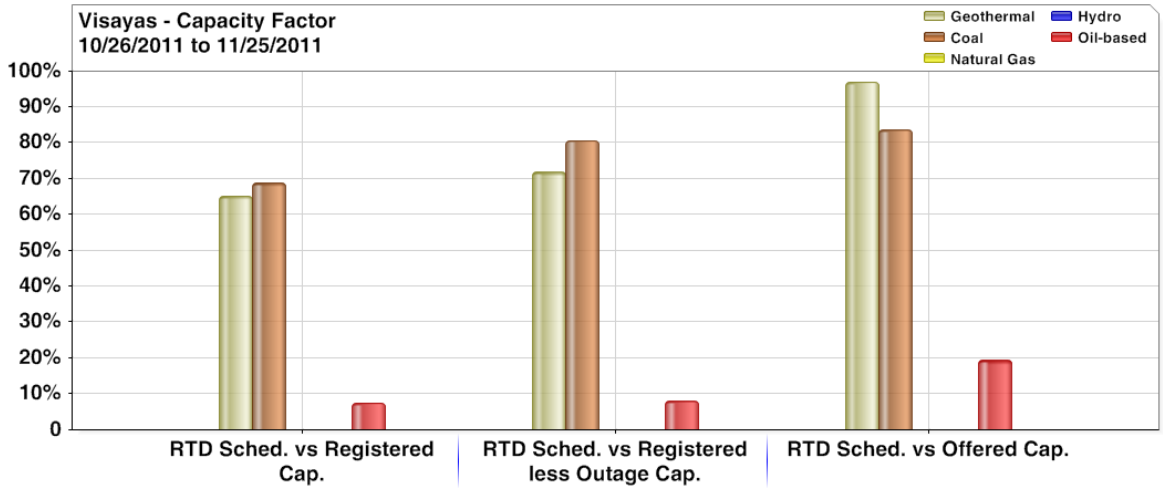


Table 16. Summary of Capacity Factor by Plant Type in Visayas, October and November 2011

Plant Type	RTD Sched. vs Registered Cap.			RTD Sched. vs Registered less Outage Cap.			RTD Sched. vs Offered Cap.		
	October 2011	November 2011	%Change	October 2011	November 2011	%Change	October 2011	November 2011	%Change
Coal	68%	69%	1%	79%	81%	2%	82%	84%	2%
Geothermal	64%	65%	3%	70%	72%	3%	92%	97%	5%
Oil-based	9%	7%	-15%	9%	8%	-13%	21%	19%	-10%

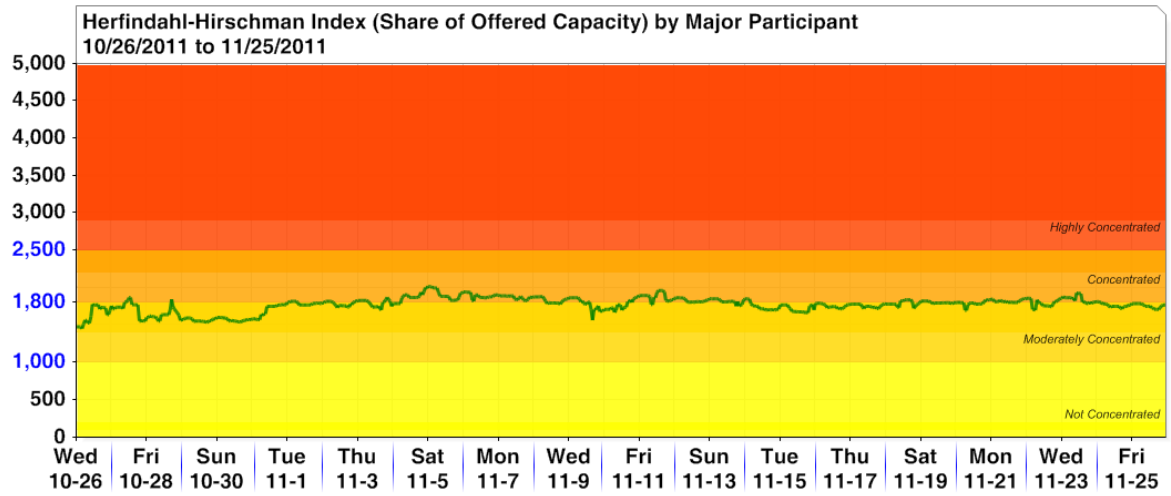
Table 17. Capacity Factor by Plant Type in Visayas, November 2011

