

NGCP

TRANSMISSION DEVELOPMENT PLAN 2026-2050

CONTENTS

EXECUTIVE SUMMARY 4

CHAPTER 1 THE PHILIPPINE TRANSMISSION GRID 6

1.1 ABOUT NGCP 6
1.2 GRID PERFORMANCE 6
1.3 NGCP TRANSMISSION ASSET GROWTH 7
1.4 LUZON TRANSMISSION NETWORK 9
1.5 VISAYAS TRANSMISSION NETWORK 10
1.6 MINDANAO TRANSMISSION NETWORK 11

CHAPTER 2 TRANSMISSION PLANNING INPUTS 12

2.1 SYSTEM PEAK DEMAND (SPD) 13
2.2 GENERATION EXPANSION PLAN 16
2.3 NEW GRID-CONNECTED POWER PLANTS 17
2.4 COMMITTED AND INDICATIVE CAPACITIES 18
2.5 GENERATOR CAPACITY REALIZATION 21
2.6 SINGLE-OUTAGE CONTINGENCY (N-1) PROVISION AND LOOP CONFIGURATION 22
2.7 SUBTRANSMISSION ASSETS / 69 KV FACILITIES 22
2.8 PROJECT CLUSTERING 23
2.9 GRID EQUIPMENT DATA 23
2.10 GRID RESILIENCE IN TRANSMISSION PLANNING 24

CHAPTER 3 RENEWABLE ENERGY INTEGRATION AND EMERGING GRID TECHNOLOGIES 25

3.1 POLICY AND PLANNING FRAMEWORK FOR ENERGY TRANSITION 25
3.2 INTEGRATION CHALLENGES OF VARIABLE RENEWABLE ENERGY 28
3.3 GRID-ENABLING TECHNOLOGIES: ENERGY STORAGE SYSTEMS 28
3.4 SMART GRID AND DIGITAL TRANSFORMATION 32
3.5 ADVANCED ASSET MANAGEMENT AND MONITORING TECHNOLOGIES 35

CHAPTER 4 MAJOR GRID DEVELOPMENT PROGRAM 40

4.1 REGULATORY RESET 40
4.2 PROJECT DRIVERS 42
4.3 CERTIFICATE OF ENERGY PROJECTS OF NATIONAL SIGNIFICANCE 42
4.4 ESTIMATED TIME OF COMPLETION 42
4.5 TRANSMISSION BACKBONE AND MAJOR ISLAND INTERCONNECTION PROJECTS 43

CHAPTER 5 LUZON GRID DEVELOPMENT OUTLOOK **50**

5.1 LUZON PROJECTS FOR 2026-2030 51
5.2 LUZON PROJECTS FOR 2031-2040 64
5.3 LUZON PROJECTS FOR 2041-2050 90

CHAPTER 6 VISAYAS GRID DEVELOPMENT OUTLOOK 93

6.1 VISAYAS PROJECTS FOR 2026-2030 94
6.2 VISAYAS PROJECTS FOR 2031-2040 100
6.3 VISAYAS PROJECTS FOR 2041-2050 119

CHAPTER 7 MINDANAO GRID DEVELOPMENT OUTLOOK 122

7.1 MINDANAO PROJECTS FOR 2026-2030 122
7.2 MINDANAO PROJECTS FOR 2031-2040 127
7.3 MINDANAO PROJECTS FOR 2041-2050 136

CHAPTER 8 ISLAND AND OFF-GRID INTERCONNECTION 145

8.1 MAJOR ISLAND INTERCONNECTIONS AND CAPACITY UPGRADES 145
8.2 OFF-GRID INTERCONNECTION 147
8.3 POTENTIAL SMALL ISLAND INTERCONNECTIONS 149
8.4 ASEAN POWER GRID UPDATE 149

CHAPTER 9 OPERATIONS AND MAINTENANCE 151

9.1 SUBSTATION, TRANSMISSION LINE AND SUBTRANSMISSION LINE RELIABILITY PROGRAMS 151
9.2 IMPROVEMENT OF SUBSTATION FACILITY AND NON-NETWORK ASSET PROGRAM 156
9.3 TOOLS AND EQUIPMENT ACQUISITION PROGRAM 157
9.4 SUMMARY OF 2026 - 2050 O&M CAPEX BUDGET REQUIREMENTS 157
9.5 METERING FACILITIES 159

CHAPTER 10 SYSTEM OPERATIONS 168

10.1 DEVELOPMENTAL OBJECTIVES 168
10.2 SITUATIONAL ANALYSIS 169
10.3 SUMMARY OF CAPEX COSTS 172
10.4 STRATEGIES 173
10.5 TELECOMMUNICATIONS 176
10.6 SCADA PROGRAMS 179
10.7 NETWORK PROTECTION AND POWER QUALITY 184
APPENDIX 1 PROJECT CLUSTERS 187
APPENDIX 2 COMMITTED POWER PLANTS 190
APPENDIX 3 INDICATIVE POWER PLANTS 200
APPENDIX 4 PROSPECTIVE POWER PLANTS 213
APPENDIX 5 LIST OF DIRECTLY CONNECTED CUSTOMERS 218
APPENDIX 6 LIST OF PROJECTS COMPLIANT WITH SINGLE OUTAGE CONTINGENCY AND LOOP CONFIGURATION 219
APPENDIX 7 AVAILABLE TRANSMISSION CAPACITY 221
APPENDIX 8 ANCILLARY SERVICE AGREEMENT PROCUREMENT PLAN 223
APPENDIX 9 LIST OF OFFSHORE WIND PROJECTS 226
APPENDIX 10 GENERATION AND LOAD DISTRIBUTION 230
APPENDIX 11 POWER RESTORATION HIGHWAY 233
APPENDIX 12 NGCP-RECOMMENDED, EXISTING AND GENCO-PROPOSED BESS SITES AND CAPACITIES 236
APPENDIX 13 EXISTING VRE PLANTS AS CANDIDATE LOCATIONS FOR NEW BESS 240
APPENDIX 14 ABBREVIATIONS AND ACRONYMS 242
APPENDIX 15 CONTACT DETAILS 243

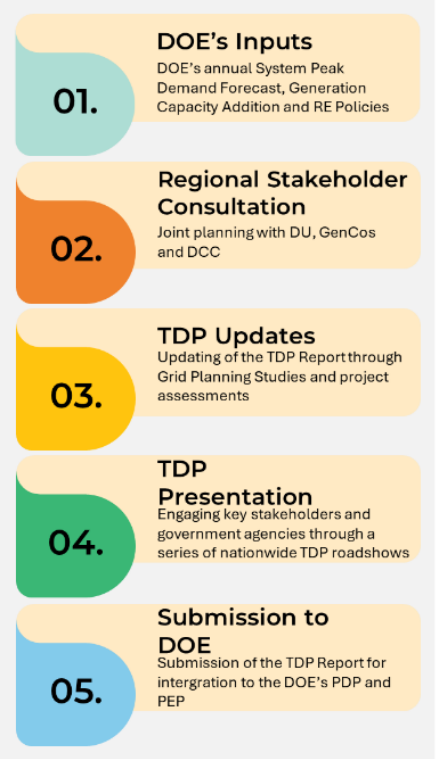
EXECUTIVE SUMMARY

The Transmission Development Plan (TDP) 2026 – 2050 details extensive transmission expansion programs across Luzon, Visayas, and Mindanao, including the development of new transmission lines, substations, and looped backbone configurations designed to improve grid resilience and operational flexibility. Inter-island interconnection projects and capacity upgrades are also considered to enable efficient power sharing across regions. In parallel, National Grid Corporation of the Philippines (NGCP) pilot grid-forming BESS provides interim solutions to address near-term system requirements while large-scale infrastructure is being implemented.

For the transmission planning process, NGCP integrates the demand forecast, generation expansion planning, information gathered during regional stakeholder consultation, and network development into a unified process. This integrated approach enables planners to determine the scale and timing of required transmission projects while ensuring compliance with reliability criteria. It also supports the identification of optimal locations for generation interconnection and guides the development of transmission corridors and substations necessary to accommodate future load growth and generation capacity.

The TDP 2026–2050 reinforces the critical role of proactive and coordinated planning in supporting the country's transition towards clean energy. It highlights the necessity of recognizing the transmission development challenges, strengthening stakeholder collaboration, and compliance with policies to guide project implementation and adopt technological innovations. Through these measures, transmission planning aims to deliver a resilient, reliable, and future-ready grid capable of sustaining long-term demand growth and enabling large-scale renewable energy integration.

From a transmission planning perspective, the TDP 2026–2050 presents a strategic roadmap to proactively develop the Philippine grid in response to the growth in electricity demand and the rapid influx of renewable energy (RE). System peak demand is projected to increase from approximately 20 GW in 2026 to more than 80 GW by 2050, necessitating timely and adequate transmission investments. However, the planning environment remains highly uncertain due to the large volume of indicative generation projects creating a critical challenge in aligning transmission expansion with actual generation entry. This uncertainty, combined with inherent differences in development timelines, places transmission planning at the forefront of ensuring that sufficient network capacity is available ahead of generation commissioning.



This TDP version emphasizes the need to expand high-voltage backbone networks, particularly 500 kV and 230 kV systems, to form a grid capable of accommodating large-scale and geographically dispersed RE resources. Strengthening interconnections among Luzon, Visayas, and Mindanao is likewise a core planning consideration to enhance power transfer capability, improve resource sharing, and support overall system reliability. These developments are complemented by the implementation of HVDC bipolar operation, grid-scale battery energy storage systems (BESS), and static synchronous compensators (STATCOM), which are essential in managing variability, maintaining voltage stability, and increasing system flexibility under high RE penetration scenarios.

A major consideration in transmission planning is the alignment of generation and transmission timelines. Given that transmission projects typically face longer lead times due to right-of-way acquisition, permitting processes, and coordination with local government units, planners must account for these constraints early in the development cycle. Failure to achieve alignment may result in delayed energization of generation

facilities, transmission congestion, or curtailment of renewable output, all of which pose risks to system reliability and the achievement of national renewable energy targets. As such, the TDP underscores the importance of coordinated planning with industry stakeholders, focusing on high-probability generation clusters and synchronizing project execution schedules.

For the TDP 2026–2050, the planning studies indicate that recent transmission reinforcements and expansion projects have strengthened the Grid's capability to support demand growth and generation additions. The continued economic growth, the development of renewable energy resources, and the need for stronger inter-island power exchange require reliable and resilient transmission infrastructure. Below is the overview of each chapter for the latest TDP:

Chapter 1: **The Philippine Transmission Grid** – presents NGCP's role as Transmission Network Provider and System Operator, the existing transmission grid, recent grid performance, asset profile, and the current network configuration of Luzon, the Visayas, and Mindanao.

Chapter 2: **Transmission Planning Inputs** – discusses the major inputs used in preparing the TDP, including the System Peak Demand forecast, generation expansion plan, new grid-connected power plants, committed and indicative capacities, customer development plans, and other planning assumptions.

Chapter 3: **Renewable Energy Integration and Emerging Grid Technologies** – discusses the integration of renewable energy resources and emerging technologies, with emphasis on Battery Energy Storage Systems (BESS), recommended BESS locations and capacities, and other grid-supporting solutions for variable renewable energy (VRE) integration.

Chapter 4: **Major Grid Development Program** – presents NGCP's national grid development direction before the detailed regional transmission outlooks in the succeeding chapters. It provides an integrated view of the major transmission backbone, grid expansion, and island interconnection developments needed to strengthen the Philippine Grid, support demand growth and generation entry, improve inter-regional power transfer, and guide long-term transmission development across Luzon, the Visayas, and Mindanao.

Chapter 5: **Luzon Grid Development Outlook** – presents the Luzon transmission outlook and development plans for the 2026 – 2030, 2031 – 2040, and 2041 – 2050 planning periods, including major backbone projects, network reinforcements, and facilities required to support demand growth and generation additions.

Chapter 6: **Visayas Grid Development Outlook** – presents the Visayas transmission outlook and development plans for the 2026 –2030, 2031–2040, and 2041–2050 planning periods, including island grid reinforcements, submarine cable developments, and projects needed to improve power transfer capability and reliability across the Visayas sub-grids.

Chapter 7: **Mindanao Grid Development Outlook** – presents the Mindanao transmission outlook and development plans for the 2026 – 2030, 2031 – 2040, and 2041 – 2050 planning periods, covering backbone reinforcements, regional network upgrades, and facilities needed to support load growth, generation development, and interconnection requirements.

Chapter 8: **Island and Off-Grid Interconnection** – discusses existing island interconnections, major backbone and interconnection projects, small-island and off-grid interconnection plans, and potential interconnection initiatives to improve supply reliability and grid access in island and off-grid areas.

Chapter 9: **Operations and Maintenance** – presents the programs for transmission line, substation, and subtransmission reliability; facility improvement; tools and equipment acquisition; metering facilities; and the corresponding O&M CAPEX requirements for the planning period.

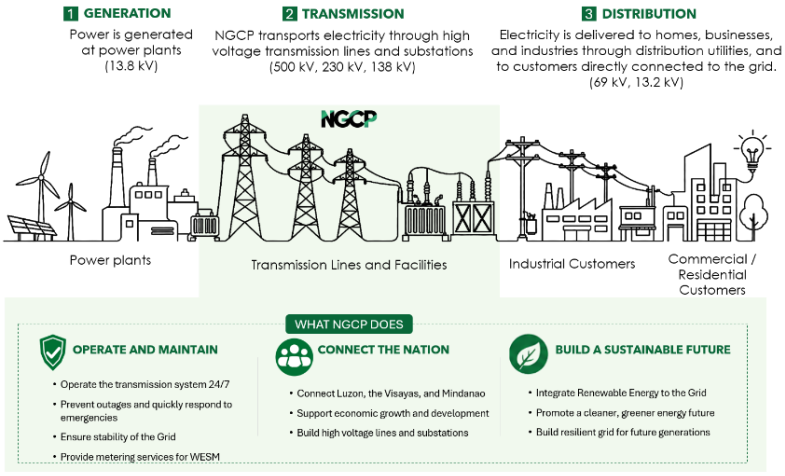
Chapter 10: **System Operations** – discusses system operations objectives, situational analysis, operational strategies, telecommunications, SCADA programs, network protection, and power quality initiatives needed to support the secure, reliable, and efficient operation of the Grid through 2050.

Chapter 1

THE PHILIPPINE TRANSMISSION GRID

1.1 ABOUT NGCP

NGCP is the sole Transmission Network Provider and System Operator of the Philippine power grid. In this role, NGCP plans, operates, maintains, and expands the transmission network to support the reliable and efficient delivery of electricity from generating plants to distribution utilities, directly connected customers (DCCs), and other grid users.



NGCP's technical functions are carried out through coordinated planning and engineering, operations and maintenance, and system operations activities, supported by other functional groups within the organization. These integrated functions allow NGCP to respond to system requirements, support customer growth, and maintain the secure operation of the Grid.

To support consistent performance, NGCP is committed to operate under an Integrated Management System, ensuring its core technical functions are governed by certified international standards. NGCP's commitment to excellence is certified by these International Organization for Standardization (ISO) standards:

ISO STANDARDS UNDER THE INTEGRATED MANAGEMENT SYSTEM

ISO 31000:2018 Risk Management	**ISO 9001:2015** Quality Management System	**ISO 50001:2018** Environmental Management System
ISO 45001:2018 Occupational Health and Safety Management System	**ISO 22301:2019** Business Continuity Management System	**ISO 27001:2022** Information Security and Management System

Despite the country's challenging geography as an archipelago with mountainous terrain, NGCP is determined to pursue innovative solutions to gradually interconnect the islands and off-grid areas and provide secure and reliable source of power. The major grid backbone and interconnection developments are discussed in the succeeding regional and island interconnection chapters of this report.

1.2 GRID PERFORMANCE

Since taking over the transmission business in 2009, NGCP has consistently improved the system's overall performance through strategic projects and enhanced operational practices. As a regulated entity under Performance-Based Regulation (PBR), NGCP's performance metrics have generally exceeded the 3rd Regulatory Period (RP) approved limits, demonstrating its effective delivery of power and system operations for end-users. Under the PBR framework, NGCP is incentivized for strong performance and is subject to penalties in cases of underperformance, ensuring accountability and the continuous pursuit of service excellence.

The 2025 performance of the transmission grid covering the period 01 October 2024 – 30 September 2025 is shown in Table 1.1 based on the ERC-released amendment of the Rules for the Setting of Transmission Wheeling Rates (RTWR).

Table 1.1: 2025 Performance of Transmission Grid

Region	System Interruption Severity Index, system-min.	Frequency of Tripping, count per 100 ckm	System Availability %	Frequency Limit Compliance, %	Voltage Limit Compliance %	Average Forced Outage Duration System Min.
LUZON	1.8985	0.3127	99.5302	99.8699	99.9998	345.7314
VISAYAS	4.1561	0.1952	99.7405	99.9980	99.9974	141.7298
MINDANAO	1.5937	0.1070	99.7734	99.7889	99.9996	206.4648

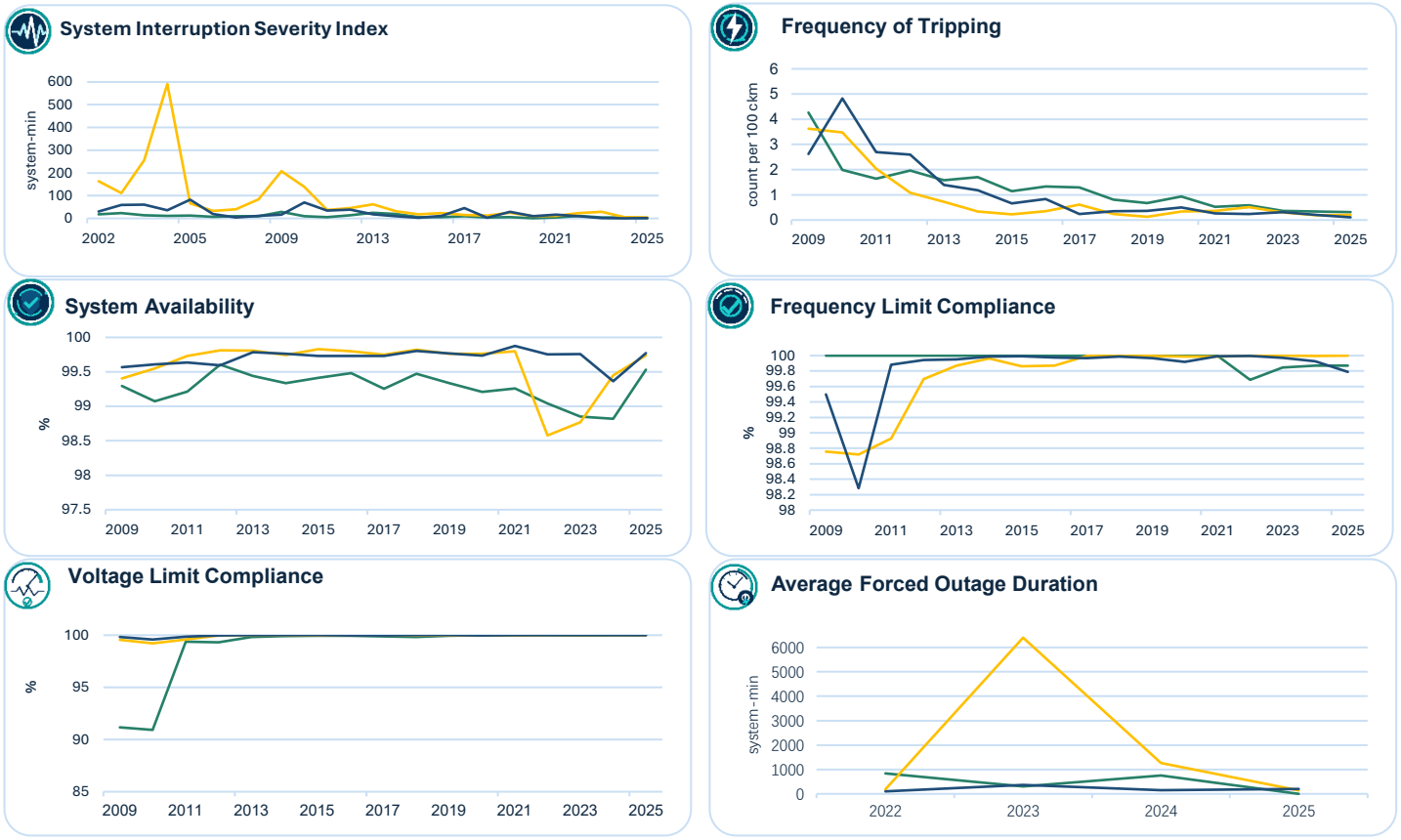


Figure 1.2: Grid Performance Indices

1.3 NGCP TRANSMISSION ASSET GROWTH

Transmission expansion is crucial to adequately and reliably serve the increase in demand and accommodate the entry of new power plants. As of December 2025, the Philippine transmission grid comprises 23,378.92 ckm of transmission lines, connecting the grid with 64,580.90 MVA of substation capacity distributed across 226 substations nationwide. Power quality is maintained by the 7,368 MVAR of reactors and capacitor banks. The breakdown of the existing Grid assets and capacity additions are provided in Table 1.2 and Table 1.3, respectively.

Table 1.2: Summary of Existing Grid Assets as of December 2025

Grid	Transmission Line-Length (ckm)	Substation Capacity (MVA)	Number of Substations	Capacitor (in MVAR)	Reactor (MVAR)
LUZON	9,938.20	42,266.00	90	3,682.50	1,300.00
VISAYAS	6,887.00	11,628.70	80	388.20	1,275.00
MINDANAO	6,553.71	10,686.20	56	600.00	122.50
TOTAL	**23,378.92**	**64,580.90**	**226**	**4,670.70**	**2,697.50**

Table 1.3: Summary of Capacity Additions as of December 2025

Grid	Transmission Line-Length (ckm)	Substation Capacity (MVA)	Capacitor (MVAR)	Reactor (MVAR)	STATCOM (MVAR)	Asset Replacement (MVA)		Decommissioned Assets (MVA)
						Replaced Assets	New Asset Capacity	
LUZON	1,273	28,780	3,332.50	710	0	7675	12,030	10,148.0
VISAYAS	1,876	6,960	182.50	840	40	720	455	1,232.5
MINDANAO	2,484	8,405	434.50	70	200	1375	460	1,957.5
TOTAL	**5,633**	**44,145**	**3,949.50**	**1,620**	**240**	**9,770.00**	**12,945**	**13,338.0**

From a holistic view of the Philippine power system, the increase in SPD and increase in installed generation capacity in Luzon, Visayas, and Mindanao grids were adequately supported by the completion/energization of NGCP's **5,633 ckm** of new transmission lines and line upgrading projects, and **44,145 MVA** of substation expansions including the capacity of new substations. Since 2009, the Philippine power system has experienced significant SPD growth of 112% from 2009 to 2025. To accommodate this substantial growth, the total installed generation capacity has also increased by 102%. NGCP's transmission projects have been instrumental in ensuring the reliable and efficient delivery of electricity to meet the ever-increasing demand.

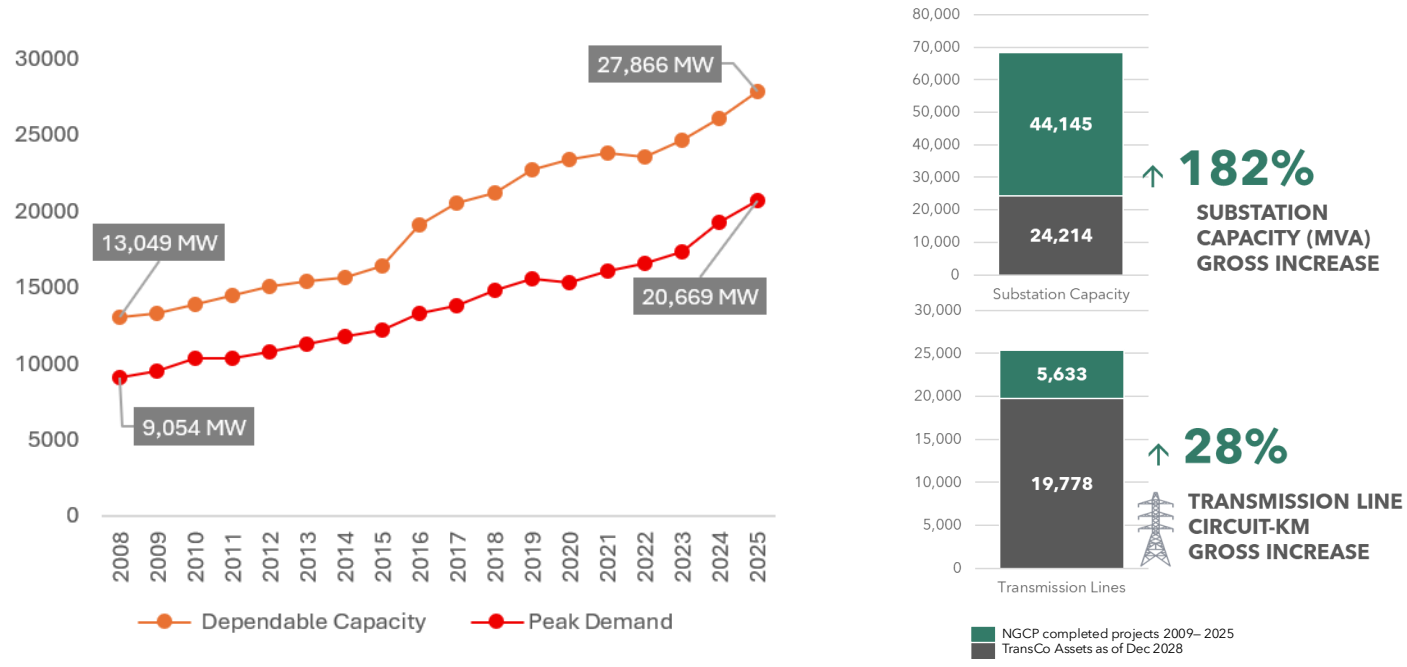


Figure 1.3: Summary of NGCP Capacity Addition from 2009 to 2025

It is important to note that the ckm, while providing information about the length of existing transmission lines, does not directly correlate with the grid's ability to handle load growth and the entry of generators. The key factors determining transmission line capacity are the voltage level and conductor size of the line. To make this concept more relatable, consider the analogy of highways. A shorter highway can handle more traffic than a longer one if it's wider and has multiple lanes. Similarly, a shorter transmission line can

have a higher capacity if it's designed with larger conductors or a higher voltage. Therefore, a 28% increase in ckm does not necessarily indicate limited transmission line capacities.

1.4 LUZON TRANSMISSION NETWORK

The bulk generation sources in the Luzon Grid are in the northern and southern parts of Luzon Island, while the load center is in the Metro Manila area. Since almost 60% of the total demand in Luzon is in Metro Manila, NGCP's transmission backbone must have the capability to transmit bulk power from both the northern and southern parts of Luzon to the Metro Manila area.

Northern Transmission Corridor – 500 kV backbone in North Luzon transmits bulk power from the generation hub to Metro Manila. The Bolo – Nagsaag – San Jose 500 kV backbone, rated at 2,850 MVA per circuit, currently allows the transfer of around 2,200 MW generation capacity in Pangasinan and Zambales. The recently completed Mariveles – Hermosa (Balsik) – San Jose 500 kV that spans 276 ckt-km accommodates incoming generations in Bataan Peninsula and Zambales. It transmits bulk power merging from the new 500 kV Hermosa Substation to the load center in Metro Manila. This transmission backbone rated at 4,700 MVA per circuit, currently allows the transfer of around 1,800 MW generation capacity from Bataan. Another major project completed in the northern transmission corridor is the Western 500 kV Backbone Project, Stage 1 that accommodates bulk generation in Zambales area.

The transmission corridor in the Ilocos Region extends from Bolo 230 kV Substation in Pangasinan to Laoag in Ilocos Norte through a double circuit transmission line with 300 MVA capacity per circuit. Meanwhile, the transmission corridor in Cagayan Valley Area emanates from Bayombong in Nueva Vizcaya up to Tuguegarao in Cagayan through double circuit transmission line with 300 MVA capacity per circuit.

The underlying 230 kV transmission Corridor in Central Luzon includes the following:

1. Labrador – Botolan – Olongapo 230 kV Lines
2. Olongapo – Hermosa and Olongapo – Subic – Hermosa 230 kV Lines
3. San Manuel – Concepcion – Mexico 230 kV Lines
4. San Manuel – Pantabangan – Cabanatuan – Mexico 230 kV Lines.

Metro Manila – As the major center of commerce and trade, Metro Manila accounts for about 60% of the total load in the Luzon Grid. It relies on a network of substations that deliver electricity from both north and south Luzon.

It is worth mentioning the sectorization of loads in the Metro Manila to accurately represent the demand distribution of load for a more precise load forecasting, power flow analysis, and identification of specific areas requiring transmission reinforcement considering its load share. This information supports a more accurate, reliable, and efficient transmission planning. Presently, there are three main load sectors within Metro Manila:

Sector	Served by
Sector 1	Quezon Substation
	Navotas Substation
	Marilao Substation
	San Jose 230 kV Substation
Sector 2	Taytay Substation
	Doña Imelda 230 kV Substation
Sector 3	Muntinlupa Substation
	Las Piñas 230 kV Substation

To address Metro Manila's continuing increase in energy demand, new substations such as Antipolo, Navotas, and Pasay 230 kV Substation are being developed.

In the northern part of Metro Manila, the power requirements are drawn from the San Jose 500 kV Substation. Quezon and Taytay Substations heavily rely on the power delivered through the 230 kV lines from San Jose Substation.

On the other hand, the power requirements in the southern part of Metro Manila are drawn from Dasmariñas 500 kV Substation. Particularly, the Las Piñas Substation is connected through a double-circuit 230 kV line from Dasmariñas Substation, while Muntinlupa has a four-circuit supply line from Biñan Substation.

Southern Transmission Corridor – The Southern Transmission Corridor stretches from Naga Substation in Camarines Sur to Tayabas Substation in Quezon province. It transmits about 3,300 MW of Natural Gas and Coal-Fired Power Plants (CFPP) in Batangas and Quezon. This connection, along with the existing link between Tayabas and San Jose 500 kV Substations, creates a complete 500 kV transmission loop that allows the transfer of energy generated from northern and southern parts of Luzon.

The transmission corridor also includes a 230 kV transmission line in Batangas and Laguna, which caters to more than 3,100 MW total generation capacity of Coal and Natural Gas Plant in Calaca and Batangas City.

The segment of transmission line from Pagbilao to Naga Substation is currently energized at 230 kV. It is worth noting that Naga Substation serves as the termination point for the High Voltage Direct Current (HVDC) Interconnection System (energized in 1998) that allows the exchange of power up to 440 MW between Luzon and Visayas Grids.

Finally, the 500 kV backbone extends from Tayabas to Dasmariñas Substation, supplying power to adjacent provinces south of Metro Manila.

1.5 VISAYAS TRANSMISSION NETWORK

The Visayas Grid is composed of five sub-grids, namely: Leyte – Samar, Cebu, Bohol, Negros, and Panay. These sub-grids are interconnected via submarine cables with effective transfer capacities as follows: Leyte–Cebu (200 MW and 240 MW), Cebu – Negros (2x90 MW and 2x400 MW), Negros – Panay (90 MW and 2x400 MW), Cebu–Bohol (2x600 MW), and Leyte – Bohol (90 MW). The installed submarine cables enable the sharing of excess generation between islands to accommodate the growing demand in the Visayas.

