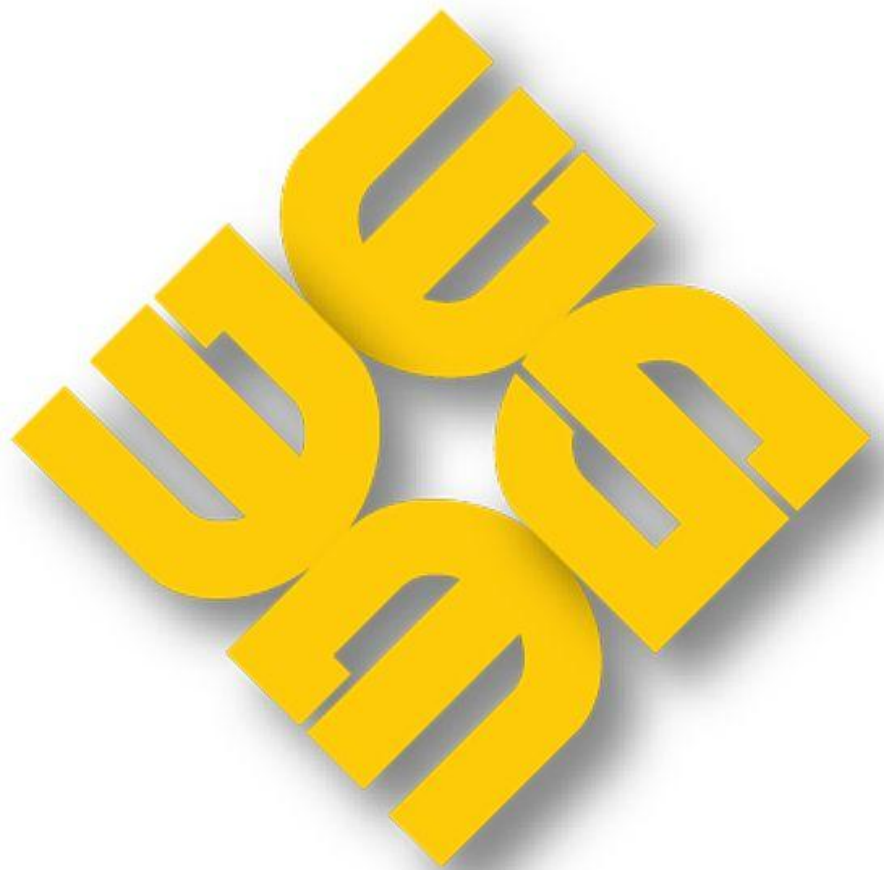


MAG-AMAR-2013

ANNUAL MARKET ASSESSMENT REPORT

For the 2013 Billing Period



**PHILIPPINE
ELECTRICITY
MARKET
CORPORATION**

**MARKET ASSESSMENT GROUP
(MAG)**

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EXECUTIVE SUMMARY

The year 2013 saw average system demand rose by 4.5 percent, from 6,994 MW in 2012 to 7,311 MW. Correspondingly, the total WESM registered capacity for 2013 also grew, albeit at a slower rate, by 2 percent from about 14,068 MW in 2012 to an average of 14,341 MW. However, only about 60 percent of the average registered capacity or 8,535 MW was made available in the market in 2013, an increase by 2.5 percent from the average effective supply of 8,329 MW in year 2012.

The same trend in supply and demand was mirrored in both regions. In Luzon, peak demand grew by 3.9 percent (from 7,921 MW in 2012 to 8,232 MW in 2013), and effective supply, by 5.6 percent (from 6,817 MW to 7,199 MW). Likewise in the Visayas, maximum demand growth was posted at 5.3 percent (from 1,463 MW to 1,540 MW) while supply was marked with an increase by 2.1 percent (from 1,519 MW to 1,550 MW).

System-wide Reserve Margin Index (RMI) demonstrated better demand and supply condition in about 68 percent of the time in 2013. Mirroring the same trend, the occurrence of trading intervals with RMI of more than 10 percent was noted in about 63.4 percent of the time in Luzon, and in about 90 percent in the Visayas. Meanwhile, system-wide average market prices increased by .66 percent to PhP5,463/MWh in 2013 from PhP5,428/MWh in 2012. The summer months of April and May and the 4th quarter of the billing year registered the highest monthly average prices and were also the same months with the most tight RMIs. Notably, system-wide market prices surged to its highest levels in November and December, averaging at PhP11,246/MWh and PhP11,060/MWh, respectively.

Supply and demand were most tight in Luzon during the summer months of April and May and the billing months of November and December, all of which incurred the most number of trading intervals marked with RMIs of less than 10 percent at about 50 percent. November and December were low supply months (with effective supply at 6,655 MW and 6,947 MW, respectively), while April and May were months of high demand (at 6,467 MW and 6,698 MW). Additionally, the months of April and December posted the highest level of capacity not offered at 3,420 MW and 3,178 MW, respectively, while the November billing month recorded high outage capacity at 2,592 MW (following the highest outage capacity posted at 2,726 MW during the month of October). Tight market balance is usually accompanied by higher spot prices as noted in all four months, with the December billing month posting an exceedingly high average market price of PhP18,194/MWh, followed by November with PhP16,104/MWh, April at PhP6,993/MWh and May at PhP6,053/MWh.

In the Visayas, the frequency of occurrences of trading intervals with RMIs of less than 10 percent averaged at only about 10 percent of the time. Supply and demand was most tight during the April, October and May billing months with RMIs of less than 10 percent occurring at about 20 percent of the time. The same months were marked with the highest monthly average market prices in the region at PhP7,158/MWh, PhP6,320/MWh and PhP6,014/MWh. April and October were low supply months (1,526 MW and 1,444 MW) attributable to the high average outage capacity incurred during said months (at 193 MW and 257 MW) while May was a high demand (1,243 MW) month marked with a high level of capacity not offered (393 MW).

Majority of the prices in both Luzon and Visayas during the covered period were within the range of PhP2,000/MWh to PhP4,000/MWh, except in November and December in Luzon, when the frequency of prices above PhP20,000/MWh significantly rose to 22.9 percent and 27.4 percent from only 1.96 percent in the previous months. The extremely high market

prices in Luzon during said months did not apply in the Visayas which made use of the administered price cap for the duration of the ERC's partial market suspension in the region.

Major coal plants Pagbilao, Sual, Masinloc, and Mariveles frequently set the spot prices below PhP5,000/MWh in Luzon while geothermal plant Leyte A and coal plants PEDC, KSPC, CEDC and TPC were the most frequent price setters in Visayas at the same price level. On the other hand, oil-based plants dominated the list of frequent price setters at the above PhP10,000/MWh level, with Luzon oil-based plant Bauang at the top spot, followed by Visayas oil-based plant Panay DPP III, Luzon oil-based plant Limay and Visayas coal plant TPC (Carmen). The price setting frequency index of oil-based plants Bauang, Limay and Therma Mobile were noted to have rose significantly in November and December and were the top price-setting plants for prices above PhP60,000/MWh.

The most frequent pivotal suppliers in 2013 were similarly dominated by major coal plant Sual, followed by natural gas plants Ilijan and Sta. Rita and coal plants Masinloc, Pagbilao, Batangas, and Quezon in Luzon, while geothermal plant Leyte A, coal plants CEDC, KSPC and PEDC were the most frequent pivotal suppliers in Visayas. For Luzon, the frequency by which generators became pivotal increased during the April and May as well as the November and December billing months. Similarly for the Visayas, April, May and October were months of most pivotal suppliers.

Correspondingly, system-wide, the billing months of April, May, November, and December (covering Luzon only), posted the highest percentage of residual supply index (RSI) below 100 percent, indicating the significant increase in the number of pivotal generators.

Almost 100 percent of offers from geothermal plants were priced consistently at PhP5,000/MW and below. Capacity offers of natural gas plants in Luzon were likewise priced low at PhP5,000/MW and below. Coal plants in Luzon were similarly low-priced, with 99 percent of capacity offered at a price below PhP5,000/MW. On the other hand, 96 percent of the offered capacities of Visayas coal plants, were within the same price range of PhP5,000/MW and below. Offer submission of hydro plants were volatile all throughout the year, with 16 percent of its offered capacity priced between PhP5,000/MW to PhP20,000/MW and a relatively small portion, between PhP20,000/MW to above PhP60,000/MW. Oil-based plants were the most expensive resource among all plant types as 64 percent of its offers were priced between PhP5,000/MW to PhP20,000/MW and about 16 percent of its capacity offers ranged at prices above PhP60,000/MW. Oil-based plants in the Visayas, on the other hand, had 60 percent of its offers priced at above PhP10,000/MW.

In Luzon, natural gas plants consistently posted a high level of monthly capacity factor of above 73 percent across all months, except in November and December when it posted a mere 61.3 percent and 61 percent utilization level based on registered capacity following the shutdown of the Malampaya gas platform from 11 November to 10 December 2013. Geothermal plants had the highest utilization factor based on offered capacity, with an annual average of about 98 percent. Capacity factors of coal plants averaged at 64 percent and 75 percent in terms of registered capacity and registered capacity net of outage, but averaged at a high of 86 percent in terms of offered capacity. Utilization of oil-based plants was lowest averaging at only 6 percent, 8 percent and 15 percent, respectively in terms of registered, registered net of outage and offered capacities.

In the Visayas, geothermal plants recorded the highest capacity factors followed by coal plants and lastly, by oil-based plants which annual capacity factors showed limited utilization at 7.36 percent, 7.45 percent and 15.8 percent based on registered, registered net of outage and offered capacities.

Generator and customer spot exposure in Luzon averaged at 13.53 percent and 13.54 percent, except that generator spot transactions increased in April and May as well as in the 4th Quarter of 2013 (with spot exposure ranging from 15 percent to 18 percent of its total energy volume across all five months). Correspondingly, the same increase was noted in the customer spot transactions which exposure ranged from 14.37 percent to 16.44 percent on the same months.

Spot exposure of Visayas generators at 19.56 percent annual average was higher than that of Luzon, with April and May posting the highest level of exposure at 25.2 percent and 22.9 percent, respectively. Notable is the decrease in the level of spot exposure in December due to the ERC's declaration of market suspension in the Visayas. However, spot exposure of Visayas customers was at a much lesser degree, at only about 4.33 percent. 91.36 percent were energy covered by bilateral contracts with generators in the region while the remaining 4.31 percent were attributable to cross-purchases from Luzon generators.

The monthly market share trend of major participants in the WESM indicates that the market was dominated by San Miguel Corporation (SMC) with an average share of about 20.61 percent of the registered capacities in Luzon and Visayas. PSALM came in second with a market share of almost 17.33 percent, followed by Aboitiz and First Gen, with market shares of 16.59 percent and 15 percent, respectively.

In terms of trading participant-grouping, PSALM had the highest market share of about 15.28 percent of the registered capacities in Luzon and Visayas. PSALM was followed by San Miguel Energy Corporation (SMEC) at about 9 percent and South Premier Power Corp. (SPPC) at about 8.36 percent.

SMC's Sual and Ilijan plants had market shares of 9 percent and 8.36 percent, respectively, followed by First Gen's Sta. Rita with 7.26 percent, Aboitiz's Pagbilao plant at 5.32 percent and PSALM's CBK (KPSPP) at 5 percent.

When grouped into major participants, the calculated HHI generally signalled a moderately concentrated market. However, HHI calculation based on spot transactions indicated a concentrated market, the highest of which points to the August and September billing months, with September bordering the highly concentrated mark. The 4th Quarter signalled a decrease in said calculation, with an indication of a moderately concentrated market at slightly below the 1,800 threshold during the billing months of November and December, due to the decrease in the share in the total spot exposure of PSALM's Leyte A in November and December as well as SMC's Ilijan plant.

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I. INTRODUCTION

The 2013 Annual Market Assessment Report (AMAR) highlights the result of the six (6) main market monitoring indices, as provided for in the WESM Catalogue of Market Monitoring Data and Indices. The indices aim to give an indication of market trends, performance, drivers and signals that in turn provide means by which to assess market competition and conditions as well as the bidding behaviour of trading participants.

For the period in review, the AMAR covers the integrated Luzon and Visayas market operations for the billing period 26 December 2012 – 25 December 2013. With the partial market suspension of the WESM in the Visayas effective 08 November 2013 at 1500H to 25 March 2014 at 2400H, relevant parts of this report will cover only the market results for Luzon during said period. The administered prices which were used for settlement in the Visayas during the Energy Regulatory Commission's (ERC) partial market suspension were consequently incorporated in the calculation of market prices as discussed/presented in this Report.

II. DEMAND AND SUPPLY SITUATION

A. Demand¹

The next succeeding sections illustrate that demand for electricity varies according to the time of day and time of year, and is affected by factors such as weather condition, consumer population, varying economic activities, among others.

1. Historical Demand

In Luzon, maximum demand during the year in review was posted at 8,232 MW, higher by 4.0 percent from the 7,921 MW maximum demand in year 2012. The same is 1.85 percent lower than the 2013 Peak Demand Forecast under the Power Development Plan (2013-2030) of the Department of Energy (DOE), which projected peak demand is at 8,388 MW (at a growth rate of 5.2 percent from the projected peak demand of 7,972 MW in 2012).

Looking at the historical demand trend in the region would show that demand is increasing over the past seven (7) years, from 26 June 2006 upon commencement of commercial operations in the region until year 2013. The highest growth was noted during year 2010.

Comparison of year-on-year demand growth indicated that maximum demand rose by 9.32 percent in 2010 (7,644 MW) from 5.04 percent in 2009 (6,993 MW). The same can be attributable to the rise in temperature in year 2010, which has the highest yearly average temperature from 2006, averaging at 29°C.² It may be recalled that a blistering high of 37.8°C was recorded by Philippine Atmospheric, Geophysical and Astronomical Service Administration (Pag-asa) in Luzon in year 2010.

With the exception of year 2010 which average demand growth is posted at 11 percent and the succeeding year 2011 at 0.28 percent, average demand growth

¹ The demand is equal to the total scheduled MW of all load resources for each respective region plus losses.

² Based on Weather Underground's Luzon Weather History

in Luzon consistently ranged between 2.18 percent to 5 percent, on account of other factors such as economic growth in the region. Average demand in 2013 grew by 4.21 percent, from 5,895 MW in 2012 to an average of 6,143 MW.

Figure 1. Historical Demand - Luzon

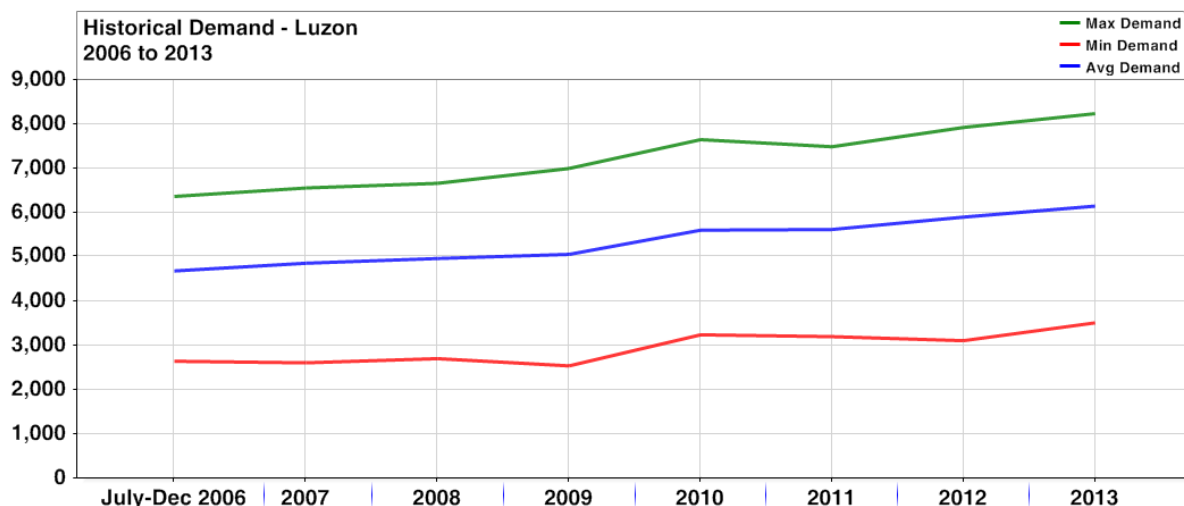


Table 1. Demand Growth - Luzon

	Annual Demand Growth (MW), Luzon							
	July-Dec 2006	2007	2008	2009	2010	2011	2012	2013
Max Demand	6,361	6,553	6,658	6,993	7,644	7,485	7,921	8,232
Avg Demand	4,678	4,854	4,960	5,053	5,600	5,615	5,895	6,143

Table 2. Demand Growth Percent (%) Change - Luzon

	Percent Change (%), Demand Growth - Luzon						
	2007	2008	2009	2010	2011	2012	2013
Max Demand	3.02	1.60	5.04	9.32	(2.09)	5.82	3.93
Avg Demand	3.75	2.18	1.88	10.82	0.28	4.98	4.21

Figure 2 shows the demand growth rate in the Visayas upon commencement of the WESM in the region in 2011 (26 December 2010, the start of the January billing month) until year 2013. Even as the average temperature in the Visayas became cooler³, growing economic activity may have still driven the maximum demand to increase by 5.27 percent in year 2013 (1,540 MW). It is noteworthy that the same is 2 percent lower than the DOE's projected peak demand at 1,572 MW, but was 3.9 percent higher than its projected demand growth rate of only 1.4 percent (from a peak demand projection of 1,551 MW in 2012).

Year-on-year comparison of average demand shows that demand consistently grew by 5.46 percent to 5.19 percent from 1,042 MW in 2011, 1,099 MW in 2012

³ Based on Weather Underground's Visayas Weather History

to 1,156 MW in 2013, which may be attributed to the economic growth in the region.

The sharp decline in minimum demand however, is on account of the high outage incidence in the region on 08 November 2013 at 1300H due to the destruction of power lines and facilities brought about by typhoon Yolanda.

Figure 2. Historical Demand - Visayas

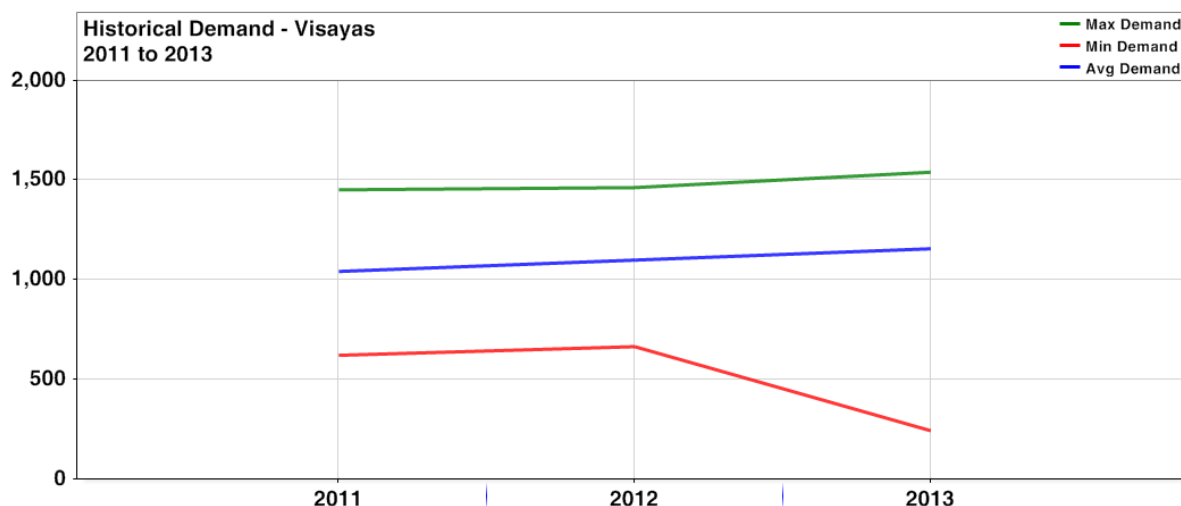


Table 3. Demand Growth - Visayas

	Annual Demand Growth, Visayas				
	2011	2012	2013	Growth Rate	
	(MW)	(MW)	(MW)	2012 (%)	2013 (%)
Max. Demand	1,452	1,463	1,540	0.78	5.27
Ave. Demand	1,042	1,099	1,156	5.46	5.19

2. Demand Profile

Figures 3, 4 and 5 show the demand profiles or the variation of 2013's monthly demand over the course of a 24-hour period. They not only show how demand varies throughout the day but across both regions as well.

Demand profiles for Luzon and Visayas indicate differing peak periods. In Luzon, average demand was highest in the afternoon at trading interval 1400H, followed by 1100H, 1500H, 1900 and 1200H. Bulk of said peak load is on account of the volume of the industrial and commercial consumers in the region with high energy usage during work/office hours.

In Visayas, average demand reached its peak in the evening at trading interval 1900H, reflective that majority of its demand comes from residential and commercial sectors, given that energy use of household and commercial consumers is proven to be highest at night time. Demand was also high during 2000H, 1400H, 1100H and 1800H.

Both regions nonetheless point to the same off-peak periods, with the lowest demand posted at trading interval 0400H. It is noteworthy that almost identical demand pattern has been observed for both Luzon and Visayas for trading intervals 0900H to 1700H, which are typical working hours.

Month-on-month comparison of average demand shows that demand is at its highest during the billing month of May in both regions. This effectively pushed electricity demand to its highest level as the country experienced sweltering high temperatures. On the contrary, demand hit its lowest level during the January billing month, noting that the same recorded the lowest temperature for the entire year. Consistent with the above, the summer months of April and June likewise posted high levels of demand in Luzon for the year while the February and November billing months posted low levels of demand, when the weather was relatively cooler. The same high and low trends were likewise noted for the Visayas, except that September posted the second highest monthly average demand in the region.

Although the level of demand is strongly influenced and consequently varies according to such other factors as weather/temperature and seasonal changes as well as economic behaviour/activity, the demand profiles also denote that notwithstanding these factors, the pattern of electricity demand during the course of a day throughout the year is approximately the same for any given month. This is manifested by the same trend in the hourly demand profile for all billing months, in both the Luzon and Visayas regions, regardless of weather and seasonal changes.

The notable deviation looking at the hourly trend of other billing months is the spike in the demand level in Luzon at 1800H for the November and December billing months, attributable to the putting-up of Christmas lights during night time at the onset of the Christmas season until yearend.

System-wide, average demand peaked at trading intervals 1400H, 1100H and 1900H, which mirrors the peak of the hourly consumption trend in the Luzon region. System average demand was noted to have grown by 4.5 percent from 6,994 MW in 2012 to 7,311 MW in 2013.

Figure 3. Hourly System Demand Profile

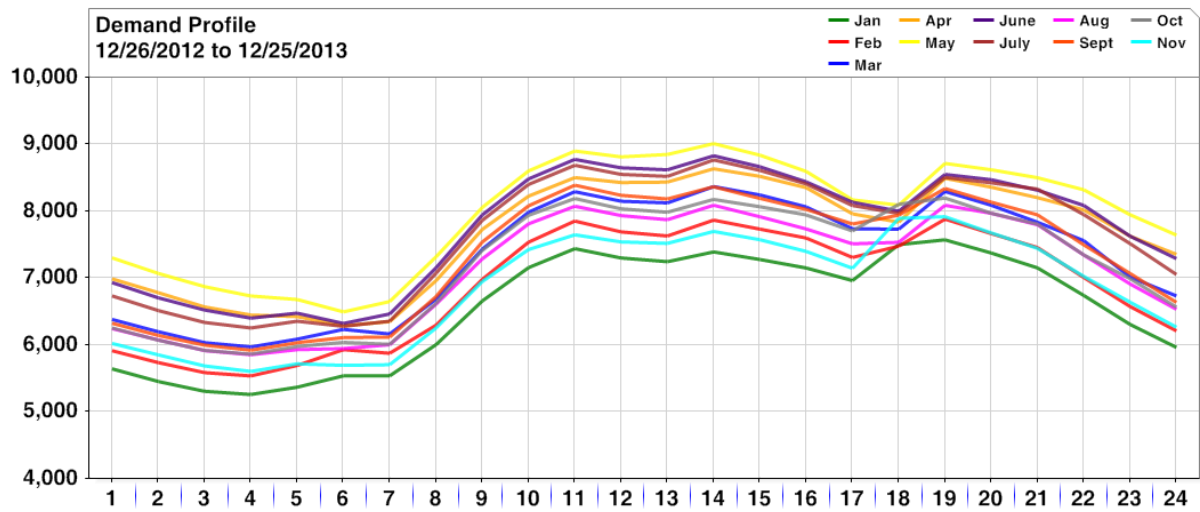


Table 4. Hourly System Demand Profile

Average System Demand by Trading Interval - 2013 (MW)																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Avg. Demand	6,448	6,252	6,083	6,001	6,081	6,095	6,129	6,718	7,462	7,991	8,276	8,146	8,113	8,316	8,173	7,996	7,707	7,817	8,244	8,084	7,908	7,557	7,133	6,772

Table 5. Monthly System Average Demand

Average System Demand by Billing Month - 2013 (MW)												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Annual Avg.
Avg. Demand	6,552	6,874	7,306	7,643	7,938	7,741	7,644	7,122	7,321	7,214	6,826	7,311

Figure 4. Hourly Demand Profile - Luzon

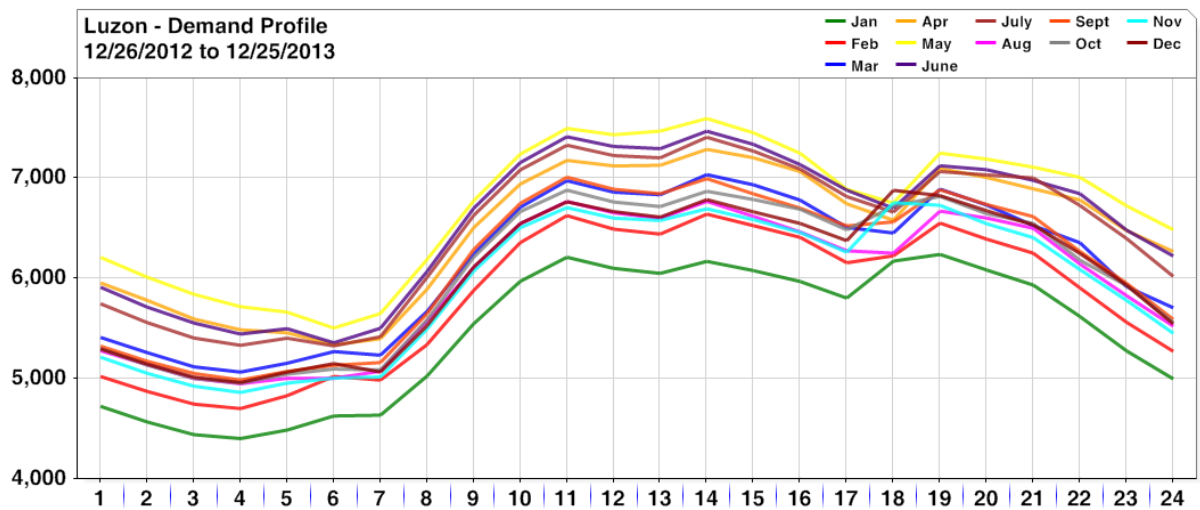


Table 6. Hourly Demand Profile - Luzon

Average Demand by Trading Interval- Luzon, 2013 (MW)																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Avg. Demand	5,447	5,282	5,139	5,069	5,133	5,150	5,183	5,667	6,254	6,705	6,945	6,843	6,812	6,973	6,855	6,709	6,472	6,559	6,844	6,725	6,606	6,344	6,020	5,719

Table 7. Monthly Average Demand - Luzon

Average Demand by Billing Month - Luzon, 2013 (MW)													
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
Avg. Demand	5,464	5,800	6,152	6,467	6,698	6,550	6,465	5,972	6,125	6,070	5,947	6,040	6,143

Figure 5. Hourly Demand Profile - Visayas

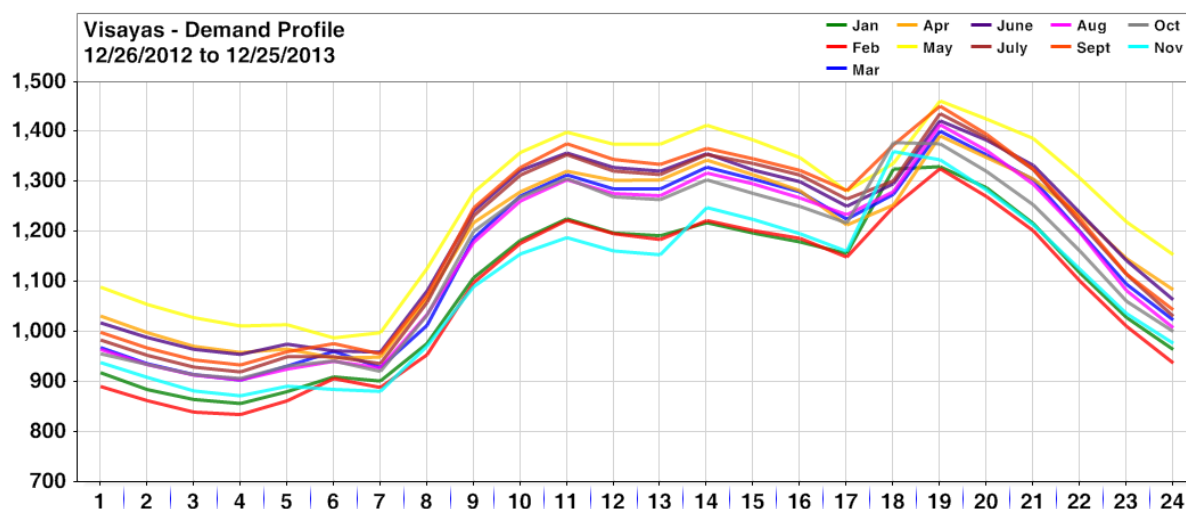


Table 8. Hourly Demand Profile - Visayas

Average Demand by Trading Interval - Visayas, 2013 (MW)																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Avg. Demand	980	950	926	916	937	945	934	1,039	1,194	1,271	1,312	1,284	1,279	1,319	1,295	1,270	1,225	1,310	1,399	1,351	1,291	1,197	1,099	1,029

Table 9. Monthly Average Demand - Visayas

Average Demand by Billing Month - Visayas, 2013 (MW)												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Annual Avg.
Avg. Demand	1,089	1,074	1,154	1,176	1,243	1,191	1,179	1,150	1,196	1,144	1,086	1,156

It may be gleaned, based on the subsequent figures and data, that the month-on-month average fluctuations in demand show that the same did not only follow the temperature trend but rather indicated that economic behaviour may have effectively influenced the said monthly demand variation. A careful look at Table 1 (Quarterly Demand and GDP Comparison) reveals that the demand trend follows that of the Gross Domestic Product (GDP)⁴, at least for the first three quarters where growth and reduction in GDP also meant the same inclination for the demand. It was observed that the first quarter, which posted the lowest GDP in 2013, also registered the lowest average demand.

The fourth quarter was a different matter, however, with the recorded GDP posting the highest in 2013, while the average system demand for the quarter slightly dropped from the system averages in the second and third quarters of the year. It is significant to note however, that the last quarter on system average demand covered only the period until 08 November 2013, in view of the ERC's

⁴ The GDP is the basic measure of the country's economic performance.

partial market suspension affecting the Visayas region which commenced on the same date.

The drop in energy demand may have also been influenced by the increasing consumer awareness of the upward price trend during the fourth quarter (Price Elasticity of Demand). The same decline was likewise evident with the decrease in the regional average demand during the last quarter, with November and December figuring-in as two of the low demand months in Luzon while October and November were also low demand months in the Visayas.

Table 10. Quarterly Demand and GDP Comparison

	Demand (MW)	GDP (PhP)	% Change in Demand	% Change in GDP
Q1	6,911	2,646,087		
Q2	7,774	2,852,632	12.49	7.81
Q3	7,362	2,799,701	(5.30)	(1.86)
Q4	7,020	3,247,684	(4.65)	16.00

Figure 6. Luzon Temperature⁵

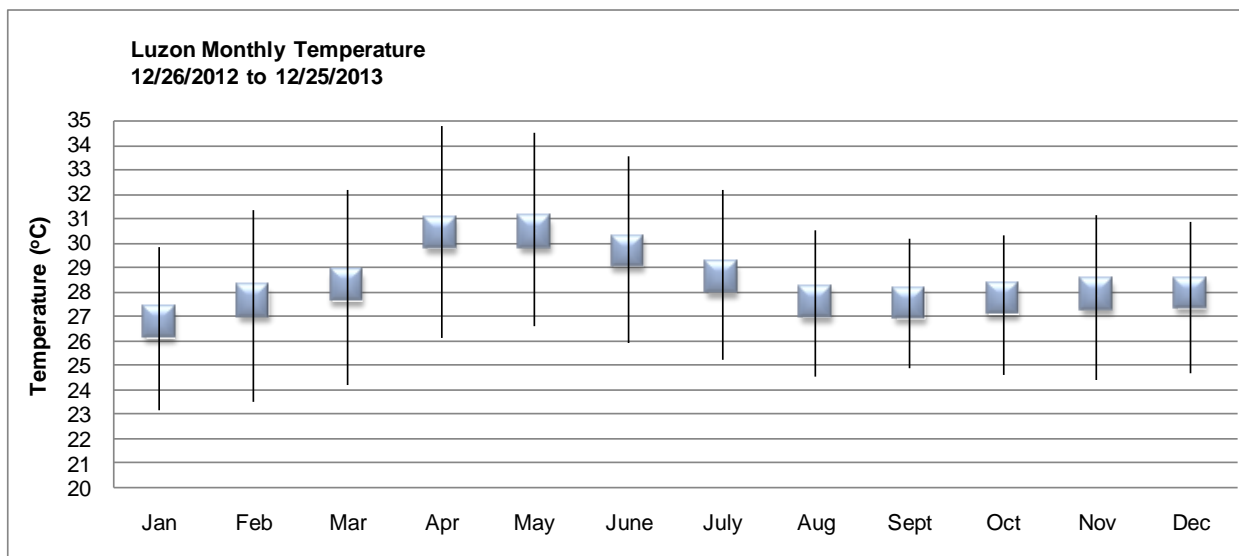


Table 11. Luzon Temperature

Average Temperature by Billing Month - Luzon, 2013 (C°)												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Avg. Temp	26.74	27.61	28.25	30.39	30.43	29.65	28.60	27.58	27.52	27.70	27.90	27.93
	Annual Avg.											28.36

⁵ Based on Weather Underground

3. Load Factor⁶

Load factor is a measure of the degree of uniformity of demand over a period of time, and is determined by dividing the total energy withdrawn by the product of the peak load and total number of hours in a particular billing period. It is a useful indicator for describing the consumption characteristics of electricity over a period of time.

The actual monthly energy consumption in 2013, except November and December, was steadily averaging at about 71 percent of the total energy available for use in a month. The same can be said for the Luzon and Visayas regions which consistently posted load factors for the January to October billing months of about 72 percent and 63 percent, respectively.

The level of load factor changed dramatically in the Visayas during November and December, attributable to the sharp decline in the level of total energy withdrawn and peak load in the region during said months due to the outages of facilities affected by typhoon Yolanda. Load factor in the Visayas correspondingly dropped to 52.62 percent and 62.44 percent, respectively, in November and December, while load factor in Luzon was consistently within the range of 76 percent in both months.

System-wide load factor slightly dropped its load factor level during the November billing month at 74.65 percent.

Figure 7. System Load Factor

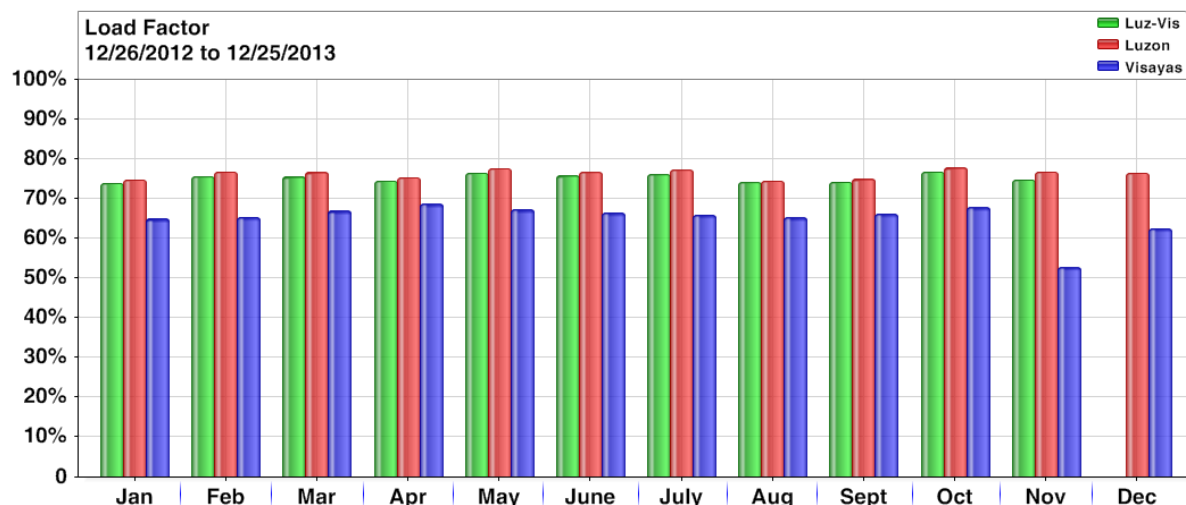


Table 12. Monthly Load Factor

Load Factor (%) by Billing Month - 2013												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
System	73.82	75.46	75.36	74.49	76.45	75.67	76.01	74.03	74.10	76.67	74.65	-
Luzon	74.65	76.65	76.52	75.30	77.53	76.58	77.17	74.41	74.79	77.66	76.68	76.47
Visayas	64.83	65.29	66.87	68.61	67.18	66.40	65.87	65.20	66.15	67.79	52.62	62.45
Annual Avg.	70.70	71.68	62.85									

⁶ Computed from the metered quantity of energy withdrawn

B. Load Forecast Variation

1. Comparison of day-ahead load forecast and ex-ante load

By comparing the day-ahead load forecast and ex-ante load, the load forecast variation measures the degree of accuracy of the day-ahead scheduling in relation to load forecast. Results of such comparison will be helpful in assessing the quality of the pre-dispatch process in estimating and informing expected load requirement. It is noteworthy that the day ahead projections are non-binding.

Figures 8 and 9 show the load forecast variation distribution for Luzon and Visayas, respectively. The figures indicate the occurrences of over forecast and under forecast by the Market Operator across all billing months. In Luzon, it was noted that the majority of the day-ahead load forecast variation from the ex-ante schedule falls within the range of ± 3 percent. 33 percent of said load forecasts fall within the range of -3 percent to -1 percent, while 41 percent are within 1 to 3 percent. The frequency distribution in the Visayas, on the other hand, is more spread-out as load variations are mostly within the range of ± 10 percent. It is noted however, the majority of the load forecasts variation in the Visayas region fell within the ± 3 percent, at 55.76 percent.

Figure 8. Load Forecast Variation Distribution (Ex-ante vs. Day-Ahead) - Luzon

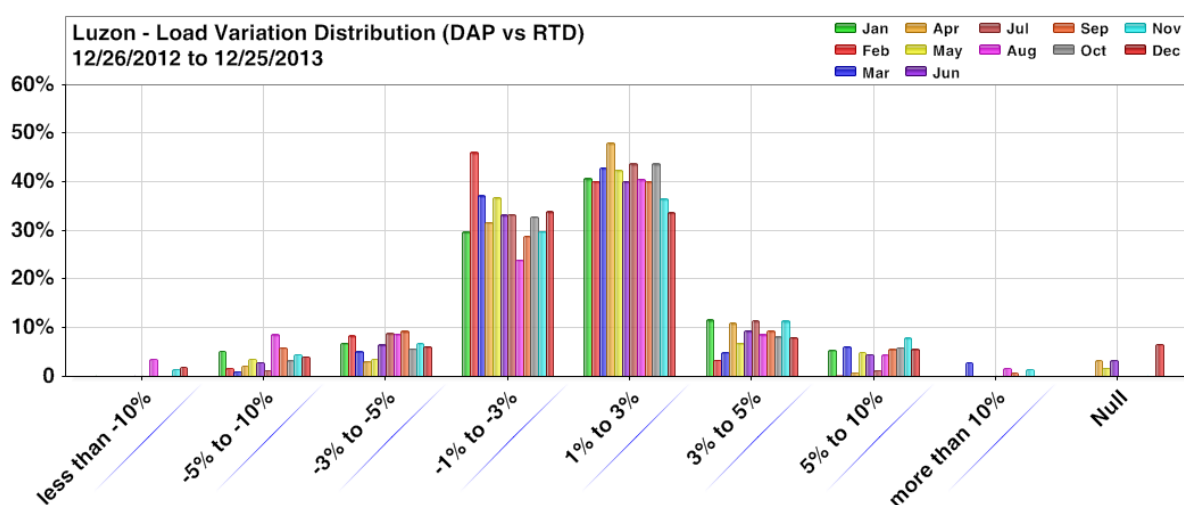


Table 13. Load Forecast Variation Distribution (Ex-ante vs. Day-Ahead) - Luzon

	Load Forecast Variation (%) Distribution (Ex-ante vs. Day-Ahead) - Luzon, 2013								
	less than -10%	-5% to -10%	-3% to -5%	-1% to -3%	1% to 3%	3% to 5%	5% to 10%	more than 10%	Null
Jan	0.13	5.24	6.85	29.70	40.73	11.69	5.38	0.27	
Feb		1.61	8.33	46.10	40.19	3.36	0.40		
Mar		0.89	5.06	37.20	43.01	4.91	6.10	2.83	
Apr		2.15	2.96	31.72	48.12	11.02	0.81		3.23
May		3.61	3.61	36.81	42.50	6.81	5.00		1.67
June	0.13	2.82	6.45	33.20	40.19	9.41	4.57		3.23
July		1.25	8.89	33.33	43.75	11.53	1.11		0.14
Aug	3.49	8.60	8.74	23.92	40.59	8.60	4.44	1.61	
Sept	0.13	5.91	9.27	28.90	40.19	9.41	5.51	0.67	
Oct	0.28	3.19	5.69	32.92	43.75	8.19	5.97		
Nov	1.34	4.57	6.85	29.84	36.56	11.42	7.93	1.34	0.13
Dec	1.94	4.03	6.11	33.89	33.75	8.06	5.56		6.67
Annual Avg.	0.63	3.69	6.59	33.08	41.10	8.73	4.38	0.55	1.26

Note: Results are null if either the ex-ante is null (due to market intervention/suspension) or the day ahead load forecast (at 0100H) is missing.

