

National Grid Corporation of the Philippines

2025-2034 ANCILLARY SERVICE AGREEMENT PROCUREMENT PLAN

In compliance with the Department of Energy's (DOE) Department Circular No. DC 2021-10-0031, "Prescribing the Policy for the transparent and efficient procurement of Ancillary Services by the System Operator" or the Competitive Selection process (CSP) Policy of Ancillary Services (AS), the 2025 – 2034 Ancillary Service Agreement Procurement Plan (ASAPP) Report is hereby created, pursuant to the Section 4 of the said Circular.

This ASAPP outlines the acquisition plan of AS requirements by the System Operator (SO) to support the transmission of capacity and energy from resources to loads while maintaining reliable operation of the transmission system.

As prescribed under Section 4 of DC 2021-10-0031, the SO shall develop and submit to the DOE its annual ASAPP not later than 31 March of every year that contains the projected AS requirements for the next ten (10) years, including but not limited to the following: Type of AS to be procured per grid; Timing of AS requirement per grid (month and year); Existing ASPAs (providing the location and expiration); Monthly levels of AS requirement per grid to account seasonality; Typical Hourly level for the past five years of the AS requirement per type per grid; and other information that the DOE may require. The ASAPP shall be posted at the SO website within three (3) days from receipt of the review by the DOE but should not be later than 30 April of every year.

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INTRODUCTION

The Philippine Grid Code defines Ancillary Services as "support services such as Regulating Reserves, Contingency Reserves, Reactive Power Support, and Black Start capability which are necessary to support the transmission capacity and energy that are essential in maintaining the Power Quality, Reliability, and Security of the Grid. The following are the basis of Ancillary Services:

1. Section 8 of Republic Act No. 9136, or the Electric Power Industry Reform Act of 2001 (EPIRA): The National Transmission Corporation (TransCo) shall assume the National Power Corporation's (NPC) authority and responsibility for the planning, construction, and centralized operation and maintenance of its high voltage transmission facilities, including grid interconnections and AS.
2. Philippine Grid Code mandates the System Operator to be responsible in determining, acquiring, and dispatching the capacity needed to supply the required AS of the Grid.
3. 2006 Ancillary Services Procurement Plan (ASPP)
4. 2006 Ancillary Services – Cost Recovery Mechanism: sets the rules on TransCo's recovery of AS contracted and procured under the ASPP
5. Regulatory Reset for the National Grid Corporation of the Philippines (NGCP) for 2011 to 2015 Final Determination - ERC Case No. 2009 – 180RC dated 22 November 2010
6. Republic Act No. 9511 or An Act Granting the National Grid Corporation of the Philippines a franchise to engage in the business of conveying or transmitting electricity through High Voltage Back-Bone System of Interconnected Transmission Lines, Substations and Related Facilities, and for other purposes.

The cited laws, rules, and regulations above were promulgated prior to 2009, which still referred to TransCo as the responsible entity for AS. The roles as Transmission Network Provider, Metering Service Provider, and System Operator, along with it the responsibility on AS, have been turned over to NGCP in 2009.

Types of Ancillary Service to be procured

Based on DOE Department Circular DC2019-12-0018, pending the harmonization of AS-related issuances and review of the relevant provisions of PGC 2016, the classification and required levels of AS shall be in accordance with the following:

I. Classification of Ancillary Services

Regulating Reserve (RR) — Readily available and dispatchable generating capacity that is allocated exclusively to correct deviations from the acceptable nominal frequency caused by unpredicted variations in demand or generation output;

Contingency Reserve (CR) — Synchronized generation capacity from Qualified Generating Units and Qualified Interruptible Loads allocated to cover the loss or failure of a synchronized generating unit or a transmission element or the power import from a circuit interconnection;

Dispatchable Reserve (DR) — Generating capacity that is not scheduled for Regular Energy Supply, Regulating Reserve or Contingency Reserve, or interruptible loads not scheduled for Contingency Reserve, and that are readily available for dispatch in order to replenish the Contingency Reserve Service whenever a generating unit trips or a loss of a single transmission interconnection occurs;

Reactive Power Support AS (RPS) — Capability to supply Reactive Power to, or absorb Reactive Power from, the Grid in order to maintain the bus voltage within five percent ($\pm 5\%$) of its nominal voltage;

Black Start AS (BS) — Ability of a generating unit, without assistance from the Grid or other external power supply, to recover from a shutdown condition to an operating condition in order to energize the Grid and assist other generating units to start.

II. Required Level of Ancillary Services

The following are the ancillary services with the corresponding required levels of reserve:

Regulating Reserve (RR) — 4% of the total demand;

Contingency Reserve (CR) — Maximum capacity among the following: the largest synchronized generating unit or a transmission element or the power import from a circuit interconnection;

Dispatchable Reserve (DR)— Maximum capacity among the following: the second largest synchronized generating unit or a transmission element or the power import from a circuit interconnection;

Reactive Power Support (RPS) — System Operator (SO) to determine day-ahead through load flow simulation;

Black Start Service (BSS) – at least two (2) generating units contracted per power restoration highway and one (1) should always be available at any given time.

Further, as prescribed in the DOE Department Circular DC2019-12-0018, prior to the commercial operation of the Reserve Market, the SO shall ensure compliance with its obligation to procure the required level of AS through Firm Contracts only. Upon commercial operation of the Reserve Market, the SO shall procure RR, CR, and DR through firm contracts, and Reserve Market. Provided that the contracted levels are equivalent to 50% of the required levels for RR, CR, and DR. For the RPS and Black Start, they shall be procured through firm contracts only.

2025-2033 ANCILLARY SERVICE AGREEMENT PROCUREMENT PLAN

The following are the list of the accredited and contracted ancillary service providers, including its validity:

LIST OF CONTRACTED ANCILLARY SERVICE PROVIDERS								
NO. of ASPAs	COMPANY	POWER PLANT/FACILITY	ANCILLARY SERVICES					EFFECTIVITY
			TYPE / ASPA & ERC-APPROVED CAPACITY PAYMENT RATE					
LUZON			RR	CR	DR	RPS	BSS	
1	BACMAN GEOTHERMAL, INC.*	110 MW Bac-Man I Geothermal Power Plant	-	-	-	-	ASPA Rate: P9.6060616/kWh ERC-Approval: 2.00/kW/hr +FOM+VOM+ FUEL (per occurrence)	9/15/2023 - 9/14/2028
2	BULACAN POWER GENERATION CORP *	54.62 MW Bulacan Diesel-Fired Power Plant	-	-	ASPA/ERC-Approved Rate: P0.5781/kW/hr	-	-	11/26/2023 - 11/25/2028
3	CIP II POWER CORPORATION *	20MW Bunker-Fired Power Plant	-	-	ASPA Rate: P5.7692/kW/hr	-	-	Pending ERC issuance of PA
4	FIRST GEN HYDRO POWER CORP*	Pantabangan HEPP	-	-	-	ASPA/ERC-Approved Rate: P4.00/kVAR/hr (per occurrence)	ASPA Rate: P9.6060616/kWh ERC-Approval: FOM+VOM+FUEL (per occurrence)	9/21/2023 - 9/20.2028
5	GIGA ACE 4, INC.*	Alaminos BESS Unit 2	ASPA/ERC-Approved Rate: P0.9581/kW/hr	ASPA Rate: P5.2841/kW/hr ERC-Approved Rate: Not included in the PA	-	-	-	8/18/2023 - 8/17/2028
6	INGRID POWER HOLDINGS INC*	Ingrid Pililla DPP (Units 1, 2, 4 & 6)	-	ASPA Rate: P4.4056/kW/hr, P4.4059/kW/hr, P4.4057/kW/hr, P4.4058/kW/hr ERC-Approved Rate: P1.50/kW/hr,	-	-	-	Deferred implementation due to filed manifestation
7	MASINLOC POWER PARTNERS CO, LTD.*	Masinloc Advancion Energy Storage Array (Phase 1)	-	ASPA Rate: P2.00/kW/hr ERC-Approved Rate: P1.50/kW/hr	-	-	-	9/9/2023 - 9/8/2028