Eastern Visayas is composed of Samar and Leyte Islands. Leyte Island hosts the largest geothermal power plants in the Visayas, with a total capacity of 695 MW. This supplies the islands of Leyte, Samar, and portion of Bohol, through the Babatngon – Paranas 138 kV Transmission Line and the Leyte – Bohol 138 kV Interconnection. Leyte Island has already reached a peak demand[1] of 263 MW. In addition, Leyte Island has an existing 230 kV interconnection to Cebu Island, enabling other islands to source power from cheaper geothermal resources. The Leyte – Luzon HVDC Interconnection facility, with a transfer capacity of 440 MW, allows the exchange of power between Luzon and the Visayas. Samar Island has reached a peak demand[1] of 70 MW and has only a few existing power plants, including the Taft Hydroelectric Power Plant (HEPP) and Tubig HEPP in Eastern Samar, and the Calbayog Bunker C-Fired Power Plant (BCFDPP) in Western Samar.

Central Visayas is composed of Cebu and Bohol Islands. Metro Cebu is considered the major load center of the Visayas Grid. Cebu Island has reached a peak demand[1] of 1,254 MW with numerous coal-fired power plants (CFPP) located in the Naga and Toledo areas. The completion of the Cebu – Negros – Panay 230 kV Backbone Project and the Mindanao – Visayas Interconnection Project allowed the utilization of the excess generation from Mindanao, Negros, and Panay to cater to the high demand of Cebu Island. With the completion of the Cebu – Bohol 230 kV Interconnection Project, Bohol Island now sources power from Cebu Island via a 230 kV submarine cable and from Leyte Island via a 138 kV submarine cable. Bohol Island has reached a peak demand[1] of 130 MW.

[1] *Demand is based on 2025 coincident peak data*

Western Visayas is composed of Negros and Panay Islands, with load centers in Bacolod City and Iloilo City, respectively. Negros Island has reached a peak demand[1] of 446 MW, with most of its generation coming from geothermal, solar, and biomass power plants. Panay Island recorded a peak demand[1] of 529 MW, with bulk generation primarily from large CFPP and wind power facilities. The completion of the Cebu–Negros–Panay 230 kV Backbone Project enables the sharing of power generation across the Visayas Grid.

1.6 MINDANAO TRANSMISSION NETWORK

The Mindanao Grid enters 2026 with a generally stable supply outlook, supported by a balanced mix of hydropower, conventional baseload plants, and a growing share of renewable energy, strengthened further by the continued rollout of Battery Energy Storage Systems (BESS). In May 2026, Mindanao reached a peak demand of 2,775 MW, compared to a forecasted peak of 3,038 MW for the entire year.

Structurally, the grid is composed of 138 kV transmission corridors and 69 kV radial lines, reinforced by the fully energized 230 kV backbone, which now acts as the primary channel for bulk power transfer across the island. A robust loop which is critical to island-wide transfer capability supplies the Cagayan de Oro, Davao, and General Santos corridors via:

- Balo-i – Tagoloan – Maramag – Kibawe – Davao 138 kV corridor, and
- Balo-i – Villanueva – Maramag – Bunawan – Toril – Matanao – Culaman 230 kV backbone.

These two parallel paths support north-to-south bulk transfers, dynamic voltage stability, and N-1 reliability under high-loading or outage conditions.

The Mindanao transmission system is divided into six districts:

District	Area	Province
1	North-Western Mindanao Area (NWMA)	Zamboanga del Norte, Zamboanga del Sur, Zamboanga Sibugay, Misamis Occidental
2	Lanao Area (LA)	Lanao del Norte, Lanao del Sur
3	North Central Mindanao Area (NCMA)	Bukidnon, Misamis Oriental
4	North-Eastern Mindanao Area (NEMA)	Agusan del Norte, Agusan del Sur, Surigao del Norte, Surigao del Sur
5	South-Eastern Mindanao Area (SEMA)	Davao del Sur, Davao del Norte, Davao Oriental, Davao Occidental, Davao de Oro
6	South-Western Mindanao Area (SWMA)	Cotabato, South Cotabato, Sultan Kudarat, Maguindanao del Norte, Maguindanao del Sur, Sarangani

The generation mix in Mindanao remains anchored in renewable and conventional power plants located in Lanao and Misamis Oriental in the north, and in Davao in the south. Although most dependable capacity is in the north, the southern areas—especially Davao and SOCCSKSARGEN—account for nearly half of the island's total demand, driving steady southward transfers through the 138 kV and 230 kV corridors. The importance of these transfers has increased with the activation of the Mindanao–Visayas HVDC link, which enables bidirectional power exchange of up to 450 MW, expandable to 900 MW. This system is now fully operational, and Mindanao has already exported substantial power, such as 389 MW in mid-2025, to help support Visayas reserves.

In 2025, NGCP completed the Zamboanga Peninsula Voltage Improvement Project, which enhances voltage stability in the region through the installation of two 100-MVAR 138 kV STATCOM units, additional voltage-compensating equipment in Tacurong and General Santos, and new power circuit breakers to accommodate future BESS integration. Together, these projects improve reliability and support the continued economic growth of Northern and Western Mindanao.

Chapter 2

TRANSMISSION PLANNING INPUTS

This chapter presents the main inputs used in preparing the TDP. These inputs help identify the transmission facilities needed to serve future demand, connect new generation capacities, maintain system reliability, support power quality, and guide the long-term development of the Grid.

Power system planning requires coordination between generation development and transmission planning. The DOE provides the System Peak Demand forecast and the Generation Expansion Plan, which serve as key references in assessing future power supply and transmission requirements. These are supplemented by information on committed and indicative power plants, DCCs, grid equipment data, customer development plans, and other relevant system information.

Figure 2.1 shows the relationship between generation planning and the TDP. It illustrates how demand forecasting and generation planning help determine where new transmission facilities may be needed. Since power plants are often located based on resource availability, land access, fuel logistics, and commercial considerations, their locations may not always be near existing transmission facilities. As a result, additional connection facilities or network reinforcements may be required to deliver power to load centers.

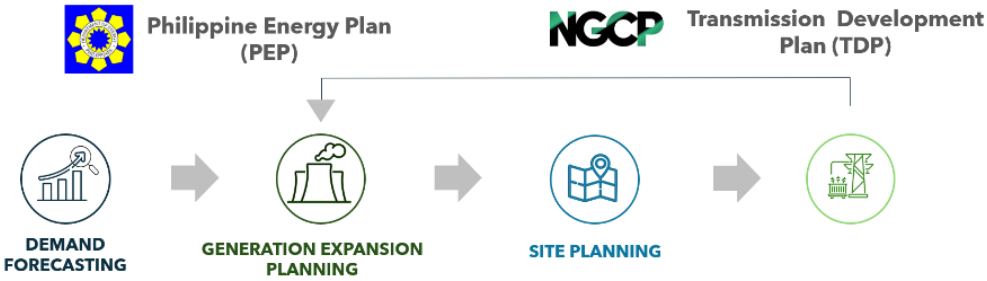


Figure 2.1: Power System Expansion Planning

To support better project development decisions, available transmission capacity has been made accessible to stakeholders and presented during the Green Energy Auction Program (GEAP) through the DOE. This helps generation developers consider grid readiness and available hosting capacity when identifying project locations.

The timing of generation and transmission projects is also an important consideration. In some cases particularly on RE, power plants may be ready before the required transmission facilities are completed. To manage this, NGCP implements project staging, phased connection arrangements, System Integrity Protection Schemes, and grid-scale Battery Energy Storage Systems to help maintain grid security and address near-term system constraints.

Permitting and right-of-way acquisition also affect the timely implementation of transmission projects. DOE and NGCP continue to coordinate through the Ad Hoc Committee on Transmission Projects (AHCTP) and other regular mechanisms to address implementation concerns and support the completion of critical transmission facilities.

Transmission planning also considers grid resilience to ensure that the Grid can withstand, adapt to, and recover from natural and man-made disruptions. In preparing the TDP, resiliency considerations are incorporated in route and site selection, equipment design, network redundancy, restoration readiness, asset replacement programs, and Business Continuity Management (BCM) aligned with ISO standards. These measures support the continued delivery of reliable transmission service to grid users, including during adverse events and system disturbances.
Overall, this chapter provides the basis for the major grid development projects, regional transmission outlooks, and system improvement programs discussed in the succeeding chapters.

2.1 SYSTEM PEAK DEMAND (SPD)

The annual System Peak Demand (SPD) forecast serves as a critical input in the development of the TDP, as it provides the basis for assessing future transmission requirements and ensuring that the grid can reliably meet growing electricity demand. For the TDP 2026–2050, NGCP adopted the updated SPD projections prepared by the DOE, officially provided in February 2026. These projections form the foundation in guiding the identification and timing of network reinforcements and expansion projects needed to support the country's long-term power system requirements.

Historical Demand for Electricity

Total SPD (in MW, non-coincident sum) of the Philippines shows a consistent upward trend from 2005 to 2019. However, SPD in 2020 declined by 1.92% or 299 MW across all Grids – Luzon, Visayas and Mindanao. This can be largely attributed to the economic downturn brought about by the COVID-19 pandemic. Demand began to recover as the Government loosened up quarantine restrictions and rolled out its COVID-19 vaccination program. A 4.93% growth in demand was recorded in 2021 followed by 3.49% growth in 2022 and 4.43% in 2023. Total demand growth was at its highest in 2024 at 11.21% but the growth was not sustained as the total demand dropped by 62 MW in 2025. In 2025, the demand of Luzon decreased by 1.26% from the 2024 level while Visayas and Mindanao demand increased by 0.36% and 4.07% respectively. The Average Annual Compounded Growth Rate (AACGR) for 2006-2025 was recorded at 3.87% for Luzon, 5.25% for Visayas, 4.33% for Mindanao, and 4.10% for total Philippines.

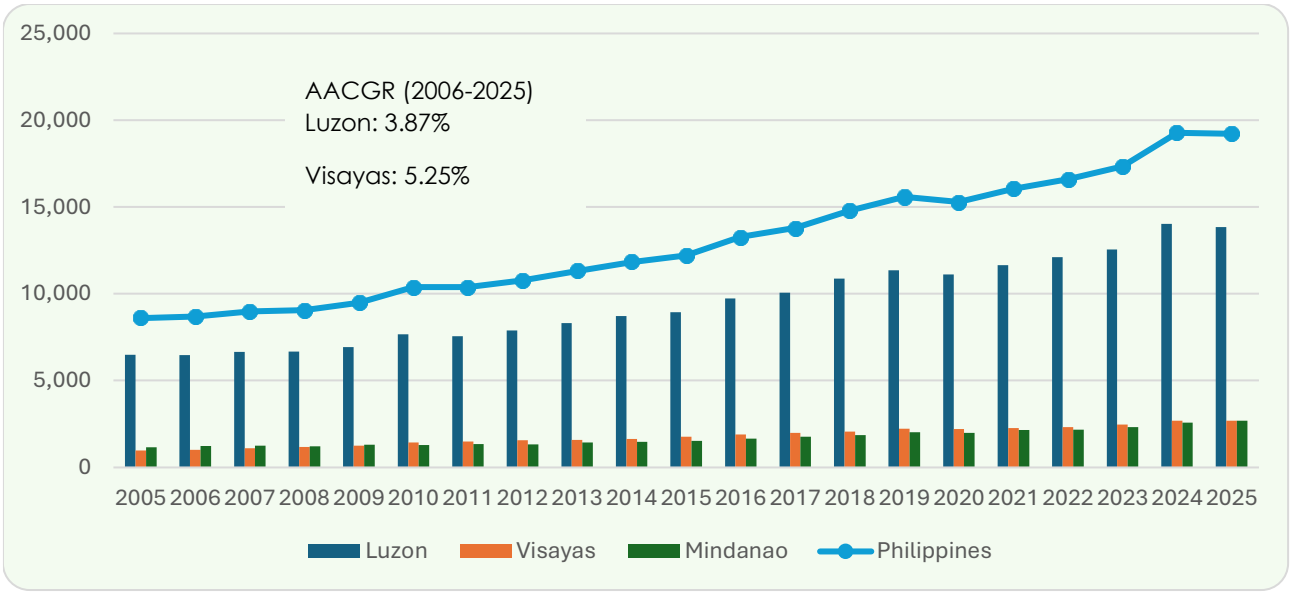
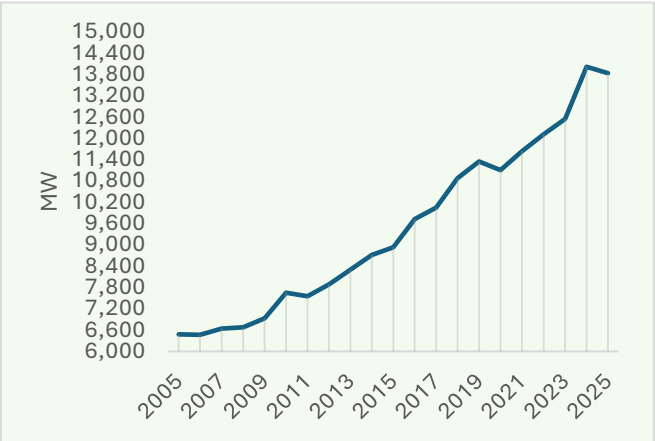


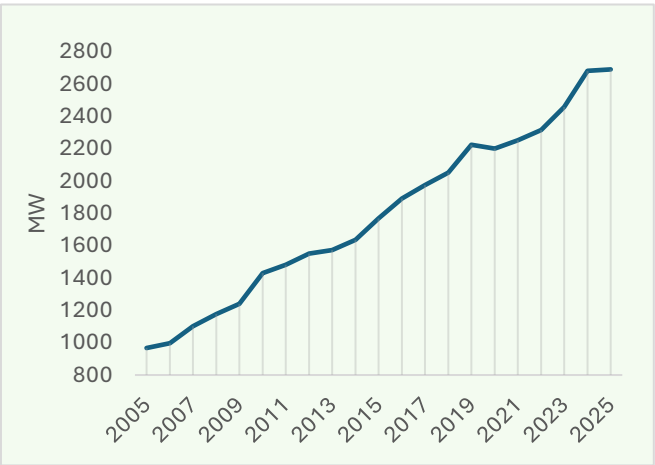
Figure 2.2: Summary of Historical Demand per Grid (2005-2025), in MW*
*Includes embedded generation monitored by NGCP

LUZON HISTORICAL DEMAND



Luzon Grid has posted an AACGR of 3.87% for the period 2006-2025. Steady growth was observed except for the decrease in 2006 and 2011 due to reduced power consumption by MERALCO during the global financial crisis and La Niña phenomenon, respectively. MERALCO's demand accounts for at least 70% of the total system peak demand (SPD) in Luzon. Demand growth in 2010 was unprecedented at 10.51%, driven by election spending, GDP growth, and El Niño's impact on summer temperatures. This growth was not sustained in 2011, with a 1.36% decline in SPD, but demand recovered with a 4.46% growth in 2012. From 2013 to 2019, Luzon saw an average annual growth of 5.36% or 507 MW. In 2020, Luzon SPD declined by 2.12% or 241 MW due to community quarantines starting in March. Metro Manila, Central Luzon, and CALABARZON were under Enhanced Community Quarantine (ECQ) for three months, leading to the temporary closure of large commercial, manufacturing, and industrial establishments during peak summer months. Metro Manila remained in General Community Quarantine (GCQ) by the end of 2020, resulting in lower electricity demand. In 2021 and 2022, demand recovered with 4.84% and 4.06% growth, respectively, as the government loosened quarantine restrictions and rolled out the COVID-19 vaccination program. Luzon Grid reached 14,016 MW in 2024, the highest growth rate recorded for Luzon but in 2025, the system peak demand of Luzon Grid declined by 1.26% or equivalent to 177 MW.

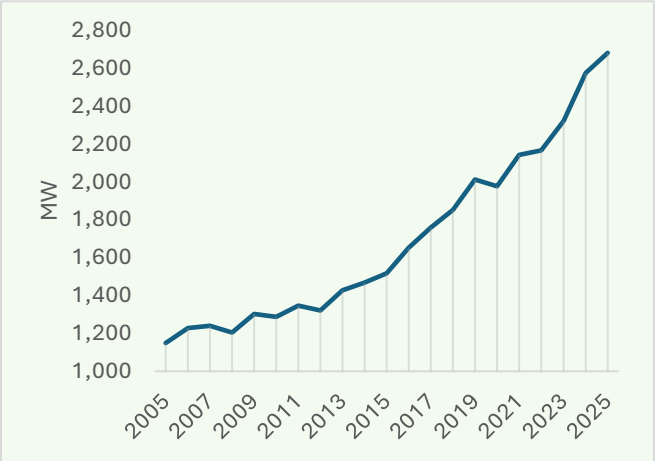
VISAYAS HISTORICAL DEMAND



The aggregate demand for Visayas Grid has posted an AACGR of 5.25% for the period 2006-2025. The year 2010 brought a significant increase in the demand for electricity in the Visayas. Compared with the SPD recorded in 2009, Visayas Grid grew by a record high of 15.31% in 2010. This growth was attributed to improved economic activities and increased reliance on the power supply from the Grid by existing large customers with self-generation. Furthermore, the realization of a 346 MW increase in generation capacity from CEDC, KEPCO, and PEDC bolstered the supply-demand situation in 2010. However, this growth was not sustained as the system grew only at an average rate of 4.11% for the next two years (2011-2012). In 2013, the total demand in Visayas posted a meager increase of only 1.35%, largely due to the impact of Typhoon Yolanda, which struck the region in November and caused a significant decrease in power consumption. Despite the challenges, Visayas demand grew by 4.07% in the year following Typhoon Yolanda, and the demand continued to rise steadily from 2014 to 2019. The onset of the COVID-19 pandemic in 2020 led to a decreased demand of 1.03% or 23 MW, with load centers such as Cebu, Iloilo, and Bacolod City experiencing longer ECQ periods compared to other areas in Visayas. However, similar to Luzon, the demand of Visayas Grid demonstrated resilience and recorded a 2.29% increase in 2021, followed by a 2.84% increase in 2022, and a 6.13% increase in 2023. The demand further increases in 2024 and reached 2,681 MW or equivalent to 9.07% demand growth. For 2025, the recorded system peak demand for Visayas is 2,691 MW which is 0.4% or 10 MW higher compared with the 2024 SPD.

MINDANAO HISTORICAL DEMAND

Mindanao Grid has posted an AACGR of 4.33% for the period 2006-2025. After recording high annual growth rates from 2002 to 2004 (an annual average of 7.36%), demand growth has been sluggish from 2005 to 2010 due to the overall reduced power requirement from large non-utility customers. From 2005 onwards, the historical growth in the Mindanao Grid has been volatile with alternating periods of rise and decline.



Drop-in demand occurred in the years 2005, 2008, 2010 and 2012. The year 2005 was characterized by reduced demand from distribution utilities while 2008 was characterized by the large decrease in the demand of non-utility customers, possibly a direct effect of the global financial crisis which adversely affected exporting industries. On the other hand, suppressed generation impeded demand growth in 2010 and 2012. This was due to the El Niño phenomenon that hampered hydropower generation, which comprised about half of the Grid's installed capacity. Mindanao power demand recovered in recent years and grew by 8.10% in 2013 then maintained at around 3.10% growth rate in the next two years. In 2016, a record high of 8.98% demand growth was registered in Mindanao Grid. More than 800 MW additional generation capacity was also added to Mindanao. In 2017 and 2018 the demand for Mindanao further improved and posted an increase of 6.46% and 5.28% respectively. In 2019, a 160 MW demand increase was recorded in the Mindanao Grid: the highest in terms of absolute increase in the past 14 years. Similar to Luzon and Visayas, Mindanao SPD declined by 1.76% or 35MW in 2020. ECQ was also implemented in Davao, load center in Mindanao, for some time and was under GCQ by the end of 2020. Large DUs in Mindanao, including Davao, recorded decreased demand for the period of April to December in 2020 compared with the level recorded during the same period in 2019. In 2021, Mindanao recorded the highest percent growth in demand, across all grids, recording 8.42% growth while only 1.07% increase in demand was recorded in 2022. In 2023, the demand for electricity in Mindanao reached 2,323 MW or equivalent to 156 MW increase from its 2022 demand. The Mindanao Grid reached 2,577 MW in 2024, also the highest growth rate recorded for Mindanao at 10.93%. Demand growth continued in 2025 at 4.07%, an increase of 105 MW to the 2024 SPD.

FORECAST FOR TDP 2026–2050

The power demand for the country is expected to grow at an AACGR of 5.66% for the period 2026-2030, 5.96% for the period 2026-2035, 6.02% for 2026-2040 and 5.93% for 2026-2050. It is projected that Mindanao will have the highest AACGR compared with the two other Grids. Mindanao is forecasted to reach an AACGR of 6.07% for 2026-2050 while the Luzon and Visayas Grids at 5.96% and 5.64%, respectively.

Table 2.1 shows the projected demand disaggregated per O&M District based on the transformer peak demand coincident with the System Peak. This was derived from the updated DOE SPD Forecast. A comparison of the projected load and generation capacity per area per grid is also available (see Appendix 10).

Table 2.1: System Peak Demand Forecast (MW)

Area	2026	2030	2035	2040	2045	2050
LUZON	**13,872**	**17,872**	**24,452**	**33,193**	**44,521**	**58,839**
MERALCO	9,492	10,967	13,343	16,234	19,751	24,030
1 NCR	6,146	7,025	8,547	10,399	12,652	15,393
2 North	486	579	704	857	1,043	1,269
3 South	2,860	3,363	4,092	4,978	6,057	7,369
North Luzon	3,338	5,241	8,419	13,154	19,746	28,613
1 Ilocos	273	361	526	777	1,066	1,360

	Area	2026	2030	2035	2040	2045	2050
2	Mt. Province	157	198	279	399	528	650
3	North Central	361	513	745	1,097	1,498	1,901
4	Cagayan Valley	397	516	742	1084	1469	1850
5	West Central	544	855	1263	1702	2146	2535
6	South Central	1563	2747	4796	8000	12912	20161
7	North Tagalog	43	50	68	96	126	156
South Luzon		1,042	1,664	2,689	3,805	5,024	6,196
1	Batangas/Cavite Central	553	1,021	1,759	2,432	3,139	3,787
2	Laguna/Quezon	135	169	233	330	440	549
3	Bicol	354	474	698	1,043	1,445	1,860
VISAYAS		**2,942**	**3,624**	**4,746**	**6,235**	**8,166**	**10,606**
1	Leyte-Samar	391	482	631	829	1,085	1,410
2	Bohol-Cebu	1,492	1,838	2,407	3,162	4,142	5,379
	Bohol	140	172	225	296	388	504
	Cebu	1,353	1,666	2,182	2,866	3,754	4,876
3	Negros	484	596	781	1,026	1,344	1,745
4	Panay	575	708	927	1,218	1,595	2,072
MINDANAO		**3,038**	**3,809**	**5,077**	**6,762**	**8,945**	**11,705**
1	North Western	374	456	607	830	1,109	1,445
2	Lanao Area	156	223	274	347	427	522
3	North Central	662	738	912	1,186	1,567	2,084
4	North Eastern	272	325	436	608	836	1,131
5	South Eastern	920	1,248	1,803	2,390	3,126	4,011
6	South Western	654	819	1,046	1,401	1,881	2,511
PHILIPPINES		**19,852**	**25,305**	**34,275**	**46,190**	**61,633**	**81,151**

DEMAND PROJECTIONS FOR SUBSTATION CAPACITY ADDITION

The demand projections for SS expansion take off from the per meter forecast undertaken by NGCP. Forecast energy deliveries per metering point are derived from historical trends and/or information as to the potential expansion or contraction of demand of Grid-connected customers. Inputs are sought from customers in this bottom-up process to incorporate their operation plans. Projected monthly energy deliveries (in MWh) to metering points connected to a given transformer are then summed up. Accounting adjustments for technical losses and substation use to this sum, the monthly per transformer energy delivery forecast (in MWh) is derived. The forecast transformer peak (in MW) is then calculated by applying the appropriate load factor to these energy delivery projections. This transformer peak becomes the basis for adding transformer capacities at the substations.

DEMAND PROJECTIONS FOR TRANSMISSION EXPANSIONS

The SPD projection for each Grid is used in determining the necessary transmission expansion projects. However, for the figure to be usable in the power system analysis software, broken down into individual transformer loads. First, the embedded generation during system peak is subtracted from the SPD to come up with the non-embedded peak. Applicable plant station uses, and system loss were applied to the generation level to disaggregate the forecast down to the NGCP transformers. Then, the individual transformer maximum demand projections during the month when the system peak usually occurs (as determined in the previous section) are used to establish the percent share to arrive at the non-embedded peak that will be assumed for a specific transformer.

2.2 GENERATION EXPANSION PLAN

The DOE Energy Outlook has two distinct scenarios for the country's energy transition: Reference Scenario (REF) and Clean Energy Scenario (CES). The REF Scenario reflects the current energy policies while the CES explores the potential of aggressive clean energy targets within the planning horizon.

Table 2.2: DOE Reference Scenarios (Source: Philippine Energy Plan 2023-2050 Volume 1)

REFERENCE SCENARIO	CLEAN ENERGY SCENARIO - 1	CLEAN ENERGY SCENARIO - 2
SUPPLY	**SUPPLY: REFERENCE +**	**SUPPLY: REFERENCE +**
• Present development trends and strategies • Existing plants and committed power projects and WESM-registered capacities as of May 2023 • 35% RE share by 2030; 50% by 2050 • Indigenous production targets by 2050 • LNG imports in 2023	• More than 50% RE share by 2050 • Capacity targets under NREP • **19 GW of OSW** • 40-year technical life for coal plants • Additional nuclear capacity of 1,200 MW by 2032, 2,400 MW by 2035 and 4,800 MW by 2050	• More than 50% RE share by 2050 • Capacity targets under NREP • **50 GW of OSW** • 40-year technical life for coal plants • Additional nuclear capacity of 1,200 MW by 2032, 2,400 MW by 2035 and 4,800 MW by 2050
DEMAND	**DEMAND: REFERENCE +**	
• Reduction in economy-wide energy intensity consistent with regional targets ○ 10% EV penetration rate by 2040 ○ Current biofuels blending (B2 and E10) ○ EEC efforts sustained at 5%	• Higher reduction in economy-wide energy intensity • 50% EV penetration rate by 2040 • B5 and E10 biofuels blending by 2026 • EEC rate on oil products and electricity use improve by 10% in 2040-2050 through heightened EE&C activities	

The DOE's GEAP has also supported the expansion of renewable energy capacity in the country. Through the GEAP, renewable energy developers are provided with a competitive mechanism to secure capacity awards and advance project development. Projects awarded under completed GEAP rounds form part of the expected generation additions and may be included in the list of committed power plant projects, subject to applicable requirements and project milestones. Completed and upcoming GEAP rounds also provide important planning inputs in identifying future generation additions and the corresponding transmission facilities needed to support them. The completed and upcoming GEAP rounds are discussed in Section 3.2.

2.3 NEW GRID-CONNECTED POWER PLANTS

New generating power plants are linked to the grid every year to maintain the demand-supply balance in the system. Table 2.3 provides a list of the additional grid-connected capacities installed since 2025, based on the DOE data as of December 2025.

Table 2.3: List of Grid-Connected Additional Capacities in 2025.

Power Plant	Location	Installed Capacity (MW)	Dependable Capacity (MW)	Connection Point
LUZON		**2262.9**	**2,009.3**	
Mariveles Coal Unit 4	Barangay Biaan, Mariveles, Bataan	150.0	132.0	Mariveles (Alas-asin) 500 kV SS
EERI Unit 1	Barangay Dela Paz Proper, Batangas City, Batangas	440.0	420.6	Double Circuit Direct Connection to Ilijan 500 kV SY
EERI Unit 2	Barangay Dela Paz Proper, Batangas City, Batangas	440.0	421.9	Double Circuit Direct Connection to Ilijan 500 kV SY
EERI Unit 3	Barangay Dela Paz Proper, Batangas City, Batangas	440.0	419.6	Double Circuit Direct Connection to Ilijan 500 kV SY
Palayan Geothermal	Barangay Nagotgot, Manito, Albay	35.7	28.0	Direct connection to Bacman 230 kV SS
Tiwi Binary Geothermal	Brgy. Cale, Tiwi, Albay	17.0	17.0	Direct connection to Tiwi-C 69 kV SS
Tanawon Geothermal	Barangay Bulabog and Capuy	21.6	20.6	Direct connection to Bacman 230 kV SS
Tanauan Solar	Tanauan, Batangas	64.1	48.1	Meralco 230 kV Facility
Maragondon Solar	Maragondon, Cavite	64.6	48.1	Direct Connection to Dasmariñas 115 kV SS
Bongabon Solar	Bongabon, Nueva Ecija	42.9	30.9	Direct Connection to Cabanatuan 69 kV SS

Power Plant	Location	Installed Capacity (MW)	Dependable Capacity (MW)	Connection Point
Gamu Solar	Gamu, Isabela	56.6	41.2	Tap connection along Gamu-Roxas Isabela 69 kV line
Armenia Solar	Tarlac CIty, Tarlac	46.7	37.5	Tap Connection along Concepcion-Sta. Ignacia Line 2
Raslag IV Solar	Magalang, Pampanga	36.6	26.4	Tap Connection along Mexico-Clark 69 kV TL
Sto. Domingo Solar	Sitio Silsilay, Brgy. Sto. Domingo, San Manuel, Pangasinan	59.8	46.2	Direct Connection to San Manuel 69 kV SS
Subic New PV Solar (Phase 4A)	Morong and Hermosa Bataan	72.1	61.6	Direct connection thru SBMA 230 kV Facility
San Jose Solar	Sitio Saranay, Brgy. Santo Nino 3rd, San Jose, Nueva Ecija	19.6	15.3	Direct connection to Cabanatuan 69 kV SS
Samal Solar	Brgy. Gugo and San Juan, Samal, Bataan	49.2	35.8	Tap Connection along the Hermosa- Calaguiman 69 kV TL
Paluig Solar	Sito Luan, Pangolingan Road, Brgy. Lipay, Palauig, Zambales	75.2	49.5	Tap Connection along Botolan–Candelaria 69 kV TL
Bongabon SPP	Sitio Lutet, Brgy. Pesa, Bongabon, Nueva Ecija	25.5	19.8	Tap connection along NGCP's Cabanatuan–Baler 69 kV TL
Laguio (Laginbayan) Malaki 1 River	Brgy. Cagsiay III, Mauban, Quezon	1.7	1.7	
Bac-Man BESS	Sitio Palayan Bayan, Brgy. Nagotgot, Manito, Albay	29.0	20.0	Direct Connection to EDC's Palayan Binary 230 kV SS
Balaoi Wind	Barangays Balaoi and Caunayan, Pagudpud, Ilocos Norte	25	22.4	Double Circuit Direct Connection to Laoag 115 kV SS
Caparispisan II Wind	Barangays Caparispisan and Subec, Pagudpud, Ilocos Norte	50	45.1	Connected Thru Laoag 115 kV SS
VISAYAS		337.4	263.9	
Dagohoy Solar	Dagohoy, Bohol	27.1	20.2	Tap along Ubay 69 kV Line
Calatrava Solar	Barangay San Isidro, Calatrava, Negros Occidental	169.0	137.4	Double Circuit Direct Connection to Calatrava 230 kV SS
Upper Taft HEPP	Barangay San Rafael, Taft, Eastern Samar	14.2	13.8	Tap connection along Paranas-Taft 69 kV Line
Mahanagdong GPP	Barangay Tongonan, Ormoc, Leyte	31.3	28.5	Direct connection to the Existing Kananga SwS
Southern Negros ESS	Brgy. Puhagan, Valencia, Negros Oriental	14.5	10.0	Direct Connection to Nasuji 138 kV SS
Tongonan ESS	Brgy. Lim-ao, Kananga, Leyte	14.5	14.2	Direct Connection to Tongonan 138 kV SS
Bohol In-Island DPP	Brgy. Imelda, Ubay, Bohol	66.8	60	Double Circuit Direct Connection to Ubay 138 kV SS

Directly Connected Customers (DCCs) are also considered as part of the transmission planning inputs. These customers are directly connected to the Grid and may have existing or future demand requirements that affect transmission loading, capacity requirements, and the timing of network reinforcements. Their load requirements are assessed together with other planning inputs to ensure that the transmission system can continue to serve existing customers and accommodate future demand growth. The list and details of DCCs are provided in Appendix 5.

