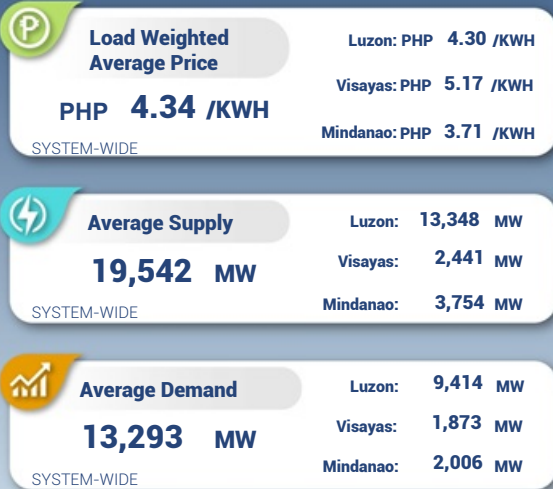


## MARKET OUTCOMES



## HVDC AVERAGE MW FLOW



### LUZON TO VISAYAS

**>>> 75 MW**

7.19% of the time

### VISAYAS TO LUZON

**<<< 283 MW**

91.77% of the time

### VISAYAS TO MINDANAO

**>>> 18 MW**

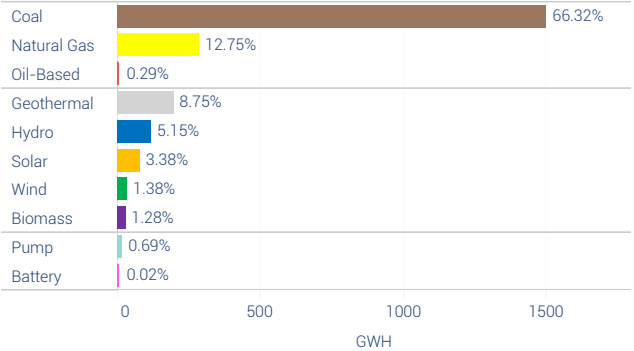
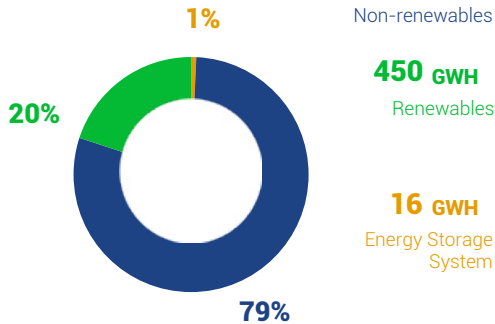
0.20% of the time