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8	ONE SUBIC POWER GENERATION CORPORATION*	One Subic Bunker-Fired Power Plant	-	-	ASPA/ERC-Approved Rate: P0.5457/kWh	-	-	11/26/2023 - 11/25/2028
9	PAGBILAO ENERGY CORP	420MW Pagbilao 3 Coal Fired Thermal Plant	-	-	-	ERC-Approved Rate: P4.00/kVAR/hr (per occurrence)	-	12/26/2020 -12/25/2025
10	PRIME MERIDIAN POWER CORP.	100MW Avion Natural Gas Fired PP	ERC-Approved Rate: P2.25/kW/hr (Firm) P3.00/kW/hr (Non-Firm)				ERC-Approval: Incidental Energy Payment (per occurrence)	5/26/2020 - 5/25/2025
11	PSALM/NATIONAL POWER CORP.	Kalayaan Pump Storage	ERC-Approved Rate: P1.1805/kW/hr	ERC-Approved Rate: P1.1805/kW/hr	ERC-Approved Rate: P1.1805/kW/hr	ERC-Approved Rate: P0.0533/kVAR/hr (per occurrence)	√	Until a new ASPA is approved
12	SNAP-BENGUET, INC.*	112.5 MW Ambuklao HEPP	-	ASPA Rate: P 2.25/kW/hr ERC-Approved Rate: P1.50/kW/hr	ASPA/ERC-Approved Rate: P0.85/kW/hr	-	-	9/19/2023 - 9/18/2028
13	SNAP-BENGUET, INC.	Ambuklao HEPP (Units 1, 2 & 3)				ERC-Approved Rate: P4.00/kVAR/hr (per occurrence)		10/5/2019 - 25/5/2024
14	SNAP-BENGUET, INC.*	140 MW Binga HEPP	-	ASPA Rate: P 2.25/kW/hr ERC-Approved Rate: P1.50/kW/hr	ASPA/ERC-Approved Rate: P0.85/kW/hr	-	-	9/19/2023 - 9/18/2028
15	SNAP-BENGUET, INC.	Binga HEPP				ERC-Approved Rate: P4.00/kVAR/hr (per occurrence)		5/10/2019 - 5/25/2024

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16	SNAP-MAGAT, INC.*	388 MW Magat HEPP	-	ASPA Rate: P 2.25/kW/hr ERC-Approved Rate: P1.50/kW/hr (Units 1 & 4)	ASPA/ERC-Approved Rate: P0.85/kW/hr (Units 2 & 3)	-	-	9/19/2023 - 9/18/2028
17	SNAP-MAGAT, INC.	Magat HEPP (Units 1, 2, 3 & 4)				ERC-Approved Rate: P4.00/kVAR/hr (per occurrence)		5/14/2019 - 5/25/2024
18	THERMA LUZON, INC.	Pagbilao Coal-Fired Plant 1 & 2 (CR)		ERC-Approved Rate: P1.50/kW/hr (Firm) P2.25/kW/hr (Non-Firm)	-		-	07/26/2019 - 7/25/2024
	THERMA LUZON, INC.*	Pagbilao Coal-Fired Plant 1 & 2 (CR)	-	ASPA Rate: P 2.25/kW/hr ERC-Approved Rate: P1.50/kW/hr	-	-	-	Deferred implementation of Firm ASPA
19	THERMA LUZON, INC.	Pagbilao Coal-Fired Plant 1 & 2 (RPS)				ASPA/ERC-Approved Rate: P4.00/kVAR/hr (per occurrence)		12/26/2020 -12/25/2025
20	THERMA MOBILE, INC.*	239.20 MW Bunker C-Fired Diesel Plant	-	-	ASPA/ERC-Approved Rate: P0.85/kW/hr	ASPA/ERC-Approved Rate: P4.00/kVAR/hr (per occurrence)	-	01/6/2024 - 01/5/2029
21	UNIVERSAL POWER SOLUTIONS, INC.*	Lamoa BESS	ASPA/ERC-Approved Rate: P2.15/kW/hr	ASPA Rate: P2.40/kW/hr ERC-Approved Rate: P1.50/kW/hr	-	-	-	9/15/2023 - 9/14/2028
22	UNIVERSAL POWER SOLUTIONS, INC.*	Bataan BESS	ASPA/ERC-Approved Rate: P2.15/kW/hr	-	-	-	-	9/15/2023 - 9/14/2028
23	UNIVERSAL POWER SOLUTIONS, INC.*	Concepcion BESS	-	ASPA Rate: P2.40/kW/hr ERC-Approved Rate: P1.50/kW/hr	-	-	-	3/18/2024 - 3/17/2029

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24	UNIVERSAL POWER SOLUTIONS, INC.*	San Manuel BESS	ASPA Rate: P.2.25/kW/hr ERC-Approved Rate: P2.20/kW/hr	ASPA Rate:P2.40/kW/hr ERC-Approved Rate: P1.50/kW/hr	-	-	-	9/15/2023 - 9/14/2028
VISAYAS								
1	TOLEDO POWER COMPANY	TPC Carmen Diesel Power Plant	-	-	ERC-Approved Rate: P0.85/kW/hr	ERC-Approved Rate: P4.00/kVAR/hr (per occurrence)	ERC-Approval: FOM+VOM+FU EL (per occurrence)	6/26/2019 - 06/25/2024
2	PANAY POWER CORPORATION 3	Nabas Diesel Power Plant	-	-	ERC-Approved Rate: P0.85/kW/hr	ERC-Approved Rate: P4.00/kVAR/hr (per occurrence)	-	6/26/2019 - 06/25/2024
3	MORE POWER BARGE INC.*	PB 101 (Units 1, 2, 3 & 4)	-	-	-	-	ASPA Rate: P18.7166/kW/hr ERC-Approval: 5.00/kW/hr+FO M+VOM+FUEL (per occurrence)	10/15/2023 -10/14/2028
4	SPC ISLAND POWER CORP	Bohol Diesel Power Plant	-		ERC-Approved Rate: P0.85/kW/hr		ERC-Approval: FOM+VOM+FU EL (per occurrence)	4/26/2019 - 4/25/2024
5	SPC ISLAND POWER CORP	Panay Diesel Power Plant 1	-	ERC-Approved Rate: P2.00/kW/hr (Non-Firm)	ERC-Approved Rate: P1.25/kW/hr (Non-Firm)	ERC-Approved Rate: P4.00/kVAR/hr (per occurrence)		11/26/2013 - 12/25/2018
		Panay Diesel Power Plant 3						
	SPC ISLAND POWER CORP.*	Panay Diesel Power Plant 3			ASPA/ERC Approved Rate: P0.60/kW/hr (Firm)		ASPA Rate: P 31.5079/kW/hr ERC-Approval: FOM+VOM+FU EL (per occurrence)	Deferred implementation due to filed manifestation
6	SPC POWER CORP	PB 104	-	-	ERC Approved Rate: P0.85/kW/hr (Firm)	-	ERC-Approval: FOM+VOM+FU EL	9/26/2019 - 9/25/2024

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					P1.25/kW/hr (Non-Firm)		(per occurrence)	
7	CENTRAL NEGROS POWER RELIABILITY INC.	Calumangan DPP	-	-	ERC Approved Rate: P1.25/kW/hr (Non-Firm)	ERC-Approved Rate: P4.00/kVAR/hr (per occurrence)	-	8/26/2019 - 8/25/2024
8	SMCGP PHILS. ENERGY STORAGE, CO. LTD	Kabankalan BESS	ASPA/ERC-Approved Rate: P2.20/kW/hr	-	-	-	-	1/26/2022 - 1/25/2027
9	ISABEL ANCILLARY SVCS. CO.LTD	80 MW Modular Diesel Plant	ERC-Approved Rate: P2.25/kW/hr	ERC-Approved Rate: P1.50/kW/hr	-	ERC-Approved Rate: P4.00/kVAR/hr (per occurrence)		8/18/2023-8/17/2028
10	MERIDIAN POWER, INC. (formerly Cebu Private Power Corp.)*	70.59 MW Bunker C-Fired Diesel Plant	-		ASPA Rate: P0.7700/kW/hr ERC-Approved Rate: P0.77kW/hr (Units 1 & 2)	ASPA/ERC-Approved Rate: P4.00/kVAR/hr (per occurrence)	ERC-Approval: FOM+VOM+FU EL (per occurrence)	11/16/2023-11/15/2028
11	EAST ASIA UTILITIES CORP*	49.6MW Bunker C-Fired Diesel Plant	-	-	-	ASPA/ERC-Approved Rate: P4.00/kVAR/hr (per occurrence)	ERC-Approval: FOM+VOM+FU EL (per occurrence)	10/26/2023-10/25/2028
12	THERMA VISAYAS, INC.*	353.94 MW CFB Coal-Fired Power Plant	-	ASPA/ERC-Approved Rate: P1.50/kW/hr	-	ASPA/ERC-Approved Rate: P4.00/kVAR/hr (per occurrence)	-	9/15/2023 - 9/14/2028
13	THERMA POWER VISAYAS, INC.*	44.64 MW Naga Oil Fired Diesel Plant	-	-	-	ASPA/ERC-Approved Rate: P4.00/kVAR/hr (per occurrence)	ERC-Approval: FOM+VOM+FU EL (per occurrence)	10/26/2023-10/25/228
14	UNIVERSAL POWER SOLUTIONS, INC.*	20MW Toledo BESS	-	ASPA/ERC-Approved Rate: P1.25/kW/hr	-	-	-	8/26/2023-8/25/2028