2.4 COMMITTED AND INDICATIVE CAPACITIES

The DOE's monthly publication of Power Sector Initiated Power Projects (PSIPPs) on its website includes information on both committed and indicative power plants. Tables 2.4 and 2.5 show the DOE's projected committed and indicative capacities as of December 2025, respectively. A committed capacity of 13,839.48 MW is projected to contribute to the grid, with RE sources representing a majority share. Furthermore, the DOE has identified a substantial 119.23 GW of indicative capacity that may potentially connect to the grid in the future, subject to further technical and economic assessment.

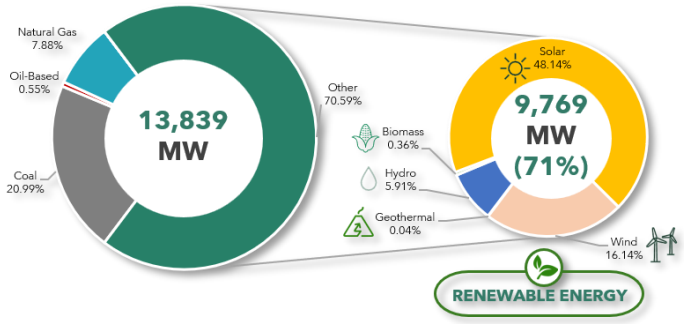


Table 2.4: Summary of Committed Power Plants (Philippines)

Plant Type	2026	2027	2028	2029	2030	TBD	TOTAL
Coal	700.00	135.00	-	600.00	1,335.00	135.00	2,905.00
Oil-Based	67.04	8.50	-	-	-	-	75.54
Natural Gas	-	-	440.00	-	-	650.00	1,090.00
NON-RE	767.04	143.50	440.00	600.00	1,335.00	785.00	4,070.54
RE	7,545.21	1,001.41	243.92	339.80	632.00	6.60	9,768.94
Geothermal	*5.65*	-	-	-	-	-	*5.65*
Hydropower	*80.52*	*88.72*	*6.30*	*9.80*	*632.00*	*0.60*	*817.94*
Biomass	*40.88*	*3.40*	-	-	-	*6.00*	*50.28*
Solar	*5,664.92*	*909.29*	*87.62*	-	-	-	*6,661.82*
Wind	*1,753.24*	-	*150.00*	*330.00*	-	-	*2,233.24*
TOTAL	**8,312.25**	**1,144.91**	**683.92**	**939.80**	**1,967.00**	**791.60**	**13,839.48**

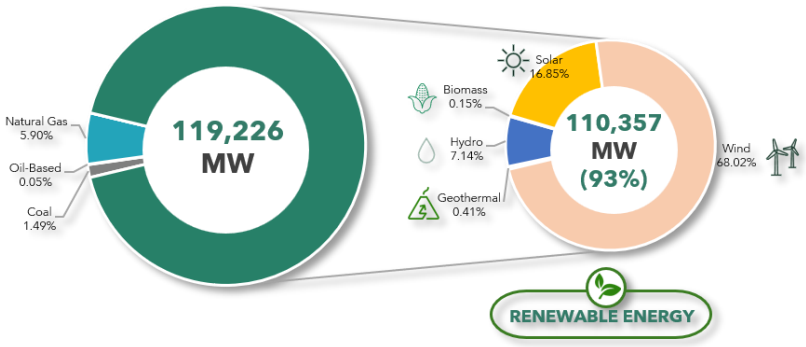


Table 2.5 Summary of Indicative Power Plants (Philippines)

Plant Type	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	TBD	TOTAL
COAL	-	-	289	82	-	-	-	-	-	-	-	-	1,400	1,771
OIL-BASED	-	-	-	-	-	-	-	-	-	-	-	-	60	60
NATURAL GAS	-	-	1,200	1,200	3,378	-	-	-	-	-	-	-	1,260	7,038
NON-RE	-	-	1,489	1,282	3,378	-	-	-	-	-	-	-	2,720	8,869
RE	5,935.88	8,770.91	16,000.29	14,811.39	15,209	18,225.56	14,265	13,491.75	1,034	704	-	45	1,864.62	110,357.39
GEOTHERMAL	-	-	20	20	174	105	120	-	-	-	-	45	-	484
HYDROPOWER	-	-	1,053.96	85	3,658	2,014.76	1,400	-	-	300	-	-	-	8,511.72
BIOMASS	62	-	15	100	-	-	-	-	-	-	-	-	-	177
SOLAR	4,645.08	4,332.32	6,884.63	2,948.57	-	-	-	-	-	-	-	-	1,274.37	20,084.96
WIND	1,228.80	4,438.59	8,026.70	11,657.83	11,377	16,105.80	12,745	13,491.75	1,034	404	-	-	590.25	81,099.72
TOTAL	**5,935.88**	**8,770.91**	**17,489.29**	**16,093.39**	**18,587**	**18,225.56**	**14,265**	**13,491.75**	**1,034**	**704**	**-**	**45**	**4,584.62**	**119,226.39**

Notes:

1. Period Coverage is from 2026-2037, including Projects without a firm commercial operations date and/or beyond 2037 tagged as To be Determined (TBD).

2. Off-grid projects are not included

Appendix 2 shows the detailed list of DOE's Committed Power Plants with associated transmission projects as of December 2025. Generation projects are tagged if these are included in the DOE's GEAP and have

undergone System Impact Study (SIS). It should be noted that the list includes small capacity power plants, which may not actually connect directly to the transmission system. For relatively small capacity power plants connecting to the distribution system, the main impact is a slight reduction in the power being drawn by the DU from NGCP Substations and would not generally require reinforcement in the transmission network.

Appendix 3 presents the DOE's list of indicative power plants as of December 2025, which includes potential generation additions that are still subject to further development, permitting, financing, or assessment by the DOE. It also identifies projects included under the GEAP and those that have undergone a SIS, where applicable. Appendix 4 presents prospective power plants with either completed or ongoing SIS reports but are not included in the DOE's committed or indicative power plant lists as of December 2025. These indicative and prospective projects are provided as reference information for transmission planning, as they may represent possible future generation developments subject to further confirmation of project status and development progress.

Figure 2.4 below illustrates the projected timeline for these capacity additions alongside peak demand forecasts, providing valuable insights into the country's future power generation potential.

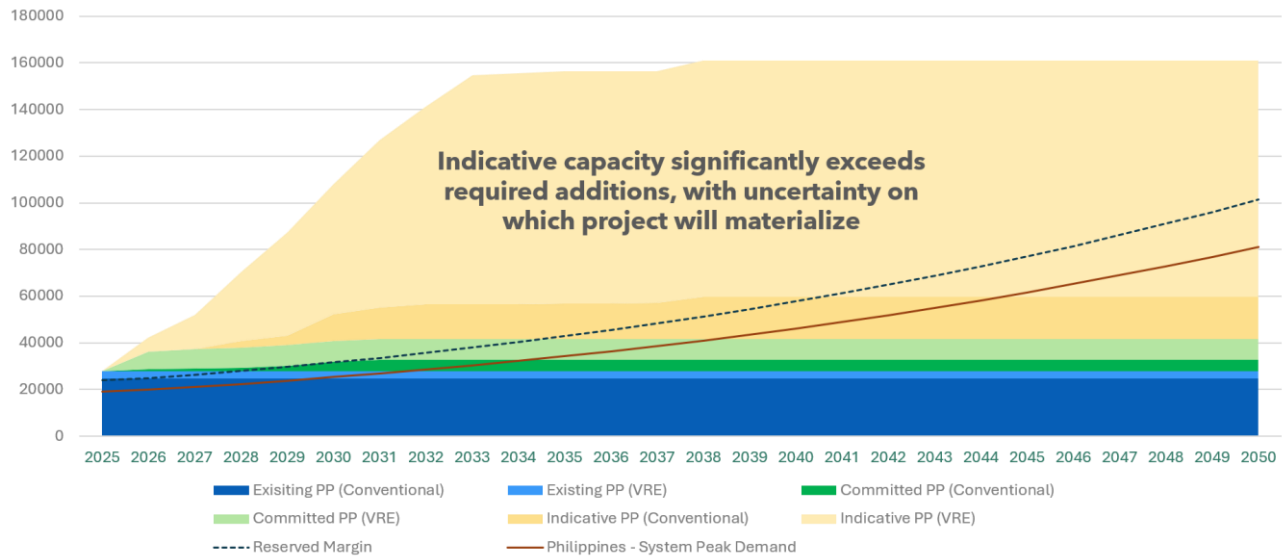


Figure 2.4: Future Power Generation Potential2

Based on committed power plants' target commissioning dates, the projected grid capacity appears adequate until 2031. However, one of the significant concerns in transmission planning is the low realization rate of committed and indicative power plants. Figure 2.5 shows that from the list of June 2020 PSIPP based on the DOE data, only 23% of the planned power plants have reached commercial operation.

2 Based on DOE's List of Private Sector Initiated Power Projects as of December 2025

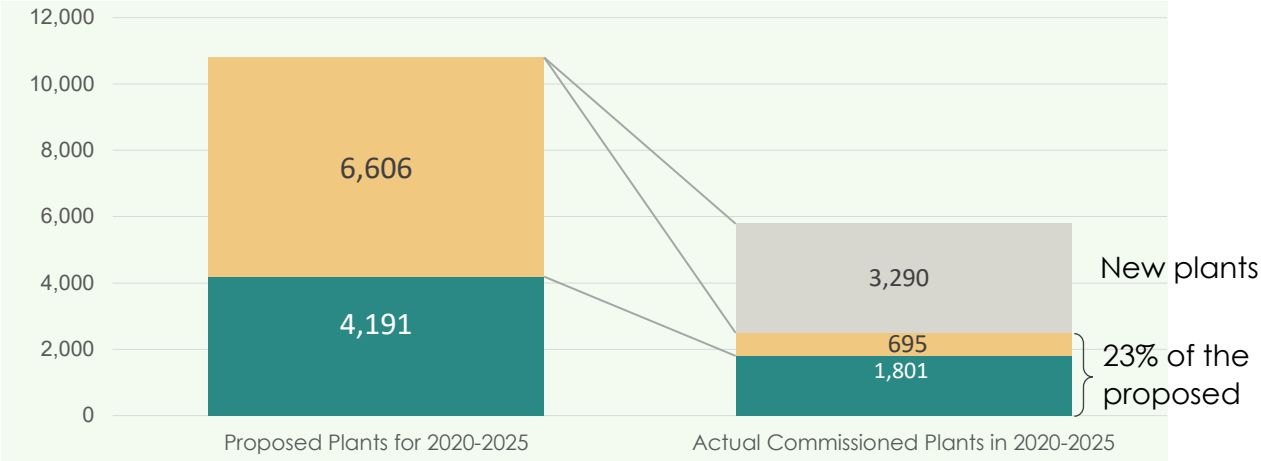


Figure 2.5: Realization of Based on June 2020 DOE data of proposed power plants for the 2020- December 2025

*excluding projects with commercial operation beyond December 2025

2.5 GENERATOR CAPACITY REALIZATION

Generator capacity realization refers to the aggregate generating capacity of proponents with SIS applications that successfully completed their grid connection and achieved operational or commercial integration within the reporting period. Consequently, the turn-out of generators is measured based on actual grid-connected capacities, representing projects that have progressed from the SIS application and interconnection process to physical connection, energization, and power injection into the transmission network. This approach provides a more accurate measure of generation realization, as it reflects capacities that have been successfully integrated into the grid and are available to serve demand.

The continuous coordination of DOE and NGCP's generation-transmission alignment is intended to increase generator capacity realization by ensuring that adequate transmission infrastructure is available to accommodate new generation projects. The transmission planning strategy considers ongoing and planned network developments across the Luzon, Visayas, and Mindanao grids to facilitate the integration of future generation facilities and support their reliable dispatch to the system.

NGCP released information of available transmission capacity (ATC)that guides generator proponents on where and when their capacities can be connected in a shorter time. This information is particularly valuable to investors, especially for non-site-specific power plants, as it helps identify potential connection points where new generation facilities may be interconnected to the grid and fully dispatched without requiring significant transmission reinforcements. The availability of available transmission infrastructure at these locations can facilitate the timely realization of generation projects and integration into the grid.

For site-specific power plants, such as hydroelectric, geothermal, and offshore wind (OSW) facilities, project development and construction typically involve longer lead times. As such, it is imperative that project proponents provide detailed project information to NGCP at the earliest possible stage. This allows sufficient time for the planning and development of the required grid interconnection facilities and associated

transmission projects. The implementation of these facilities is often complex, involving transmission routes through rugged terrain and challenges related to right-of-way acquisition, permitting, and regulatory approvals, all of which may significantly extend project timelines.

2.6 SINGLE-OUTAGE CONTINGENCY (N-1) PROVISION AND LOOP CONFIGURATION

In addition to maintaining reliability and security of the transmission network system during normal condition, the compliance to grid code during single-outage contingency criterion (N-1) has always been the primary basis of NGCP in planning and in preparing the TDP. Since 2009, NGCP planned and completed various projects for transmission capacity expansion and to maintain the N-1 contingency provision.

With the continuing increase in SPD and the development of new power plants in various parts of the grid, the need for more transmission projects to maintain the grid's single-outage contingency (N-1) compliance is urgent. Moreover, establishing transmission backbone loop configuration is crucial to enhance grid resilience. The projects for system reliability and grid resilience are in various stages of implementation. In addition, the enhanced criteria in the substation site and transmission line route selection to avoid geologic or environmental hazards and the updating of wind speed design for new transmission lines are included in the grid resilience measures already being implemented. Appendix 6 outlines the projects for N-1 Contingency and Loop Configuration.

2.7 SUBTRANSMISSION ASSETS / 69 KV FACILITIES

A key reform introduced by Electric Power Industry Reform Act (EPIRA) in the power sector concerns the management of 69 kV subtransmission assets, which are to remain under the operation and maintenance of the National Transmission Corporation (TransCo) until their eventual divestment to qualified distribution utilities. TransCo is given a period of two years (from EPIRA's effectivity or open access, whichever is earlier) to negotiate the transfer and facilitate the turnover of these assets, along with the corresponding operational responsibilities, to eligible entities.

The ERC also issued the Guidelines to the Sale and Transfer of the TransCo's Subtransmission Assets and the Franchising of Qualified Consortiums on October 17, 2003, to establish the approval process of the sale and transfer of subtransmission assets to distribution utilities. This is later amended by ERC Resolution No. 15, series of 2011 with objectives to:

1. Ensure continued quality, reliability, security, and affordability of electric service to end-users
2. Enhance the inflow of private capital and broaden the ownership base of subtransmission assets
3. Ensure the transparent and reasonable prices of electric service in a regime of free and fair competition and to achieve greater operational and economic efficiency
4. Provide for the orderly and transparent sale and transfer of subtransmission assets of TransCo or NGCP to qualified buyers

The ERC's Final Determination for the 2nd Regulatory Period (2006 - 2010) indicates that TransCo is not expected to finance further subtransmission projects after a certain timeframe. This is because the costs of these assets are to be borne solely by connected customers, who will eventually acquire them. Hence, customers requiring installation or upgrades of subtransmission assets will undertake these projects themselves.

As a way forward, short and long-term plans by NGCP and the DU need to be realized to comply with the EPIRA and transmission regulations set by the ERC.

Short-Term Measures	Long -Term Measures
1. Co-location: Sharing space at DU substations for NGCP-operated capacitors, potentially improving efficiency and reducing land use. 2. Line Upgrade: Building new 69 kV lines or reconductoring existing ones to enhance capacity and reliability. 3. Real-time monitoring: Installing Remote Terminal Units (RTUs) at Large Electricity Users (LES) to facilitate market operations and grid management. 4. Metering relocation: Implementing ERC Resolution 23/2016, potentially improving metering accuracy and efficiency.	1. NGCP substations: Building new substations to provide DUs with alternative power sources and enhance grid resilience. 2. LES capacitor integration: Encouraging LES to incorporate capacitors in their new developments, improving power quality and reducing losses. 3. DU line expansion: Encouraging DUs to build additional outgoing lines from existing NGCP substations, potentially improving distribution capacity and reducing congestion.

2.8 PROJECT CLUSTERING

NGCP prioritizes efficient resource allocation for its transmission projects. To achieve this, NGCP implements a strategic project clustering approach based on their geographic location that are categorized on the following major cluster groups and further detailed in Appendix 1.

By establishing project clusters in Luzon, the Visayas, and Mindanao, NGCP takes a proactive approach towards optimizing resource utilization and achieving cost-effective grid development. Skilled personnel, contractors, and material suppliers can efficiently serve multiple projects within a cluster. This not only reduces redundancy but also promotes knowledge exchange. Lessons learned and best practices from one project can be readily applied to others, accelerating overall project implementation.

2.9 GRID EQUIPMENT DATA

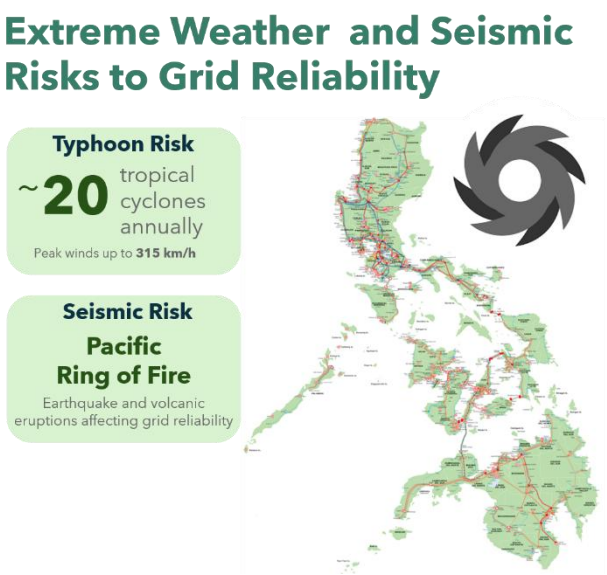
Grid Equipment Data registration is the process of registering and maintaining data on various equipment within the power transmission network. This data is crucial for effective grid planning, particularly in conducting system studies required in the preparation of the TDP. As stated in the PGC under section GCR 4.11, the data relating to the connection point and user development, submitted by the user to the TNP, must be registered according to the following data categories:

Data Category	Description
Forecast Data	includes demand and active energy, representing the user's best estimate of projected data for the succeeding years
Estimated Equipment Data	includes demand and active energy, representing the User's best estimate of parameters or information based on standard values.
Registered Equipment Data	contains validated actual values of parameters and information about the equipment that is submitted by the User to the TNP at the connection data including connected project planning data which shall replace any estimated values of parameters and information about the equipment previously submitted

2.10 GRID RESILIENCE IN TRANSMISSION PLANNING

The Department of Energy (DOE) defines energy resiliency as the ability of the energy sector to withstand, adapt to, and rapidly recover from natural and human-induced disruptions while ensuring reliable energy supply. To institutionalize this, the DOE issued Department Circular No. DC2018-01-0001 (Energy Resiliency Policy) and later strengthened it through Department Circular No. DC2022-06-0028, which requires energy sector participants to integrate resiliency measures into planning, investment programming, contingency preparedness, disaster response, and recovery activities. The policy aims to maintain the mainstream disaster-risk reduction, enhance infrastructure hardening, improve coordination through the Task Force on Energy Resiliency (TFER), and ensure continuous energy service during extreme weather events and other emergencies.

Complementing energy resiliency efforts is BCM, which provides a systematic framework for ensuring that critical operations, personnel, facilities, information systems, and supporting resources remain available or can be restored within acceptable timeframes during disruptive incidents. Through business continuity planning, risk assessment, emergency response procedures, continuity strategies, and regular testing and exercises, NGCP can minimize operational interruptions and maintain essential services. BCM serves as a key enabler of energy resilience by strengthening organizational preparedness, response, and recovery capabilities.



For the transmission sector, NGCP aligns its grid resilience initiatives with the DOE policy through its Transmission Development Plan (TDP). NGCP's grid resilience strategy focuses on:

- strengthening and modernizing transmission facilities, (flood control, improved tower wind-speed design, anti-pilferage etc.)
- replacing aging assets,
- upgrading substations and transmission lines,
- adopting smart grid technologies,
- integrating battery energy storage systems (BESS),
- increasing system redundancy,
- creation of transmission backbone / loop configuration
- and enhancing inter-island connectivity.

These measures are intended to reduce the likelihood of widespread outages and improve the grid's capability to recover quickly after typhoons, earthquakes, and other disruptive events.

NGCP grid resilience initiatives have a significant positive impact on the Philippine power sector. NGCP improved the system reliability by reducing the frequency and duration of outages, strengthen disaster preparedness, increased system availability, and supports the integration of renewable energy resources. Enhanced transmission infrastructure and grid modernization also contribute to better power quality and operational flexibility, particularly as the country transitions toward a cleaner energy mix.

NGCP's way forward is anchored on the continued implementation of its TDPs, which prioritize grid expansion, network reinforcement, renewable energy integration, and resilience enhancement. Key actions include developing new transmission corridors, increasing substation and transformer capacities, replacing aging 69-kV and higher-voltage assets, expanding interconnection projects between islands, deploying advanced grid technologies, incorporating energy storage solutions, and strengthening emergency response and restoration capabilities. NGCP also continues to invest heavily in projects that improve transmission reliability and support the government's long-term energy transition and resilience objectives.

Chapter 3

RENEWABLE ENERGY INTEGRATION AND EMERGING GRID TECHNOLOGIES

The Philippine power sector continues to transition toward a more sustainable and resilient energy system, guided by the targets set under the Philippine Energy Plan (PEP) 2023-2050. The government aims to achieve a 35% share of renewable energy (RE) in the generation mix by 2030 and 50% by 2040, requiring significant expansion beyond the current level of approximately 25% as of 2025. This expansion will be largely driven by VRE resources, particularly solar photovoltaic and wind, including offshore wind developments.

While this shift supports long-term sustainability goals, it also introduces new operational and planning challenges for the transmission system. Addressing these challenges requires the coordinated implementation of policy frameworks, grid infrastructure development, and enabling technologies that collectively support reliable and secure grid operations.

3.1 POLICY AND PLANNING FRAMEWORK FOR ENERGY TRANSITION

To support the country's energy transition and the increasing integration of renewable energy (RE) into the power system, the government has established a set of key policy and planning mechanisms that guide both generation development and transmission expansion. These frameworks are intended not only to accelerate RE deployment, but also to ensure that the supporting grid infrastructure is developed in a timely and coordinated manner. Among the most important of these mechanisms are the Competitive Renewable Energy Zones (CREZ), the GEAP, and the Smart and Green Grid Plan (SGGP). Together, these initiatives provide the strategic basis for identifying priority RE development areas, facilitating private sector investment, and aligning long-term transmission planning with the evolving requirements of the energy transition.

3.1.1 Competitive Renewable Energy Zone (CREZ)

The general objectives and principles behind the CREZ were adapted from the DOE's Department Circular 2018-09-0027, entitled Establishment and Development of CREZ in the Country. The CREZ Process intends to:

- Identify abundant high-quality, economic RE resources
- Reduce RE deployment barriers
- Improve national coordination for power system planning
- Enhance opportunities for RE investment

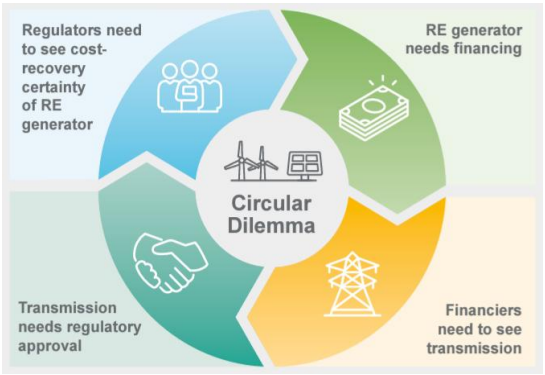


Figure 3.1 Circular Dilemma

The Zone Working Group (ZWG) selected candidate CREZ, which are geographical areas that enable the development of profitable, cost-effective, grid-connected RE. These zones were prescreened for high-quality resources, suitable topography, potential land-use constraints, and demonstrated private developer interest, thereby reducing overall feasibility assessment costs. From 34 candidate CREZ, the ZWG selected 25 CREZ in the Philippines.

Since traditional transmission planning could not efficiently support the RE developments mainly due to misalignment in terms of planning and construction time of RE and transmission facilities, both the transmission development and VRE projects go through circular dilemmas when these two do not meet (see Figure 3.1 Circular Dilemma[3]). By evaluating the transmission needs of the system, as opposed to upgrading the system incrementally based on the needs of specific projects, costs will be reduced while amplifying the benefits[4]. As part of the CREZ Process, the Transmission Working Group developed

[3] Source: Ready for Renewables: Grid Planning and CREZ in the Philippines
[4] Lee et al. (2020). Ready for Renewables: Grid Planning and CREZ in the Philippines

transmission expansion options that could provide sufficient transfer capability to accommodate the CREZ. Figure 3.2 shows the identified CREZ in the Philippines and the associated transmission projects.

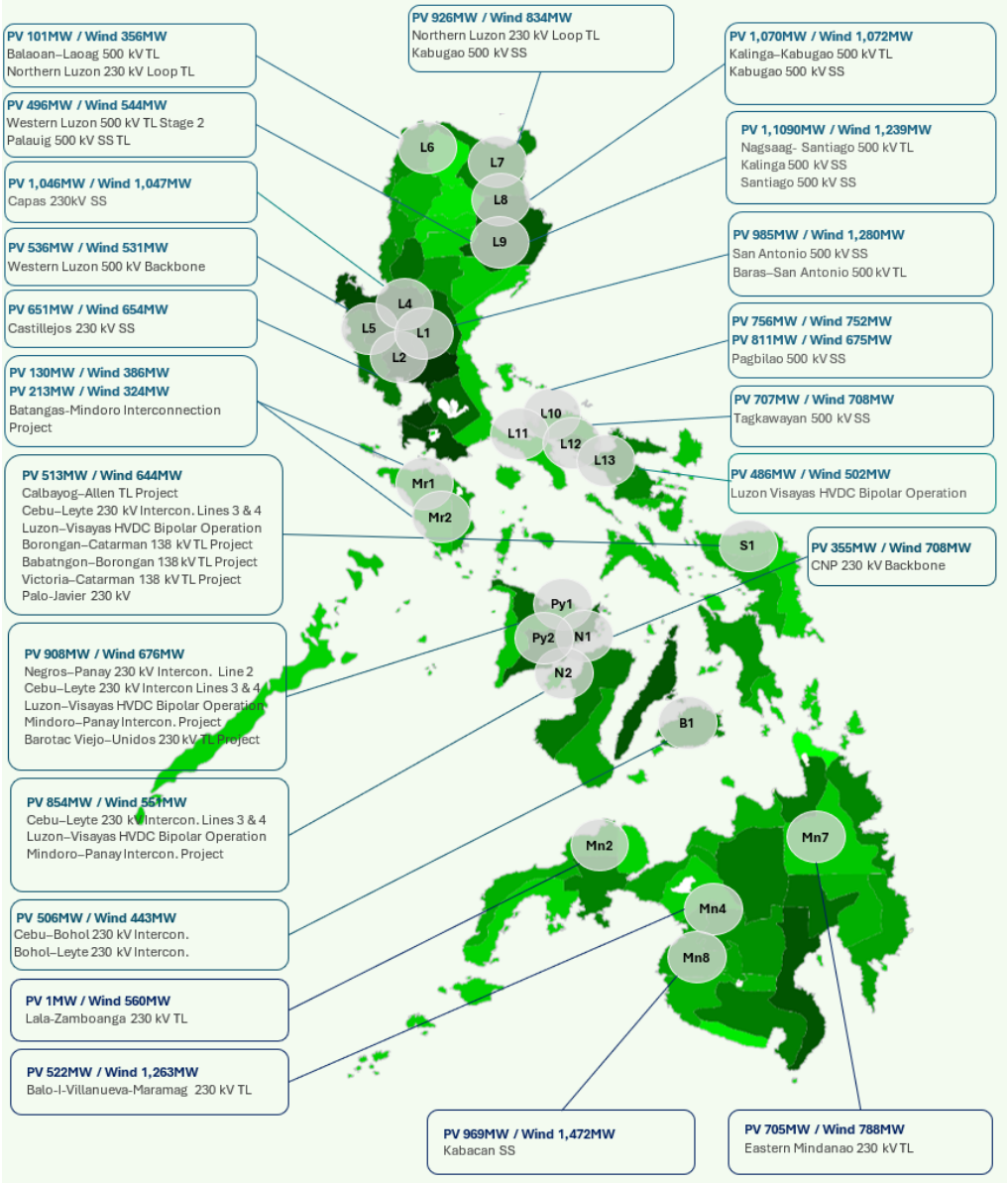


Figure 3.2: CREZ Approximate Location and Associated Transmission

3.1.2 Green Energy Auction Program (GEAP)

The DOE's GEAP, established under DC No. DC2021-11-0036, remains a cornerstone policy for achieving a 35% RE share by 2030. It promotes private sector participation through a transparent, competitive auction mechanism, accelerating project development while ensuring cost-efficient procurement of RE. Since the first auction in 2022, the DOE has institutionalized a 10-year auction roadmap targeting 25 GW of new capacity by 2035. This roadmap provides long-term investment visibility for investors and ensures stable pipeline of projects to support grid reliability and energy transition goals.

Round	Auction	Primary Focus Technologies	Total Awarded/ Target
GEA-1	Jun. 17, 2022	Solar, Wind, Hydro, Biomass	1,866 MW
GEA-2	Jul. 3, 2023	Ground-mounted, roof-mounted, floating solar and Onshore Wind	3,442.756 MW

GEA-3	Feb.11 & Jun.10, 2025	Non-FIT: Geothermal, Impounding and Pumped-Storage Hydropower	6,677.218 MW
GEA-4	Sep. 2, 2025	Integrated RE and Energy Storage System (IRESS)	10,195.49 MW
GEA-5	4Q 2026	Offshore Wind (OSW)	3,300 MW

The evolution of the GEAP reflects DOE's shift from simply procuring "green megawatts" toward developing a more diversified, reliable, and grid responsive RE portfolio. In particular, the upcoming auction rounds are expected to support more specialized technologies and applications, including advanced VRE, distributed and hybrid RE systems, and RE solutions integrated with agriculture and irrigation infrastructure.

These succeeding auction rounds include the following:

- GEA-6 – **(Advanced VRE):** Onshore Wind and Floating Solar
- GEA-7 – **(Distributed & Hybrid):** Rooftop Solar (Visayas and Mindanao) and Solar + BESS
- GEA-8 – **(Agri-Renewables):** Integrates solar with agriculture (AgriSolar) and solar on canal (irrigation).
- GEA-9 – **(BIGSHOW):** Onshore Wind

3.1.3 Smart and Green Grid Plan (SGGP)

The DOE is actively spearheading the SGGP, a key component of the Philippines' long-term power sector modernization strategy aimed at supporting the country's clean energy transition, enabling large-scale RE integration, enhancing grid resiliency, and preparing the power system for increasing electricity demand through 2050.

