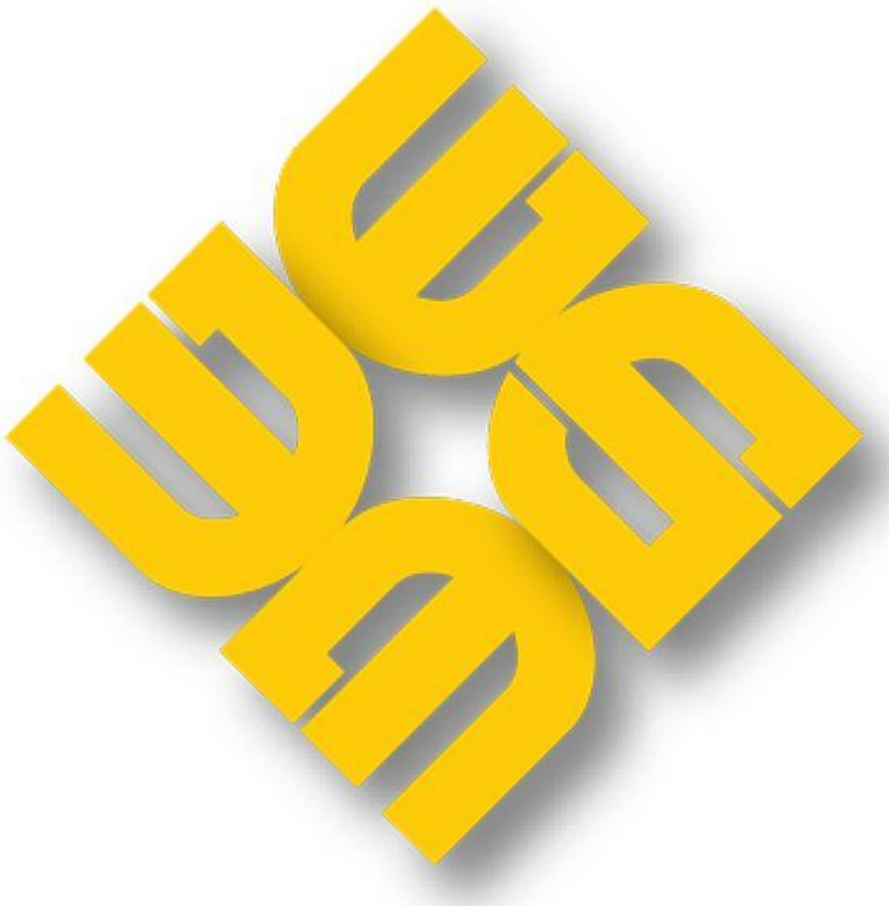
MONTHLY MARKET ASSESSMENT REPORT

For the Billing Period 26 September to 25 October 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 September to 25 October 2011 and how the market performed compared with the previous billing month.

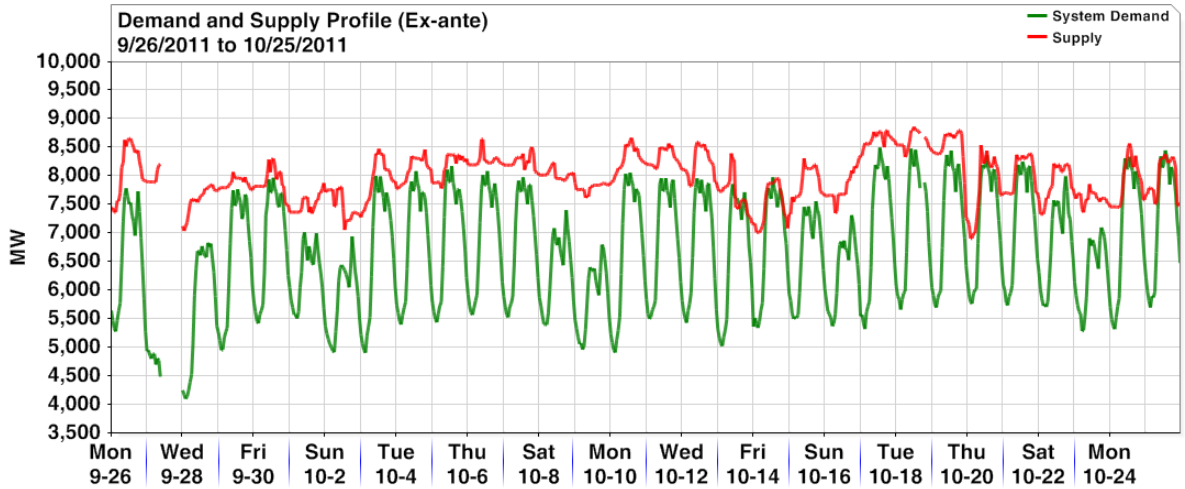
Supply and Demand Situation

The monthly average system demand[1] (ex-ante) in October 2011 slightly decreased by 1.1 percent to 6,701 MW with the hourly demand ranging from a minimum of 4,101 MW to a maximum of 8,502 MW *(Table 1)*. The decrease in demand was evident in both regions. The regional average demand decreased by 0.9 percent (5,692 MW to 5,643 MW) in Luzon and 2.2 percent (1,085 MW to 1,061 MW) in Visayas *(Table 2)*.

The monthly average supply[2] during the period ranged from 6,909 MW to 8,865 MW. The monthly average supply was lower from the previous billing month by 4.1 percent (8,332 MW to 7,909 MW) *(Table 1).* Both regions showed a decrease in supply during the billing month. The average supply in Luzon decreased by 4.1 percent (6,773 MW to 6,498 MW) while, the average supply in Visayas decreased by 4.2 percent (1,558 MW to 1,493 MW) *(Table 3).* The decline in supply in both regions was brought about by higher level of capacity on outage.

The resulting margin between the supply and demand in October was calculated at an average of 1,289 MW (minimum of negative 163 MW and maximum at 3,725 MW). This was lower by 17 percent from the previous billing month's average margin of 1,554 MW *(Table 1)*.

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

	September 2011 (In MW)			October 2011 (In MW)			% M-on-M Change (Sep 2011 - Oct 2011)		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
Demand	8,498	4,775	6,777	8,502	4,101	6,701	0.0	(14.1)	(1.1)
Supply	9,069	6,375	8,332	8,865	6,909	7,990	(2.2)	8.4	(4.1)
Supply/Demand Variance	3,492	(437)	1,554	3,725	(163)	1,289	6.7	62.7	(17.0)

Note: The derived values were non-coincident.

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

	September 2011 (In MW)			October 2011 (In MW)			% M-on-M Change (Sept 2011 - Oct 2011)		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
Luzon	7,152	3,967	5,692	7,153	3,332	5,643	0.0	(16.0)	(0.9)
Visayas	1,426	767	1,085	1,379	706	1,061	(3.3)	(7.9)	(2.2)

Note: The derived values were non-coincident.

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

	September 2011 (In MW)			October 2011 (In MW)			% M-on-M Change (Sep 2011 - Oct 2011)		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
Luzon	7,418	4,949	6,773	7,429	5,519	6,498	0.1	11.5	(4.1)
Visayas	1,693	1,354	1,558	1,628	1,272	1,493	(3.9)	(6.0)	(4.2)

Note: The derived values were non-coincident.

Plant Outages

Figures 2 and 3 below show the outage capacity by plant type during the ex-ante scheduling process (left Y-Axis) vis-a-vis the outage schedule based on NGCP-SO's CY2011 Grid Operating and Maintenance Program (GOMP). Among the plants scheduled for maintenance outage based on the GOMP, only the Pagbilao coal plant appeared to be consistent with its outage schedule although slightly delayed. The forced outages of power plants that were not in the GOMP list resulted in the unexpected decline in supply during the period in review.

The capacity on outage in Luzon (during ex-ante) averaged 2,757 MW ranging from 1,788 MW to 3,673 MW. The monthly average outage capacity in October was higher by 23 percent than the previous billing month. *(Figure 2 and Table 4)*

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

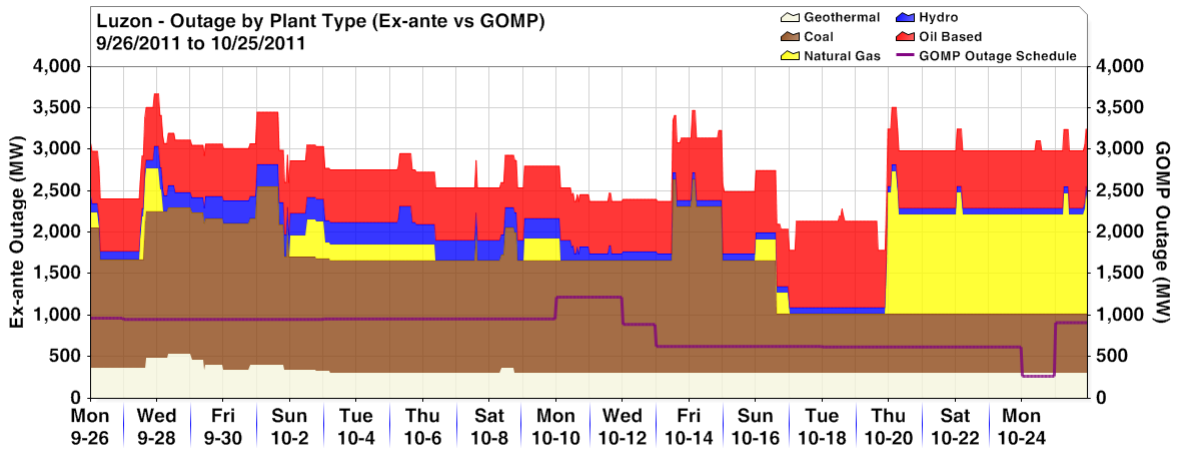


Table 4. Luzon Regional Outage Summary (Ex-ante), September and October 2011 (Non Coincident)

Resource Type	September 2011 (In MW)			October 2011 (In MW)			% M-on-M Change (Sep 2011 - Oct 2011)		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
Coal	1,689	977	1,091	2,336	712	1,263	38.3		15.7
Natural Gas	1,313	0	86	1,723	0	314	31.2		264.3
Geothermal	430	308	330	533	308	331	24.0	0.0	0.5
Hydro	232	102	143	463	76	156	99.7	(25.5)	8.5
Oil Based	632	632	632	1,192	632	693	88.6	0.0	9.7
TOTAL	3,721	2,054	2,248	3,673	1,788	2,757	(1.3)	(12.9)	22.6

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 October 2011.

