

Luzon Grid Power Supply Outlook

8 June 2021

Outline of the presentation

- Historical peak demand vs. generation capacity in Luzon
- Luzon Grid Red Alerts since 2014
- DOE's power supply situationer for 2021

Luzon system peak demand

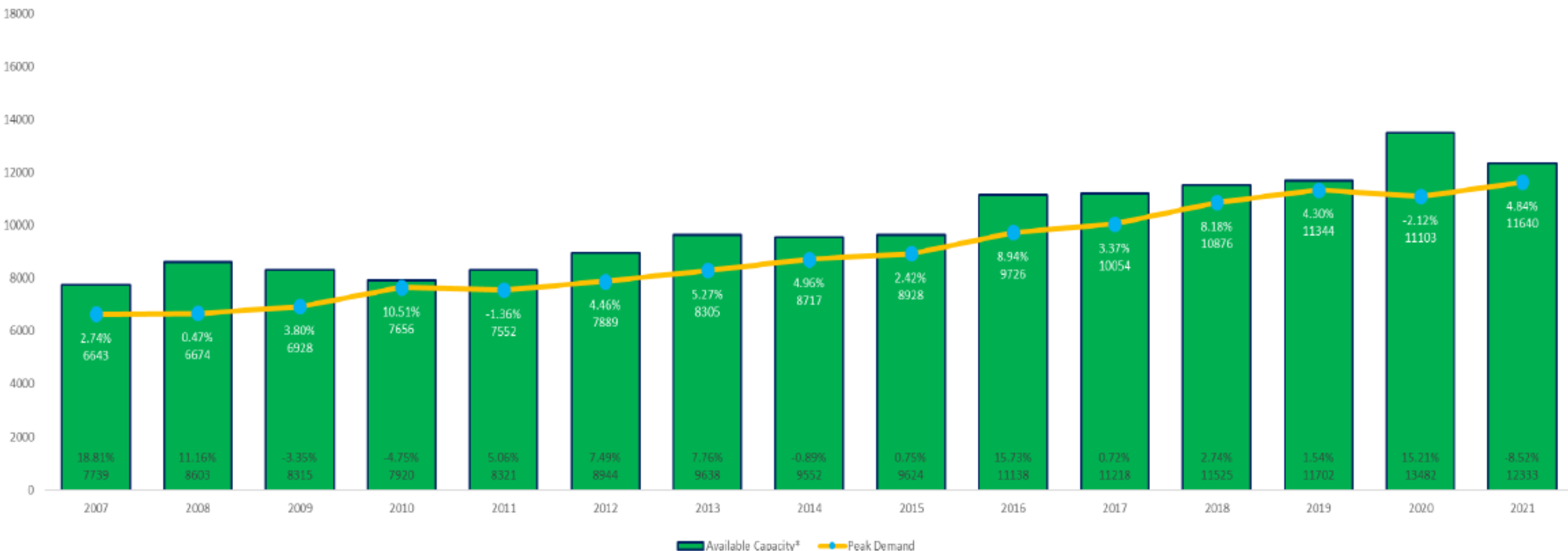
MONTH	LUZON SYSTEM PEAK DEMAND (MW)																			
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
JAN	5,119	5,212	5,282	5,511	5,471	5,619	5,819	5,972	6,118	6,407	6,594	7,027	7,079	7,121	7,315	8,175	8,249	9,213	9,123	9,713
FEB	5,157	5,056	5,345	5,701	5,853	5,776	6,115	6,094	6,452	6,878	6,877	7,162	7,214	7,545	7,610	8,229	8,668	9,579	9,309	9,889
MAR	5,384	5,424	5,705	6,065	6,210	6,186	6,157	6,211	6,642	7,057	7,006	7,503	7,720	7,655	7,878	8,806	9,459	9,936	10,180	11,103
APR	5,523	5,589	6,149	6,218	6,266	6,222	6,581	6,663	6,845	7,305	7,056	7,885	8,178	8,267	8,727	9,586	9,831	10,539	10,957	8,377
MAY	5,646	5,823	6,109	6,323	6,443	6,466	6,643	6,485	6,829	7,656	7,538	7,889	8,305	8,717	8,928	9,726	10,054	10,750	11,245	9,639
JUN	5,447	5,750	5,831	5,978	6,348	6,339	6,619	6,674	6,928	7,646	7,552	7,709	8,208	8,607	8,881	9,507	10,000	10,876	11,344	10,642
JUL	5,281	5,652	5,856	6,061	6,039	6,221	6,464	6,559	6,848	7,240	7,438	7,574	8,030	8,265	8,826	9,339	9,588	9,996	10,997	10,595
AUG	5,313	5,604	5,813	5,906	6,107	6,094	6,369	6,403	6,863	7,009	7,200	7,242	7,755	8,230	8,889	9,379	9,957	9,843	10,687	10,422
SEP	5,364	5,559	5,885	6,097	5,998	6,195	6,416	6,496	6,873	7,057	7,107	7,293	7,966	8,005	8,738	9,082	9,806	10,035	10,392	10,570
OCT	5,460	5,687	5,878	5,916	5,843	5,845	6,155	6,627	6,530	7,074	7,255	7,421	7,564	7,993	8,624	9,005	9,483	10,346	10,845	10,344
NOV	5,319	5,712	5,957	5,987	5,889	5,974	6,137	6,492	6,662	6,851	7,223	7,425	7,488	8,033	8,498	8,900	9,590	10,088	10,413	9,886
DEC	5,305	5,707	5,904	5,900	5,910	5,813	6,195	6,376	6,575	6,946	7,178	7,395	7,670	7,996	8,487	8,774	9,441	9,987	10,111	9,634