Initiated in 2023, the SGGP is being developed in coordination with TransCo, NGCP, USAID, and other technical stakeholders to serve as a strategic framework for transmission planning, timely project implementation, and efficient system operations.

As a forward-looking roadmap for energy planning and investment, the SGGP seeks to balance accelerated RE deployment with the continued delivery of reliable, secure, and affordable electricity service to consumers. It supports DOE's target of achieving a 35 % RE share by 2030 and 50% by 2040, and it also lays the groundwork for integrating up to 50 gigawatts of offshore wind and 4.8 gigawatts of nuclear energy by 2050. More broadly, the SGGP envisions a modern, digital, and climate-resilient transmission system capable of accommodating evolving generation patterns and future demand growth.

A major implementation component of the SGGP is Phase 2, which focuses on the transmission development roadmap needed to support long-term grid modernization and large-scale RE integration. SGGP Phase 2 establishes the transmission development timeline, identifies priority reinforcement corridors, and outlines grid modernization strategies required to accommodate increasing electricity demand and the higher penetration of VRE.

Under SGGP Phase 2, transmission development projects are generally classified into robust projects and flexible projects. Robust projects are reinforcements required at least two generation portfolios, such as the Business-as-Usual (BAU), Clean Energy Scenario 1 (CES 1), and Clean Energy Scenario 2 (CES 2) cases. These typically include backbone transmission lines, substations, transformers, STATCOMs, capacitor banks, and submarine cable interconnections that are necessary to maintain grid reliability, resiliency, and system security regardless of the generation pathway.

By contrast, flexible projects are transmission reinforcements required only under specific generation portfolios. These are scenario-dependent projects that may be implemented depending on the pace of renewable energy development, electricity demand growth, geographic load distribution, and the integration of emerging technologies such as offshore wind and other high-capacity energy resources. This distinction allows the SGGP to identify both no-regret backbone investments and conditional reinforcements that may be pursued as future system conditions evolve.

As presented in Table 3.1, the plan identifies 98 robust projects and 74 flexible projects in Luzon, 73 robust projects and 74 flexible projects in Visayas, and 50 robust projects and 49 flexible projects in Mindanao, for a total of 172, 147, and 99 projects, respectively. These project counts reflect the scale of transmission expansion and reinforcement needed to support the country's long-term clean energy and grid modernization objectives.

Table 3.1 - SGGP Phase 2 Transmission Projects by Grid

Grid	Robust Projects	Flexible Projects	Total Projects
Luzon	98	74	172
Visayas	73	74	147
Mindanao	50	49	99

NGCP remains fully supportive of the DOE's SGGP and plays a central role in its realization through the TDP, which serves as the implementation-oriented framework for converting identified transmission needs into technically validated and executable projects. As complementary planning instrument, the SGGP provides the long-term strategic direction for grid modernization and RE integration, while the TDP translates these directions into concrete transmission developments. Moving forward, this continuing alignment between the SGGP and the TDP positions the grid to better meet evolving system requirements and advance the country's transition toward a modern, resilient, and sustainable power system.

3.2 INTEGRATION CHALLENGES OF VARIABLE RENEWABLE ENERGY

The increasing penetration of VRE introduces several technical and operational challenges that must be addressed to maintain grid stability and reliability. These include variability and intermittency in power output, transmission constraints that may lead to congestion and curtailment, reduced system inertia associated with inverter-based resources (IBRs), and the need to adapt traditional protection and control systems to evolving grid conditions. Investments in infrastructure, energy storage, and regulatory reforms are likewise essential to support RE integration.

To address these challenges, a combination of solutions is being pursued. These include transmission expansion and interconnection strengthening, deployment of energy storage systems (ESS), adoption of advanced grid technologies such as grid-forming (GFM) inverters and STATCOM, and integration of flexible and hybrid generation. Collectively, these measures support the development of a stable, flexible, and resilient power system capable of accommodating a growing share of RE.

NGCP is already considering RE developments in grid planning and operations, with several studies and projects underway to better understand the impacts of high RE penetration and identify practical solutions. Among these are the Laoag Power Quality Improvement Project (LPQIP) and the Batangas-Mindoro 500 kV Interconnection and Backbone Project (BMIBP), both of which are intended to strengthen the system's ability to integrate large-scale RE while maintaining reliability.

3.3 GRID-ENABLING TECHNOLOGIES: ENERGY STORAGE SYSTEMS

3.3.1 Policy and Regulatory Framework

In August 2019, the DOE issued Department Circular No. DC2019-08-0012 entitled, "Providing a Framework for Energy Storage System in the Electric Power Industry "which established the policy framework for the operation, connection and application of ESS in the power sector". It recognizes that ESS technologies are applied to serve a variety of functions in the generation, transmission and distribution of electric energy, which include Energy Generation, Peak Shaving and Ancillary services (AS). The increasing integration of VRE in the transmission system necessitates the recognition of ESS as one of the technologies

to manage the intermittent operation of the VRE-generating plants' output to ensure stability. Moreover, ESS will be one of the key elements in the proposed Smart Grid Roadmap towards power system modernization.

In April 2023, considering the need to enhance the ESS policy and regulation to accommodate the development of ESS for RE integration and grid stability, the DOE issued Department Circular No. DC2023-04-0008, titled "Prescribing the Policy for Energy Storage System in the Electric Power Industry", to enhance the policy and regulatory framework first established under DC2019-08-0012. The Battery Energy Storage System (BESS) is one of ESS technologies with various applications for the transmission system, such as provision of AS, transmission facility upgrades deferment, and transmission congestion relief.

In February 2026, the DOE released Department Circular No. DC2026-02-0008, a supplemental and amendatory policy to the 2023 circular. This issuance mandates all prospective VRE plants with an installed capacity of 10 MW and above are required to integrate an ESS of at least 20% of the installed capacity, upon effectivity of the circular. While 20% serves as the minimum baseline requirement, the actual ESS sizing may be adjusted based on the findings of the conducted SIS and Distribution Impact Study (DIS). By requiring developers to integrate ESS, the DOE aims to enhance grid reliability and stabilize the power system, thereby allowing for higher RE penetration.

3.3.2 NGCP's Recommended Battery Energy Storage Systems (BESS) for AS Application

NGCP determined the optimal BESS sites and capacities through load flow analysis, with the evaluation performed under both normal and N-1 contingency conditions. In identifying suitable BESS installations for AS, particularly for primary reserves due to their rapid response capability, the following criteria were considered: (i) no overloading of transmission facilities when the BESS operates either as a load or as a generator, (ii) resulting voltages remain within the limits prescribed by the PGC, and (iii) adequate substation termination is available. NGCP initially identified BESS for AS particularly focusing on the primary reserves due to its rapid response capabilities.

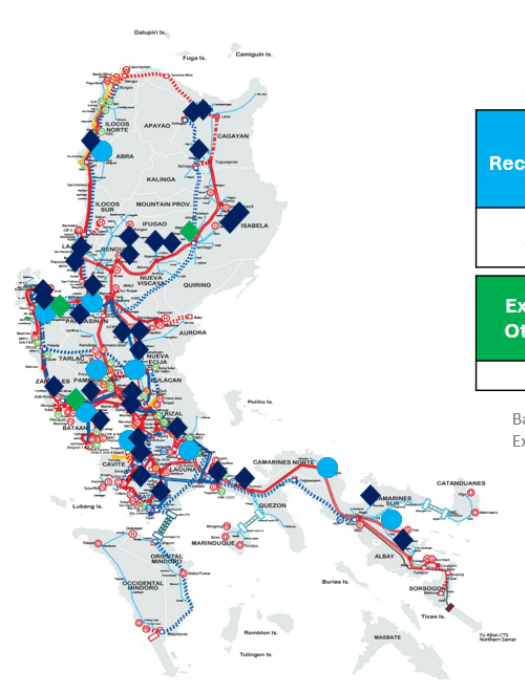
NGCP has recommended 430 MW of BESS capacity across Luzon, Visayas, and Mindanao Grids with existing capacity of 756.4 MW and proposed capacities of almost 5,175 MW. Table 3.2 summarizes NGCP's recommended capacities alongside existing and proposed BESS capacities per grid.

Table 3.2: Summary of Recommended, Existing and Proposed BESS as of December 2025

Grid	Site Capacity		Existing BESS (MW)	Proposed BESS (MW) Committed	Indicative
LUZON	NGCP Recommended	270 MW	184	290	150
	Other Sites		281.2	976	1,331.48
VISAYAS	NGCP Recommended	70 MW	73.9	40	117.5
	Other Sites		74.1	349.9	1,558.5
MINDANAO	NGCP Recommended	90 MW	47.1	0	50
	Other Sites		96.1	228	84.28
	Total	**430 MW**	**756.4**	**1,883.90**	**3,291.76**

LUZON GRID

Luzon Grid has the largest share of both existing and proposed BESS projects. As shown in Figure 3.3, NGCP recommended 270 MW of BESS capacity at 10 priority substations.



NGCP Recommended Sites	Existing BESS Installed at NGCP Recommended Sites	Proposed BESS at NGCP Recommended Sites : 440 MW	
		Committed	Indicative
270 MW	184 MW	290 MW	150 MW

Existing BESS in Other Locations	Proposed BESS in Other Locations : 2,307.48 MW	
	Committed	Indicative
281.2 MW	976 MW	1,331.48 MW

Based on December 2025 DOE Initiated Power Projects
Excluding the **896.163 MW** IRESS Committed Capacity

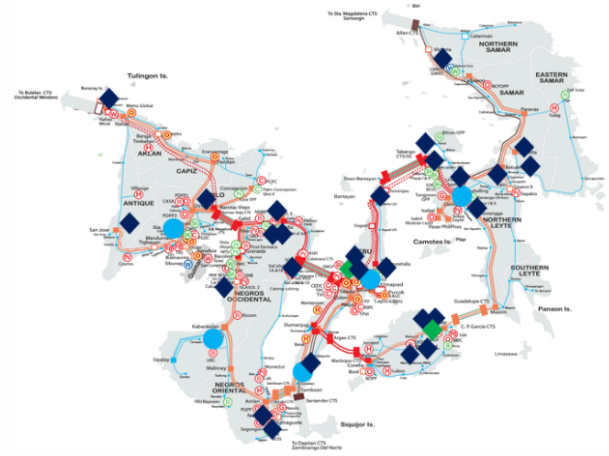
With SIS Application
1,256.7 MW

Figure 3.3 Recommended BESS Capacity (MW) and Sites in Luzon Grid

Currently, 184 MW of BESS is already installed at NGCP-recommended sites, such as San Manuel 69 kV and Lamao 230 kV Substations, and with an additional 440 MW of proposed projects (290 MW committed and 150 MW indicative). Beyond NGCP-recommended sites, 281.2 MW of existing BESS and 2,307.48 of proposed projects are in other areas of the Luzon Grid. A more detailed breakdown is provided in Appendix 14 Table 14.1.

VISAYAS GRID

As shown in Figure 3.4, NGCP identified 70 MW of recommended BESS capacity at 5 priority substations for the Visayas Grid.



NGCP Recommended Sites	Existing BESS Installed at NGCP Recommended Sites	Proposed BESS at NGCP Recommended Sites : 157.5 MW	
		Committed	Indicative
70 MW	73.9 MW	40 MW	117.5 MW

Existing BESS in Other Locations	Proposed BESS in Other Locations : 1,908.4 MW	
	Committed	Indicative
74.1 MW	349.9 MW	1,558.5 MW

Based on December 2025 DOE Initiated Power Projects

With SIS Application
828.9 MW

Figure 3.4 Recommended BESS Capacity (MW) and Sites in Visayas Grid

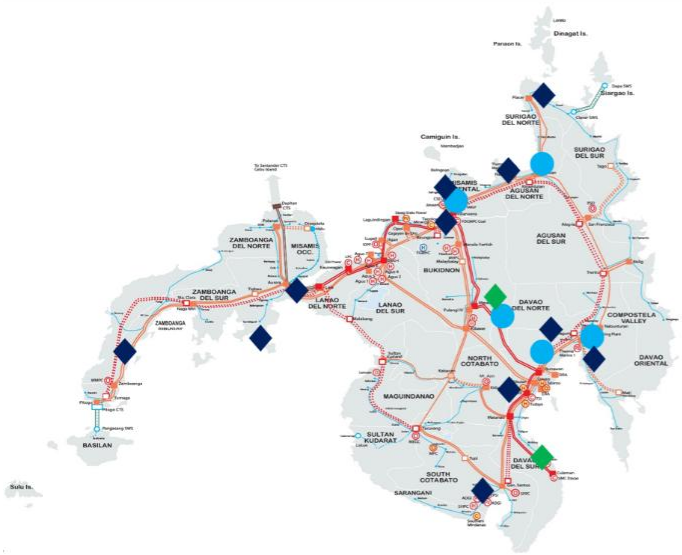
At present, 73.9 MW of BESS have already been installed at NGCP-recommended sites, exceeding the initial recommendation. These are the BESS installed at Kabankalan 138 kV and Ormoc 69 kV Substations.

Additionally, 157.5 MW of proposed projects are located at NGCP-recommended sites, alongside 74.1 MW existing and 1,908.4 MW proposed (349.9 MW committed, 1,558.5 MW indicative) in other parts of the Visayas Grid. A more detailed breakdown is provided in Appendix 14 Table 14.2.

MINDANAO GRID

As shown in Figure 3.5, NGCP recommended 90 MW of BESS capacity at 5 priority substations for Mindanao Grid.

Currently, 47.1 MW are already installed at NGCP-recommended sites, such as Villanueva 138 kV and Maco 69 kV Substations, and with an additional 50 MW of indicative projects identified. Beyond NGCP-recommended sites, 96.8 MW of existing BESS are operational, and 312.28 MW of BESS projects are being proposed. A more detailed breakdown is provided in Appendix 14 Table 14.3



NGCP Recommended Sites	Existing BESS Installed at NGCP Recommended Sites	Proposed BESS at NGCP Recommended Sites : 50 MW	
		Committed	Indicative
90 MW	47.1 MW	0 MW	50 MW

Other Location Existing BESS	Other Locations Proposed BESS: 312.28 MW	
	Committed	Indicative
96.1 MW	228 MW	84.28 MW

Based on December 2025 DOE Initiated Power Projects

With SIS Application
270.08 MW

Figure 3.5 Recommended BESS Capacity (MW) and Sites in Mindanao Grid

Overall, the recommended sites and capacities serve as a technical basis for guiding the next phase of BESS deployment in support of DOE policies and the long-term modernization of the Philippine power system.

3.3.3 BESS For Grid Stability, Reliability and Congestion Management Support

NGCP is proposing the strategic deployment of utility-scale BESS facilities in selected substations in Luzon and the Visayas Grids. These proposed installations, which will also be known as the "airbag projects," are intended to provide essential transmission support services that will help enhance voltage and frequency stability, improve system reliability, and provide congestion management support in areas with rapid integration of VREs.

The proposed BESS facilities are consistent with DOE Department Circular No. DC2023-04-0011 and related policy issuances, which recognize energy storage systems as key enablers of grid reliability, flexibility, and stability in power systems with high RE penetration. Under this policy framework, BESS may serve as a non-wire alternative capable of providing transmission support services such as frequency regulation, voltage control, and congestion management.

The proposed facilities will utilize Grid-Forming BESS (GFM-BESS) to provide fast and flexible support to the transmission system, particularly in weak-grid and RE-dense areas. Through these capabilities, the installations

are expected to help reduce RE curtailment, relieve transmission capacity constraints, improve dynamic grid performance, and strengthen the overall operability of the network under changing system conditions.



Figure 3.6 Pilot GFM-BESS Locations – Luzon Grid



Figure 3.7 Pilot GFM-BESS Location – Visayas Grid

In particular, the proposed installations at the Laoag 230 kV, Gamu 230 kV, and Santiago 230 kV Substations in Luzon, and the Victoria 138 kV GIS Substation in the Visayas, as shown in Figures 3.6 and 3.7, are intended to address limitations that cannot be resolved through conventional transmission expansion within the required timeframe. As such, these BESS facilities also serve as a practical near-term solution to transmission limitations while major network reinforcements continue to face right-of-way and permitting challenges.

The proposed NGCP BESS facilities will be developed and operated strictly as regulated transmission assets. Accordingly, they will not participate in the Wholesale Electricity Spot Market (WESM) or in AS markets for commercial gain. Dispatch of these facilities will be undertaken solely by the System Operator, based on system reliability and security requirements rather than market price signals. In this way, the proposed BESS installations will function as network support assets that complement long-term transmission expansion and reinforce NGCP's efforts to maintain a secure, reliable, and increasingly renewable energy-ready grid.

NGCP also continues to undertake studies on the broader application of BESS as a grid-enabling technology for the transmission system. These studies evaluate other potential locations and determine the appropriate BESS capacity and operating strategy based on site-specific system conditions and requirements. The assessments consider the potential contribution of BESS to improving voltage and frequency stability, strengthening system reliability, managing transmission congestion, and addressing potential overgeneration associated with the continued integration of VREs.

3.4 SMART GRID AND DIGITAL TRANSFORMATION

NGCP has progressively deployed advanced grid and digital technologies to support RE integration, improve reliability, and transition toward a smarter and more resilient transmission system. These technologies form part of the broader modernization effort needed to address increasing system complexity, improve operational visibility and controllability, and support the long-term development of a flexible and RE-ready grid.

3.4.1 Policy And Strategic Framework

Smart Grid development has become an important strategy worldwide for improving grid reliability, operational efficiency, resiliency, and RE integration. In the Philippines, the policy foundation for Smart Grid development was initiated by the DOE through Department Circular No. DC2013-03-0003, issued on 11 March 2013, which created an inter-agency steering committee tasked to formulate a comprehensive Smart Grid Policy Framework and Roadmap for the Philippine Electric Power Industry. This initiative was

intended to accelerate technological innovation, strengthen energy security, promote sustainable economic growth, generate employment opportunities, and enhance the country's competitiveness.

This policy direction was further strengthened on 6 February 2020 through DOE Department Circular No. DC2020-02-0003, entitled "Providing a National Smart Grid Policy Framework for the Philippine Electric Power Industry and Roadmap for Distribution Utilities." The circular envisions a higher level of Smart Grid development in the country, including self-healing grid operations, advanced demand-side management, wider implementation of market and policy mechanisms, optimized deployment of ESS and other digital energy systems, and the development of smart homes, buildings, and cities connected through digital energy infrastructure.

3.4.2 NGCP Smart Grid Development Strategy

Over the past 10 years, NGCP has implemented several smart grid initiatives including the upgrade of Supervisory Control and Data Acquisition-Energy Management System (SCADA-EMS), establishment of the Overall Command Center, implementation of Microprocessor-Based Substation Control (MBSC), time synchronization devices, transient fault recorders in major substations, as well as holistic cyber-security enhancement program.

Moreover, for an increased level of observability and controllability for the power grid, NGCP has a continuing program for further implementation of time synchronization devices, fiber optics to increase bandwidth to support the big data exchange that will be needed by the Smart Grid, SCADA-EMS enhancement, network protection enhancements, establishment of National Control Center and the integration of all monitoring systems of the grid. The Victoria 138/69 kV GIS Substation, under the Calbayog–Allen 138/69 kV Transmission Line Project, will be the pilot substation with applied smart grid technologies.

As transmission network provider, NGCP adopts best practices, monitoring and control data analytics, smart metering, supply reliability, green energy, energy storage integration, security and customer empowerment and satisfaction as shown in Table 3.3.

Table 3.3: Smart Grid Strategies

TRANSFORMATION	CONSOLIDATION	STANDARDIZATION
Transmission backbone developments, which include the Mindanao-Visayas Interconnection Project (MVIP), Batangas-Mindoro 500 kV Interconnection and Backbone Project (BMIBP), Luzon-Visayas Bipolar Operation Project (LVBOP), other island interconnection projects, backbone expansions, transmission looping configurations, to make the grid more flexible and resilient.	Application of advanced ICT to **integrate existing automated systems** and enable nationwide, AI-driven smart grid operations.	Establishment of multidimensional Smart Grid framework suitable to the unique geological environment of the country. **Development of smart grid technical standards** to ensure interoperability across all electricity sector stakeholders

3.4.3 Smart Substation Technology

NGCP is actively transforming its grid infrastructure to meet the DOE' Smart Grid vision. This modernization effort involves upgrading existing substations and designing new ones to incorporate the following key characteristics:

DIGITALIZATION	SUBSTATION RELIABILITY ENHANCEMENTS	SIMPLIFIED SUBSTATION DESIGN
- Optical fiber replaces traditional copper wiring for device communication - Monitoring and control of high voltage equipment and secondary devices are now digital	- Additional backup Breaker Failure Relay (BFR) protection - Redundant Smart Control Units (SCUs)	- Inter-device communication through Generic Object-Oriented Substation Event (GOOSE) messaging and IEC 61850 protocols - Easier maintenance and testing, no need for pre-wiring activities

Smart Substation Technology requirements include the additional supply and installation of the following equipment and smart devices components:

Additional Equipment

- Smart Control Units Main 1 and Main 2, SCU)
- Merging Units (Main 1 & Main 2, MU)
- Network Analyzers
- Breaker Failure Protection Systems (Main 2, doubled the quantity)
- Bus Protection (69 kV (additional Main 2)
- Station Auxiliary Distribution Panels
- Smart Network Disturbance Monitoring Equipment (NDME) devices
- Fiber Optic Cables
- Smart Protection Devices (Substation & Line Protection System)
- Switch Panel Systems

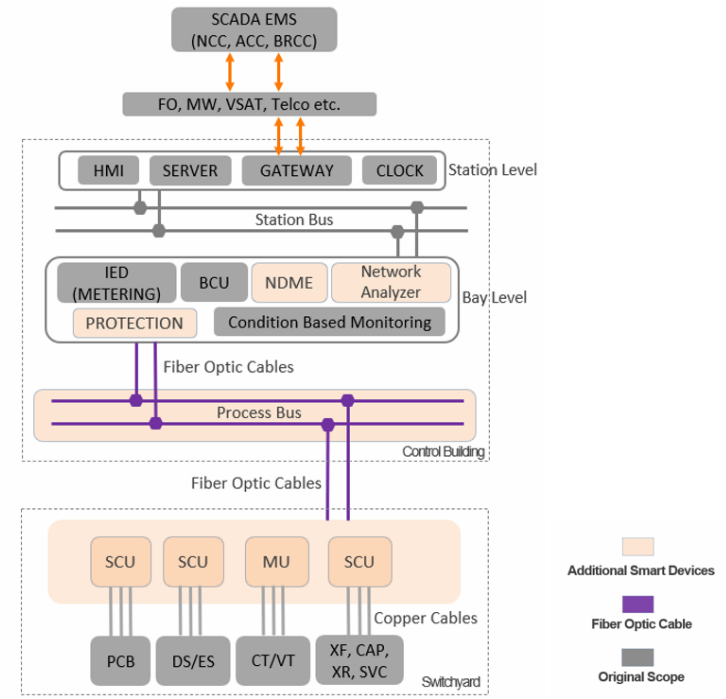


Figure 3.8 Smart Substation System Architecture

Table 3.4: NGCP's Smart Substation project implementations as of May 2026

New Smart Substations	Status	Existing Substations to be Converted to Smart Substations	Status
• Castillejos • Pinamucan • Victoria	Awarded	• Isabel • Bolo • Iloilo	Awarded

• Catarman • Pinili		• Nabunturan • Botolan • Hermosa • Panitan	
• Milaor • Porac • Abuyog • Tublijon	For Bidding Ongoing Negotiation to Adopt to Smart Substations	• La Trinidad	For Bidding

3.4.4 Smart Grid Roadmap

NGCP's Smart Grid Roadmap provides the long-term direction for progressively modernizing the transmission system in support of the country's clean energy transition. The roadmap is intended to strengthen grid resilience, improve operational flexibility, enhance real-time situational awareness, and support the integration of increasing levels of RE and emerging technologies.

Under this roadmap, NGCP targets the gradual transition toward a more intelligent and digitally enabled transmission network through continued investments in automation, communications, monitoring systems, and substation modernization. The roadmap also supports the adoption of best international practices in smart transmission planning, real-time data integration, cybersecurity, and substation automation, while laying the foundation for future AI-enabled grid applications.

As shown in Figure 3.9, the roadmap envisions that all new substations will be built using smart and digital architectures, while existing substations will be progressively upgraded to smart configurations through 2050. In this way, the roadmap serves as the integrating framework that ties together current Smart Grid initiatives and future modernization priorities.

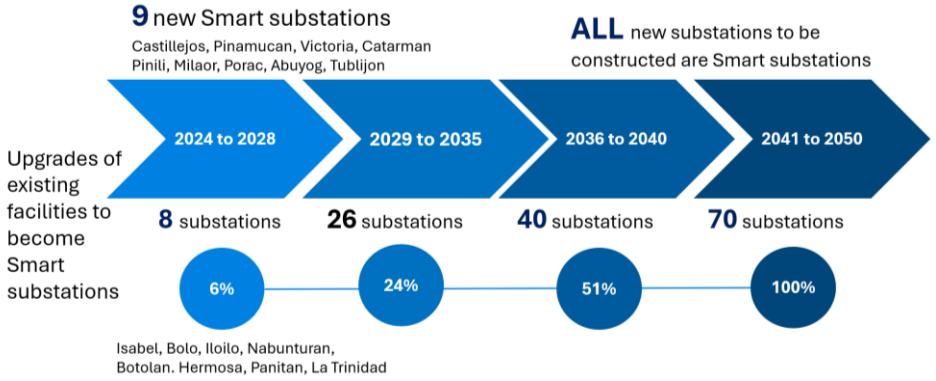


Figure 3.9 NGCP's Smart Grid Roadmap

3.5 ADVANCED ASSET MANAGEMENT AND MONITORING TECHNOLOGIES

NGCP continues to adopt advanced technologies to enhance asset reliability, inspection efficiency, situational awareness, and overall system visibility as part of its transition toward a more modern and data-driven transmission system. These technologies support both routine operations and long-term asset management.

3.5.1 Aerial Drone-Based Inspection

The inspection of transmission lines has been completely enhanced through the deployment of aerial drones. With their cutting-edge cameras and sensors, these unmanned aerial vehicles offer an economical and effective alternative to traditional techniques for inspecting transmission line assets. Aerial drones' capacity to fly at high elevations gives them a thorough perspective of transmission lines,

which facilitates the identification and resolution of possible problems. In addition to increasing inspection speed and accuracy, the use of aerial drones in transmission line inspection has also made the procedure safer for line workers.

Aerial drones continue to modernize NGCP's transmission line inspection activities by providing faster, safer, and more detailed assessments of line components. Their advanced imaging capabilities enable early detection of potential issues while reducing the need for hazardous manual inspections.

From 2024 to 2025, NGCP implemented the pilot program for Thermal and Light Detection and Ranging (LiDAR) inspections, assigning one line each region in 2024 and expanding to three lines for LiDAR and three lines for thermal inspection per region in 2025. These pilots are designed to validate the effectiveness of advanced scanning technologies for comprehensive inspection and maintenance.

In 2025, NGCP further strengthened its drone program through the acquisition of new aerial units equipped with upgraded thermal imaging capabilities. These newly acquired drones will be deployed to support regular transmission line inspections, enhancing monitoring efficiency, and improving maintenance planning across the transmission network.

3.5.2 Online Monitoring of High-Value Equipment (HVES)

To remotely monitor the status of critical transmission assets, NGCP has implemented various online monitoring devices. Transformers were selected as the primary assets for online monitoring as this is the most important asset of the substation. The following are the online monitoring devices installed:

- Dissolved Gas Analysis
- Bushing Monitoring
- Partial Discharge Monitoring

The installation of online monitoring will enable technical personnel far from substations to assess the physical condition of the equipment. This capability will enhance the efficiency and effectiveness of maintenance operations by providing real-time data on the condition of the equipment, allowing for proactive measures to prevent potential failures and ensure reliable operation.

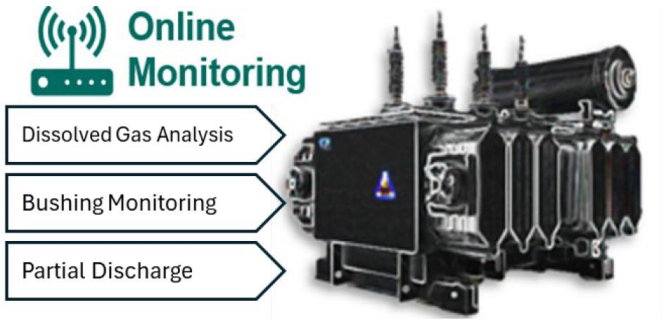


Figure 3.10: Online Monitoring System framework

3.5.3 Central Control Monitoring System (CCMS)/ CCTV

As part of its ongoing efforts to improve energy power transmission capabilities and bring the country closer to running on a Smart Grid, NGCP will be implementing the centralization of operation of its substations. The result of this centralization will be the unmanning of substations across the country. The unmanned substations will be clustered, and the operation management of these clusters will be in one strategically located control center per area. Centralization will improve the operational performance of the substations by simplifying the process coordination and by reducing the manpower involved in monitoring and switching operations.

For the project to be realized, the technical requirements must be met: all substations should be Microprocessor-Based Substation Control (MBSC) compliant, all manually operated disconnecting/earthing switches (DS/ES) should be replaced with motorized-operated DS/ES, all manually reset lockouts should be replaced with electrical reset lockout relays, and all connections should be properly wired to prevent mis operation.

Significant progress has been made on the Central Control and Monitoring System (CCMS) implementation, with all CCMS stations successfully demonstrating the system's capabilities in monitoring and controlling of primary and secondary devices of the priority substations.

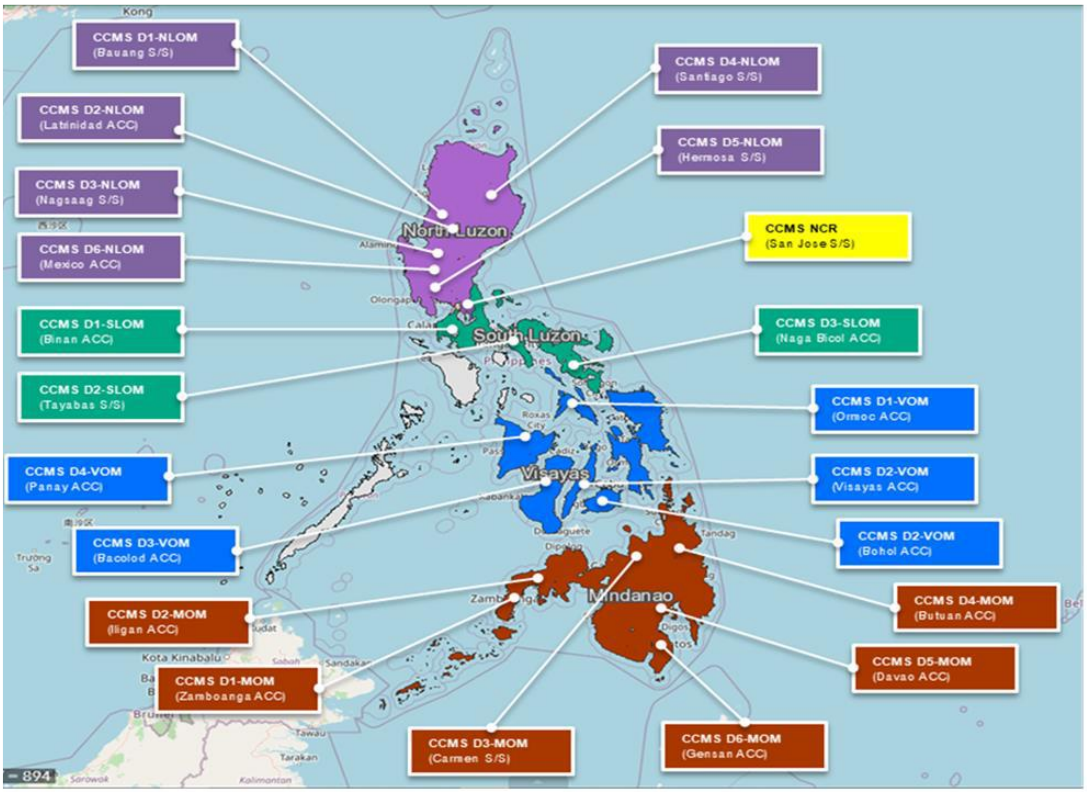


Figure 3.11: CCMS Map with 21 CCMS Stations

3.5.4 LiDAR Applications

Some portions of NGCP's transmission facilities traverse forest reservations and protected areas that must be managed in strict compliance with government environmental policies and regulatory guidelines. In these locations, vegetation management activities must be undertaken with greater precision to ensure that maintenance requirements are met without unnecessary disturbance to affected forestland and protected areas.