Table 5. Major Plant Outages, Luzon, October 2011

Plant/Unit Name	Date/Time Out	Date/Time In	Outage Type	Reason
COAL				
Sual 1	2011-08-20 23:33:00	2011-10-16 23:39:00	Unplanned Outage	Maintenance outage
Sual 2	2011-10-13 11:40:00	2011-10-14 22:57:00	Forced Outage	Trouble at primary air fan
Calaca 1	2011-08-29 22:15:00		Forced Outage	Emergency shutdown due to suspected reheater leak.
Calaca 2	2011-09-22 14:26:00	2011-10-01 19:48:00	Forced Outage	Emergency shutddown due to suspected boiler tube leak
Calaca 2	2011-10-01 21:49:00	2011-10-01 22:23:00	Forced Outage	Failure of main stop valve to open
Calaca 2	2011-10-07 13:22:00	2011-10-07 14:30:00	Forced Outage	Sudden closure of bypass valve
Calaca 2	2011-10-08 10:45:00	2011-10-08 20:12:00	Forced Outage	Tripped with 225MW load due to turbine protection basic card level trouble
Calaca 2	2011-10-13 11:40:00	2011-10-13 14:34:00	Forced Outage	HP Bypass valve trouble
Calaca 2	2011-10-14 01:02:00	2011-10-14 04:40:00	Forced Outage	Trouble at station service transformer
Pagbilao 1	2011-09-25 00:09:00	2011-09-26 05:44:00	Forced Outage	Repair of submerege flight conveyor
Pagbilao 1	2011-10-01 00:51:00		Planned Outage	Maintenance outage
QPPL	2011-09-27 14:22:00	2011-10-01 15:53:00	Forced Outage	For submerge drag conveyor repair.
NATURAL GAS				
Ilijan A1	2011-10-19 22:35:00		Planned Outage	Maintenance of Malampaya Gas Facilities until Oct. 26 2011
Ilijan A2	2011-10-19 23:10:00	2011-10-25 23:24:00	Planned Outage	Maintenance of Malampaya Gas Facilities until Oct. 26 2011
Ilijan A3	2011-10-19 22:57:00		Planned Outage	Maintenance of Malampaya Gas Facilities until Oct. 26 2011
Ilijan B1	2011-09-24 15:46:00	2011-09-26 05:53:00	Forced Outage	Natural gas fuel supply restriction from SPEX Malampaya onshore gas plant.
Ilijan B1	2011-10-02 12:38:00	2011-10-06 08:44:00	Forced Outage	Malampaya gas supply restriction due to a hole at methanol line
Ilijan B1	2011-10-19 23:36:00		Planned Outage	Maintenance of Malampaya Gas Facilities until Oct. 26 2011
Ilijan B2	2011-09-22 23:43:00	2011-09-26 05:53:00	Forced Outage	Natural gas supply restrictionfrom SPEX
Ilijan B2	2011-10-20 00:12:00		Planned Outage	Maintenance of Malampaya Gas Facilities until Oct. 26 2011
Ilijan B3	2011-10-19 23:55:00		Planned Outage	Maintenance of Malampaya Gas Facilities until Oct. 26 2011
Sta. Rita 1	2011-10-16 00:34:00	2011-10-16 23:39:00	Unplanned Outage	Offline washing
Sta. Rita 2	2011-09-27 11:08:00	2011-09-28 03:45:00	Forced Outage	Low system demand due to typhoonPEDRING
Sta. Rita 2	2011-10-25 09:32:00	2011-10-25 09:32:00	Forced Outage	Tripped due to hybrid burner temperature protection trouble
Sta. Rita 3	2011-10-22 00:22:00	2011-10-22 04:16:00	Forced Outage	Trouble at pressure seal water pump no. 1
Sta. Rita 4	2011-09-27 12:26:00	2011-09-28 01:41:00	Other Outage	Due to low actual system demand. Affected by the passage of typhoonPEDRING
San Lorenzo 1	2011-10-09 01:11:00	2011-10-10 02:24:00	Planned Outage	Offline compressor washing and burner inspection
San Lorenzo 1	2011-10-19 23:56:00	2011-10-20 06:50:00	Planned Outage	Rectification of HP reducing station flow transmitter
San Lorenzo 2	2011-10-02 00:39:00	2011-10-03 00:05:00	Planned Outage	Offline washing
San Lorenzo 2	2011-10-20 01:06:00	2011-10-20 05:25:00	Forced Outage	Changeover failure from natural gas to distilate gas
San Lorenzo 2	2011-10-25 20:49:00		Forced Outage	Trouble at hybrid burner temp protection

In Visayas, the capacity on outage averaged at 211 MW (minimum of 96 MW and maximum of 297 MW) *(Figure 3, Table 6)*. One unit of coal plant CEDC was placed on outage during the month, which was scheduled to be on outage in the previous month per the GOMP.

Figure 3. Plant Outage Capacity, October 2011 - Visayas

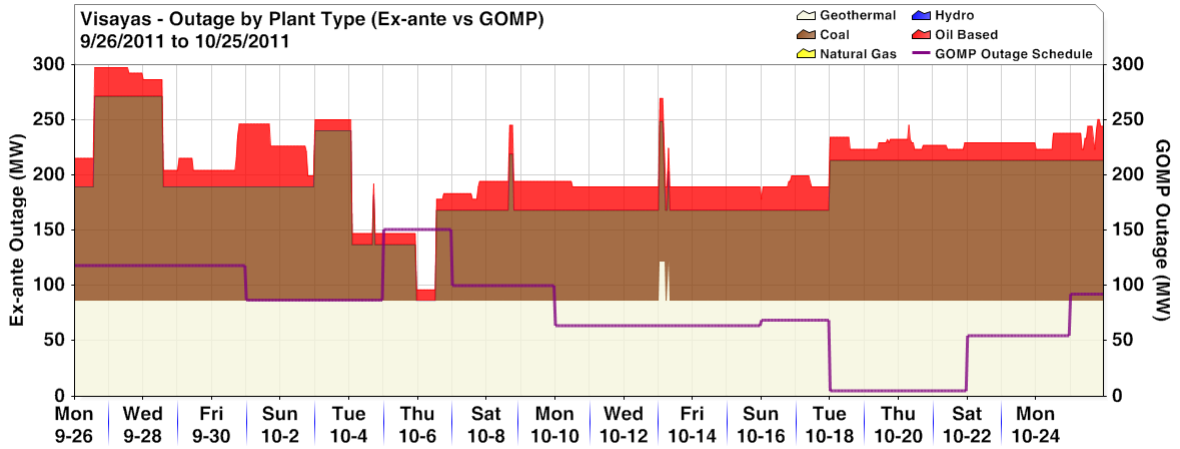


Table 6. Visayas Regional Outage Summary (Ex-ante), September and October 2011

Resource Type	September 2011 (In MW)			October 2011 (In MW)			% M-on-M Change (Sep 2011 - Oct 2011)		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
Coal	148	0	60	185	0	104	25.0		72.7
Geothermal	179	50	113	122	86	87	(32.1)		(23.1)
Hydro	0	0	0	0	0	0			
Oil Based	26	10	11	57	10	20	119.2	0.0	90.3
TOTAL	283	95	183	297	96	211	5.3	2.0	15.6

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

Table 7 below list the outages of coal and geothermal plants in Visayas for the billing of month of October 2011.

Table 7. Major Plant Outages, Visayas, October 2011

Plant/Unit Name	Date/Time Out	Date/Time In	Outage Type	Reason
COAL				
CEDC 2	2011-10-06 12:16:00		Planned Outage	PMS
CEDC 3	2011-10-04 16:32:00	2011-10-04 17:07:00	Forced Outage	Activation of SPS when Cebu-Colon 138kV TL manually open due to breaker lock out at Colon.
Cebu TPP1	2011-10-04 16:32:00	2011-10-04 16:59:00	Forced Outage	Activation of SPS when Cebu-Colon 138kV TL manually open due to breaker lock out at Colon.
Cebu TPP1	2011-10-11 11:27:00	2011-10-12 11:56:00	Forced Outage	Generator protection trip indication
Cebu TPP1	2011-10-13 12:04:00	2011-10-13 03:34:00	Forced Outage	Smoke coming out from transformer exciter
Cebu TPP1	2011-10-18 00:13:00		Unplanned Outage	Manual cut out. PMS.
Cebu TPP2	2011-10-03 00:14:00	2011-10-05 09:13:00	Forced Outage	Planned Outage
Cebu TPP2	2011-10-08 15:03:00	2011-10-08 19:12:00	Forced Outage	AVR Failure
Kepco Salcon 1	2011-09-16 00:04:00	2011-10-04 00:01:00	Planned Outage	Annual PMS
PEDC 1	2011-09-26 13:36:00	2011-09-28 15:24:00	Forced Outage	Emergency shutdown due to clogged cyclone
GEOTHERMAL				
NNGPP	2011-07-01 00:11:00		Other Outage	To conduct plant rectification
PGPP1 Unit 1	2011-09-19 00:01:00		Planned Outage	To conduct majro rehab of the unit.
PGPP1 Unit 2	2011-10-13 00:10:00	2011-10-13 04:07:00	Forced Outage	To conduct cleaning o exciter and gen air coolers
PGPP1 Unit 2	2011-10-13 06:48:00	2011-10-13 07:40:00	Forced Outage	Condenser level very high
PGPP2 Unit 1	2011-09-29 14:24:00	2011-09-29 15:55:00	Forced Outage	Tripped by booster pump at both end

Market Price Outcome

The monthly average price[3] in October increased by 79.1 percent to PhP6,803/MWh from PhP3,798/MWh in September with the highest price posted at PhP47,583/MWh and lowest at PhP0.00/MWh. Looking at regional prices, the calculations also showed an increase in the price outcomes for Luzon and Visayas. The average price in Luzon increased by 84.9 percent from PhP3,772/MWh to PhP6,976/MWh, while the average price in Visayas increased by 49.7 percent from PhP3,937/MWh to PhP5,895/MWh *(Table 8)*. Regional prices reached a high of PhP51,507/MWh in Luzon and PhP48,174/MWh in Visayas.