Figure 9. Load Forecast Variation Distribution (Ex-Ante vs. Day-Ahead) - Visayas

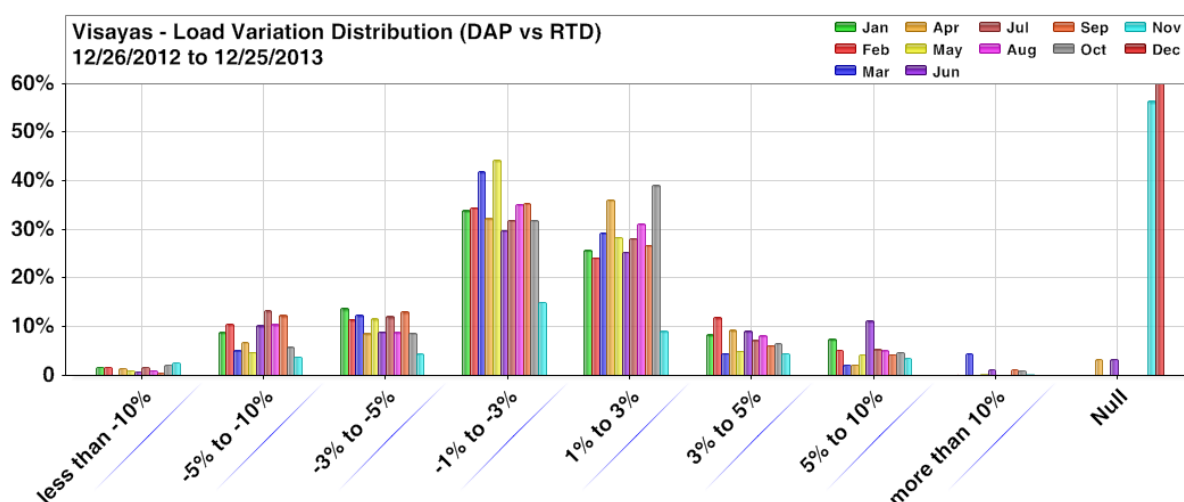


Table 14. Load Forecast Variation Distribution (Ex-Ante vs. Day-Ahead) - Visayas

	Load Forecast Variation (%) Distribution (Ex-ante vs. Day-Ahead) - Visayas, 2013								
	less than -10%	-5% to -10%	-3% to -5%	-1% to -3%	1% to 3%	3% to 5%	5% to 10%	more than 10%	Null
Jan	1.75	8.87	13.84	33.87	25.67	8.33	7.39	0.27	
Feb	1.75	10.62	11.56	34.54	24.19	11.96	5.24	0.13	
Mar	0.15	5.06	12.50	41.96	29.32	4.46	2.08	4.46	
Apr	1.34	6.85	8.60	32.26	36.16	9.27	2.15	0.13	3.23
May	0.97	4.72	11.67	44.31	28.47	5.00	4.31	0.42	0.14
June	0.81	10.22	9.01	29.84	25.40	9.14	11.29	1.08	3.23
July	1.53	13.47	12.08	31.94	28.19	7.22	5.28	0.14	0.14
Aug	0.94	10.48	8.87	35.22	31.18	8.20	5.11		
Sept	0.54	12.37	13.17	35.48	26.75	6.18	4.30	1.21	
Oct	2.08	5.83	8.75	31.94	39.17	6.67	4.72	0.83	
Nov	2.69	3.76	4.44	15.05	9.14	4.57	3.49	0.40	56.45
Dec									100.00
Annual Avg.	1.22	7.73	9.53	30.48	25.29	6.79	4.65	0.73	13.58

Note: Results are null if either the ex-ante is null (due to market intervention/suspension) or the day ahead load forecast (at 0100H) is missing.

2. Comparison of ex-ante load and ex-post load

Figures 10 and 11 compare the forecasts variation in the ex-ante load and ex-post load for Luzon and Visayas, respectively. In Luzon, it was noted that a large percentage of the load variation are within the range of -3 percent to -1 percent (at 41.14 percent) and 1 to 3 percent (at 56 percent). In Visayas meanwhile, the load forecasts variation are spread-out within the -3 percent to 5 percent range, majority of which likewise fall within ± 3 percent at 77.8 percent.

Figure 10. Load Forecast Variation Distribution (Ex-Ante vs. Ex-Post) - Luzon

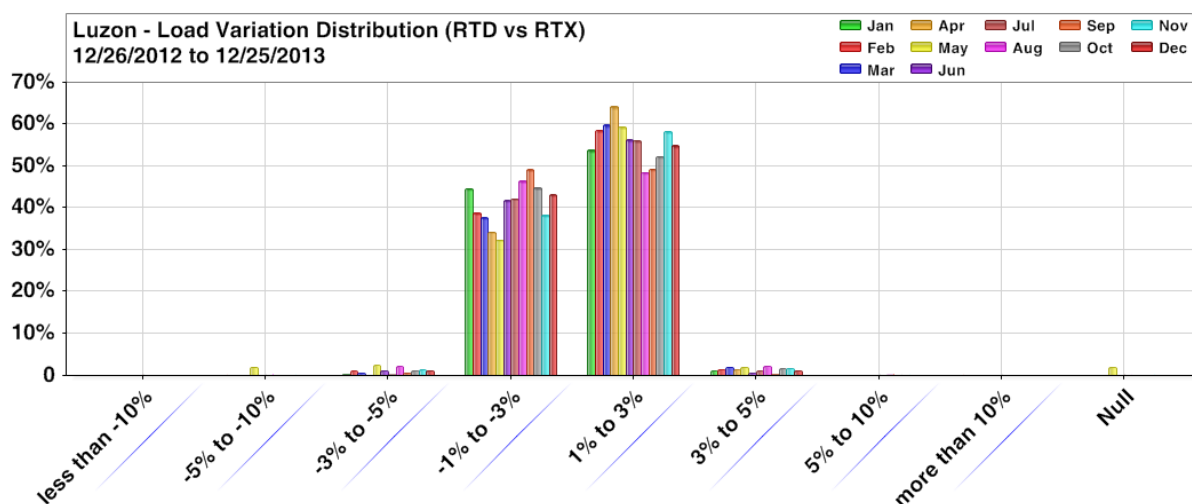


Table 15. Load Forecast Variation Distribution (Ex-Ante vs. Ex-Post) - Luzon

	Load Forecast Variation (%) Distribution (Ex-ante vs. Ex-Post) - Luzon, 2013								
	less than -10%	-5% to -10%	-3% to -5%	-1% to -3%	1% to 3%	3% to 5%	5% to 10%	more than 10%	Null
Jan			0.54	44.62	53.76	1.08			
Feb		0.13	1.08	38.71	58.60	1.34		0.13	
Mar			0.60	37.65	59.82	1.93			
Apr			0.13	34.27	64.25	1.34			
May		1.94	2.36	32.36	59.44	1.81	0.28		1.81
June		0.13	1.08	41.80	56.32	0.67			
July	0.14		0.42	42.22	56.11	0.97			0.14
Aug		0.27	2.15	46.37	48.52	2.15	0.40		0.13
Sept			0.67	49.19	49.33	0.54	0.27		
Oct		0.28	0.97	44.72	52.36	1.53	0.14		
Nov		0.13	1.34	38.17	58.33	1.75	0.13		0.13
Dec			0.97	43.19	54.86	0.97			
Annual Avg.	0.01	0.24	1.03	41.14	55.95	1.34	0.10	0.01	0.18

Note: Results are null if either the ex-ante or the ex-post load forecast is null due to market intervention/suspension.

Figure 11. Load Forecast Variation Distribution (Ex-Ante vs. Ex-Post) - Visayas

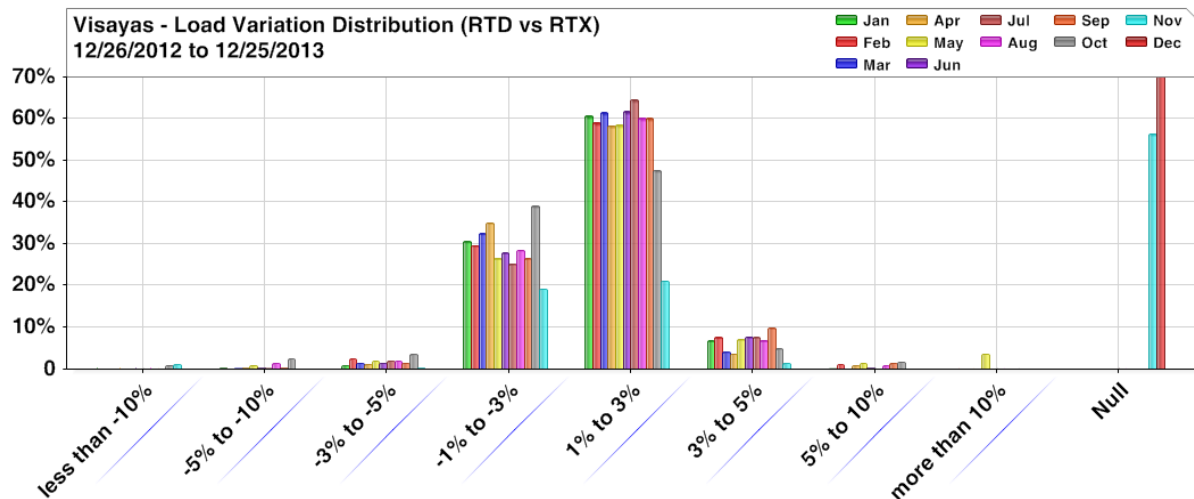


Table 16. Load Forecast Variation Distribution (Ex-Ante vs. Ex-Post) - Visayas

	Load Forecast Variation (%) Distribution (Ex-ante vs. Ex-Post) - Visayas, 2013								
	less than -10%	-5% to -10%	-3% to -5%	-1% to -3%	1% to 3%	3% to 5%	5% to 10%	more than 10%	Null
Jan	0.27	0.54	0.94	30.51	60.62	6.72	0.40		
Feb		0.13	2.42	29.57	59.01	7.53	1.21	0.13	
Mar		0.45	1.49	32.44	61.46	4.02	0.15		
Apr	0.27	0.54	1.08	35.08	58.33	3.63	0.94	0.13	
May		0.83	1.94	26.39	58.47	7.08	1.39	3.61	0.28
June	0.27	0.54	1.48	27.82	61.69	7.66	0.54		
July		0.42	1.81	25.14	64.58	7.64	0.28		0.14
Aug	0.27	1.34	2.02	28.49	60.08	6.72	0.81	0.13	0.13
Sept	0.13	0.54	1.48	26.48	60.08	9.95	1.34		
Oct	0.83	2.36	3.47	39.03	47.64	4.86	1.67	0.14	
Nov	1.08	0.13	0.54	19.22	21.10	1.34	0.13		56.45
Dec									100.00
Annual Avg.	0.26	0.65	1.55	26.68	51.10	5.62	0.74	0.34	13.06

Note: Results are null if either the ex-ante or the ex-post load forecast is null due to market intervention/suspension or if there was no ex-post run.

C. Supply⁷

The figures below show the supply profile for the entire year. While the total WESM registered capacity for 2013 was recorded at an average of about 14,341 MW, only 60 percent of which or an average of about 8,535 MW was made available in the market, including the capacity scheduled as ancillary services (AS) by NGCP-SO as well as the offers submitted by oil-based plant Malaya despite being on open-breaker status.

It is significant to note that for the covered year, the highest level of supply was posted during the July billing month averaging at about 9,464 MW, following the low incidence of outages recorded during the period.

⁷Supply as discussed in this section refers to effective supply which is the offered capacity of all generator resources adjusted for any security limit provided by the System Operator and other constraints considered during the market dispatch optimization process such as generator offered ramp rates.

The maximum supply on record was posted at 10,396 MW on 03 September 2013 from 1100H-1200H. On the other hand, the system-wide minimum supply was recorded at 1,373 MW on 02 May 2013 during the 1700H trading interval.

Note that the supply level from 08 November 2013 to 25 December 2013 accounts only for the supply profile of Luzon, with the Visayas under partial market suspension brought about by typhoon Yolanda. Thus, the noticeable dip in the level of system-wide supply as shown in Figure 13.

Year-on-year comparison indicates that registered capacity grew by an average of 2 percent from 14,068 MW in 2012, but only 8,329 MW was supplied in the market, or about 59 percent of the average capacity registered that year.

Further, as illustrated in Figure 13, July posted the highest growth in supply from year 2012, with a significant 18 percent rise in the level of supply in the market. However, supply growth was curtailed during the last quarter of 2013 as supply was noted to have greatly reduced by 18 percent and 13 percent, respectively, during the billing months of December (from 8,437 MW in 2012 to 6,899 MW) and November (from 8,405 MW to 7,333).

Figure 12. Supply Profile - 1st Half

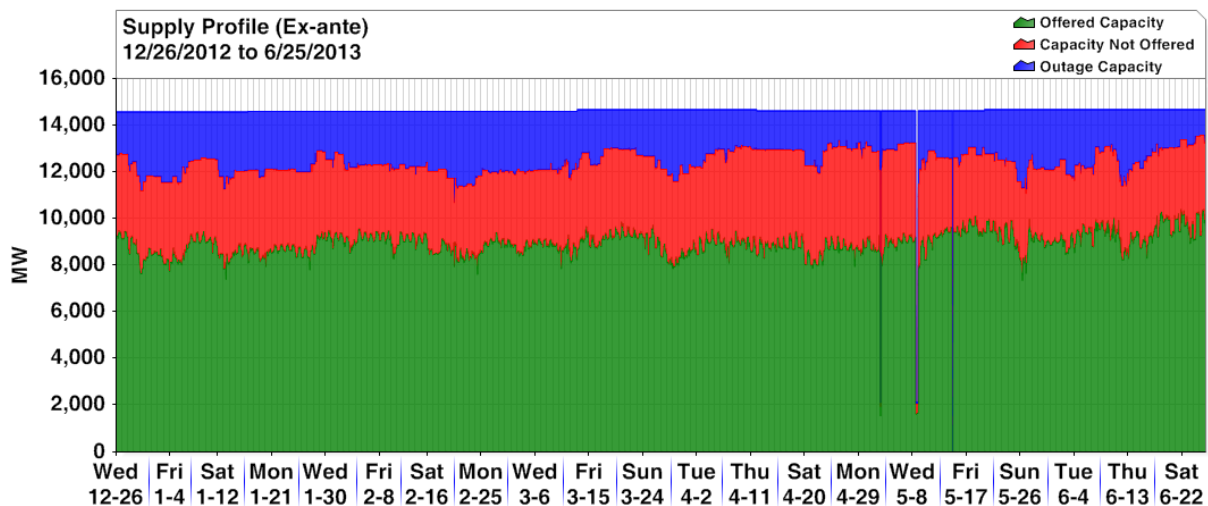


Figure 13. Supply Profile - 2nd Half

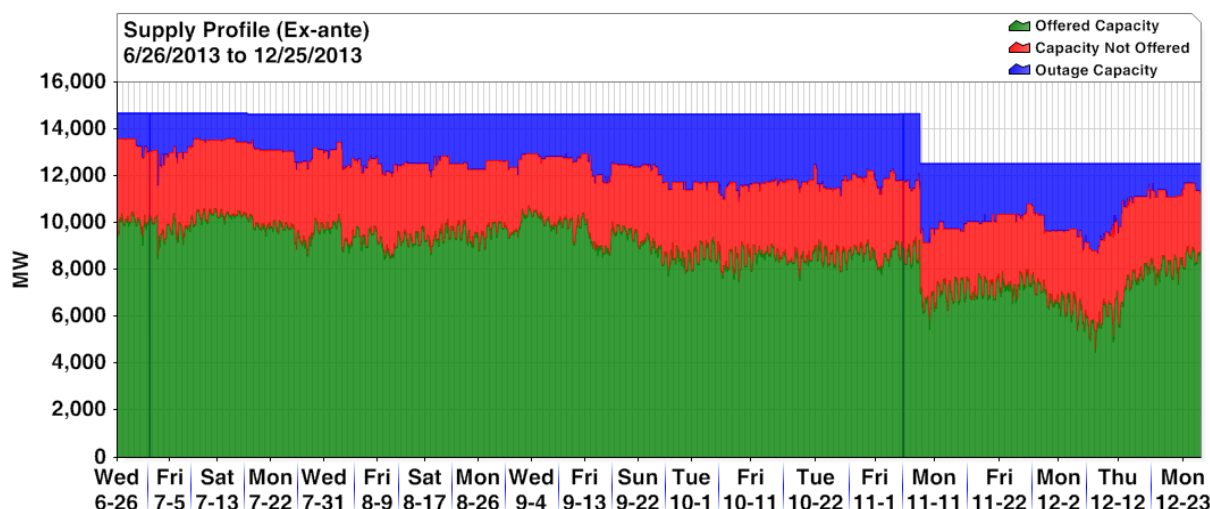


Table 17. Supply Profile - System

	Supply Profile by Billing Month - System, 2013 (MW)												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
Avg. Registered Capacity	14,579	14,594	14,632	14,648	14,439	14,672	14,659	14,625	14,631	14,631	13,445	12,523	14,341
Avg. Offered Capacity	8,643	8,922	9,018	8,752	9,024	9,305	10,002	9,398	9,639	8,533	7,778	7,172	8,849
Avg. Effective Supply	8,333	8,650	8,734	8,661	8,985	9,134	9,464	8,898	9,071	8,257	7,333	6,899	8,535

Table 18. Year-on-Year Supply Profile Comparison - System

	Year-on-Year Effective Supply Comparison by Billing Month - System, 2013												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
2013 Avg. Effective Supply (MW)	8,333	8,650	8,734	8,661	8,985	9,134	9,464	8,898	9,071	8,257	7,333	6,899	8,535
2012 Avg. Effective Supply (MW)	7,660	8,199	8,390	8,616	8,657	8,242	7,994	8,530	8,540	8,288	8,405	8,437	8,329
Y-Y Percent (%) Change	8.79	5.50	4.10	0.52	3.79	10.82	18.40	4.31	6.23	(0.37)	(12.76)	(18.23)	2.47

Considering that Luzon represents more than 80 percent of the total available supply in the system, it is not surprising that the July billing month similarly posted the highest level of average supply for 2013 in Luzon at 7,903 MW.

The maximum supply was registered at 8,687 MW on 03 September 2013 for the 1100H trading hour while the lowest level of supply in Luzon was recorded at only 4,768.5 MW on 08 December 2013 at 0400H. It is significant to note that said billing month was marked with several occurrences of under-generation, coinciding with the maintenance shutdown of the Malampaya gas facility which affected the output of natural gas plants as well as the series of outages of major coal plants.

In comparison with the supply profile in 2012, supply was noted to have rose by 5.61 percent in Luzon from an average of 6,817 MW in 2012 to 7,199 MW in 2013. The billing month of July posted the highest increase by 21.75 percent, from 6,491 MW in 2012. It is worthy to note however, that supply growth was stalled in the last quarter of 2013, particularly during the November billing month. Year-on-year comparison indicates that supply went down by 4 percent in November, from an average of 6,934 MW in November 2012 to 6,655 MW.

The Visayas region, on the other hand, registered an average supply level of 1,550 MW, demonstrating that supply grew by about 2 percent from an average of 1,519 MW in 2012.

The billing month of March registered the highest average supply at 1,610 MW as well as the maximum supply level for the year at 1,756 MW on 21 March 2013 at 1100H.

The November billing month marked the lowest level of supply recorded for the year, posted at 977 MW on 08 November 2013 at 1300H due to its high incidence of outages. The lowest average monthly effective supply level on the other hand, was posted during the October billing month at 1,444 MW.

Year-on-year comparison indicates that the highest supply growth in the Visayas was likewise recorded in March at 6.35 percent (from 1,514 MW to 1,610 MW), while supply was noted to have decreased by 3.4 percent, 2.4 percent and .6 percent in April, June and October.

Figure 14. Supply Profile (Luzon) - 1st Half

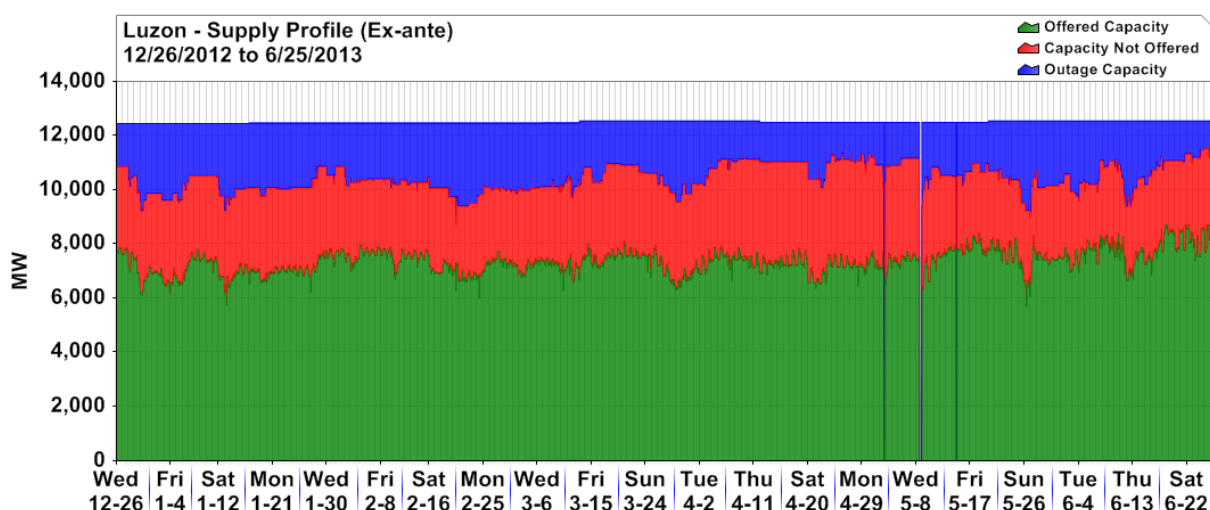


Figure 15. Supply Profile (Luzon) - 2nd Half

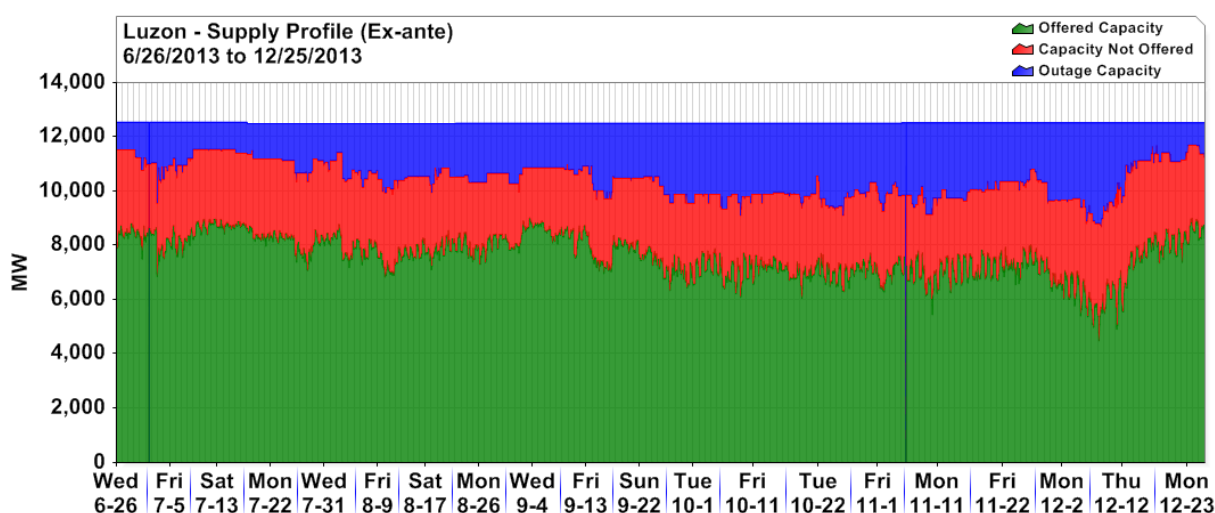


Table 19. Supply Profile - Luzon

Supply Profile by Billing Month - Luzon, 2013 (MW)													
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
Avg. Registered Capacity	12,451	12,466	12,503	12,520	12,502	12,544	12,531	12,497	12,503	12,503	12,517	12,523	12,505
Avg. Offered Capacity	7,037	7,340	7,377	7,201	7,515	7,731	8,419	7,833	8,064	7,068	7,089	7,172	7,487
Avg. Effective Supply	6,763	7,101	7,124	7,134	7,504	7,575	7,903	7,359	7,523	6,813	6,655	6,947	7,199

Table 20. Year-on-Year Supply Profile Comparison - Luzon

Year-on-Year Effective Supply Comparison by Billing Month - Luzon, 2013													
	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual Avg.
2013 Avg. Effective Supply (MW)	6,763	7,101	7,124	7,134	7,504	7,575	7,903	7,359	7,523	6,813	6,655	6,947	7,199
2012 Avg. Effective Supply (MW)	6,157	6,705	6,876	7,037	7,077	6,711	6,491	7,015	7,042	6,837	6,934	6,923	6,817
Y-Y (%) Change	9.85	5.91	3.61	1.39	6.02	12.87	21.75	4.90	6.84	(0.35)	(4.03)	0.34	5.61

Figure 16. Supply Profile (Visayas) - 1st Half

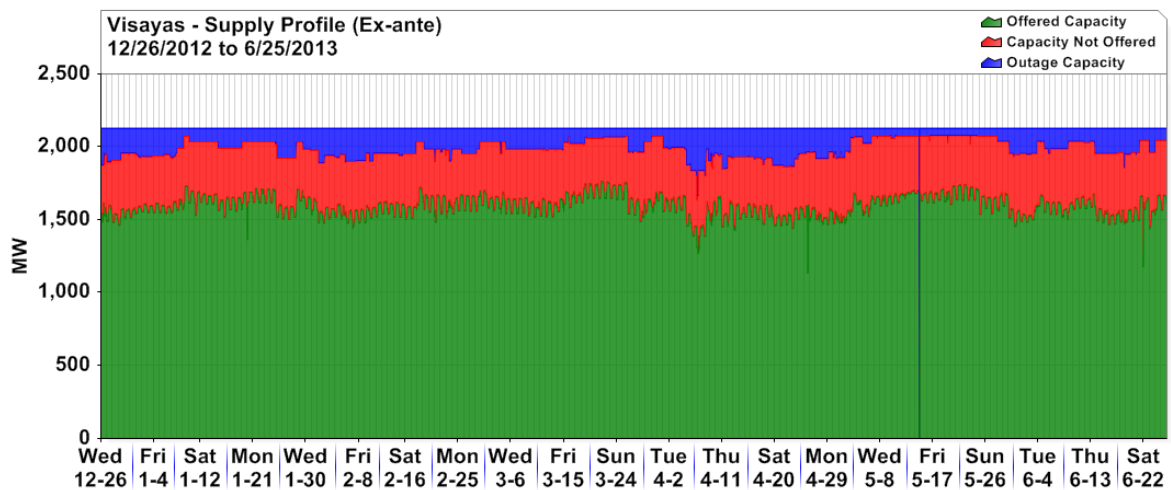


Figure 17. Supply Profile (Visayas) - 2nd Half

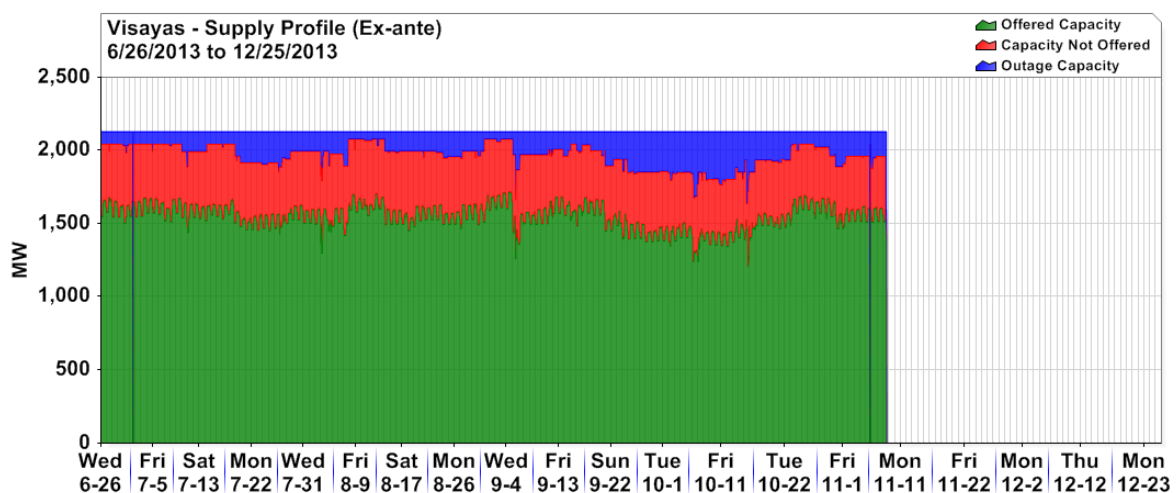


Table 21. Supply Profile - Visayas

Supply Profile by Billing Month - Visayas, 2013 (MW)												
	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Annual Avg.
Avg. Registered Capacity	2,128	2,128	2,128	2,128	2,128	2,128	2,128	2,128	2,128	2,128	2,128	2,128
Avg. Offered Capacity	1,607	1,581	1,641	1,551	1,624	1,574	1,584	1,565	1,574	1,464	1,580	1,576
Avg. Effective Supply	1,570	1,549	1,610	1,526	1,599	1,559	1,561	1,539	1,548	1,444	1,555	1,550

Table 22. Year-on-Year Supply Profile Comparison - Visayas

	Year-on-Year Effective Supply Comparison by Billing Month - Visayas, 2013												
	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual Avg.
2013 Avg. Effective Supply (MW)	1,570	1,549	1,610	1,526	1,599	1,559	1,561	1,539	1,548	1,444	1,555	-	1,550
2012 Avg. Effective Supply (MW)	1,503	1,500	1,514	1,579	1,580	1,597	1,503	1,515	1,498	1,452	1,471	1,514	1,519
Y-Y (%) Change	4.45	3.26	6.35	(3.35)	1.19	(2.40)	3.92	1.59	3.33	(0.60)	5.70	-	2.06

D. Reserve Margin Index

The reserve margin index (RMI)⁸ measures the generation-demand balance, the purpose of which is to measure and identify how tight the energy balance in the market is, because a tight energy balance in the market is usually accompanied by higher spot prices. Further, the tighter the supply the greater the opportunity to exercise market power.

System-wide RMI demonstrated better demand and supply conditions for the most part of the year or in about 68 percent of the time, most particularly during off-peak periods. Generation and demand balance were noted to be tightest during the 4th Quarter of 2013 and likewise, during the summer months of April and May. Note that the Visayas region was under partial market suspension from 08 November 2013 at 1500H. As such, system-wide RMI during said period covered the Luzon region only.

In Luzon, the occurrence of trading intervals with RMIs of less than 10 percent was noted at its highest during the billing months of April (52.3 percent) and May (48 percent), November (54 percent) and December (55.28 percent). The November and December billing months were marked with high occurrences of tight to insufficient supply conditions due to the shutdown of the Malampaya gas platform, and the outages of the major coal plants in Luzon. Also, the unavailability of the HVDC Interconnection in exporting power to Luzon from 08 November 2013 further aggravated the supply condition in the region which was compounded by the high level of capacity not offered during the December billing month.

On the other hand, the high demand level was the main driver of the tight RMI during the April and May billing months. A closer look at the April billing month would likewise reveal that offered capacity dropped as a result of the continued failure by several generator-trading participants to offer its maximum available capacity. Capacity gap was noted to be highest in April. The billing month of May likewise persisted with tight demand and supply condition, driven by high demand and limited available supply, resulting from the high level of capacity not offered in said month.

⁸ Offers submitted by oil-based plant Malaya in Luzon were taken-out from the supply calculation in the RMI from 26 July 2012, having noted its submission of offers despite being on open-breaker status since said trading day.

Year-on-year comparison would indicate tighter demand and supply balance system-wide, as well as in Luzon in 2013. System-wide RMIs in 2012 showed tight supply and demand balance in about 29.25 percent of the time, lower by 2.7 percent from 2013's 31.95 percent. In Luzon, the frequency of trading intervals with posted RMIs of less than 10 percent was noted to have occurred at 37 percent of the time in 2013, higher by 3 percent from year 2012 when the region's RMI hit the below 10 percent mark at only about 34 percent of the time. Similar to the trend in 2013, the RMI level in the region was also noted to be tightest during the summer months of June and May 2012, when demand reached its highest level. Interestingly, the December and November billing months were noted to have fared rather well in 2012 not only in terms of RMI level but correspondingly, also in terms of market prices.

Better generation-demand balance was noted in the Visayas than in Luzon, with the frequency of occurrences of trading intervals with RMIs of less than 10 percent averaging at only about 10 percent of the time. The same trend was noted for the region in 2012, with RMIs hitting the below 10 percent mark also at about 10 percent of the time that year. Trading intervals with RMIs of less than 10 percent in 2013 reached its highest occurrences during the April, October and May billing months at 25 percent, 23 percent and 20 percent, respectively.

It is worthy to note the high market prices which accompanied the tight market balance during the said months as discussed above. Price trends and outages will be discussed in detail in the succeeding sections.

Figure 18. Reserve Margin Index (RMI), System - 1st Half

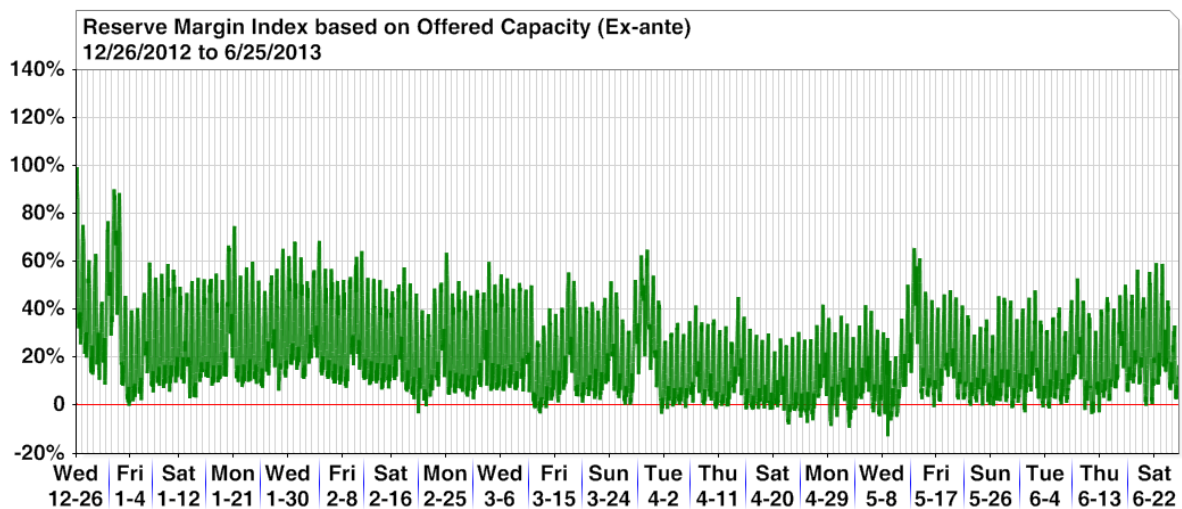


Figure 19. Reserve Margin Index (RMI), System - 2nd Half

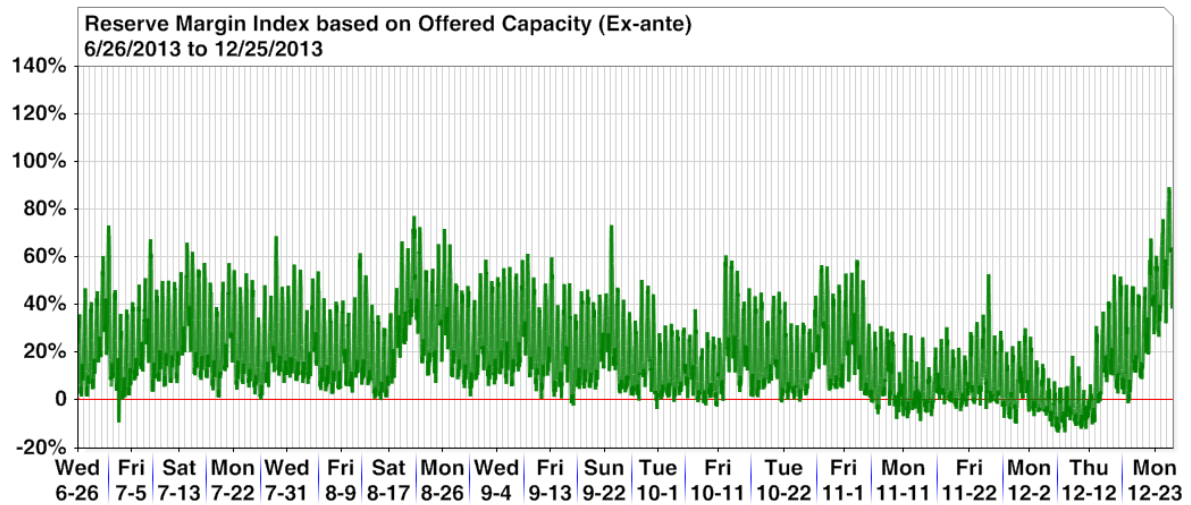


Table 23. RMI Distribution - System, 2013

RMI Distribution by Billing Month - System, 2013 (%)													
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
Less or equal to 10%	11.96	9.95	29.46	49.19	42.51	33.33	20.45	19.62	19.09	44.17	51.28	53.33	31.95
More than 10%	88.04	90.05	70.54	50.81	57.49	66.67	79.55	80.38	80.91	55.83	48.72	46.67	68.05

Table 24. RMI Distribution - System, 2012

RMI Distribution by Billing Month - System, 2012 (%)													
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
Less or equal to 10%	15.75	8.87	17.29	22.45	51.94	46.63	42.70	10.89	25.98	36.72	34.68	38.06	29.25
More than 10%	84.25	91.13	82.71	77.55	48.06	53.37	57.30	89.11	74.02	63.28	65.32	61.94	70.75

Table 25. RMI Distribution Per Hour Type - System, 2013

RMI Distribution	No. of Trading Intervals		Percent of Time	
	Peak	Off-Peak	Peak	Off-Peak
Less or equal to 10%	2,289	505	60.17	10.22
More than 10%	1,515	4,437	39.83	89.78

Table 26. RMI Distribution Per Hour Type - System, 2012

RMI Distribution	No. of Trading Intervals		Percent of Time	
	Peak	Off-Peak	Peak	Off-Peak
Less or equal to 10%	2,240	327	58.32	6.64
More than 10%	1,601	4,601	41.68	93.36

Figure 20. Reserve Margin Index (RMI), Luzon - 1st Half

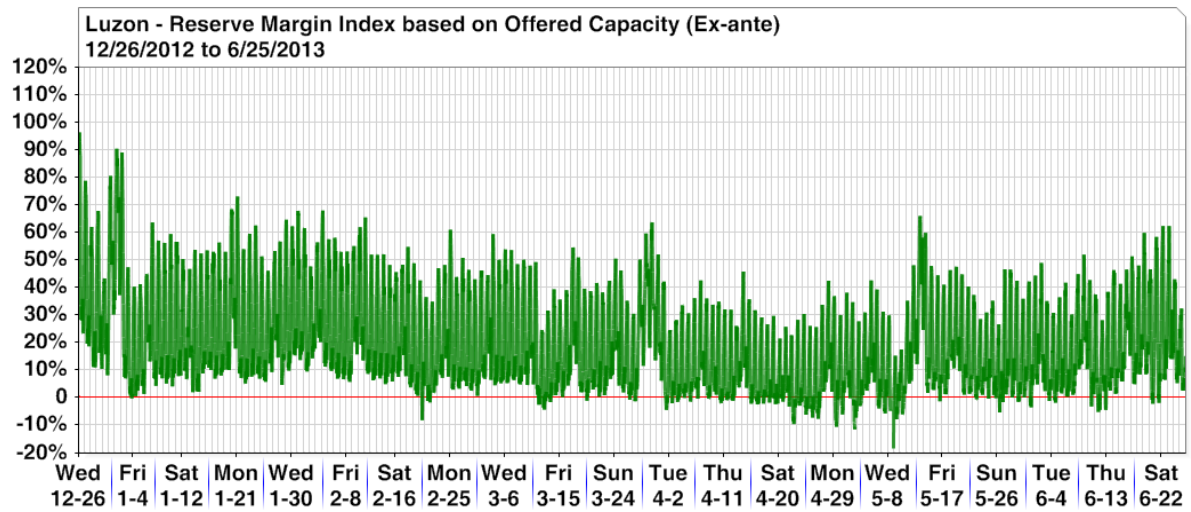


Figure 21. Reserve Margin Index (RMI), Luzon - 2nd Half

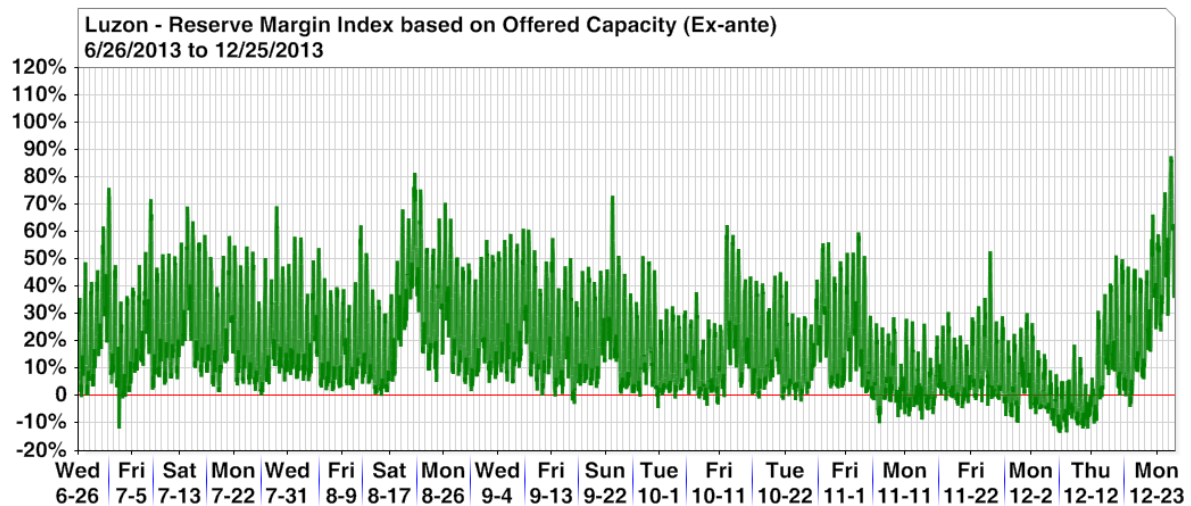


Table 27. RMI Distribution - Luzon

RMI Distribution by Billing Month - Luzon, 2013 (%)												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Less or equal to 10%	18.01	17.74	38.24	52.28	47.74	37.50	22.95	24.87	24.87	46.94	53.84	55.28
More than 10%	81.99	82.26	61.76	47.72	52.26	62.50	77.05	75.13	75.13	53.06	46.16	44.72