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15	UNIVERSAL POWER SOLUTIONS, INC.*	20MW Ubay (Bohol) BESS	-	ASPA/ERC-Approved Rate: P1.25/kW/hr	-	-	-	12/28/2023-12/27/2023
16	UNIVERSAL POWER SOLUTIONS, INC.*	40MW Ormoc BESS	-	ASPA/ERC-Approved Rate: P1.25/kW/hr	-	-	-	3/18/2024 - 3/17/2029
MINDANAO								
1	THERMA MARINE, INC.*	100MW Mobile 1 Bunker-Fired PB	-	ASPA Rate: P1.60/kW/hr ERC-Approved Rate: P 1.50/kW/hr	-	ASPA/ERC-Approved Rate: P4.00/kVAR/hr	ERC-Approval: FOM+VOM+FU EL (per occurrence)	10/19/2023-1018/2028
2	THERMA MARINE, INC.*	100MW Mobile 2 Bunker-Fired PB	-	-	ASPA Rate: P 1.25/kW/hr ERC-Approved Rate: P0.85/kW/hr	ASPA/ERC-Approved Rate: P4.00/kVAR/hr	ERC-Approval: FOM+VOM+FU EL (per occurrence)	10/19/2023-1018/2028
3	WESTERN MINDANAO POWER CORP.	100MW Bunker C Fired Thermal Plant	-	-	ERC-Approved Rate P1.25/kW/hr	ASPA/ERC-Approved Rate: P4.00/kVAR/hr	ERC-Approval: Incidental Energy Payment (per occurrence)	4/26/2019 - 4/25/2024
	WESTERN MINDANAO POWER CORP. *	100MW Bunker C Fired Thermal Plant	-	-	ASPA Rate: P1.20/kW/hr	ASPA Rate: P50.00/kVAR/hr	ASPA Rate: P15.65160688/ kW/hr	Pending ERC issuance of PA
4	PSALM/NATIONAL POWER CORP.	AGUS 1 HEPP (Units 1 & 2)	ERC-Approved Rate P1.13044/kW/hr	ERC-Approved Rate P1.13044/kW/hr	-	ERC-Approved Rate: P0.0295/kVAR/hr	-	Until a new ASPA is approved
		AGUS 2 HEPP (Units 1, 2 & 3)			-		-	
		AGUS 4 HEPP (Units 1, 2 & 3)			-		-	
		AGUS 5 HEPP (Units 1 & 2)			-		-	
		AGUS 7 HEPP (Units 1 & 2)			-		-	
		PULANGI 4 HEPP			-		√	
		AGUS 6 HEPP (Units 3 & 5)			-			

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5	GN POWER KAUSWAGAN LTD. CO.*	Kauswagan CFPP	-	ASPA Rate: P 2.90/kW/hr ERC-Approved Rate: P1.50/kW/hr	-	-	-	Deferred implementation due to filed manifestation
6	KING ENERGY, INC.*	Misaamis Occidental Power Plant 2	-	-	ASPA/ERC-Approved Rate: P 0.6542/kW/hr	ASPA/ERC-Approved Rate: P4.00/kVAR/hr		11/26/2023-11/25/2028
7	KING ENERGY, INC.*	Misaamis Occidental Power Plant 3	-	-	ASPA/ERC-Approved Rate: P 0.6821/kW/hr	ASPA/ERC-Approved Rate: P4.00/kVAR/hr		11/26/2023-11/25/2028
8	KING ENERGY, INC.*	Surigao Sur Power Plant	-	-	ERC-Approved Rate: P0.85kw/hr	-	-	3/26/2023-3/25/2028
9	MAPALAD POWER CORPORATION*	Diesel/Bunker-C Fired Power Plant	-	-	ASPA Rate: P1.20/kW/hr; ERC Approved Rate: P0.85/kW/hr	-	-	11/26/2023-11/25/2028
10	UNIVERSAL POWER SOLUTIONS, INC.*	20MW Malita BESS	ASPA/ERC-Approved Rate: P 2.08/kW/hr	-	-	-	-	11/26/2023-11/25/2028
11	UNIVERSAL POWER SOLUTIONS, INC.*	20MW Maco BESS	ASPA/ERC-Approved Rate: P 2.08/kW/hr	-	-	-	-	8/26/2023 - 8/25/2028
12	UNIVERSAL POWER SOLUTIONS, INC.*	20MW Jasaan BESS	-	ASPA Rate: P 1.65/kW/hr ERC-Approved Rate: P1.50/kW/hr	-	-	-	3/18/2024 - 3/17/2029

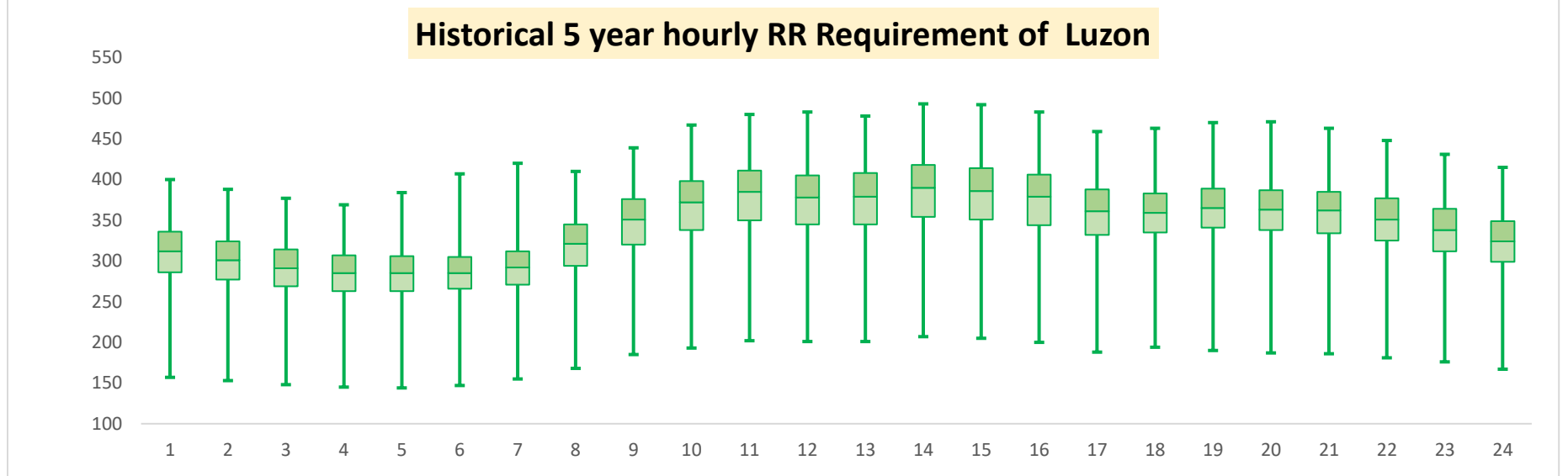
* Firm Contracts procured through Competitive Selection Process

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Typical Hourly Level for The Past Five Years of the AS Requirement Per Type Per Grid

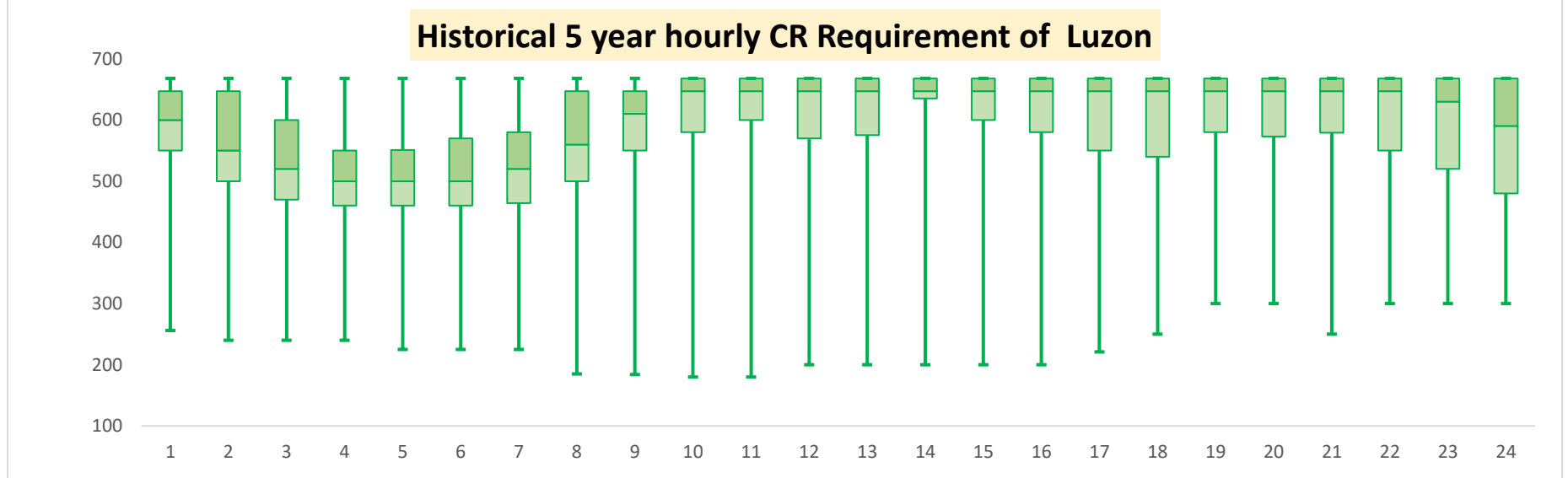
Historical 5-year Hourly RR Requirement of Luzon																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Minimum	157	153	148	145	144	147	155	168	185	193	202	201	201	207	205	200	188	194	190	187	186	181	176	167
25th percentile	286	277	269	263	263	266	271	294	320	338	350	345	345	354	351	344	332	335	341	338	334	325	312	299
50th percentile	312	301	291	285	285	285	292	321	351	372	385	378	379	390	386	379	361	359	365	363	362	351	338	324
Average	311	300	291	285	285	285	291	319	346	367	379	373	375	385	382	374	358	357	364	362	359	350	337	324
75th percentile	336	324	314	307	306	305	312	345	376	398	411	405	408	418	414	406	388	383	389	387	385	377	364	349
Maximum	400	388	377	369	384	407	420	410	439	467	480	483	478	493	492	483	459	463	470	471	463	448	431	415