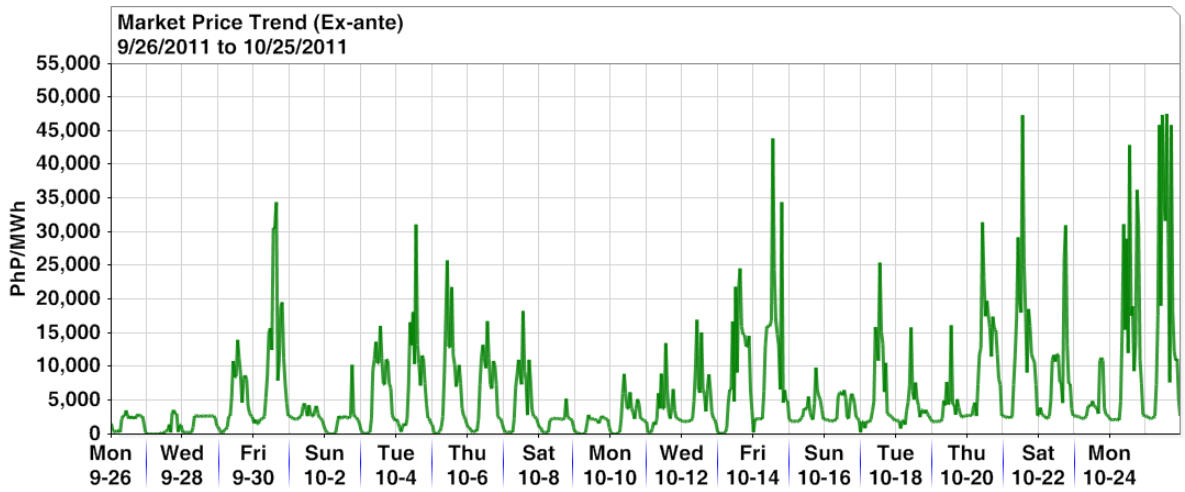
A series of high prices occurred during the billing month which was attributed to various reasons. Price mark up was first observed during the period September 29 to October 7 when major coal and natural gas plants went on outage *(i.e. forced outage of coal plant QPPL on September 27-October 1, planned outage of coal plant Pagbilao Unit 1 starting October 1, and forced outage of one gas turbine of Ilijan Block B due to natural gas supply restriction from SPEX)*.

The second series of high prices occurred during the period October 10-19 when the Leyte-Luzon HVDC submarine cable underwent annual maintenance. The high prices, however, affected the Luzon region only as shown in Figures 5 and 6. The shutdown of the HVDC submarine cable totally constrained the flow of excess and cheaper power from Visayas to Luzon. More so, supply condition in Luzon during the period was tight due to the existing outage of major coal plants *(i.e. Sual Unit 1 and Pagbilao Unit 1)*. Luzon's supply condition was further compounded by the outage of the other unit of Sual on October 13-14.

The last episode of high prices occurred starting October 20 following the total shutdown of the natural gas plant Ilijan due to the annual maintenance of the Malampaya gas facilities. The shutdown of the Ilijan plant had severed the supply condition in the market. Fortunately, the other natural gas plants Sta. Rita and San Lorenzo shifted to alternate fuel and provided the needed generation. However, the use of alternate fuel also entails higher fuel cost for the plants, which will be recovered through their bilateral contracts with MERALCO.

Figure 4.

Figure 5. Market Price Trend, October 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.

Figure 6. Market Price Trend - Luzon, October 2011

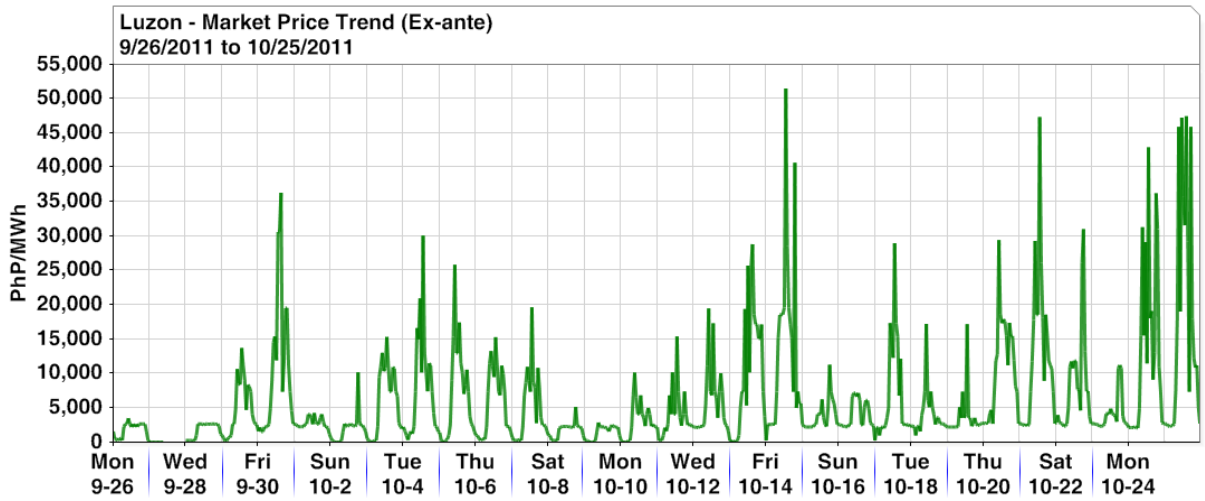


Figure 7. Market Price Trend - Visayas, October 2011

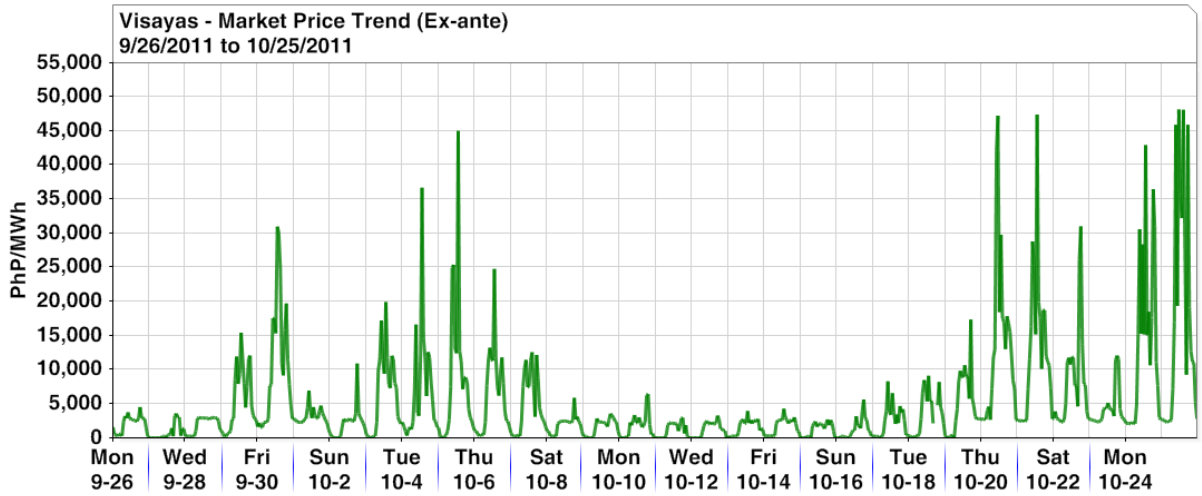


Table 8. Market Price Summary, September and October 2011[4]

	September 2011 (In PhP/MWh)			October 2011 (In PhP/MWh)			% M-on-M Change (Sep 2011 - Oct 2011)		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
Luz-Viz	45,667	0	3,798	47,583	0	6,803	4.2		79.1
Luzon	46,679	0	3,772	51,507	0	6,976	10.3		84.9
Visayas	40,470	0	3,938	48,174	0	5,895	19.0		49.7

As shown in Figure 7 and Table 9, the frequency of market prices falling at the price levels of PhP4,000/MWh and below decreased in October. Correspondingly, the frequency of market prices at levels above PhP4,000/MWh increased.

[4] Incorporated a change in the calculated monthly system LWAP for October 2011.