Table 28. RMI Distribution - Luzon, 2013

RMI Distribution	No. of Trading Intervals		Percent of Time	
	Peak	Off-Peak	Peak	Off-Peak
Less or equal to 10%	2,598	602	68.30	12.18
More than 10%	1,206	4,340	31.70	87.82

Table 29. RMI Distribution - Luzon, 2012

RMI Distribution	No. of Trading Intervals		Percent of Time	
	Peak	Off-Peak	Peak	Off-Peak
Less or equal to 10%	2,494	457	64.93	10.22
More than 10%	1,347	4,471	35.07	90.73

Figure 22. Reserve Margin Index (RMI), Visayas - 1st Half

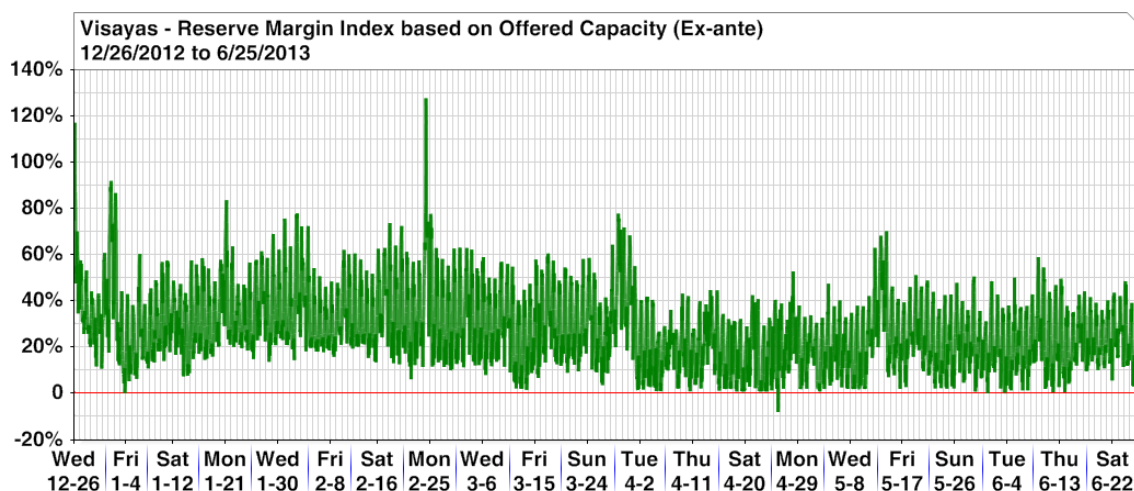


Figure 23. Reserve Margin Index (RMI), Visayas - 2nd Half

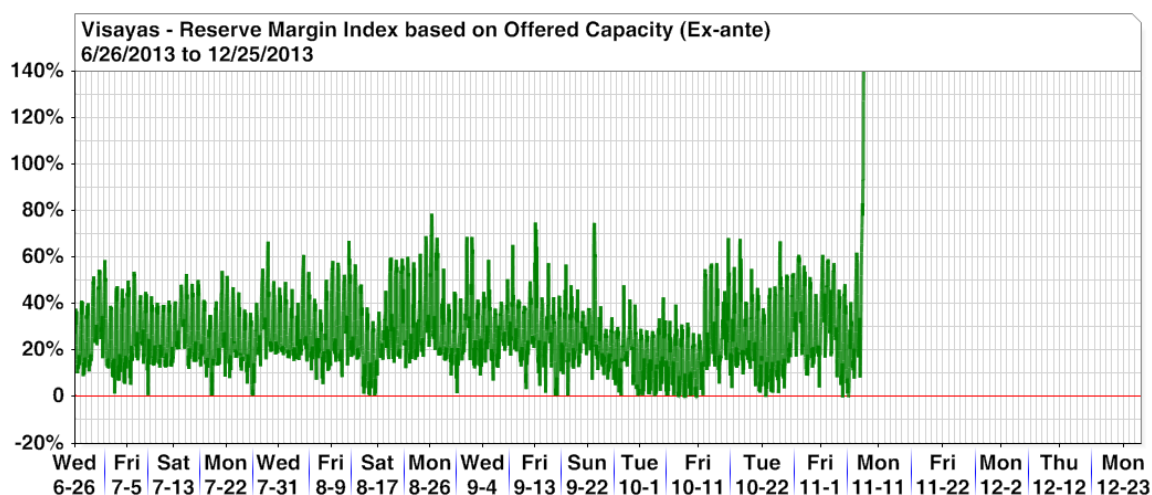


Table 30. RMI Distribution - Visayas

RMI Distribution by Billing Month - Visayas, 2013 (%)												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Annual Avg.
Less or equal to 10%	3.23	0.13	5.21	24.60	19.47	11.96	3.48	5.91	3.76	23.33	8.02	10.02
More than 10%	96.77	99.87	94.79	75.40	80.53	88.04	96.52	94.09	96.24	76.67	91.98	89.98

Table 31. RMI Distribution - Visayas, 2013

RMI Distribution	No. of Trading Intervals		Percent of Time	
	Peak	Off-Peak	Peak	Off-Peak
Less or equal to 10%	194	569	16.93	8.79
More than 10%	952	5903	83.07	91.21

Table 32. RMI Distribution - Visayas, 2012

RMI Distribution	No. of Trading Intervals		Percent of Time	
	Peak	Off-Peak	Peak	Off-Peak
Less or equal to 10%	229	649	17.31	9.54
More than 10%	1,094	6,800	82.69	91.29

III. OUTAGES

The purpose of outage indicators is to measure the reliability of generation and to assess the impact of outages in the spot market. The succeeding figures show the regional capacity on outage by plant type vis-a-vis the outage schedule indicated in NGCP-SO's CY 2013 Grid Operating and Maintenance Program (GOMP).

The hourly trend in the succeeding Figures show the high level of outage capacity in Luzon in 2013. Outage capacities were consistently high from October to December as well as January to March, influenced by the outages of coal plants and oil-based plants and the shutdown of the Malampaya natural gas pipeline from 11 November to 10 December 2013.

Outage capacity reached its highest monthly average of 2,726 MW during the October billing month, mainly due to the outages of large generating coal plants QPPL, Masinloc 1 & 2, Calaca 2 and GN Power 2, in addition to existing outages of major coal plants Sual 1 and Pagbilao 2 since the previous month. Increases in the average outage capacities of geothermal and oil-based plants (due to outages of Limay and Malaya 2) were similarly noted, thus contributing to the increased level of outage capacity for the billing month.

The November billing month saw the next highest level of outage capacity for the year at 2,592 MW following the maintenance shutdown of the Malampaya gas platform from 11 November 2013 which affected the output of natural gas plants. High level of outage capacity was however noted two weeks prior to the Malampaya shutdown, brought about by the existing outages of almost all natural gas plants and further aggravated by the forced outages of several major coal plants. The impact of outages was mostly felt during this month as it registered the second highest average price in 2013.

As shown in Figure 24, a spike on hourly outage capacity reaching 5,257 MW was noted on 08 May 2013 at trading interval 1600H. The same is on account of the outages of major coal plants Calaca 1 & 2, QPPL and Sual 1, as well as the consecutive tripping of several plants triggered by the tripping of Calaca 2 along the Calaca-Biñan 230 KV line. The billing month of May, however, recorded a low monthly average of 1,791 MW.

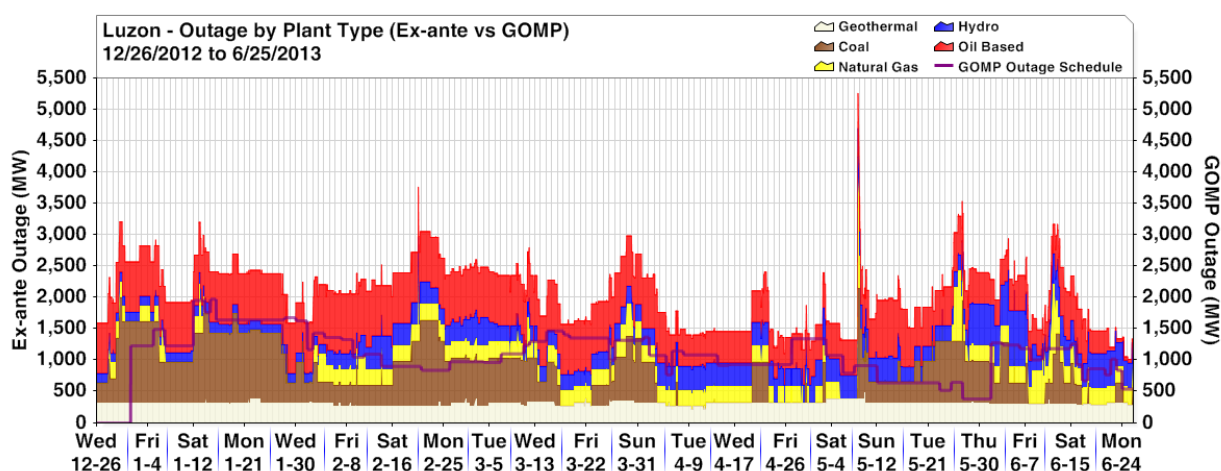
The level of average outage capacity considerably went down to 1,290 MW during the July billing month as more capacity was noted to be made available in July, significantly from oil-based, coal and hydro plants as indicated by the decrease in the level of capacity that went on outage on said period. Outage capacity level was also low in April, attributable to the reduction in the average outage capacity of oil-based plants with Duracom units coming back online starting 05 April 2013⁹ after it has been on deactivated shutdown since 13 July 2006.

It is noteworthy that 31.7 percent of the outage capacity posted at an average of 2,078 MW in 2013 was attributable to coal plants, which posted the highest capacity on outage at 659 MW, followed by oil-based plants at 21.5 percent (447 MW) and natural gas plants at 17.3 percent (360 MW).

Year-on-year comparison of outage capacity indicates an increase by 2.3 percent (2,078 MW) in 2013 from 2,031 MW in 2012. The highest increase in outage capacity was noted during the 4th Quarter of 2013, particularly in October and November, with an average of 42.4 percent (from 1,915 MW to 2,726 MW) and 43.7 (from 1,803 MW to 2,592 MW) percent increase respectively.

Figures 24 and 25 show a higher level of capacity on outage in Luzon vis-a-vis the planned capacity on outage based on the 2013 GOMP, mainly due to the high level of forced, unplanned and other outages of certain plants as presented in Table 35 on Outage Factor.

Figure 24. Capacity on Outage (Luzon) - 1st Half



⁹ On account of acquisition of Duracom units by Therma Mobile Power, Inc., and subsequent registration under new ownership

Figure 25. Capacity on Outage (Luzon) - 2nd Half

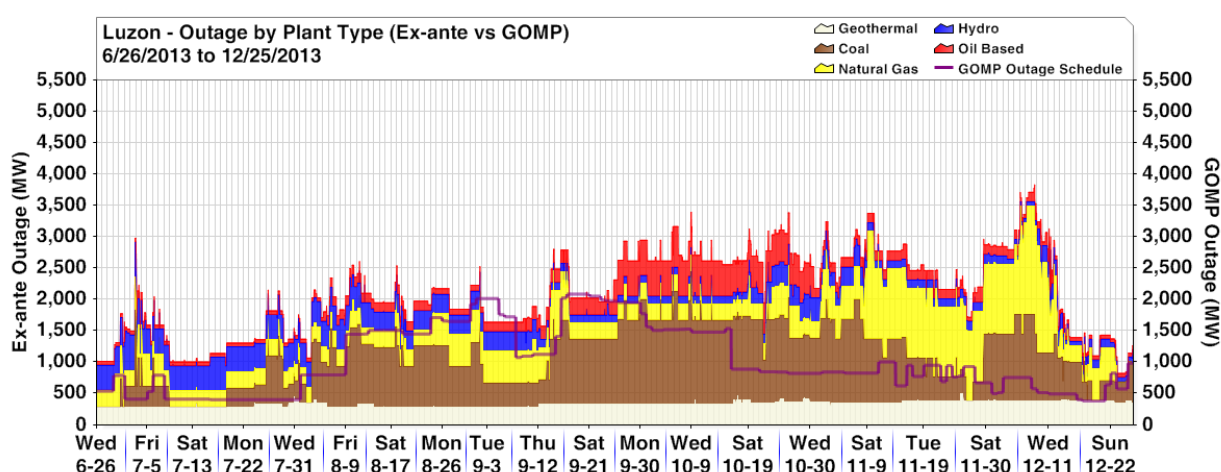


Table 33. Capacity on Outage - Luzon

Plant Type	Average Outage Capacity by Billing Month - Luzon, 2013 (MW)												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
Coal	1,003	623	494	265	379	384	192	808	752	1,376	941	680	659
Natural Gas	78	222	246	264	103	335	317	287	478	290	865	829	360
Geothermal	331	294	310	319	341	311	292	315	313	355	376	383	328
Hydro	152	278	279	347	326	519	426	362	223	159	204	128	284
Oil Based	804	849	802	608	641	452	63	117	186	547	206	107	447
Total	2,368	2,265	2,131	1,802	1,791	2,001	1,290	1,889	1,952	2,726	2,592	2,127	2,078
GOMP	1,231	1,181	1,201	1,063	875	915	478	1,109	1,713	1,364	842	612	1,050

Table 34. Year-on-Year Average Outage Capacity Comparison - Luzon

	Year-on-Year Average Outage Capacity Comparison by Billing Month - Luzon, 2013												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
2013 (MW)	2,368	2,265	2,131	1,802	1,791	2,001	1,290	1,889	1,952	2,726	2,592	2,127	2,078
2012 (MW)	2,546	2,181	1,977	1,802	1,877	2,312	2,005	1,962	2,119	1,915	1,804	1,856	2,031
Y-Y (%) Change	(6.99)	3.86	7.78	0.02	(4.56)	(13.46)	(35.68)	(3.73)	(7.87)	42.40	43.74	14.60	2.33

Table 35 shows the monthly outage factor per plant type and per outage type. In 2013, the plant type with the highest outage factor in Luzon was recorded by geothermal plants, averaging at about 38.2 percent and consistently logging an outage factor of above 30 percent across all billing months. It is noteworthy that forced and other outages were significantly higher than the planned outages of geothermal plants.

Oil-based plants posted the next highest outage factor, at an average of about 25 percent. About 13 percent were attributable to planned outage, while about 11.5 percent were on account of forced outages. Noted however, is the low outage factor of oil-based plants during the July billing month at only 3.5 percent, following the decrease in its level of outage capacity in July.

On the other hand, coal plants exhibited an outage factor which averaged at about 15 percent. Consistent with the outage capacity data, forced outage factor of coal plants increased during the November and December billing months (8 percent and 13.5 percent, respectively) while its planned outage factor were highest in January and October (17 percent and 27 percent).

Natural gas plants registered significant increases in its total outage factor from an average of about 10 percent to 31.31 percent in November and 30.10 percent in December,

consistent with the rise in its outage capacity during the period coinciding with the Malampaya shutdown. Planned outage accounted for 20.5 percent and 25 percent, respectively, of the total outage factor of natural gas plants in said months.

Hydro plants, likewise incurred increases (at 21 percent and 17.3 percent) in its total outage factor during the June and July billing months, corresponding to the increases in their planned outage capacities during said months.

Notably, forced and other outages, together with planned outages, comprised majority of the total outage factor in the Luzon region.

Table 35. Outage Factor - Luzon

Plant Type	Outage Type	Outage Factor (%) by Billing Month - Luzon, 2013											
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
COAL	Forced Outage	4.40	7.97	6.27	1.65	6.16	6.48	4.07	6.97	0.89	2.95	8.02	13.50
	Other Outage		0.35				0.01	0.12			0.40		
	Planned Outage	17.06	5.57	4.60	3.23		0.05		11.22	15.66	27.06	11.99	1.81
	Unplanned Outage	0.77			0.86	2.33	1.83					0.61	0.30
COAL Total Outage Factor		22.23	13.89	10.87	5.74	8.48	8.37	4.20	18.19	16.55	30.41	20.62	15.61
NATG	Forced Outage	0.71	0.09	0.48	0.63	1.08	9.72	10.31	9.86	9.59	9.45	10.81	4.59
	Other Outage	0.75	0.58	0.33	0.40	1.06	0.66			0.17			0.35
	Planned Outage	0.52	7.32	7.86	8.24	1.88	2.01	0.56	0.54	6.55	0.87	20.50	24.76
	Unplanned Outage	0.94		0.38	0.28			0.56		0.96	0.15		0.40
NAT GAS Total Outage Factor		2.91	7.98	9.03	9.55	4.01	12.39	11.42	10.40	17.27	10.47	31.31	30.10
GEO	Forced Outage	12.58	8.56	9.38	9.58	12.67	13.01	12.82	14.76	12.55	11.70	8.99	14.92
	Other Outage	14.93	15.06	14.03	18.71	17.94	17.94	18.44	25.41	20.20	20.07	22.29	17.57
	Planned Outage	10.23	9.92	5.19	6.11	6.82	3.85	2.27	2.39	5.10	10.89	10.90	10.31
	Unplanned Outage	0.05	0.08	6.75	2.00	1.41							
GEO Total Outage Factor		37.79	33.63	35.35	36.40	38.84	34.80	33.54	42.56	37.84	42.66	42.18	42.80
HYD	Forced Outage	0.02	0.03	0.17	1.60	0.67	0.00	0.07	0.20	0.15	0.24	0.54	0.48
	Other Outage	3.10	2.89	2.89	2.89	2.90	2.95	3.00	2.88	2.88	2.88	2.93	1.37
	Planned Outage	2.95	7.29	6.33	9.38	9.77	18.06	14.30	11.67	6.18	3.01	4.55	3.37
	Unplanned Outage	0.16	1.13	2.02	0.34		0.00				0.02	0.35	
HYDRO Total Outage Factor		6.23	11.34	11.41	14.21	13.34	21.01	17.37	14.75	9.21	6.14	8.37	5.22
OIL	Forced Outage	8.34	8.27	8.27	9.14	15.48	5.09	3.50	3.04	1.03	19.99	2.97	4.15
	Other Outage	13.83	15.94	13.35	4.36	-	1.03		-				
	Planned Outage	22.80	22.61	22.61	20.47	19.75	14.10		3.36	9.29	10.30	8.22	1.76
	Unplanned Outage						4.62		0.04			0.19	
OIL Total Outage Factor		44.97	46.82	44.23	33.97	35.23	24.84	3.50	6.44	10.31	30.29	11.37	5.91

As in the case of Luzon, year 2013 showed a higher level of capacity outage in Visayas vis-a-vis the planned capacity on outage based on the 2013 GOMP.

It is significant to note that the capacity on outage in the Visayas region rose during the last quarter of 2013. In October, the rise in the level of outage capacity was on account of the increase in the average outage capacity of coal plants CEDC and KSPC during the period.

The total outage capacity in the region drastically went up during the billing months of November and December, following the significant increase in the average outage capacity of geothermal plants. The same was mainly attributable to the forced outage of Leyte A, which was isolated from the grid beginning 08 November 2013 due to typhoon Yolanda, further aggravating the high incidence of outages during the period.

In view of the above contributing factors, the average outage capacity level in the Visayas which ranged only between 87 MW to 193 MW from January to September, increased to 257 MW in October, 348 MW in November and 460 MW in December.

Nonetheless, year-on-year comparison of the total outage capacity indicates a 17 percent overall reduction in the outage capacity level in the region from an annual average of 233 MW in 2012 to 192 MW in 2013.

Figure 26. Capacity on Outage (Visayas) - 1st Half

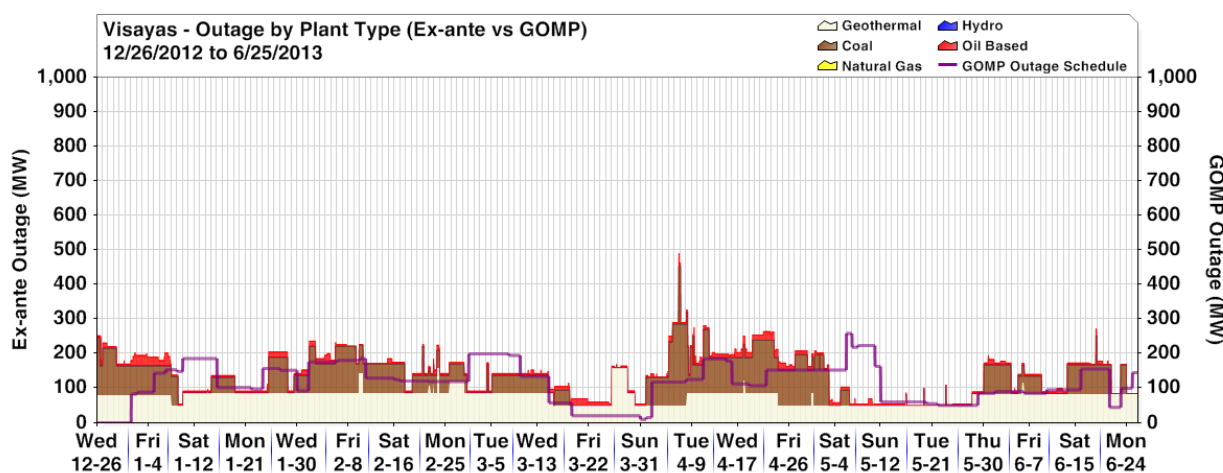


Figure 27. Capacity on Outage (Visayas) - 2nd Half

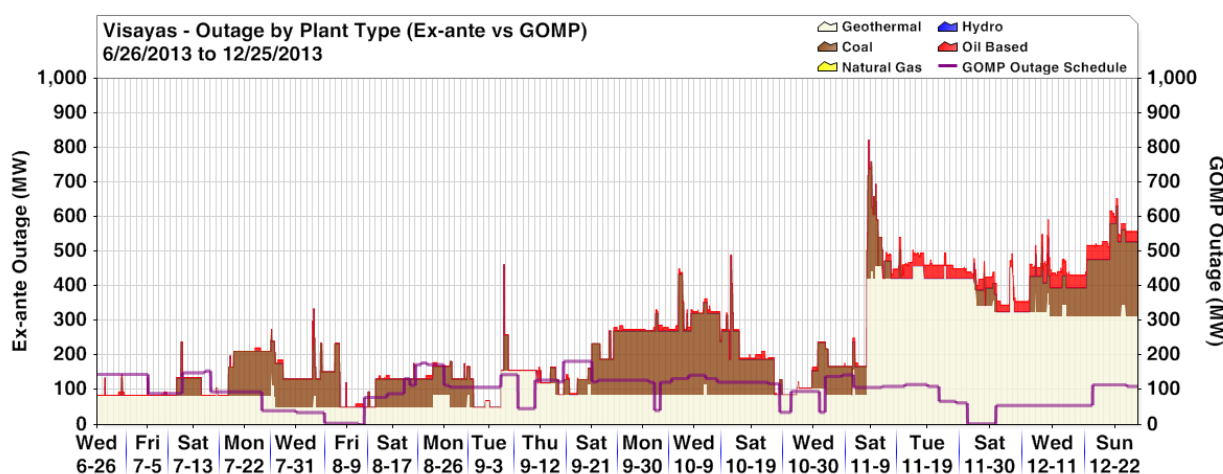


Table 36. Capacity on Outage - Visayas

Plant Type	Average Outage Capacity by Billing Month - Visayas, 2013 (MW)												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
Coal	53	77	28	103	32	43	36	77	47	165	46	97	67
Geothermal	82	90	76	80	50	83	85	55	95	86	285	330	116
Oil Based	10	7	8	11	6	5	1	2	1	6	16	33	9
Total	146	174	112	193	88	131	122	133	142	257	348	460	192
GOMP Outage Schedule	108	144	114	110	121	97	117	68	124	119	104	63	107

Table 37. Year-on-Year Average Outage Capacity Comparison - Visayas

	Year-on-Year Average Outage Capacity Comparison by Billing Month - Luzon, 2013												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
2013 (MW)	146	174	112	193	88	131	122	133	142	257	348	460	192
2012 (MW)	164	225	244	176	172	202	289	225	289	323	273	217	233
Y-Y (%) Change	(11.05)	(22.52)	(54.18)	9.59	(49.21)	(35.26)	(57.77)	(40.88)	(50.84)	(20.40)	27.55	111.94	(17.45)

Consistent with the above chart, there was a notable increase in the total outage factor of geothermal and oil-based plants in November and December, mainly on account of the rise in its forced outage factor, following the destruction of generating facilities in the region due to Typhoon Yolanda.

The total outage factor of coal plants increased during the October billing month, attributable to the significant increase in the level of its forced outage factor posted at 13.7 percent, from a forced outage factor ranging only within 1 percent to 6.8 percent in the previous months.

Table 38. Outage Factor - Visayas

Plant Type	Outage Type	Outage Factor (%) by Billing Month -Visayas, 2013											
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
COAL	Forced Outage	6.83	4.12	3.05	4.55	1.06	3.09	2.26	6.75	5.02	13.67	6.42	4.89
	Other Outage												2.04
	Planned Outage		5.78		8.05	3.06	2.52	2.43	3.25	0.41	6.16		6.73
	Unplanned Outage			0.54						0.74	0.43		
COAL Total Outage Factor		6.83	9.91	3.60	12.60	4.13	5.61	4.68	10.00	6.18	20.26	6.42	13.66
GEO	Forced Outage	0.02	0.51	0.29	0.05	0.05	0.24	0.11	0.55	0.22	0.08	22.36	35.26
	Other Outage	5.60	5.60	5.60	5.60	5.60	5.60	5.60	5.60	5.60	5.60	5.60	5.60
	Planned Outage	4.04	4.63	2.71	3.49		3.84	3.97	0.09	4.84	4.08	4.44	4.36
	Unplanned Outage					0.04						0.04	0.02
GEO Total Outage Factor		9.66	10.74	8.60	9.15	5.70	9.69	9.69	6.24	10.67	9.76	32.44	45.24
OIL	Forced Outage	2.37	1.67	1.92	2.41	1.28	1.12	0.20	0.37	0.17	1.34	3.79	7.65
	Other Outage					0.02							
	Planned Outage												
	Unplanned Outage												
OIL Total Outage Factor		2.37	1.67	1.92	2.41	1.30	1.12	0.20	0.37	0.17	1.34	3.79	7.65

IV. CAPACITY GAP

The capacity gap measures the difference between registered capacity net of capacity on outage and the maximum offered capacity of the generating plant. The purpose of which is to determine possible breach of the WESM Rules by a generator-trading participant for offering less than its maximum available capacity.

Figures 28 and 29 show that hydro and oil-based plants accounted for 55 percent and 25 percent, respectively, of the total capacity gap in Luzon for the 2013 billing period. The same is consistent with the low capacity factor obtained by said plants as will be discussed in the succeeding sections. High capacity gaps denote limited or even non-submission of offers from these plants, particularly from oil-based plants. Hydro and oil-based plants tend to offer more of their available capacity only during peak hours (and less during off-peak hours), as indicated by peak and off-peak variation shown in succeeding figures.

Further, the increased level of capacity gap during the billing months of April, May and December 2013, respectively, are observed to be the same months characterized by tight supply conditions. It is worthy to note the sharp increase in the capacity gap of natural gas plants during the November and December billing months, coinciding with the Malampaya shutdown which affected the availability of natural gas plants. In particular, the same can be attributed to Ilijan Block A as its generating capability was limited to 420 MW at the start of the Malampaya shutdown. High level of capacity gap was likewise observed a week after the Malampaya maintenance as Ilijan plants started to resume operations although at a limited capability.

The highest level of capacity gap is shown in Figure 28 as a spike which occurred on 11 December 2013.

Contracted capacities of generating plants covered by Ancillary Service Procurement Agreements (ASPA) with the NGCP-SO, most of which are capacities from hydro plants, are still included in the calculation of capacity gap as above discussed.

Year-on-year comparison points to a 4.5 percent increase in the level of capacity not offered in the market. The highest increase was posted in April at 27 percent, from 2,701 MW in 2012 to 3,420 MW.

As a matter of due course, the capacity gap per generator trading participant will still be subject to further evaluation.

Figure 28. Capacity Gap (Luzon) - 1st Half

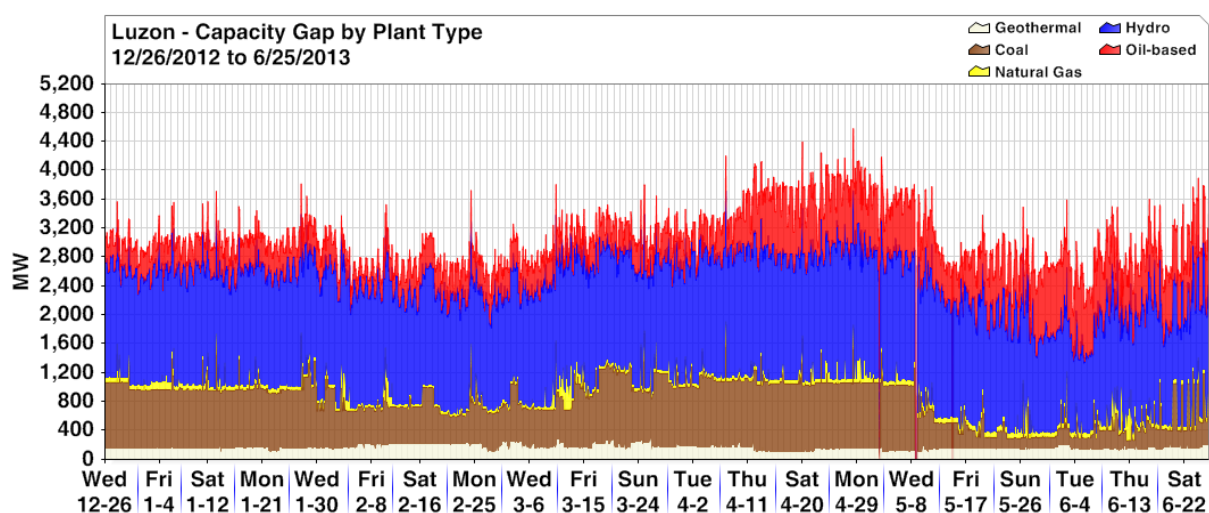


Figure 29. Capacity Gap (Luzon) - 2nd Half

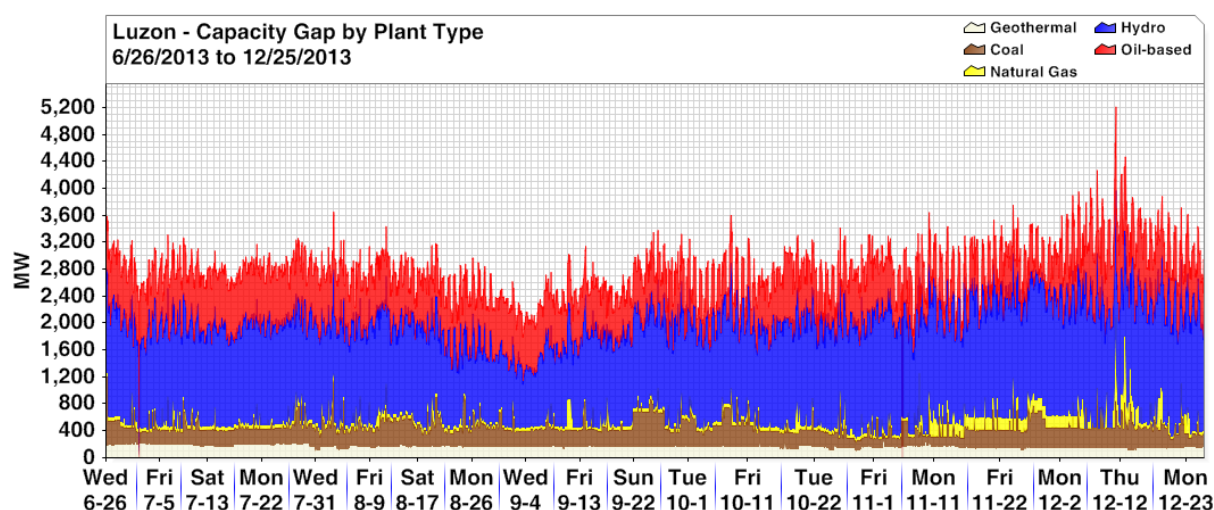


Table 39. Capacity Gap - Luzon

Plant Type	Average Capacity Gap by Billing Month - Luzon, 2013 (MW)												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
Coal	847	621	731	955	588	326	282	353	336	327	242	350	496
Natural Gas	64	49	65	51	76	73	54	55	54	55	122	152	73
Geothermal	151	191	188	148	138	153	188	166	161	159	153	139	161
Hydro	1,556	1,594	1,596	1,680	1,683	1,422	1,451	1,386	1,169	1,480	1,663	1,745	1,534
Oil Based	381	359	375	586	702	800	806	769	721	642	608	792	629
Total	3,000	2,814	2,956	3,420	3,187	2,775	2,782	2,729	2,440	2,663	2,789	3,178	2,893

Table 40. Year-on Year Capacity Gap Comparison - Luzon

	Year-on-Year Average Capacity Gap Comparison by Billing Month - Luzon												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
2013 (MW)	3,000	2,814	2,956	3,420	3,187	2,775	2,782	2,729	2,440	2,663	2,789	3,178	2,893
2012 (MW)	2,536	2,323	2,503	2,701	2,899	2,739	3,094	2,352	2,657	2,963	3,059	3,417	2,768
Y-Y (%) Change	18.29	21.13	18.08	26.61	9.93	1.31	(10.07)	16.03	(8.17)	(10.13)	(8.83)	(6.98)	4.50

Looking at the Visayas, oil-based and geothermal plants accounted for more than 60 percent and 29 percent, respectively, of the capacity gap in the region. Large volume of capacity gap for oil-based plants can be attributed to its limited submission of offers. It is noteworthy that oil-based plants posted a low average outage capacity at only about 7 MW in 2013. Thus, albeit its low outage capacity, capacity factor of oil-based plants in the region was low due to its large volume of capacity not offered.

It was noted that capacity gap tended to be higher during off-peak hours, indicating that submission of offers was particularly lower or even limited during the same and higher during peak hours.

Year-on-year comparison indicates that there is no significant change in the level of capacity not offered in years 2013 and 2012, as annual averages were posted at 380 MW and 379 MW, respectively.

As a matter of due course, the capacity gap per generator trading participant will still be subject to further evaluation.

Figure 30. Capacity Gap (Visayas) - 1st Half

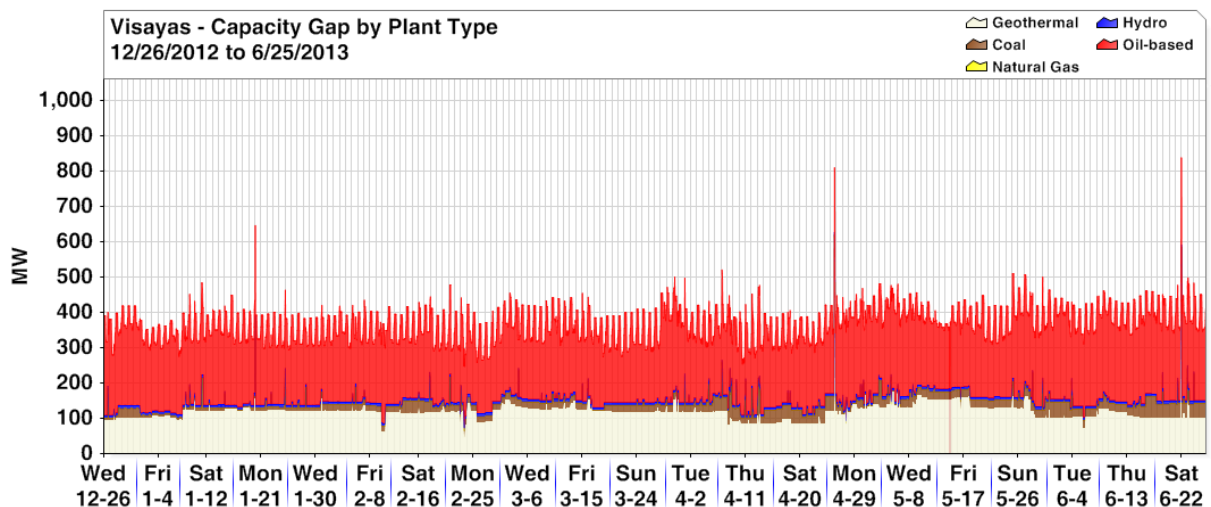


Figure 31. Capacity Gap (Visayas) - 2nd Half

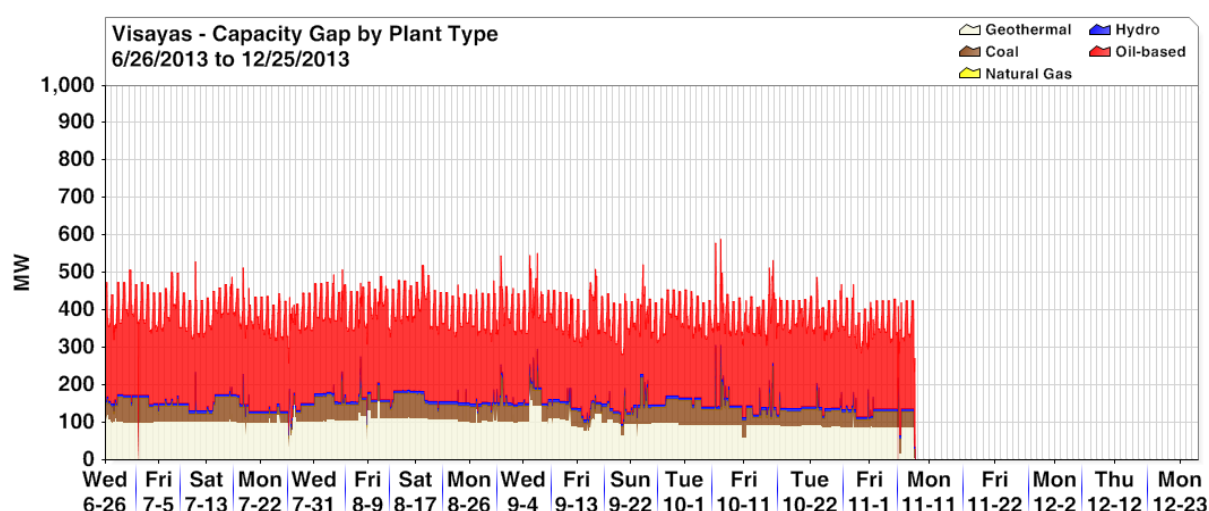


Table 41. Capacity Gap - Visayas

Plant Type	Average Capacity Gap by Billing Month - Visayas, 2013 (MW)											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Annual Avg.
Coal	11	21	18	33	21	35	44	48	43	50	40	33
Geothermal	116	118	125	106	141	111	101	108	104	91	84	111
Oil Based	220	206	206	215	224	246	246	244	237	238	235	229
Total	354	352	356	361	393	399	399	407	391	387	368	380

Table 42. Year-on-Year Capacity Gap Comparison - Visayas

	Year-on-Year Average Capacity Gap Comparison by Billing Month - Visayas												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
2013 (MW)	354	352	356	361	393	399	399	407	391	387	368	-	380
2012 (MW)	470	412	386	381	401	372	383	393	317	328	356	350	379
Y-Y (%) Change	(24.59)	(14.49)	(7.84)	(5.36)	(1.95)	7.40	4.04	3.65	23.42	17.80	3.34	-	0.10

V. MARKET PRICE OUTCOME¹⁰

A. Average energy weighted spot prices

This Section assesses the resulting market prices in 2013¹¹, taking into account the demand and supply situation as discussed in the previous sections. It is important to note that the Visayas market was partially suspended by the ERC starting 08 November 2013 due to natural calamity brought about by Typhoon Yolanda which caused the destruction of the power system in the region. Consequently, administered prices were applied in the Visayas, affecting a total of 1,138 trading intervals for the

¹⁰ 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.

¹¹ Administered prices imposed during events of market intervention/suspension which were consequently used in settlement during affected trading intervals were incorporated in the market prices calculation as discussed/illustrated in this Section.

duration of the ERC's partial market suspension in 2013. Administered prices imposed during events of market intervention and suspension which were consequently used in settlement during affected trading intervals were incorporated in the calculation of hourly market prices as herein discussed.

System-wide market prices averaged at PhP5,463/MWh in 2013, reaching as high as PhP11,246/MWh in November and PhP11,060/MWh in December. High market prices were observed during the summer months of April, May, and in the last quarter of the billing year (October, November and December), which are the same period characterized by tight generation-demand balance, as previously noted in the section on RMI.

Notably, hourly market prices surged to extremely high levels during the last quarter of year 2013, particularly during the November and December billing months. It is significant to note, however, that the extremely high market prices during the said months applied only in the Luzon region and did not apply in the Visayas, which made use of the administered prices for the duration of the ERC's partial market suspension of the region.

The high market prices in November and December were mainly influenced by the prevailing tight demand and supply conditions in Luzon as well as the high occurrence of insufficient supply/under-generation, particularly during the first three weeks of the December billing month, following the maintenance shutdown of the Malampaya gas platform and the series of outages of major coal plants. Supply was further limited due to the unavailability of the Leyte-Luzon HVDC Interconnection caused by the devastation brought about by typhoon Yolanda in the Visayas which rendered the HVDC incapable of exporting power to Luzon and vice-versa, from 08 November 2013 to 14 December 2013¹². Also contributing to the high market prices was the increase in the offer price of price-setter Therma Mobile Power, Inc. (TMO) particularly during the off-peak hours.