LUZON



Luzon System Capacity and Demand Profile

Luzon Grid Capacity and Demand for 2007 to 2021

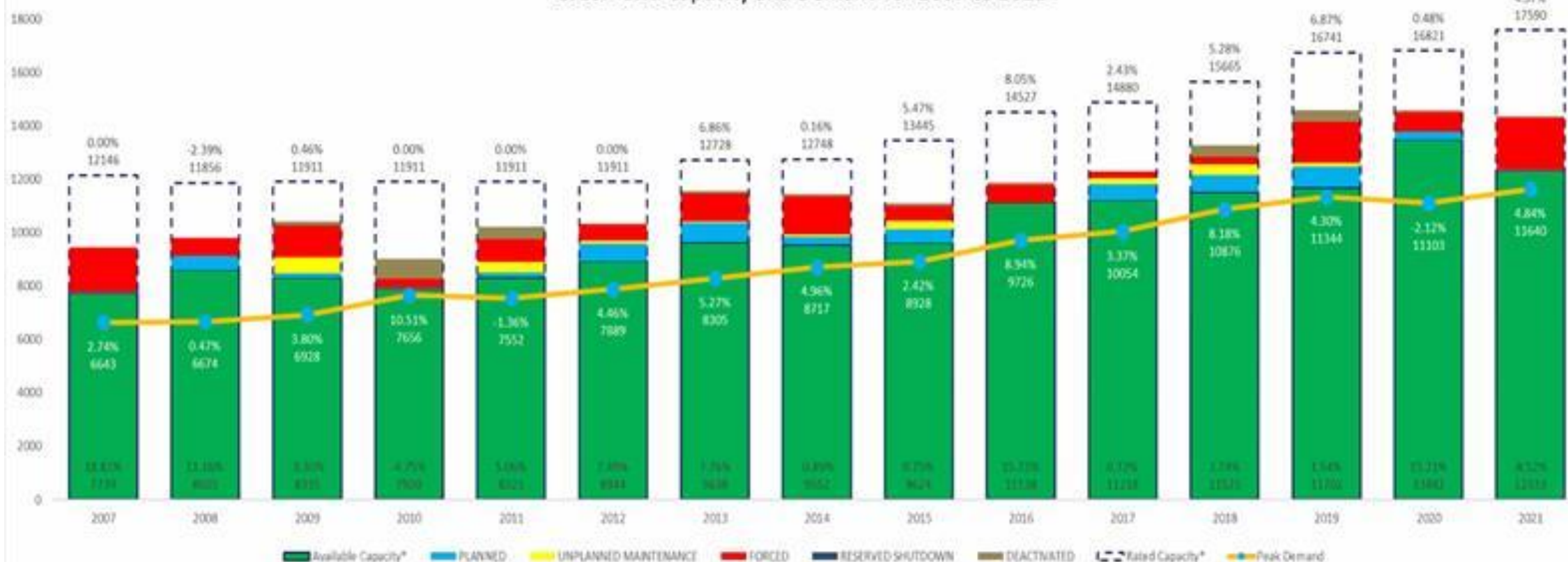


**Rated and Available Capacity Coincident with the date occurrence of the System Peak Demand
Peak Demand based on System Peak Aggregate Annual Submission to DOE*

Growth Rate in %

System Capacity and Demand Profile

Luzon Grid Capacity and Demand for 2007 to 2021



*Rated and Available Capacity Coincident with the date occurrence of the System Peak Demand
Peak Demand based on System Peak Aggregate Annual Submission to DOE

Growth Rate in %

NGCP Red Alert issuances in Luzon

2014 and 2015

Date	Reason	Remarks
16 May 2014	Outage of Sual U2 and emergency shutdown of Pagbilao U1	MLD and ILP
12 Jul 2014	Pigging activities of Ilijan and outage of Masinloc U1	MLD and ILP
14 Jul 2014	Zero contingency reserve; no MLD allocation	No MLD and No ILP