Figure 8. Market Price Distribution, September and October 2011

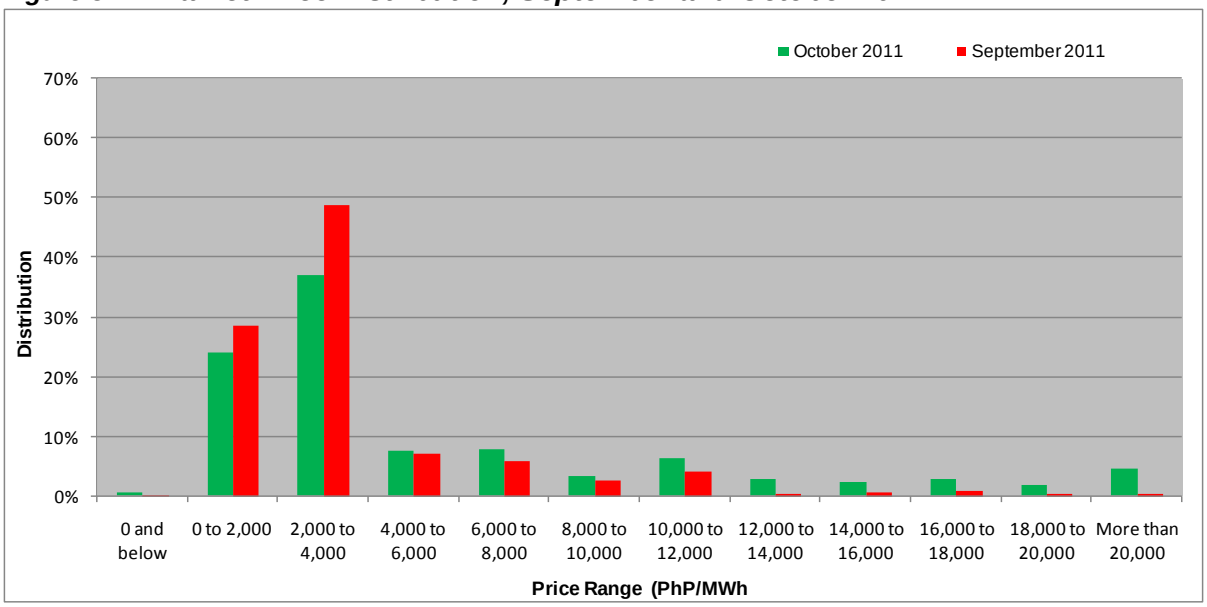


Table 9. Market Price Distribution, September and October 2011

Price Range (PhP/MWh)	% Distribution	
	September. 2011	October. 2011
0 and below	0.1	0.6
0 to 2,000	28.7	23.9
2,000 to 4,000	48.7	36.9
4,000 to 6,000	7.0	7.5
6,000 to 8,000	5.8	7.8
8,000 to 10,000	2.7	3.3
10,000 to 12,000	4.2	6.3
12,000 to 14,000	0.4	2.6
14,000 to 16,000	0.7	2.4
16,000 to 18,000	0.9	2.6
18,000 to 20,000	0.4	1.7
More than 20,000	0.4	4.4

Unlike the previous month's results, the average price in Luzon in October was 15.5 percent higher than the average price in Visayas *(Table 10)*.

Table 10. Regional Price Summary, September and October 2011

	Luzon (In PhP/MWh)			Visayas (In PhP/MWh)			% Difference		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
October 2011	51,507	0	6,976	48,174	0	5,895	(6.5)		(15.5)
September 2011	46,679	0	3,772	40,470	0	3,938	(13.3)		4.4

Pricing Errors and Market Intervention

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

The market results showed pricing errors occurring in Luzon at about 31 percent of the time or 224 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 and Araneta. Meanwhile, system-wide pricing errors were issued in 18 trading intervals due to undergeneration *(generation deficiency)* conditions, artificial load shedding (value of lost load) at MERALCO loads in Zapote and Araneta, and violation of the contingency (N-1) requirement.

The ex-post market results, on the other hand, indicated system-wide pricing errors in 15 trading intervals due to undergeneration conditions and a case of input data concern. Luzon had 20 trading intervals with PEN due to undergeneration conditions also. In Visayas, pricing errors were issued in 2 trading intervals due to base case *(transformer limit)* constraint violations.

During ex-ante, the PSM was applied for the whole system (Luzon and Visayas) in 14 trading intervals due to the constraint at Bauang-Kadampat 230kV Line resulting from the contingency trip of San Manuel-New San Manuel 230kV line. On a regional basis, PSM was applied in three trading intervals in Luzon and one trading interval in Visayas.

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

	Luz-Vis		Luzon		Visayas		Total	
	Freq.	% of Time	Freq.	% of Time	Freq.	% of Time	Freq.	% of Time
PEN (RTD)	18	2.5	224	31.1	5	0.7	242	33.6
PEN (RTX)	15	2.1	20	2.8	2	0.3	35	4.9
PSM (RTD)	14	1.9	3	0.4	1	0.1	17	2.4
PSM (RTX)		-		-		-		-
MI		-	14	1.9	2	0.3	14	1.9

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

HVDC Scheduling and Price Separations

A constraint in the Leyte-Luzon HVDC occurs if the actual or restricted capability of the submarine cable is not enough to accommodate the resulting power transfer between Luzon and Visayas based on the trading participants' offers and demand conditions in the regions. The constraint will result to the occurrence of price separation between Luzon and Visayas.

In October, constraint in the Leyte-Luzon HVDC occurred in 230 trading intervals during ex-ante and 233 trading intervals during ex-post. The constraints occurred in relevant trading intervals where the transfer capability of the HVDC was set by the NGCP-SO to zero in line with annual maintenance of the submarine cable on October 10-19. The occurrence of constraints in the Leyte-Luzon HVDC in October was obviously higher compared with the previous billing month *(Tables 12 and 13).*

Table 12. 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

Table 13. Summary of HVDC Limits Imposed by NGCP-SO and Results of HVDC Schedules (Ex-ante and Ex-post), September 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	150/220	150/440	Total	0/0	150/200	150/220	150/440	Total
Visayas to Luzon	**-**	**76**	**20**	**593**	**689**	**-**	**66**	**20**	**578**	**664**
Limit Not Maximized		*73*	*3*	*593*	*669*		*66*	*2*	*578*	*646*
Limit Maximized [1\]		*3*	*17*		*20*			*18*		*18*
Luzon to Visayas	**-**	**9**	**-**	**42**	**51**	**-**	**19**	**-**	**58**	**77**
Limit Not Maximized		*9*		*42*	*51*		*19*		*58*	*77*
No Flow [1\]	**3**				**3**	**2**				**2**
TOTAL	**3**	**85**	**20**	**635**	**743**	**2**	**85**	**20**	**636**	**743**

Notes: 1\ with price separation

Price Setting Plants[5]

As shown in Figure 8, 26 plants from Luzon have been considered as price setters across all price levels in October. The top five frequent price setters during the month include the coal plants Masinloc (at 33%), Pagbilao (at 27%) and Sual (at 25%), oil-based plant Bauang (at 14%) and natural gas plant Kepco Ilijan (at 10%). The coal plants Masinloc, Sual and Pagbilao were also the most frequent price setters in September.

In Visayas *(Figure 8),* 20 plants have been considered as price setters across all price levels with the geothermal plant Leyte A (at 36%) and coal plants KSPC (at 21%), PEDC (at 18%), CEDC (at 14%) as most frequent price setters.

[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 (Luzon Plants), September and October 2011