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	397,240	576,749	492,485	475,518	69%	81%	84%
Geothermal	451,838	693,259	628,883	466,168	65%	72%	97%
Oil-based	27,550	367,673	345,361	142,650	7%	8%	19%

Market Concentration

The Herfindahl-Hirschman Index (HHI) calculated based on offered capacity by Major participants' grouping still indicated a concentrated to moderately concentrated market condition during the period *(Figure 22)*.

Figure 22. Hourly HHI based on Offered Capacity by Major Participant Grouping, November 2011

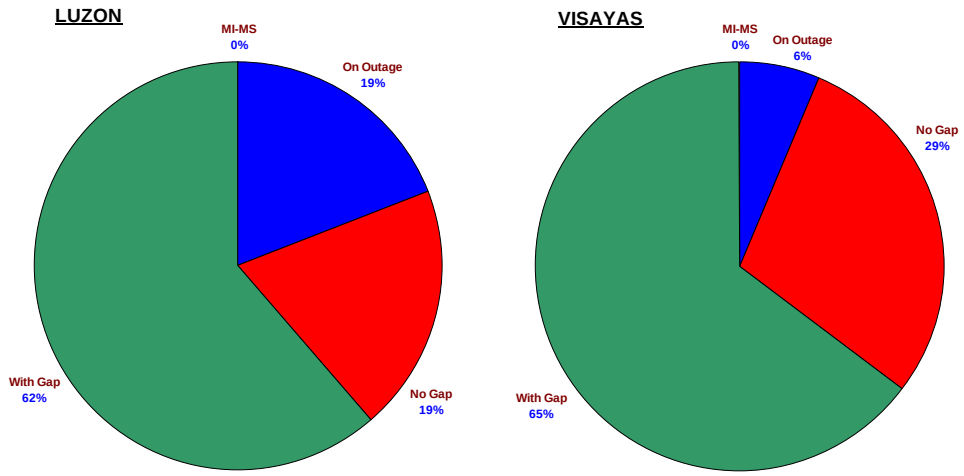


Compliance Monitoring

Compliance to Must Offer Rule

Continued non-compliance with the must-offer rule by generator trading participants was observed throughout the covered period. Figure 23 shows a high percentage of capacity gap[6] at around 62 percent and 65 percent of the total generator resource-trading intervals[7] in Luzon and Visayas, respectively.

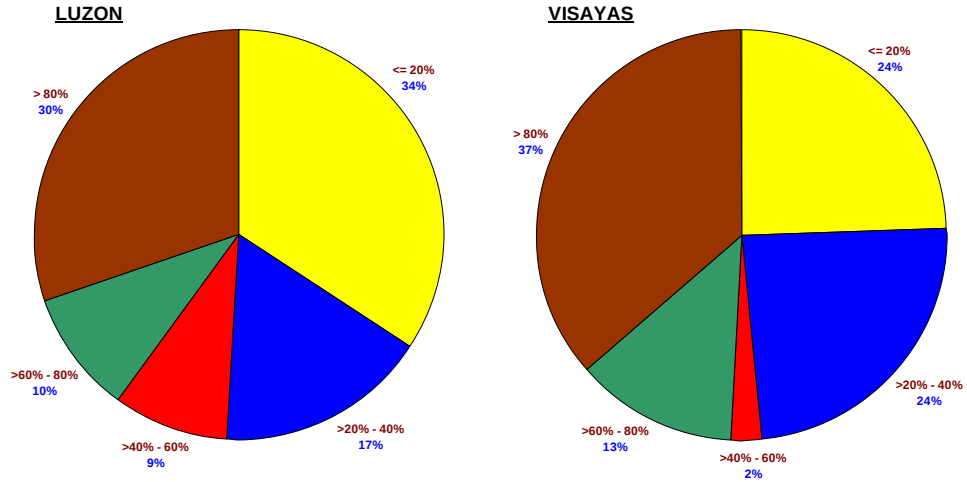
Figure 23. Summary of Compliance Monitoring to Must Offer Rule, November 2011