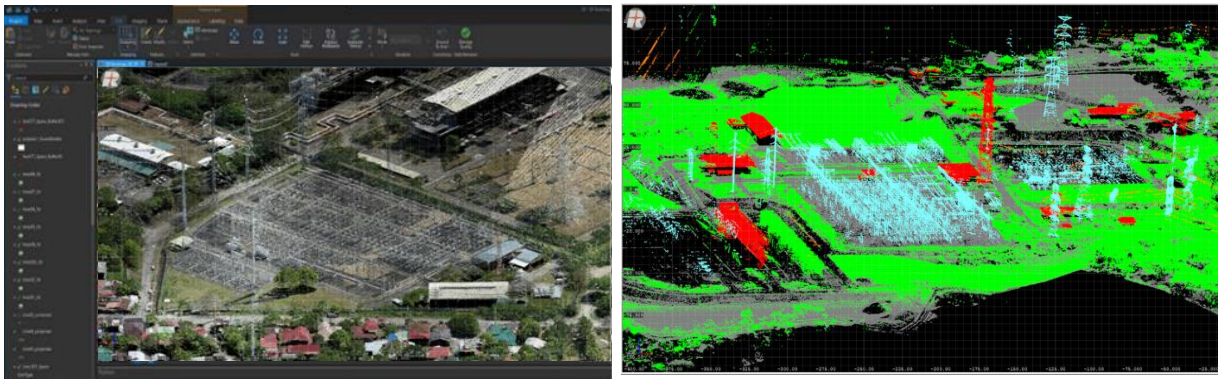
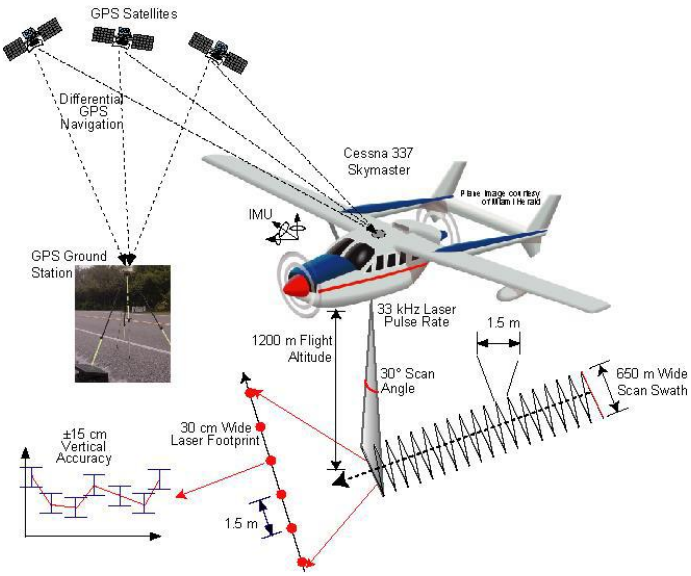


Figure 3.12: LiDAR applications

Vegetation encroachment, particularly from hazard trees, remains one of the leading causes of transmission line tripping. As the transmission network operator, NGCP is mandated to maintain the reliability of its facilities and to minimize outages arising from preventable right-of-way and vegetation-related issues. To address this challenge, NGCP is pursuing the use of airborne LiDAR as a more accurate and efficient means of identifying trees and other obstructions that may violate required clearances along transmission corridors.

LiDAR is a powerful data collection system that provides 3-D information for an area of interest or a project area for various applications:

- Surface mapping
- Vegetation mapping
- Transportation corridor mapping
- Transmission route mapping
- 3-D building mapping



Through LiDAR-based assessment, pruning and trimming activities can be more precisely targeted, thereby improving the effectiveness of vegetation management while ensuring compliance with applicable environmental policies and regulatory requirements.

As part of its efforts to modernize transmission line inspection and maintenance practices, NGCP rolled out pilot Thermal and LiDAR inspection programs between 2024 and 2025. The initial pilot phase in 2024 covered one transmission line per region, while the 2025 expansion increased coverage to three transmission lines per region for both LiDAR and thermal inspections. These pilot programs are intended to evaluate the accuracy, efficiency, and operational value of advanced inspection technologies in detecting asset defects, identifying vegetation and clearance issues, and supporting more data-driven maintenance strategies.

Emerging applications also include satellite LiDAR for large-scale terrain mapping and mobile/terrestrial LiDAR for high-precision asset inspection. These advancements make LiDAR a critical enabler of data-driven planning, smart grid integration, and resilient infrastructure development.

3.5.5 Intelligent Remote Surveillance

Traditionally, monitoring of transmission lines and substations relied on manual patrols and periodic inspections, which are resource-intensive and limited in coverage. To address these limitations, NGCP is

prioritizing remote, real-time surveillance technologies to enhance operational visibility, security, and reliability. The methods of monitoring these crucial infrastructure elements often involve manual patrols and inspections, which can be time-consuming, expensive, and limited in scope. To further enhance security, efficiency, and reliability, NGCP is prioritizing the implementation of Intelligent Remote Surveillance Monitoring for transmission lines and substations. This innovative system utilizes:

- High-definition cameras and sensors to capture real-time data on the physical condition of our infrastructure.
- Advanced analytics powered by machine learning and artificial intelligence to identify potential threats and abnormalities.
- Automated alerts and actions to notify personnel and take proactive measures in case of issues

The implementation of intelligent remote surveillance monitoring represents a shift toward a proactive, data-driven approach in managing transmission infrastructure. By combining real-time monitoring, automation, and centralized control, NGCP strengthens the security, efficiency, and resilience power grid, especially critical given the country's dispersed geography and exposure to natural hazards.

This technology provides several key benefits:

- **Enhanced Security**
  By automatically detecting unauthorized access, vandalism, or equipment tampering, NGCP can prevent potential disruptions and ensure the integrity of the grid.
- **Improved Efficiency**
  Early identification of potential problems allows for preventative maintenance, minimizing downtime and optimizing resource allocation.
- **Increased Safety**
  Proactive detection of environmental hazards like vegetation encroachment or potential wildfires helps prevent accidents and equipment failures.

By implementing Intelligent Remote Surveillance Monitoring, NGCP is demonstrating its commitment to a future-proof and resilient transmission network.

Chapter 4

MAJOR GRID DEVELOPMENT PROGRAM

NGCP envisions a unified Philippine Grid through the development of Transmission Backbone and Major Island Interconnections, creating a robust and resilient transmission network capable of supporting sustained economic growth and maintaining competitive electricity prices. This long-term development strategy integrates Luzon, the Visayas, and Mindanao Grids, with a focus on strengthening the transmission backbone, enhancing inter-regional power transfers, accommodating new generation capacities, and serving the ever-increasing power demand. Guided by its vision, NGCP achieved a milestone through the completion of the Mindanao-Visayas Interconnection Project in 2024.

The unified Philippine Grid has created a more open, liberalized, and competitive power sector. The interconnection of Luzon, Visayas, and Mindanao Grids, electricity can be transferred more efficiently across regions, improving system reliability, enhancing resource sharing, and providing consumers with greater access to competitively sourced electricity through the Wholesale Electricity Spot Market (WESM). Figure 4.1 illustrates the future network topology of the fully interconnected Philippine Grid.

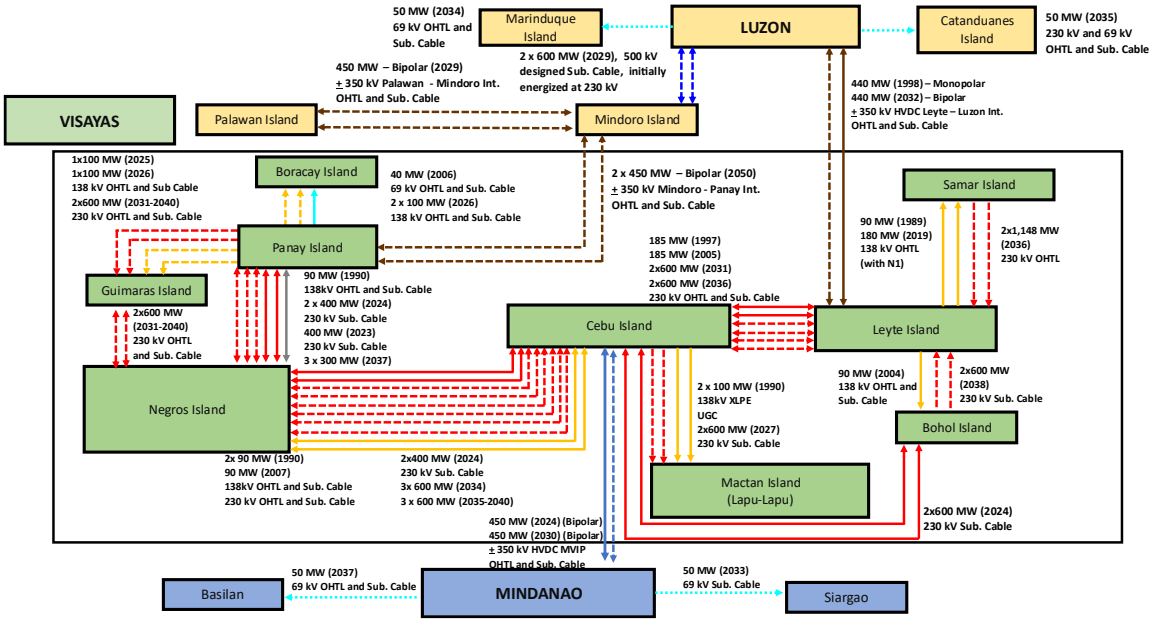


Figure 4.1: Philippine Network Topology as of June 2026

4.1 REGULATORY RESET

As a regulated entity, NGCP's capital expenditure projects are subject to review and approval by the Energy Regulatory Commission (ERC) pursuant to EPIRA and applicable regulatory rules. The ERC has issued its decisions for NGCP's rate reset applications for 4th Regulatory Period covering 2016-2022 and 5th Regulatory Period covering 2023-2027, which include projects identified in the TDP.

In 2025, 58 projects were approved through the issuance provisional authority to implement and were subsequently included as part of the rate reset applications. These transmission projects were proposed with careful consideration of sequencing, implementation readiness, and timing to support practical project delivery and manage potential impacts on consumers. Given the significant number of projects approved by the ERC and to support practical implementation, NGCP adopts phased project implementation based on project readiness, urgency, and system need. This approach allows critical and time-sensitive projects to be prioritized while considering implementation constraints such as right-of-way acquisition, permitting, and coordination with affected stakeholders.

For the 6th Regulatory Period covering 2028-2032, NGCP filed its proposed Capital Expenditure (CAPEX) Program to the ERC in May 2026. The proposed CAPEX program amounts to PhP 388.187 billion and covers transmission line and substation projects, major island interconnection projects, system operations projects, metering services, operations and maintenance projects, and support facility projects across Luzon, the Visayas, and Mindanao. These projects are intended to support the major development requirements identified in the TDP, including backbone transmission reinforcements, new and expanded substations, interconnection facilities, reactive power support, system operations modernization, and facilities needed to strengthen grid reliability and resilience.

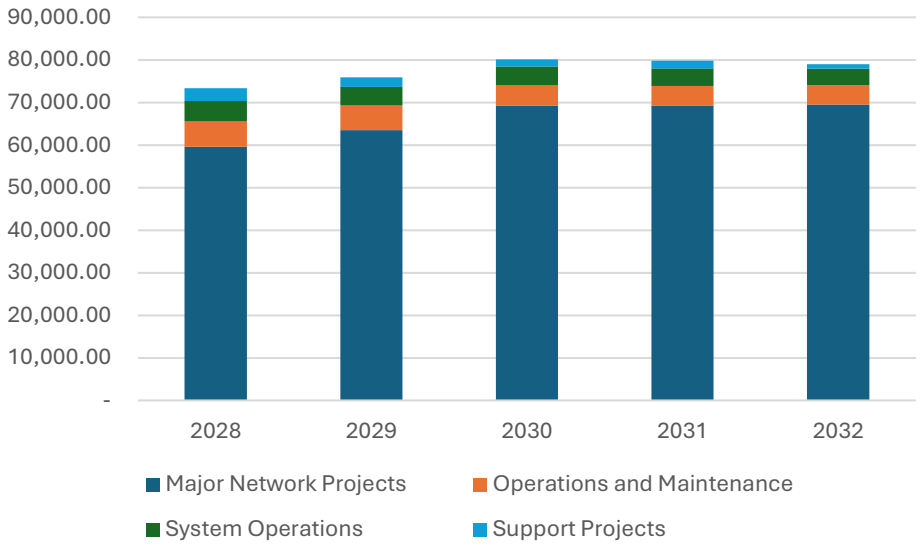


Figure 4.2: 6RP CAPEX Level

The proposed investments are intended to address existing and emerging system requirements, such as overloading/congestion, system reliability, power quality, and the need to accommodate committed and future generation capacity. They also support the continued expansion and modernization of the Grid in response to demand growth, generation development, and the increasing complexity of system operations.

A portion of the proposed projects were initiated during the 5th Regulatory Period and are carried forward into the 6th Regulatory Period. This reflects the long development timeline of major transmission facilities, which typically involves detailed engineering, regulatory approval, right-of-way acquisition, permitting, procurement, construction, testing, and commissioning before the facilities can be energized.

In addition to network expansion projects, the CAPEX Program includes system operations projects that form part of the broader modernization of the transmission network. These projects enhance telecommunications, protection systems, real-time monitoring, cybersecurity, and other operational technologies needed to maintain secure and reliable grid operations.

The program also includes reliability, maintenance, tools and equipment, facility improvement, and security-related projects. These support the safe, reliable, and efficient operation of the Grid by addressing asset condition requirements, operational readiness, and emergency response capability.

As Metering Service Provider for the WESM, NGCP also includes metering services projects in the proposed CAPEX Program. These investments support the expansion of metering facilities for new connections, the timely replacement of meters, and the continued availability of accurate meter data for market settlement and billing. They also help ensure compliance with the OATS Rules, ERC regulations, the PGC, and applicable metering accuracy requirements.

NGCP's CAPEX Program further includes support projects covering the acquisition of technical and non-technical equipment, facility improvements, and the enhancement of physical and cybersecurity systems. These projects are intended to support the safe, secure, and efficient operation of NGCP facilities, strengthen operational readiness, and ensure continued compliance with transmission regulations, international standards, and industry best practices.

Collectively, the proposed CAPEX projects support the development of a more reliable, secure, resilient, and future-ready transmission network capable of serving growing electricity demand, accommodating new generation capacity, supporting market operations, and enabling the country's long-term energy transition.

4.2 PROJECT DRIVERS

Transmission projects identified in the TDP are generally driven by specific system requirements and development objectives. These project drivers provide the basis for determining the type, location, and timing of transmission investments needed across the Grid. As shown in Figure 4.3, the major project drivers include load growth, generation entry, system reliability and security, island interconnection, power quality and technology, and market operation support. Together, these drivers guide the development of transmission facilities needed to ensure that the Grid remains reliable, secure, efficient, and responsive to future requirements.

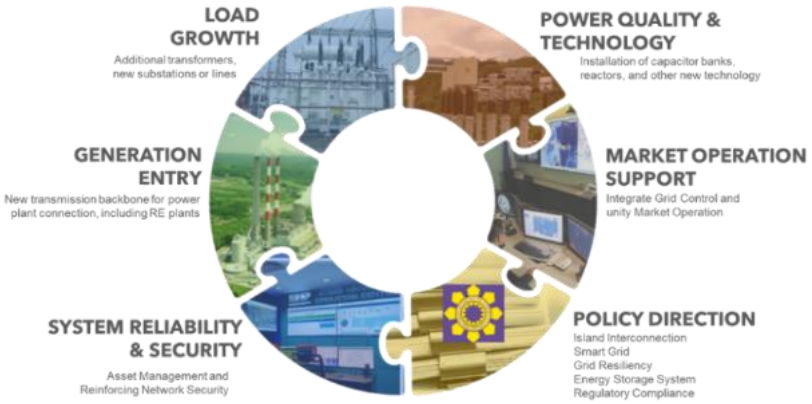


Figure 4.3: Project Drivers

4.3 CERTIFICATE OF ENERGY PROJECTS OF NATIONAL SIGNIFICANCE

NGCP has a consistent practice of utilizing the CEPNS framework as prescribed under the DOE Department Order No. DO2024-04-003 titled "Prescribing the Framework and Guidelines for the Processing of Applications for Certificate of Energy Projects of National Significance (CEPNS)". The CEPNS designation is intended to facilitate the timely processing of permits and approvals for critical energy projects. For transmission projects, this supports the efficient implementation of facilities needed to strengthen the Grid, improve power supply reliability, and support national energy development. Projects identified with CEPNS status are tagged accordingly to indicate that they have been granted the designation under the DOE framework.

4.4 ESTIMATED TIME OF COMPLETION

The Estimated Time of Completion (ETC) indicated in the project application to the ERC is based on the criticalness of the project, and the Need Date determined through the conduct of system simulations. These simulations are based on various grid operation scenarios considering the DOE's SPD Forecast and PSIPP for the planning period, which are updated periodically.

Since 2009 when NGCP took over the power transmission business from the government, the typical project implementation cycle is within a five-year duration. For cases where there is an immediate need by customers, e.g., generation-associated projects, directly connected customers, etc., ETC as filed with the ERC would reflect a more aggressive timeline and deviate from the typical duration of each project milestones. In the NGCP's issuance of the TDP for the period 2009-2022, the project ETCs are re-evaluated and adjusted in the succeeding issuance to account the actual progress/status of each project milestones, including status of ROW.

DOE Policy on Projects' ETC – For new transmission projects in the TDP 2023-2040, the indicated time of completion, whether indicated as estimated or otherwise, shall be "**firm dates for the completion of the projects.**" The DOE further reiterates that for new transmission projects in the TDP 2024-2050, the indicated times of completion are considered firm dates and not subject to changes in subsequent TDPs. The DOE stated also that any adjustments in subsequent TDPs to the Original ETC of a Committed Project are reported solely as a guide to stakeholders.

Consistent with the DOE's direction[5], NGCP submits a monthly Transmission Project Status Report (TPSR) that indicates the subsequent adjustments of ETCs due to various challenges beyond NGCP's control:

1. ROW acquisition
2. Legal impediments, such as the issuance of Temporary Restraining Order (TRO) by the Courts
3. Delays in the issuance of construction permits.

The detailed implementation "bottlenecks" identified are regularly discussed in the AHCTP meetings with the guidance and active support of the DOE in identifying solutions and way forward activities to minimize possible project completion delays, thus mitigating the risk/impact to the electricity end-users.
Through the Ad hoc Committee meetings, NGCP and the DOE align on the adjusted ETC, which appears in the TDP 2023-2040. The subsequent TDP update shall guide the stakeholders on the expected completion of a particular project therein.

NGCP Position on the ETC – The timeline and ETCs of projects are merely proposals based on a "best-case scenario" Therefore, since the ETCs or timelines proposed in NGCP's Capital Expenditures (CAPEX) Application reflect this best-case scenario, they should be considered hard deadlines or firm commitments. Instead, they serve as estimates of a project's implementation timeline with the assumption that no roadblocks, difficulties, or legal impediments arise.

Accordingly, while NGCP indicated an ETC for the implementation of various CAPEX Applications, the same is conditioned on the assumption that no difficulties or impediments are encountered, and that the project would be approved timely by the ERC. The proposed timelines are still subject to possible movements depending on the resolution of the concerns on the grounds that may affect the project's implementation.

In view of the challenges encountered in project implementation, NGCP also enhanced the process of establishing the project ETC based on the historical project data and the result of project constraint analysis. The distinct project timelines are established for each of the following set of project constraints examined:

A. Transmission Line Length
B. Substation Required Area
C. Terrain and Level of Urbanization
D. Voltage.

4.5 TRANSMISSION BACKBONE AND MAJOR ISLAND INTERCONNECTION PROJECTS

To provide an integrated view of the transmission network development up to 2050, Figure 4.4 presents the transmission outlook for the Luzon, Visayas, and Mindanao Grids. The figure summarizes the major transmission backbone, substation, and interconnection projects identified over the planning horizon, and illustrates how the Philippine Grid is expected to evolve into a stronger and more interconnected network by 2050.

5
Excerpts from NGCP Comments to the DOE-Approved TDP 2023-2040 contained in the 11 February 2025 letter to the DOE.

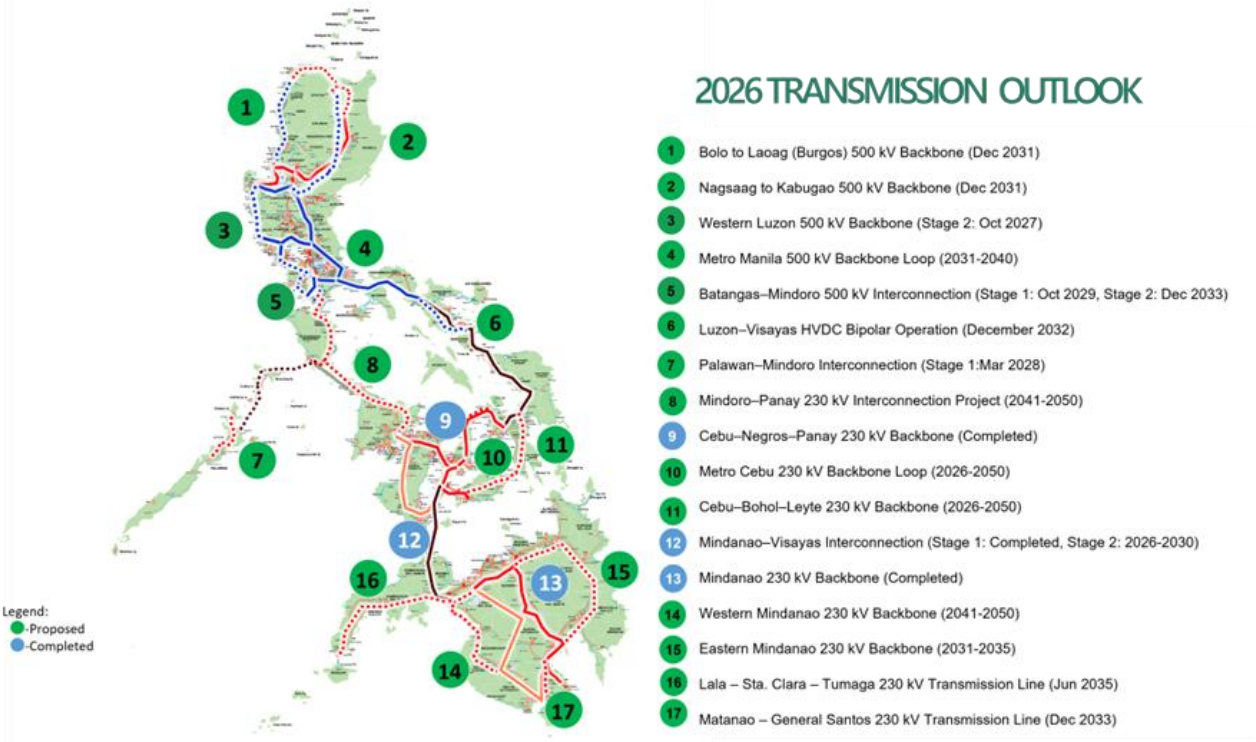


Figure 4.4: Transmission Outlook

Table 4.1 Transmission Backbone and Major Island Interconnections

Project Name	Project Description	ETC
Bolo to Laoag (Burgos) 500 kV Backbone	Composed of Bolo – Balaoan and Balaoan – Laoag (Burgos) 500 kV Transmission Lines that will traverse the provinces of Pangasinan, La Union, Ilocos Sur, and Ilocos Norte. This 500 kV Backbone is intended to support the entry of large generation capacities in La Union, Mountain Province, and Ilocos area. It also aims to address the anticipated overloading of the San Esteban – Laoag and San Esteban – Bakun/Bacnotan – Bauang 230 kV TL during N-1 contingency event.	Mar 2036
Nagsaag to Kabugao 500 kV Backbone	Composed of Nagsaag – Santiago and Santiago – Kalinga – Kabugao 500 kV TL that will traverse the provinces of Pangasinan, Isabela, Kalinga, and Apayao. This is to support the generation developments in Cagayan Valley and the Cordilleras. Furthermore, it also intends to augment and relieve the overloading of the Santiago–Bayombong and Bayombong – Ambuklao 230 kV TL.	Sep 2036
Western Luzon 500 kV Backbone	Subdivided in two stages: (a) Stage 1 is the construction of Castillejos – Hermosa 500 kV TL (initially energized at 230 kV), which provides a transmission facility to connect the Renewable Energy plants to the Luzon Grid through Hermosa Substation; and (b) Stage 2 is the construction of a 174 km DC 500 kV line from Bolo 500 kV SS to Castillejos. It will also involve the implementation of the Castillejos 500 kV SS to accommodate bulk generation capacities. The Western Luzon 500 kV Backbone will traverse the provinces of Pangasinan and Zambales.	Stage 1: Completed Stage 2: Oct 2027
Metro Manila 500 kV Backbone Loop	The development of Metro Manila 500 kV Backbone Loop involves the implementation of the Silang 500 kV SS, which will bus-in to the existing Dasmariñas – Tayabas 500 kV TL; the implementation of Taguig 500 kV SS, which will initially cut-in to the existing San Jose – Tayabas 500 kV TL; the construction of the Silang – Taguig 500 kV TL; and the development of the Baras 500 kV SS, which will bus-in to the existing San Jose –Taguig – Tayabas 500 kV TL. This forms the Silang – Taguig – Baras – Tayabas 500 kV Backbone Loop for Metro Manila. Another 500 kV Backbone Loop within Metro Manila will be developed through the Bataan –Cavite 500 kV TL Project.	2031-2040

Batangas – Mindoro 500 kV Interconnection & Backbone Project	The Batangas – Mindoro 500 kV Interconnection and Backbone Project – Stage 1 (BMIBP Stage 1) aims to link Mindoro Island to the Luzon Grid through a 28.5 km submarine cable and a total of 31.5 km overhead transmission Line. BMIBP Stage 1 will also involve the development of a substation in Calapan, Oriental Mindoro, with a total transformer capacity of 2x100 MVA that will connect to the existing 69 kV transmission network in Mindoro through a total of 8.5 km overhead transmission line. The submarine cable and the overhead transmission lines will be designed at 500 kV voltage level but will be initially energized at 230 kV in preparation for the Stage 2 project which aims to cater for the full development of bulk renewable energy (Onshore and Offshore) projects on the island. In addition, the Batangas – Mindoro 500 kV Interconnection and Backbone Project – Stage 2 (BMIBP Stage 2) aims to develop a more robust transmission network in Mindoro Island. The project involves the energization from 230 kV voltage level to 500 kV to enable higher transfer capacity of the Stage 1 Batangas – Mindoro link. This energization will involve the development of the Calapan 500 kV Substation with transformer capacity of 2x750 MVA. BMIBP Stage 2 also will involve the development of the 133.1 km Calapan – Magsaysay 500 kV Transmission Line backbone and the Magsaysay 500 kV Substation in southern Occidental Mindoro with transformer capacity of 2x750 MVA. The Magsaysay 230/69 kV Substation with transformer capacity of 2x100 MVA will connect through a 20.9 km overhead transmission line to the existing 69 kV transmission network of Mindoro to provide further support. BMIBP Stage 2 aims to encourage the full development of bulk renewable energy projects in the island, increase the transfer capacity between Mindoro and Luzon Grid, and provide further support to the existing 69 kV transmission network of Mindoro. The Magsaysay Substation will also serve as a connection point for the future interconnection of Palawan and Panay islands to the Luzon Grid.	Stage 1: Oct 2029 Stage 2: Jun 2035

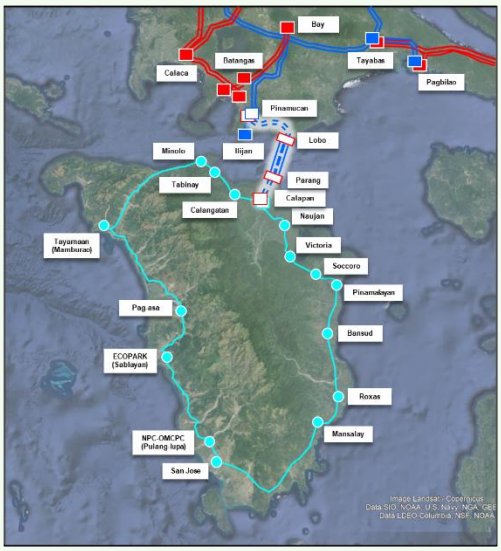


Figure 4.5: Batangas – Mindoro 500 kV Interconnection & Backbone Project Stage 1

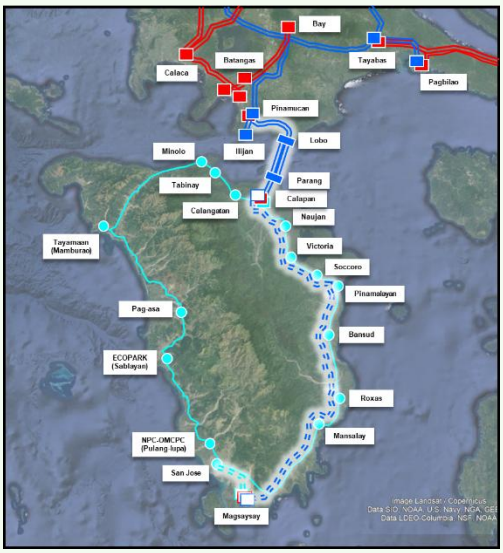


Figure 4.6: Batangas – Mindoro 500 kV Interconnection & Backbone Project Stage 2

Luzon – Visayas HVDC Bipolar Operation	The project involves the upgrading of the existing Luzon – Visayas HVDC interconnection with 440 MW transfer capacity. The project includes the upgrading of Naga (Luzon) and Ormoc Converter/Inverter Stations to provide an additional 440 MW transfer capacity between Luzon Grid and Visayas Grid. To complement this increase in HVDC transfer capacity, the expansion of Milaor 500 kV Substation, expansion of Naga 230 kV	Dec 2032

Substation, and upgrading of the 230 kV network between Cebu and Leyte are also necessary.