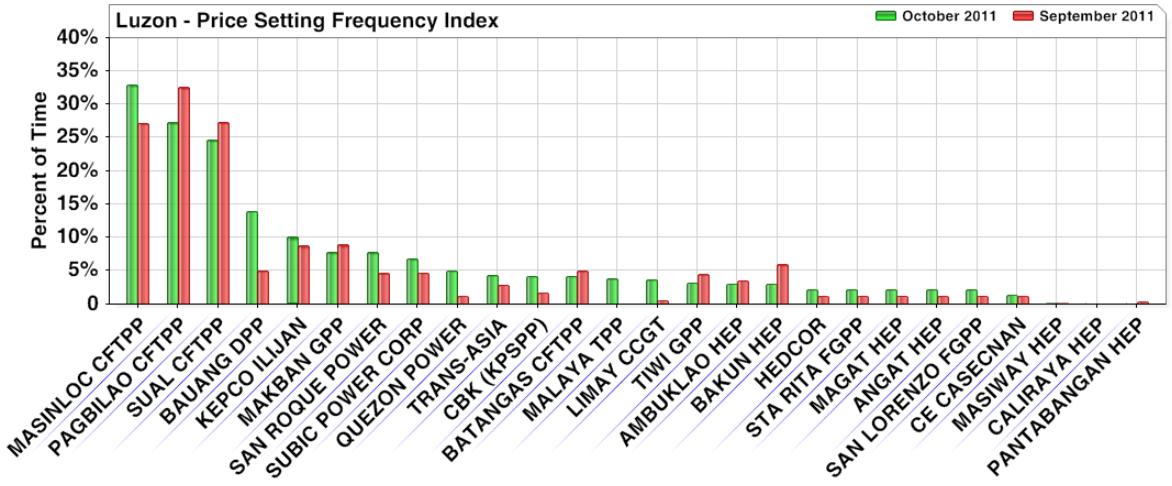
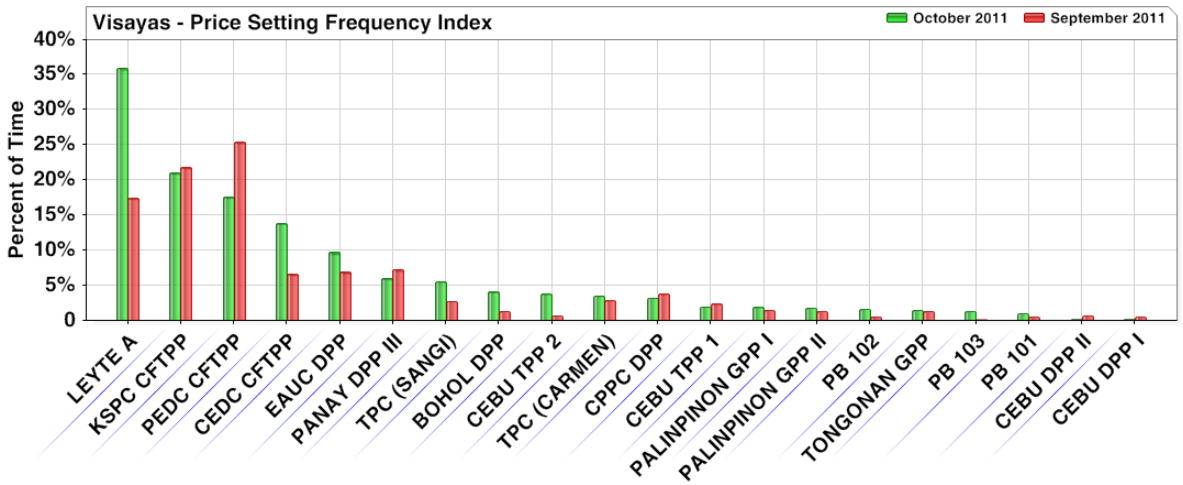
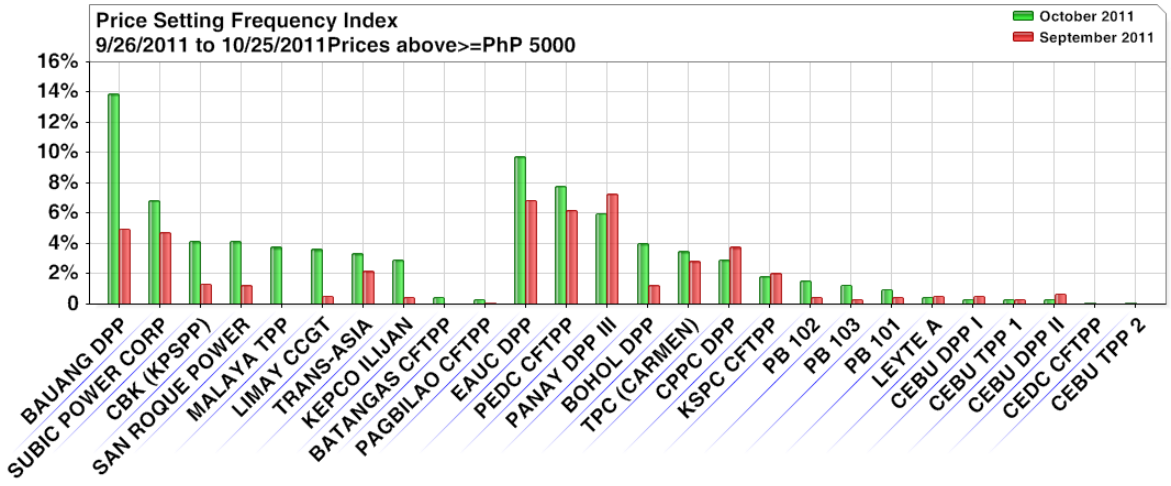


Figure 10. Price Setting Frequency Index (Visayas Plants), September and October 2011



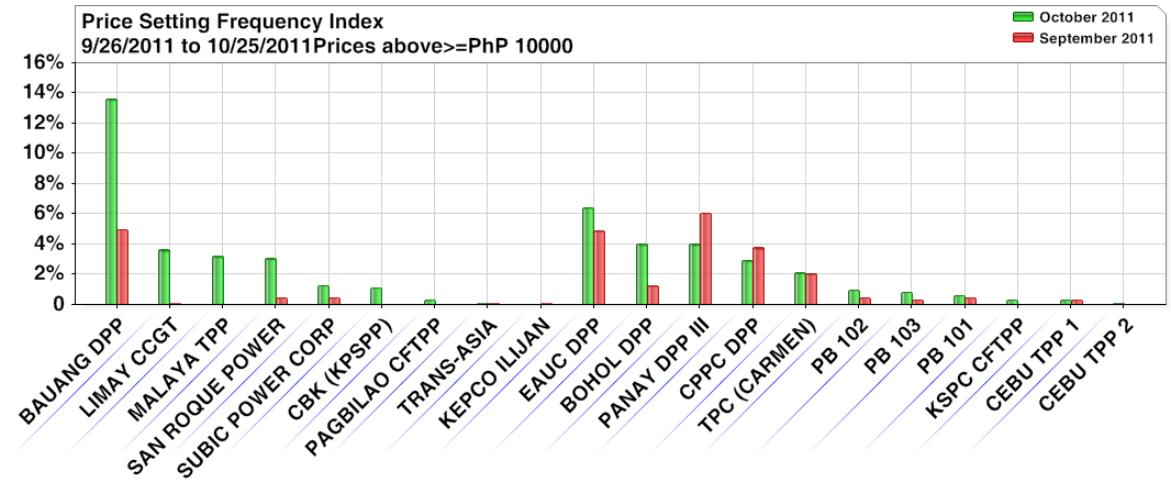
Looking at the PhP5,000/MWh and above price range, the number of price setters was down to twenty-six (26) plants, composed of ten (10) plants from Luzon and sixteen (16) plants from Visayas *(Figure 10)*. The oil-based plants Bauang (at 14%) and Subic-Enron (at 7%), and pumped storage Kalayaan (at 4%) topped the price setting plants from Luzon. Meanwhile, the oil-based plants EAUC (at 10%) and PANAY DPP (at 6%) and coal plant PEDC (at 8%) were the top price setting plants from Visayas.

Figure 11. Price Setting Frequency Index (PhP5,000 and Above), September and October 2011



The number of price setters at the price level of PhP10,000/MWh and above was further reduced to 20 plants, nine plants from Luzon and 11 from Visayas *(Figure 11)*.

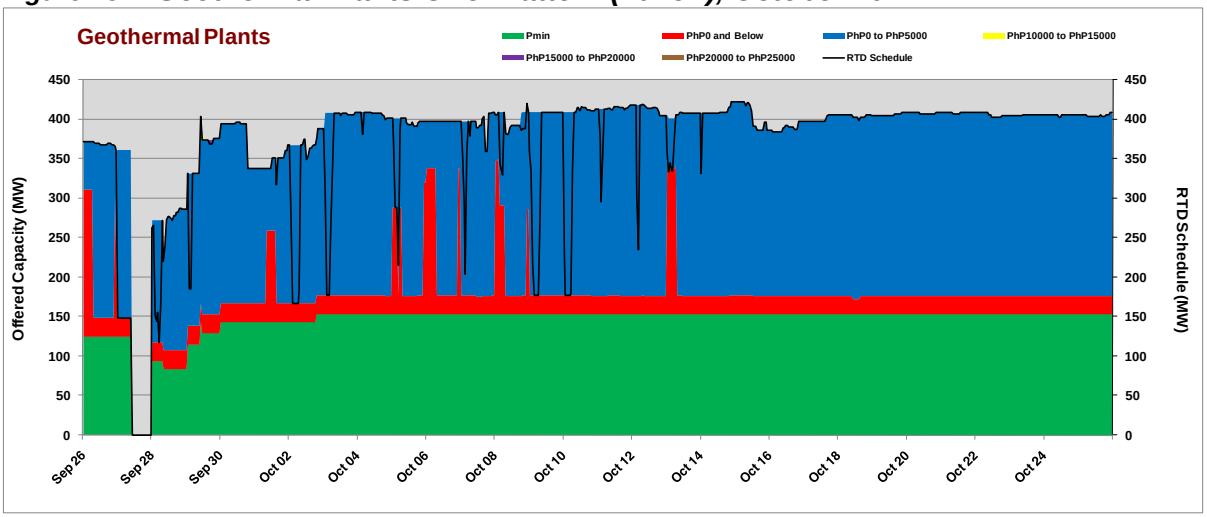
Figure 12. Price Setting Frequency Index (PhP10,000 and Above), September and October 2011



Generator Offer Pattern

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

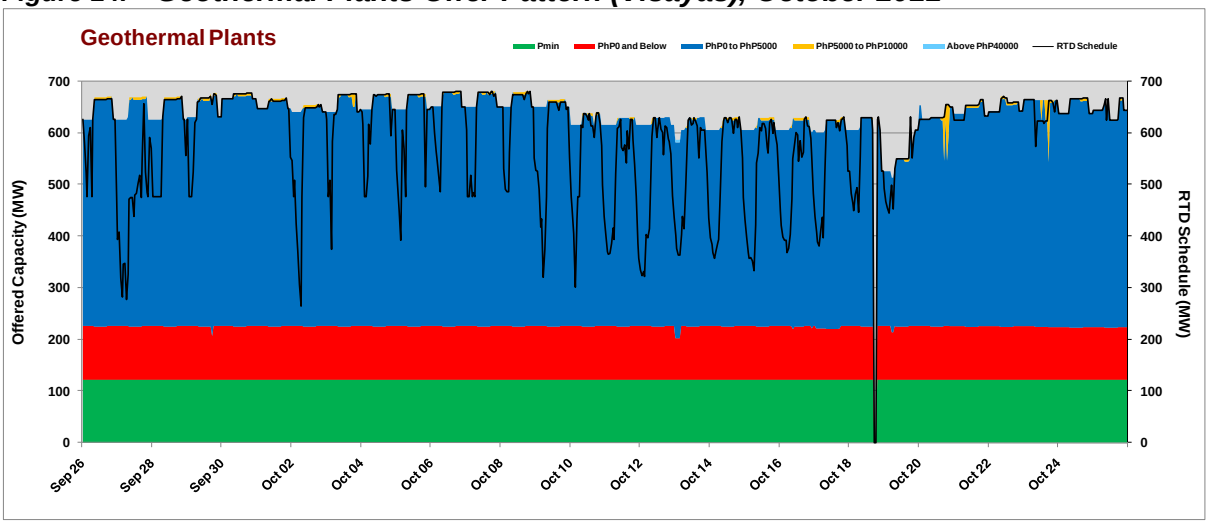
Figure 13. Geothermal Plants Offer Pattern (Luzon), October 2011