8 Sep 2014	Forced outage of GN Power U2 and Calaca U2; scheduled maintenance of Sta. Rita Module 20	MLD and ILP
29 Jun 2015	Zero contingency reserve; no MLD allocation	No MLD and No ILP

NGCP Red Alert issuances in Luzon

2016

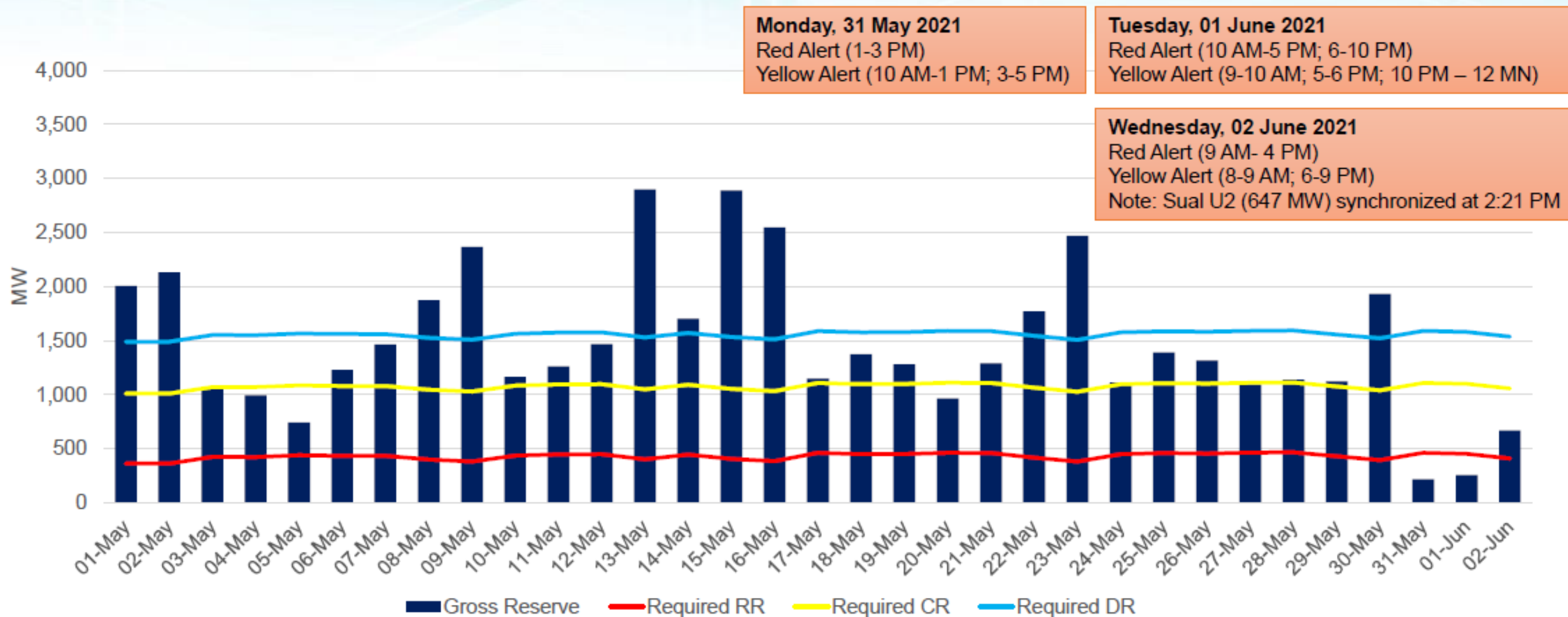
Date	Reason	Remarks
15 Apr 2016	Outage of Kalayaan U3 and U4; deration of Malaya U2	MLD and ILP
29 Jul 2016	Outage of Sual U2, Calaca U2 and Pagbilao U2	MLD and ILP
30 Jul 2016	Outage of Kalayaan units, SLTEC U1 and Limay 1; limited capability of Magat, San Roque and Angat	MLD and ILP
5 Aug 2016	Tripping of Calaca U2; Outage of Malaya U1; deration of Malaya U2 and Calaca U1	MLD and ILP
6 Sep 2016	Isolation of San Lorenzo, San Gabriel and Avion due to tripping of Makban-Batangas 230 kV lines 1 and 2	MLD and ILP
15 Nov 2016	Explosion of San Jose capacitor bank No. 1 power circuit breaker	MLD only