### MINDANAO TO VISAYAS

**<<< 320 MW**

99.80% of the time

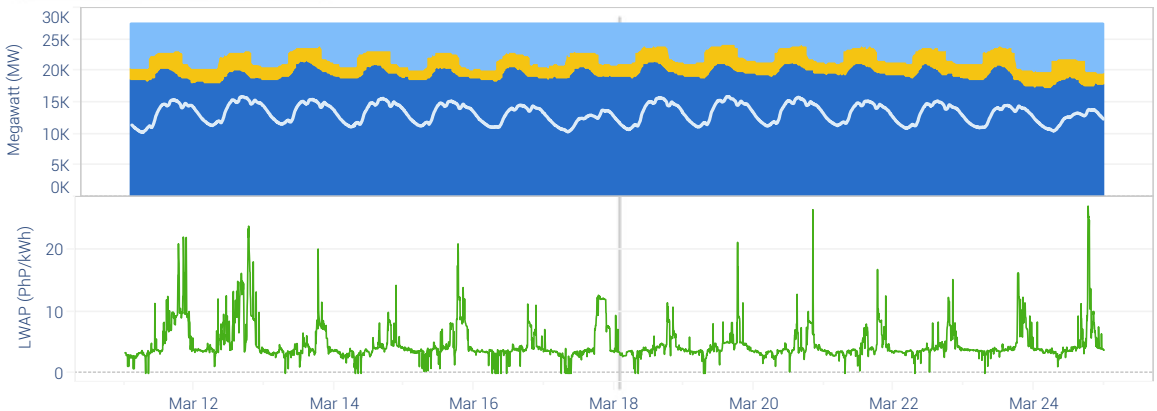
## GENERATION MIX



SYSTEM-WIDE

## SUPPLY DEMAND PRICE

Outage Capacity    Derated Capacity    Available Capacity    Demand



SYSTEM-WIDE

Cumulative Price Threshold

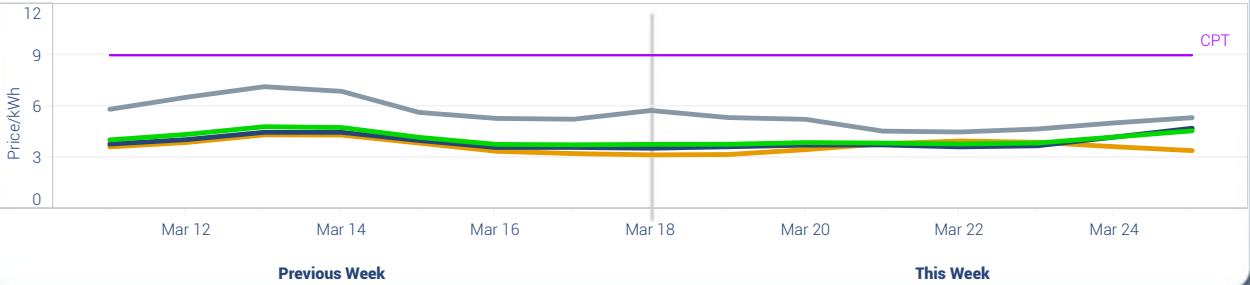
**ROLLING AVERAGE GENERATOR WEIGHTED AVERAGE PRICE**

System

Luzon

Visayas

Mindanao


**PRICE DISTRIBUTION**
**System**

	Below 0 P/kWh	0 - 2.5 P/kWh	2.5 - 5.0 P/kWh	5 - 10 P/kWh	Above 10 P/kWh
Mar 18	1%	5%	87%	6%	1%
Mar 19	0%	5%	86%	7%	2%
Mar 20	0%	8%	81%	9%	1%
Mar 21	1%	4%	87%	6%	1%
Mar 22	0%	3%	87%	9%	0%
Mar 23	0%	2%	82%	10%	6%
Mar 24	0%	2%	76%	14%	8%

**Luzon**

	Below 0 P/kWh	0 - 2.5 P/kWh	2.5 - 5.0 P/kWh	5 - 10 P/kWh	Above 10 P/kWh
Mar 18	1%	5%	92%	1%	1%
Mar 19	0%	4%	92%	1%	2%
Mar 20	1%	8%	89%	2%	1%
Mar 21	1%	4%	93%	1%	1%
Mar 22	1%	3%	96%	0%	0%
Mar 23	0%	2%	84%	7%	7%
Mar 24	0%	2%	76%	13%	9%

**Visayas**

	Below 0 P/kWh	0 - 2.5 P/kWh	2.5 - 5.0 P/kWh	5 - 10 P/kWh	Above 10 P/kWh
Mar 18	1%	3%	82%	5%	8%
Mar 19	0%	3%	89%	2%	6%
Mar 20	0%	3%	86%	3%	8%
Mar 21	1%	3%	84%	3%	8%
Mar 22	0%	2%	83%	7%	8%
Mar 23	0%	2%	78%	9%	11%
Mar 24	0%	1%	82%	7%	10%

**Mindanao**

	Below 0 P/kWh	0 - 2.5 P/kWh	2.5 - 5.0 P/kWh	5 - 10 P/kWh	Above 10 P/kWh
Mar 18	1%	8%	90%	1%	0%
Mar 19	1%	7%	89%	2%	2%
Mar 20	1%	7%	89%	2%	1%
Mar 21	1%	4%	92%	1%	1%
Mar 22	1%	2%	96%	0%	0%
Mar 23	0%	2%	95%	1%	2%
Mar 24	1%	9%	90%	0%	0%

**PRICING CONDITION**

	LUZON					VISAYAS					MINDANAO				
	OK	PEN	PSM	SEC	AP	OK	PEN	PSM	SEC	AP	OK	PEN	PSM	SEC	AP
Mar 18	286	2	0	0	0	286	2	0	0	0	286	2	0	0	0
Mar 19	288	0	0	0	0	288	0	0	0	0	288	0	0	0	0
Mar 20	255	32	1	0	0	256	32	0	0	0	256	32	0	0	0
Mar 21	246	41	1	0	0	247	41	0	0	0	247	41	0	0	0
Mar 22	251	37	0	0	0	251	37	0	0	0	251	37	0	0	0
Mar 23	281	7	0	0	0	281	7	0	0	0	281	7	0	0	0
Mar 24	277	11	0	0	0	277	11	0	0	0	277	11	0	0	0

**REGIONAL INTERCONNECTION**
**VISAYAS-LUZON HVDC INTERCONNECTION**
**From Luzon to Visayas**

	Maximum	Average	% of Time
Mar 18	0	0	0%
Mar 19	30	21	1%
Mar 20	243	96	26%
Mar 21	98	43	3%
Mar 22	142	57	20%
Mar 23	0	0	0%
Mar 24	0	0	0%

**From Visayas to Luzon**

	Maximum	Average	% of Time
Mar 18	420	274	100%
Mar 19	420	243	99%
Mar 20	420	197	71%
Mar 21	412	189	95%
Mar 22	420	279	77%
Mar 23	420	378	100%
Mar 24	420	387	100%

**MINDANAO-VISAYAS HVDC INTERCONNECTION**
**From Visayas to Mindanao**

	Maximum	Average	% of Time
Mar 18	0	0	0%
Mar 19	0	0	0%
Mar 20	40	18	1%
Mar 21	0	0	0%
Mar 22	0	0	0%
Mar 23	0	0	0%
Mar 24	0	0	0%