High market prices were likewise noted during the April, May and October billing months. It is significant to mention that the billing months of April and May obtained the highest level of capacity gap for the year (with hydro plants accounting for majority of the total capacity gap all throughout year 2013) while the October billing month incurred the highest outage capacity on account of the outages of major coal, geothermal and oil-based plants during the month. The low level of supply during said months mainly influenced the high market prices for the period. In addition, the months of April and May significantly posted high demand levels with the onset of summer, demonstrating further that prices were likewise driven by the tight interaction of demand and supply in said months.

Year-on-year comparison would show that market prices in November and December 2013 rose significantly by 108 percent and 81 percent respectively, from an average of PhP5,401/MWh and PhP6,115/MWh in 2012.

It is also worthy to note the similar pattern observed for the monthly price trend in Luzon, with the highest market prices in the region recorded as follows: PhP18,194/MWh (December), PhP16,104/MWh (November), PhP6,993/MWh (April), PhP6,641/MWh (October), and PhP6,053/MWh (May). Average market prices in 2013 were noted to be 19 percent higher than the market prices posted in the region in 2012.

¹² The HVDC Interconnection resumed operations starting from 15 December 2013 but power flow was limited from Luzon to Visayas only, until the end of the billing year.

In Visayas, the highest monthly average price was posted in April at PhP7,158/MWh, the next highest at PhP6,320/MWh was recorded during the October billing month, and PhP6,014/MWh in May. Unlike in Luzon, the year 2013 saw a significant 24 percent reduction in the monthly average price in Visayas from PhP5,424/MWh in 2012 to PhP4,135/MWh. As earlier mentioned, the extremely high market prices during the November and December 2013 billing months did not apply in the Visayas which made use of the administered prices for the duration of the ERC's partial market suspension of the region.

Figure 32. Market Price Trend - 1st Half

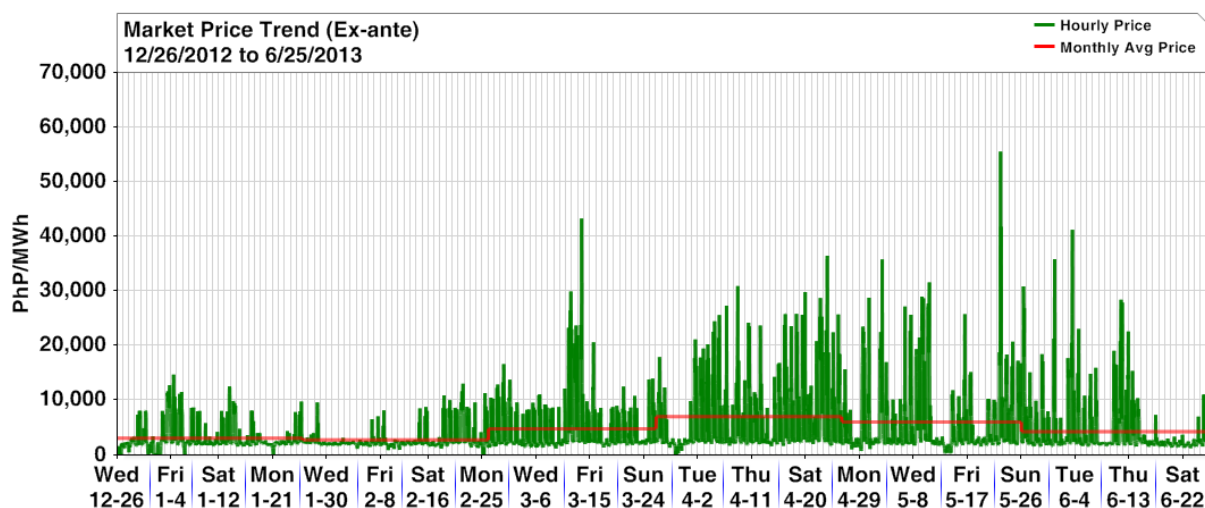


Figure 33. Market Price Trend - 2nd Half

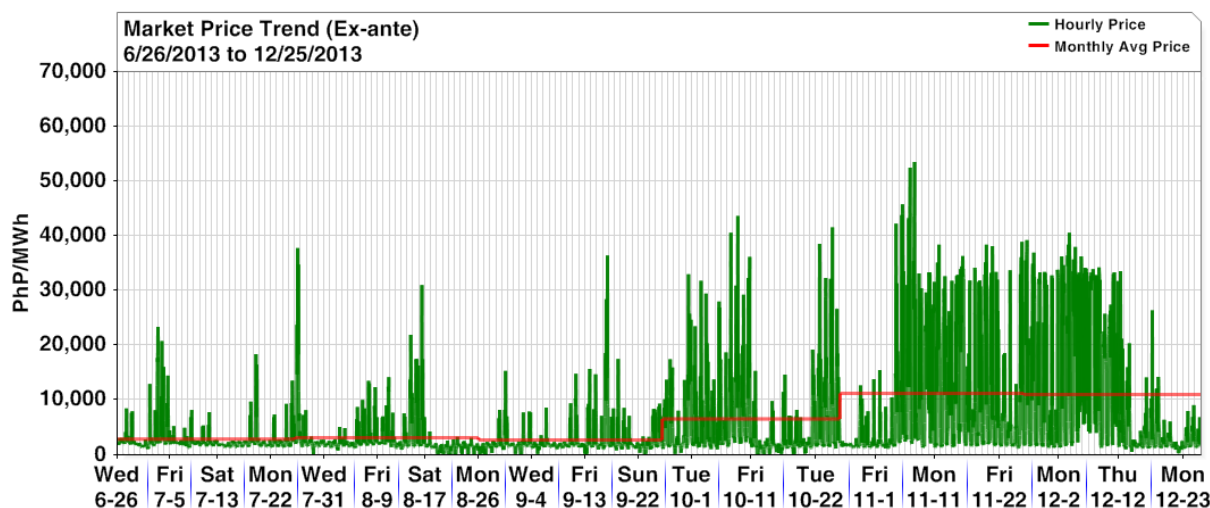


Table 43. Market Price Trend - System

Market Price Trend by Billing Month - System, 2013 (PhP/MWh)													
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
Max Price	14,748.21	13,050.82	43,279.09	36,482.41	55,518.21	41,231.90	23,411.69	37,760.22	36,448.91	43,651.81	53,533.95	40,589.31	36,542.18
Min Price	(0.48)	0	1,225.31	0	391.02	1,314.76	1,115.45	0	0	0	1,205.36	342.79	459.99
Avg Price	3,073.14	2,766.09	4,785.31	7,018.20	6,046.50	4,270.87	2,892.68	3,161.74	2,734.62	6,590.32	11,245.92	11,060.35	5,463.21

Table 44. Year-on-Year Average Price Trend Comparison - System

	Year-on-Year Market Price Trend Comparison by Billing Month - System												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
2013 (PhP/MWh)	3,073.14	2,766.09	4,785.31	7,018.20	6,046.50	4,270.87	2,892.68	3,161.74	2,734.62	6,590.32	11,245.92	11,060.35	5,463.21
2012 (PhP/MWh)	5,165.28	3,404.70	4,498.53	3,625.23	6,836.55	9,086.82	8,045.76	2,426.41	4,354.79	6,282.63	5,409.98	6,114.56	5,427.63
Y-Y (%) Change	(40.50)	(18.76)	6.37	93.59	(11.56)	(53.00)	(64.05)	30.31	(37.20)	4.90	107.87	80.89	0.66

Figure 34. Market Price Trend (Luzon) - 1st Half

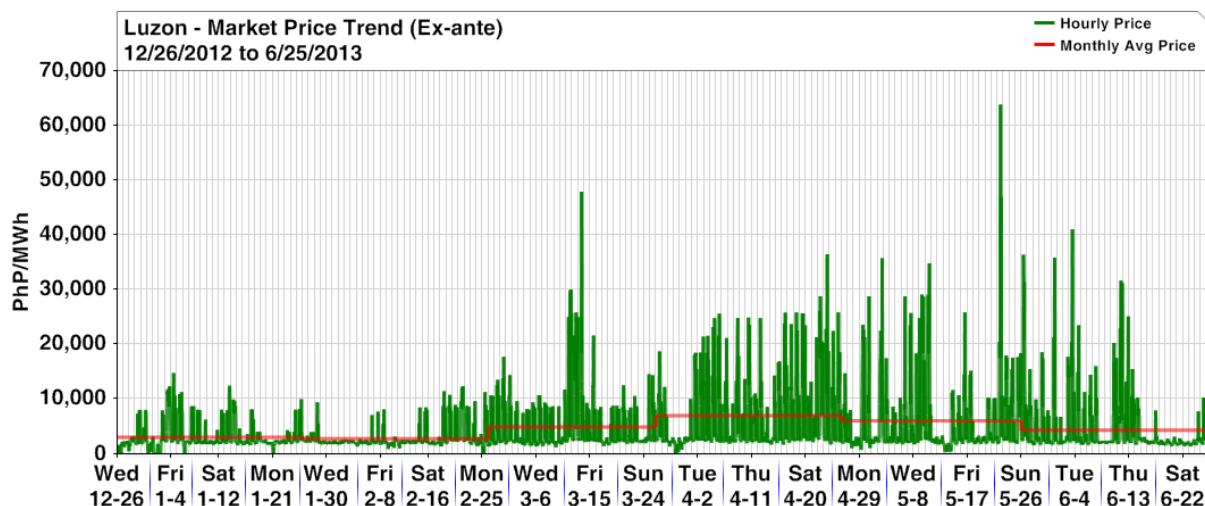


Figure 35. Market Price Trend (Luzon) - 2nd Half

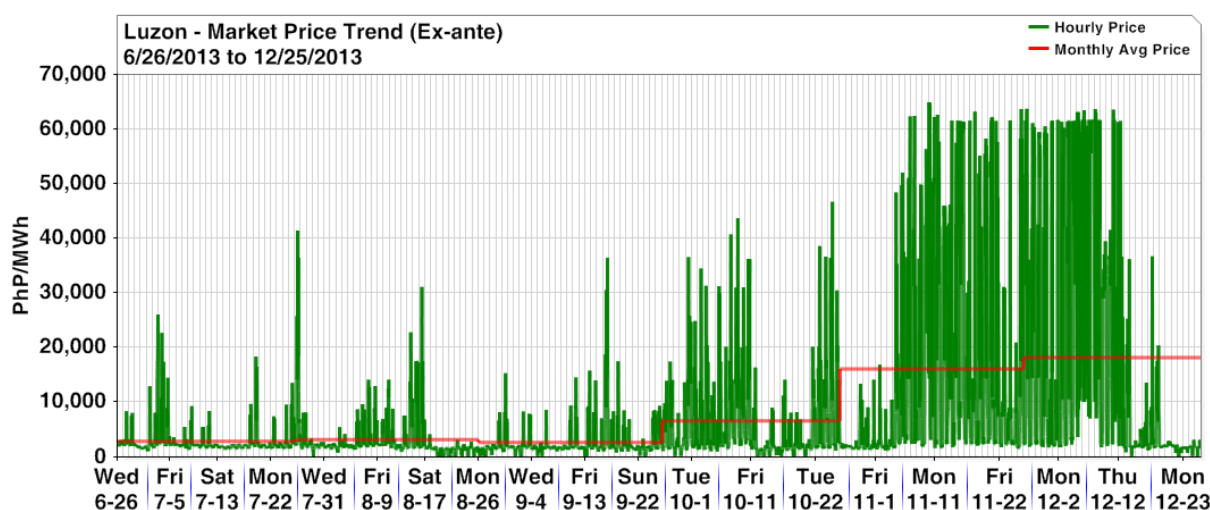


Table 45. Market Price Trend - Luzon

	Market Price Trend by Billing Month - Luzon, 2013 (PhP/MWh)												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
Max Price	14,778.35	12,411.28	47,903.94	36,482.41	63,799.95	41,062.07	26,085.18	41,447.65	36,479.36	46,731.39	64,950.00	63,715.45	41,170.45
Min Price	0	0	1,222.80	0	413.62	1,410.54	1,111.40	0	0	0	1,199.43	0	440.82
Avg Price	3,038.42	2,791.71	4,889.87	6,992.79	6,052.74	4,309.76	2,880.31	3,202.23	2,678.01	6,641.10	16,103.88	18,193.89	6,472.82

Table 46. Year-on-Year Average Price Trend Comparison - Luzon

	Year-on-Year Market Price Trend Comparison by Billing Month - Luzon, 2013												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
2013 (PhP/MWh)	3,038.42	2,791.71	4,889.87	6,992.79	6,052.74	4,309.76	2,880.31	3,202.23	2,678.01	6,641.10	16,103.88	18,193.89	6,472.82
2012 (PhP/MWh)	5,218.04	3,323.79	4,475.95	3,634.13	6,835.06	9,086.15	8,076.21	2,391.96	4,296.02	6,403.98	5,393.59	6,106.52	5,426.53
Y-Y (%) Change	(41.77)	(16.01)	9.25	92.42	(11.45)	(52.57)	(64.34)	33.87	(37.66)	3.70	198.57	197.94	19.28

Figure 36. Market Price Trend (Visayas) - 1st Half

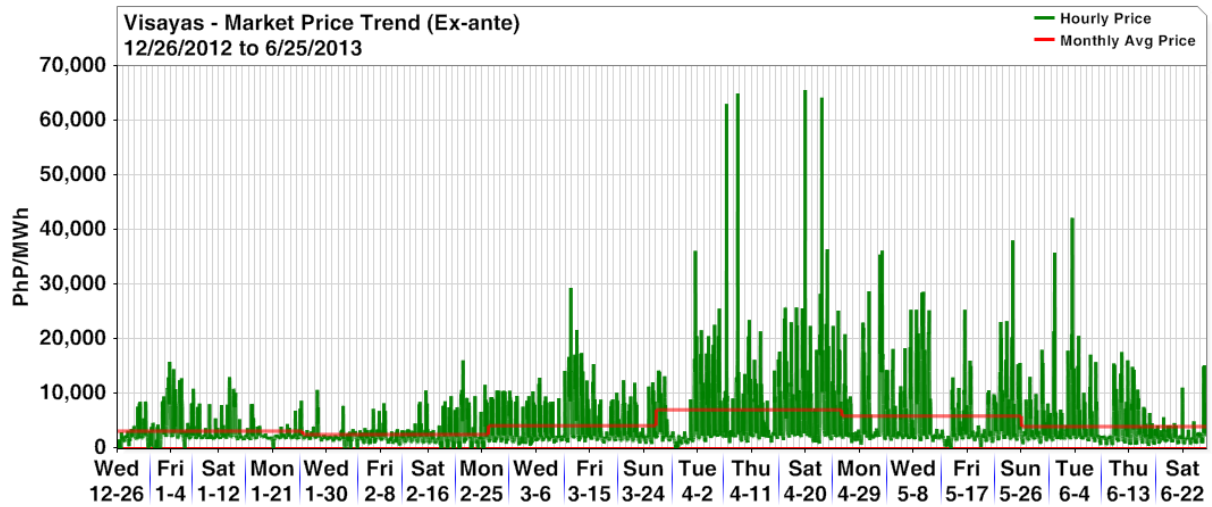


Figure 37. Market Price Trend (Visayas) - 2nd Half

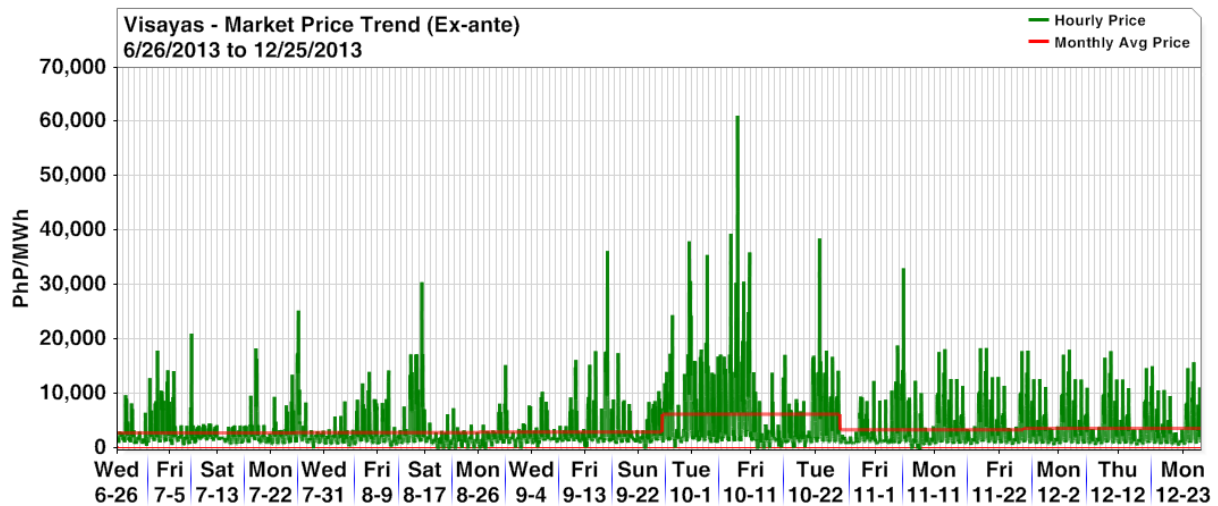


Table 47. Market Price Trend - Visayas

Market Price Trend by Billing Month - Visayas, 2013 (PhP/MWh)												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Max Price	15,905.91	16,193.81	29,393.30	65,558.01	38,066.08	42,185.41	21,141.45	30,571.61	36,306.49	61,137.91	33,093.59	18,154.69
Min Price	(2.52)	0	596.07	0	183.30	557.02	507.31	0	0	0	(256.24)	589.97
Avg Price	3,248.66	2,626.82	4,226.06	7,158.28	6,014.09	4,054.88	2,890.24	2,949.65	3,027.90	6,319.51	3,464.52	3,721.53
Annual Avg.	34,006.23											

Table 48. Monthly Average Price Comparison - Visayas

Year-on-Year Market Price Trend Comparison by Billing Month - Visayas, 2013												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
2013 (PhP/MWh)	3,248.66	2,626.82	4,226.06	7,158.28	6,014.09	4,054.88	2,890.24	2,949.65	3,027.90	6,319.51	3,464.52	3,721.53
2012 (PhP/MWh)	4,884.13	3,749.54	4,624.86	3,576.11	6,844.97	9,159.02	7,843.67	2,594.89	4,680.16	5,572.59	5,495.79	6,157.75
Y-Y (%) Change	(33.49)	(29.94)	(8.62)	100.17	(12.14)	(55.73)	(63.15)	13.67	(35.30)	13.40	(36.96)	(39.56)
Annual Avg.	4,134.64											

B. Maximum spot price and minimum spot price

The figures below compare the monthly maximum, minimum and average price. As previously discussed, the billing months of November and December recorded the highest monthly average price. System-wide, the registered maximum price was at PhP55,518/MWh, posted on 22 May 2013 at 1300H. However, the year's maximum price was posted at PhP64,950/MWh on 10 November 2013 in the Luzon region. It is noteworthy that higher market price levels and more occurrences of the same drove up the monthly average prices in November and December.

On the other hand, minimum spot price was noted at an annual average of PhP460/MWh. The billing months of February, April, August, September, October and December posted its minimum spot price at PhP0/MWh while negative spot price of PhP-0.48/MWh was posted in January.

Excluding the November and December billing months, the average monthly prices for Luzon and Visayas are comparable.

Figure 38. Maximum and Minimum Spot Price (System)

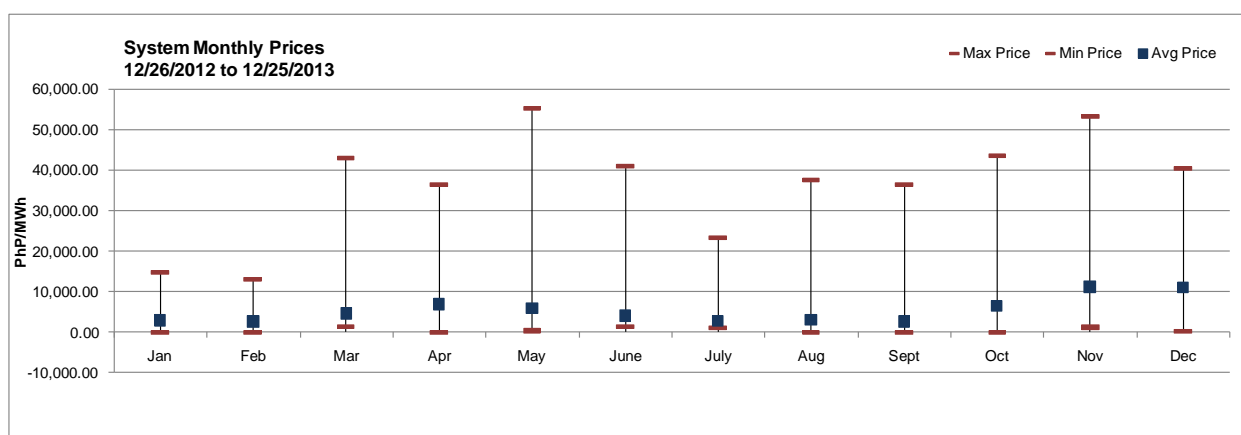
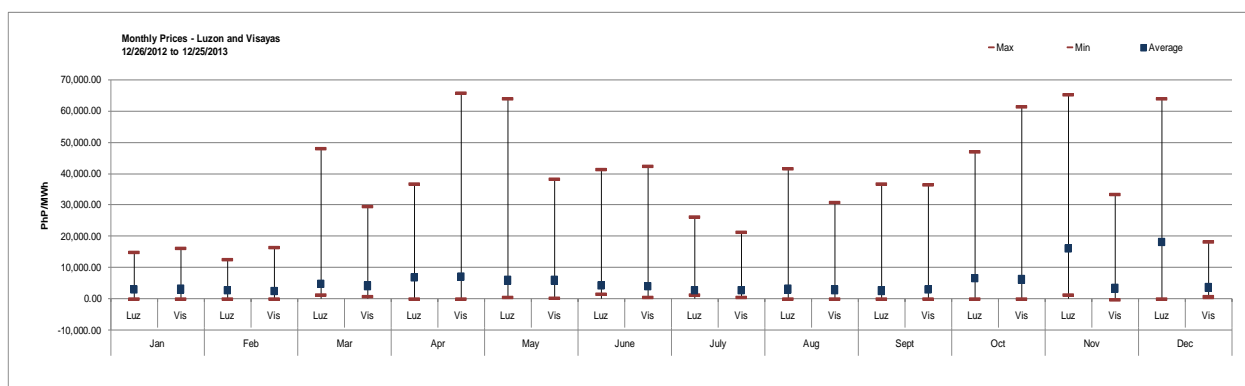


Figure 39. Maximum and Minimum Spot Price (Regional)



C. Frequency and distribution

The price distribution in the figures below show the price movements across the 2013 billing months. The same manifests that prices for the majority of the covered period were within the range of PhP2,000/MWh to PhP4,000/MWh at 42.59 percent. The November and December billing months, however, posted a notable variation to the price distribution trend for 2013, as the frequency of the price ranging from above PhP20,000/MWh rose significantly to 19.35 percent and 23.19 percent, respectively, from an average of only 1.9 percent in the previous months. Correspondingly, prices ranging from PhP2,000/MWh to PhP4,000/MWh plummeted from an average of 48 percent in the previous months to 21.7 percent and 12.2 percent in November and December.

Figure 40. Monthly Market Price Distribution - System

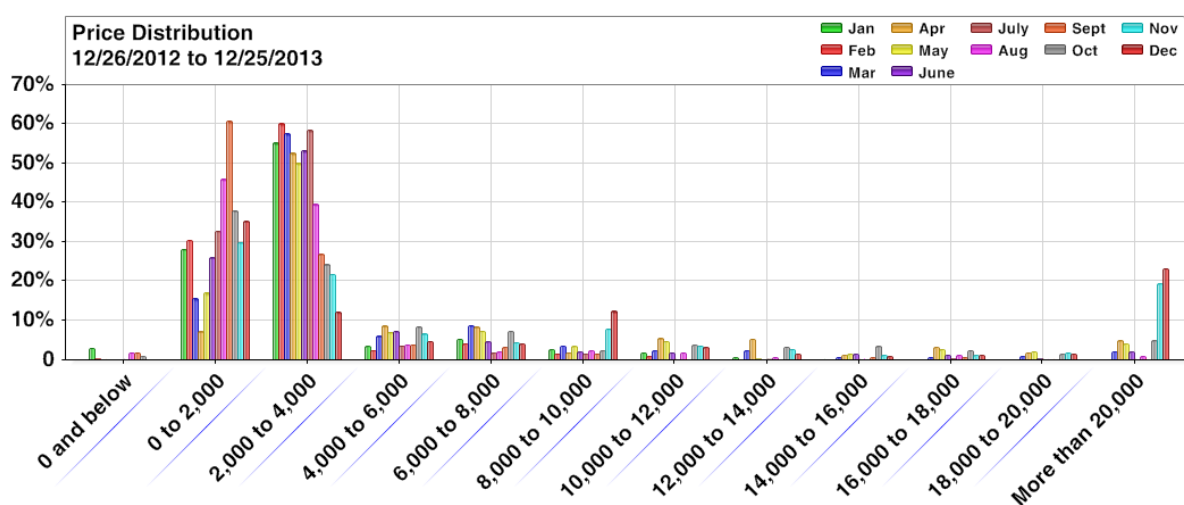


Table 49. Monthly Market Price Distribution - System

Price Range (PhP/MWh)	Market Price (%) Distribution by Billing Month - System, 2013												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
0 and below	2.96	0.54	0.00	0.13	0.00	0.00	0.00	1.75	1.75	0.97	0.00	0.00	0.68
0 to 2,000	28.09	30.51	15.63	7.12	17.08	25.94	32.78	45.97	60.75	37.92	29.84	35.28	30.70
2,000 to 4,000	55.24	60.08	57.59	52.55	50.00	53.23	58.47	39.52	26.88	24.17	21.77	12.22	42.59
4,000 to 6,000	3.36	2.42	5.95	8.60	6.94	7.26	3.47	3.90	3.90	8.47	6.59	4.72	5.46
6,000 to 8,000	5.24	4.03	8.78	8.33	7.36	4.57	1.67	1.88	3.09	7.36	4.44	4.03	5.03
8,000 to 10,000	2.55	1.48	3.57	1.75	3.33	2.02	1.53	2.28	1.48	2.22	7.93	12.36	3.53
10,000 to 12,000	1.75	0.81	2.23	5.38	4.72	1.75	0.28	1.75	0.27	3.75	3.49	3.06	2.43
12,000 to 14,000	0.67	0.13	2.23	5.24	0.56	0.13	0.42	0.67	0.13	3.19	2.69	1.53	1.46
14,000 to 16,000	0.13	0.00	0.60	1.21	1.39	1.34	0.28	0.27	0.67	3.33	1.08	0.83	0.92
16,000 to 18,000	0.00	0.00	0.60	3.09	2.50	1.21	0.56	1.08	0.67	2.36	1.08	1.25	1.20
18,000 to 20,000	0.00	0.00	0.74	1.75	2.08	0.54	0.28	0.13	0.13	1.39	1.75	1.53	0.86
More than 20,000	0.00	0.00	2.08	4.84	4.03	2.02	0.28	0.81	0.27	4.86	19.35	23.19	5.14

Comparing the price distribution between the Luzon and Visayas region, with the exception of the November and December billing months, it was noted that both regions follow the same pattern almost all of the time, where the frequency of prices falling within the range of PhP0/MWh to PhP4,000/MWh is fairly high.

As previously indicated, the market prices from 08 November to 25 December 2013 as shown in the figures below are reflective of the administered prices applied in the Visayas, owing to the ERC's declaration of partial market suspension in the region. Thus, while majority of the prices in Luzon in the November and December billing months pointed largely to the higher price range of above PhP20,000/MWh (at 22.98

percent and 27.36 percent), majority of the prices in Visayas were within PhP0/MWh to PhP2,000/MWh (40 percent) and between PhP2,000/MWh to PhP4,000/MWh (36 percent).

Figure 41. Monthly Market Price Distribution - Luzon

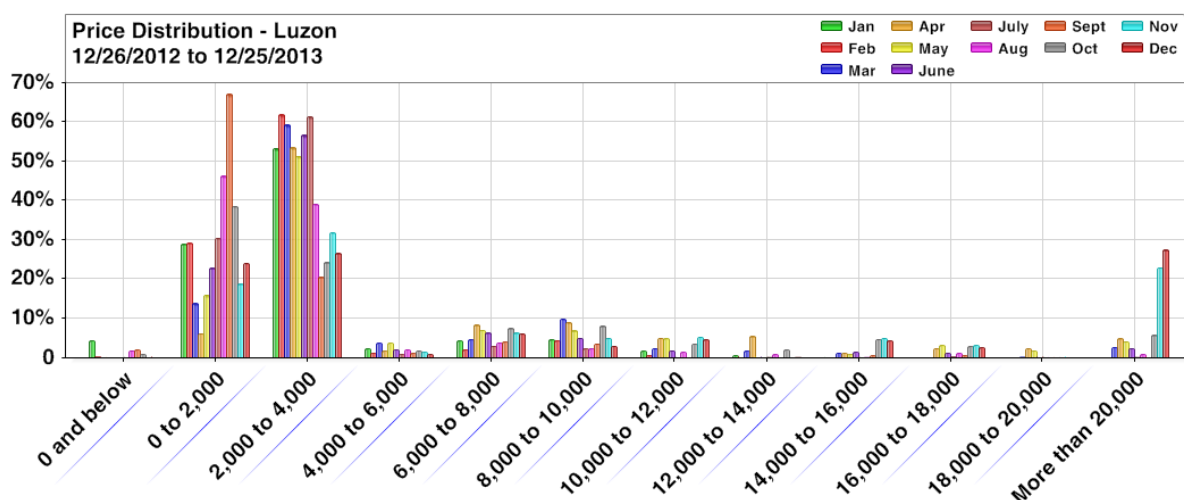


Table 50. Monthly Market Price Distribution - Luzon

Price Range (PhP/MWh)	Market Price (%) Distribution by Billing Month - Luzon, 2013												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
0 and below	4.30	0.54	0.00	0.13	0.00	0.00	0.00	1.75	1.88	0.97	0.00	0.28	0.83
0 to 2,000	28.90	29.17	13.84	6.18	15.97	22.72	30.42	46.24	67.07	38.61	18.68	24.03	28.62
2,000 to 4,000	53.23	61.83	59.23	53.49	51.25	56.59	61.39	39.11	20.43	24.17	31.85	26.53	44.85
4,000 to 6,000	2.28	1.21	3.72	1.61	3.75	2.15	0.97	2.15	1.08	1.81	1.48	0.97	1.92
6,000 to 8,000	4.30	2.02	4.61	8.33	7.08	6.32	2.92	3.90	4.03	7.50	6.32	6.11	5.29
8,000 to 10,000	4.57	4.30	9.97	9.01	6.81	4.97	2.22	2.28	3.49	8.06	4.97	2.92	5.26
10,000 to 12,000	1.61	0.67	2.38	4.97	4.86	1.75	0.14	1.34	0.13	3.61	5.24	4.58	2.60
12,000 to 14,000	0.67	0.27	1.64	5.38	0.28	0.27	0.42	0.81	0.13	1.94	0.13	0.42	1.03
14,000 to 16,000	0.13	0.00	1.19	1.21	0.97	1.34	0.28	0.40	0.67	4.72	4.97	4.31	1.68
16,000 to 18,000	0.00	0.00	0.30	2.42	3.06	1.21	0.56	1.08	0.67	2.78	3.09	2.50	1.47
18,000 to 20,000	0.00	0.00	0.45	2.42	1.81	0.27	0.28	0.13	0.13	0.14	0.27	0.00	0.49
More than 20,000	0.00	0.00	2.68	4.84	4.17	2.42	0.42	0.81	0.27	5.69	22.98	27.36	5.96

Figure 42. Monthly Market Price Distribution - Visayas

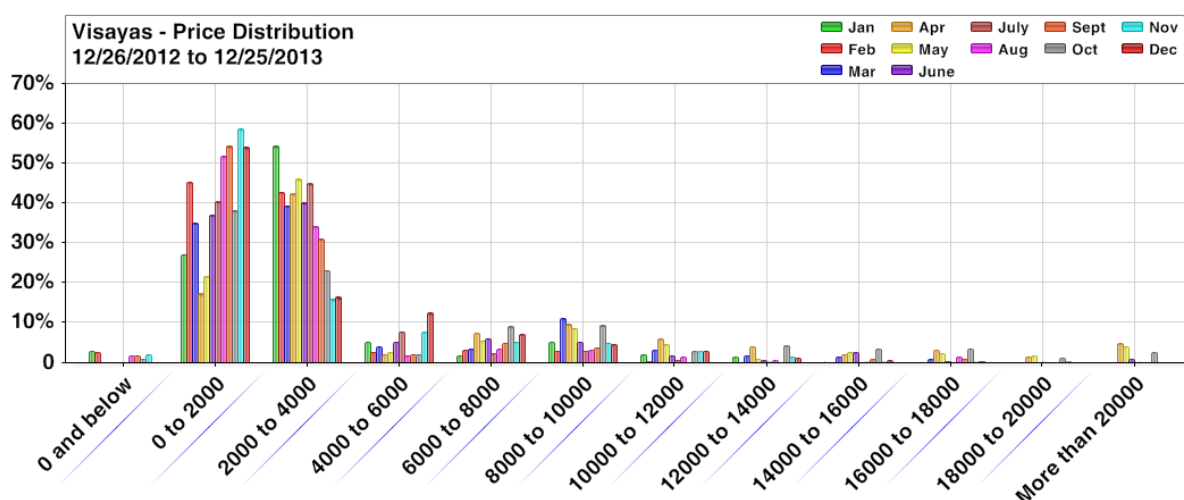


Table 51. Monthly Market Price Distribution - Visayas

Price Range (PhP/MWh)	Market Price (%) Distribution by Billing Month - Visayas, 2013												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
0 and below	2.96	2.55	0.00	0.13	0.00	0.00	0.00	1.75	1.75	0.97	1.88	0.00	1.02
0 to 2,000	27.15	45.30	34.97	17.34	21.53	36.96	40.28	51.88	54.30	38.06	58.74	54.03	40.10
2,000 to 4,000	54.30	42.74	39.29	42.34	45.97	40.05	44.86	34.14	30.91	23.06	15.99	16.39	35.84
4,000 to 6,000	5.24	2.69	4.02	1.88	2.50	5.24	7.78	1.75	2.02	2.08	7.66	12.50	4.60
6,000 to 8,000	1.61	3.09	3.27	7.53	5.42	6.05	2.22	3.36	4.97	9.03	5.11	7.08	4.90
8,000 to 10,000	5.24	2.96	11.16	9.54	8.61	5.24	2.92	3.09	3.76	9.31	4.84	4.44	5.88
10,000 to 12,000	1.88	0.54	3.13	5.91	4.44	1.75	0.69	1.34	0.27	2.78	2.82	2.92	2.36
12,000 to 14,000	1.34	0.00	1.79	4.03	0.83	0.67	0.42	0.67	0.13	4.17	1.48	1.25	1.39
14,000 to 16,000	0.27	0.00	1.34	2.02	2.64	2.42	0.28	0.40	0.81	3.33	0.40	0.69	1.21
16,000 to 18,000	0.00	0.13	0.74	3.23	2.36	0.54	0.14	1.34	0.94	3.47	0.40	0.56	1.15
18,000 to 20,000	0.00	0.00	0.00	1.34	1.67	0.13	0.28	0.00	0.00	1.25	0.54	0.14	0.45
More than 20,000	0.00	0.00	0.30	4.70	4.03	0.94	0.14	0.27	0.13	2.50	0.13	0.00	1.10

VI. MARKET INTERVENTION/SUSPENSION

The market intervention or suspension index is a general indicator used to assess the development of the WESM in relation to special conditions, which, under the WESM Rules, include emergency, system security threat, and *force majeure* events. Either the Market Operator (MO) or System Operator (SO) may declare/initiate market intervention depending on the emergency events.

On the other hand, market suspension is an event wherein the ERC declares the operation of the spot market to be suspended in cases of natural calamities or national and international security emergencies. In the event of market intervention or suspension, the administered price shall be used for WESM settlement.

It is important to note that administered prices will be used for the settlement of transactions in trading intervals affected by either market intervention or suspension. In the event that a market intervention or suspension is declared to be applied only to one region, the administered prices shall apply only to the region where the suspension or intervention is declared.

In 2013, market intervention was declared both system-wide and in the Luzon and Visayas regions.

System-wide, market-intervention was declared in three (3) trading intervals, two of which were initiated by the MO and the third one, by the NGCP-SO. All the system-wide market interventions were noted to have been declared due to workflow stoppage in either the MMS or the SCADA/EMS.

On a per region basis, the declaration of market intervention was noted to be more frequent in Luzon than in the Visayas, with the NGCP-SO initiating 11 market interventions in Luzon and only 1 market intervention in the Visayas. It is observed that all market interventions were declared on account of an emergency/security event. It is worthy to note that in cases where intervention was declared and confined to one region (i.e. Luzon or Visayas), the calculated administered prices were consequently applied to the affected region only. Two events in Luzon were initiated by the NGCP-SO due to manual load dropping (MLD) prompted by the generation deficiency in the region on 02 May 2013 while the remaining nine events were on account of major system trouble. On the other hand, the only market intervention event in Visayas was declared following the destruction by Typhoon Yolanda of the generation and transmission facilities in the region on 08 November 2013 at 1400H, immediately before the ERC declared the suspension of the Visayas market.

All in all, a total of fifteen (15) trading intervals were placed under market intervention in 2013, with the billing month of May posting the highest number of occurrences.

Partial market suspension was declared by the ERC affecting the Visayas region on 08 November 2013 at 1500H. To recall, the Visayas region was devastated by typhoon Yolanda resulting in severe power disturbance which prompted the ERC to declare market suspension on said date, which was only lifted on 26 March 2014.

Table 52. Total Monthly Occurrences of Market Intervention

Initiated by	Remarks (Luz-Vis)	2013												Total
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	
MO	Force Majeure (MMS Concern)					1						1		
	Force Majeure (MO Other Concern)													
	Sub-Total (MO-Initiated)					1						1		2
NGCP-SO	Emergency/Security Event													
	Force Majeure (SCADA/EMS Concern)							1						
	Force Majeure (SO Other Concern)													
	Sub-Total (NGCP-SO-Initiated)							1						1
ERC	Declaration of (Partial) Market Suspension													
	Sub-Total (ERC-Initiated)													
Total						1		1				1		3

Table 53. Monthly Occurrences of Market Intervention - Luzon

Initiated by	Remarks (Luzon)	2013												Total
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	
MO	Force Majeure (MMS Concern)													
	Force Majeure (MO Other Concern)													
	Sub-Total (MO-Initiated)													
NGCP-SO	Emergency/Security Event					11								11
	Force Majeure (SCADA/EMS Concern)													
	Force Majeure (SO Other Concern)													
	Sub-Total (NGCP-SO-Initiated)					11								11
ERC	Declaration of Market Suspension													
	Sub-Total (ERC-Initiated)													
Total						11								11

Table 54. Monthly Occurrences of Market Intervention/Suspension - Visayas

Initiated by	Remarks (Visayas)	2013												Total
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	
MO	Force Majeure (MMS Concern)													
	Force Majeure (MO Other Concern)													
	Sub-Total (MO-Initiated)													
NGCP-SO	Emergency/Security Event											1		1
	Force Majeure (SCADA/EMS Concern)													
	Force Majeure (SO Other Concern)													
	Sub-Total (NGCP-SO-Initiated)											1		1
ERC	Declaration of Market Suspension											418	720	1138
	Sub-Total (ERC-Initiated)											418	720	1138
Total												419	720	1139

VII. PRICE SETTING INDICES PRICE SETTING FREQUENCY INDEX (PSFI)

The price setting indices identify generating plants or generators that set the price or are near setting the spot prices. A generating plant or a generator is considered a price setter if the last accepted offer price is within 95 to 100 percent of the nodal price. A generator that frequently sets the price may have greater opportunities to design bidding strategies to influence market price outcome.

The PSFI is the percentage of time in a given period that a generation unit or a generator qualifies as price setter.

Spot prices below Php5,000/MWh were most frequently set by four (4) coal plants from Luzon (Pagbilao, Sual, Masinloc and Mariveles), one Visayas geothermal plant (Leyte A) and four (4) coal plants from Visayas (PEDC, KSPC, CEDC and TPC (Sangi).

For prices within the range of Php 5,000/MWh to Php 10,000/MWh, the frequent price setters were Luzon oil-based plant Bauang, Visayas oil-based plant Panay DPP III, and Visayas coal plant PEDC. The top 3 price setters were closely followed by Visayas oil-based plant EAUC and Luzon oil-based plants Subic Power Corp and Trans-Asia.