Note: "Null" values were used during the trading intervals under market intervention

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

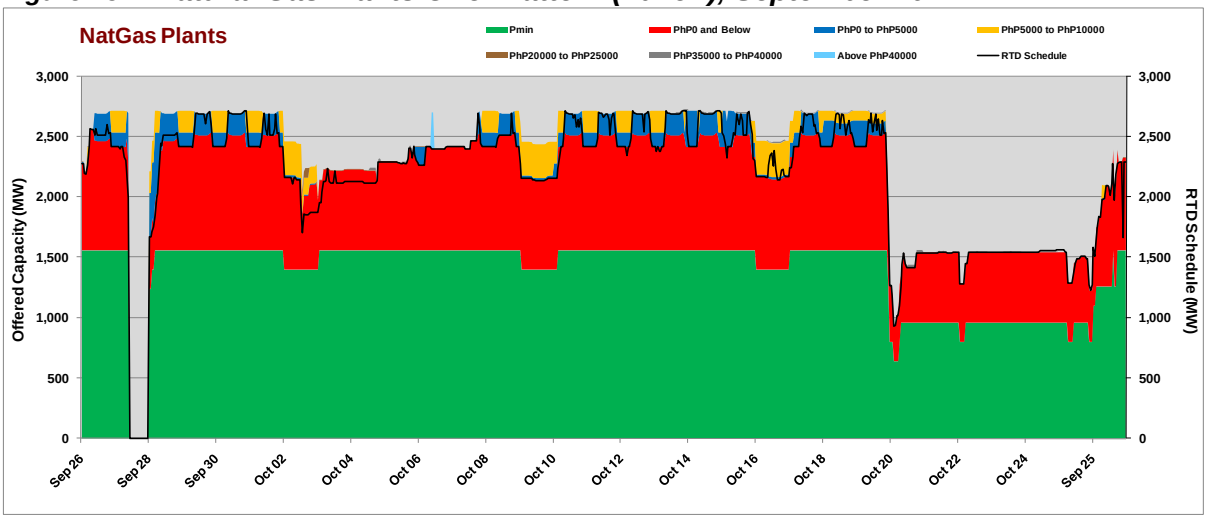
Figure 14. Geothermal Plants Offer Pattern (Visayas), October 2011



Note: "Null" values were used during the trading intervals under market intervention

About 97% of the offered capacities (average of 2,244 MW) of natural gas plants were priced at PhP5,000/MW and below. The other 3% of the offered capacities (average of 34 MW) were priced above PhP5,000/MW. The capacity offer of the natural gas plants notably decreased in the latter part of the billing period due to the shutdown of Ilijan *(Figure 14).*

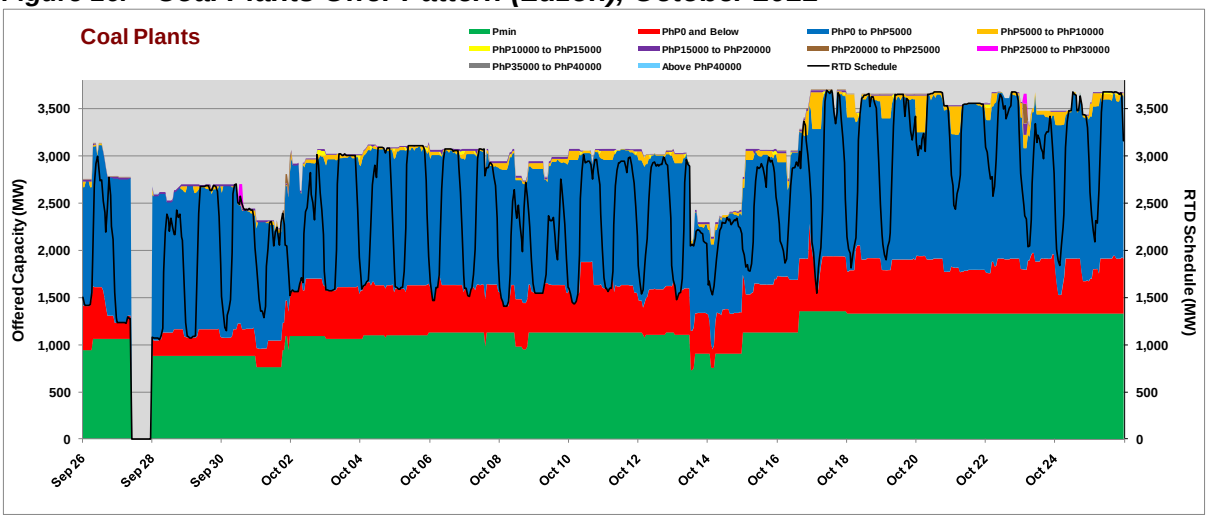
Figure 15. Natural Gas Plants Offer Pattern (Luzon), September 2011



Note: "Null" values were used during the trading intervals under market intervention

About 2% of the offered capacities (average of 72 MW, maximum of 577 MW) were priced above PhP5,000/MW *(Figure 15).* The capacity offer of coal plants increased starting October 16 after one unit of Sual returned from its maintenance outage.

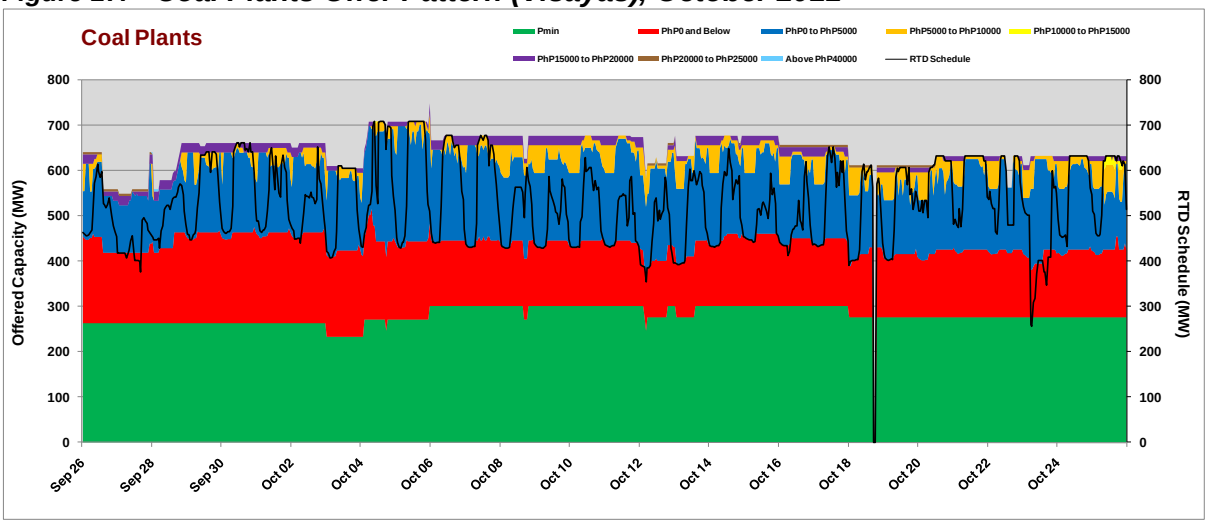
Figure 16. Coal Plants Offer Pattern (Luzon), October 2011



Note: "Null" values were used during the trading intervals under market intervention

About 94% of the offered capacity of coal plants in Visayas (average of 607 MW) were priced below PhP5,000/MW. The other 6% of the offered capacities (average of 41 MW) were priced above PhP5,000/MW, reaching as high as PhP60,000/MW *(Figure 16)*.

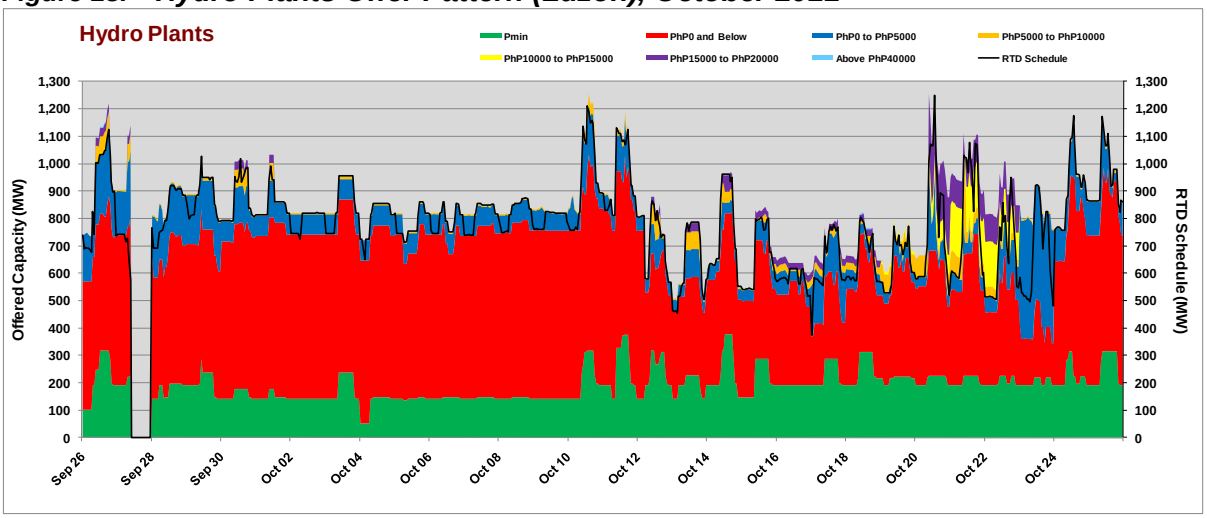
Figure 17. Coal Plants Offer Pattern (Visayas), October 2011



Note: "Null" values were used during the trading intervals under market intervention

A fairly consistent offer pattern from hydro plant in Luzon was observed in the first of the billing month *(Figure 17)*. The volatility in terms of capacity and price prevailed anew in the latter half of the month. The capacity offers ranged from 501 MW to 1,256 MW while the offer prices ranged from negative PhP250/MW to PhP62,000/MW.