**From Mindanao to Visayas**

	Maximum	Average	% of Time
Mar 18	450	355	100%
Mar 19	450	333	100%
Mar 20	450	250	99%
Mar 21	450	237	100%
Mar 22	450	286	100%
Mar 23	450	422	100%
Mar 24	450	355	100%

**SUPPLY, DEMAND AND PRICE TABLE**

**Luzon**

	SUPPLY			DEMAND			PRICE		
	MIN	AVE	MAX	MIN	AVE	MAX	MIN	AVE	MAX
Mar 18	12,665	13,716	14,992	7,662	9,646	11,221	-96	3,656	11,981
Mar 19	12,591	13,639	14,712	7,978	9,770	11,276	-1	4,064	14,275
Mar 20	13,013	13,974	14,992	8,074	9,754	11,092	0	3,587	25,036
Mar 21	13,153	13,832	14,739	8,086	9,477	10,599	-9,985	3,457	13,355
Mar 22	12,819	13,550	14,724	7,664	9,299	10,525	0	3,622	14,226
Mar 23	11,285	12,851	14,405	7,814	9,158	10,188	0	4,814	16,925
Mar 24	11,111	11,871	12,772	7,416	8,793	9,842	1,553	5,714	30,539

**Visayas**

	SUPPLY			DEMAND			PRICE		
	MIN	AVE	MAX	MIN	AVE	MAX	MIN	AVE	MAX
Mar 18	2,273	2,423	2,663	1,449	1,865	2,198	-100	4,629	18,022
Mar 19	2,288	2,399	2,641	1,498	1,896	2,235	-1	4,712	31,815
Mar 20	2,277	2,406	2,645	1,496	1,908	2,251	0	4,458	25,974
Mar 21	2,314	2,509	2,778	1,534	1,919	2,269	-1	4,404	20,310
Mar 22	2,349	2,495	2,754	1,522	1,941	2,292	0	4,960	25,128
Mar 23	2,345	2,470	2,707	1,527	1,872	2,162	0	5,322	21,066
Mar 24	2,290	2,391	2,570	1,507	1,713	1,992	1,595	5,696	42,311

**Mindanao**

	SUPPLY			DEMAND			PRICE		
	MIN	AVE	MAX	MIN	AVE	MAX	MIN	AVE	MAX
Mar 18	3,798	3,870	3,920	1,542	1,996	2,381	-98	3,295	5,924
Mar 19	3,822	3,858	3,914	1,595	2,059	2,475	-1	3,798	14,555
Mar 20	3,664	3,717	3,775	1,644	2,071	2,502	0	3,664	25,330
Mar 21	3,607	3,683	3,786	1,659	2,055	2,391	-1	3,541	13,707
Mar 22	3,522	3,632	3,699	1,609	2,048	2,441	0	3,521	14,309
Mar 23	3,690	3,772	3,872	1,591	1,977	2,307	0	3,557	12,650
Mar 24	3,696	3,746	3,780	1,526	1,837	2,142	0	3,136	4,476

**GENERATION MIX TABLE**

**Luzon**

	NON-RENEWABLE ENERGY			RENEWABLE ENERGY					ESS	
	Coal	Natural Gas	Oil-Based	Geothermal	Hydro	Solar	Wind	Biomass	Pump	Battery
Mar 18	66.51%	18.47%	0.00%	5.32%	2.11%	3.85%	2.00%	0.49%	1.24%	0.02%
Mar 19	67.04%	19.36%	0.07%	5.12%	2.11%	3.73%	1.32%	0.56%	0.66%	0.03%
Mar 20	65.31%	18.76%	0.03%	5.13%	2.14%	3.15%	3.36%	0.57%	1.53%	0.01%
Mar 21	64.95%	19.56%	0.00%	5.25%	2.33%	3.28%	3.14%	0.59%	0.84%	0.05%
Mar 22	66.28%	19.84%	0.00%	5.31%	2.21%	3.63%	0.61%	0.62%	1.45%	0.04%
Mar 23	67.36%	18.72%	0.14%	5.48%	2.32%	3.84%	0.31%	0.63%	1.20%	0.00%
Mar 24	72.73%	14.01%	0.26%	5.65%	2.18%	4.07%	0.47%	0.62%	0.00%	0.00%

**Visayas**

	NON-RENEWABLE ENERGY		RENEWABLE ENERGY					ESS
	Coal	Oil-Based	Geothermal	Hydro	Solar	Wind	Biomass	Battery
Mar 18	53.09%	1.40%	33.18%	0.48%	5.97%	1.57%	4.31%	0.00%
Mar 19	52.95%	1.58%	32.92%	0.47%	5.50%	1.49%	5.09%	0.00%
Mar 20	52.08%	1.42%	33.37%	0.46%	5.15%	2.17%	5.36%	0.00%
Mar 21	52.37%	1.46%	32.25%	0.45%	5.82%	2.51%	5.14%	0.00%
Mar 22	53.42%	1.39%	32.25%	0.42%	5.72%	1.73%	5.07%	0.00%
Mar 23	53.16%	1.24%	32.72%	0.40%	5.94%	1.78%	4.76%	0.00%
Mar 24	56.13%	1.44%	31.45%	0.46%	3.54%	1.84%	5.14%	0.00%