Figure 43. Price Setting Frequency Index - Luzon Plants (Php 5,000/MWh and Below)

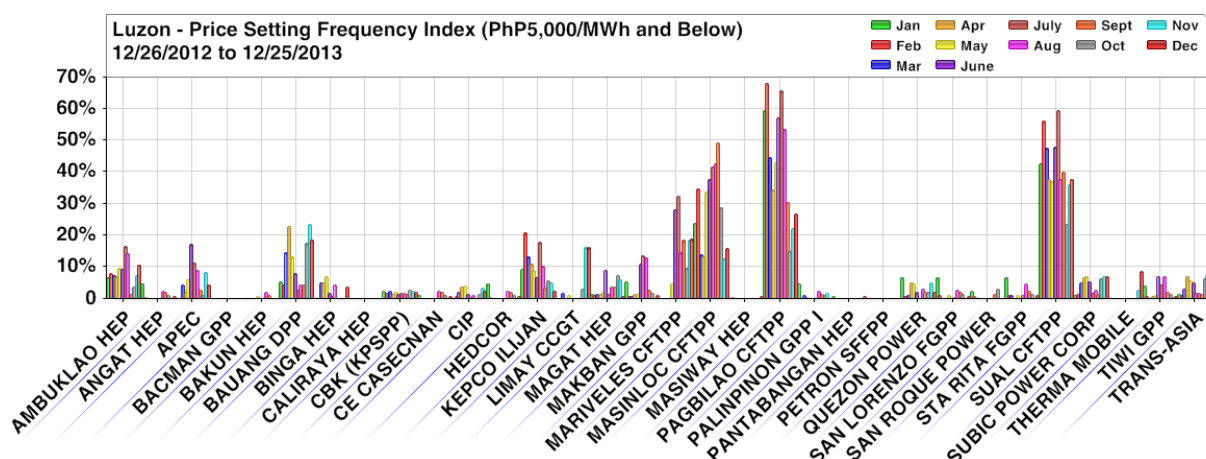


Figure 44. Price Setting Frequency Index - Visayas Plants (Php 5,000/MWh and Below)

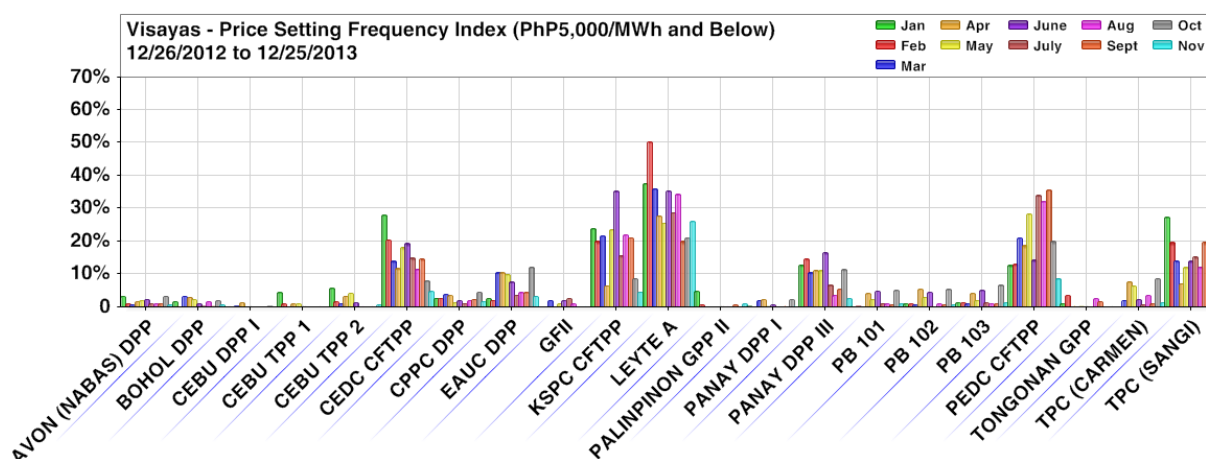


Table 55. PSFI by Billing Month - Luzon (Php 5,000/MWh and Below)

Plant	PSFI (%) by Billing Month - Luzon Plants (Php 5,000/MWh and Below)											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
AMBUKLAO HEP	6.59	7.80	7.14	6.85	9.44	9.41	16.53	14.25	1.48	3.47	7.26	10.56
ANGAT HEP	4.70	0.54	0.15	0.27				2.42	2.02	0.97		0.69
APEC			4.17	1.88	5.97	17.20	11.39	8.87	2.55	0.97	8.33	4.17
BACMAN GPP					0.14			0.13	0.40			
BAKUN HEP	0.13	0.13			0.69	0.27		1.88	0.94			
BAUANG DPP	5.24	4.44	14.43	22.85	13.06	7.93	2.64	4.30	4.17	17.50	23.39	18.61
BINGA HEP	0.27	0.27	4.91	4.97	7.08	1.61	0.69	4.17	0.27	0.14	0.40	3.61
CALIRAYA HEP	0.13											
CBK (KPSPP)	2.15	1.61	2.23	1.34	1.94	1.21	1.81	1.61	1.34	2.50	2.28	1.94
CE CASECNAN	1.08	0.40						2.42	2.02	0.97		0.69
CIP	0.13	0.81	1.93	3.63	3.89	1.21	0.56	1.08	0.13	1.39	3.23	2.22
GFI			1.93		0.97	1.88	2.64	0.94			0.13	
HEDCOR	4.57	0.54		0.27				2.42	2.02	0.97		0.69
KEPCO ILIJAN	9.41	20.83	13.10	10.75	8.89	6.72	17.92	10.08	3.36	5.69	4.97	2.36
LIMAY CCGT			1.49	0.40	0.83				0.27	2.92	16.26	16.11
MAGAT HEP	1.34	0.94	1.19	1.34	1.94	9.01	1.25	3.49	3.76	7.36	6.05	0.69
MAKBAN GPP	5.38	0.81	0.74	1.48	1.39	11.02	13.47	12.90	2.69	1.67	0.40	0.83
MARIVELES CFTPP					4.72	28.09	32.50	14.52	18.41	9.44	18.55	18.75
MASINLOC CFTPP	23.66	34.54	13.84	13.31	33.75	37.63	41.67	42.74	49.33	28.61	12.63	15.97
MASIWAY HEP	0.13	0.54		0.27				0.40				0.69
PAGBILAO CFTPP	59.54	68.15	44.64	34.27	43.06	57.26	65.69	53.49	30.38	14.86	22.18	26.81
PANTABANGAN HEP	0.81	0.40										0.69
PETRON SFPP									0.13			
QUEZON POWER	6.59	0.67	1.04	4.84	4.72	2.02		3.09	2.02	2.08	5.11	1.94
SAN LORENZO FGPP	6.45	0.94	0.30	0.27	0.83	0.27	0.56	2.69	2.02	1.25		0.69
SAN ROQUE POWER	2.15	0.67	0.45				0.14	0.13	1.48	3.06	0.13	
STA RITA FGPP	6.45	0.94	0.89	0.27	0.83	0.40	1.11	4.70	2.15	1.25		0.97
SUAL CFTPP	42.74	56.05	47.47	37.77	36.94	47.85	59.58	37.63	40.05	23.47	36.02	37.64
SUBIC POWER CORP	1.08	1.21	4.91	6.72	6.81	5.38	1.67	2.55	1.48	6.39	6.99	6.94
THERMA MOBILE											2.69	8.47
TIWI GPP	4.03	0.67	0.15	0.67	0.97	6.99	4.44	6.99	2.02	1.39	0.54	0.69
TRANS-ASIA	1.21	0.94	3.13	6.99	5.56	5.11	1.53	1.61	1.48	6.25	7.53	6.94

Table 56. PSFI by Billing Month - Visayas (Php 5,000/MWh and Below)

Plant	PSFI (%) by Billing Month - Visayas Plants (Php 5,000/MWh and Below)										
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov
AVON (NABAS) DPP	3.09	0.81	0.74	1.75	1.81	2.28	0.83	1.08	0.81	3.19	0.67
BOHOL DPP	1.48	0.27	3.27	2.96	2.36	0.94	0.56	1.75	0.40	1.81	0.67
CEBU DPP I	0.27	0.13	0.60	1.34	0.28					0.56	0.13
CEBU TPP 1	4.30	0.81		0.81	1.11	0.13	0.14			0.14	
CEBU TPP 2	5.65	1.48	1.04	3.23	4.17	1.21		0.13		0.14	0.67
CEDC CFTPP	27.96	20.43	13.99	11.69	18.19	19.35	14.86	11.56	14.65	7.92	4.70
CPPC DPP	2.55	2.69	3.72	3.49	1.25	1.88	0.97	1.88	2.28	4.58	1.75
EAUC DPP	2.69	2.02	10.42	10.48	10.00	7.53	3.61	4.30	4.30	12.22	3.23
KSPC CFTPP	23.79	20.03	21.58	6.45	23.47	35.22	15.69	21.91	21.10	8.75	4.57
LEYTE A	37.63	50.40	36.01	27.69	25.56	35.35	28.75	34.27	19.89	20.97	26.08
PALINPINON GPP I	4.57	0.27	1.04	0.54	0.14	0.13		2.42	1.21	0.97	1.75
PALINPINON GPP II	4.70	0.67					0.14	0.13	0.67	0.14	0.81
PANAY DPP I	0.54		1.93	2.15	0.42	0.67	0.28		0.27	2.36	0.27
PANAY DPP III	12.77	14.78	10.42	11.16	11.11	16.67	6.53	3.49	5.38	11.39	2.42
PB 101	0.27	0.54	0.15	4.03	2.36	4.84	0.97	0.81	0.67	5.00	0.81
PB 102	0.94	0.81	0.74	5.38	2.92	4.44	0.28	0.94	0.67	5.28	0.67
PB 103	1.21	1.34	0.89	4.03	1.94	4.97	1.25	1.08	0.94	6.53	1.21
PEDC CFTPP	12.63	13.04	20.98	18.68	28.33	14.25	33.89	32.12	35.62	20.00	8.60
TONGONAN GPP	0.94	3.49		0.27	0.42		0.14	2.42	1.61	0.14	
TPC (CARMEN)	0.13		1.93	7.66	6.39	2.15	0.69	3.49	0.81	8.75	1.21
TPC (SANGI)	27.28	19.62	14.14	7.12	12.08	13.98	15.28	12.10	19.76	4.31	4.57

Figure 45. Price Setting Frequency Index - Luzon Plants (Php 5,000/MWh to Php 10,000/MWh)

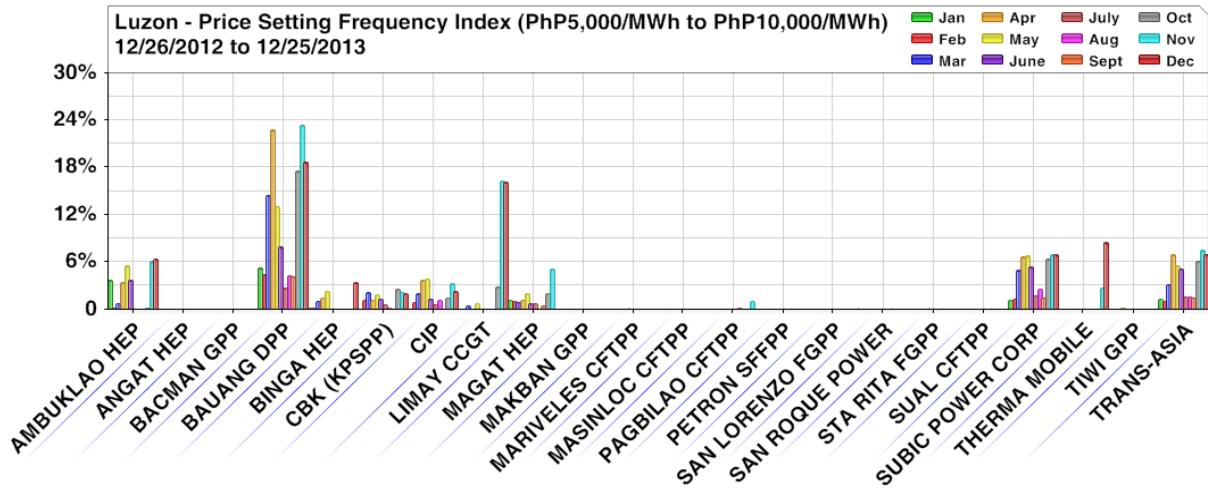


Figure 46. Price Setting Frequency Index - Visayas Plants (Php 5,000/MWh to Php 10,000/MWh)

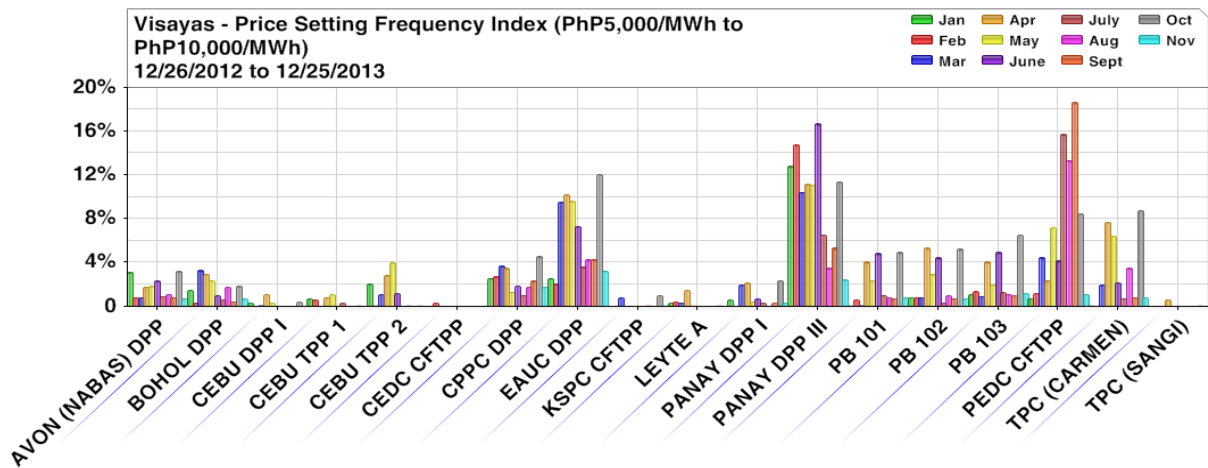


Table 57. PSFI by Billing Month - Luzon (Php 5,000/MWh to Php 10,000/MWh)

Plant	PSFI (%) by Billing Month - Luzon Plants (PhP 5,000/MWh to PhP 10,000/MWh)											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
AMBUKLAO HEP	3.63	0.27	0.74	3.36	5.56	3.63				0.28	6.05	6.39
ANGAT HEP			0.15									
BACMAN GPP					0.14							
BAUANG DPP	5.24	4.44	14.43	22.72	13.06	7.93	2.64	4.30	4.17	17.50	23.39	18.61
BINGA HEP	0.27	0.27	1.04	1.48	2.22						0.13	3.33
CBK (KPSPP)	0.13	1.08	2.08	1.08	1.81	1.21	0.56	0.27	0.13	2.50	2.15	1.94
CIP	0.13	0.81	1.93	3.63	3.89	1.21	0.56	1.08	0.13	1.39	3.23	2.22
LIMAY CCGT			0.45		0.69					2.78	16.26	16.11
MAGAT HEP	1.08	0.94	0.89	1.08	1.94	0.67	0.69	0.13	0.40	1.94	5.11	
MAKBAN GPP			0.15	0.13								
MARIVELES CFTPP					0.14	0.13						
MASINLOC CFTPP				0.13								
PAGBILAO CFTPP				0.13				0.27			0.94	
PETRON SFFPP									0.13			
SAN LORENZO FGPP					0.14							
SAN ROQUE POWER	0.13								0.13			
STA RITA FGPP					0.14	0.13			0.13			
SUAL CFTPP									0.13			
SUBIC POWER CORP	1.08	1.21	4.91	6.72	6.81	5.38	1.67	2.55	1.48	6.39	6.99	6.94
THERMA MOBILE											2.69	8.47
TIWI GPP			0.15	0.27								
TRANS-ASIA	1.21	0.94	3.13	6.99	5.56	5.11	1.53	1.61	1.48	6.11	7.53	6.94

Table 58. PSFI by Billing Month - Visayas (Php 5,000/MWh to Php 10,000/MWh)

Plant	PSFI (%) by Billing Month - Visayas Plants (PhP5,000/MWh to PhP10,000/MWh)										
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov
AVON (NABAS) DPP	3.09	0.81	0.74	1.75	1.81	2.28	0.83	1.08	0.81	3.19	0.67
BOHOL DPP	1.48	0.27	3.27	2.96	2.36	0.94	0.56	1.75	0.40	1.81	0.67
CEBU DPP I	0.27		0.15	1.08	0.28					0.42	
CEBU TPP 1	0.67	0.54		0.81	1.11		0.27			0.14	
CEBU TPP 2	2.02	0.13	1.04	2.82	4.03	1.21		0.13		0.14	
CEDC CFTPP		0.27									
CPPC DPP	2.55	2.69	3.72	3.49	1.25	1.88	0.97	1.75	2.28	4.58	1.75
EAUC DPP	2.55	2.02	9.52	10.22	9.58	7.26	3.61	4.30	4.30	12.08	3.23
KSPC CFTPP			0.74					0.13		0.97	0.13
LEYTE A	0.27	0.40	0.30	1.48	0.14					0.14	
PANAY DPP I	0.54		1.93	2.15	0.42	0.67	0.28		0.27	2.36	0.27
PANAY DPP III	12.77	14.78	10.42	11.16	11.11	16.67	6.53	3.49	5.38	11.39	2.42
PB 101	0.13	0.54	0.15	4.03	2.36	4.84	0.97	0.81	0.67	5.00	0.81
PB 102	0.81	0.81	0.74	5.38	2.92	4.44	0.28	0.94	0.67	5.28	0.67
PB 103	1.08	1.34	0.89	4.03	1.94	4.97	1.25	1.08	0.94	6.53	1.21
PEDC CFTPP	0.67	1.21	4.46	2.28	7.22	4.17	15.69	13.31	18.68	8.47	1.08
TPC (CARMEN)	0.13		1.93	7.66	6.39	2.15	0.69	3.49	0.81	8.75	0.81
TPC (SANGI)				0.54						0.14	

Oil-based plants dominated the list of frequent price setters at the above PhP10,000/MWh price level, with Luzon oil-based plant Bauang at the top spot, followed by Visayas oil-based plant Panay DPP III, Luzon oil-based plant Limay, coal plant TPC (Carmen), and oil-based plants EAUC and PB 103. It is observed that Visayas plants more frequently set the price at this level before the ERC's declaration of partial market suspension in the region effective 08 November 2013.

Moreover, the PSFI of oil-based plants Bauang, Limay and Therma Mobile rose significantly during the billing months of November and December, obtaining the highest PSFI for prices above PhP40,000/MWh on said months. The same increase likewise manifests the very high market prices during the period following the dispatch of the higher-priced oil-based plants in

Luzon. Therma Mobile, which is the top price-setting plant for prices above PhP60,000/MWh, is noted to have commenced commercial operations on 12 November 2013 only.

Figure 47. Price Setting Frequency Index - Luzon Plants (Above Php 10,000/MWh)

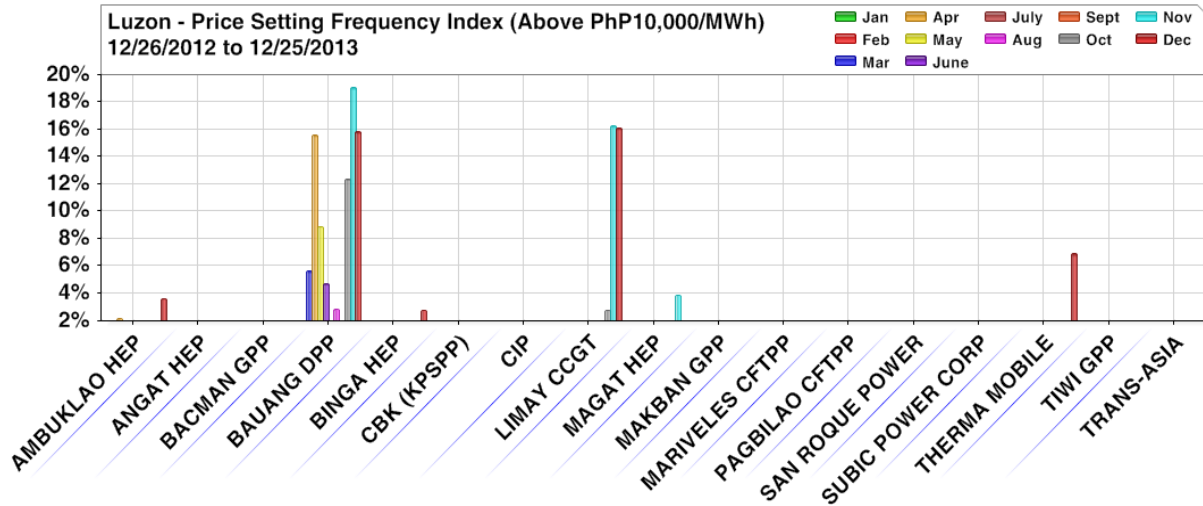


Figure 48. Price Setting Frequency Index - Visayas Plants (Above Php 10,000/MWh)

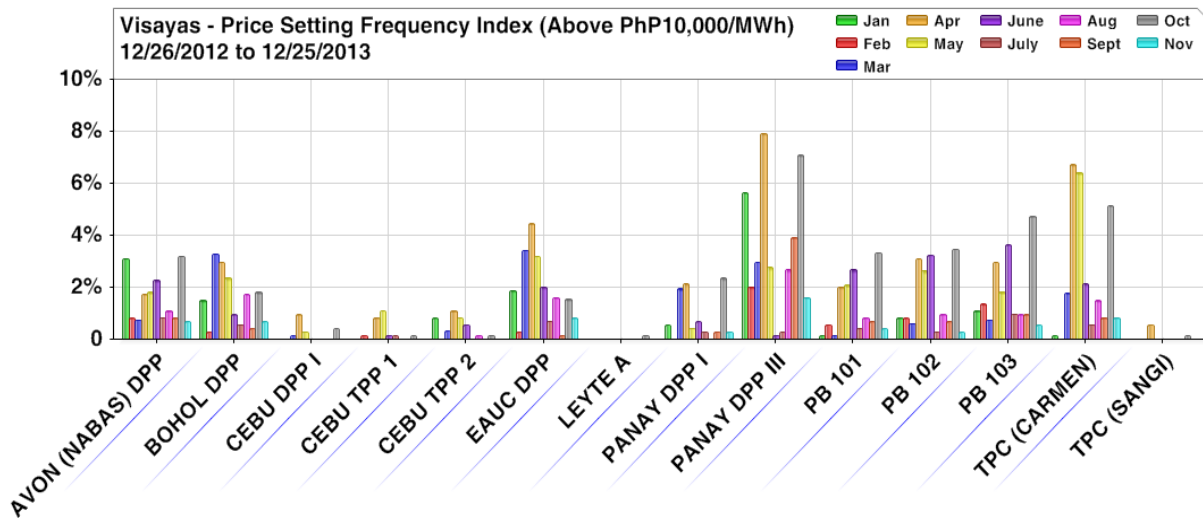


Table 59. PSFI by Billing Month - Luzon (Above PhP 10,000/MWh)

Plant	PSFI (%) by Billing Month - Luzon Plants (Above PhP 10,000/MWh)											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
AMBUKLAO HEP				2.15	2.08	0.40				0.14	1.61	3.61
ANGAT HEP			0.15									
BACMAN GPP					0.14							
BAUANG DPP	1.34	0.54	5.65	15.59	8.89	4.70	1.25	2.82	1.21	12.36	19.09	15.83
BINGA HEP		0.13	0.60	0.40	0.83							2.78
CBK (KPSPP)		0.27	1.34		1.11	0.27				1.11	0.81	0.83
CIP			0.15	0.13	0.14	0.27	0.42	0.27		0.14	0.54	0.42
LIMAY CCGT					0.69					2.78	16.26	16.11
MAGAT HEP	0.81	0.27	0.60	1.08	0.69						3.90	
MAKBAN GPP			0.15	0.13								
MARIVELES CFTPP					0.14							
PAGBILAO CFTPP								0.27				
SAN ROQUE POWER	0.13											
SUBIC POWER CORP	0.27	0.13	0.74	0.13	0.28	0.94	0.42	0.67		0.42	0.94	1.11
THERMA MOBILE											1.21	6.94
TIWI GPP			0.15	0.27								
TRANS-ASIA			0.45	0.13	1.39	0.54	0.56	0.13	0.27	0.28	0.94	1.53

Table 60. PSFI by Billing Month - Visayas (Above PhP 10,000/MWh)

Plant	PSFI (%) by Billing Month - Visayas Plants (Above PhP10,000/MWh)										
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov
AVON (NABAS) DPP	3.09	0.81	0.74	1.75	1.81	2.28	0.83	1.08	0.81	3.19	0.67
BOHOL DPP	1.48	0.27	3.27	2.96	2.36	0.94	0.56	1.75	0.40	1.81	0.67
CEBU DPP I			0.15	0.94	0.28					0.42	
CEBU TPP 1		0.13		0.81	1.11	0.13	0.14			0.14	
CEBU TPP 2	0.81		0.30	1.08	0.83	0.54		0.13		0.14	
EAUC DPP	1.88	0.27	3.42	4.44	3.19	2.02	0.69	1.61	0.13	1.53	0.81
LEYTE A										0.14	
PANAY DPP I	0.54		1.93	2.15	0.42	0.67	0.28		0.27	2.36	0.27
PANAY DPP III	5.65	2.02	2.98	7.93	2.78	0.13	0.28	2.69	3.90	7.08	1.61
PB 101	0.13	0.54	0.15	2.02	2.08	2.69	0.42	0.81	0.67	3.33	0.40
PB 102	0.81	0.81	0.60	3.09	2.64	3.23	0.28	0.94	0.67	3.47	0.27
PB 103	1.08	1.34	0.74	2.96	1.81	3.63	0.97	0.94	0.94	4.72	0.54
TPC (CARMEN)	0.13		1.79	6.72	6.39	2.15	0.56	1.48	0.81	5.14	0.81
TPC (SANGI)				0.54						0.14	

Figure 49. Price Setting Frequency Index - Luzon and Visayas Plants (Above PhP 40,000/MWh)

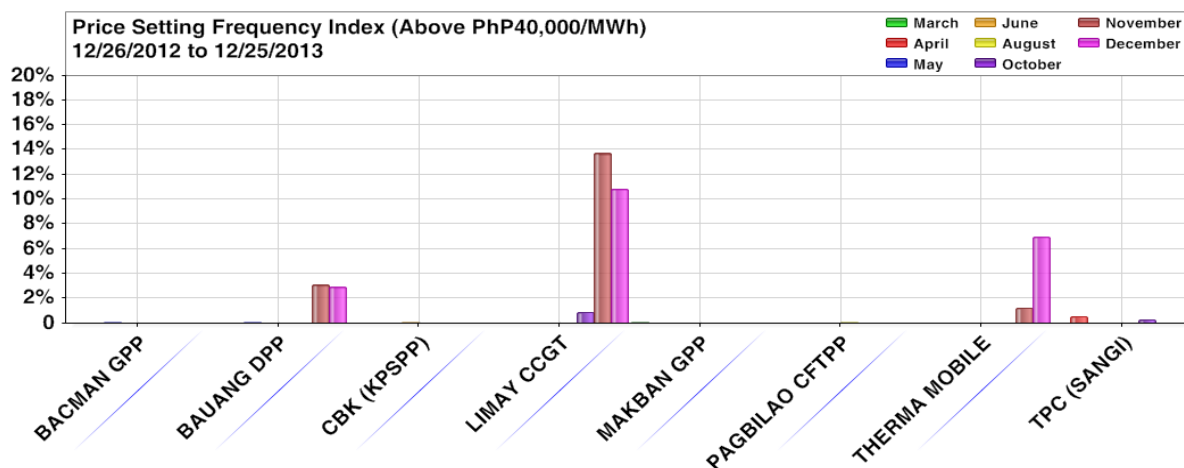


Figure 50. Price Setting Frequency Index - Luzon and Visayas Plants (Above PhP 60,000/MWh)

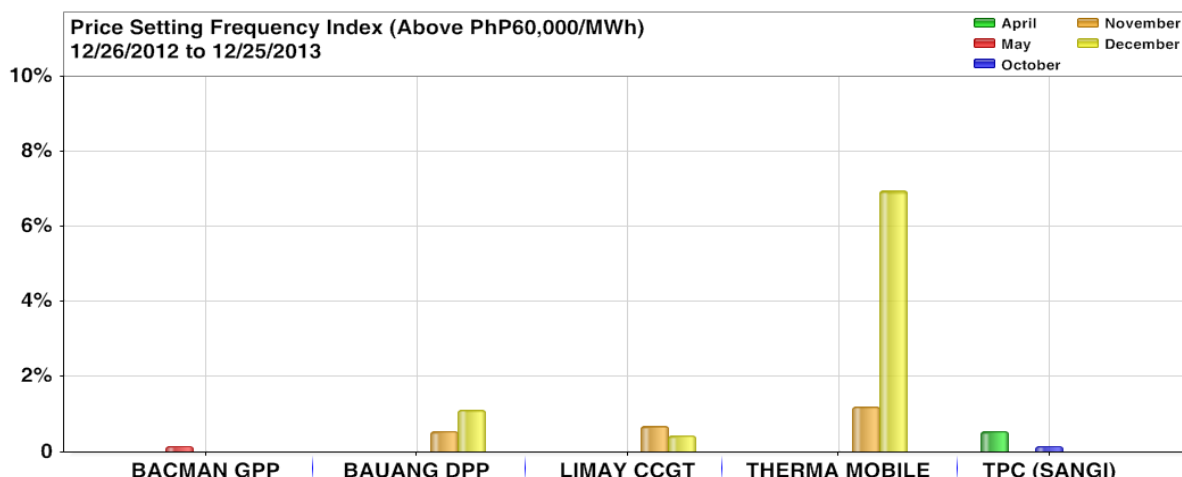


Table 61. PSFI by Billing Month - Above PhP 40,000/MWh

Plant	PSFI (%) by Billing Month (Above PhP 40,000/MWh)											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
BACMAN GPP					0.14							
BAUANG DPP					0.14						3.09	2.92
CBK (KPSPP)						0.13						
LIMAY CCGT										0.83	13.71	10.83
MAKBAN GPP			0.15									
PAGBILAO CFTPP								0.13				
THERMA MOBILE											1.21	6.94
TPC (SANGI)				0.54						0.28		

Table 62. PSFI by Billing Month - Above PhP 60,000/MWh

Plant	PSFI (%) by Billing Month (Above PhP 60,000/MWh)				
	Apr	May	Oct	Nov	Dec
BACMAN GPP		0.14			
BAUANG DPP				0.54	1.11
LIMAY CCGT				0.67	0.42
THERMA MOBILE				1.21	6.94
TPC (SANGI)	0.54		0.14		

VIII. PIVOTAL SUPPLIERS

The Pivotal Supply Index (PSI) is a binary variable (1 for pivotal and 0 for not pivotal) which measures the frequency that a generating plant is pivotal in a particular study period. A generator is pivotal if its capacity is needed to meet the demand requirements. Pivotal generators have greater opportunity to influence the market price by exercising their market power either through capacity withholding or offering prices above their usual price offers.

The higher the system demand, or if a large plant is on outage, the higher the probability of plants qualifying as pivotal.

The list of the most frequent pivotal suppliers in Luzon and Visayas are shown in the Figures below. In Luzon, coal plant Sual, Natural gas plants Ilijan and Sta. Rita, and coal plants

Masinloc, Pagbilao, Batangas and Quezon were the top seven most frequent pivotal suppliers throughout the year. In Visayas, geothermal plant Leyte A, coal plants CEDC, KSPC and PEDC were the most frequent pivotal suppliers followed by geothermal plants Palinpinon I, Tongonan and Palinpinon II.

It was observed that the frequency by which generators became pivotal increased significantly during the December, November, April and May billing months. It can be recalled that the months of April and May were the same months when demand was at its highest for the year. Meanwhile, the December and November billing months were marked with several occurrences of undergeneration.

Similarly in the Visayas, generators became pivotal more frequently during the summer months of April and May. However, it was the October billing month which posted the highest incidence of pivotal suppliers, which coincided when the supply level in the region was low and the average supply margin level was at its lowest for the year.

Figure 51. Pivotal Supplier Frequency Index - Luzon

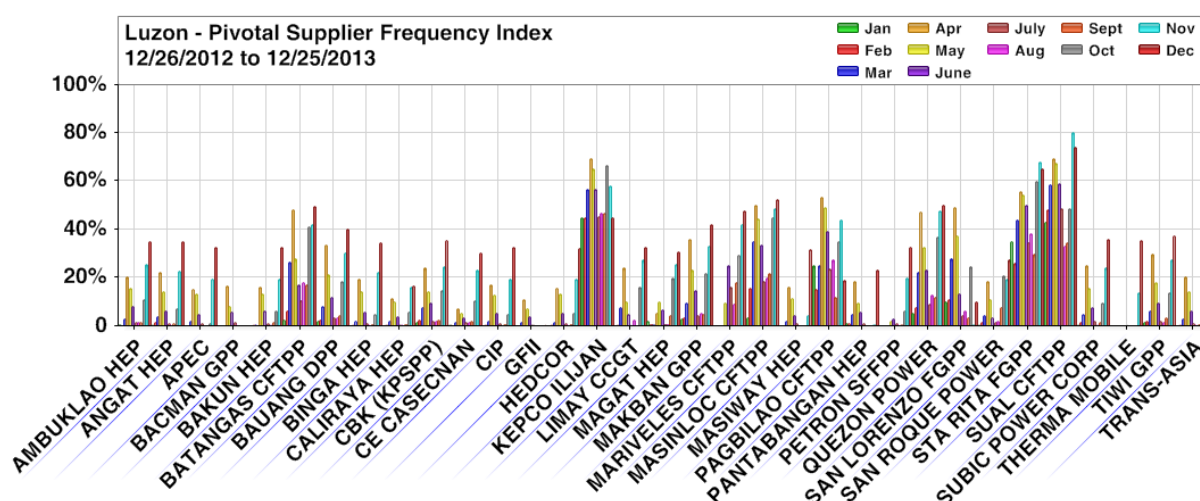


Figure 52. Pivotal Supplier Frequency Index - Visayas

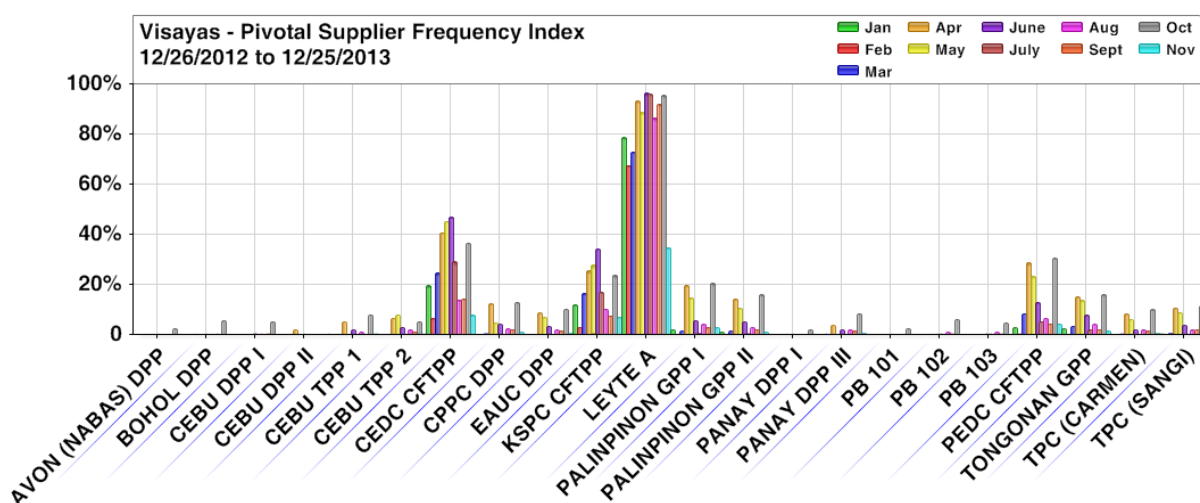


Table 63. Pivotal Supplier Frequency Index by Billing Month - Luzon

Plant	Pivotal Supplier Frequency Index (%) by Billing Month - Luzon											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
AMBUKLAO HEP	0.81	0.00	2.98	20.16	15.42	8.20	1.53	1.34	1.48	10.69	25.27	35.00
ANGAT HEP	0.67	1.21	3.87	22.04	14.31	6.18	1.11	0.40	1.08	6.94	22.72	34.86
APEC			1.79	15.32	13.19	4.70	0.97	0.00	0.54	1.11	19.35	32.36
BACMAN GPP			0.00	16.53	8.19	5.78	1.25	0.40	0.13			
BAKUN HEP	0.13	0.67	0.45	15.99	13.19	6.05	1.11	0.67	1.21	5.97	19.35	32.36
BATANGAS CFTPP	2.55	6.18	26.64	48.25	27.64	16.94	10.42	18.15	17.07	41.25	41.80	49.44
BAUANG DPP	2.02	2.28	7.89	33.47	21.11	11.96	3.47	3.09	4.03	18.19	30.24	40.00
BINGA HEP	0.13	0.67	1.93	19.49	14.17	5.65	0.97	0.40	0.94	4.58	22.31	34.58
CALIRAYA HEP	0.13	0.67	2.08	11.16	10.00	3.76	0.69	0.40	0.94	5.69	15.86	16.67
CBK (KSPSP)	1.48	2.15	7.74	23.92	14.31	9.27	1.81	1.75	2.15	14.44	24.46	35.56
CE CASECNAN	0.67	0.27	1.34	6.85	5.28	3.23	1.25	1.61	1.75	10.28	23.12	30.42
CIP	0.00	0.67	2.08	16.94	12.92	5.24	0.97	0.13	0.94	4.86	19.35	32.36
GFII			1.64	10.75	7.08	3.76	0.69				0.00	0.28
HEDCOR	0.13	0.67	1.64	15.73	13.06	5.38	0.97	0.40	0.94	5.14	19.22	32.22
KEPCO ILIJAN	44.76	44.62	56.40	69.49	64.86	56.45	45.28	46.77	46.64	66.53	57.93	45.00
LIMAY CCGT		0.67	7.59	23.92	10.00	4.70	0.14	2.15	0.00	15.83	27.15	32.36
MAGAT HEP	1.75	0.94	0.74	5.38	10.14	6.45	0.83	0.94	4.03	19.58	25.67	30.56
MAKBAN GPP	2.69	3.09	9.38	35.75	23.19	14.52	4.03	4.97	4.70	21.81	32.93	41.81
MARIVELES CFTPP					9.44	25.00	15.83	9.14	18.15	29.44	42.20	47.50
MASINLOC CFTPP	3.36	15.73	35.12	49.87	44.17	33.33	18.61	20.03	21.51	45.00	48.39	52.22
MASIWAY HEP	0.13	0.54	1.79	16.26	11.53	4.44	0.97	0.00	0.13	0.00	4.03	31.39
PAGBILAO CFTPP	24.87	15.19	24.85	53.49	48.89	39.11	23.47	27.42	11.69	34.86	43.95	18.75
PANTABANGAN HEP	1.08	1.08	4.91	18.41	9.31	5.65	0.97	0.13	0.13		0.81	23.33
PETRON SFFPP					1.67	2.82	0.97	0.40	0.81	6.11	19.89	32.78
QUEZON POWER	5.11	7.66	22.32	47.18	32.36	23.25	8.89	12.90	11.83	36.67	47.45	50.14
SAN LORENZO FGPP	9.95	10.75	27.98	49.06	37.36	13.44	4.44	6.05	3.36	24.58	0.81	10.00
SAN ROQUE POWER	0.67	1.48	4.32	18.41	10.97	3.36	1.25	1.75	7.66	20.69	19.22	27.50
STA RITA FGPP	34.95	26.08	43.90	55.51	54.31	49.87	34.58	38.17	29.70	60.00	67.88	65.28
SUAL CFTPP	43.15	47.98	58.63	69.22	67.22	58.87	48.47	33.20	34.27	48.47	80.11	74.17
SUBIC POWER CORP	0.67	1.21	4.61	25.13	15.42	7.39	1.67	0.67	1.34	9.31	24.06	35.69
THERMA MOBILE											13.58	35.28
TIWI GPP	1.48	1.75	6.10	29.84	17.92	9.41	1.81	1.48	3.09	13.61	27.55	37.50
TRANS-ASIA	0.13	0.67	2.83	20.30	14.31	6.05	1.11	0.40	0.94	5.00	20.83	33.75

Table 64. Pivotal Supplier Frequency Index by Billing Month - Visayas

Plant	Pivotal Supplier Frequency Index (%) by Billing Month - Visayas										
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov
AVON (NABAS) DPP	0.13			0.27		0.13				2.36	0.27
BOHOL DPP	0.13			0.27		0.13		0.27	0.40	5.42	0.27
CEBU DPP I	0.13			0.54	0.14	0.67	0.14	0.40	0.67	4.86	0.27
CEBU DPP II	0.13			1.61	0.14						
CEBU TPP 1	0.27		0.15	4.97	0.28	1.75	0.56	0.94	0.13	7.92	0.67
CEBU TPP 2	0.27			6.32	7.78	2.82	0.56	1.61	1.08	5.00	0.67
CEDC CFTPP	19.35	6.18	24.55	40.59	45.14	46.64	28.89	13.71	14.25	36.39	7.53
CPPC DPP	0.27		0.74	12.23	4.72	4.03	0.56	2.15	1.88	12.78	1.08
EAUC DPP	0.13		0.15	8.60	6.67	2.96	0.56	1.75	1.34	10.14	0.81
KSPC CFTPP	11.69	2.69	16.37	25.40	27.50	34.01	16.94	10.22	7.39	23.47	6.72
LEYTE A	78.63	67.47	72.92	93.28	88.61	96.24	96.11	86.16	91.94	95.42	34.41
PALINPINON GPP I	1.88		1.49	19.62	14.58	5.38	0.83	3.90	2.69	20.28	2.55
PALINPINON GPP II	0.94		1.49	14.11	10.42	4.97	0.69	2.82	2.02	15.83	1.08
PANAY DPP I				0.13		0.13				1.67	
PANAY DPP III	0.13		0.30	3.63	0.56	1.61	0.56	1.61	1.21	8.19	0.81
PB 101	0.13			0.27		0.13				2.36	0.27
PB 102	0.13			0.27		0.27	0.42	1.08	0.67	5.97	0.40
PB 103	0.13					0.40	0.42	1.08	0.67	4.58	0.40
PEDC CFTPP	2.69	0.67	8.33	28.76	23.33	12.77	5.14	6.59	4.30	30.28	4.30
TONGONAN GPP	2.42	0.13	3.27	15.19	13.47	7.53	1.67	4.03	1.88	15.83	1.21
TPC (CARMEN)	0.27		0.60	8.06	6.11	2.02	0.56	1.61	1.34	9.86	0.81
TPC (SANGI)	0.67		0.89	10.48	8.75	3.63	0.56	1.75	1.88	11.25	1.08

IX. RESIDUAL SUPPLY

The Residual Supply Index (RSI) is a dynamic continuous index that provides additional information to the concept of pivotal Generator (PSI), by measuring the ratio of available generation without a Generator to the total generation required to supply the demand. It identifies a Generator based on offers, with market power and has the ability to raise prices above the level of effective competition.

The Market RSI is measured as the lowest RSI among all generators in the market. A Market RSI less than 100 percent indicates the presence of pivotal generator/s or supplier/s.