As shown in the Boxplots above, the minimum RR level in Luzon ranges from 144 MW to 207 MW. While the Maximum RR level ranges from 369 MW to 493 MW. It's also noteworthy that the Maximum, 75th percentile, 50th percentile, and 25th percentile is low from Hour 1 to Hour 7; then increases at Hour 8 to Hour 15; and decreases at Hour 16 to Hour 24.

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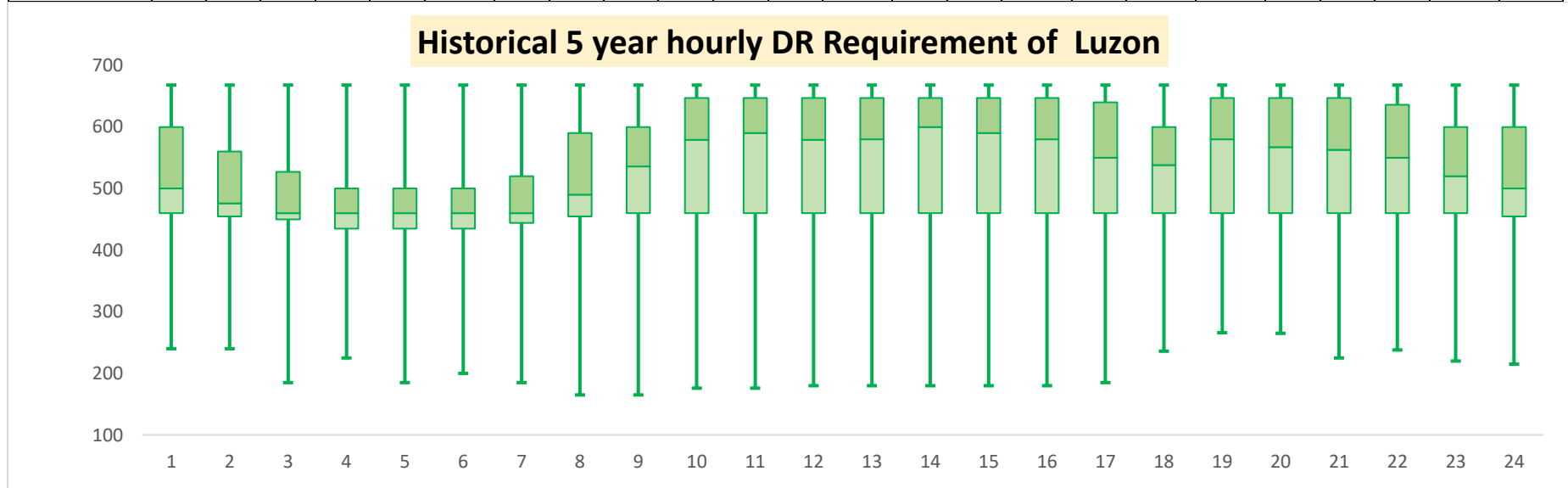
Historical 5-year Hourly CR Requirement of Luzon																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Minimum	256	240	240	240	225	225	225	185	184	180	180	200	200	200	200	200	221	250	300	300	250	300	300	300
25th percentile	550	500	470	460	460	460	464	500	550	580	600	570	575	635	600	580	550	540	580	573	579	550	520	480
50th percentile	600	550	520	500	500	500	520	560	610	647	647	647	647	647	647	647	647	647	647	647	647	647	630	590
Average	586	559	532	516	516	519	529	564	593	611	623	609	610	628	623	613	595	594	615	611	610	603	590	575
75th percentile	647	647	600	550	551	570	580	647	647	668	668	668	668	668	668	668	668	668	668	668	668	668	668	668
Maximum	668	668	668	668	668	668	668	668	668	668	668	668	668	668	668	668	668	668	668	668	668	668	668	668



For the CR levels in Luzon, the Minimum CR level ranges from 180 MW to 300 MW, while the Maximum level is fixed at 668MW. It's also noteworthy that the 50th and 75th percentile is closer to the maximum level at Hour 10 to Hour 22.

2025-2033 ANCILLARY SERVICE AGREEMENT PROCUREMENT PLAN

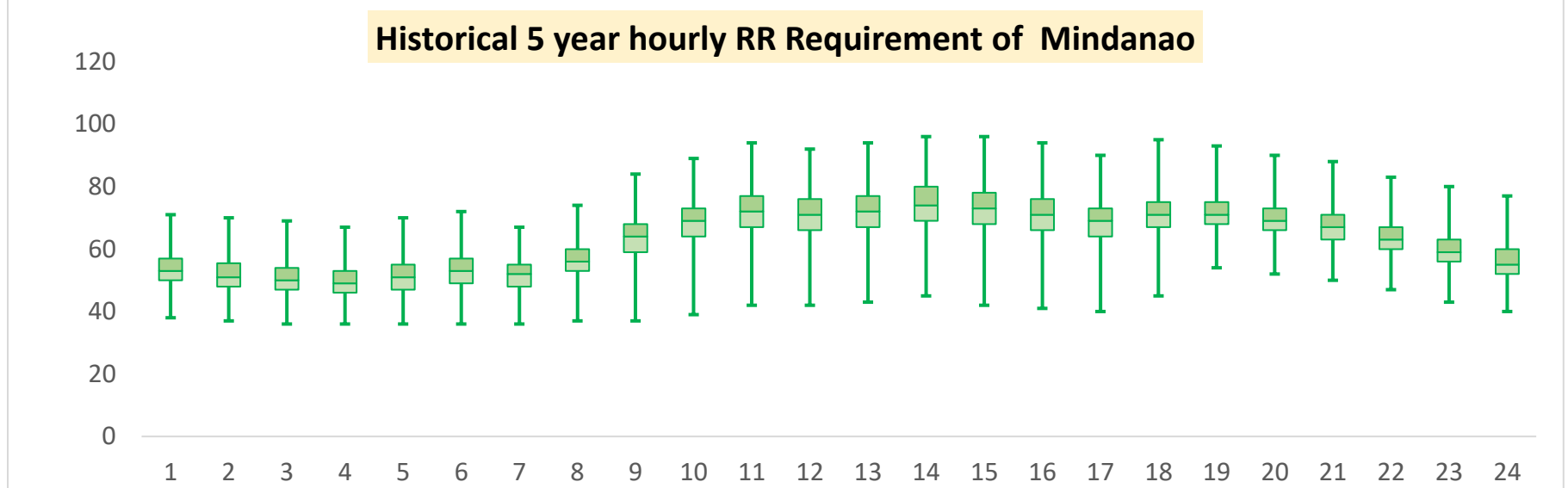
Historical 5-year Hourly DR Requirement of Luzon																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Minimum	240	240	185	225	185	200	185	165	165	176	176	180	180	180	180	180	185	236	266	265	225	238	220	215
25th percentile	460	455	450	435	435	435	444	455	460	460	460	460	460	460	460	460	460	460	460	460	460	460	460	455
50th percentile	500	476	460	460	460	460	460	490	536	579	590	579	580	600	590	580	550	538	580	567	563	550	520	500
Average	526	506	487	475	474	476	483	509	532	547	556	548	550	561	558	552	540	538	550	549	549	545	536	525
75th percentile	600	560	527	500	500	500	520	590	600	647	647	647	647	647	647	647	640	600	647	647	647	636	600	600
Maximum	668	668	668	668	668	668	668	668	668	668	668	668	668	668	668	668	668	668	668	668	668	668	668	668



For DR levels in Luzon, the Minimum DR level ranges from 165MW to 266MW, while the Maximum level is fixed at 668MW. It's also noteworthy that the 75th percentile is closer to the maximum level at Hour 10 to Hour 16, and Hour 19 to Hour 21.