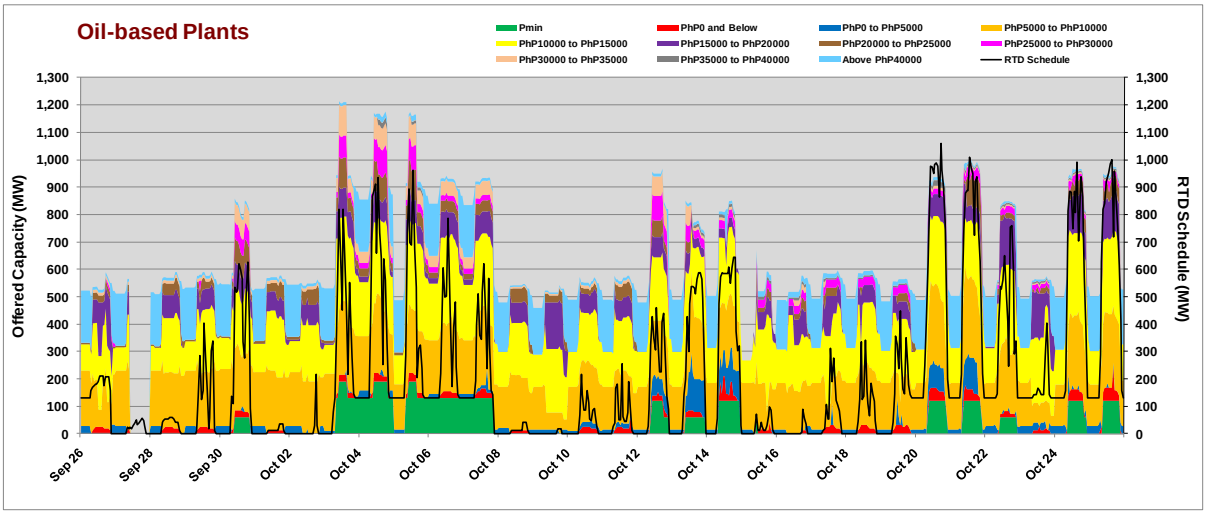
Figure 18. Hydro Plants Offer Pattern (Luzon), October 2011



Note: "Null" values were used during the trading intervals under market intervention

The Limited or non-submission of offers from oil-based plants in Luzon accounts to about 28% of the capacity gap in the region. The offered capacity of the Luzon oil-based plants ranged from 268 MW to 1,213 MW while the offer prices ranged between PhP0.00/MW and PhP62,000/MW *(Figure 18).*

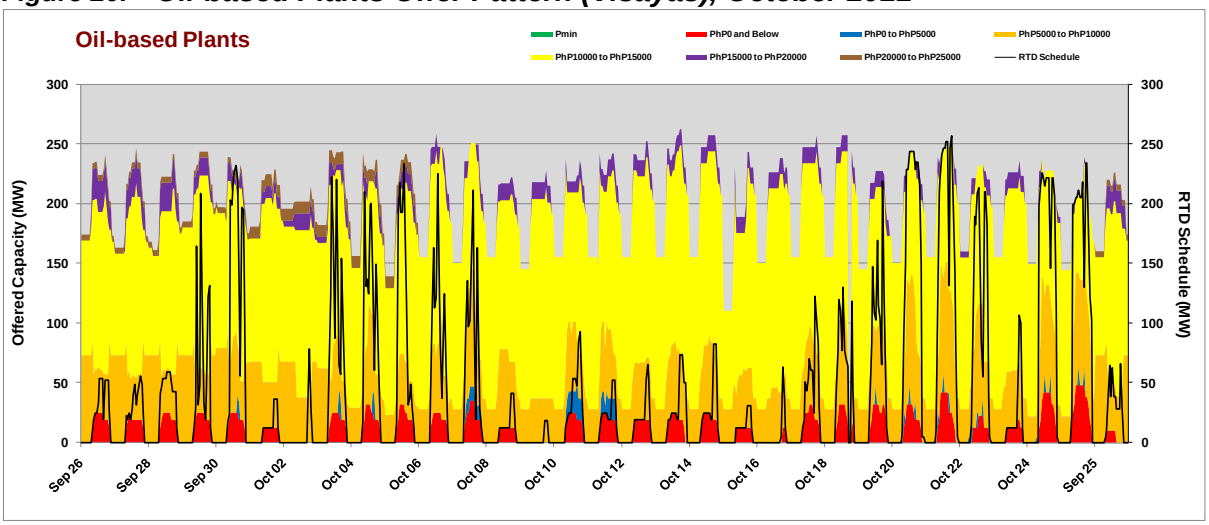
Figure 19. Oil-based Plants Offer Pattern (Luzon), October 2011



Note: "Null" values were used during the trading intervals under market intervention

The capacity and price offers from oil-based plants in Visayas ranged from 111 MW to 263 MW and PhP0.00/MW to PhP20,543/MW, respectively *(Figure 19)*.

Figure 20. Oil-based Plants Offer Pattern (Visayas), October 2011



Note: "Null" values were used during the trading intervals under market intervention

Capacity Factor

The calculations showed a significant increase in the capacity factor of oil-based plants in October attributed to higher RTD schedule *(Figure 20 and Table 14).*

Figure 21. Capacity Factor (Luzon Plants), October 2011

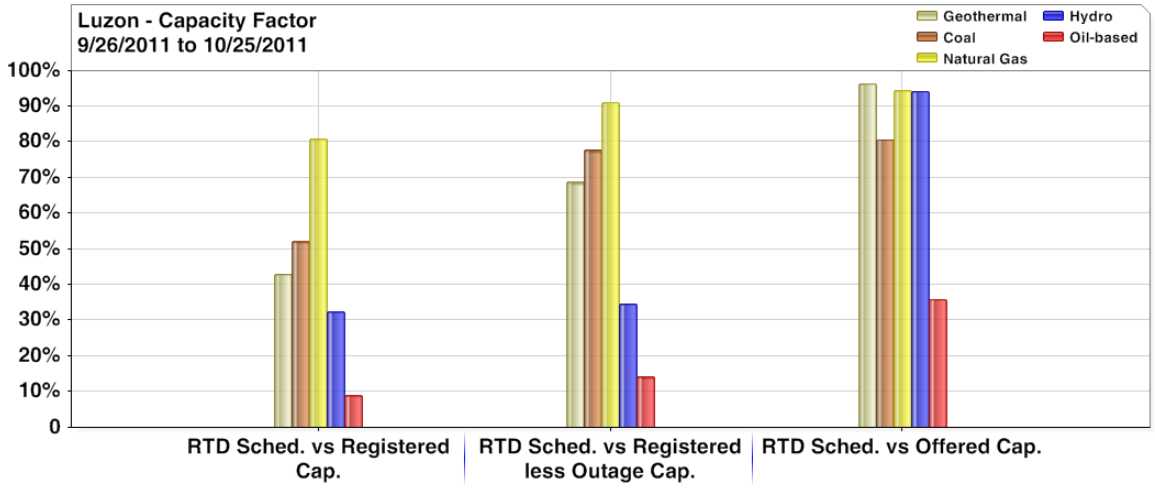


Table 14. Summary of Capacity Factor by Plant Type in Luzon, September and October 2011

Plant Type	RTD Sched. vs Registered Cap.			RTD Sched. vs Registered less Outage Cap.			RTD Sched. vs Offered Cap.		
	September 2011	October 2011	%Change	September 2011	October 2011	%Change	September 2011	October 2011	%Change
Coal	51%	52%	2%	71%	78%	9%	77%	81%	5%
Natural Gas	87%	81%	-8%	90%	91%	1%	92%	94%	2%
Geothermal	43%	43%	1%	68%	69%	1%	94%	96%	2%
Hydro	33%	32%	-1%	35%	35%	0%	90%	94%	4%
Oil-based	3%	9%	160%	5%	14%	171%	17%	36%	108%

Table 15. Capacity Factor by Plant Type in Luzon, October 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	1,400,710	2,687,742	1,800,807	1,735,753	52%	78%	81%
Natural Gas	1,569,324	1,943,689	1,723,704	1,662,899	81%	91%	94%
Geothermal	267,061	621,068	388,853	277,338	43%	69%	96%
Hydro	552,347	1,705,843	1,595,571	586,616	32%	35%	94%
Oil-based	112,196	1,265,152	792,520	312,037	9%	14%	36%

The calculations also showed a significant improvement in the capacity factors of the oil-based in Visayas due to higher RTD schedule. On the other hand, calculations showed a decrease in the capacity factor of geothermal plants brought about by lower RTD schedule particularly during the period where the HVDC submarine cable underwent annual maintenance *(Figure 21 and Table 16).*