The figures below indicate the hourly trend of the market RSI for the billing year, plotted against pivotal suppliers. Compared with the other billing months, November, December (covering only the Luzon region), April and May had the highest percentage of RSI below 100 percent, indicating the presence of pivotal generators most of the time during said months. It can be recalled that the same billing months incurred the highest occurrence of trading intervals with low reserve margin (RMI), clearly manifesting that demand and supply conditions were most tight during the said months. Consequently, high market prices were posted during the said months, with the highest market price posted during the month of December.

The noticeable dip in the RSI level of below 100 percent during the December billing month is on account of the increased level of under-generation during said period.

It is significant to note that trading intervals with below 100 percent RSI had 1 or more pivotal suppliers. Conversely, trading intervals with above 100 percent RSI had no pivotal suppliers.

The market RSI exceeded the 100 percent mark at an average of about 40 percent of the time in 2013, lower than the average of 54 percent in year 2012, indicating the increase in the number of pivotal suppliers as well as the presence of the same during the year 2013. The RSI values in 2013 were pulled lower during the billing months of November, December April and May, when demand and supply conditions were tight and the RSI values were notably lower than the rest of the billing months.

Figure 53. RSI Based on Offered Capacity - 1st Half

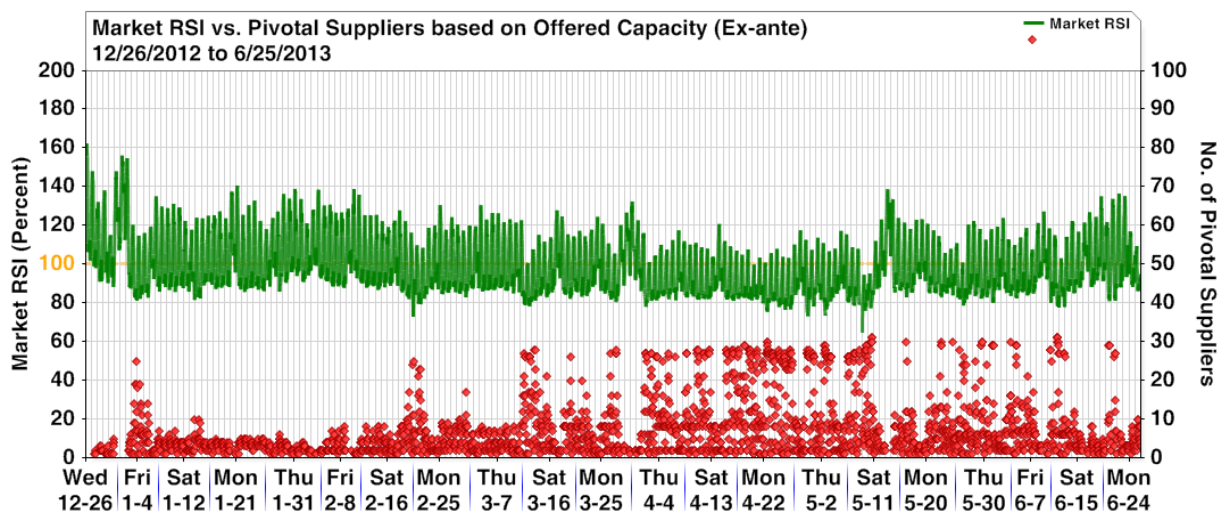


Figure 54. RSI Based on Offered Capacity - 2nd Half

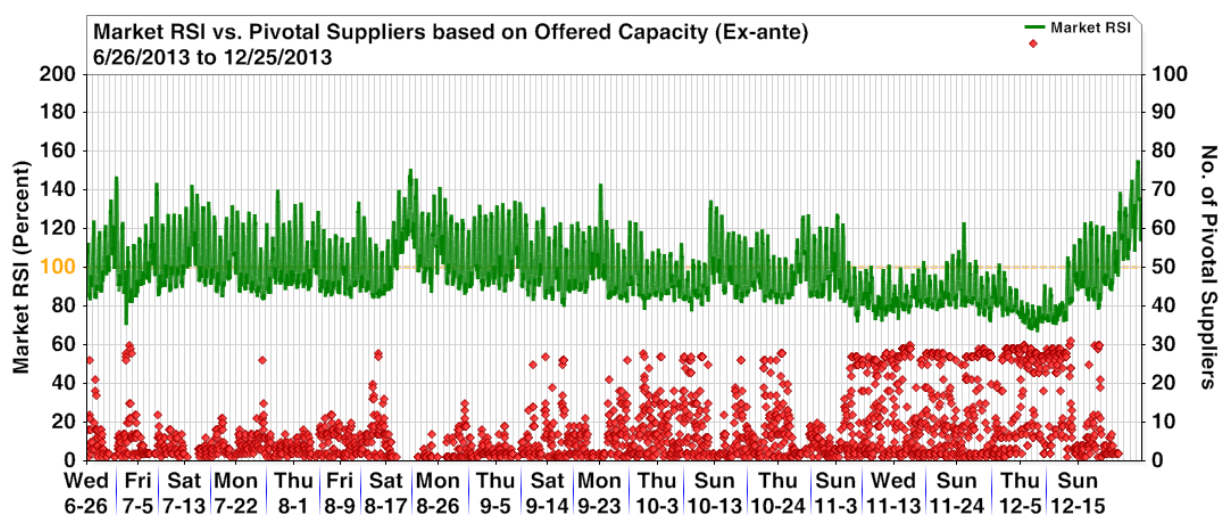


Table 65. Market RSI Summary - 2013

	Market RSI (%) Distribution by Billing Month, System - 2013												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
More than or equal to 100%	52.96	50.81	40.33	28.49	30.74	39.78	51.46	52.55	51.75	33.19	18.71	25.83	39.76
Less than 100%	47.04	49.19	59.67	71.51	69.26	60.22	48.54	47.45	48.25	66.81	81.29	74.17	60.24

Table 66. Market RSI Summary - 2012

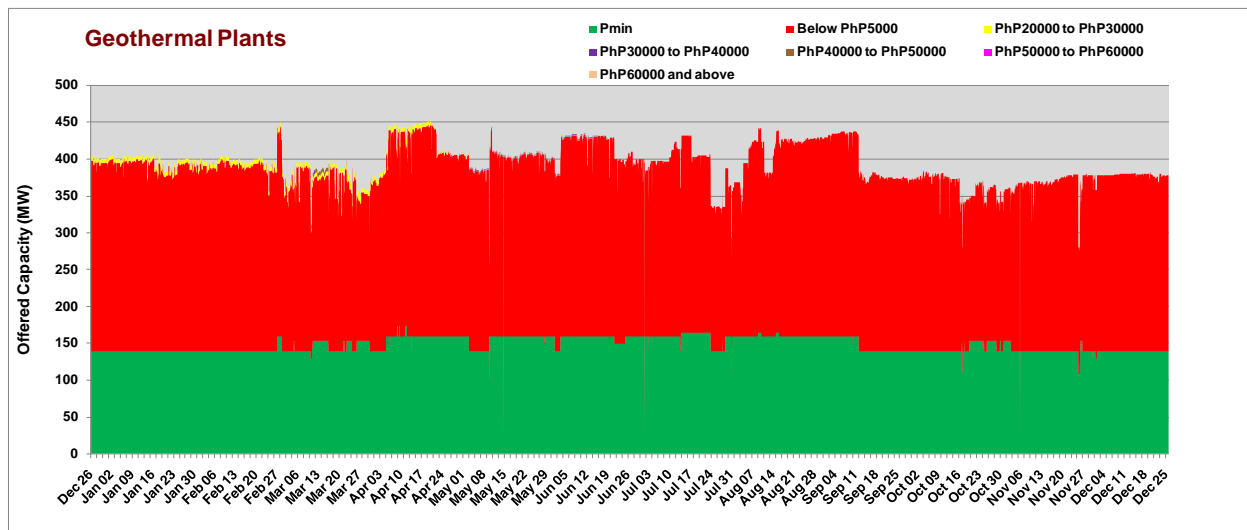
	Market RSI (%) Distribution by Billing Month, System - 2012												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
Less than 100%	33.78	23.66	37.90	35.35	65.83	64.15	65.51	22.31	43.47	55.63	50.27	51.25	45.76
More than or equal to 100%	66.22	76.34	62.10	64.65	34.17	35.85	34.49	77.69	56.53	44.37	49.73	48.75	54.24

X. GENERATOR OFFER PATTERN

Generation offer index aims to determine trends or strategy in the offer behaviour of generators. The following figures show the offer pattern of generating plants according to resource type.

Geothermal plants had one of the lowest price offers among all plant resources, noting that about 99.5 percent of its offers were consistently priced at PhP5000/MWh and below throughout the year.

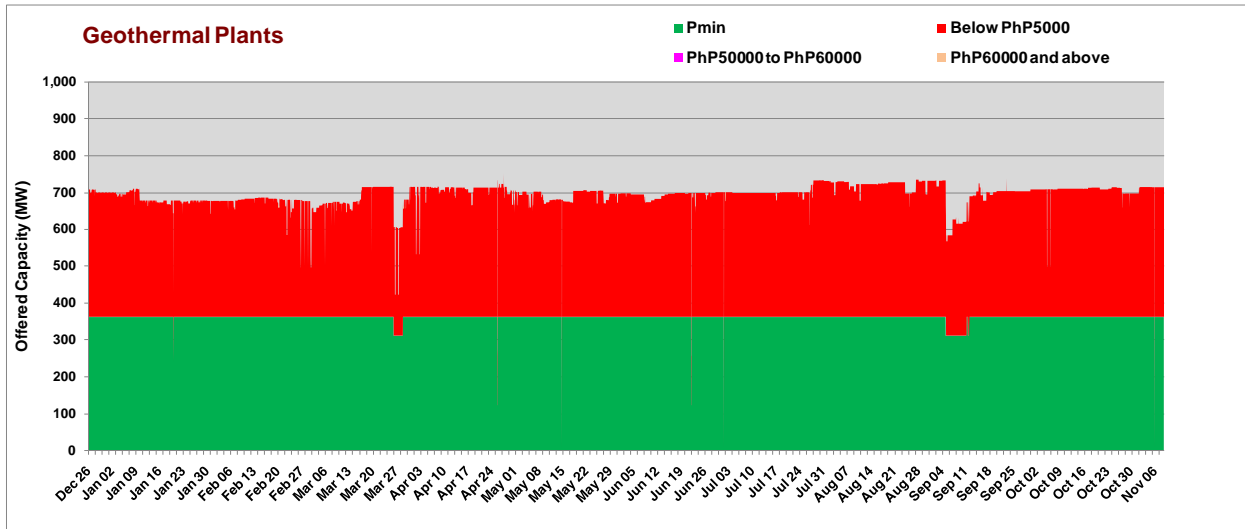
Figure 55. Geothermal Plants Offer Pattern - Luzon



Similarly, almost 100 percent of the offered capacities of Visayas geothermal plants were steadily priced at Php 5,000/MW and below.

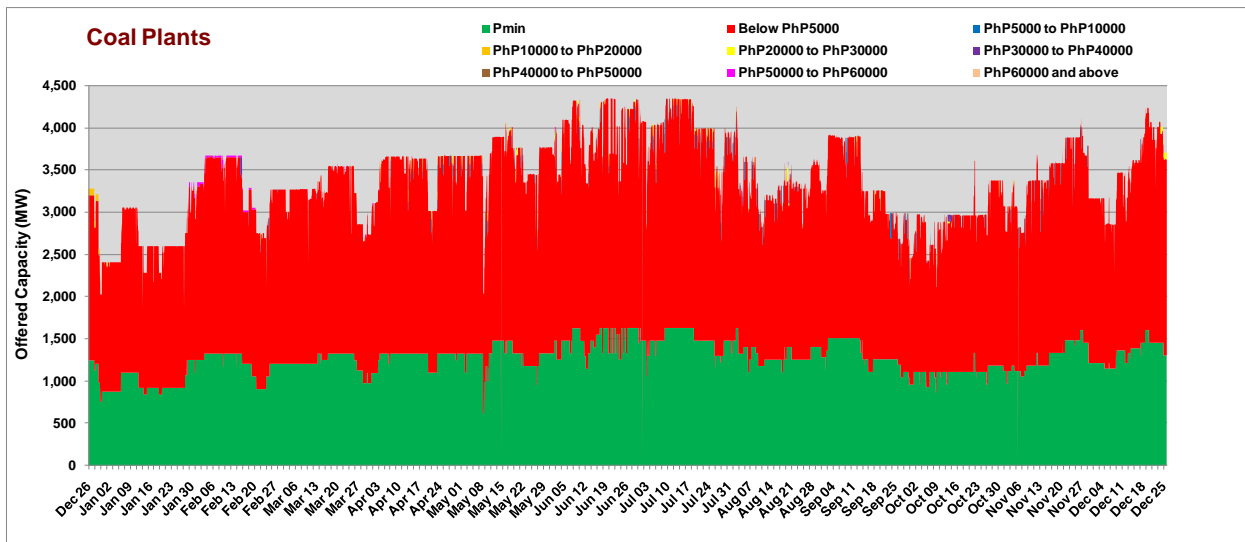
As shown in the next succeeding Figure, the capacity offers submitted by geothermal plants in the Visayas remained almost consistent throughout the year. Noteworthy is the noticeable dip in the level of capacity offers on 26-30 March, due to the planned outage of Palinpinon Units 1-3 as well as the reduction in the capacity offers during the September billing month (starting 05 September), on account of the planned outages of the 3 units of Tongonan GPP.

Figure 56. Geothermal Plants Offer Pattern - Visayas



Coal plants had relatively low offer prices, making them a cheap source of power in addition to geothermal plants. 99.5 percent of the capacity offers of Luzon coal plants were offered at a price below Php5,000/MW. Capacity offers dropped during the January and October billing months on account of the high level of outage capacities of major coal plants in Luzon.

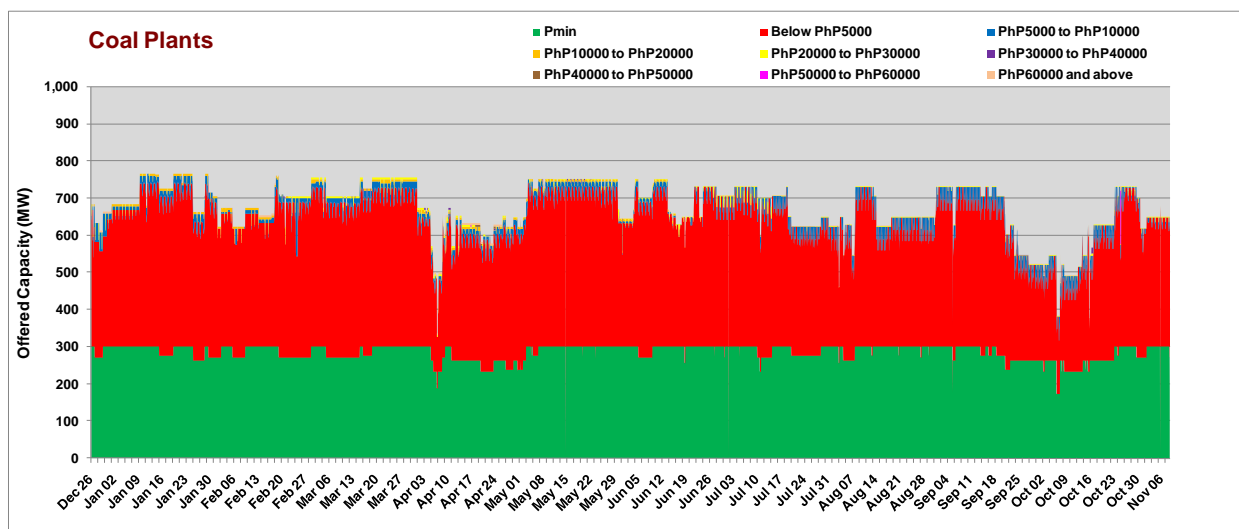
Figure 57. Coal Plants Offer Pattern - Luzon



Visayas coal plants had about 95 percent of their offered capacities priced at below PhP5,000/MW, while about 4 percent were priced between PhP5,000/MW to PhP10,000/MW. The remaining percentage were apportioned on prices ranging from above PhP10,000/MW to PhP60,000/MW.

A notable decline in the offered capacities of Visayas' coal plants was observed during the April and October billing months, coincident to the high incidence of outages of Visayas coal plants in said months.

Figure 58. Coal Plants Offer Pattern - Visayas

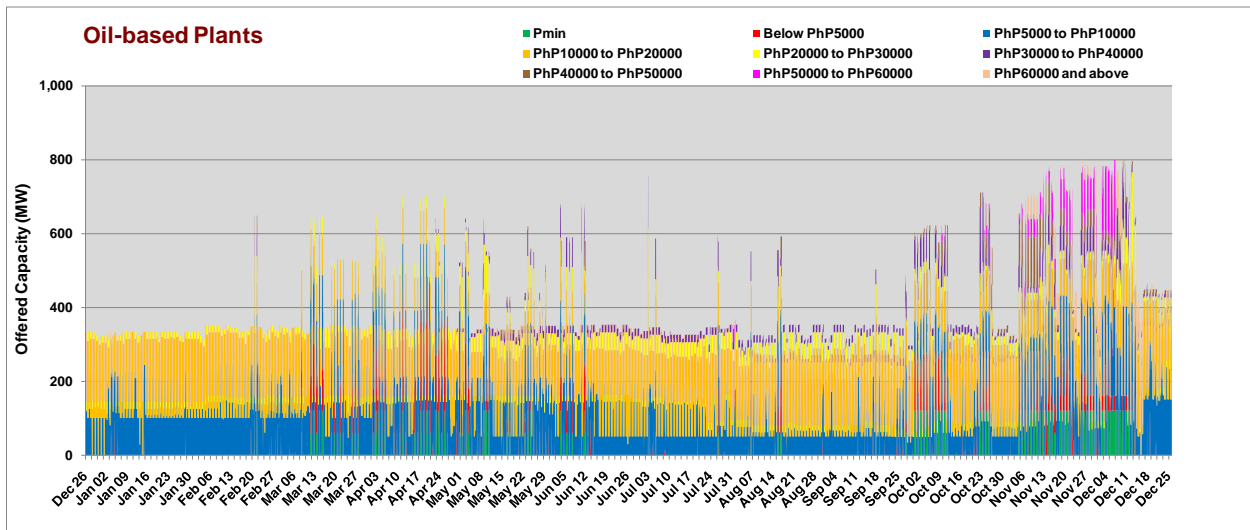


Oil-based plants remained to be the most expensive source of power among all plant types, as indicated by its high offer prices, and its dispatch could very well drive market prices upward. For the year 2013, about 64 percent of the offers submitted by oil-based plants in Luzon were priced between PhP5,000/MW to PhP20,000/MW. The next 11.5 percent were apportioned to prices ranging from PhP20,000/MW to PhP50,000/MW while about 1 percent were offers between PhP50,000/MW to PhP60,000/MW. It is significant to note that 15.85 percent of the offers were priced at above PhP60,000/MW. The remaining 7.8 percent were offers below PhP5,000/MW.

Nonetheless, it should be noted, that submission of offers by oil-based plants were limited all throughout the year, clearly manifested by its capacity factor level with only about 8 percent of its capacity net of outage scheduled in the market. However, as shown in the figure below, the level of capacity offered in the market by Luzon oil-based plants notably increased during the November and December billing months, when prices went exceptionally high as a result of the tight demand and supply condition in the market.

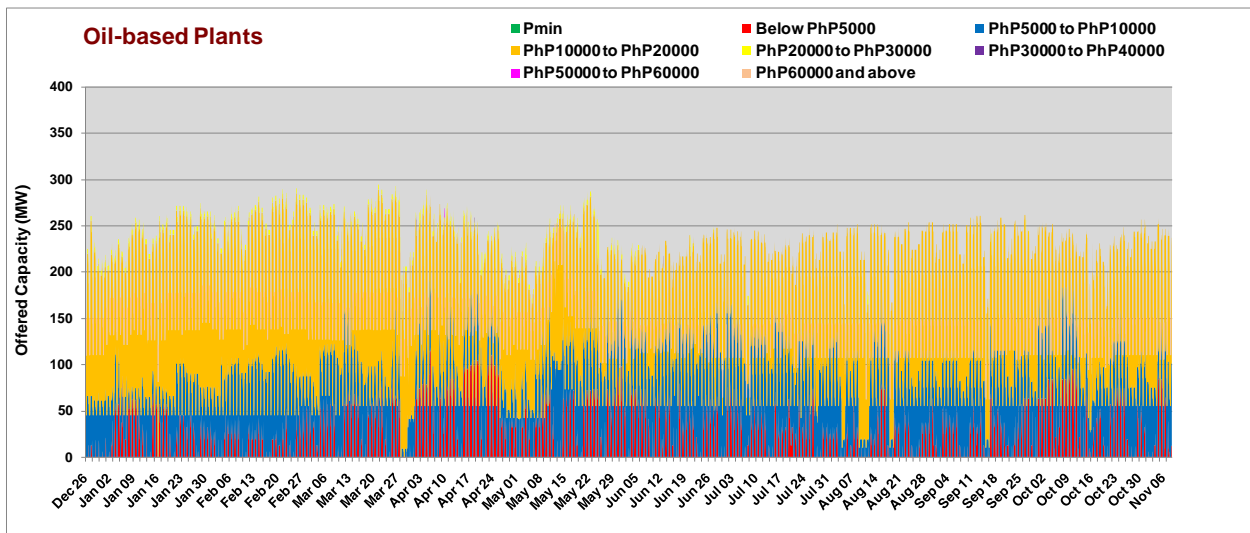
Correspondingly, offer prices of oil-based plants at above PhP40,000/MW rose to about 28 percent in November, and about 25 percent in December, from an average of 15.76 percent in the previous months. Notwithstanding the above high prices, 22 percent of its offers during the November billing month and 36 percent of its offers in December were scheduled for dispatch following the tight supply and demand condition prevailing during the period.

Figure 59. Oil-based Plants Offer Pattern - Luzon



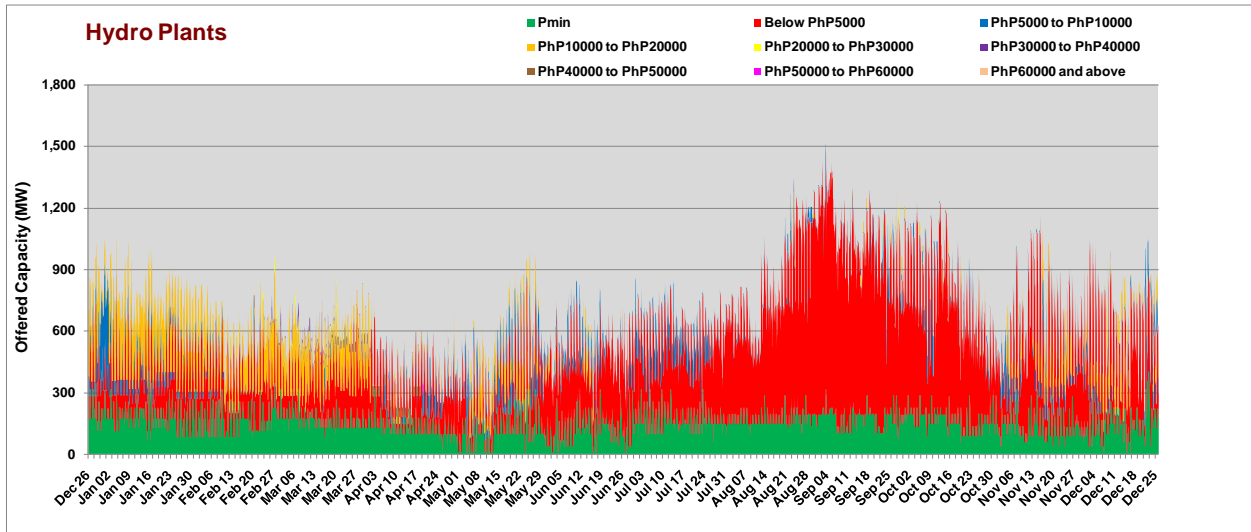
Similarly, a large percentage of the capacity offers from Visayas oil-based plants were priced higher than other resource types, as 60 percent of the offers were priced at above PhP10,000/MW. Offers were priced consistently within the same range throughout the year 2013 until 08 November 2013.

Figure 60. Oil-based Plants Offer Pattern - Visayas



The aggregate hourly offer pattern of hydro plants in Luzon was volatile in terms of capacity and price. Although still unpredictable, offered capacity notably rose during the second half of the year during the cooler weather months/rainy season, with about 83 percent of the capacity offers priced at below Php5,000/MW. On the other hand, about 16 percent of the offered capacity of hydro plants were priced between Php5,000/MW to Php20,000/MW and the relatively small portion, apportioned to offer prices ranging from Php20,000/MW to above Php60,000/MW.

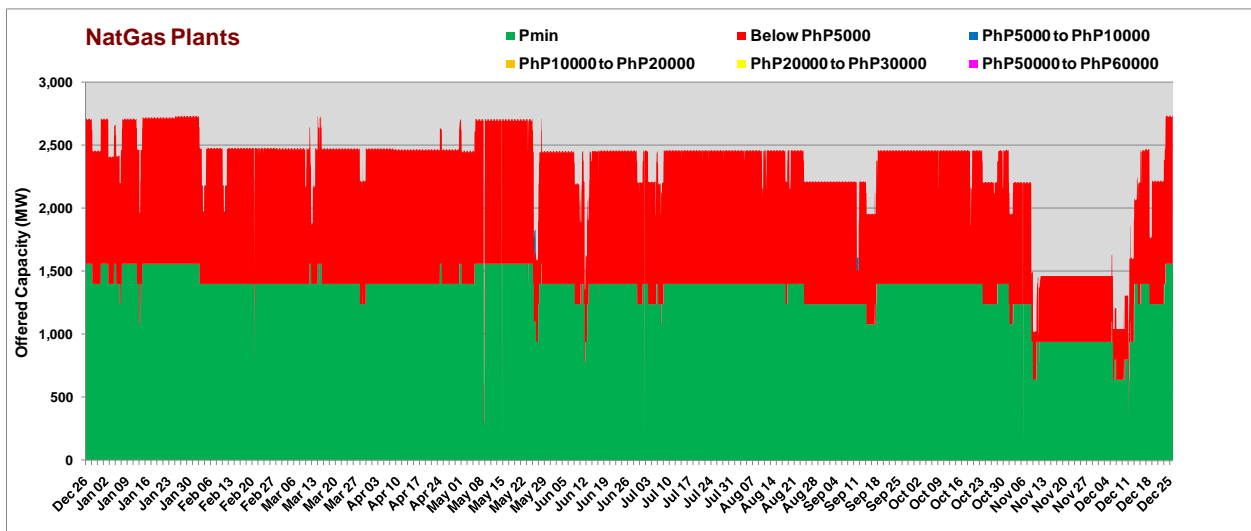
Figure 61. Hydro Plants Offer Pattern - Luzon



Another cheap source of power, about 100 percent of the offered capacities of natural gas plants were priced below PhP5,000/MW in 2013.

Noteworthy is the striking decline in the capacity offers of natural gas plants during the billing months of November and December as shown in the figure below. The same was on account of the maintenance shutdown of the Malampaya gas facility which affected the output of natural gas plants.

Figure 62. Natural Gas Plants Offer Pattern - Luzon



XI. CAPACITY FACTOR

The capacity factor of the generating plant is calculated to assess its performance in the market. The capacity factor (expressed in percent) is calculated as the ratio of a power plant's scheduled capacity in the market relative to its registered maximum capacity, registered less outage capacity, and maximum offered capacity.

As shown in the subsequent figures, the monthly capacity factor of generation facilities in Luzon show that the same varies depending on the energy resource type.

Among the different plant types, only natural gas plants consistently posted a high level of monthly capacity factor of above 73 percent in terms of utilization based on registered capacity, registered less outage capacity and offered capacity. The only notable variation was its lower utilization based on registered capacity during the billing months of November and December (61.3 percent and 61 percent, respectively), following the shutdown of the Malampaya gas platform from 11 November to 10 December 2013 which effectively limited the output of natural gas plants on said period. Nevertheless, the overall utilization of natural gas plants throughout the year indicates that this type of resource had fewer occurrences of outages, least capacity gaps, offered the most of their registered capacities, and had about 91 percent of its offered capacity dispatched in the market.

Geothermal plants had the highest capacity factor based on offered capacity, averaging more than 97 percent for the covered year except during the billing months of June, July and August which posted slightly lower capacity factors at 94 percent, 91 percent and 94 percent, respectively. It should be noted however, that as shown in the succeeding figures, the capacity factor of geothermal plants exceeded the 100 percent mark during the February billing month as well as from September to December, attributable to the designation of Bacman 1 and Bacman 2, respectively, as must-run-units (MRUs) during said periods. Monthly capacity factor based on registered capacity is relatively low, however, hovering at only about 44 percent.

Coal plants on the other hand, posted a monthly capacity factor ranging from a low of 48.2 percent to a high of 76 percent based on registered capacity, and a low of 62 percent to 84.31 percent based registered capacity net of outage. The lower capacity factor of coal plants when measured in terms of registered capacity can be attributed to the high level of outage capacity of coal plants in 2013. Coal plants nonetheless had a higher level of capacity factor in terms of offered capacity, averaging at about 86 percent in 2013, considering that its offers are priced relatively low and were thus utilized more efficiently than other resource types.

Capacity factors based on registered and net of outage capacity were lowest in the case of hydro plants, averaging only about 21 percent and 24 percent, respectively. Said low level of utilization indicates the limited submission of offers of hydro plants. On the other hand, higher level of capacity factor based on offered capacity, ranging from 58 percent to 95.53 percent, was noted for hydro plants for 2013, indicating that capacities of hydro plants, when offered, were generally dispatched in the market.

Oil-based plants recorded the lowest capacity factor among all plant types in Luzon ranging from a mere 0.62 percent to 19.32 percent when measured in terms of registered capacity and registered less outage capacity. Considering its high offer prices, the capacity factor of oil-based plants in terms of offered capacity mirrors the same trend, posting its utilization at an annual average of only 14.53 percent. Significant increases in the level of utilization were posted by oil-based plants during the billing months of April, May, November and December

at 36.8 percent, 36.2 percent, 22.01 percent and 36.05 percent, respectively, clearly manifesting the dispatch of the higher-priced oil-based plants due to the tight demand and supply prevailing on said months.

In the Visayas, geothermal plants recorded the highest monthly capacity factors in terms of registered and net of outage capacities as well as offered capacity. It is significant to note the remarkably high monthly capacity factor of geothermal plants based on offered capacity compared with the other resource types in the Visayas, indicating that geothermal capacities were dispatched most of the time when offered in the market. The same averaged about 97 percent throughout the year. It is noteworthy however, that the November billing month, incurred a decline in its capacity factor based on offered capacity at 91 percent due to its limited offer submission following the series of outages which occurred during said month.

Coal plants in the Visayas came next to geothermal plants in its capacity utilization in terms of registered capacity, registered net of outage and offered capacity, averaging about 74.3 percent, 81.3 percent and 85.19 percent, respectively; while oil-based plants maintained its low utilization averaging only 7.4 percent, 7.45 percent and 15.75 percent in terms of capacity factor based on registered, registered net of outage and offered capacities.

Figure 63. Capacity Factor - Luzon Natural Gas Plants

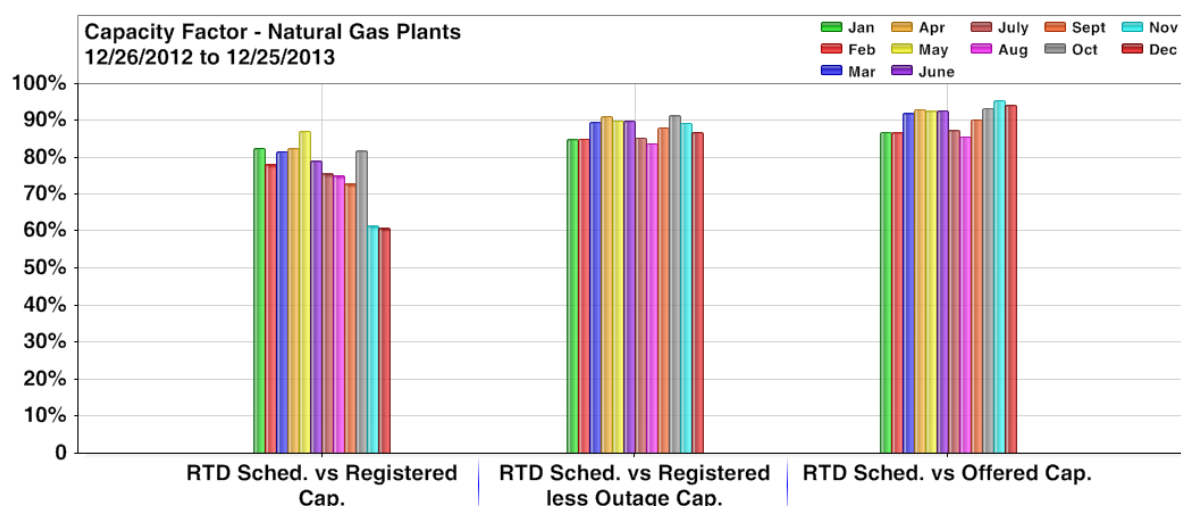


Figure 64. Capacity Factor - Luzon and Visayas Geothermal Plants

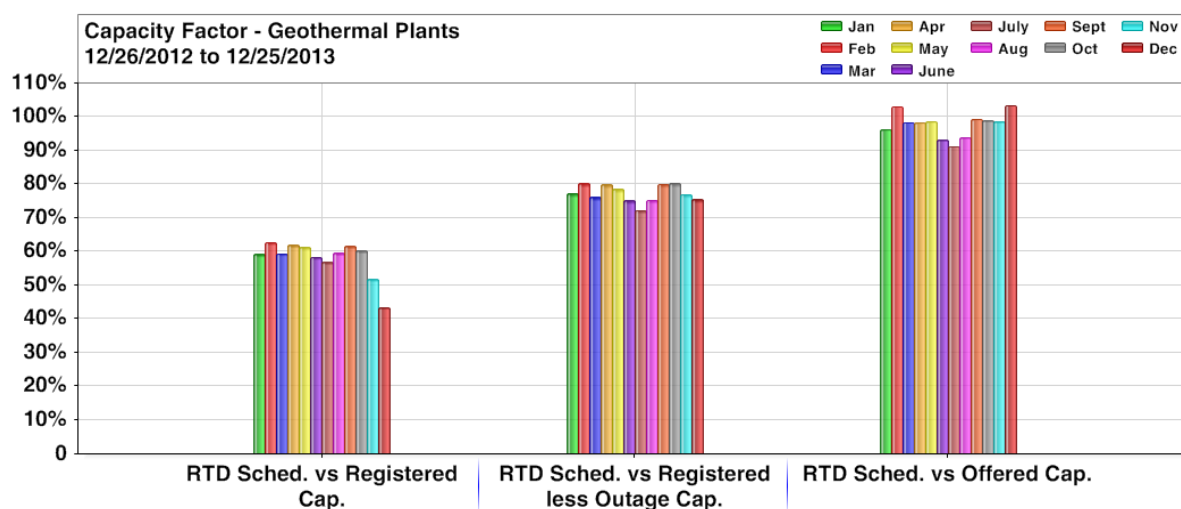


Figure 65. Capacity Factor - Luzon and Visayas Coal Plants

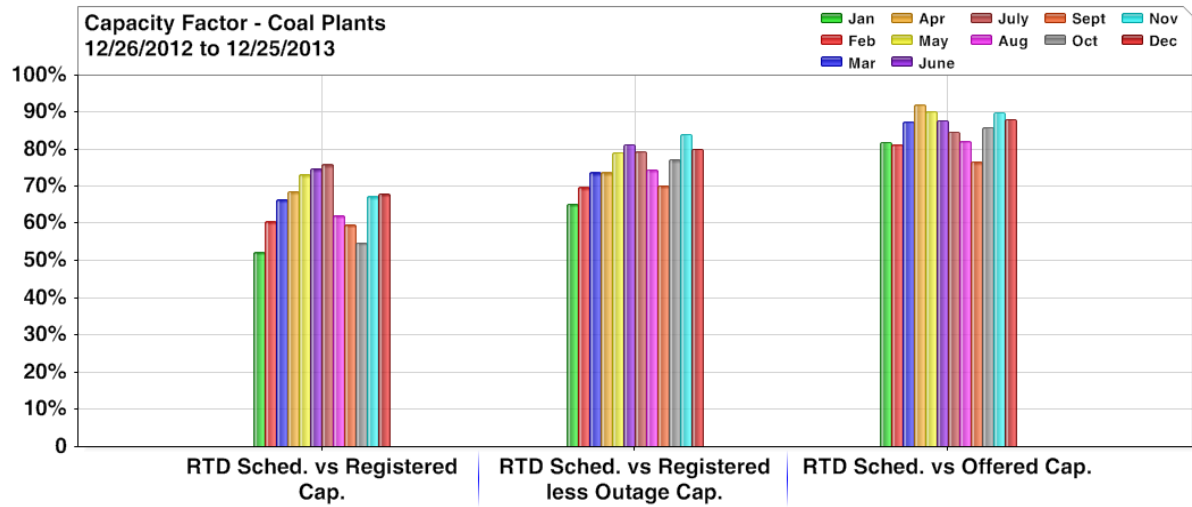


Figure 66. Capacity Factor - Luzon Hydro Plants

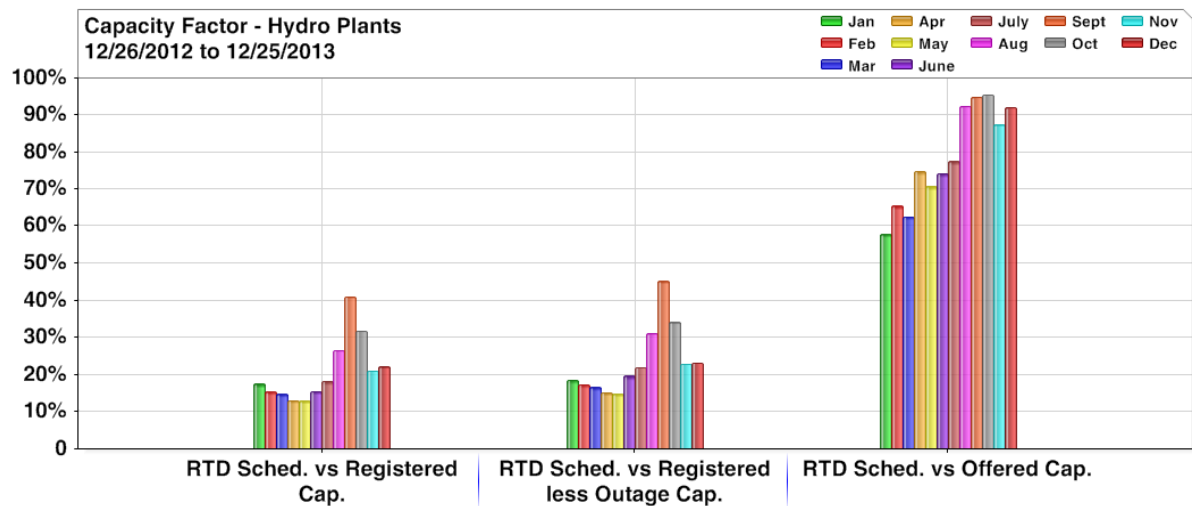


Figure 67. Capacity Factor - Luzon and Visayas Oil-based Plants

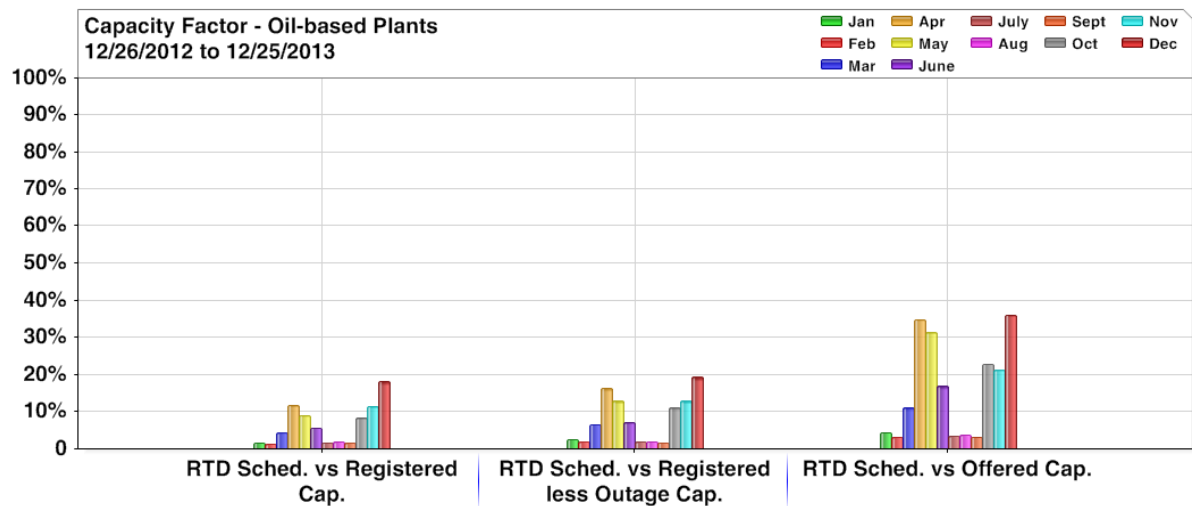


Table 67. Capacity Factor by Plant Type - Luzon

Plant Type	Capacity Factor (%) by Billing Month - Luzon, 2013												
	RTD Sched vs. Registered Cap												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
Coal	48.17	58.62	64.42	68.02	71.71	74.19	75.95	60.73	57.35	53.29	66.81	68.08	63.93
Nat Gas	82.46	78.18	81.56	82.43	87.08	78.98	75.57	75.08	72.89	81.72	61.39	60.79	76.46
Geo	44.48	53.32	43.04	46.12	44.71	39.72	35.66	40.50	47.34	42.00	42.66	43.32	43.60
Hydro	17.45	15.38	14.72	13.02	12.84	15.52	18.24	26.59	41.18	31.93	21.04	22.00	20.89
Oil-Based	0.81	0.62	3.50	11.11	8.73	5.15	0.88	1.24	0.78	7.24	12.13	18.19	5.84
Plant Type	RTD Sched. vs Registered less Outage Cap												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
Coal	61.93	68.02	72.27	72.19	77.90	80.97	79.27	73.90	68.76	76.51	84.31	80.09	74.76
Nat Gas	84.85	84.98	89.52	91.10	89.90	89.85	85.34	83.75	88.10	91.28	89.28	86.78	87.85
Geo	71.37	80.04	66.42	72.34	72.92	61.48	53.39	63.12	73.44	70.36	73.67	75.44	69.42
Hydro	18.61	17.35	16.61	15.16	14.80	19.68	22.07	31.19	45.29	34.14	22.95	23.21	23.62
Oil-Based	1.46	1.17	6.27	16.83	13.69	6.86	0.92	1.32	0.87	10.36	13.68	19.32	7.76
Plant Type	RTD Sched. vs Offered Cap												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
Coal	81.65	80.96	88.20	92.70	90.52	87.80	84.73	81.63	75.46	85.35	90.39	88.09	85.69
Nat Gas	86.92	86.66	91.90	93.00	92.51	92.64	87.27	85.67	90.21	93.35	95.41	94.15	90.58
Geo	98.59	118.78	99.22	98.31	97.98	84.04	78.60	89.41	102.45	100.86	104.80	103.33	97.89
Hydro	57.80	65.39	62.58	74.81	70.67	74.24	77.53	92.31	94.79	95.53	87.25	92.00	80.48
Oil-Based	2.37	1.86	9.97	36.77	36.18	16.60	1.70	2.41	1.56	21.00	22.01	36.05	14.53

Table 68. Capacity Factor by Plant Type - Visayas

	Capacity Factor (%) by Billing Month - Visayas, 2013											
Plant Type	RTD Sched vs. Registered Cap											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Annual Avg.
Coal	76.30	71.63	78.51	72.55	82.27	78.57	75.89	70.67	73.44	64.11	74.02	74.34
Geo	73.61	72.03	75.69	77.44	77.40	76.82	77.75	78.34	75.69	78.26	72.64	76.14
Oil-Based	4.82	3.21	7.25	14.70	10.34	7.67	4.84	4.28	4.66	12.88	5.28	7.36
Plant Type	RTD Sched. vs Registered less Outage Cap											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Annual Avg.
Coal	81.89	79.49	81.42	83.68	85.81	83.24	79.63	78.41	78.14	81.51	80.75	81.29
Geo	81.16	80.21	82.80	85.12	82.04	84.75	86.01	83.51	84.78	86.72	81.91	83.62
Oil-Based	4.94	3.26	7.39	15.06	10.48	7.76	4.85	4.30	4.67	13.06	5.30	7.45
Plant Type	RTD Sched. vs Offered Cap											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Annual Avg.
Coal	83.09	81.88	83.41	87.95	88.30	87.45	84.70	84.14	83.01	88.52	85.51	85.19
Geo	94.63	93.88	97.70	98.06	98.74	98.29	98.41	96.00	97.27	97.56	90.78	96.77
Oil-Based	10.16	6.24	14.02	30.12	21.61	17.94	11.09	9.74	10.17	29.03	11.47	15.75

XII. TRANSMISSION CONGESTION FREQUENCY INDICES

This section monitors the frequency of transmission congestions, which includes all the constraints and congestion in generator and load-side substations, transmission lines, and those encountered by the submarine cable.