In 2017 and 2018, Luzon grid was on Yellow Alert for 17 days and on Red Alert for only 1 day. Power plant outages in 2019 resulted in 51 days of Yellow Alert and 15 days of Red Alert

MARCH							APRIL							MAY							JUNE						
S	M	T	W	Th	F	S	S	M	T	W	Th	F	S	S	M	T	W	Th	F	S	S	M	T	W	Th	F	S
					1	2		1	2	3	4	5	6				1	2	3	4							1
3	4	5	6	7	8	9	7	8	9	10	11	12	13	5	6	7	8	9	10	11	2	3	4	5	6	7	8
10	11	12	13	14	15	16	14	15	16	17	18	19	20	12	13	14	15	16	17	18	9	10	11	12	13	14	15
17	18	19	20	21	22	23	21	22	23	24	25	26	27	19	20	21	22	23	24	25	16	17	18	19	20	21	22
19	20	26	27	28	29	30	28	29	30	31				26	27	28	29	30	31		23/30	24	25	26	27	28	29
JULY							OCTOBER							NOVEMBER							DECEMBER						
S	M	T	W	Th	F	S	S	M	T	W	Th	F	S	S	M	T	W	Th	F	S	S	M	T	W	Th	F	S
	1	2	3	4	5	6			1	2	3	4	5						1	2	1	2	3	4	5	6	7
7	8	9	10	11	12	13	6	7	8	9	10	11	12	3	4	5	6	7	8	9	8	9	10	11	12	13	14
14	15	16	17	18	19	20	13	14	15	16	17	18	19	10	11	12	13	14	15	16	15	16	17	18	19	20	21
21	22	23	24	25	26	27	20	21	22	23	24	25	26	17	18	19	20	21	22	23	22	23	24	25	26	27	28
28	29	30	31				27	28	29	30	31			24	25	26	27	28	29	30	29	30	31				

* Data as of December 31, 2019

2021 LUZON Actual Power Situation (as of 02 June 2021)



Notes:

1. Actual Peak Demand and Capacity were based on NGCP's Daily Operations Reports; and
2. HVDC import from Visayas not included.