2025-2033 ANCILLARY SERVICE AGREEMENT PROCUREMENT PLAN

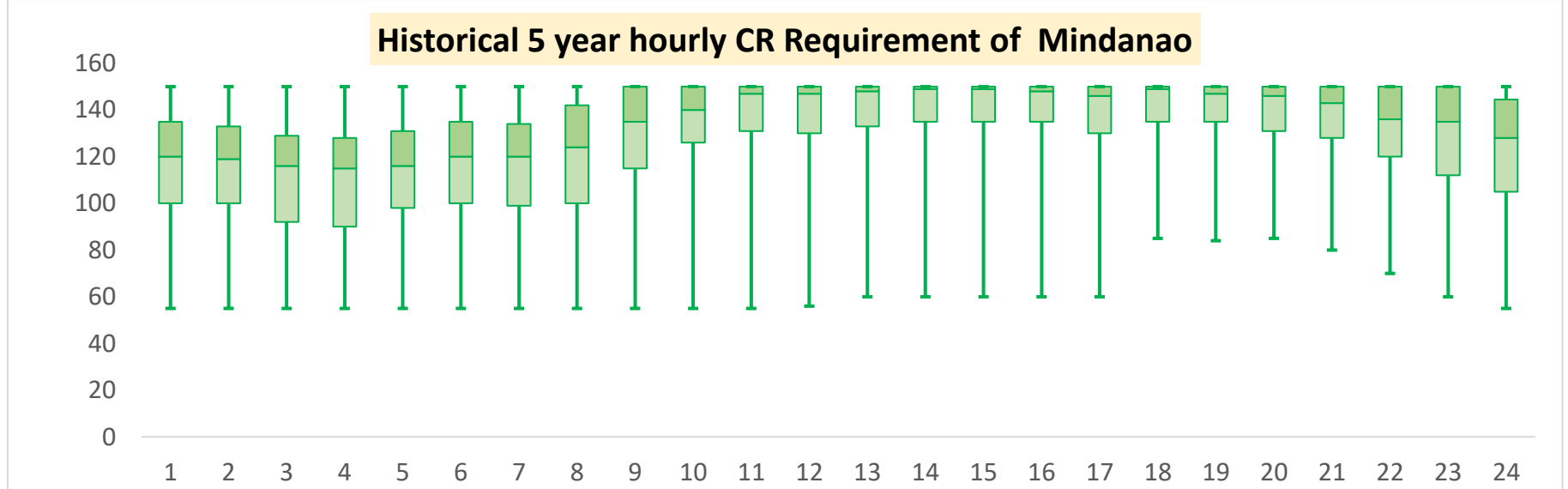
Historical 5-year Hourly RR Requirement of Mindanao																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Minimum	38	37	36	36	36	36	36	37	37	39	42	42	43	45	42	41	40	45	54	52	50	47	43	40
25th percentile	50	48	47	46	47	49	48	53	59	64	67	66	67	69	68	66	64	67	68	66	63	60	56	52
50th percentile	53	51	50	49	51	53	52	56	64	69	72	71	72	74	73	71	69	71	71	69	67	63	59	55
Average	54	52	51	50	52	53	52	57	64	68	71	71	72	74	73	71	69	72	72	70	68	64	60	56
75th percentile	57	55.5	54	53	55	57	55	60	68	73	77	76	77	80	78	76	73	75	75	73	71	67	63	60
Maximum	71	70	69	67	70	72	67	74	84	89	94	92	94	96	96	94	90	95	93	90	88	83	80	77



The minimum RR level in Mindanao ranges from 36 MW to 54 MW. While the Maximum RR level ranges from 67 MW to 96 MW. It's also noteworthy that the Maximum, 75th percentile, 50th percentile, and 25th percentile is low from Hour 1 to Hour 7; then increases at Hour 8 to Hour 18; and decreases at Hour 19 to Hour 24.

2025-2033 ANCILLARY SERVICE AGREEMENT PROCUREMENT PLAN

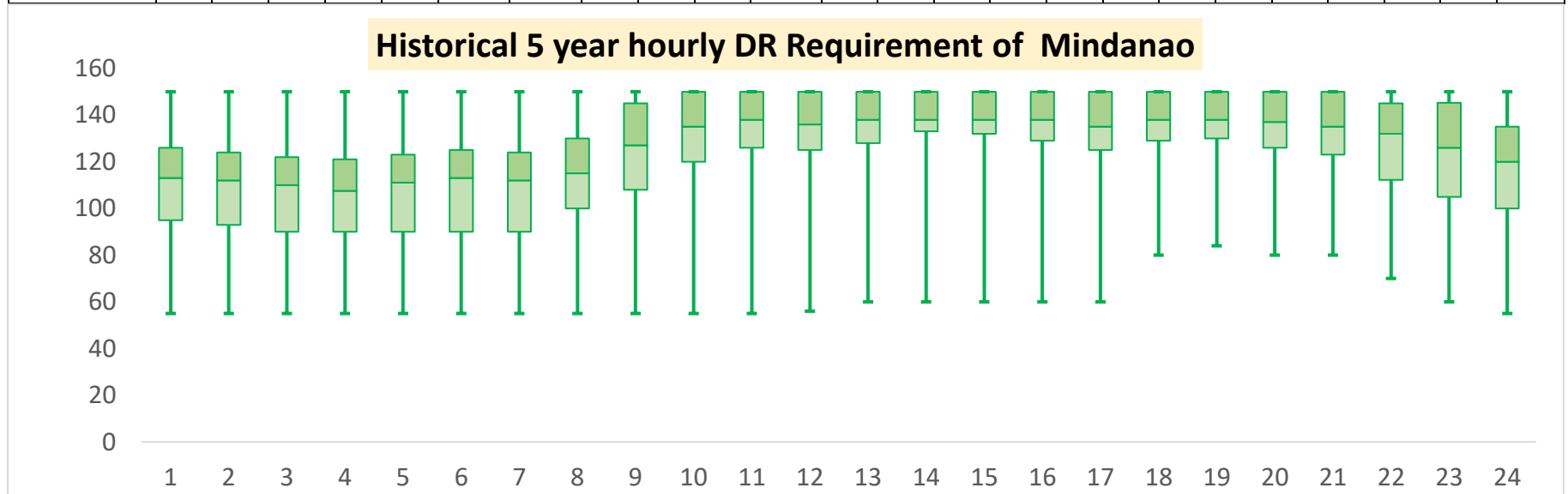
Historical 5-year Hourly CR Requirement of Mindanao																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Minimum	55	55	55	55	55	55	55	55	55	55	55	56	60	60	60	60	60	85	84	85	80	70	60	55
25th percentile	100	100	92	90	98	100	99	100	115	126	131	130	133	135	135	135	130	135	135	131	128	120	112	105
50th percentile	120	119	116	115	116	120	120	124	135	140	147	147	148	149	149	148	146	149	147	146	143	136	135	128
Average	117	116	113	112	114	116	115	120	130	135	137	137	138	139	139	138	137	139	139	138	136	132	129	124
75th percentile	135	133	129	128	131	135	134	142	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	144.5
Maximum	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150



For Required CR levels in Mindanao, the Minimum CR level ranges from 55 MW to 85 MW, while the Maximum level is fixed at 150MW. It's also noteworthy that the 25th, 50th and 75th percentile is closer to the maximum value during Hour 9 to Hour 23.

2025-2033 ANCILLARY SERVICE AGREEMENT PROCUREMENT PLAN

Historical 5-year Hourly DR Requirement of Mindanao																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Minimum	55	55	55	55	55	55	55	55	55	55	55	56	60	60	60	60	60	80	84	80	80	70	60	55
25th percentile	95	93	90	90	90	90	90	100	108	120	126	125	128	133	132	129	125	129	130	126	123	112	105	100
50th percentile	113	112	110	108	111	113	112	115	127	135	138	136	138	138	138	138	135	138	138	137	135	132	126	120
Average	110	109	106	105	107	109	108	114	125	132	135	134	135	137	137	136	134	137	137	135	133	127	124	118
75th percentile	126	124	122	121	123	125	124	130	145	150	150	150	150	150	150	150	150	150	150	150	150	145	145	135
Maximum	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150