**Mindanao**

	NON-RENEWABLE ENERGY		RENEWABLE ENERGY				ESS
	Coal	Oil-Based	Hydro	Geothermal	Solar	Biomass	Battery
Mar 18	72.17%	0.21%	21.90%	3.91%	0.78%	1.03%	0.00%
Mar 19	72.33%	0.27%	21.73%	3.84%	0.76%	1.07%	0.00%
Mar 20	74.19%	0.32%	19.61%	3.92%	0.71%	1.24%	0.00%
Mar 21	75.58%	0.39%	18.21%	3.91%	0.63%	1.29%	0.00%
Mar 22	74.17%	0.39%	19.50%	3.89%	0.79%	1.27%	0.00%
Mar 23	73.15%	0.27%	20.76%	3.84%	0.77%	1.20%	0.00%
Mar 24	71.38%	0.03%	22.30%	4.23%	0.71%	1.35%	0.00%

## LUZON RESERVES

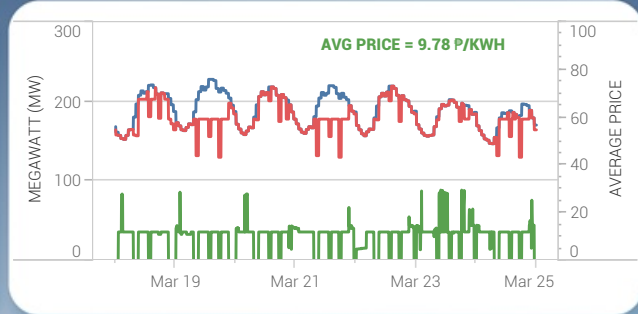
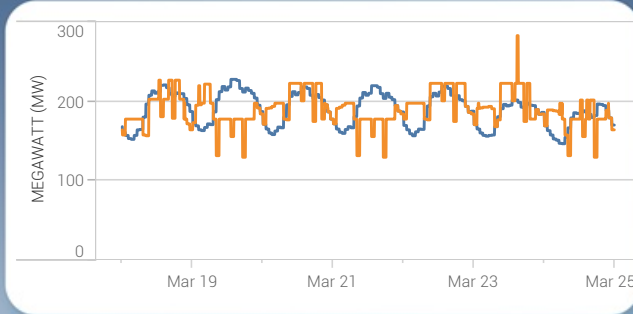
Reserve Requirement

Reserve Offers

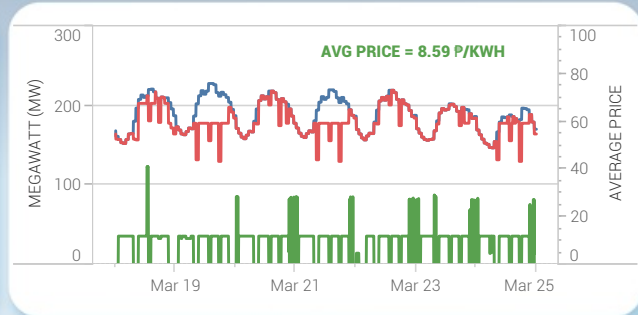
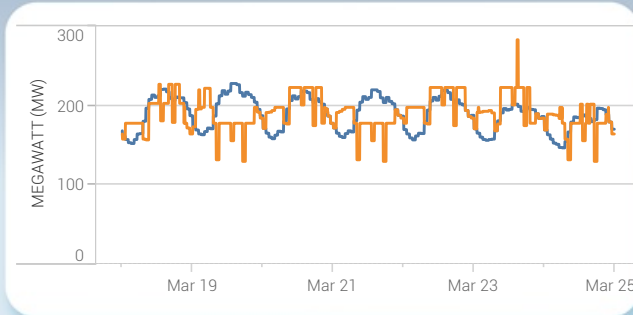
Reserve Schedule

Zonal Reserve Price

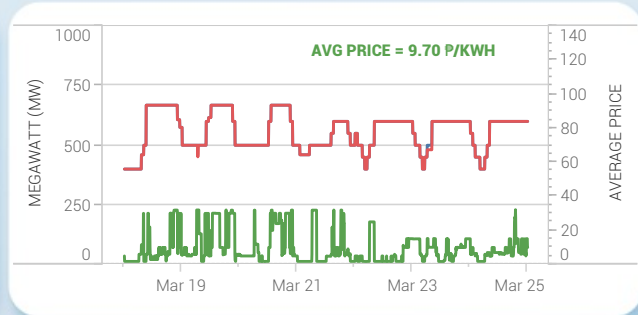
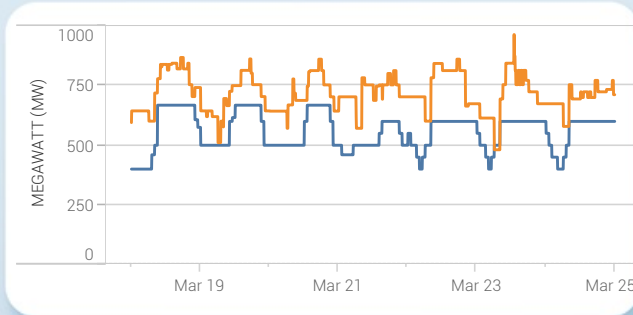
### REGULATION UP RESERVE