A. Frequency of active constraints (Ex-ante)

Year 2013 saw consistently high occurrences of constraints, most particularly at the Zapote substation in Luzon, contributing 90 percent of the total occurrences of load-side transformer constraints in the region. Said constraints, which totals to 3,463 constraints in 2013 and averaged at about 288 for each billing month, were attributable

to the violation of the contingency (N-1) requirement on the Zapote 300MVA Transformer.

Occurrences of constraints were significantly fewer in the Visayas grid, and accounted for a mere 2 percent (85 constraints) of the total 3,917 constraints in both Luzon and Visayas. It is interesting to note that the constraints in the Visayas substations were due to base case constraints.

All in all, about 45 percent of the total ex-ante runs in 2013 was marred by constraints.

Table 69. Frequency of Constraints at Load-Side Transformers (Ex-Ante)

Region	Equipment	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Luzon	Cabanatuan 100MVA Transformer							1					2	3
	Concepcion 100MVA Transformer				1									1
	Dasmariñas 300MVA Transformer		4		1	3	10	18	1	20	3	21	14	95
	Doña Imelda (formerly Araneta) 300MVA Transformer		15											15
	Dolores 300MVA Transformer												6	6
	San Jose 750MVA Transformer				1									1
	San Manuel 600MVA Transformer							6	5					11
	Laoag 50MVA Transformer						4					3		7
	Makban 100MVA Transformer			9										9
	Muntinlupa (formerly Sucat) 300MVA Transformer												14	14
	Quezon (formerly Balintawak) 300MVA Transformer		77	84		3	4	1	1					170
	San Esteban 50MVA Transformer					4	1							5
	San Manuel 100MVA Transformer				8									8
	Santiago 50MVA Transformer					1								1
	Tuguegarao 40MVA Transformer				1		8	14						23
	Zapote 300MVA Transformer	283	255	366	344	344	319	318	227	276	272	217	242	3463
Sub-total (Luzon)		283	351	459	356	355	346	358	234	296	275	241	278	3832
Visayas	Babatngon 50MVA Transformer				1						2			3
	Cebu 100MVA Transformer	11	13	11	2	4	2	1	3	3	5			55
	Compostela 50MVA Transformer		2		1					1	1			5
	Mandaue 100MVA Transformer	5								1		2		8
	PEDC 20MVA Transformer											1		1
	Quilot 100MVA Transformer	1			4				2	2				9
	Talavera 30MVA Transformer						1							1
	Tongonan 7MVA Transformer										2	1		3
Sub-total (Visayas)		17	15	11	8	4	3	1	5	7	10	4	0	85
TOTAL		300	366	470	364	359	349	359	239	303	285	245	278	3917

In 2013, base case constraints at several generator substations were noted to have occurred 48 and 51 times in Luzon and Visayas.

Table 70. Frequency of Constraints at Generator Transformers (Ex-Ante)

Region	Equipment	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Luzon	Bacman 69/25MVA Transformer		1						1					2
	Bakun 44MVA Transformer						1			4				5
	Binga 37MVA Transformer											1		1
	Bauang 100MVA Transformer												2	2
	Makban B 69MVA Transformer	4	2	5	5	1	5			2		2	1	27
	Pantabangan 64MVA Transformer				1					1		1	4	7
	Tiwi C 69MVA Transformer										2	2		4
Sub-total (Luzon)		4	3	5	6	1	6	0	1	7	2	6	7	48
Visayas	CEDC 100MVA Transformer								1		1	1		3
	KSPC 100MVA Transformer											1		1
	PEDC 100MVA Transformer		1			2	2		1					6
	Palinpinon GPP 1 47MVA Transformer	1		7	3	1	2	4	2			4		24
	Palinpinon GPP 2 25MVA Transformer							1				2		3
	Tongonan 47MVA Transformer	4	3		1	5			1					14
Sub-total (Visayas)		5	4	7	4	8	4	5	5	0	1	8	0	51
TOTAL		9	7	12	10	9	10	5	6	7	3	14	7	99

Transmission lines in both regions were not without difficulties, as well, as indicated by the number of occurrences of constraints due to contingency and base case constraints. The same was noted to be greater during the billing months of October and May.

96 percent of the constraints on transmission lines occurred in Luzon.

Table 71. Frequency of Constraints at Transmission Lines (Ex-Ante)

Region	Equipment	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Luzon	Amadeo-Calaca 230kV Line	8	1		12	39	13	3			12			88
	Balintawak-San Jose 230kV Line										1			1
	Bauang-BPPC 230kV Line			20	53	3	1				8	2		87
	BCCP-Mariveles 230kV Line	6												6
	Biñan-Calaca 230kV Line					1								1
	Binga-San Manuel 230kV Line										20	26		46
	Bantay-San Esteban 115kV Line					3								3
	Botolan-Cawago 230kV Line										1			1
	BPPC-Kadampat 230kV Line										14			14
	Calauan-Makban A 230 kV Line			9	37	56	2	19	30	54	118	1	20	346
	Cruz Na Daan-Balintawak 230kV Line								1					1
	Dasmariñas-Amadeo 230kV Line				1									1
	San Manuel (EHV)-San Manuel (New) 230kV Tie-Line								5					5
	Labrador-Botolan 230kV Line										6			6
	Mexico-Cruz Na Daan 230kV Line								1					1
	San Manuel (New)-San Manuel (Old) 230kV Tie-Line							7						7
	Sta. Rosa-Calaca 230kV Line					33		7	11					51
Sub-Total (Luzon)		14	1	29	103	135	16	36	48	54	180	29	20	665
Visayas	Amlan-Mabinay 138kV Line										7			7
	Kabankalan-Bacolod 138kV Line				6		1							7
	Quiot-New Naga 138kV Line					1						10		11
	Toledo-New Naga 138kV Line					1					1			2
	Calung-Calung-Toledo 138kV Line	1										1		2
Sub-Total (Visayas)		1	0	0	6	2	1	0	0	0	8	11	0	29
TOTAL		15	1	29	109	137	17	36	48	54	188	40	20	694

Constraints at the Visayas submarine cables likewise occurred in 2013, particularly at the Negros-Panay HVDC submarine cable which consistently experienced constraints throughout the year. These may have resulted from the maximization of the transfer capabilities of the HVDC lines which in turn, resulted in price separations.

Table 72. Frequency of Constraints at Submarine Cable (Ex-Ante)

Region	Equipment	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Visayas	Leyte-Cebu Submarine Cable	1						5	11	15	1		5	38
	Cebu-Negros Submarine Cable		3		5		44	72	2	10	2	2	5	145
	Negros-Panay Submarine Cable	80	69	8	12	70	60	37	81	140	25	10	15	607
TOTAL		81	72	8	17	70	104	114	94	165	28	12	25	790

B. Frequency of active constraints (Ex-post)

Occurrence of constraints at the load-side substations were noted to be significantly lower in the ex-post than in the ex-ante, as shown in the table below. Considering that N-1 contingency is no longer imposed in the ex-post run, all occurrences were on account of base case constraints.

Table 73. Frequency of Constraints at Load-Side Substations (Ex-Post)

Region	Equipment	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Luzon	Batangas 100MVA Transformer				1									1
	Cabanatuan 100MVA Transformer				4			2					1	7
	Caliraya 50MVA Transformer											1		1
	Concepcion 100MVA Transformer				2									2
	Laoag 50MVA Transformer					1	5					6		12
	Makban 100MVA Transformer			9										9
	Quezon (formerly Balintawak) 300MVA Transformer						1		1					2
	San Esteban 100/50MVA Transformer					4	1							5
	San Manuel 100MVA Transformer				9									9
	Tuguegarao 40MVA Transformer				1		13	15	1					30
Sub-total (Luzon)		0	0	9	17	5	20	17	2	0	0	7	1	78
Visayas	Cebu 100MVA Transformer	2	15	3	1	4	1		1	2				29
	Compostela 50MVA Transformer		1								1			2
	Lapu-lapu							1						1
	Maasin 10MVA Transformer				1						1			2
	Mandaue 100MVA Transformer									1		1		2
	Nabas 50MVA Transformer							1						1
	Naga 65MVA Transformer							1						1
	PEDC 20MVA Transformer											1		1
	Quiot 100MVA Transformer				5			2						7
	Sigpit 40MVA Transformer							1						1
	Talavera 30MVA Transformer					1	1							2
Sub-total (Visayas)		2	16	3	7	5	2	6	1	3	2	2	0	49
TOTAL		2	16	12	24	10	22	23	3	3	2	9	1	127

Constraints at generator substations continued to occur during ex-post runs, affecting a total of 92 trading intervals.

Table 74. Frequency of Constraints at Generator Substations (Ex-Post)

Region	Equipment	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Luzon	Bacman 25MVA Transformer								1					1
	Bakun 44MVA Transformer						1		1	3				5
	Binga 37MVA Transformer											2		2
	Ilijan 522MVA Transformer					1								1
	Makban B 69MVA Transformer	4		3	4	2	2	1		1		2	1	20
	Pantabangan 64MVA Transformer	2											2	4
	Tiwi C 69MVA Transformer										3	1		4
Sub-total (Luzon)		6	0	3	4	3	3	1	2	4	3	5	3	37
Visayas	CEDC 100MVA Transformer								2		4	3		9
	KSPC 100MVA Transformer							1				1		2
	PEDC 100MVA Transformer					2	3							5
	Palinpinon GPP 1 47MVA Transformer	2		6	4		3	4	2			5		26
	Tongonan 47MVA Transformer	6	3		1	2		1						13
Sub-total (Visayas)		8	3	6	5	4	6	6	4	0	4	9	0	55
TOTAL		14	3	9	9	7	9	7	6	4	7	14	3	92

The frequency of constraints at both Luzon and Visayas transmission lines remarkably decreased during the ex-post runs, occurring in a total of only 45 trading intervals, attributable to the removable of the N-1 contingency as a constraint in the ex-post process.

Table 75. Frequency of Constraints at Transmission Lines (Ex-Post)

Region	Equipment	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Luzon	Bauang-BPPC 230kV Line			3	3									6
	BCCP-Mariveles 230kV Line	4												4
	Binga-San Manuel 230kV Line											1		1
	Bantay-San Esteban 115kV Line					3								3
	Calauan-Makban A 230 kV Line									1			2	3
	Dasmariñas (EHV)-Dasmariñas 230kV Line					1								1
	Mexico-Cruz Na Daan 230kV Line										1			1
	Tayabas (EHV)-Tayabas 230kV Line	1												1
Sub-total (Luzon)		5	0	3	3	4	0	0	0	1	1	0	3	20
Visayas	Amlan-Mabinay 138kV Line										8			8
	Mandaue-Lapu-lapu 138kV Line							1						1
	Quiot-New Naga 138kV Line				1	2				1		8		12
	Calung-Calung-Toledo 138kV Line	3						1						4
Sub-total (Visayas)		3	0	0	1	2	0	2	0	1	8	8	0	25
TOTAL		8	0	3	4	6	0	2	0	2	9	8	3	45

Several constraints were noted to have occurred, most especially at Negros-Panay Sub-Cable (as in the case in the ex-ante) during the ex-post process. Although, said occurrences were slightly fewer at 723 trading intervals.

Table 76. Frequency of Constraints at Submarine Cable (Ex-Post)

Region	Equipment	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Visayas	Leyte-Cebu Submarine Cable	1				16		3	21	12	1		1	55
	Cebu-Negros Submarine Cable	2	17		6	2	72	86	3	24		1	1	214
	Negros-Panay Submarine Cable	51	29	3	11	49	42	28	86	102	29	9	15	454
TOTAL		54	46	3	17	67	114	117	110	138	30	10	17	723

XIII. OVER-RIDING CONSTRAINTS

This section highlights the results of the monitoring of over-riding constraints imposed on generators in 2013.

Over-riding constraints, as defined in the WESM Rules¹³, are constraints imposed in the market dispatch optimization model (MDOM) by the Market Operator (MO), at the recommendation of the System operator (SO), with the intention of over-riding the effect of a Trading Participant's (TPs) offers or demand bids. Note that the categories of the over-riding events as presented in this Report are based on data and information provided by SO.

A total of 13,984 constraints¹⁴ were imposed on generators in 2013, 95 percent of which (13,869 events) were on account of the impositions made on the generators in Luzon. The remaining 115 events (5 percent) were constraints imposed on Visayas generators.

¹³ WESM Rules, Chapter 11 (Glossary)

¹⁴ The monitoring of the over-riding constraints on generators is done on a per generator trading node per trading interval. A constraint imposed on a generator trading node on a particular trading interval is considered as one **over-riding event**. The monitoring of the over-riding constraints is based on the data and information provided by MO (i.e. real time market results and MMS-input files on security limits) and SO (i.e. SO Data for Market Monitoring).

About 85 percent of the above total imposition arose from the designation of Must-Run-Units (MRUs) by the SO, while the remaining 13.4 percent and 1.6 percent were due to security limit and line limitation, respectively.

Table 77. Summary of Over-riding Events by Category - Luzon

Category	Jan 2013	Feb 2013	Mar 2013	Apr 2013	May 2013	Jun 2013	Jul 2013	Aug 2013	Sep 2013	Oct 2013	Nov 2013	Dec 2013
Line Limitation		40		68	8		34	12	9	48		
Generator Limitation												
Reserve Limitation												
Security Limit	335	634	88	145	52	75	87	44	47	45	81	142
Must Run Unit	511	823	700	1456	1060	1374	1087	788	837	989	973	1277
Total	846	1497	788	1669	1120	1449	1208	844	893	1082	1054	1419

Table 78. Summary of Over-riding Events by Category - Visayas

Category	Jan 2013	Feb 2013	Mar 2013	Apr 2013	May 2013	Jun 2013	Jul 2013	Aug 2013	Sep 2013	Oct 2013	Nov 2013	Dec 2013
Line Limitation												
Generator Limitation												
Reserve Limitation												
Security Limit		9				2	2		78	9		
Must Run Unit		1	14									
Total	0	10	14	0	0	2	2	0	78	9	0	0

In Luzon, 1,775 events were categorized under security limit, majority of which were attributed to the start-up profile and shutdown profile activities of some generators in the region as they shutdown or started to resume operations following their respective outages (forced, planned and unplanned). The billing months of February and January registered the highest number of security limit events for the year at 634 and 335 events, respectively.

On the other hand, 100 security limit events were noted in the Visayas in 2013, the highest of which were posted (78 events) in September following the imposition of security limit on Tongonan (Leyte) GPP at 37 MW, lower than the generator's registered Pmin of 51 MW.

Table 79. Summary of Security Limit-Related Events - Luzon

Reasons for Security Limit	Jan 2013	Feb 2013	Mar 2013	Apr 2013	May 2013	Jun 2013	Jul 2013	Aug 2013	Sep 2013	Oct 2013	Nov 2013	Dec 2013
Available capacity test				13								
Commissioning test											18	
Fuel change-over											2	6
Generator Concern								10	12			
Internal ancillary test												
Line/equipment outage												
Line maintenance												
Load testing											1	9
Malampaya-related concern					3				14			
NDC test												
Others									2			
Pre-NDC test							44					
Safety valve test												12
Security limit schedule	291	581	72									
Shutdown profile	16	4	4		14		8	4	4	8	8	7
Start up profile	28	49	12	53	35	12	35	30	15	37	49	108
Turbine performance test				79		63						
Vibration testing and calibration											3	
No Remarks												
Total	335	634	88	145	52	75	87	44	47	45	81	142

Table 80. Summary of Security Limit-Related Events - Visayas

Reasons for Security Limit	Jan 2013	Feb 2013	Mar 2013	Apr 2013	May 2013	Jun 2013	Jul 2013	Aug 2013	Sep 2013	Oct 2013	Nov 2013	Dec 2013
Available capacity test												
Commissioning test												
Fuel change-over												
Generator Concern									76			
Internal ancillary test												
Line/equipment outage												
Line maintenance												
Load testing												
Malampaya-related concern												
NDC test												
Others							2		2			
Pre-NDC test												
Safety valve test												
Security limit schedule		4										
Shutdown profile										2		
Start up profile		5				2				7		
Turbine performance test												
Vibration testing and calibration												
No Remarks												
Total	0	9	0	0	0	2	2	0	78	9	0	0

As previously mentioned, the bulk of the over-riding constraints in Luzon (11,875 events) were due to the designation of generators as MRUs, majority of which were attributable to commercial operation requirement (10,453 events) followed by system voltage requirement (747 events), inadequate reserve level (490 events), and regulatory requirement (167 events).

Some of the more frequent impositions were as follows: on Malaya 1 and 2, which consistently figured as an MRU-designated generator throughout the year due to system voltage requirement, inadequate reserve level and conduct of various commercial tests; on several occasions, Limay A & B, likewise on account of inadequate reserve level and various commercial tests; on hydro plants Binga, Magat, Kalayaan, Casecnan and Pantabangan as well as coal plants Pagbilao 1 & 2 and Masinloc 1 & 2 in the conduct of ancillary certification tests; on San Lorenzo 1 and Sta. Rita 1-4 due to the conduct of NDC tests. GN Power 1 & 2 were also noted to have been designated as MRU due to regulatory requirements in the June and July billing months.

It is however significant to note that the majority of the MRU events under the criteria of commercial operation requirement were attributed to the conduct of commissioning tests. The same comprised 9,314 events in 2013.

Petron, which commenced WESM registration on 13 March, was scheduled as MRU for the whole billing month of April and on several occasions until May 2013; GN Power 1 & 2, from January to June; Bacman 2, consistently across all billing months from 31 May up to the end of the year; consistently in various incidents, Therma Mobile 1, 2 & 3 from its WESM registration on 12 April and Therma Mobile 4 from 20 May up until the November billing month; and in various instances, Sta Rita 1-4.

Some exceptions include the commissioning tests conducted by Maibarara during the November billing month, which was categorized by the SO under security limit and not as an MRU event.

It is noteworthy that on top of the MRU designations prior to real-time, there were MRU plants designated in real-time. During the September billing month, for example, a total of 398 events were noted in the Visayas though there were no scheduled MRU plants. The same follows the NGCP-SO's re-dispatch of generating plants as MRUs during real-time in

the said billing month, to address system voltage requirement, thermal limits of transmission lines/equipments, inadequate reserve level and system test of facility/equipment.

The summary of MRU-related events per Incident per region is shown in the next succeeding tables.

Table 81. Summary of MRU-Related Events - Luzon

MRU Criteria	Jan 2013	Feb 2013	Mar 2013	Apr 2013	May 2013	Jun 2013	Jul 2013	Aug 2013	Sep 2013	Oct 2013	Nov 2013	Dec 2013
System Voltage Requirement				249	312	186						
Thermal Limits				18								
Inadequate Reserve Level		3	4	81	5	4						393
Commercial Operation Requirement	511	820	696	1108	743	1033	1071	788	837	989	973	884
Regulatory Requirement						151	16					
Total	511	823	700	1456	1060	1374	1087	788	837	989	973	1277

Table 82. Summary of MRU-Related Events - Visayas

MRU Criteria	Jan 2013	Feb 2013	Mar 2013	Apr 2013	May 2013	Jun 2013	Jul 2013	Aug 2013	Sep 2013	Oct 2013	Nov 2013	Dec 2013
System Voltage Requirement												
Thermal Limits												
Inadequate Reserve Level												
Commercial Operation Requirement		1	14									
Regulatory Requirement												
Total	0	1	14	0	0	0	0	0	0	0	0	0

Table 83. Summary of MRU-Related Events per Incident - Luzon

MRU Incident	Jan 2013	Feb 2013	Mar 2013	Apr 2013	May 2013	Jun 2013	Jul 2013	Aug 2013	Sep 2013	Oct 2013	Nov 2013	Dec 2013
AGC test				4		7						
Ancillary test	21	4				18	60		52	18	26	
Capacity test				16		7	8		11	4	24	
Combustion test												
Commissioning test	233	807	507	1085	734	915	871	737	769	940	903	813
Data gathering												
Dependable capacity test												
Differential protection test	4											
Electrostatic precipitator and stack sampling test												
Emission test			5									
Equipment test												6
Fuel gas tuning												2
Full load test				3								
GT optimization						2						
Heat rate test										27	16	
LFRR/Commissioning												1
Load ramp-up												2
Load test												6
Load rejection test						2	3		1			
Load variation test												
NCC test	54								4			48
NDC test	131						129	51				6
Opacity Monitoring System Test			168									
Performance test	68	9	16			82					4	
Performance and capability test					9							
Preliminary performance test												
RATA test												
Reliability test												
Stack emission test												
No Remarks												
Total	511	820	696	1,108	743	1,033	1,071	788	837	989	973	884

The geothermal generators accounted for 5,958 over-riding events in Luzon, or 43% of the total impositions in Luzon, majority of which were attributed to the conduct of commissioning tests by Bacman 2 throughout the year from 31 May. Oil-based plants came in next at 27 percent with 3,784 events, on account of the consistent designation of Malaya 1 & 2 as must-run-units across all the billing months as well as the conduct of commissioning tests by Therma Mobile 1-4 which went-on from 12 April until the November billing month.

In the Visayas, 77 out of the 115 events (67 percent) were attributable to the geothermal generators followed distantly by coal generators with 32 events (28 percent).

Table 84. Summary of Over-riding Events by Plant Type - Luzon

Plant Type	Jan 2013	Feb 2013	Mar 2013	Apr 2013	May 2013	Jun 2013	Jul 2013	Aug 2013	Sep 2013	Oct 2013	Nov 2013	Dec 2013
Coal	136	122	283	267	238	194	103	50	32	56	34	88
Geothermal	75	743	197	79		563	712	732	736	720	743	658
Hydro	75			24		28	35	7	80	22	18	70
Natural Gas	227	44	111	79	65	123	200	50	45	36	37	198
Oil-based	36	7	125	1220	817	541	158	5		248	222	405
Biofuel	297	581	72									
Total	846	1497	788	1669	1120	1449	1208	844	893	1082	1054	1419

Table 85. Summary of Over-riding Events by Plant Type - Visayas

Plant Type	Jan 2013	Feb 2013	Mar 2013	Apr 2013	May 2013	Jun 2013	Jul 2013	Aug 2013	Sep 2013	Oct 2013	Nov 2013	Dec 2013
Coal		6	14			2				1	9	
Geothermal									77			
Hydro												
Natural Gas												
Oil-based		4					2					
Biofuel												
Total	0	10	14	0	0	2	2	0	78	9	0	0

XIV. SPOT MARKET EXPOSURE

The spot market exposure is the difference between the total energy transacted in the market and the bilateral contract quantity (BCQ). This measures the extent by which trading participants are exposed to the hourly spot price volatility in the market.

A. Generator

The generator's spot market exposure is equivalent to the percentage of energy injected not covered by bilateral contracts. System-wide, the Figure below shows that an average of about 14.5 percent of the total volume of energy injected to the system was not contracted and about 85.5 percent was covered by bilateral contracts. Such strategy from the generators, which accounts for more than 80 percent of their capacity to be covered by bilateral contract is a means to reduce exposure from the volatility of prices in the spot market and thus mitigate potentially significant financial risks.

The figure below indicates that there was notable increase in the spot market transaction of generators during the April and May billing months as well as the last quarter of 2013. From an average spot volume of only 14.3 percent during the first quarter of the year, the spot volume of generators rose significantly to 17.5 percent and 16.8 percent, respectively, in April and May. The same trend was similarly observed during the last quarter of 2013 when the monthly spot transaction of generators increased to 17.5 percent, 15.3 percent and 16.8 percent from an average level of spot volume of only 11.70 percent from June to September. It is observed that the high exposure months of generators as above-mentioned coincide with the same billing months marked with tight demand and supply conditions as well as high market prices.

Year-on-year comparison indicates that system-wide spot exposure of generators increased from an average of about 12 percent in 2012, marked by the corresponding increase in the volume of spot transactions from 598,426 MWh in the previous year to 732,492 MWh in 2013.

Figure 68. Generator's Spot Market Exposure - System

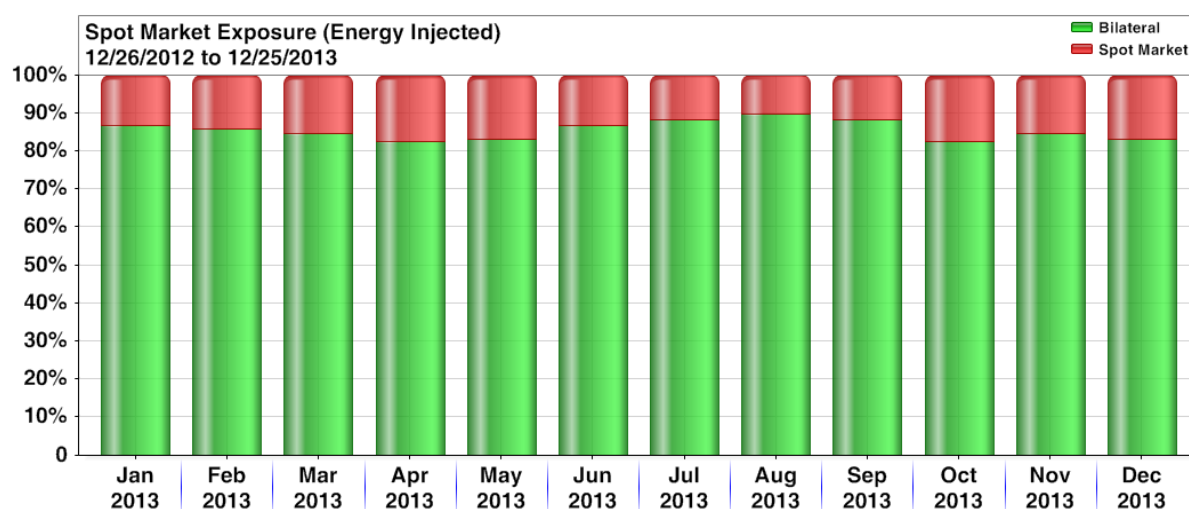


Table 86. Generators' Spot Market Exposure - System

Generators' Spot Exposure by Billing Month - System, 2013													
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
Metered Qty (MWh)	4,646,634	4,874,544	4,672,648	5,425,232	5,428,707	5,472,687	5,227,668	5,074,594	5,218,864	5,000,521	4,898,566	4,820,296	5,063,413
Bilateral Qty (MWh)	4,024,778	4,185,831	3,950,915	4,474,806	4,515,573	4,754,372	4,614,300	4,550,111	4,611,400	4,127,322	4,148,637	4,013,010	4,330,921
Spot Market Qty (MWh)	621,856	688,713	721,732	950,426	913,135	718,315	613,368	524,484	607,463	873,199	749,929	807,287	732,492
Bilateral (%)	86.62	85.87	84.55	82.48	83.18	86.87	88.27	89.66	88.36	82.54	84.69	83.25	85.53
Spot Market (%)	13.38	14.13	15.45	17.52	16.82	13.13	11.73	10.34	11.64	17.46	15.31	16.75	14.47

Table 87. Year-on-Year Comparison of Generators' Spot Market Exposure - System

Year-on-Year Comparison of Generators' Monthly Spot Market Exposure, System, 2013-2012													
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
2013 (%) Spot Exposure	13.38	14.13	15.45	17.52	16.82	13.13	11.73	10.34	11.64	17.46	15.31	16.75	14.47
2012 (%) Spot Exposure	10.52	9.95	13.35	11.15	12.10	12.36	16.15	10.23	12.37	12.37	12.62	13.76	12.26
Y-Y (%) Change	2.86	4.18	2.09	6.37	4.72	0.76	(4.42)	0.10	(0.73)	5.09	2.69	2.98	2.21

On a regional basis, about 13.5 percent of the total volume of energy injected by Luzon generators was not covered by bilateral contracts (an average of 578,502 MWh in spot transactions out of its metered quantity averaging at 4,276,276 MWh in 2013). The same trend mirrors the spot market exposure of generators, system-wide. The significant increase in the spot market volume of Luzon generators during the April, May, October, November and December billing months was similarly observed for the generators in Luzon.

Year-on-year comparison indicates a 37 percent increase in the average volume of spot transaction of Luzon generators in 2013 (422,346 MWh out of the total volume averaging at 4,072,637 MWh in 2012). Only 10.4 percent of the total energy injected in Luzon was sold in the spot market in the previous year, while the remaining 89.6 percent was covered by supply contracts.

Figure 69. Luzon Generator's Spot Market Exposure

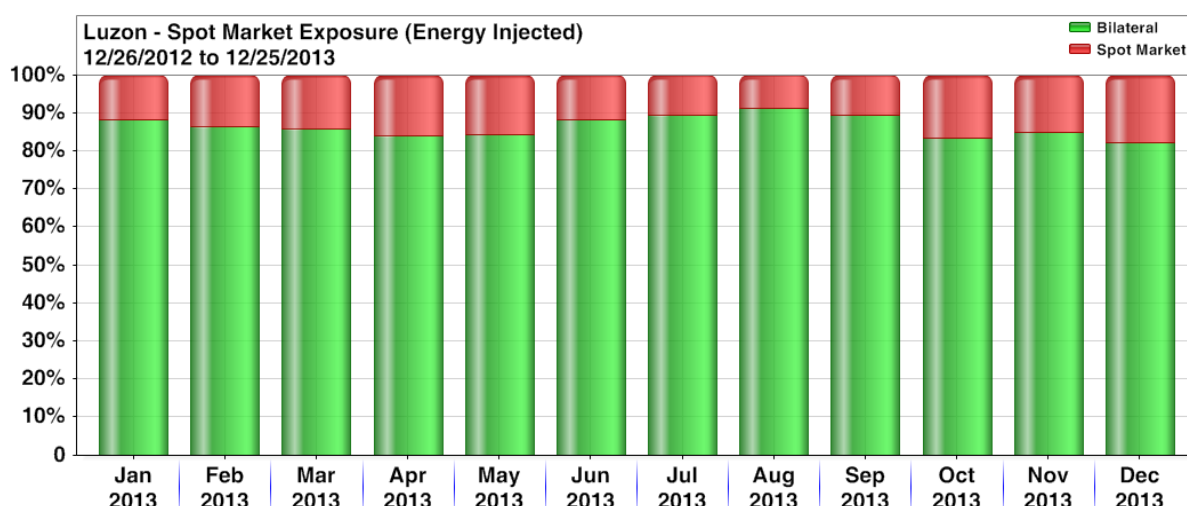


Table 88. Generators' Spot Market Exposure - Luzon

Generators' Spot Exposure by Billing Month - Luzon, 2013													
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
Metered Qty (MWh)	3,807,306	4,080,198	3,894,383	4,558,257	4,563,356	4,606,110	4,420,029	4,265,704	4,406,351	4,207,891	4,259,757	4,245,969	4,276,276
Bilateral Qty (MWh)	3,364,785	3,524,166	3,337,632	3,826,025	3,848,272	4,065,301	3,947,869	3,891,858	3,943,116	3,512,337	3,619,908	3,492,021	3,697,774
Spot Market Qty (MWh)	442,521	556,033	556,751	732,232	715,084	540,809	472,160	373,846	463,235	695,554	639,850	753,948	578,502
Bilateral (%)	88.38	86.37	85.70	83.94	84.33	88.26	89.32	91.24	89.49	83.47	84.98	82.24	86.47
Spot Market (%)	11.62	13.63	14.30	16.06	15.67	11.74	10.68	8.76	10.51	16.53	15.02	17.76	13.53

Table 89. Year-on-Year Comparison of Generators' Spot Market Exposure - Luzon

Year-on-Year Comparison of Generator's Monthly Spot Market Exposure - Luzon, 2013-2012													
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
2013 (%) Spot Exposure	11.62	13.63	14.30	16.06	15.67	11.74	10.68	8.76	10.51	16.53	15.02	17.76	13.53
2012 (%) Spot Exposure	8.58	7.78	10.57	8.50	9.55	9.15	13.66	9.43	12.10	11.80	10.98	12.22	10.37
Y-Y (%) Change	3.04	5.85	3.73	7.56	6.12	2.59	(2.98)	(0.66)	(1.59)	4.73	4.04	5.54	3.16

Spot exposure of Visayas generators was higher than that of Luzon's 13.5 percent, averaging at about 19.5 percent of its total volume of energy transacted (an average of 154,000 MWh in spot transactions out of its total average volume of 787,137 MWh in 2013). Monthly spot volume ranges from 17 percent to 25 percent, except for the December billing month, which posted the generators' spot exposure at only 9.3 percent. On the other hand, the highest recorded spot exposure of Visayas generators was during the month of April at 25.2 percent. It is important to note that the Visayas market was still under market suspension in December, and as such, spot exposure of Visayas generators during the period was settled in the market using the applicable administrative price, following the ERC's declaration of partial market suspension in the region from 08 November to 25 December 2013.

The volume of energy transacted by Visayas generators was lower by 2.69 percent in 2012 from an average volume of 808,884 MWh to 787,138 MWh. Spot transactions likewise averaged at 176,079 MWh in 2012, 12.6 percent higher than the spot volume level posted by Visayas generators in 2013. Following said decline, the level of spot volume likewise decreased from 22 percent in the previous year to 2013's 19.6 percent. Much of the decline is attributable to the sharp decrease in the level of energy transacted by Visayas generators in December and November. From an average spot volume posted in 2012 at 170,211 MWh and 173,370 MWh, energy transactions in the spot market decreased by 35.3 percent and 69.2 percent to 110,080 MW and 53,339 MWh, respectively, during said months in 2013.

Figure 70. Visayas' Generators Spot Market Exposure

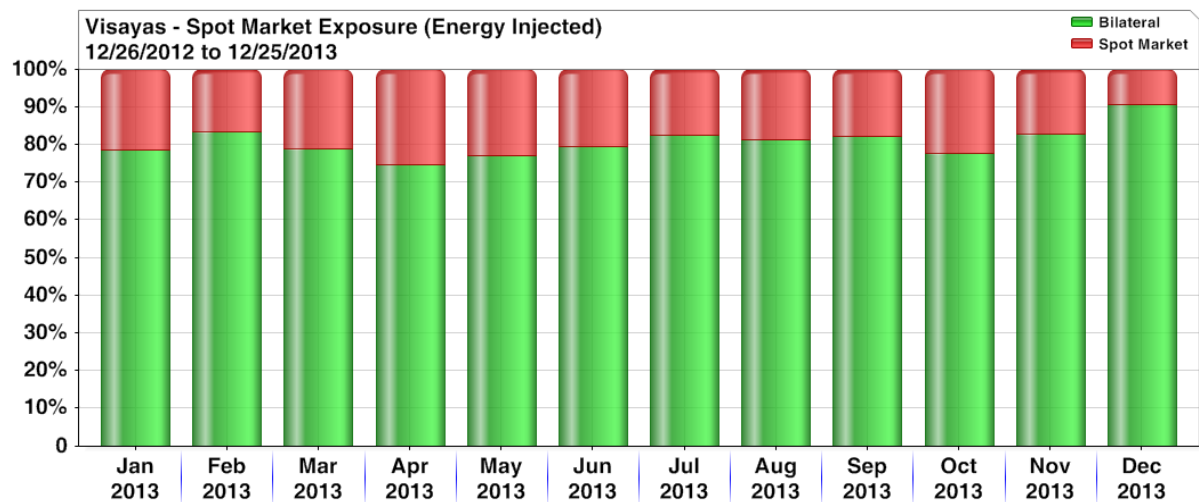


Table 90. Generators' Spot Market Exposure - Visayas

	Generators' Spot Exposure by Billing Month - Visayas, 2013												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
Metered Qty (MWh)	839,327	794,346	778,265	866,976	865,351	866,577	807,639	808,890	812,513	792,630	638,808	574,327	787,138
Bilateral Qty (MWh)	659,993	661,666	613,284	648,781	667,301	689,071	666,431	658,253	668,284	614,986	528,729	520,988	633,147
Spot Market Qty (MWh)	179,334	132,680	164,981	218,194	198,051	177,506	141,209	150,638	144,229	177,644	110,080	53,339	153,990
Bilateral (%)	78.63	83.30	78.80	74.83	77.11	79.52	82.52	81.38	82.25	77.59	82.77	90.71	80.44
Spot Market (%)	21.37	16.70	21.20	25.17	22.89	20.48	17.48	18.62	17.75	22.41	17.23	9.29	19.56

Table 91. Year-on-Year Comparison of Generators' Spot Market Exposure - Visayas

	Year-on-Year Comparison of Generators' Monthly Spot Market Exposure - Visayas, 2013-2012												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
2013 (%) Spot Exposure	21.37	16.70	21.20	25.17	22.89	20.48	17.48	18.62	17.75	22.41	17.23	9.29	19.56
2012 (%) Spot Exposure	19.47	20.51	27.51	24.33	25.26	27.77	28.25	14.36	13.81	15.48	21.08	21.54	21.77
Y-Y (%) Change	1.90	(3.81)	(6.31)	0.84	(2.37)	(7.29)	(10.77)	4.27	3.94	6.93	(3.84)	(12.25)	(2.20)

B. Customer

The Customer's spot exposure is equivalent to the percentage of energy withdrawn not covered by bilateral contracts.

In 2013, the spot market transaction of customers hovered at about 12.21 percent while about 87.80 percent of the total energy withdrawn was covered by bilateral contracts. Spot transaction of customers however dropped to below 10 percent during the billing months July, August and September. Correspondingly during said months, about 90 percent of the total Customers' demand was sourced from their bilateral power supply contracts at predetermined/agreed prices, which effectively limit their exposure to spot market price fluctuations (as was the case for generators) and gave them more assurance of price stability.

The highest level of customer spot transaction was noted in April at 15.4 percent, followed by the billing months of October, May, December and November, which customer spot exposure level was posted at 15.37 percent, 14.46 percent, 14.25 percent and 13.43 percent, respectively.

Year-on-year comparison indicates that system-wide spot exposure of customers increased from 10.01 percent in 2012 to 12.21 percent in 2013 as spot transactions rose to an average of 602,179 MWh from 476,450 MWh spot quantity in the previous year.