[6] Capacity gap - registered capacity less outage capacity less offered capacity, calculated for each generator resource node per trading interval.
[7] Total generator resource-trading intervals - calculated as the number of registered generator resource nodes multiplied by the total trading intervals in the billing month.

Figure 24 shows the proportion of the capacity gap to the registered capacity[8] net of outage capacity[9] and the corresponding frequency distribution of the generator resource-trading intervals with capacity gap. It shows that the proportion of the capacity gap above 80% constitute about 30% and 36% of the relevant generator resource-trading intervals in Luzon and Visayas, respectively.

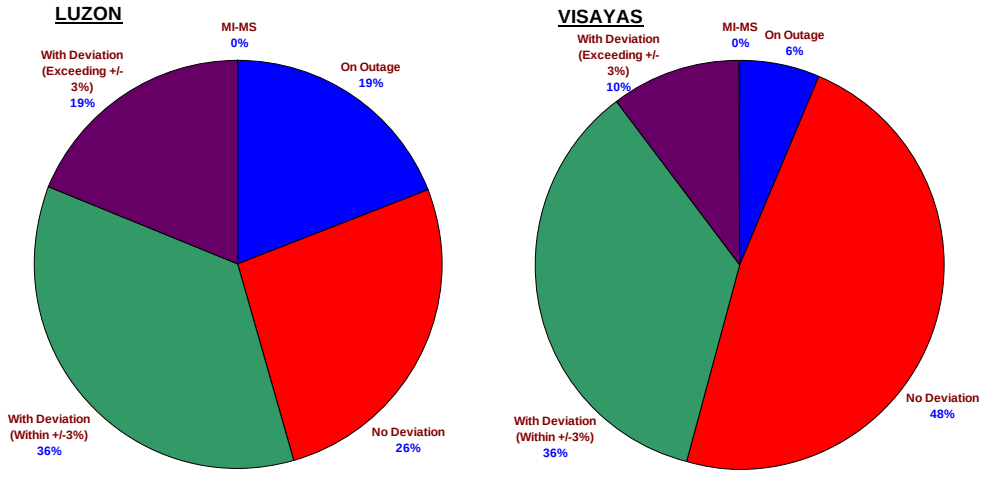
Figure 24. Distribution of Observed Capacity Gap, November 2011



Compliance to RTD Schedule

Figure 25 shows that around 19 percent and 10 percent of the total generator resource-trading intervals in Luzon and Visayas, respectively, have deviations between the RTD schedule[10] and actual dispatch[11] exceeding the +/-3% tolerance limit[12] in the billing month of September 2011.

Figure 25. Summary of Compliance Monitoring to RTD Schedule, November 2011



[8] Registered capacity - capacity of each generator resource node registered with the market.
[9] Outage capacity - validated outage capacity of each generator resource node per trading interval.
[10] RTD schedule - target loading level of each generator resource node at the end of the trading interval.
[11] Actual dispatch - actual loading of each generator resource node at the end of the trading interval (based on minute 59 snapshot data.
[12] +/-3% tolerance limit - initial dispatch tolerance limits adopted per PEM Board Resolution No. 2005-15.

The summary of dispatch deviations exceeding the +/-3% in terms of percent deviation and frequency distribution is shown in Figure 26. Majority of the dispatch deviations were within +/-20% at about 68 percent and 70 percent of the relevant generator resource-trading intervals in Luzon and Visayas, respectively. Likewise noted was the frequency of dispatch deviations exceeding 80 percent at 15 percent and 22 percent in Luzon and Visayas, respectively.

Figure 26. Distribution of Observed Deviation, November 2011