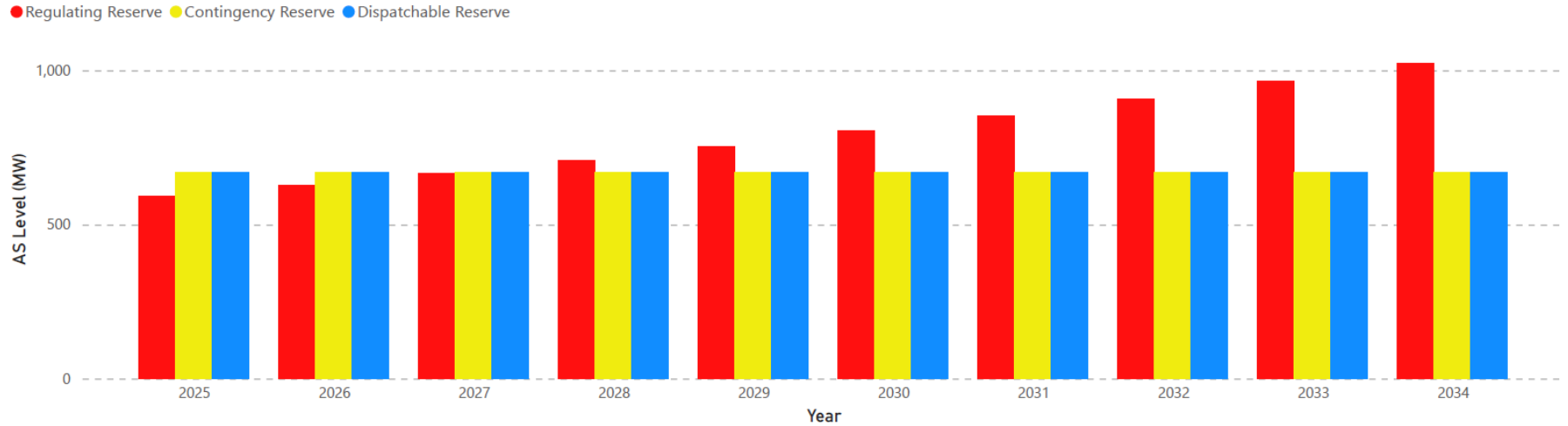


For Required DR levels in Mindanao, the Minimum CR level ranges from 55 MW to 84 MW, while the Maximum level is fixed at 150 MW. It's also noteworthy that the 50th and 75th percentile is closer to the maximum value during Hour 10 to Hour 21.

TEN-YEAR FORECASTED AS REQUIREMENT FOR LUZON GRID

TEN-YEAR FORECASTED AS REQUIREMENT FOR LUZON GRID

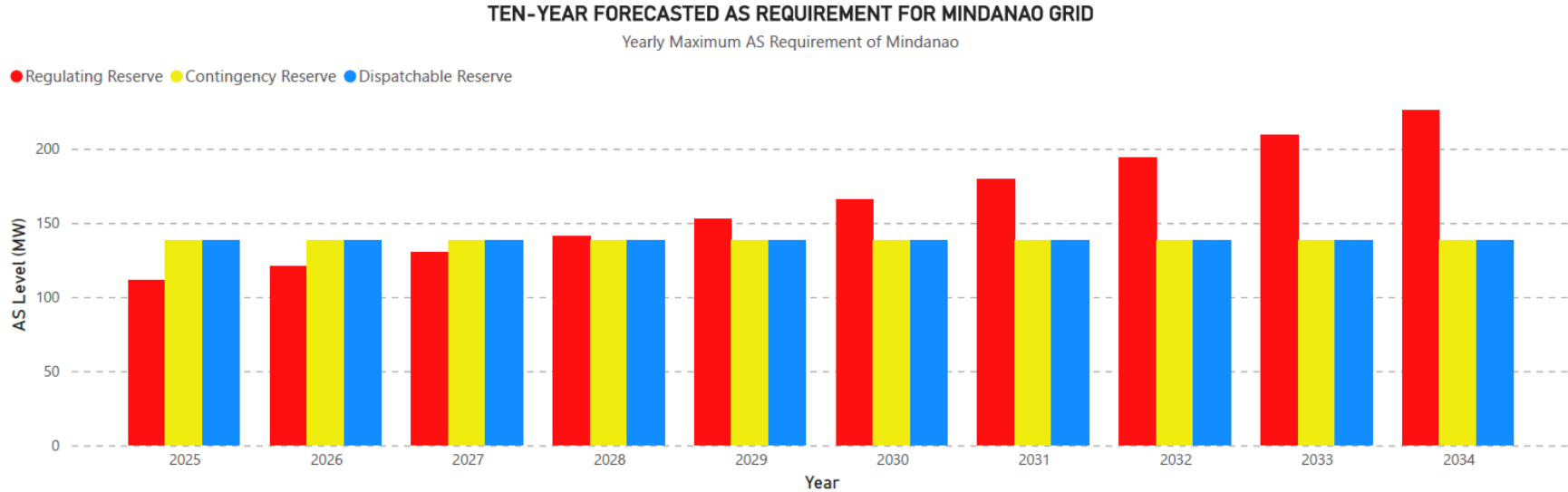
Yearly Maximum AS Requirement of Luzon



Reserve Type	Maximum AS Requirement of Luzon									
	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Regulating Reserve	591	627	667	709	754	803	854	908	964	1023
Contingency Reserve	668	668	668	668	668	668	668	668	668	668
Dispatchable Reserve	668	668	668	668	668	668	668	668	668	668

Note: RR Requirement is equivalent to 4% of Plexos Demand projection based on DOE's 2020-2040 Annual Peak Demand Projections for Luzon and Mindanao Grids, dated 24 August 2020. While CR and DR are based on Net Capacity of highest generating unit for the succeeding years, taking into consideration the DOE list of private sector initiated power projects (committed) and the capacity limits for prospective power generating plants per ERC Resolution No. 18 Series of 2017.