Figure 71. Customers' Spot Market Exposure - System

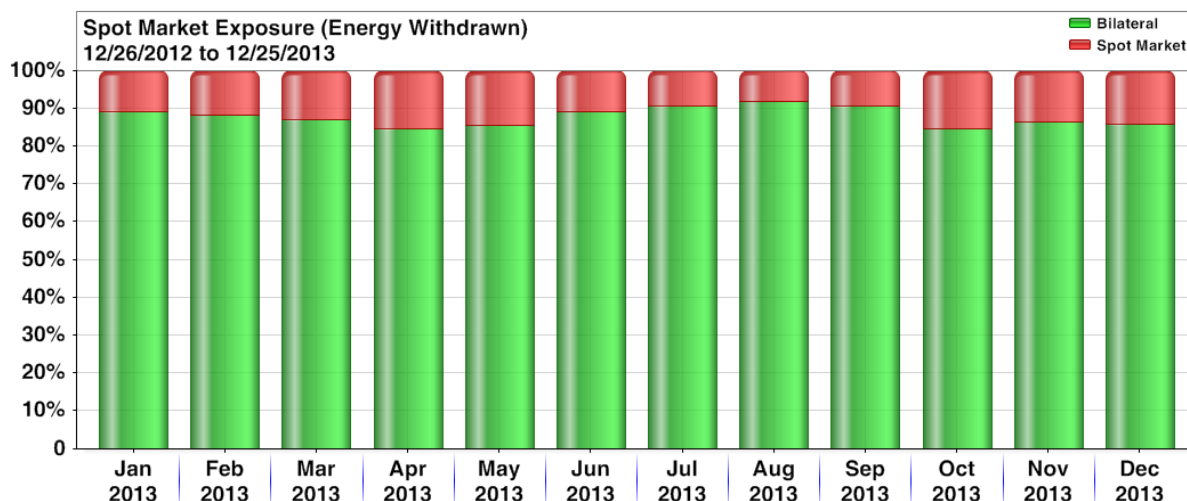


Table 92. Customers' Spot Market Exposure - System

Customers' Spot Exposure by Billing Month - System, 2013													
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
Metered Qty (MWh)	4,521,283	4,742,614	4,545,315	5,289,488	5,278,958	5,332,224	5,094,449	4,950,869	5,092,685	4,877,139	4,792,393	4,679,791	4,933,101
Bilateral Qty (MWh)	4,024,778	4,185,831	3,950,915	4,474,806	4,515,573	4,754,372	4,614,300	4,550,111	4,611,400	4,127,322	4,148,637	4,013,010	4,330,921
Spot Market Qty (MWh)	496,505	556,783	594,400	814,682	763,385	577,852	480,149	400,759	481,284	749,816	643,757	666,781	602,179
Bilateral (%)	89.02	88.26	86.92	84.60	85.54	89.16	90.58	91.91	90.55	84.63	86.57	85.75	87.79
Spot Market (%)	10.98	11.74	13.08	15.40	14.46	10.84	9.42	8.09	9.45	15.37	13.43	14.25	12.21

Table 93. Year-on-Year Comparison of Customers' Spot Market Exposure - System

Year-on-Year Comparison of Customers' Monthly Spot Market Exposure - System, 2013-2012													
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
2013 (%) Spot Exposure	10.98	11.74	13.08	15.40	14.46	10.84	9.42	8.09	9.45	15.37	13.43	14.25	12.21
2012 (%) Spot Exposure	8.12	7.53	10.89	9.21	9.99	10.01	13.91	7.97	10.21	10.16	10.43	11.49	10.01
Y-Y (%) Change	2.86	4.21	2.19	6.19	4.47	0.82	(4.49)	0.13	(0.76)	5.22	3.00	2.75	2.20

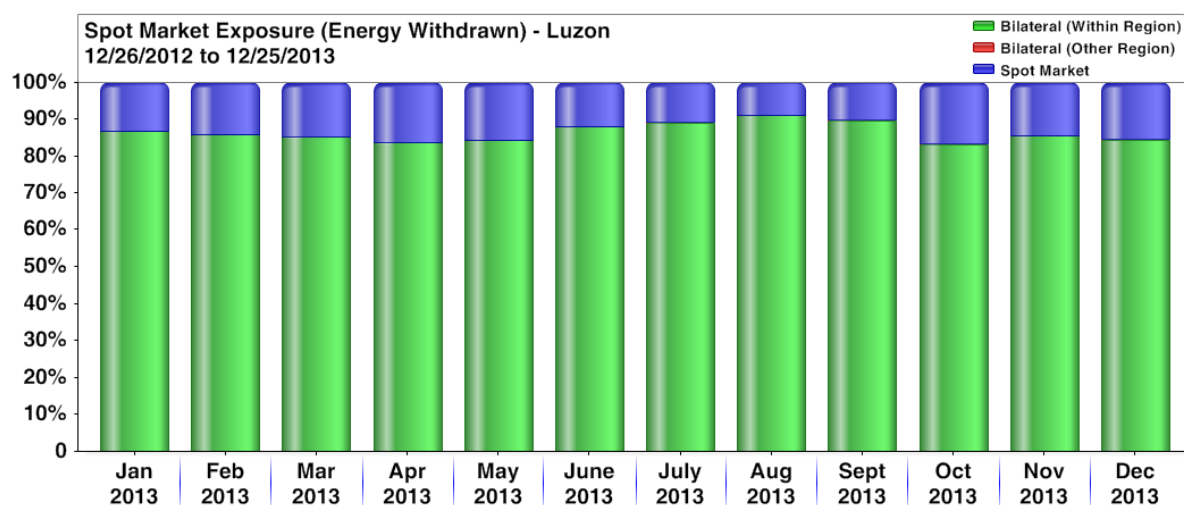
In Luzon, 13.54 percent of the energy requirement was procured from the spot market (averaged at 575,054 MWh) and the rest of the 86.46 percent through bilateral contract. Of the latter, 86.37 percent (averaged at about 3,668,112 MWh out of the average metered quantity of 4,247,095 MWh) was bilateral contract quantities from the Luzon region while .09 percent (at an average of 3,928 MWh) was procured from the Visayas. Customers had the lowest spot transactions during the billing months August and September, at 8.93 percent and 10.24 percent, respectively, while the billing months of October, December, April and May posted the highest customer spot market exposure ranging from 14.37 percent to 16.73 percent.

Luzon grid accounted for about 84 percent of the total energy withdrawn from the system, which stands to reason that the monthly spot market exposure trend for Luzon customers is nearly identical to the overall (system-wide) customers' spot market exposure.

In 2012, spot exposure of customers in Luzon was posted at only 10.78 percent. The volume of energy transacted in the spot market increased by 30.41 percent from the previous year's 440,969 MWh, while those covered by bilateral contracts averaged at

3,650,291 MWh (89.2 percent) out of the total energy volume (MQ) which averaged at 4,091,261 MWh during the previous year.

Figure 72. Luzon Customers' Spot Market Exposure



94. Customers' Spot Market Exposure - Luzon

Customers' Spot Exposure by Billing Month - Luzon 2013													
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
Metered Qty (MWh)	3,847,535	4,069,080	3,892,470	4,542,908	4,529,807	4,589,451	4,388,597	4,234,762	4,351,590	4,176,295	4,217,883	4,124,764	4,247,095
Bilateral Qty-Within Region (MWh)	3,339,031	3,494,584	3,311,672	3,796,067	3,820,072	4,037,377	3,907,853	3,851,100	3,900,482	3,474,500	3,601,574	3,483,037	3,668,112
Bilateral Qty-Other Region (MWh)	-	-	-	-	5,050	5,952	5,720	5,596	5,364	3,120	10,027	6,314	3,928
Spot Market Qty (MWh)	508,503	574,497	580,798	746,841	704,685	546,122	475,024	378,066	445,744	698,675	606,282	635,413	575,054
Bilateral Qty-Within Region (%)	86.78	85.88	85.08	83.56	84.33	87.97	89.05	90.94	89.63	83.20	85.39	84.44	86.37
Bilateral Qty-Other Region (%)	-	-	-	-	0.11	0.13	0.13	0.13	0.12	0.07	0.24	0.15	0.09
Spot Market (%)	13.22	14.12	14.92	16.44	15.56	11.90	10.82	8.93	10.24	16.73	14.37	15.40	13.54

Table 95. Year-on-Year Comparison of Customers' Spot Market Exposure - Luzon

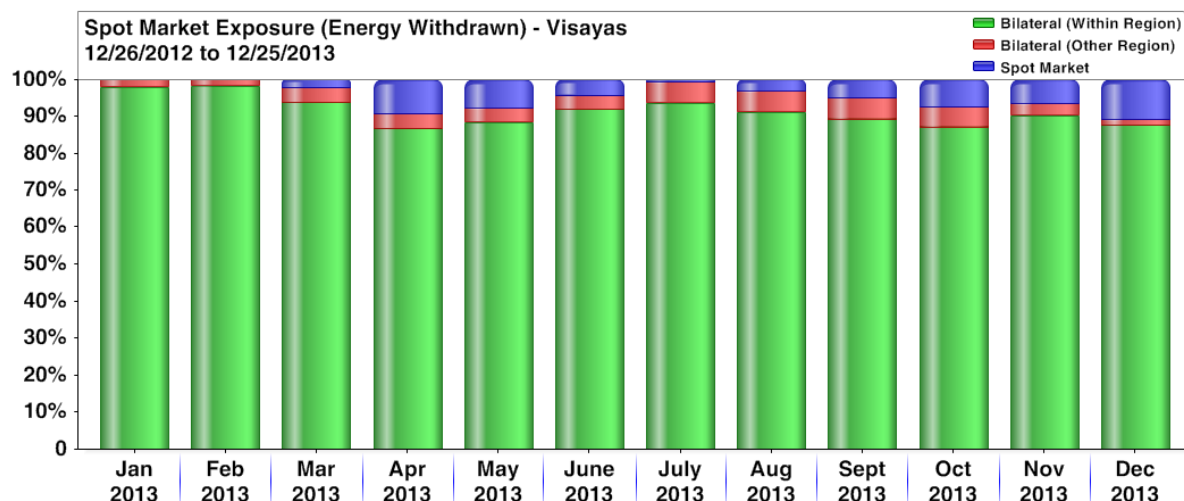
Year-on-Year Comparison of Customers' Monthly Spot Market Exposure - Luzon, 2013-2012													
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Avg.
2013 (%) Spot Exposure	13.22	14.12	14.92	16.44	15.56	11.90	10.82	8.93	10.24	16.73	14.37	15.40	13.54
2012 (%) Spot Exposure	10.11	8.97	11.08	9.89	10.40	10.84	14.61	8.40	11.15	10.93	10.53	12.30	10.78
Y-Y (%) Change	3.10	5.15	3.84	6.55	5.16	1.06	(3.78)	0.53	(0.91)	5.80	3.84	3.10	2.76

Spot market exposure of customers was lesser in Visayas, where only about 4.33 percent of the energy was sourced from the spot market (29,823 MWh out of the average total energy withdrawn of 688,704 MWh), while 95.67 percent, from the customers' bilateral power supply contracts. Of this, an average of 91.36 percent or 629,219 MWh was procured from bilateral contracts with generators in the region, while an average of 4.31 percent or 29,662 MWh were cross-purchases of bilateral contract quantities with generators in Luzon.

Spot exposure of customers in the Visayas was likewise highest during the April billing month at 9.09 percent, as the case is with the Visayas generators. On the other hand, negative spot exposure was posted during the months of January and February, indicating that Visayas customers sold energy to the market during said months. Visayas customers were also noted with high spot exposure, and low level of bilateral contracting in December, owing to the non-availability of Visayas generators following the destruction of the Visayas power system by typhoon Yolanda.

Year-on-year comparison indicates a slight decrease in the level of spot exposure by Visayas customers from 5.3 percent in 2012 (35,481 MWh) to 4.33 percent in 2013 (29,823 MWh).

Figure 73. Visayas Customers' Spot Market Exposure



96. Customers' Spot Market Exposure - Visayas

	Customers' Spot Exposure by Billing Month - Visayas 2013											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Metered Qty (MWh)	673,748	673,534	652,845	746,580	749,151	742,773	705,852	716,107	741,094	700,844	574,511	587,407
Bilateral Qty-Within Region (MWh)	659,993	661,666	613,284	648,781	662,251	683,119	660,711	652,657	662,920	611,866	518,702	514,674
Bilateral Qty-Other Region (MWh)	25,754	29,582	25,960	29,957	28,200	27,925	40,016	40,758	42,634	37,837	18,334	8,985
Spot Market Qty (MWh)	(11,998)	(17,714)	13,602	67,841	58,700	31,729	5,125	22,693	35,540	51,141	37,475	63,748
Bilateral Qty-Within Region (%)	97.96	98.24	93.94	86.90	88.40	91.97	93.60	91.14	89.45	87.30	90.29	87.62
Bilateral Qty-Other Region (%)	3.82	4.39	3.98	4.01	3.76	3.76	5.67	5.69	5.75	5.40	3.19	1.53
Spot Market (%)	(1.78)	(2.63)	2.08	9.09	7.84	4.27	0.73	3.17	4.80	7.30	6.52	10.85

Table 97. Year-on-Year Comparison of Customers' Spot Market Exposure - Visayas

	Year-on-Year Comparison of Customers' Monthly Spot Market Exposure - Visayas, 2013-2012											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
2013 (%) Spot Exposure	(1.78)	(2.63)	2.08	9.09	7.84	4.27	0.73	3.17	4.80	7.30	6.52	10.85
2012 (%) Spot Exposure	(3.91)	(1.51)	9.64	4.91	7.34	4.69	9.60	5.55	4.57	5.55	9.85	6.67
Y-Y (%) Change	2.13	(1.12)	(7.56)	4.18	0.49	(0.42)	(8.88)	(2.38)	0.23	1.75	(3.33)	4.18

XV. MARKET CONCENTRATION

These indices measure the concentration of a market, to assess if existing conditions facilitate or impede the development of competition. As most probably is true for any market, the less concentrated the market, the greater the possibility of effective competition.

A. Market Share

The market share indices, from which the Herfindahl-Hirschman Index (HHI) is computed, measure the percentage of energy or capacity that a Trading Participant controls in the monitored market. It has been recognized that those with smaller market share find it more difficult to exercise market power.

The market share was calculated based on three major groupings: (i) by major participants; (ii) by trading participants; and (iii) by generating plants.

It is noteworthy that the market share calculation in 2013 was influenced by the partial market suspension in the Visayas effective 08 November 2013 at 1300H as well as the Malampaya shutdown from 11 November 2013 which affected the output of natural gas plants.

1. By Major Participant

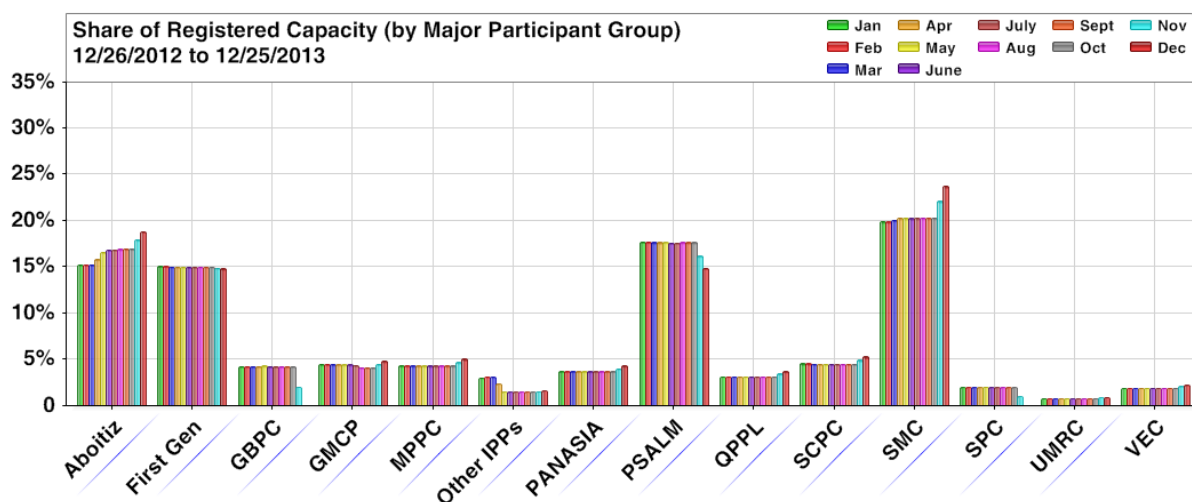
The monthly market share trend of major participants in the WESM shown in Figure 76 indicates that the market was dominated by four major players. San Miguel Corporation (SMC), which owns/controls/administers large generating plants Sual, San Roque, and Ilijan, topped the list with an average share of about 20.61 percent of the registered capacities in Luzon and Visayas. PSALM came in second with a market share of almost 17.33 percent followed by Aboitiz and First Gen, with market shares of 16.59 percent and 15 percent, respectively. In distant fifth at 4.6 percent is Sem Calaca Power Corporation (SCPC) followed by GNPowder Mariveles Coal Plant Ltd. Co. (GMCP) and Masinloc Power Partners Co. Ltd. (MPPC), both with an average market share of 4.4 percent.

The year 2013 saw the entry of new participants Petron Corporation and Therma Mobile Corporation (which acquired the Duracom generating units), giving rise to the slight increase in the registered capacities of the San Miguel group from March 2013, and the Aboitiz group from April 2013, respectively. Accordingly, the market share of other Independent Power Producers (IPPs) to which Duracom was previously grouped noticeably dipped from April 2013 upon the deregistration of Duracom's generating units.

Likewise noted is the decrease in the registered capacity of PSALM in the November and December billing months, on account of the non-availability of its generating plants in the Visayas during the partial market suspension in the region. On the other hand, the SMC and Aboitiz groups both posted a marked increase in their respective market shares in November and December partly influenced by the partial market suspension in the Visayas. It was noted that the GBPC and SPC groups which own and operate generating plants in the Visayas experienced a decrease in their respective market shares in November and had no share in the market for the entire duration of the December billing month following the ERC's partial market suspension. In addition, a decline in the market

share of the First Gen group was noted in November and December following the Malampaya shutdown which limited the output of its natural gas plants.

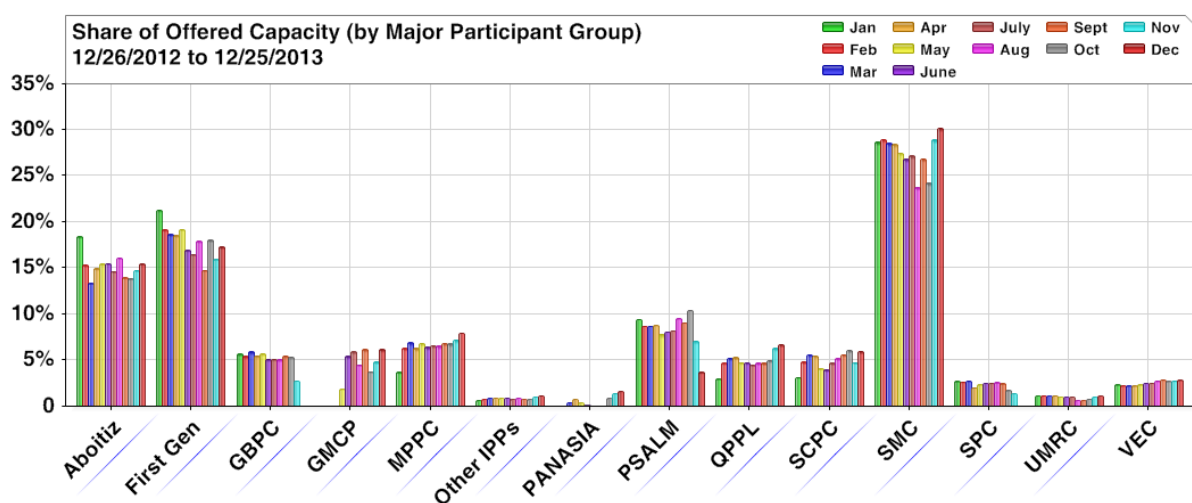
Figure 74. Share of Registered Capacity by Major Participant



Consistent with the foregoing, SMC controlled the largest share based on offered capacity at 27.4 percent, distantly followed by First Gen at 17.84 percent, Aboitiz Power at 15.14 percent and PSALM, at 8.4 percent. It is noteworthy that the offers submitted by Malaya TPP were taken-out in the calculation of market share based on offered capacity, bringing about a 4 percent decrease in the share of PSALM which could have otherwise reached 12 percent.

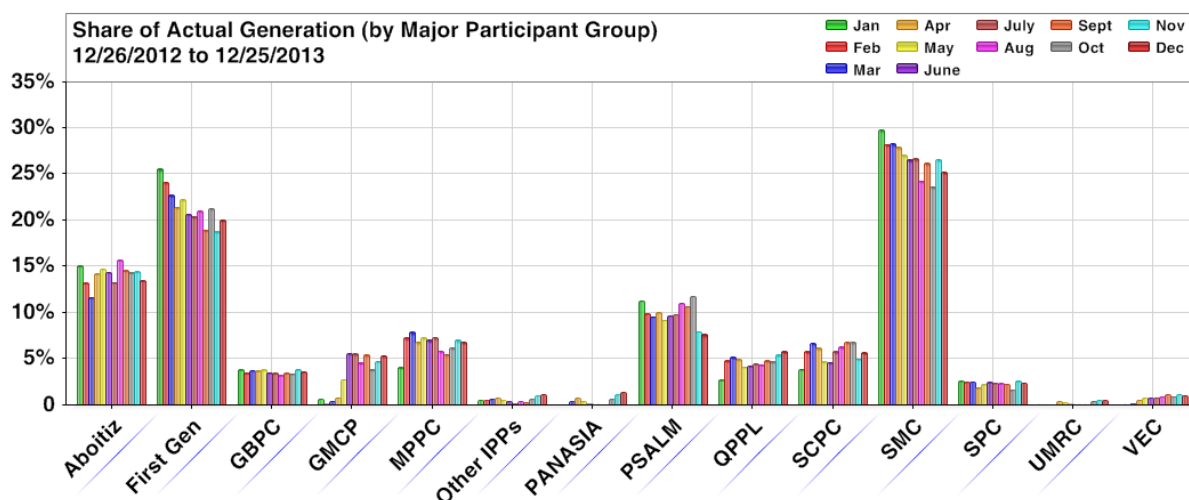
Further noteworthy is the increase in the market share of the SMC group due to the increased capacity offers of coal plant Sual in said months. Also, PSALM's market share in terms of offered capacity notably declined in November and December, parallel to the decline in its market share in terms of registered capacity during said months.

Figure 75. Share of Offered Capacity by Major Participant



An examination of the share of actual generation suggests that a greater part of the demand was supplied by generating plants owned by SMC and First Gen Groups. As shown in Figure 78, the market was by and large dominated by SMC and First Gen groups, maintaining market shares averaging at 26.69 percent and 21.4 percent, respectively, across all billing months. Aboitiz's 14.09 percent market share and PSALM's 9.86 percent figured in the 3rd and 4th place, respectively.

Figure 76. Share of Actual Generation by Major Participant

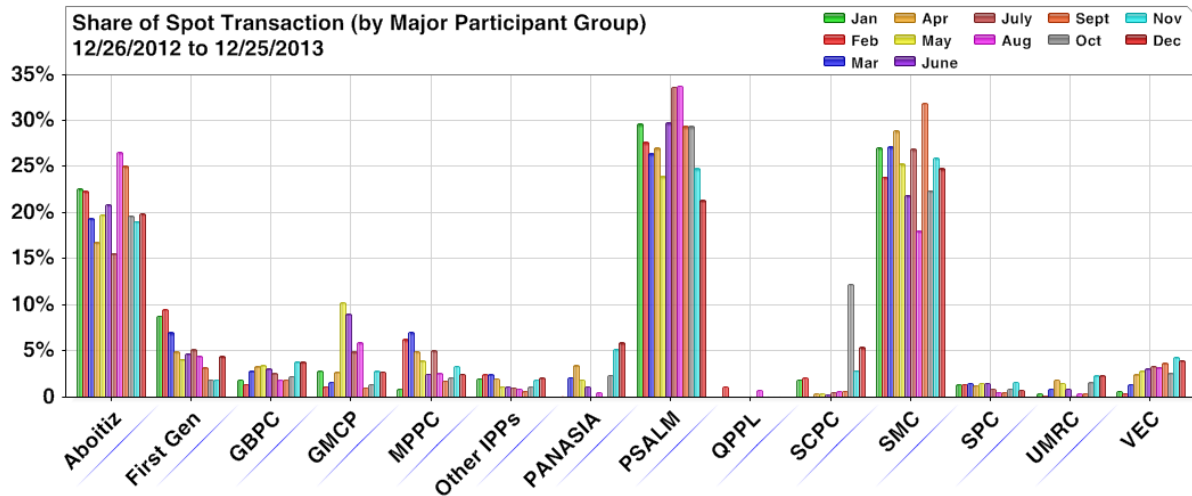


The respective spot transaction share of PSALM, SMC and Aboitiz groups fluctuated from month to month; although they consistently posted an above 21 percent market share across all months. PSALM notably held the highest market share at 28 percent followed by the SMC group at 24 percent.

SMC's share dropped to 18 percent during the August billing month coinciding with the month-long maintenance outage of its generating unit Sual 2, and as likewise reflected in the decrease in the group's actual generation during said month. On the other hand, the market share of PSALM dropped from an average of 29 percent in previous months to 24 percent and 21 percent in November and December, respectively, due to the unavailability of its Visayas plants in said months, particularly of its Leyte A geothermal plant, which has the highest market share in terms of spot transaction among all generating plants.

It is likewise worthy to note that while First Gen's share in terms of actual generation attained the above 20 percent mark, its market share in terms of spot transaction stood at only 5 percent, indicating that a substantial portion of its plants' capacities were contracted.

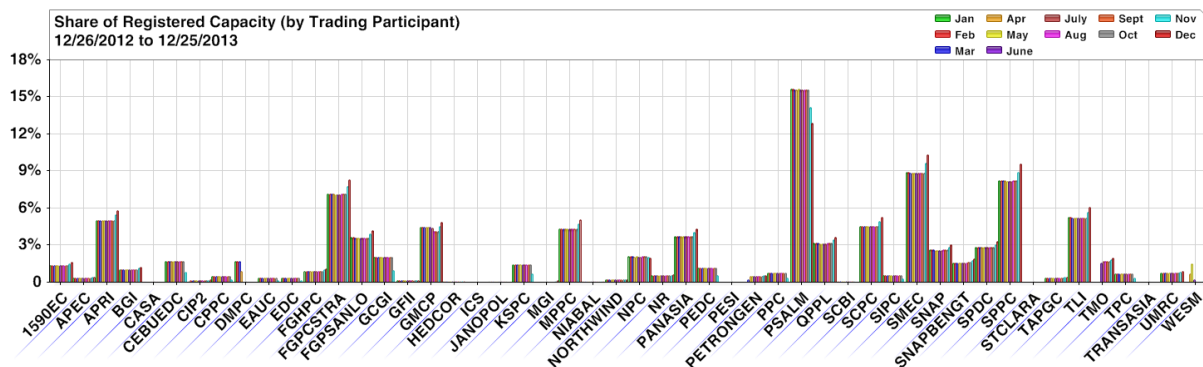
Figure 77. Share of Spot Transaction by Major Participant



2. By Trading Participant

Breaking down the major participants into trading participants, PSALM had the highest market share of about 15.28 percent of the registered capacities in Luzon and Visayas. PSALM was distantly followed by San Miguel Energy Corporation (SMC) at about 9 percent and South Premier Power Corp. (SPPC) at about 8.36 percent. FGP Corporation came next with 7.3 percent, Therma Luzon, Inc. (TLI) at 5.32 percent and AP Renewables, Inc. (APRI) at 5.1 percent.

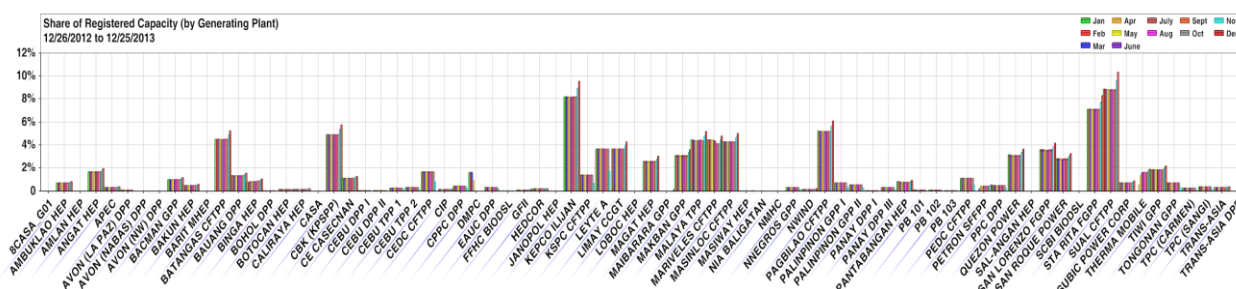
Figure 78. Share of Registered Capacity by Trading Participant



3. By Generating Plant

Considering that SMC, Aboitiz, PSALM and First Gen groups were the four leading major participants in the market, it follows that their respective generating plants dominated the market share calculated by generating plants as well. As shown in the Figure below, SMC's Sual and Ilijan plants had market shares of 9 percent and 8.36 percent, respectively, followed by First Gen's Sta. Rita with 7.26 percent, Aboitiz's Pagbilao plant at 5.32 percent and Psalm's CBK (KPSPP) at 5 percent.

Figure 79. Share of Registered Capacity by Generating Plant



B. Herfindahl-Hirschman Index (HHI) (by Generating Plant, Trading Participant and Major Participant Group)

The HHI measures the degree of market concentration that takes into account the relative size and distribution of participants in the market. Defined as the sum of squares of the participant's market share, the HHI approaches zero when the market has very large number of participants with each having a relatively small market share. In contrary, the HHI increases as the number of participants in the market decreases, and the disparity in the market shares among the participants increases. The following are the widely-used HHI screening numbers: (1) when HHI is less than 1,000 the market is not concentrated; (2) in the range of 1,000 to 1,800 the market is moderately concentrated; (3) greater than 1,800 but less than 2,500 the market is concentrated; and (4) greater than 2,500 the market is highly concentrated and signals lack of competition in the market.

The figures below show the monthly HHI calculated based on the following scenarios: registered capacity, registered capacity net of outage, offered capacity, metered quantity and spot transaction. The HHI, when based on registered capacity, provides the base scenario in assessing market concentration which does not vary over time unless there are changes in the ownership and registered capacity of the generators, or registration and deregistration of generators.

Results of HHI calculations show that the market was not concentrated if grouping is based on generating plant, thus indicating that there exist competition among generating plants in 2013. HHI calculations similarly indicated that the market was not concentrated if generating plants were further grouped according to trading participants. However, if based on spot transactions, HHI calculation by trading participants suggested a moderately concentrated market throughout the year except during the November and December billing months when the HHI calculation indicated a not concentrated market, on account of the significant drop in the spot volume of

PSALM on said months. PSALM has the highest market share when grouping is made by trading participant.

When grouped into major participants, the calculated HHI generally signalled a moderately concentrated market. However, HHI calculation based on spot transactions indicated a concentrated market, the highest of which points to the August and September billing months, when the HHI level increased to 2,252 and 2,543 (signalling a highly concentrated market) from an HHI ranging between 1,774 to 2,229 from January to August. The 4th Quarter signalled a decrease in said calculation, with an indication of a moderately concentrated market at slightly below the 1,800 threshold during the billing months of November and December. Said calculation mirrored the slight improvement in the HHI trend based on trading participants due to the decrease in the share in the total spot exposure of PSALM's Leyte A in November and December. Leyte A, which has the highest market share by plant in terms of spot transaction, sharply decreased its exposure from an average of 12 percent from January to October, to only 4.24 percent and 0.41 percent in November and December. SMC's Ilijan plant's decrease in its spot transaction from an average of 10 percent in previous months to 7 percent and 6 percent, in November and December is similarly noted.

Figure 80. HHI by Plant

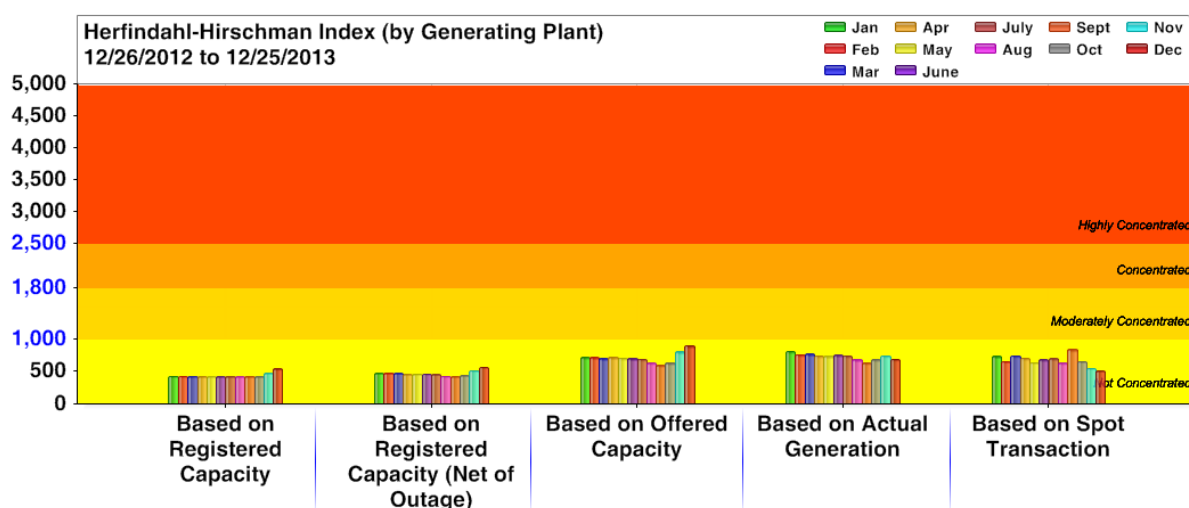


Figure 81. HHI by Participant

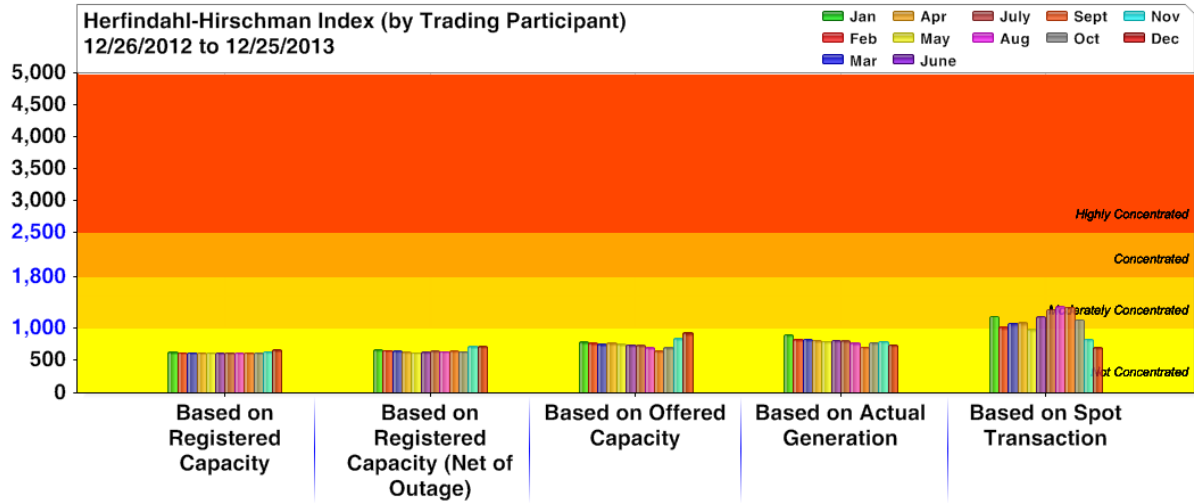
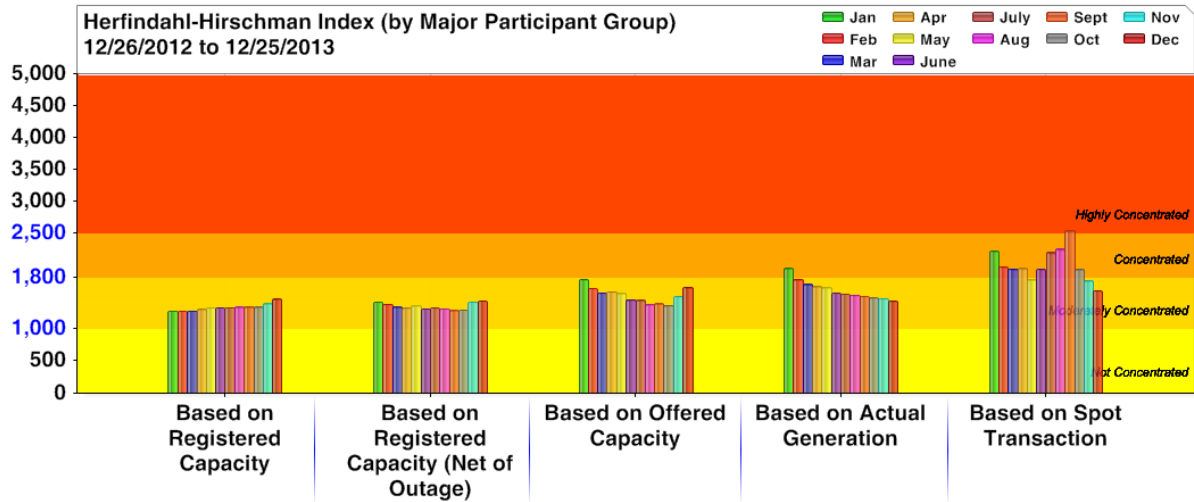


Figure 82. HHI by Major Participant



APPENDIX 'A'

List of WESM Registered Capacities as of 10 November 2013 - Luzon

WESM Registered Capacities as of 10 November 2013			
No.	Participant Name	Generation Facility Registered/WESM Resource Name	Registered Maximum Capacity (Pmax) (MW)
LUZON			
1	1590 Energy Corporation	1BAUANG_G01	200.00
2	AP Renewables Inc.	3MKBN_A	126.00
		3MKBN_B	126.00
		3MKBN_C	110.00
		3MKBN_D	40.00
		3MKBN_E	40.00
		3ORMAT_G01	12.00
		3TIWI_A	118.00
		3TIWI_B	43.70
3	Asia Pacific Energy Corporation	3TIWI_C	114.00
		1APEC_G01	52.00
4	Bac-Man Geothermal Inc.	3BACMAN_G01	110.00
5	CIP II Power Corporation	3BACMAN_G02	40.00
		1CIP2_G01	21.27
6	First Gen Hydro Power Corporation	1MASIWA_G01	12.40
7	FGP Corporation (San Lorenzo)	1PNTBNG_G01	120.00
		3STA-RI_G05	264.80
8	First Gas Power Corporation (Sta Rita)	3STA-RI_G06	261.80
		3STA-RI_G01	257.30
		3STA-RI_G02	255.70
		3STA-RI_G03	265.50
		3STA-RI_G04	264.00
9	HEDCOR, Inc.	1SLANGN_G01	2.40
		1NMHC_G01	5.09
10	GNPower Mariveles Coal Plant Ltd. Co.	1MARVEL_G01	302.00
	GNPower Mariveles Coal Plant Ltd. Co.	1MARVEL_G02	302.00
11	Green Future Innovations, Inc.	1GFII_G01	19.81
12	Maibarara Geothermal, Inc.	3MGPP_G01	20.00
13	Masinloc Power Partners Co. Ltd.	1MSINLO_G01	315.00
		1MSINLO_G02	315.00
14	National Irrigation Administration	1NIABAL_G01	6.00
15	National Power Corporation	1ANGAT_A	46.00
		1ANGAT_M	200.00
16	North Wind Power Development, Inc.	1NWIND_G01	27.00
17	PANASIA Energy Holdings, Inc.	1LIMAY_A	270.00
		1LIMAY_B	270.00
18	People's Energy Services Inc.	3BART_G01	1.80
19	Petron Corporation	1PETRON_G01	70.00
		1CASECN_G01	165.00
		1HEDCOR_G01	30.00
		3BOTOCA_G01	20.80
		3CALIRY_G01	28.00
		3KAL_G01	180.00
		3KAL_G02	180.00
		3KAL_G03	180.00
		3KAL_G04	180.00
		3MALAYA_G01	300.00
20	Power Sector Assets & Liabilities Management Corporation	3MALAYA_G02	350.00
		3QPPL_G01	459.00
21	Quezon Power (Phils) Ltd. Co.	1SUAL_G01	647.00
22	San Miguel Energy Corporation	1SUAL_G02	647.00
		3CALACA_G01	330.00
23	SEM-Calaca Power Corporation	3CALACA_G02	330.00
24	SN Aboitiz Power - Benguet, Inc.	1BINGA_G01	132.00
		1AMBUK_G01	105.00
25	SN Aboitiz Power - Magat, Inc.	1MAGAT_G01	380.00
26	South Premier Power Corporation	3ILIJAN_G01	600.00
		3ILIJAN_G02	600.00
27	Strategic Power Development Corporation	1SROQUE_G01	411.00
28	Therma Luzon, Inc.	3PAGBIL_G01	382.00
		3PAGBIL_G02	382.00
29	Therma Mobile, Inc.	2TMO_G01	66.00
	Therma Mobile, Inc.	2TMO_G02	67.20
	Therma Mobile, Inc.	2TMO_G03	57.00
	Therma Mobile, Inc.	2TMO_G04	52.00
30	Trans-Asia Power Generation Corporation	1T_ASIA_G01	50.00
31	Udenna Management Resource Corporation	1S_ENRO_G01	110.00
31	Vivant Sta. Clara Northern Renewables Generation Corporation (formerly Amlan Power Hydro, Inc.)	1BAKUN_G01	76.00

APPENDIX 'B'

List of WESM Registered Capacities as of 10 November 2013 - Visayas

WESM Registered Capacities as of 10 November 2013			
No.	Participant Name	Generation Facility Registered/WESM Resource Name	Registered Maximum Capacity (Pmax) (MW)
VISAYAS			
1	Bohol I Electric Cooperative, Inc.	7JANOPO_G01	5.00
2	Cebu Energy Development Corporation	5CEDC_G01	246.00
3	Cebu Private Power Corporation	5CPPC_G01	70.00
4	Central Azucarera de San Antonio	8CASA_G01	4.00
5	East Asia Utilities Corporation	5EAUC_G01	49.60
6	Energy Development Corporation	6NNGPP_G01	49.50
7	First Farmers Holdings Corporation	6FFHC_G01	12.00
8	Green Core Geothermal Inc.	6PAL1A_G01	109.57
		6PAL2A_G01	79.16
		4LGPP_G01	107.00
9	ICS Renewables	6AMLA_G01	0.90
10	KEPCO Salcon Power Corporation	5KSPC_G01	103.00
		5KSPC_G02	103.00
11	National Power Corporation (PB 101)	8STBAR_PB	20.00
	National Power Corporation (PB 102)	8STBAR_PB2	20.00
	National Power Corporation (PB 103)	8PANIT_PB	15.00
12	Panay Energy Development Corporation	8PEDC_G01	167.40
13	Panay Power Corporation (Nabas)	8GLOBAL_G01	10.00
14	Power Sector Assets & Liabilities Management Corporation	4LEYTE_A	538.00
		5CDPPI_G01	16.50
		5CDPPI_G02	16.50
		5CTPP_G01	45.00
		5CTPP_G02	50.80
15	San Carlos Bioenergy, Inc.	6SCBE_G01	8.30
16	SPC Island Power Corporation	7BDPP_G01	13.70
		8PDPP_G01	15.00
		8PDPP3_G01	52.00
17	Sta Clara Power Corporation	7LOBOC_G01	1.20
18	Toledo Power Company	5TPC_G01	40.00
		5TPC_G02	60.00
19	Trans-Asia Oil Development Corp.	8GUIM_G01	3.00