Luzon Power Plant Outages

Planned Outages

Power Plant	Installed Capacity (MW)	Dependable Capacity (MW)	Cause	Date Out	Estimated Date In
San Roque Power Corporation (SRPC) Hydroelectric Power Plant Unit 1	145	145	Planned Outage	30-May-2021	13-Jun-2021
San Roque Power Corporation (SRPC) Hydroelectric Power Plant Unit 2	145	145	Planned Outage	30-May-2021	13-Jun-2021
San Roque Power Corporation (SRPC) Hydroelectric Power Plant Unit 3	145	145	Planned Outage	30-May-2021	13-Jun-2021
Total	435	435			



Luzon Power Plant Outages

Unplanned / Forced Outages

Power Plant	Installed Capacity (MW)	Dependable Capacity (MW)	Cause	Date Out	Estimated Date In
TeaM Sual Corporation (TSC) Sual Unit 2 Coal-fired Power Plant	647	647	Problem at pressure control valve of gland steam	16-Sep-2020 16-May-2021	11-May-2021 02-Jun-2021
Sem-Calaca Power Corporation (SCPC) Calaca Unit 2 Coal-fired Power Plant	300	300	Generator stator earth fault	03-Dec-2020	01-Jul-2021
GNPower Mariveles Energy Center Ltd. Co. (GMEC) Mariveles Unit 1 Coal-fired Power Plant	345	316	Boiler tube leak	06-Feb-2021	31-Aug-2021
GNPower Mariveles Energy Center Ltd. Co. (GMEC) Mariveles Unit 2 Coal-fired Power Plant	345	316	Boiler tube leak	01-Jun-2021	08-Jun-2021



Luzon Power Plant Outages

Unplanned / Forced Outages

Power Plant	Installed Capacity (MW)	Dependable Capacity (MW)	Cause	Date Out	Estimated Date In
TeaM Pagbilao Corporation (TPC) Pagbilao Unit 2 Coal-fired Power Plant	382	382	Boiler tube leak	02-Jun-2021	06-Jun-2021
Total	2,019	1,961			



Luzon Power Plant Outages

Major Power Plant derating

Power Plant	Installed Capacity (MW)	Dependable Capacity (MW)	Declared Available Capacity (MW)	Cause	Date Out
KEPCO Ilijan Corporation (KEILCO) Ilijan Gas Power Plant	1,277	1,200	716	Malampaya gas restriction	23-Mar-2021
Derated Capacity (MW)			484		

Testing and commissioning

Power Plant	Installed Capacity (MW)	Dependable Capacity (MW)	Cause	Date Out	Estimated Date In
GN Power Dinginin (GNPD) Unit 1 Coal-fired Power Plant	668	668	Boiler tube leak	31-May-2021	14-Jun-2021
Total	668	668			



Ancillary Service (AS) Requirement Status

NGCP Contracted Ancillary Services, as of December 2020

Grid	Regulating Reserve (RR)				Contingency Reserve (CR)				Dispatchable Reserve (DR)			
	Required	Contracted			Required	Contracted			Required	Contracted		
	(MW)	F (in MW)	F (in %)	NF (in MW)	(MW)	F (in MW)	F (in %)	NF (in MW)	(MW)	F (in MW)	F (in %)	NF (in MW)
Luzon	491	237	48%	525	647	180	28%	395	647	145	22%	806
Visayas	96	0	0	50	166	71	43%	30	166	94	57%	145
Mindanao	91	0	0	165	150	0	0	230	150	0	0	308

Uncontracted AS (Firm)