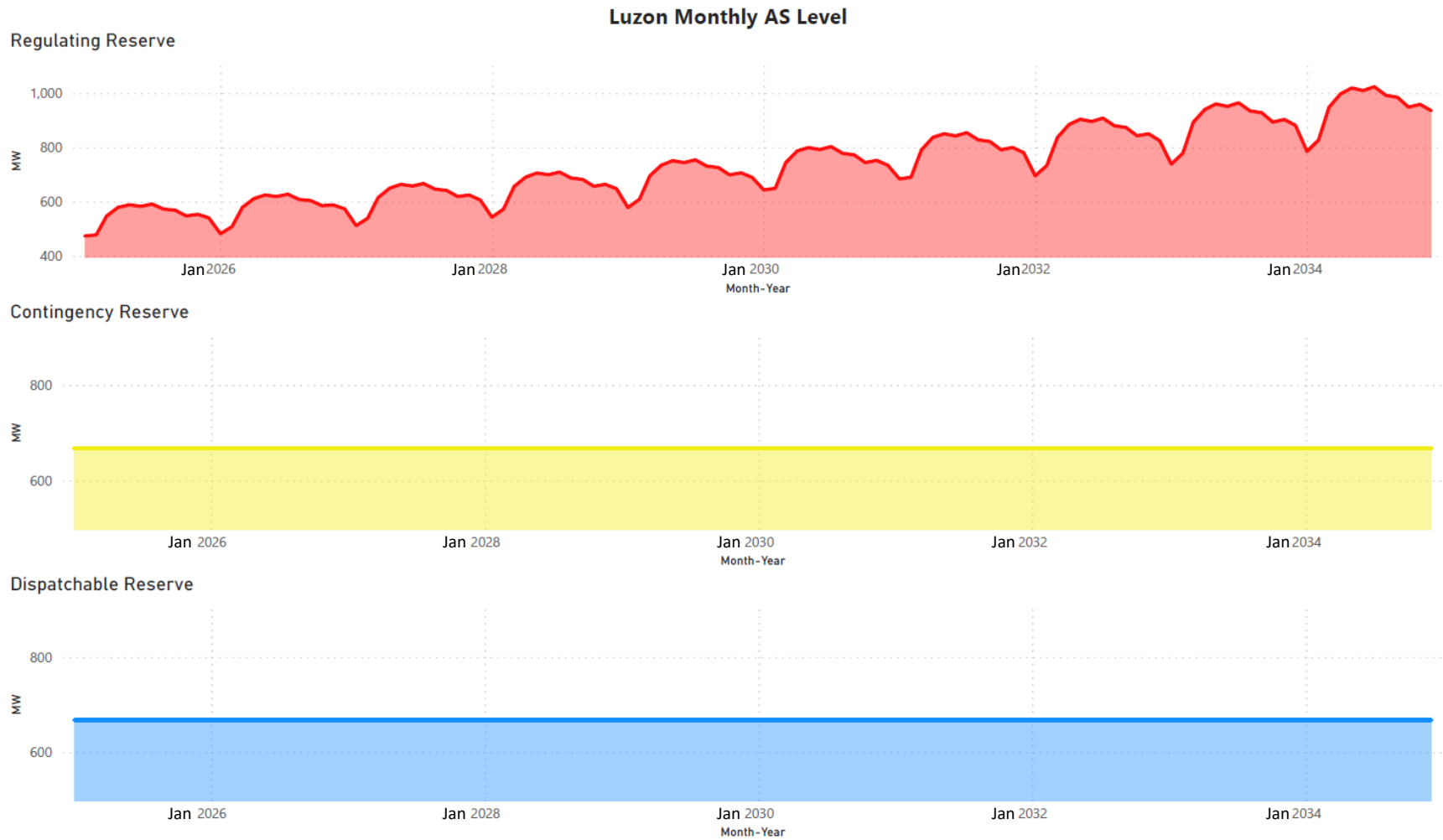
TEN-YEAR FORECASTED AS REQUIREMENT FOR MINDANAO GRID



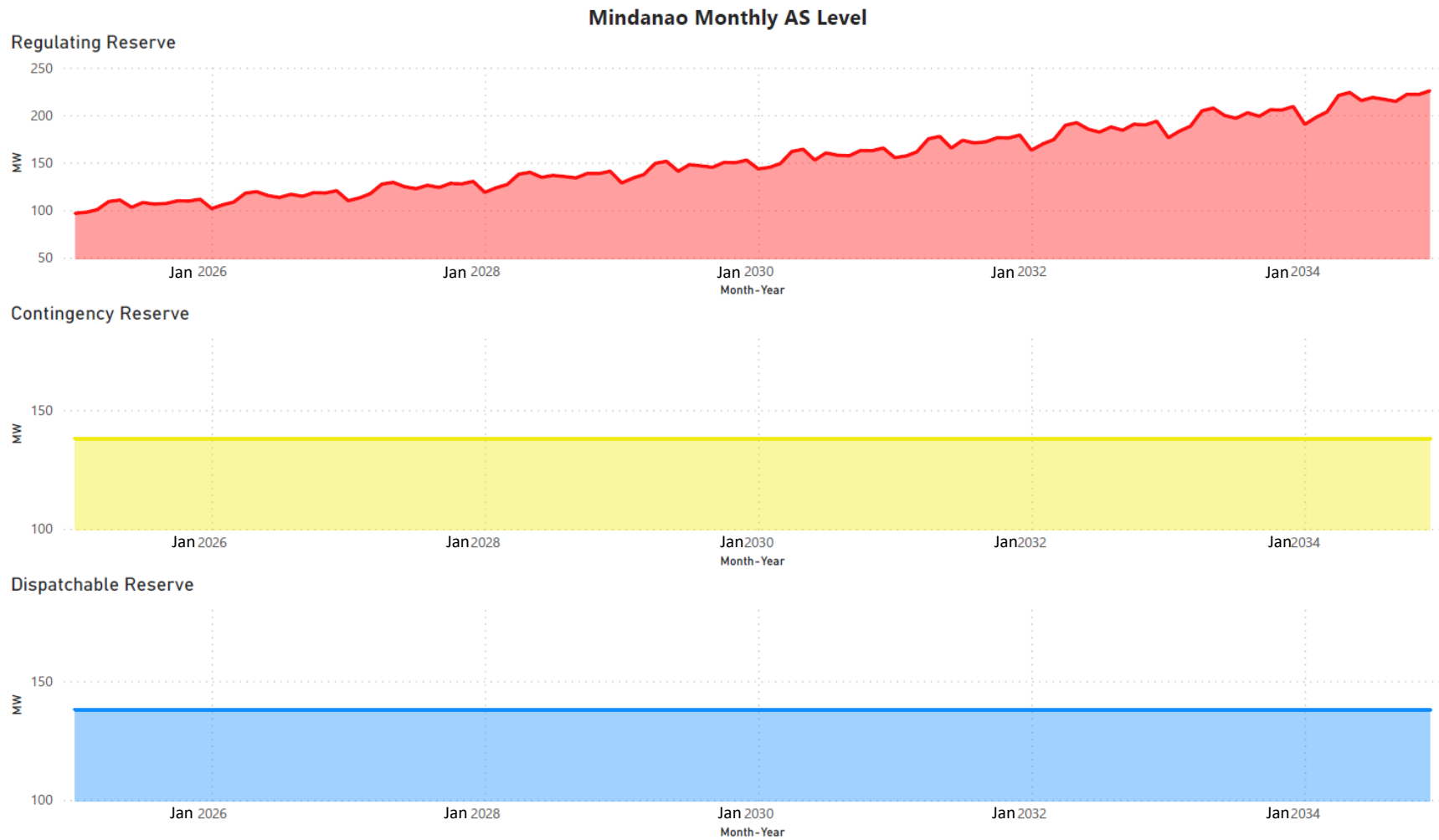
Reserve Type	Maximum AS Requirement of Mindanao									
	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Regulating Reserve	112	121	130	141	153	166	179	194	209	226
Contingency Reserve	138	138	138	138	138	138	138	138	138	138
Dispatchable Reserve	138	138	138	138	138	138	138	138	138	138

Note: RR Requirement is equivalent to 4% of Plexos Demand projection based on DOE's 2020-2040 Annual Peak Demand Projections for Luzon and Mindanao Grids, dated 24 August 2020. While CR and DR are based on Net Capacity of highest generating unit for the succeeding years, taking into consideration the DOE list of private sector initiated power projects (committed) and the capacity limits for prospective power generating plants per ERC Resolution No. 18 Series of 2017.

MONTHLY LEVELS OF AS REQUIREMENT PER GRID TO ACCOUNT SEASONALITY



MONTHLY LEVELS OF AS REQUIREMENT PER GRID TO ACCOUNT SEASONALITY

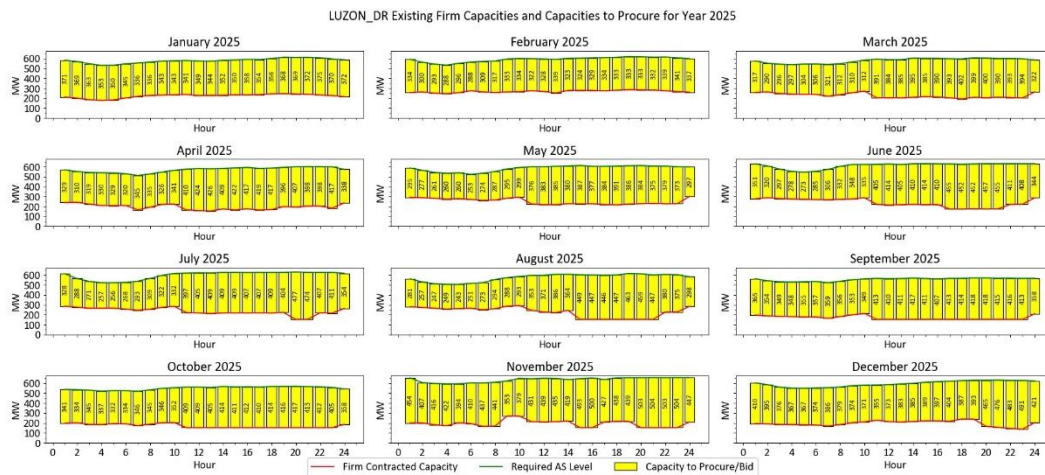
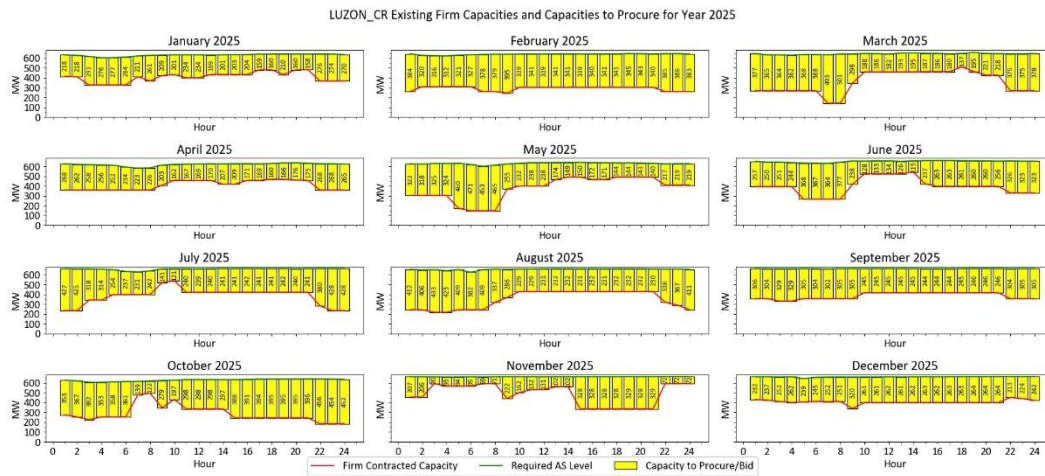
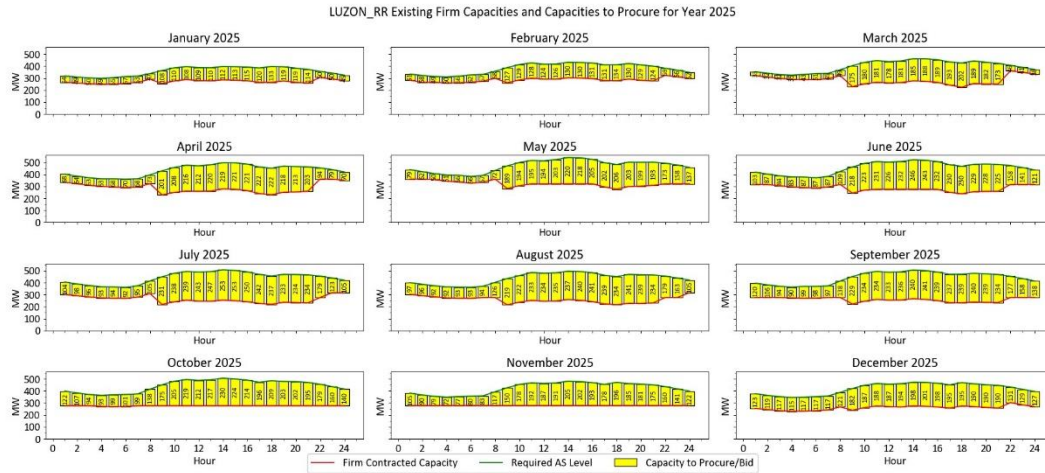