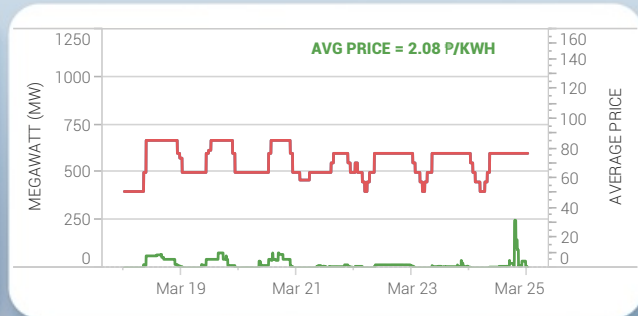
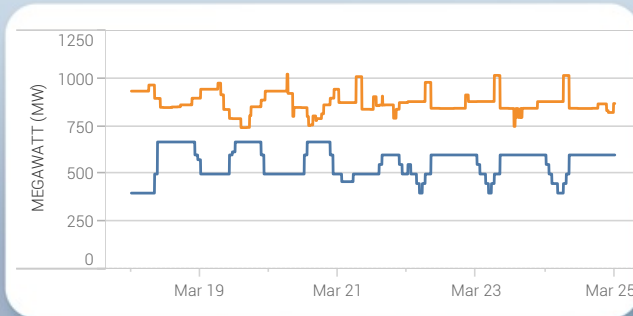
### REGULATION DOWN RESERVE



### CONTINGENCY RESERVE



### DISPATCHABLE RESERVE



## VISAYAS RESERVES

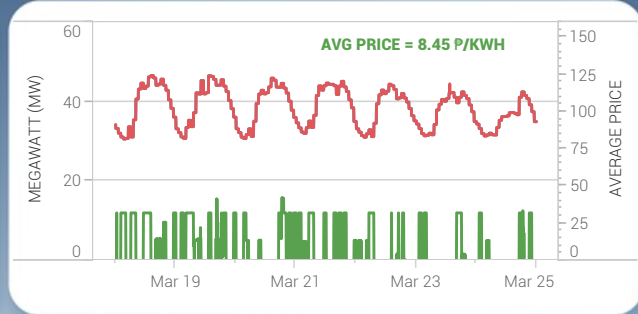
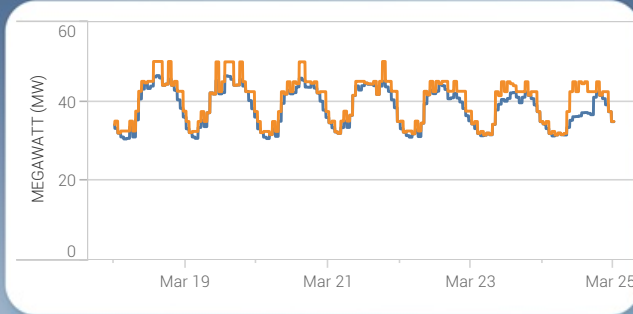
Reserve Requirement

Reserve Offers

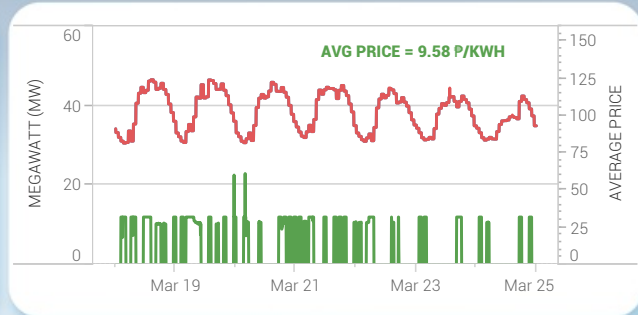
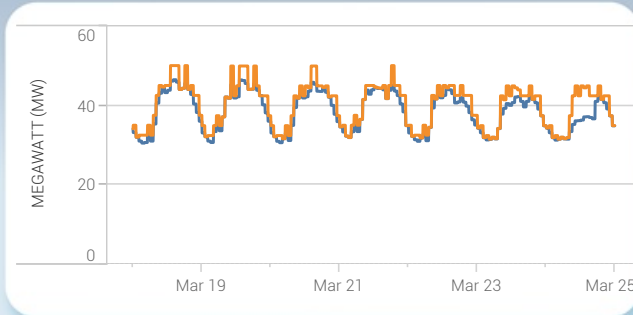
Reserve Schedule