Palawan – Mindoro Interconnection Project (Stage 1)

Jul 2029

With the envisioned interconnection of Mindoro Island to the Luzon Grid, the province of Palawan will be the next big island to be interconnected in terms of land area and energy demand. Presently, the power system of Palawan Island is composed of a 69 kV transmission corridor which stretches from Taytay in the north and extending down to Bataraza in the south with an estimated length of about 359.3 circuit-km and 60 MVA substation capacity according to the DOE 2024-2028 Missionary Electrification Development Plan (MEDP). Based on this MEDP, the main power grid of Palawan registered a peak load of 65.76 MW in 2023 and is served by combination of bunker and diesel power plants with a dependable capacity of 102 MW.

By interconnecting the existing Palawan grid into the Luzon grid via Mindoro Island, the current energy mix of the province, which is mainly oil-based, is seen to deviate from conventional sources in the forthcoming years. This is due to the projected entry of renewable energy power plants in which Palawan has high potential. A reliable transmission backbone and an opportunity to export power to the main grid will encourage the development of more renewable power plants in the province.

To interconnect Palawan to the Luzon Grid, NGCP will be implementing a stage-by-stage project development.

- Stage 1 will include the Desktop, System and Feasibility Studies, and Hydrographic Survey of the submarine cable route of the Palawan – Mindoro Interconnection Project (PMIP), and
- Stage 2 will involve the actual implementation of the PMIP. The design and scheme of the PMIP will be dependent on the results of the study in the PMIP Stage 1. This interconnection project aims to provide the Mainland Palawan with a more reliable supply of power and to address the power quality issues, which may result to frequent power interruptions.

The Palawan-Mindoro Interconnection Project will also prepare the country for interconnection with other ASEAN member states as envisaged in the ASEAN Power Grid under the Heads of ASEAN Power Utilities/Authorities or the regional initiatives for power grid interconnection being done by the Brunei Darussalam-Indonesia-Malaysia-Philippines East ASEAN Growth Area



Figure 4.7: Palawan – Mindoro Hydrographic Survey

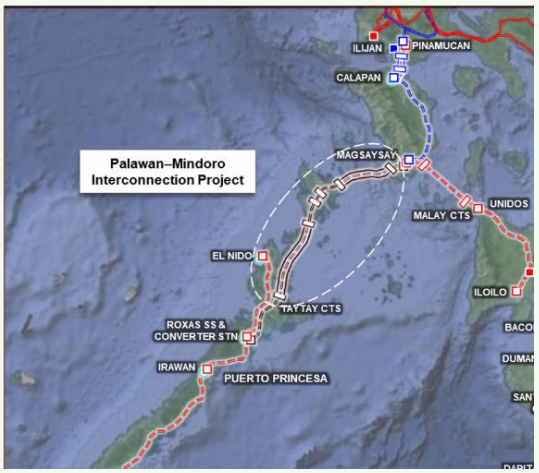


Figure 4.8: Palawan – Mindoro Interconnection Project

Mindoro – Panay Interconnection Project

2041-2050

The Project creates a new interconnection between Luzon and Visayas Grids via Mindoro Island in the western region of the Philippines. It increases the power transfer capability of the system as this new transmission corridor accommodates the power generation in Luzon and Visayas especially power plants that are located within CREZ.

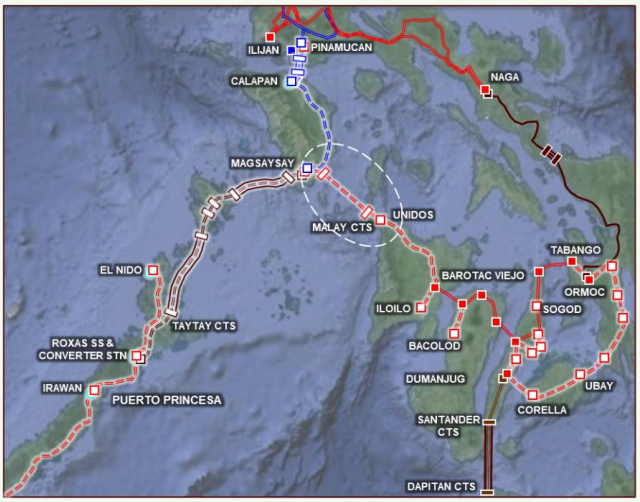


Figure 4.9: Mindoro - Panay Interconnection Project

Cebu – Negros – Panay 230 kV Backbone	The project involves the construction of a 230 kV transmission backbone between the Cebu, Negros and Panay Islands. It will augment the transfer capacity of the existing corridor which will support the transmission of excess power generation in Negros and Panay Islands toward the rest of the Philippine Grid. • Stage 1 involves the development of transmission corridor composed of submarine cable system and overhead TL from Barotac Viejo SS in Panay to Bacolod SS in Negros - Completed • Stage 2 involves the construction of 230 kV facilities in the existing Cebu 138 kV SS and harmonize its capacity with the 230 kV transmission backbone; and - Completed • Stage 3 involves the construction of 230 kV facilities from Barotac Viejo SS to Cebu SS- Completed • Cebu – Negros 230 kV Interconnection Upgrading Project • Negros – Panay 230 kV Interconnection Lines Upgrading Project • Calatrava – Granada 230 kV Transmission Line Project • Poblacion– Macapso 230 kV Interconnection Project	Completed New Projects: 2031-2040
Metro Cebu 230 kV Backbone Loop	The project aims to pool the excess power resources from Negros, Panay and Mindanao and transmit it to the main load center in Metro Cebu. It involves the construction of several 230 kV transmission corridors and 230 kV drawdown substations with adequate capacities to facilitate the power absorption by the load-end customers. This long-term plan is the basis of the transmission projects in Metro Cebu spread within the 2040 planning horizon namely: • Cebu – Negros–Panay 230 kV Backbone Project Stages 2 and 3 - Completed • Cebu – Lapu-Lapu Transmission Project • Lapu-Lapu 230 kV Substation Project • Maghaway (Laray) 230 kV Substation Project (Initially energized at 138 kV) • Maghaway (Laray) – San Fernando 230 kV Energization Project • Maghaway (Laray) – Sirao (Bonbon) 230 kV Transmission Line Project • Pusok – Cordova 230 kV Interconnection Project	2027-2050
Cebu–Bohol–Leyte 230 kV Backbone	The project involves the construction of a 230 kV transmission backbone between the Cebu, Bohol and Leyte Islands. It increases the reliability the current transmission system by constructing several 230 kV facilities and to distribute the excess power generation from Negros, Panay and Mindanao toward power customers in Bohol, Leyte and Samar. This long-term plan is the basis of the transmission projects in Cebu, Bohol and Leyte spread within the 2040 planning horizon namely: Cebu – Negros–Panay 230 kV Backbone Project Stages 2 and 3 – Completed • Mindanao – Visayas Interconnection Project (MVIP) - Completed • Cebu – Bohol 230 kV Interconnection Project - Completed • Babatngon – Palo 230 kV TL Project (Initially Energized at 138 kV)	May 2038

	• Ormoc – Babatngon 230 kV TL Project • Cebu – Leyte 230 kV Interconnection Lines 3 and 4 Project • Cebu – Leyte 230 kV Interconnection Lines 5 and 6 Project • Maasin – Malinao (Sogod) 230 kV TL Project (Initially Energized at 138 kV) • Leyte – Bohol 230 kV Interconnection Project (Initially Energized at 138 kV) • Corella – Ubay 230 kV Transmission Line Project • Palo – Malinao (Sogod) 230 kV TL Project	
Negros–Guimaras – Panay 230 kV Backbone	This project will involve the laying of double circuit submarine cables from Negros to Guimaras and to Panay. This is to ensure to accommodate the upcoming generation under CREZ in the area of Negros, Panay and Guimaras. This will also provide reliability to the Negros–Panay interconnection. This long-term plan is the basis of the transmission projects in Metro Cebu spread within the 2040 planning horizon namely: • Cebu – Negros – Panay 230 kV Backbone Project Stage 1 and Stage 3 - Completed • Talisay (Granada) 230 kV Substation Project • Negros – Guimaras 230 kV Backbone Project • Panay – Guimaras 230 kV Backbone Project • Barotac Viejo – Sta. Barbara 230 kV Transmission Line Project	2026-2050
Leyte – Samar 230 kV Backbone	This project will involve a 230 kV transmission backbone connecting Leyte and Samar Islands. This is intended for the generation capacity transfer from Samar going to Leyte and to the other parts of the country. • Babatngon – Calbayog 230 kV Transmission Line Project • Ormoc– Babatngon 230 kV Transmission Line Project	Dec 2036
Mindanao – Visayas Interconnection CEPNS	As part of the government's vision to interconnect the major grids into a single national grid, this interconnection project is intended to help improve the overall power supply security in the country by optimizing the use of available energy resources and additional generation capacities of the major grids through sharing of reserves from one grid to another. The Mindanao – Visayas Interconnection Project was previously known as Visayas-Mindanao Interconnection Project (VMIP). The change to MVIP indicates the importance and priority given to Mindanao Grid which has long been isolated. Luzon and the Visayas Grid have already been interconnected since 1998 and with the electricity market in operation since 2006 and 2011, respectively. The name MVIP indicates further support to boost the development of the country's electricity market to include the Mindanao Grid. The tangible benefits in terms of reduced investments in power generation due to the implementation of MVIP are due to the following: • Sharing of system reserve • Lesser investment in power generation in either the Visayas or Mindanao to maintain the one-day Loss of Load Probability (LOLP) • Reduction of operating cost due to economic dispatch of generators The intangible benefits in the implementation of MVIP: • Attractiveness of MVIP to power generation investments due to the bigger market through an interconnected power network • From a technical standpoint, MVIP will provide benefits to the system in terms of added supply security, improved system reliability and improvement in the quality of power supply • Optimized utilization of indigenous energy sources, such as natural gas in Luzon, geothermal in the Visayas and hydro in Mindanao as well as, this will reduce the	Completed – 450 MW Expansion – 450 MW 2030

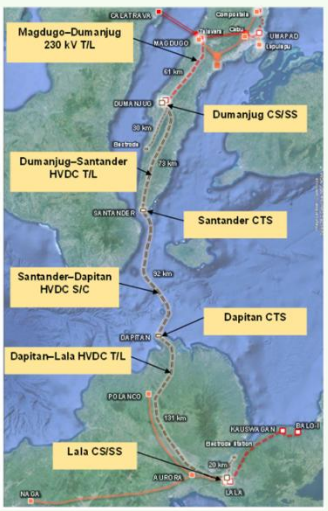


Figure 4.10 Connection Configuration of MVIP

Figure 7.7 Connection Configuration of MVIP

	overall generation of pollution and dependency on the importation of fossil fuels, where its availability and price are sensitive to the price in the world market.	
Mindanao 230 kV Transmission Backbone CEPNS	This project mainly concentrates on strengthening the existing transmission backbone in Mindanao. As a major transmission highway that delivers both renewable and conventional energies to load centers, it ensures the stability, reliability, and efficiency of power supply in the island. While the existing 138 kV transmission backbone is already inadequate to accommodate the increasing capacity from the new power plants, the energization of the project to 230 kV level increases the thermal capacity of the existing line allowing the transfer of huge power capacity coming from north or south of the island.	Completed
Western Mindanao 230 kV Backbone	The project completes the envisioned 230 kV transmission extension and looping at the western side of the island. It provides an alternate transmission corridor to far-flung and radially connected areas for much reliable power supply. • Lala – Malabang – Sultan Kudarat 230 kV Transmission Line Project • Sultan Kudarat – Tacurong 230 kV Transmission Line Project	2041-2050
Eastern Mindanao 230 kV Backbone	The Eastern Mindanao 230 kV Backbone loops 230 kV transmission corridor in the eastern side of Mindanao. It increases the power transfer capacity of the grid between CARAGA and Davao Region. In addition, its new transmission corridor serves as reinforcement to the existing Butuan – San Francisco – Bislig – Nabunturan 138 kV SC line. • Villanueva – Kinamlutan 230 kV Transmission Line Project • Eastern Mindanao 230 kV Transmission Line Project • Bunawan – Tagum 230 kV Transmission Line Project	Dec 2036
Northern Luzon 230 kV Loop	The project aims to complete the 230 kV loop in the Northern part of Luzon, while also providing a new transmission corridor to accommodate the integration of renewable energy sources and other power plants within the region	Aug 2031

Chapter 5

LUZON GRID DEVELOPMENT OUTLOOK

The DOE list of private sector-initiated power projects shows that several committed and indicative power plant projects in the Luzon Grid are positioned to meet the increasing demand in the next 10 years.

The incoming large capacity coal-fired and natural gas-fired power plants are primarily concentrated in the provinces of Batangas, Quezon, Bataan, and Zambales, which would result in huge surplus of power in these areas. These bulk capacities were accommodated by the completion of major transmission projects such as the Pagbilao 500 kV Substation and Mariveles – Hermosa – San Jose 500 kV Transmission Line Project.

To DOE's national RE power generation mix target of 35% by 2030 and 50% by 2040, the implementation of new 500 kV transmission facilities is necessary to allow the entry of RE capacities to be transmitted to the load center.

As bulk power delivery to the 500 kV system increases, the existing substations in San Jose Del Monte in Bulacan and Dasmarinas Cavite will become critical nodes. These are currently the only two Extra High Voltage (EHV) drawdown facilities supporting Metro Manila's loads. Capacity and space limitations in these substations could result in grid congestion unless new 500 kV drawdown substations are developed. In the TDP, new 500 kV substations are being implemented, with a priority site in Taguig City as it is close to the load center. However, the construction of its associated 500 kV TL that traverses the portion of Laguna Lake is a major challenge. Additionally, another 500 kV drawdown substation is being constructed in Marilao, Bulacan.

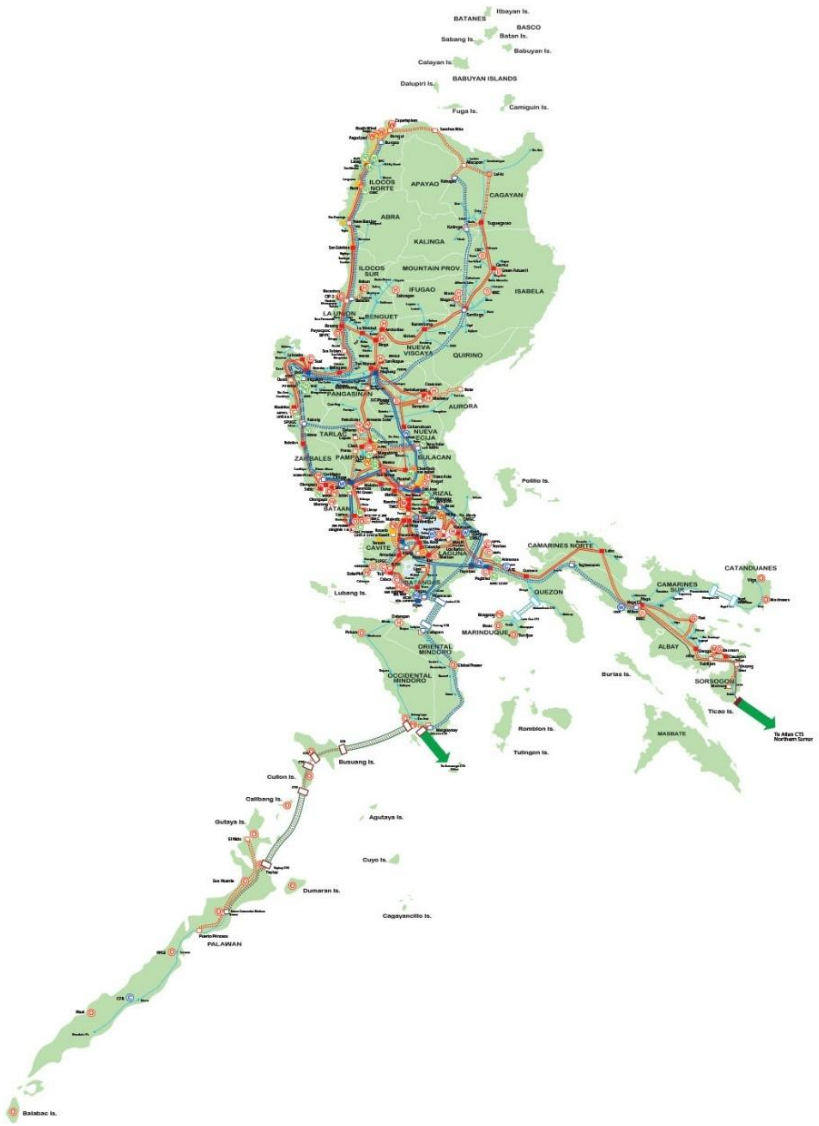


Figure 5.1: Luzon 2026 Grid Map

In addition to support the grid integration of new power plants, NGCP is prioritizing the strengthening of the transmission facilities in Metro Manila, the country's primary load center. The existing 230 kV transmission line traversing from Quezon City to Muntinlupa City is critical, given its heavy loading condition and single-circuit configuration.

Such conditions pose a great risk both to power quality and supply reliability in the area. Moreover, the existing 230/115 kV substations in Metro Manila are currently heavily loaded and some have capacity

expansion limitations. Thus, the development of new substations is important to support the increasing demand in the long-term.

The grid reinforcement projects that ensure the long-term adequacy, reliability, and security of power supply in Metro Manila are regarded as "projects of national significance". However, securing the ROW for new transmission facilities in the highly urbanized area of Metro Manila is becoming more difficult. It is therefore important to begin their implementation to realize these critical transmission development plans, supported by both the local and national government. In addition to Taguig EHV and Marilao EHV, the proposed new facilities include Antipolo, Pasay, and Navotas Substations, which would also involve the implementation of associated 230 kV transmission lines.

Aside from Metro Manila, the province of Pampanga is expected to be the next major load center. Thus, a new 230 kV backbone and 230/69 kV substations are needed for the towns of Porac and Clark to support the increasing load in these areas. Other provinces, on the other hand, will be supported by the installation of additional transformers at existing substations or the development of new substations and reinforcements of the 69 kV TL.

To improve the system reliability and to maintain the power quality within the grid code-prescribed standards, the implementation of transmission looping configurations for the 500 kV system, upgrading of old transmission lines and substations as well as installation of reactive power compensation equipment at various Substations.

Lastly, to support the DOE Department Circular DC 2019-01-0001 "Prescribing the Omnibus Guidelines on Enhancing Off-Grid Power Development and Operation" which aims to improve the quality, reliability, and affordability of electric power in off-grid areas, island interconnections will be implemented. These includes the Batangas – Mindoro Interconnection and Backbone Project (BMBIP), Quezon–Marinduque Interconnection Project (QMIP) and Camarines Sur – Catanduanes Interconnection Project (CCIP).

5.1 LUZON PROJECTS FOR 2026–2030

Major transmission projects planned for the period 2026-2030 are geared toward ensuring the adequacy and reliability of transmission facilities to accommodate new generation capacity additions and address the increasing electricity demand in the Luzon Grid.

To support the integration of additional generation capacity, new substations and transmission corridors will be developed. These projects also aim to support the government's RE generation mix target of 35% by 2030 and 50% by 2050. The completion of the Tuy 500 kV Substation (Stage 1), Pinamucan 500 kV Substation and the Western 500 kV Backbone (Stage 2) will facilitate the connection of bulk generation capacities from both conventional and RE sources. In Camarines Sur, the development of Milaor 500 kV Substation aims to accommodate the entry of Offshore Wind (OSW) projects in the area.

To meet the projected demand in Metro Manila, the primary load center of the Luzon Grid, two (2) major 500/230 kV drawdown substations will be developed in Taguig City and Marilao, Bulacan, providing an additional 4,000 MVA of transformer capacity. Furthermore, a new 230/115 kV drawdown substation will be established in Antipolo, Rizal to further strengthen supply reliability in the eastern portion of Metro Manila.

Outside Metro Manila, several drawdown substations will likewise be developed to address forecasted load growth. These include the Lal-lo 230 kV Substation under the Tuguegarao – Lal-lo 230 kV Transmission Line Project in Cagayan, the Pinili 230 kV Substation in Ilocos Norte, the San Simon and Porac 230 kV Substations in Pampanga, and the Abuyog 230 kV Substation in Sorsogon. In addition, new 69 kV transmission facilities will be implemented to further improve network coverage and system reliability.

Lastly, the BMIBP Stage 1 will interconnect the Island of Mindoro to the main Luzon Grid, enabling access to a more reliable, secure, and affordable electricity supply while supporting the island's long-term economic development.

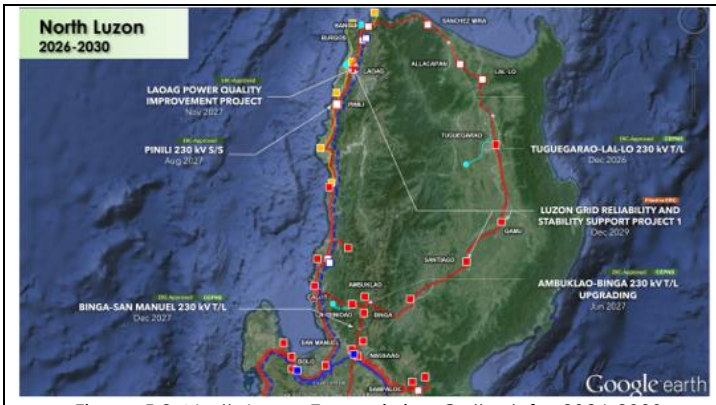


Figure 5.2: North Luzon Transmission Outlook for 2026-2030

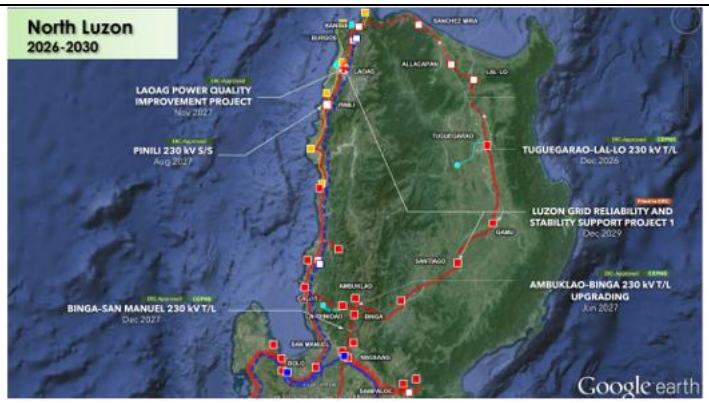


Figure 5.3: Central Transmission Outlook for 2026-2030



Figure 5.4: Metro Manila Transmission Outlook for 2026-2030

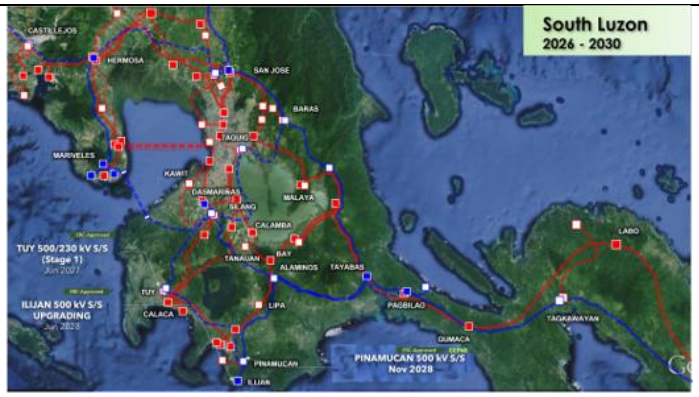


Figure 5.5: South Luzon Transmission Outlook for 2026-2030

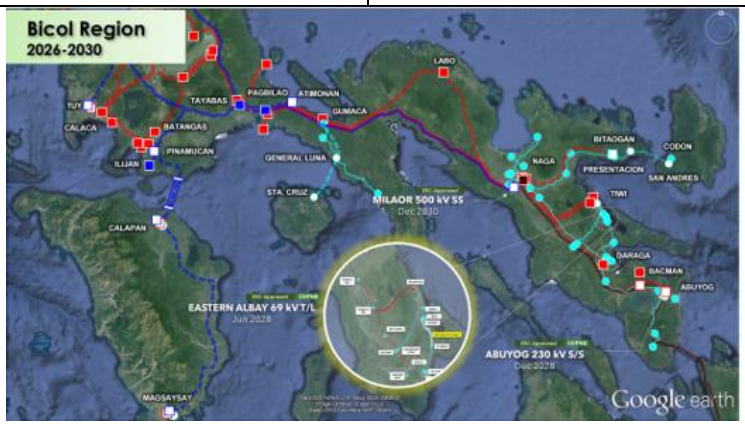


Figure 5.6: Bicol Regional Transmission Outlook for 2026-2030

Table 5.1: List of Luzon transmission projects for the period 2026-2030

TRANSMISSION LINE

500 kV PROJECTS

1. Bataan – Cavite Transmission Line Feasibility Study
Bataan, Cavite

Driver	Status	Project Cost	ETC
Generation Entry	ERC-Approved	194 Mn	To be assessed

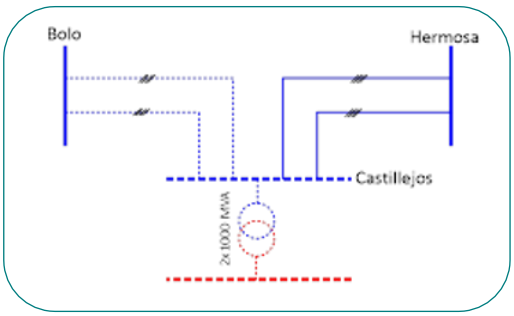
Need / Justification:
To establish the most feasible submarine cable link between Bataan and Cavite as part of the long-term plan to form a backbone loop system

Scope:
- Power System Study
- Feasibility Study

2. Western Luzon 500 kV Backbone (Stage 2)
Pangasinan, Zambales

Driver	Status	Project Cost	ETC
Generation Entry	ERC-Approved CEPNS	25,406 Mn	Oct 2027

Need / Justification:
To accommodate the incoming bulk generation entry in North Luzon and complement the proposed Balaoan –Laoag (Burgos) 500 kV Line, Bolo –Balaoan 500 kV Line and Santiago – Nagsaag 500 kV Line.



Substation Components:
- Castillejos 500 kV SS: 2x1,000 MVA, 500/230 kV Power Transformer 14-500 kV PCB and associated equipment. 2x90 MVAR, 500 kV Shunt Reactor, 2x60 MVAR, 500 kV Line Reactor
- Castillejos 230 kV SS: 2x200 MVAR, 230 kV Shunt Capacitor, 4-230 kV PCB and associated equipment Bolo 500 kV SS: 5-500 kV PCB and associated equipment 4-230 kV PCB and associated equipment
- Hermosa 500 kV SS: 4-500 kV PCB and associated equipment

Transmission Line Components:
- Castillejos – Bolo 500 kV TL: ST-DC, 4-410 mm^2 TACSR, 174 km (2x4,234 MW).

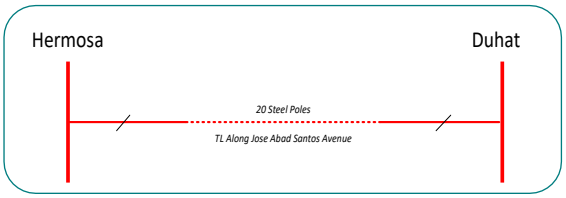
TRANSMISSION LINE

230 kV PROJECTS

3. Relocation of Steel Poles along Hermosa – Duhat 230 kV Transmission Line
Bataan

Driver	Status	Project Cost	ETC
System Reliability	ERC-Approved CEPNS	341 Mn	Jul 2026

Need / Justification:
To eliminate the danger brought by road widening by the remaining steel pole structures as well as to prevent accidents that will cause power interruption to the Hermosa–Duhat 230 kV Line.



Transmission Line Components:
Hermosa – Duhat 230 kV TL: 230 kV, SP-SC, 2-795 MCM, 18 steel poles (1x573 MW)

4. Tuguegarao –Lal-lo 230 kV Transmission Line
Cagayan

Driver	Status	Project Cost	ETC
Power Quality Load Growth	ERC-Approved CEPNS	3,526 Mn	Dec 2026

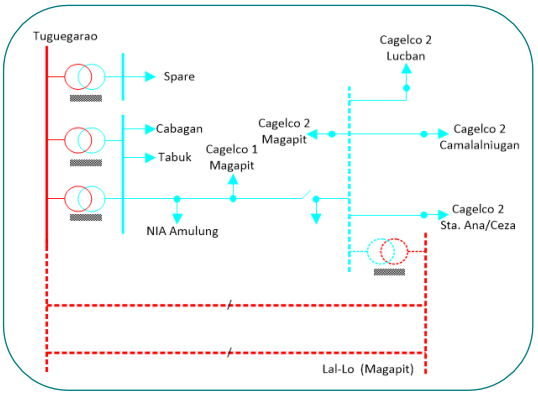
Need / Justification:
- To address the overloading of the Tuguegarao – Magapit 69 kV Line due to the forecasted load growth in the northern part of Cagayan Province
- To improve the power quality and reliability of supply in the area which is presently being served by a 69 kV line
- To link the north-western and north-eastern 230 kV backbone

Substation Components:

- Lal-lo 230 kV SS: 2x100 MVA 230/69-13.8 kV Power Transformer, 6-230 kV PCB and associated equipment, 8-69 kV PCB and associated equipment. (Energized)
- Tuguegarao 230 kV SS: 3-230 kV PCB.

Transmission Line Components:

- Tuguegarao – Lal-lo 230 kV TL: ST-DC, 1-410 mm² TACSR, 61.2 km (2x487 MW).