THREE YEARS HOURLY FORECASTED AS REQUIREMENT FOR LUZON AND MINDANAO GRIDS



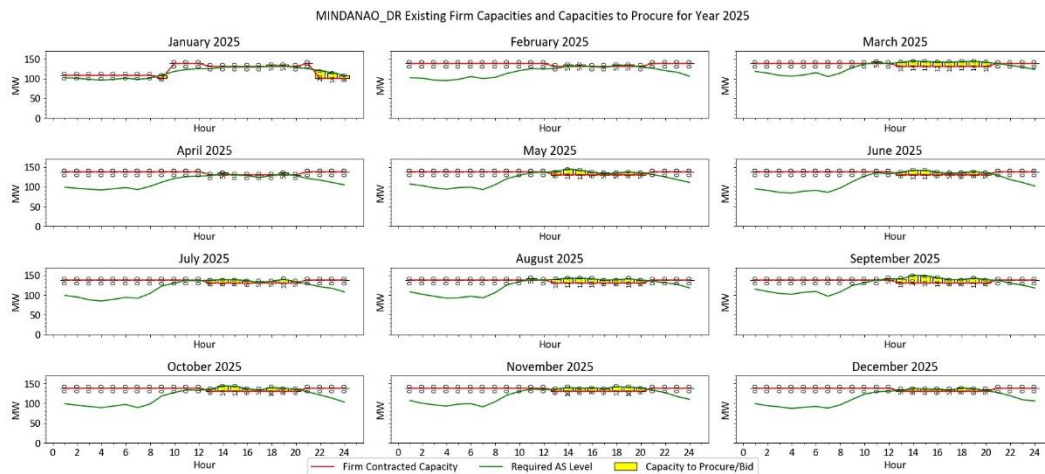
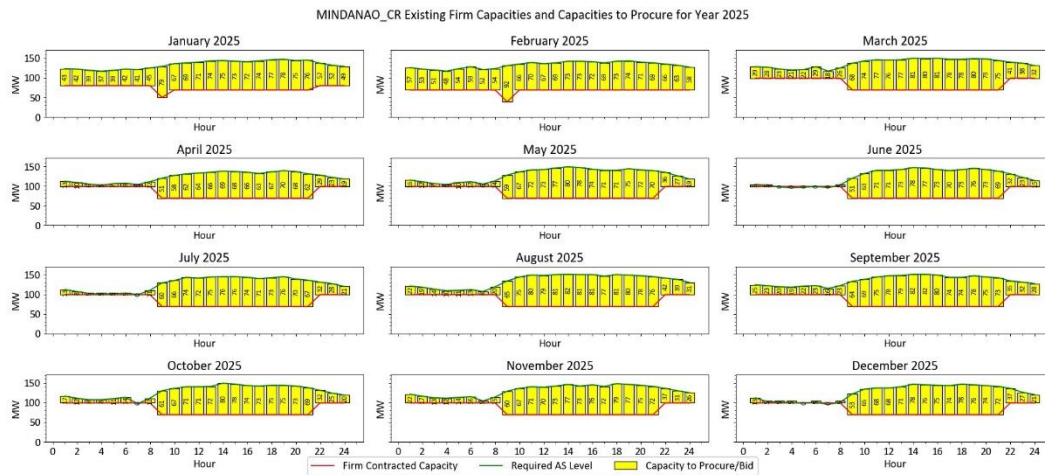
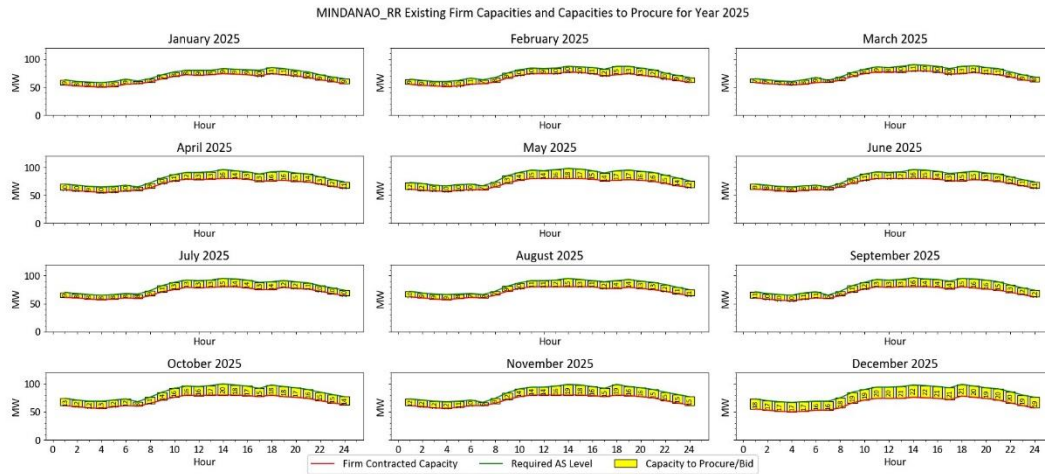
Since the CSP of ASPs covers firm contracts only but based on the historical and projected required AS levels, the reserve requirements are dynamic; NGCP recommends that there should be flexibility in day-ahead scheduling of AS providers to lower the total AS costs.

Projected AS Capacity to Procure under CSP for Luzon



Note: These simulations include the capacities contracted from the 2023 CSP. Further, these simulations consider the remaining firm contracts secured, prior the conduct of 2023 CSP. Required levels might change upon conclusion of succeeding Ancillary Services – Competitive Selection Process and contracts. Values for the Firm Capacities, Required AS Levels, and Capacity to Procure/Bid are based on the monthly billing cycle (26th of the month to the 25th of the succeeding month).

Projected AS Capacity to Procure under CSP for Mindanao



Note: These simulations include the capacities contracted from the 2023 CSP. Further, these simulations consider the remaining firm contracts secured, prior the conduct of 2023 CSP. Required levels might change upon conclusion of succeeding Ancillary Services – Competitive Selection Process and contracts. Values for the Firm Capacities, Required AS Levels, and Capacity to Procure/Bid are based on the monthly billing cycle (26th of the month to the 25th of the succeeding month).

Areas Requiring Additional Reactive Power Support Service (RPSS) and Black Start Service (BSS) for Year 2025

Reactive Power Support Service (RPSS)

Luzon

Location	Additional RPS Requirement (MVar)	
	Lagging	Leading
North Luzon Area	300*	0
Central Luzon Area	0	0
Metro Manila Area	0	0
Southern Tagalog Area	0	0
Bicol Area	0	0

*existing contracts with RPS providers to expire on May 2024

Mindanao

Location	Additional RPS Requirement (MVar)	
	Lagging	Leading
Lanao Area (LA) & North Central Mindanao Area (NCMA)	0	0
Northwestern Mindanao Area (NWMA) Sub-grid	10	0
Southeastern Mindanao Area (SEMA) Sub-grid	20	0
Northeastern Mindanao Area (NEMA) Sub-grid	20	0
Southwestern Mindanao Area (SWMA) Sub-grid	0	0

Black Start Service (BSS)

Luzon

Restoration Highway	Sub-Grid	Additional BSS Requirement
North Luzon	North Luzon	2 x 50 MW
Central Luzon	Central Luzon	-
Metro Manila	Metro Manila	1 x 50 MW
Southern Tagalog	Southern Tagalog	2 x 50 MW
Bicol	Bicol	1 x 50 MW

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Mindanao

Restoration Highway	Sub-Grid	Additional BSS Requirement (MW)
Iligan ACC (IACC) Restoration Highway	Lanao Area (LA) & North Central Mindanao Area (NCMA) Sub-Grid	2 x 25 MW
Zamboanga ACC (ZACC) Restoration Highway	Northwestern Mindanao Area (NWMA) Sub-grid	1 x 25 MW
Davao ACC (DACC) Restoration Highway	Southeastern Mindanao Area (SEMA) Sub-grid	-
Butuan ACC (BuACC) Restoration Highway	Northeastern Mindanao Area (NEMA) Sub-grid	1 x 25 MW
Gensan ACC (GSACC) Restoration Highway	Southwestern Mindanao Area (SWMA) Sub-gird	2 x 25 MW

**Listed additional BSS requirement are based on the minimum requirement vs the existing BSS providers, as defined in the ASPP. More BSS than the above identified values may be procured, provided the current payment scheme remains.*