Zonal Reserve Price

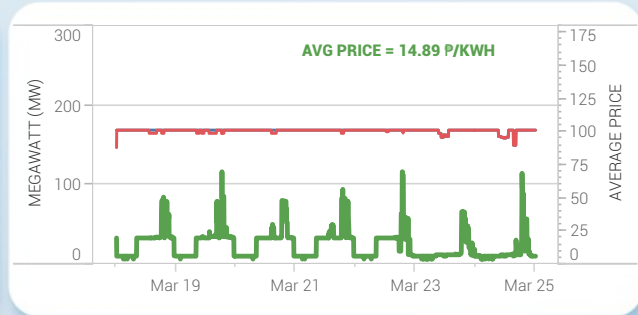
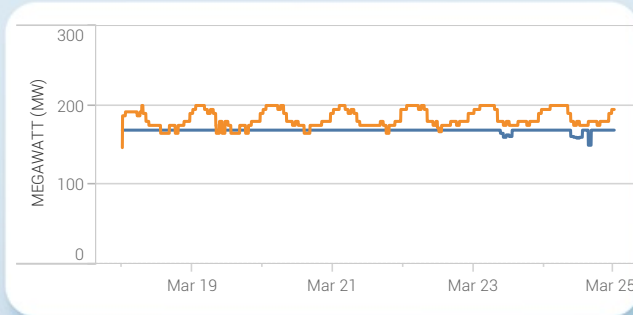
### REGULATION UP RESERVE



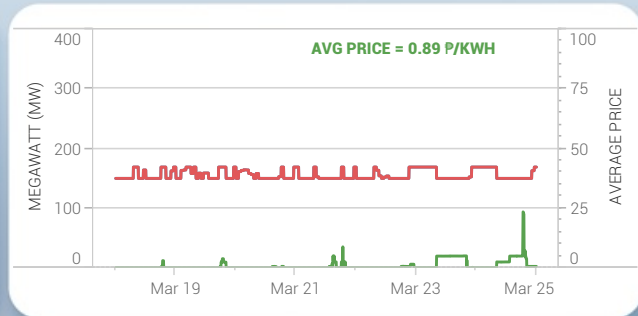
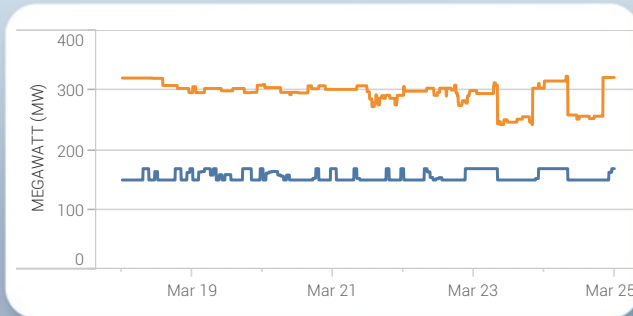
### REGULATION DOWN RESERVE



### CONTINGENCY RESERVE



### DISPATCHABLE RESERVE





## MINDANAO RESERVES

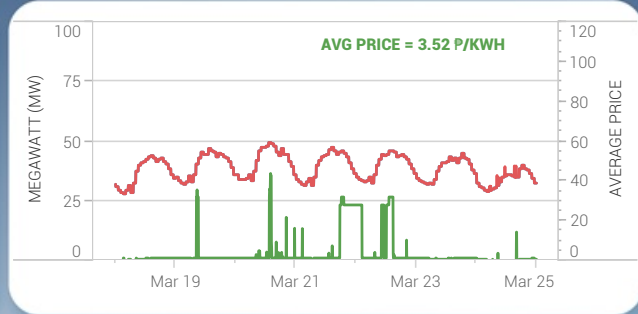
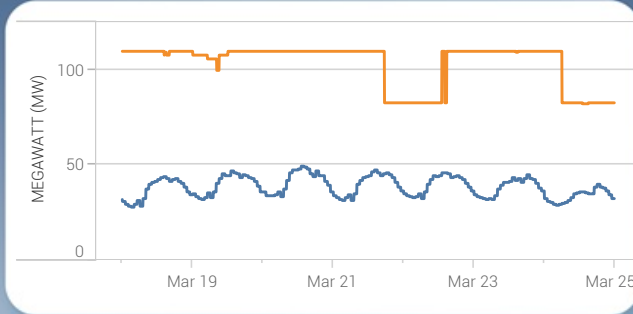
Reserve Requirement