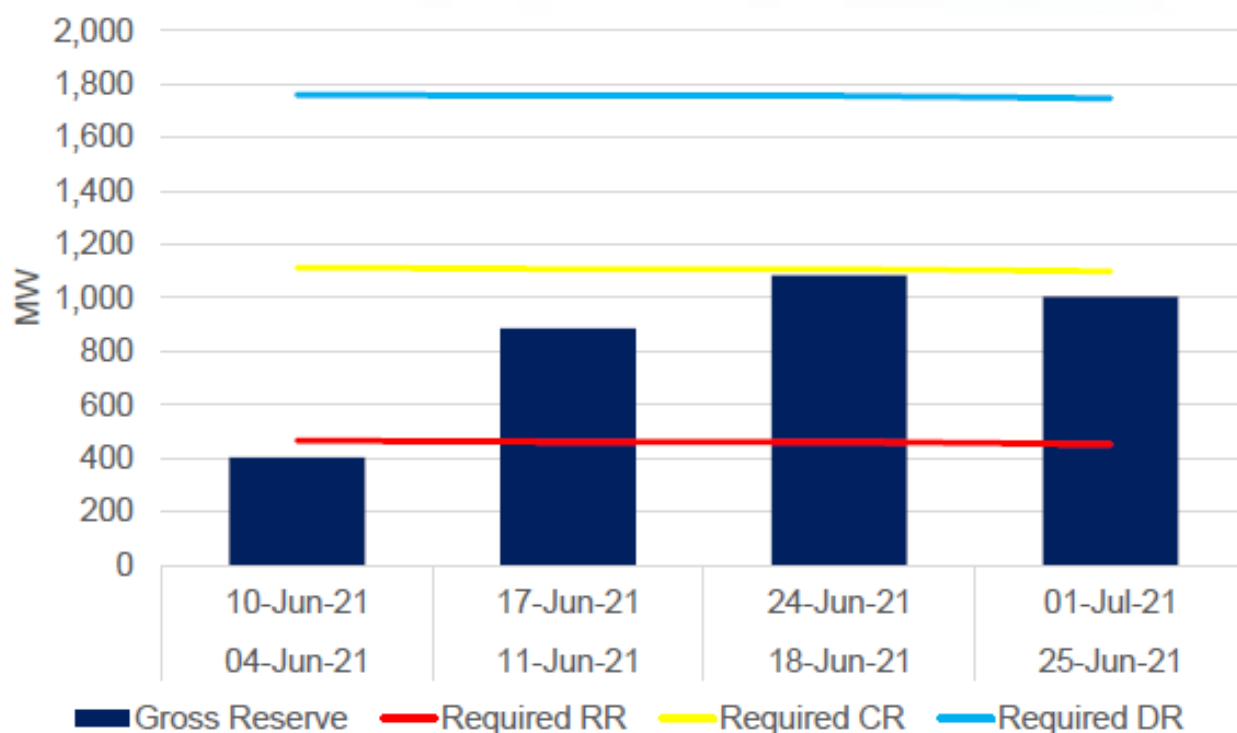
Grid	Regulating Reserve (RR)	Contingency Reserve (CR)	Dispatchable Reserve (DR)
Luzon	254 MW	467 MW	502 MW
Visayas	96 MW	95 MW	72 MW
Mindanao	91 MW	150 MW	150 MW
Total	441 MW	712 MW	724 MW

Total Uncontracted AS = 1,877 MW

F- Firm Contract; NF – Non-firm Contract; MW - Megawatt



2021 LUZON Power Outlook for June 2021



Luzon Grid	04-Jun-21	11-Jun-21	18-Jun-21	25-Jun-21
	10-Jun-21	17-Jun-21	24-Jun-21	01-Jul-21
Available Capacity	12,049	12,421	12,626	12,318
Peak Demand	11,645	11,535	11,541	11,313
Gross Reserve	404	886	1,085	1,005
Required RR	466	461	462	453
Required CR	647	647	647	647
Required DR	647	647	647	647

Power Plant Outages	04-Jun-21	11-Jun-21	18-Jun-21	25-Jun-21
	10-Jun-21	17-Jun-21	24-Jun-21	01-Jul-21
Planned				
SRPC U1	145	0	0	0
SRPC U2	145	0	0	0
SRPC U3	145	0	0	0
Pagbilao U1	0	382	382	382
Unplanned / Forced				
GN Power Mariveles U1	316	316	316	316
GN Power Mariveles U2	316	0	0	0
Sem-Calaca U2	300	300	300	300
Major Dearth				
Ilijan	484	484	484	484
Total	1,851	1,482	1,482	1,482

Notes:

1. Peak demand forecast was based on NGCP's update as of 15 March 2021; and
2. HVDC import from Visayas not included.



Thank you