5. Ambuklao – Binga 230 kV Transmission Line Upgrading Project

Benguet

Driver	Status	Project Cost	ETC
System Reliability	ERC-Approved CEPNS	1,051 Mn	Jun 2027

Need / Justification:

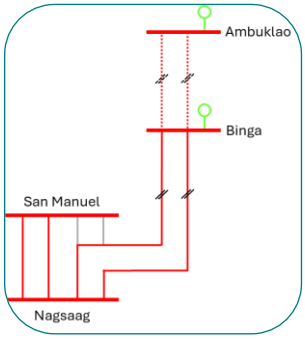
To upgrade the existing line to address its old age condition and to maintain the N-1 contingency provision

Substation Components:

Ambuklao 230 kV SS: 7-230 kV PCB and associated equipment. (Energized)

Transmission Line Components:

Ambuklao – Binga 230 kV TL: ST/SP-DC, 2-410 mm² TACSR, 11 km (2x974 MW)



6. Binga – San Manuel 230 kV Transmission Line

Benguet

Driver	Status	Project Cost	ETC
System Reliability Generation entry	ERC-Approved CEPNS	3,350 Mn	Dec 2027

Need / Justification:

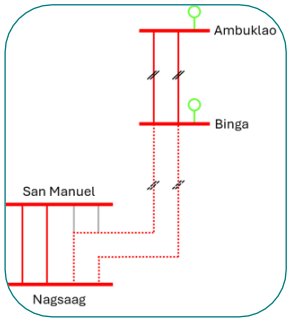
To provide N-1 contingency during the maximum dispatch of the generating plants, particularly HEPPs, in north Luzon

Substation Components:

- San Manuel 230 kV SS: 2-230 kV PCB and associated equipment. (Energized)
- Binga 230 kV SS: 1x50 MVA 230/69 kV Power Transformer, 14-230 kV PCB and associated equipment. (Energized)

Transmission Line Components:

- Binga – San Manuel 230 kV TL: ST-DC, 2-410 mm² TACSR, 40 km (2x974 MW)



7. Northern Luzon 230 kV Loop

Ilocos Norte / Cagayan

Driver	Status	Project Cost	ETC
Generation entry	ERC-Approved CEPNS	51,520M	Aug 2031

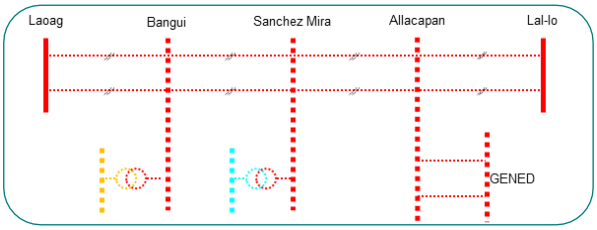
Need / Justification:

To provide new transmission corridor to accommodate renewable energy and other power plants in the Northern part of Luzon

To ensure the system reliability and operational flexibility in the Ilocos Region and Cagayan Valley through the 230 kV looping

Substation Components:

- Laoag 230 kV SS: 4-230 kV PCB and associated equipment
- Bangui 230 kV SS: 2x300 MVA 230/115 kV Power Transformer, 14-230 kV PCB and associated equipment, 18-115 kV PCB and associated equipment, 4x25
- MVAR, 230 kV Shunt Reactor, 4x50 MVAR, 115 kV Capacitor



- Sanchez Mira 230 kV SS: 2x300 MVA 230/69 kV Power Transformer, 18-230 kV PCB and associated equipment, 8-69 kV PCB and associated equipment, 4x25 MVAR, 230 kV Shunt Reactor, 4x25 MVAR, 230 kV Capacitor
- Pudtol (Allacapan) 230 kV SS: 10-230 kV PCB and associated equipment

Transmission Line Components:
- Laoag – Bangui 230 kV TL: ST-DC, 2-795 MCM ACSR/AS, 52.6 km (2x573 MW).
- Bangui – Sanchez Mira 230 kV TL: ST-DC, 2-795 MCM ACSR/AS, 70 km (2x573 MW)
- Sanchez Mira – Pudtol (Allacapan) 230 kV TL: ST-DC, 2-795 MCM ACSR/AS, 43.04 km (2x573 MW)
- Pudtol (Allacapan) – Lal-lo 230 kV TL: ST-DC, 2-795 MCM ACSR/AS, 41.6 km (2x573 MW)

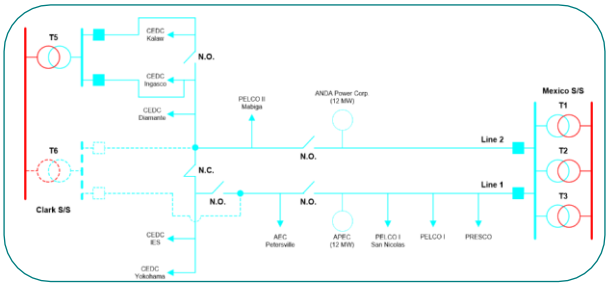
TRANSMISSION LINE

69 kV PROJECTS

8. Clark – Mabiga 69 kV Transmission Line
Pampanga

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	5,593 Mn	Dec 2028

Need / Justification:
- To address the load growth in Angeles and Mabalacat, together with the new industries in Clark Freeport Zone and improve the power quality of supply in the area
- To provide transmission capacity reinforcement to the Mexico–Clark 69 kV Line which serves various Distribution Utilities and DCCs



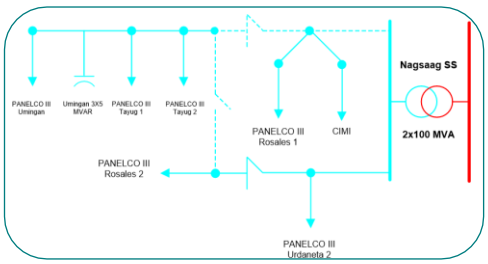
Substation Components:
Clark 230 kV SS (Expansion): 1x300 MVA 230/69-13.8 kV Power Transformer, 1-230 kV PCB and associated equipment, and 3-69 kV PCB and associated equipment (Energized)

Transmission Line Components:
Clark – Mabiga 69 kV TL: 1,600 mm^2 Underground Cable System, UC-DC, 6.0 km (2x108 MW)

9. Nagsaag – Tumana 69 kV Transmission Line
Pangasinan

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	744 Mn	Completed

Need / Justification:
To cater to the growing demand in Pangasinan and address the overloading of Nagsaag-Umingan 69 kV Transmission Line



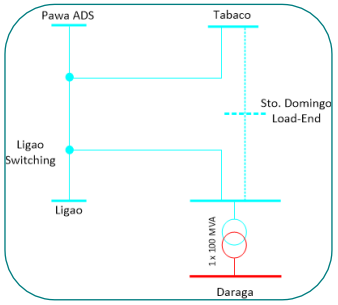
Substation Components:
Nagsaag 69 kV SS: 1-69 kV PCB and associated equipment

Transmission Line Components:
Nagsaag – Tumana 69 kV TL: 69 kV, ST/SP-DC1, 1-795 MCM ACSR, 27.5 km (1x56 MW).

10. Eastern Albay 69 kV Line Stage 2
Albay

Driver	Status	Project Cost	ETC
System Reliability	ERC-Approved CEPNS	2,049 Mn	Jun 2028

Need / Justification:
To provide a more reliable transmission corridor on the eastern coast of Albay and serve the increasing eco-tourism developments in the area



Substation Components:
Sto. Domingo SS: 2-69 kV PCB and associated equipment. (Energized)

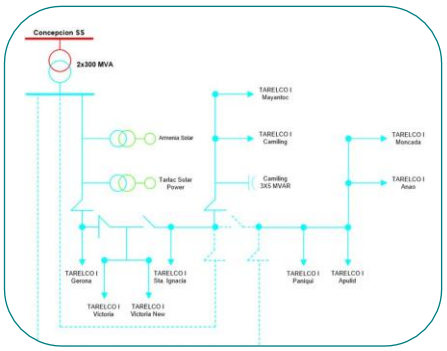
Transmission Line Components:
Sto. Domingo – Tabaco 69 kV TL: ST-SC, 1-336.4 MCM ACSR, 16 km (1x56 MW)

11. Concepcion – Sta. Ignacia 69 kV Transmission Line
Tarlac

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	2,291 Mn	Dec 2027

Need / Justification:
- To cater to the growing demand in Tarlac
- To address the overloading of the existing Concepcion –Camiling 69 kV TL

Transmission Line Components:
- Concepcion – Sta. Ignacia (Camiling) 69 kV TL (2x172 MW): SP-DC, 1-410 mm² STACIR, 33.0 km



SUBSTATION

500 kV PROJECTS

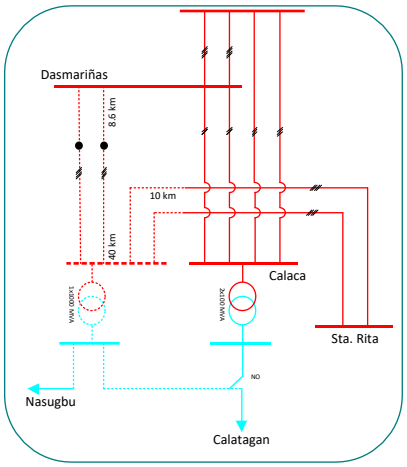
12. Tuy 500/230 kV Substation Project Stage 1
Batangas, Cavite

Driver	Status	Project Cost	ETC
Generation Entry	ERC-Approved CEPNS	8,414 Mn	Jun 2027

Need / Justification:
- To address the overloading of outgoing 230 kV lines at Calaca 230 kV Substation
- To accommodate the connection proposed power plants such as 51.55 MWAC Tuy Batangas 4 Solar, 75 MW Bolbok 2 Solar, 50 MWAC Luntal Solar, and 90 MWA Lumbangan Solar

Substation Components:
- Tuy SS: 1x100 MVA, 230/69 kV Power Transformer, 12-230 kV PCB and associated equipment, 3-69 kV PCB and associated equipment. (Energized)
- Dasmariñas SS Expansion: 2-230 kV PCB and associated equipment.
- Sta. Rita Switchyard Expansion: Line Protection and Communication System.
- Calaca SS: Replacement of Current Transformers and Bus works.

Transmission Line Components:
- Tuy – Silang (initially 230 kV-energized), 500 kV: ST-DC, 4-410 mm² TACSR, 40 km (2x4,234 MW).
- Silang – Dasmariñas 230 kV: ST- DC, 4-410 mm² TACSR/AS, 8.6 km (2x1,948 MW).
- Sta. Rita 230 kV Line Extension: 230 kV, ST-DC, 4-795 MCM ACSR/AS, 10 km (2x1,148 MW)
- Calatagan/ Nasugbu Line Extension: 69 kV, SP-DC, 1-795 MCM ACSR/AS, 3.5 km (2x86 MW). (Energized)

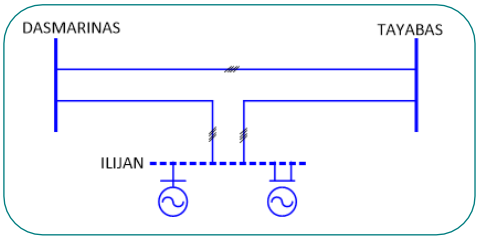


13. Ilijan 500 kV Substation Upgrading
Batangas

Driver	Status	Project Cost	ETC
System Reliability	ERC-Approved CEPNS	3,354 Mn	Jun 2028

Need / Justification:
- To accommodate the connection of Excellent Energy Resources Inc.'s (EERI) 1,700 MW Combined-Cycle Gas Turbine Ilijan Expansion Power Plant Project to the switchyard
- To upgrade PCB in anticipation to the additional proposed generation connections in Batangas City.

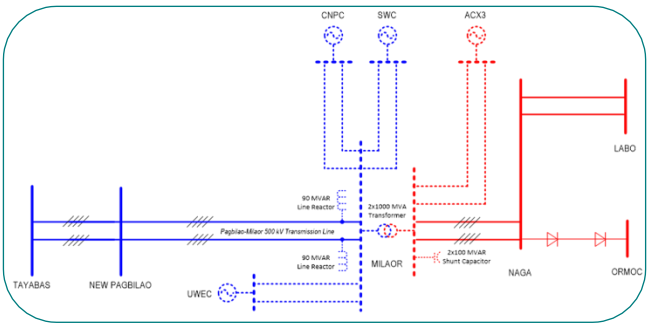
Substation Components:
- Ilijan 500 kV SS: 4-500 kV PCB and associated equipment (GIS), 6-500 kV PCB and associated equipment (AIS)
- Dasmarinas 500 kV SS: 1x600 MVA 500/230 kV Power Transformer (1x600 MVA Power Transformer transferred from Tayabas SS), 1-550 kV PCB and associated equipment
- Tayabas 500 kV SS: 1x600 MVA 500/230 kV Power Transformer



14. Milaor 500 kV Substation Project
Camarines Sur, Quezon

Driver	Status	Project Cost	ETC
Generation Entry	ERC-Approved CEPNS	15,476 Mn	Dec 2030

Need / Justification:
To provide a connection point to the proposed bulk Offshore Wind (OSW) power projects in Camarines Norte and Camarines Sur



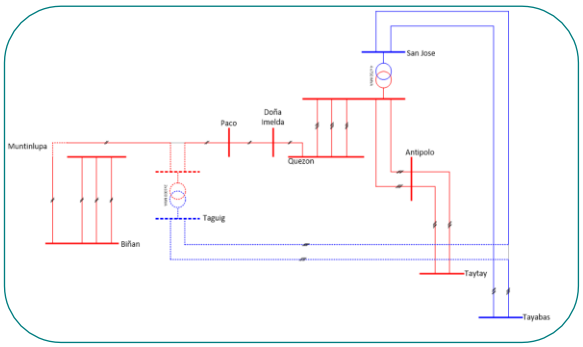
Substation Components:
- Milaor 500 kV SS: 2x1,000 MVA, 500/230-13.8 kV Power Transformer and accessories, 2x90 MVAR 500 kV Line Reactor, 2x100 MVAR 230 kV Shunt Capacitor, 12-500 kV PCB and associated equipment, 12-230 kV PCB and associated equipment
- Pagbilao 500 kV SS (Expansion): 4-500 kV PCB and associated equipment

Transmission Line Components:
- Swinging of Pagbilao – Milaor 500 kV-designed Transmission Line at Milaor Substation: ST-DC, 4-795 MCM ACSR/AS, 1.0 km
- Swinging of Milaor–Naga 230 kV Transmission Line at Milaor Substation: ST-DC, 4-795 MCM
- ACSR/AS, 1.0 km
- Swinging of Pagbilao – Milaor 500 kV-designed Transmission Line at Pagbilao Substation: ST-DC, 4-795 MCM ACSR/AS, 1.0 k

15. Taguig 500 kV Substation Project
Taguig

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	10,818 Mn	Dec 2027

Need / Justification:
- To address the projected load growth in Metro Manila
- To provide an additional 500/230 kV drawdown SS serving metro manila



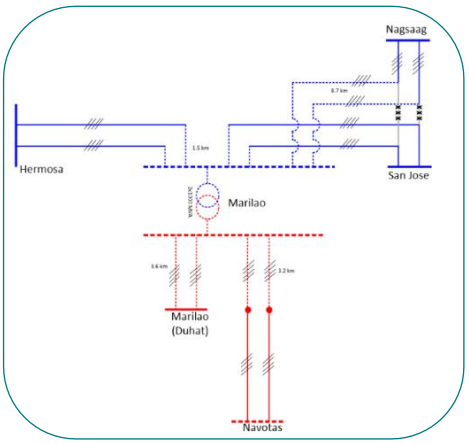
Substation Components:
Taguig 500 kV SS: 2x1,000 MVA, 500/230-13.8 kV Power Transformer, 1x90 MVAR, 500 kV Shunt Reactor, 3x100 MVAR, 230 kV Capacitor, 14-500 kV PCB (GIS) and associated equiptment,19-230 kV PCB (GIS) and associated equipment

Transmission Line Components:
- Taguig Cut-in to San Jose –Tayabas 500 kV TL: 500 kV, ST-DC, 4-795 MCM ACSR/AS, 35 km (2x2,494 MW).
- Taguig bus-in to Muntinlupa – Paco 230 kV TL: 230 kV, SP-DC,2-410 mm² TACSR/AS, 2x2.5 km (2x974 MW).

16. Marilao 500 kV Substation
Bulacan

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	9,852M	Mar 2028

Need / Justification:
- To provide an additional 500/230 kV drawdown SS to support the increasing demand in Metro Manila along with the increase in bulk power injection to the 500 kV system coming from the new power plants in the grid.
- To address the initial line by-pass scheme at San Jose SS under the project Hermosa–San Jose 500 kV TL which is brought about by the GIS expansion limitation at San Jose 500 kV SS.
- To reduce the criticality of the ring-bus configured San Jose 500 kV SS as the Marilao SS will now serve as the main node in the grid.



Substation Components:
- Marilao 500 kV SS: 2x1,000 MVA, 500/230-13.8 kV Power Transformer and Accessories 2x90 MVAR, 500 kV Shunt Reactor and Accessories
- 2x100 MVAR, 230 kV Capacitor Bank and Accessories 16-500 kV PCB and Associated equipment 12-230 kV PCB and Associated equipment

Transmission Line Components:
- Nagase – San Jose 500 kV Line Extension to Marilao 500 kV SS, ST-DC, 4-795 MCM ACSR/AS, 8.7 km (2x2,494 MW)
- Marilao Bus-in to Hermosa – San Jose 500 kV Line, ST-DC, 4-410 mm² TACSR/AS, 1.5 km (2x4,234 MW). (Energized)
- Duhat – Marilao 230 kV TL, SP-DC, 2-795 MCM ACSR/AS, 3.2 km (2x573 MW).
- Navotas Line Extension to Marilao 230 kV TL, SP-DC, 4-795 MCM ACSR/AS, 3.6 km (2x1,148 MW).

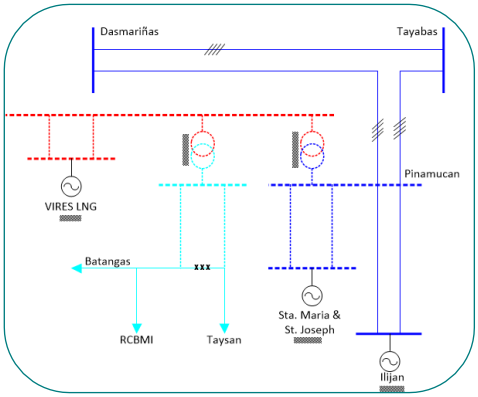
17. Pinamucan 500 kV Substation
Batangas

Driver	Status	Project Cost	ETC
Generation Entry	ERC-Approved CEPNS	7,084 Mn	Nov 2028

Need / Justification:
- To accommodate the connection of new LNG Plants in Batangas City Area
- To provide a connection point of other proposed bulk capacity generation in Batangas. In addition, it will also serve as the connection point of Batangas–Mindoro Interconnection and Backbone Project (BMIBP).
- To accommodate forecasted load growth in Batangas

Substation Components:
Pinamucan 500/230 kV SS: 2x1,000 MVA, 500/230 kV Power Transformer, 2x100 MVA, 230/69 kV Power Transformer, 14-500 kV PCB and associated equipment, 10-230 kV PCB and associated equipment, 6-69 kV PCB and associated equipment

Transmission Line Components:
- Pinamucan 500 kV bus-in TL: ST-DC, 4-795 MCM ACSR/AS, 1 km (2x2,494 MW)
- Pinamucan – Taysan 69 kV TL: SP/ST-DC, 1-795 MCM ACSR/AS, 10 km (2x86 MW)

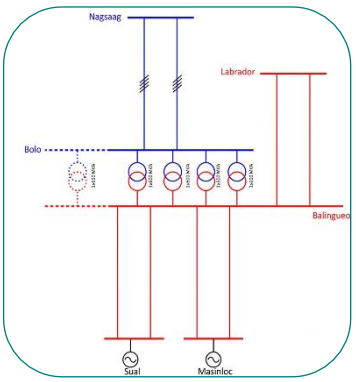


18. Bolo 5th Bank
Pangasinan

Driver	Status	Project Cost	ETC
Generation Entry	ERC-Approved CEPNS	3,791 Mn	Jun 2030

Need / Justification:
To accommodate the additional generation in the northwestern region of Luzon

Substation Components:
Bolo SS: 1x600 MVA 500/230 kV Power Transformer and Accessories 22-230 kV PCB and associated equipment



SUBSTATION

230 kV PROJECTS

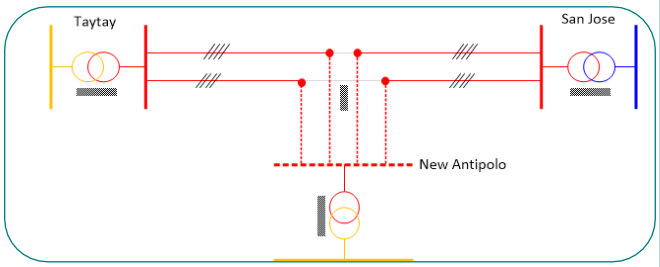
19. Antipolo 230 kV Substation
Rizal

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	1,445 Mn	Dec 2027

Need / Justification:
- To provide a new 230/115 drawdown substation in Metro Manila
- To decongest the existing Taytay 230/115 kV Substation serving MERALCO Sector 2

Substation Components:
Antipolo 230 kV SS: 12-230 kV PCB and associated equipment, 2x100 MVAR 230 kV Capacitor Bank.

Transmission Line Components:
Bus-in point along San Jose –Taytay 230 kV TL: ST-DC, 4-795 MCM ACSR/AS, 0.75 km (2x1,148 MW).



20. North Luzon 230 kV Substation Upgrading

La Union, Isabela, Nueva Vizcaya, Bataan, Quezon, Pangasinan, Bulacan

Driver	Status	Project Cost	ETC
Load Growth System Reliability	ERC-Approved CEPNS	4,516M	Dec 2026

Need / Justification:

- To cater the load growth and provide N-1 contingency to various Substations in NGCP's North Luzon Region
- To increase the reliability of the substations with old and obsolete PCB and associated equipment

Substation Components:

Stage 1:

- Bauang 230 kV SS (Replacement): 1x100 MVA 230/115/69-13.8 kV Power Transformer, 7-230 kV PCB and associated equipment
- Gamu 230 kV SS: 10-230 kV PCB and associated equipment, 3-69 kV PCB and associated equipment
- Bayombong 230 kV SS: 5-230 kV PCB and associated equipment., 2-69 kV PCB and associated equipment
- Hermosa 69 kV SS: 11-69 kV PCB and associated equipment
- Dona Imelda 230 kV SS: 1-115 kV PCB and associated equipment
- Malaya 230 kV SS (Expansion), 1x300 MVA, 230/115-13.8 kV Power Transformer, 7-230 kV PCB and associated equipment, 1-115 kV PCB and associated equipment. (Energized)
- Quezon 230 kV SS (Expansion): 3-230 kV PCB and associated equipment
- San Jose 230 kV SS (Expansion): 1x300 MVA, 230/115-13.8 kV Power Transformer, 1-230 kV PCB and associated equipment, 10-115 kV PCB and associated equipment. (Energized)

Stage 2:

- Bacnotan 230 kV SS (Expansion): 1x100 MVA 230/69-13.8 kV Power Transformer, 2-230 kV PCB and associated equipment, 8-69 kV PCB and associated equipment. (Energized)
- Balingueo 230 kV SS (Expansion): 1x100 MVA 230/69-13.8 kV Power Transformer, 5-230 kV PCB and associated equipment, 4-69 kV PCB and associated equipment. (Energized)
- Labrador 230 kV SS (Replacement): 1x100 MVA 230/69-13.8 kV Power Transformer, 5-230 kV PCB, 2-69 kV PCB and associated equipment. (Energized)
- San Rafael 230 kV SS (Expansion): 1x300 MVA 230/69-13.8 kV Power Transformer, 1-230 kV PCB and associated equipment, 2-69 kV PCB and associated equipment. (Energized)

21. Pinili 230 kV Substation

Ilocos Norte

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	2,262 Mn	Aug 2027

Need / Justification:

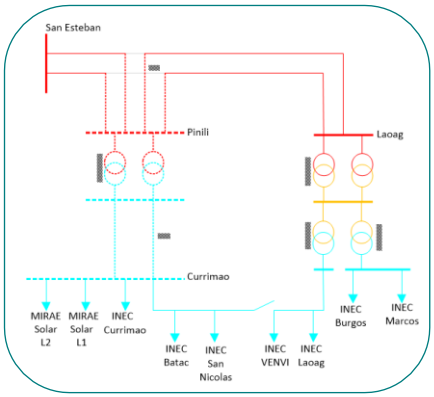
- To address the forecasted load growth in Ilocos region and to provide an alternate connection source for loads connected at Laoag SS during N-1 contingency condition.
- To replace the existing Currimao 115 kV SS as it can no longer be expanded due to space constraints.
- To serve as a connection point for new renewable energy plants

Substation Components:

- Pinili 230 kV SS (New): 2x100 MVA 230/69-13.8 kV Power Transformer, 10-230 kV PCB and associated equipment, 8-69 kV PCB and associated equipment
- Currimao SS: 5-69 kV PCB and associated equipment

Transmission Line Components:

- Pinili Bus-in to San Esteban –Laoag 230 kV TL: ST-DC, 1-795 MCM ACSR/AS, 0.8 km (2x287 MW).
- Pinili – Currimao 69 kV TL: ST-DC, 1-795 MCM ACSR/AS, 6.0 km (2x86 MW).



22. South Luzon 230 kV Substation Upgrading

Laguna, Batangas, Albay, Quezon, Camarines Norte

Driver	Status	Project Cost	ETC
Load Growth System Reliability	ERC-Approved CEPNS	1,825 Mn	Dec 2028

Need / Justification:

To cater the load growth and provide N-1 contingency to various Substations in NGCP's South Luzon Region

Substation Components:

Stage 1:

- Las Piñas 230 kV SS: 1x300 MVA, 230/115-13.8 kV Power Transformer and Accessories. (Energized)
- Lumban 230 kV SS (Expansion):
- 1x100 MVA, 230/69-13.8 kV Power Transformer and accessories 1-230
- kV PCB and Associated equipment; 2-69 kV PCB and associated equipment. (Energized)
- San Juan (Kalayaan) S/Y: 8-230 kV PCB and associated equipment

Stage 2:

- Daraga 230 kV SS, 1x100 MVA 230/69-13.8 kV Power Transformer and Accessories, 4-230 kV PCB and associated equipment, 2-69 kV PCB and associated equipment. (Energized)
- Gumaca 230 kV SS (Replacement): 1x100 MVA 230/69-13.8 kV Power Transformer and Accessories, 1-230 kV PCB and associated equipment, 2-69 kV PCB and associated equipment
- Labo 230 kV SS: Busworks, Protection and Control Equipment. (Energized)

23. South Luzon 230 kV Substation Upgrading 2

Batangas, Laguna, Quezon, Camarines Norte, Albay , Rizal, Metro Manila

Driver	Status	Project Cost	ETC
Load Growth, Power Quality and Technology	ERC-Approved CEPNS	7,671 Mn	Dec 2027

Need / Justification:

- To cater the load growth and provide N-1 contingency to various Substations in NGCP's South Luzon Region
- To replace defective and upgrade underrated PCB

Substation Components:

- Lumban 230 kV SS (Replacement): 1x100 MVA 230/69-13.8 kV Power Transformer, 1-69 kV PCB and associated equipment. (Energized)
- Gumaca 230 kV SS (Replacement): 1x100 MVA 230/69-13.8 kV Power Transformer; 1-69 kV PCB and associated equipment. (Energized)
- Tuy 230 kV SS: 1x300 MVA, 230/69-13.8 kV Power Transformer, 2-230 kV PCB and associated equipment, 3-69 kV PCB and associated equipment
- Calaca 230 kV SS (Replacement): 2x300 MVA, 230/69-13.8 kV Power Transformer; 2-230 kV PCB and associated equipment, 7-69 kV PCB and associated equipment
- Labo 230 kV SS (Replacement): 1x100 MVA, 230/69-13.8 kV Power Transformer; 1-69 kV PCB and associated equipment. (Energized)
- Taytay 230 kV SS: 3x100 MVAR, 230 kV Capacitor Bank, 4-230 kV PCB and associated equipment
- Quezon 230 kV SS: 1x100 MVAR, 230 kV Capacitor Bank, 1-230 kV PCB and associated equipment
- Biñan 230 kV SS: 5-230 kV PCB and associated equipment, 6-115 kV PCB and associated equipment. (Energized)
- Dasmariñas 115 kV SS: 11-115 kV PCB and associated equipment
- Naga 69 kV SS: 1-69 kV PCB and associated equipment
- Muntinlupa 115 kV SS, 10-115 kV PCB and associated equipment
- Daraga 230 kV SS: 3-230 kV PCB and associated equipment
- Bay 69 kV SS: 2-69 kV PCB and associated equipment

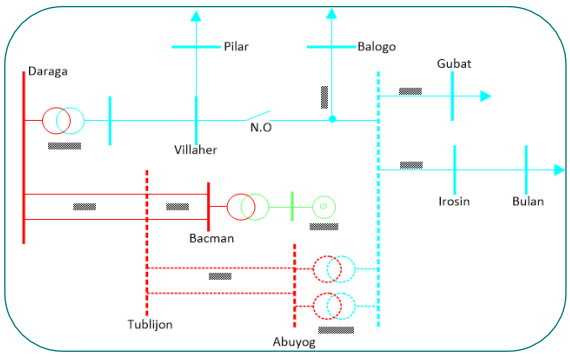
24. Abuyog 230 kV Substation

Sorsogon

Driver	Status	Project Cost	ETC
Load Growth Generation Entry	ERC-Approved CEPNS	4,717 Mn	Dec 2028

Need / Justification:

To establish a 230 kV drawdown SS closer to the loads in Sorsogon which will address the supply reliability issues, meet the long-term projected demand and address the power quality issues at the LES.



Substation Components:

- Abuyog 230 kV SS: 2x100 MVA 230/69-13.8 kV Power Transformer, 3x25 MVAR, 230 kV Shunt Capacitor, 3x25 MVAR, 230 kV Shunt Reactor, 12-230 kV PCB and associated equipment, 8-69 kV PCB and associated equipment
- Tublijon 230 kV SwS: 10-230 kV PCB and associated equipment

Transmission Line Components:

- Tublijon – Abuyog 230 kV TL: ST-DC, 2-795 MCM ACSR/AS, 26 km (2x573 MW).
- Tublijon – Daraga 230 kV Bus-in TL: ST-DC, 2-795 MCM ACSR/AS, 0.86 km (2x573 MW).
- Tublijon – BacMan 230 kV Bus-in TL: ST-DC, 1-795 MCM ACSR/AS, 0.86 km (2x287 MW).
- Abuyog – Gubat 69 kV Line Extensions: SP-SC, 1-336.4 MCM ACSR, 0.20 km (1x56 MW).
- Abuyog – Balogo 69 kV Line Extensions: SP-SC, 1-336.4 MCM ACSR, 0.20 km (1x56 MW).
- Abuyog – Irosin – Bulan 69 kV Line Extensions: SP-SC, 1-336.4 MCM ACSR, 1.14 km (1x56 MW).

25. San Simon 230 kV Substation

Pampanga

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	5,407 Mn	Nov 2027

Need / Justification:

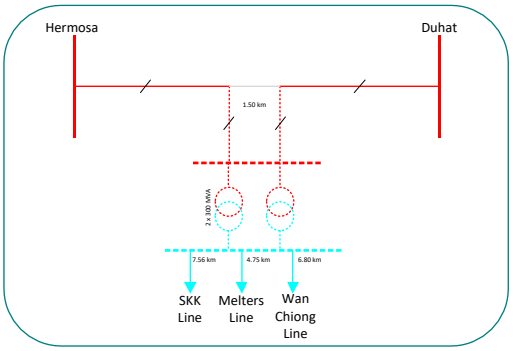
- To accommodate the growing demands of the existing steel mills and directly connected d industries
- To support the entry of new steel mills and industrial loads in San Simon, Pampanga southeastern part of the province of Pampanga which is presently being served by the existing Mexico 230 kV SS and underlying 69 kV facilities.
- To address the overloading of the 69 kV transmission facilities and serve as an alternate source SS for the loads connected at Mexico SS

Substation Components:

- Mexico 230 kV SS: 8-69 kV PCB and associated equipment
- San Simon 230 kV SS: 2x300 MVA 230/69 kV Power Transformer, 2x100 MVAR 230 kV capacitor, 10-230 kV PCB and associated equipment, 12- 69 kV PCB and associated equipment

Transmission Line Components:

- San Simon 'bus-in' connection to Hermosa – Duhat-Balintawak 230 kV Line: 2-795 MCM ACSR/AS, SP-DC, 1.81 km (2x573 MW).
- Mexico - STR 120D (Calumpit
- Line Segment) 69 kV Line: SP-SC, 1-410 mm² TACSR/AS, 12.3 km
- STR 120D–PELCO 3 (Apalit Tap) 69 kV Line: SP-SC, 1-410 mm² TACSR/AS, 2.52 km (1x146 MW).
- San Simon – SKK 69 kV Line: SP-SC, 1-410 mm² TACSR/AS, 7.51 km (1x146 MW).
- San Simon – Melters 69 kV Line: SP-SC, 1-410 mm² TACSR/AS, 4.75 km (1x146 MW).
- San Simon – Wan Chiong 69 kV Line: SP-SC, 1-410 mm² TACSR/AS, 7.2 km (1x86 MW).