Reserve Offers

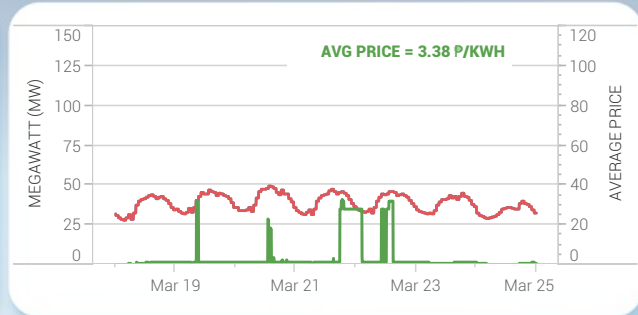
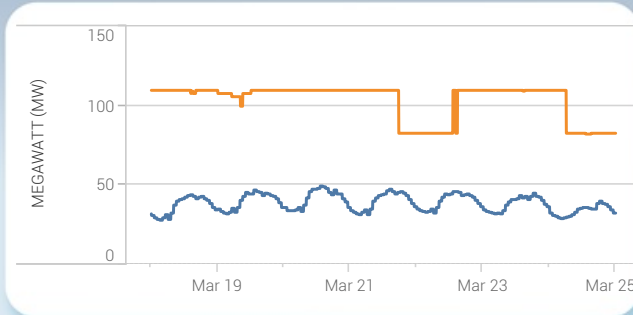
Reserve Schedule

Zonal Reserve Price

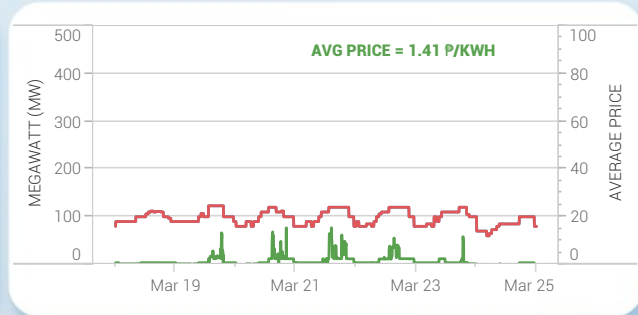
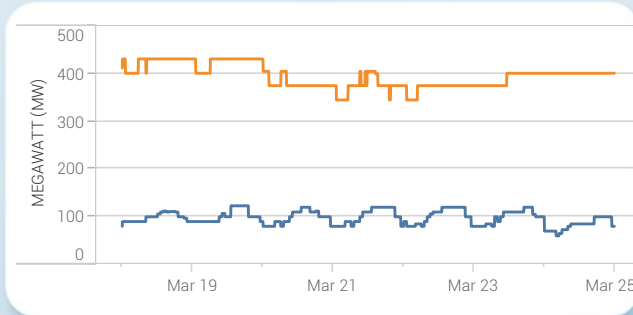
### REGULATION UP RESERVE



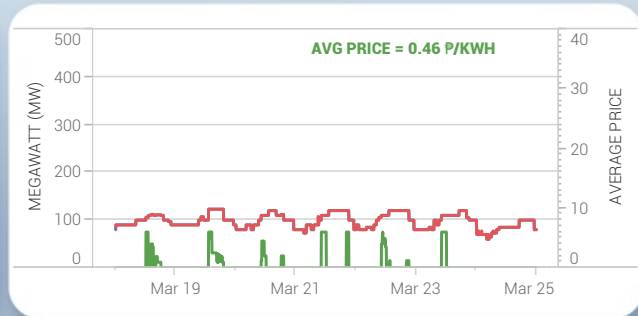
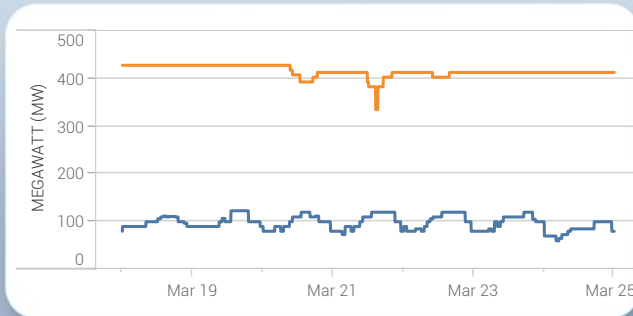
### REGULATION DOWN RESERVE