Figure 22. Capacity Factor (Visayas Plants), October 2011

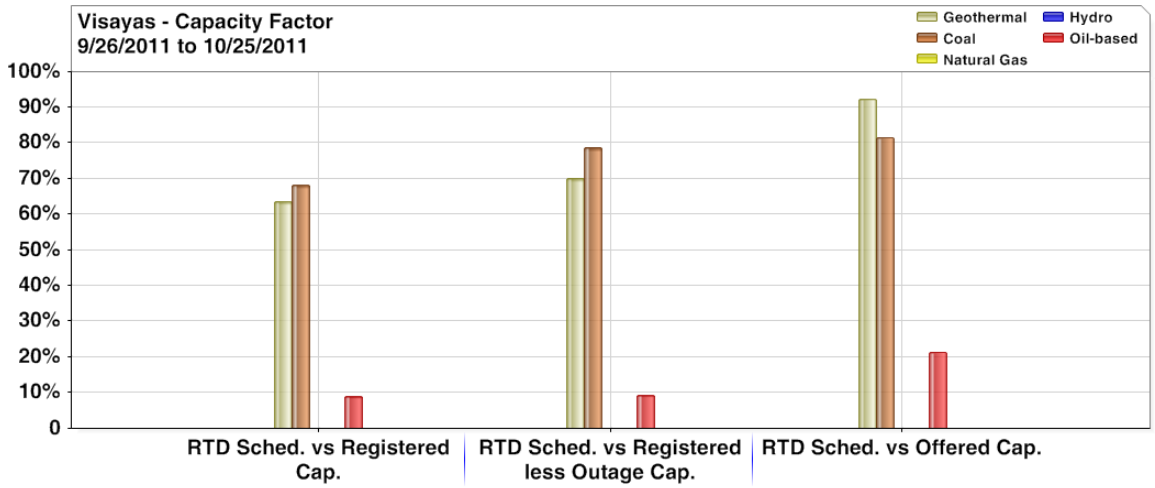


Table 16. Summary of Capacity Factor by Plant Type in Visayas, September and October 2011

Plant Type	RTD Sched. vs Registered Cap.			RTD Sched. vs Registered less Outage Cap.			RTD Sched. vs Offered Cap.		
	September 2011	October 2011	%Change	September 2011	October 2011	%Change	September 2011	October 2011	%Change
Coal	71%	68%	-4%	77%	79%	2%	81%	82%	1%
Geothermal	68%	64%	-7%	78%	70%	-10%	97%	92%	-5%
Oil-based	5%	9%	93%	5%	9%	97%	10%	21%	109%

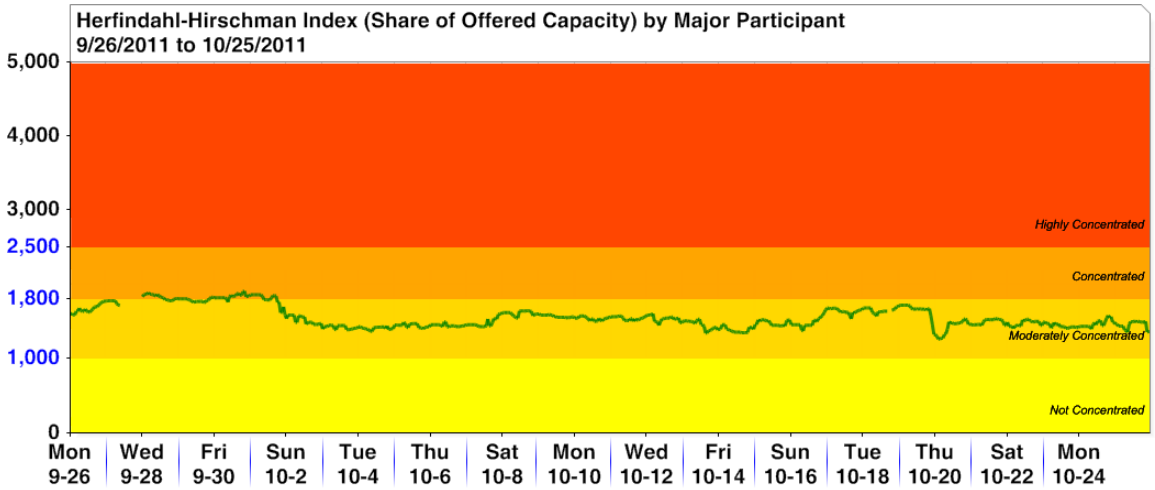
Table 17. Capacity Factor by Plant Type in Visayas, October 2011

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	379,549	556,594	482,056	465,211	68%	79%	82%
Geothermal	425,259	669,032	606,764	461,098	64%	70%	92%
Oil-based	31,217	354,836	340,190	146,039	9%	9%	21%

Market Concentration

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

Figure 23. Hourly HHI based on Offered Capacity by Major Participant Grouping, October 2011

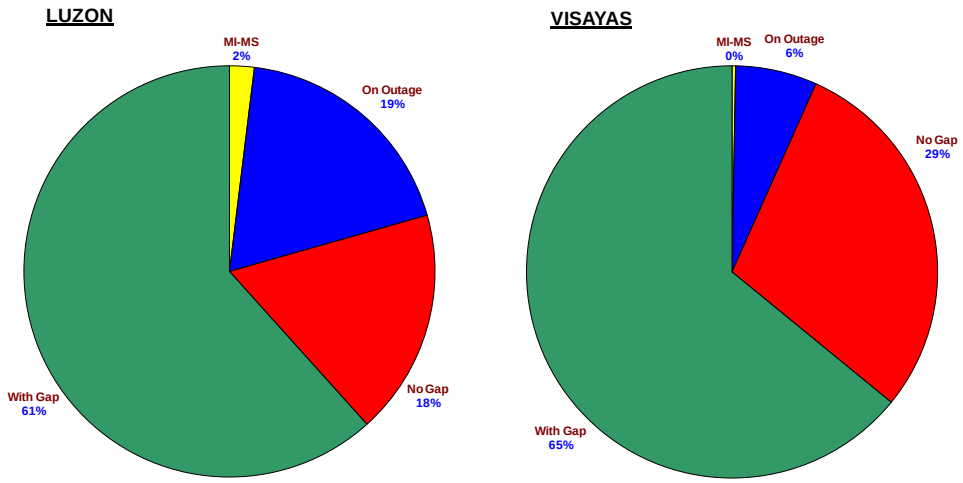


Compliance Monitoring

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 61 percent and 65 percent of the total generator resource-trading intervals[7] in Luzon and Visayas, respectively.

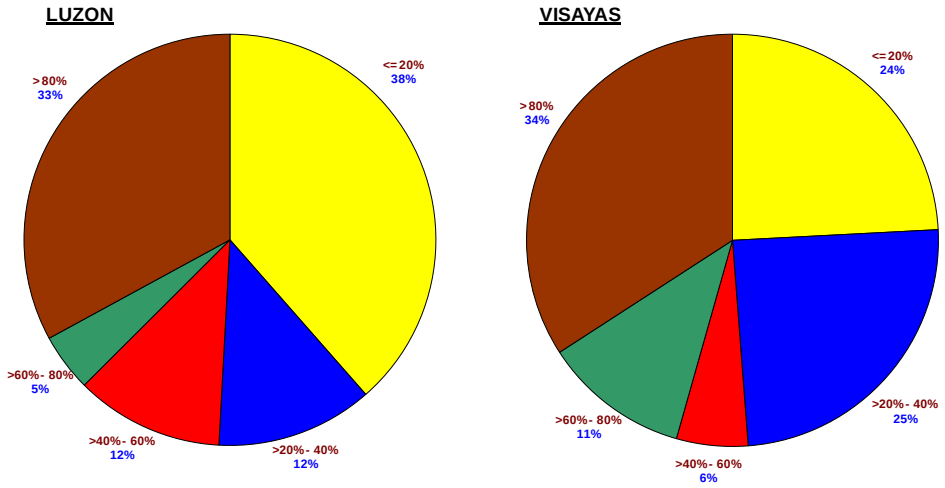
Figure 24. Summary of Compliance Monitoring to Must Offer Rule, October 2011



[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 33% and 34% of the relevant generator resource-trading intervals in Luzon and Visayas, respectively.

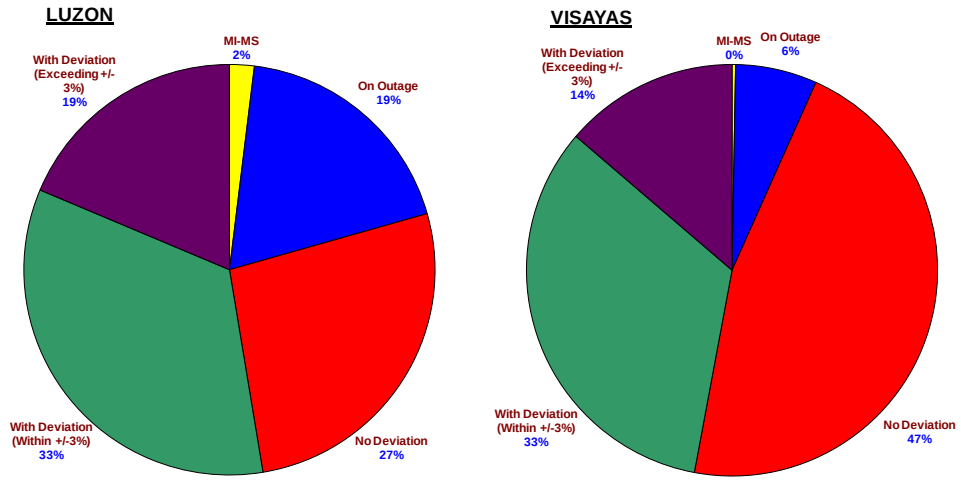
Figure 25. Distribution of Observed Capacity Gap, October 2011



Compliance to RTD Schedule

Figure 25 shows that around 19 percent and 14 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 October 2011.

Figure 26. Summary of Compliance Monitoring to RTD Schedule, October 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 66 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 17 percent and 18 percent in Luzon and Visayas, respectively.

Figure 27. Distribution of Observed Deviation, October 2011