### CONTINGENCY RESERVE



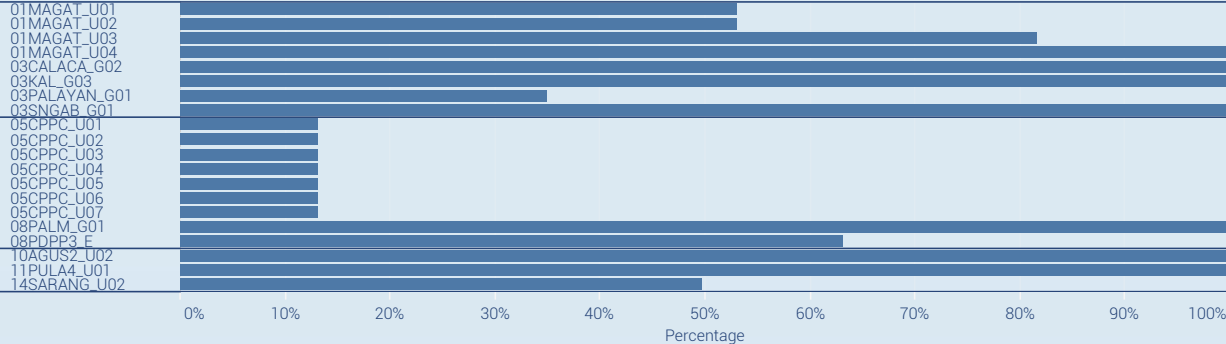
### DISPATCHABLE RESERVE



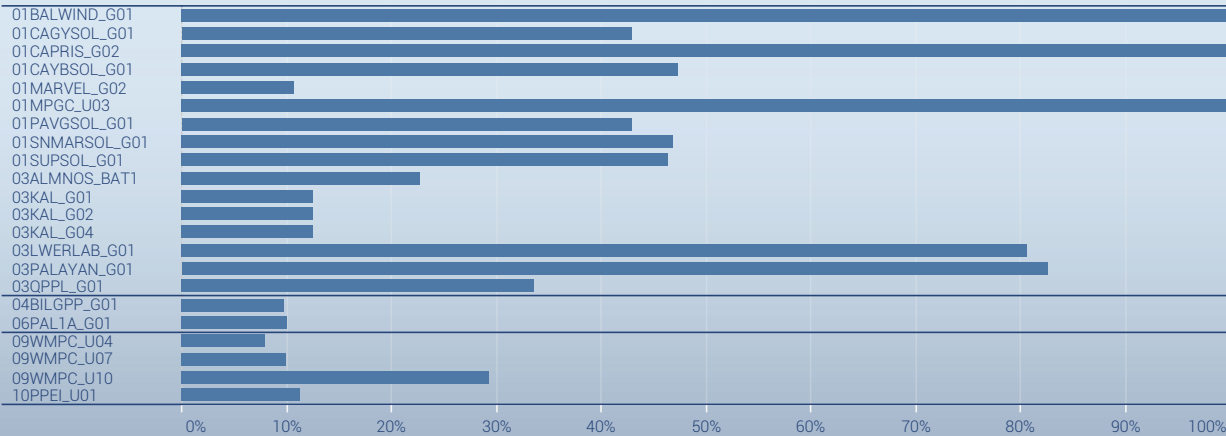
**AVERAGE RESERVE REQUIREMENT AND SCHEDULE**

LUZ	Regulation Up			Regulation Down			Contingency Reserve			Dispatchable Reserve		
	Req't	Sched	Surplus or Deficit	Req't	Sched	Surplus or Deficit	Req't	Sched	Surplus or Deficit	Req't	Sched	Surplus or Deficit
Mar 18	193	181	-11	193	181	-11	568	568	0	565	565	0
Mar 19	199	172	-27	199	172	-27	576	576	0	576	576	0
Mar 20	192	188	-4	192	188	-4	564	564	0	564	564	0
Mar 21	193	171	-22	193	171	-22	523	523	0	523	523	0
Mar 22	192	189	-3	192	189	-3	560	560	0	560	560	0
Mar 23	183	181	-2	183	181	-2	560	559	-2	560	560	0
Mar 24	175	166	-9	175	166	-9	554	554	0	554	554	0
VIS	Regulation Up			Regulation Down			Contingency Reserve			Dispatchable Reserve		
	Req't	Sched	Surplus or Deficit	Req't	Sched	Surplus or Deficit	Req't	Sched	Surplus or Deficit	Req't	Sched	Surplus or Deficit
Mar 18	40	40	0	40	40	0	169	168	-1	155	155	0
Mar 19	40	40	0	40	40	0	169	168	-1	158	158	0
Mar 20	39	39	0	39	39	0	169	169	0	155	155	0
Mar 21	40	40	0	40	40	0	169	169	0	153	153	0
Mar 22	38	38	0	38	38	0	169	169	0	154	154	0
Mar 23	38	38	0	38	38	0	168	168	0	158	158	0
Mar 24	36	36	0	36	36	0	167	167	0	158	158	0
MIN	Regulation Up			Regulation Down			Contingency Reserve			Dispatchable Reserve		
	Req't	Sched	Surplus or Deficit	Req't	Sched	Surplus or Deficit	Req't	Sched	Surplus or Deficit	Req't	Sched	Surplus or Deficit
Mar 18	37	37	0	37	37	0	99	99	0	99	99	0
Mar 19	40	40	0	40	40	0	102	102	0	102	102	0
Mar 20	42	42	0	42	42	0	98	98	0	98	98	0
Mar 21	40	40	0	40	40	0	101	101	0	101	101	0
Mar 22	40	40	0	40	40	0	102	102	0	102	102	0
Mar 23	38	38	0	38	38	0	100	100	0	100	100	0
Mar 24	34	34	0	34	34	0	83	83	0	83	83	0

**GENERATORS ON OUTAGE**



**GENERATORS WITH SYSTEM OPERATOR OVERRIDING CONSTRAINT**



**FREQUENT CONGESTIONS**