26. North Luzon 230 kV Substation Upgrading 2

La Union, Ilocos Norte, Nueva Vizcaya, Isabela, Ilocos Sur, Pangasinan, Cagayan, Tarlac, Pampanga, Zambales, Nueva Ecija, Bataan

Driver	Status	Project Cost	ETC
Load Growth System Reliability and Security	ERC-Approved CEPNS	9,017 Mn	Dec 2027

Need / Justification:

To cater for the load growth and provide N-1 contingency to substations in NGCP's North Luzon Region

Substation Components:

- Laoag SS: 1x100 MVA 115/69 kV Power Transformer and Accessories, 1-115 kV PCB and associated equipment, 10-69 kV PCB and associated equipment. (Energized)
- Mexico SS: 18-69 kV PCB and associated equipment
- San Manuel SS: 2x300 MVA, 230/69 kV Power Transformer and Accessories, 14-69 kV PCB and associated equipment
- Nagsaag SS: 2-69 kV PCB and Associated equipment. (Energized)
- Pantabangan SS: 4-230 kV PCB and associated equipment
- Tuguegarao SS: 1x100 MVA 230/69 kV Power Transformer and Accessories, 1-230 kV PCB and associated equipment, 1-69 kV PCB and Associated equipment. (Energized)
- Balingueo SS: 1x100 MVA 230/69 kV Power Transformer and Accessories, 2-230 kV PCB and associated equipment, 1-69 kV PCB and associated equipment
- Bauang SS: 1x100 MVA 230/69 kV Power Transformer and Accessories
- Bayombong SS: 2x100 MVA, 230/69 kV Power Transformer and Accessories, 5-230 kV PCB and associated equipment, 14-69 kV PCB and associated equipment
- Concepcion SS: 20-69 kV PCB and associated equipment, 2x300 MVA 230/69 kV Power Transformer and Accessories. (Energized)
- Subic SS: 1-230 kV PCB and associated equipment
- San Jose SS: 29-230 kV PCB and associated equipment, 12-115 kV PCB and associated equipment
- San Esteban SS: 2x100 MVA 115/69 kV Power Transformer and Accessories, 1-69 kV PCB and associated equipment, 2-115 kV PCB and associated equipment (Energized)
- Masinloc SS: 2-230 kV PCB and associated equipment
- Bolo SS: 2-230 kV PCB and associated equipment
- Hermosa SS: 19-230 kV PCB and associated equipment.

27. Luzon Connection Requirements for Power Plant Project 1

Various provinces in Luzon

Driver	Status	Project Cost	ETC
Generation Entry System Reliability	ERC-Approved CEPNS	7,275 Mn	Nov 2030

Need / Justification:

To accommodate proposed power plants in the Luzon Grid

Substation Components:

- Binga 69 kV SS: 1-69 kV PCB and associated equipment
- Botolan 230 kV SS: 4-230 kV PCB, 2-69 kV PCB and associated equipment
- Castillejos 230 kV SS: 2-230 kV PCB and associated equipment
- Concepcion 69 kV SS: 1-69 kV PCB and associated equipment
- Subic 230 kV SS: 3-230 kV PCB (Outdoor GIS Type) and associated equipment
- Lal-lo (Magapit) 230 kV SS: 4-230 kV PCB and associated equipment
- Lamao 230 kV SS: 3-230 kV PCB and associated equipment
- Laoag 115 kV SS: 1-115 kV PCB and associated equipment
- Mariveles 230 kV SS: 8-500 kV PCB and associated equipment

28. Luzon Connection Requirements for Power Plant Project 3 Various provinces in Luzon	Driver Generation Entry System Reliability	Status ERC-Approved CEPNS	Project Cost 10.289 Mn	ETC Jan 2030

Need / Justification:
To accommodate several power plants in the Luzon Grid

Substation Components:
- Bolo 500 kV SS: 5-500 kV PCB and associated equipment, 6-230 kV PCB and associated equipment
- Naga 69 kV SS: 1- 69 kV PCB and associated equipment
- San Manuel 69 kV SS: 6-69 kV PCB and associated equipment
- Castillejos 230 kV SS: 2-230 kV PCB and associated equipment
- Hermosa 69 kV SS: 1-69 kV PCB and associated equipment
- San Juan 230 kV SS: 2-230 kV PCB and associated equipment
- Tuy 230 kV SS: 4-230 kV and associated equipment
- Tuy 69 kV SS: 6-69 kV PCB and associated equipment
- Labo 69 kV SS: 1- 69 kV PCB and associated equipment
- Lumban 230 kV SS: 4-230 kV PCB and associated equipment
- Balingueo 69 kV SS: 2-69 kV PCB and associated equipment
- Mexico 69 kV SS: 1-69 kV PCB and associated equipment
- Gamu 69 kV SS: 2 – 69 kV PCB and associated equipment
- Laoag 230 kV SS: 4-230 kV PCB and associated equipment
- Botolan 69 kV SS: 1-69 kV PCB and associated equipment

VOLTAGE IMPROVEMENT

230 kV PROJECTS

29. Luzon Voltage Improvement Project 3 Aurora, Nueva Ecija, Pangasinan, Tarlac, Ilocos Sur, Zambales, Benguet	Driver System Reliability	Status ERC-Approved CEPNS	Project Cost 2,544 Mn	ETC Dec 2027

Need / Justification:
- To address the anticipated undervoltage problem during peak load condition and overvoltage problem during off peak load condition at various 500 kV, 230 kV and 69 kV LES in the North Luzon Grid.
- To provide additional reactive power support in the network to maintain the system voltage within ±5% of the nominal value during normal and single outage contingencies as prescribed under the PGC.

Substation Components:
- Baler 69 kV LES: 3x2.5 MVAR, 69 kV Capacitor, 3-69 kV PCB and associated equipment. (Energized)
- Umingan 69 kV LES: 3x5 MVAR 69 kV) Capacitor, 3-69 kV PCB and associated equipment. (Energized)
- Camiling 69 kV LES: 3x5 MVAR 69 kV Capacitor, 3-69 kV PCB and associated equipment. (Energized)
- Mexico SS: 3x100 MVAR, 230 kV Shunt Capacitor, 12-230 kV PCB and associated equipment. (Energized)
- San Jose SS: 1x100 MVAR, 230 kV Shunt Capacitor, 1-230 kV PCB and associated equipment. (Energized)
- Cabanatuan SS: 2x50 MVAR, 230 kV Capacitor Bank, 1-230 kV PCB and associated equipment, 1-69 kV PCB and associated equipment. (Energized)
- Laoag SS: 2x25 MVAR, 230 kV Capacitor Bank, 1x25 MVAR, 230 kV Shunt Reactor, 1x35 MVAR, 230 kV Shunt Reactor, 3-230 kV PCB and associated equipment. (Energized)
- Nagsaag SS: 1x90 MVAR, 500 kV Shunt Reactor, 1-500 kV PCB and associated equipment. (Energized)
- Tuguegarao SS: 1x25 MVAR, 230 kV Capacitor Bank, 2-230 kV PCB and associated equipment, 1-69 kV PCB and associated equipment, 1x25 MVAR, 230 kV Shunt Reactor
- Bantay SS: 1x7.5 MVAR, 115 kV Capacitor Bank, 1-115 kV PCB and associated equipment. (Energized)
- San Esteban 230 kV SS: 2x25 MVAR, 230 kV Capacitor, 2-230 kV PCB and associated equipment. (Energized)
- Botolan 230 kV SS: 1x25 MVAR 230 kV Shunt Reactor, 6-230 kV PCB and associated equipment, 3-69 kV PCB and associated equipment. (Energized)
- Itogon 69 kV LES: 1x7.5 MVAR, 69 kV Capacitor, 1-69 kV PCB and associated equipment. (Energized)
- Antipolo 230 kV SS: 2x100 MVAR, 230 kV Capacitor, 2-230 kV PCB and associated equipm904

30. Luzon Voltage Improvement Project 4 Sorsogon, Camarines Sur, Batangas, Albay, Cavite	**Driver** Power Quality and Technology	**Status** ERC-Approved CEPNS	**Project Cost** 1,904 Mn	**ETC** Dec 2027

Need / Justification:
- To address the anticipated undervoltage problem during peak load conditions at various 69 kV LES in the South Luzon Grid
- To provide additional reactive power support in the network to maintain the system voltage within ±5% of the nominal value during normal and single outage contingencies as prescribed under the PGC

Substation Components:
- Dasmariñas SS: 2x100 MVAR, 230 kV Capacitor Bank, 2-230 kV PCB and associated equipment. (Energized)
- Biñan SS: 2x100 MVAR, 230 kV Capacitor Bank, 2-230 kV PCB and associated equipment. (Energized)
- Ligao SS: 3x5 MVAR Capacitor Bank, 3-69 kV PCB and associated equipment
- Nabua (formerly Iriga) SS: 2x5 MVAR Capacitor, 2-69 kV PCB and associated equipment
- Irosin (formerly Cuenca) SS: 2x5 MVAR, 69 kV Capacitor Bank, 2-69 kV PCB and associated equipment. (Energized)
- Malvar (formerly San Juan) SS: 3x5 MVAR, 69 kV Capacitor Bank, 3-69 kV PCB and associated equipment. (Energized)
- Rosario (formerly Taysan) SS: 3x7.5 MVAR, 69 kV Capacitor Bank, 3-69 kV PCB and associated equipment
- Tigaon (formerly Lagonoy) SS: 3x5 MVAR, 69 kV Capacitor Bank, 3-69 kV PCB and associated equipment. (Energized)

31. Luzon Grid Reliability and Stability Support Project 1 Laoag, Gamu, Santiago	**Driver** Generation Entry System Reliability and Security Power Quality and Technology	**Status** Awaiting ERC Approval CEPNS	**Project Cost** 18,160 Mn	**ETC** Dec 2029

Need / Justification:
- To address the technical limitations of the Luzon Grid caused by the rapid shift from synchronous generators to VRE.

Substation Components:
- Laoag 230 kV SS: 100 MW/400 MWh, 230 kV Battery Energy Storage Systems, 2-230 kV PCB and associated equipment
- Gamu 230 kV SS: 50 MW/200 MWh, 230 kV Battery Energy Storage Systems, 3-230 kV PCB and associated equipment
- Santiago Substation 50 MW/200 MWh, 230 kV Battery Energy Storage Systems, 2-230 kV PCB and associated equipment

32. Laoag Power Quality Improvement Project Laoag	**Driver** System Reliability	**Status** ERC-Approved CEPNS	**Project Cost** 957 Mn	**ETC** Nov 2027

Need / Justification:
- To address the Voltage fluctuations in Laoag which will worsen with the commercial operation of additional wind plants in the area.
- To increase the maximum allowable VRE generation dispatch which is limited due to the voltage fluctuation problem.

Substation Components:
Laoag 230 kV SS: 50 MVAR Grid-Forming Static Synchronous Compensator, 2x25 MVAR Capacitor Bank, 4-230 kV PCB and associated equipment

ISLAND / OFF-GRID INTERCONNECTION

500 kV PROJECT

33. Palawan – Mindoro Interconnection Project (Stage 1) Palawan, Mindoro	**Driver** Island Interconnection	**Status** ERC-Approved CEPNS	**Project Cost** 782 Mn	**ETC** Jul 2029

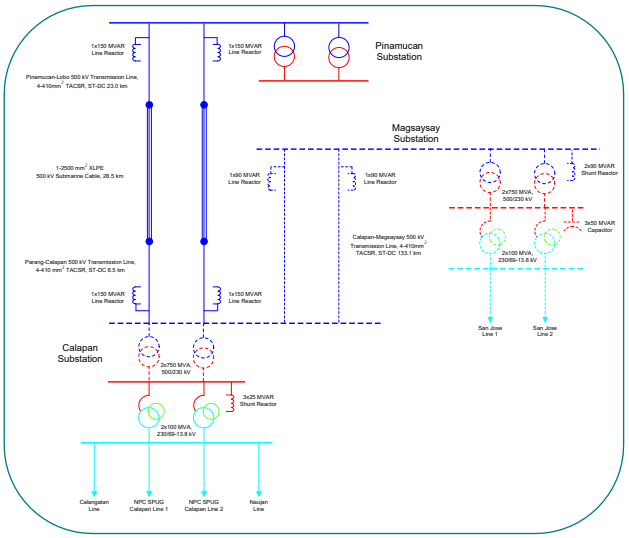
Need / Justification:
To establish the most viable route for laying the submarine cable and establish the appropriate connection scheme

Scope:
- Desktop, System and Feasibility Studies and Hydrographic Survey of the Mindoro-Palawan Interconnection

34. Batangas – Mindoro 500 kV Interconnection & Backbone Project Batangas, Mindoro	**Driver** Island Interconnection	**Status** ERC-Approved CEPNS	**Project Cost** 104,527 Mn	**ETC** Stage 1: Oct 2029 Stage 2: Jun 2035

Need / Justification:

- To provide the island of Mindoro access to available power supply from the main Luzon Grid
- To reduce Mindoro's dependence on diesel plants and encourage development of RE plants within the island



Substation Components:

Stage 1:

- Pinamucan 230 kV SY: 4-230 kV PCB and associated equipment, 2x70 MVAR, 230 kV Line Reactor associated equipment
- Calapan 230 kV SY: 2x100 MVA, 230/69-13.8 kV Power Transformer, 11-230 kV PCB and associated equipment, 2x70 MVAR, 230 kV Line Reactor,3x25 MVAR, 230 kV Shunt Reactor, 10-69 kV PCB and associated equipment

Stage 2:

- Pinamucan 500 kV Substation 6-500 kV PCB and associated equipment, 2x150 MVAR, 500 kV Line Reactor, 2x90 MVAR, 500 kV Shunt Reactor
- Calapan 500 kV Substation 2x750 MVA, 500/230 kV Transformer, 15-500 kV PCB and associated equipment, 2x150 MVAR, 500 kV Line Reactor, 3x90 MVAR, 500 kV Shunt Reactor
- Magsaysay 500 kV Substation, 2x750 MVA, 500/230 kV Transformer, 2x100 MVA, 230/69-13.8 kV Transformer, 10-500 kV PCB and associated equipment, 9-230 kV PCB and associated equipment, 6-69 kV PCB and associated equipment, 2x90 MVAR, 500 kV Line Reactor, 2x90 MVAR, 500 kV Shunt Reactor, 3x50 MVAR, 230 kV Shunt Capacitor

Transmission Line Components:

Stage 1:

- Pinamucan – Lobo CTS 500 kV Transmission Line (initially energized at 230 kV): ST-DC, 4-410 mm^2 TACSR, 23.0 km
- Lobo CTS – Parang CTS 500 kV Submarine Cable (initially energized at 230 kV): Double-circuit Submarine Cable, 1-2,500 mm^2 XLPE, 28.5 km
- Parang CTS – Calapan 500 kV Transmission Line (initially energized at 230 kV): ST-DC, 4-410 mm^2 TACSR, 8.5 km
- Calapan "cut-in" to NPC SPUG Calapan – Calangatan 69 kV Transmission Line: ST-DC, 1-795 MCM ACSR, 4.5 km
- Calapan "cut-in" to NPC SPUG Calapan – Naujan 69 kV Transmission Line: ST-DC, 1-795 MCM ACSR, 4.0 km

Stage 2:

- Calapan – Magsaysay 500 kV Transmission Backbone, 4-410 mm^2 TACSR, ST-DC, 133.1 km
- Magsaysay "cut-in" to San Jose – NPC OMCPC 69 kV Transmission Line, 1-795 MCM ACSR, ST-DC, 20.9 km

5.2 LUZON PROJECTS FOR 2031–2040

Projects planned for the 2031-2040 period will continue to prioritize the development of transmission facilities necessary to integrate additional RE projects and support the long-term growth of the Luzon Grid.

Major 500 kV transmission corridors will be developed in Northern Luzon through the Bolo – Balaoan – Laoag (Burgos) 500 kV Transmission Line Project and the Nagsaag – Santiago – Kabugao 500 kV Transmission Line Project, facilitating the connection of large-scale RE resources in the region. In Southern Luzon, the 500 kV network will be extended to the Island of Mindoro through the completion of the BMIBP Stage 2. Additional 500 kV substations will also be established in Palauig, Zambales; Bugallon, Pangasinan; San Isidro, Nueva Ecija; Baras, Rizal; Sta. Maria, Laguna; and Tagkawayan, Quezon. Moreover, the Northern Luzon 230 kV Loop will be implemented to further enhance network resiliency and operational flexibility.

To strengthen the transmission network within Metro Manila, the completion of the Metro Manila 500 kV Backbone Loop through the Taguig – Silang 500 kV Transmission Line Project is essential. This will be complemented by the development of additional 230 kV transmission corridors, particularly through the Taguig – Taytay 230 kV Transmission Line Project. Furthermore, the 230 kV network in the southern portion of Metro Manila will be reinforced through the development of the Pasay 230 kV Substation.

Outside Metro Manila, the development of new 230 kV drawdown substations, along with the expansion and upgrading of 69 kV transmission facilities, will be undertaken to address forecasted load growth and improve system reliability across the regions.

Lastly, the interconnection of the islands of Marinduque and Catanduanes will be realized through the QMIP and the CCIP, respectively, providing these islands with access to a more reliable and resilient power supply from the main Luzon Grid.



Figure 5.7: North Luzon Transmission Outlook for 2031-2040



Figure 5.8: Central Transmission Outlook for 2031-2040



Figure 5.9: Metro Manila Transmission Outlook for 2031-2040



Figure 5.10: South Luzon Transmission Outlook for 2031-2040



Figure 5.11: Bicol Regional Transmission Outlook for 2031-2040

Table 5.2: List of Luzon transmission projects for the period 2031-2040

TRANSMISSION LINE

500 kV PROJECTS

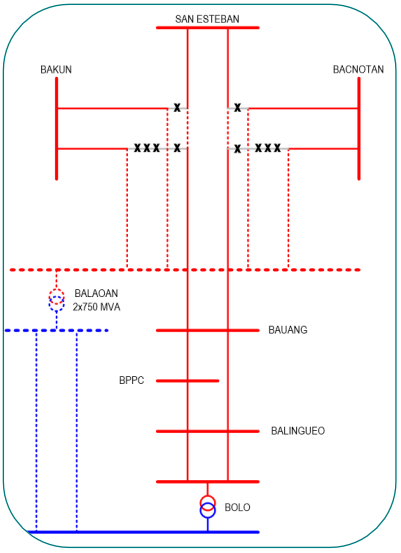
1. Bolo – Balaoan 500 kV Transmission Line
La Union, Pangasinan

Driver	Status	Project Cost	ETC
Generation Entry	ERC-Approved CEPNS	89,865 Mn	Aug 2035

Need / Justification:
- To accommodate the entry of the proposed 500 MW COHECO Badeo Pumped-Storage HEPP in Benguet
- To address the forecasted load growth in Ilocos Region

Substation Components:
- Balaoan 500 kV SS: 2x750 MVA 500/230 kV Power Transformer, 20-500 kV PCB and associated equipment, 21-230 kV PCB and associated equipment, 4x90 MVAR, 500 kV Shunt Reactor, 2x60 MVAR, 500 kV Line Reactor, 3x100 MVAR, 230 kV Capacitor
- Bolo 500 kV SS: 3-500 kV PCB and associated equipment

Transmission Line Components:
- Bolo – Balingueo 500 kV TL: ST-DC, 4-410 mm2 TACSR/AS, 53.2 km (2x4,234 MW).
- Balingueo – Balaoan 500 kV TL: ST-DC, 4-410 mm2 TACSR/AS, 130 km (2x4,234 MW).
- Bacnotan – Balaoan 230 kV TL: ST-DC, 1-795 MCM, ACSR, 11 km (2x1,148 MW)
- Balaoan – Bakun 230 kV TL: ST-DC, 1-795 MCM, ACSR, 13.7 km (2x287 MW)
- Balaoan Bus-in Bauang – San Esteban 230 kV TL: ST-DC, 1-795 MCM, ACSR, 2x0.6 km (2x287 MW).

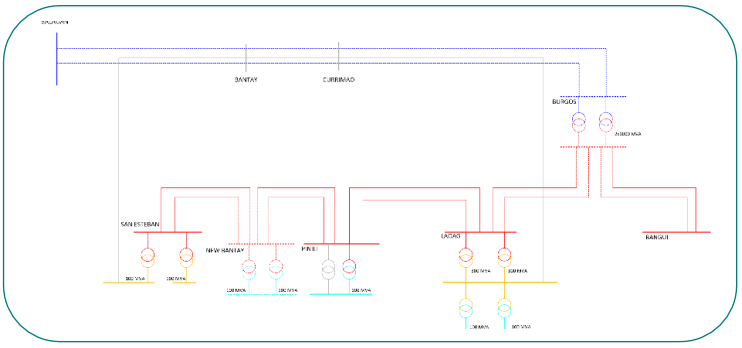


2. Balaoan – Laoag (Burgos) 500 kV Transmission Line
La Union, Ilocos Norte

Driver	Status	Project Cost	ETC
Generation Entry	ERC-Approved CEPNS	99,385 Mn	Mar 2036

Need / Justification:
- To accommodate the entry of wind farm and Solar PV projects in the Province of Ilocos Norte
- To accommodate incoming RE plants

Substation Components:
- Burgos 500 kV SS: 2x1,000 MVA, 500/230 kV Power Transformer, 3x90 MVAR 500 kV Shunt Reactor, 2x90 MVAR 500 kV Line Reactor, 11-500 kV PCB and associated equipment,
- Burgos 230 kV SS: 2x100 MVAR 230 kV Capacitor Bank and associated equipment, 12-230 kV PCB and associated equipment
- New Bantay 230 kV SS: 2x100 MVA, 230/69 kV Power Transformer, 10-230 kV PCB and Associated equipment, 7-69 kV PCB and associated equipment



Transmission Line Components:
- Balaoan – Burgos 500 kV TL: ST-DC, 4-410 mm2 TACSR, 219 km (2x4,234 MW).
- Burgos "Bus-in" to Laoag – Bangui 230 kV TL: ST-DC, 2-795 MCM ACSR/
- AS, 5 km (2x573 MW).
- Bantay "Bus-in" to San Esteban – Pinili 230 kV TL: ST-DC, 1-795 MCM ACSR, 2 km (2x287 MW).

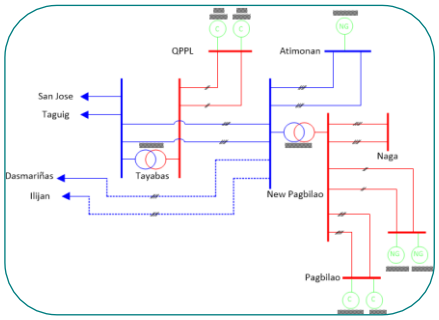
3. Pagbilao – Tayabas 500 kV Transmission Line
Quezon Province

Driver	Status	Project Cost	ETC
Generation Entry	ERC-Approved CEPNS	8,721 Mn	Jun 2035

Need / Justification:
- To allow the connection of the 2x1280 MW Atimonan Natural Gas-Fired Power Plant of Atimonan One Energy Corporation to the Luzon Grid.

Substation Components:
Pagbilao 500 kV SS: 4-500 kV PCB and 4-230 kV PCB and associated equipment, 1x30 MVAR Line Reactor and associated equipment

Transmission Line Components:
- Dasmarinas/Ilijan 500 kV TL Extension: ST-DC, 4-795 MCM ACSR, 21 km (2x2,494 MW).
- Naga 230 kV TL Extension: ST-DC, 4-795 MCM ACSR, 1.5 km (2x1,148 MW).



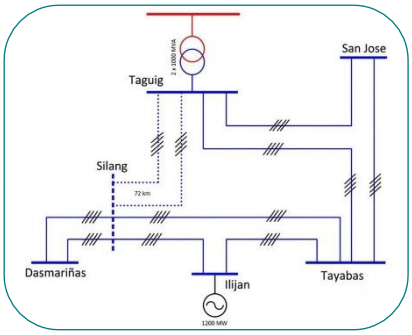
4. Taguig – Silang 500 kV Transmission Line
Cavite, Metro Manila

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	24,755 Mn	Jun 2038

Need / Justification:
- To address the overloading of San Jose – Tayabas 500 kV TL and provide new transmission corridor that supplies the loads in Metro Manila
- To provide reliability in Metro Manila 500 kV Backbone

Substation Components:
Silang 500 kV SS: 4-500 kV PCB and associated equipment

Transmission Line Components:
Taguig – Silang 500 kV TL: ST-DC, 4-410 mm2 TACSR, 72 km (2x4,234 MW).



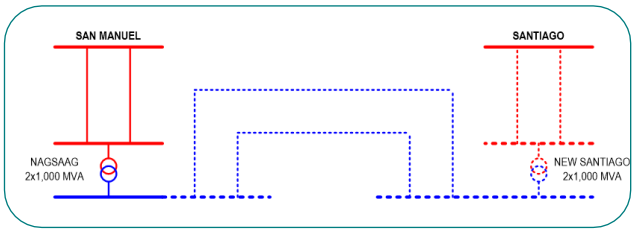
5. Nagsaag – Santiago 500 kV Transmission Line
Isabela, Pangasinan

Driver	Status	Project Cost	ETC
Generation Entry	ERC-Approved CEPNS	56,582 Mn	Dec 2034

Need / Justification:
- To cater for the incoming hydro, geothermal, and solar power plant generation capacities in the Provinces of Ifugao, Kalinga, and Apayao
- To address the overloading of Santiago – Bayombong – Ambuklao 230 kV TL

Substation Components:
- Santiago 500 kV SS: 2x1,000 MVA 500/230 kV Power Transformer, 2x60 MVAR 500 kV Line Reactor, 2x90 MVAR 500 kV Shunt Reactor, 2x100 MVAR 230 kV Capacitor, 10-500 kV PCB and associated equipment, 22-230 kV PCB and associated equipment
- Nagsaag 500 kV SS: 4-500 kV PCB and associated equipment
- Old Santiago 230 kV SS, 2-230 kV PCB and associated equipment

Transmission Line Components:
- Nagsaag – Santiago 500 kV TL: ST-DC, 4-410 mm2 TACSR, 140 km (2x4,234 MW).
- New Santiago SS 230 kV tie-line: ST-DC, 4-795 MCM ACSR, 1km (2x1,148 MW).



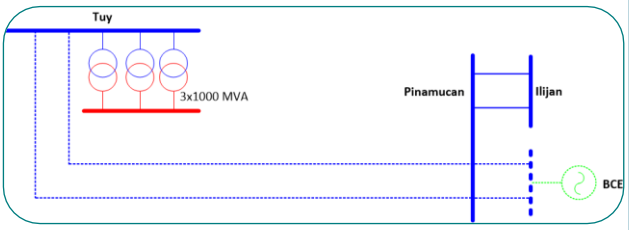
6. Pinamucan – Tuy 500 kV Transmission Line
Batangas

Driver	Status	Project Cost	ETC
Generation Entry	ERC-Approved CEPNS	21,085 Mn	Jun 2035

Need / Justification:
- To provide a new transmission corridor that will deliver bulk generation of power from Batangas to Metro Manila
- To accommodate the entry of new generation plants that will connect to Pinamucan 500/230 kV SS

Substation Components:
- Pinamucan 500 kV SS: 4-500 kV PCB and associated equipment
- Tuy 500 kV SS: 3-500 kV PCB and associated equipment

Transmission Line Components:
- Pinamucan – Tuy 500 kV TL: ST-DC, 4-795 MCM ACSR, 60 km (2x2,494 MW).



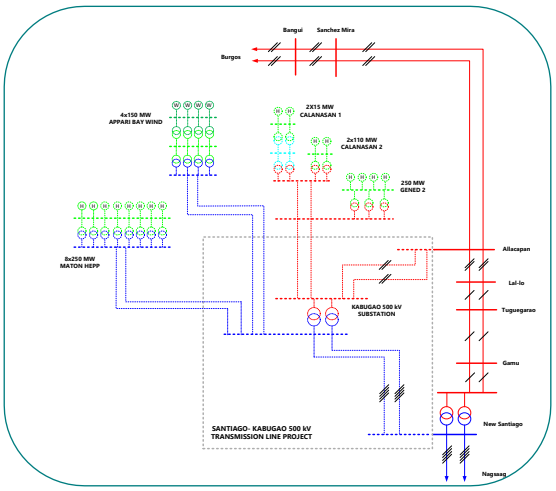
7. Santiago – Kabugao 500 kV Transmission Line
Kabugao

Driver	Status	Project Cost	ETC
Generation Entry	Awaiting ERC Approval	126,590 Mn	Sep 2036

Need / Justification:
- To accommodate the entry of proposed Hydro Plants in Apayao and RE projects in Cagayan

Substation Components:
- Kabugao 500 kV SS: 2x1,000 MVA 500/230 kV Power Transformer, 2x60 MVAR, 500 kV Line Reactor, 3x90 MVAR, 500 kV Shunt Reactor, 17-500 kV PCB and associated equipment, and 10-230 kV PCB
- and associated equipment
- Santiago 500 kV SS: 5-500 kV PCB and associated equipment, 1x90 MVAR, 500 kV Shunt Reactor
- Pudtol (Allacapan) 230 kV SS: 4-230 kV PCB and associated equipment

Transmission Line Components:
- Kabugao – Santiago 500 kV TL: ST-DC, 4-410 mm2 TACSR,160 km.
- Kabugao – Pudtol (Allacapan) 230 kV TL: ST-DC, 2-795 MCM ACSR, 47 km (2x600 MW).



TRANSMISSION LINE

230 kV PROJECTS

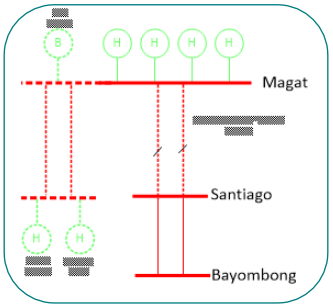
8. Santiago – Magat 230 kV Transmission Line Reconductoring
Isabela

Driver	Status	Project Cost	ETC
Generation Entry System Reliability and Security	ERC-Approved CEPNS	3,860 Mn	Aug 2035

Need / Justification:
To upgrade the existing Santiago – Magat 230 kV TL to accommodate new generation plants that will be connected in Magat 230 kV Switchyard.

Substation Components:
- Santiago 230 kV SS: 3-230 kV PCB and associated equipment
- Magat 230 kV SS: 6-230 kV PCB and associated equipment

Transmission Line Components:
Santiago – Magat 230 kV TL, ST-DC, 1-410 mm² STACIR, 14.5 km (2x574 MW)



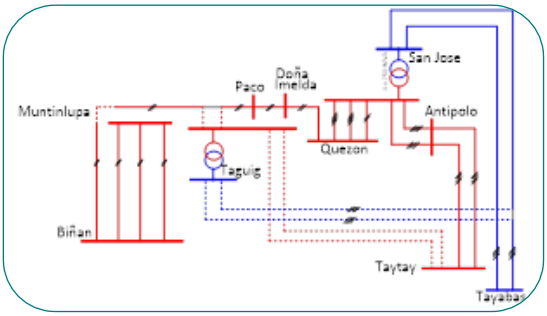
9. Taguig – Taytay 230 kV Transmission Line
Rizal

Driver	Status	Project Cost	ETC
Load Growth System Reliability and Security	ERC-Approved CEPNS	4,355 Mn	Jun 2037

Need / Justification:
To address the overloading of the Taguig-Paco 230 kV TL segment during N-1 contingency under maximum south generation condition specifically with the incoming generating plants in the provinces of Batangas and Quezon.

Substation Components:
Taytay 230 kV SS: 6-230 kV PCB and associated equipment

Transmission Line Components:
Taguig – Taytay 230 kV TL: SP-DC, 2-610 mm² TACSR, 10 km (2x1,227 MW)



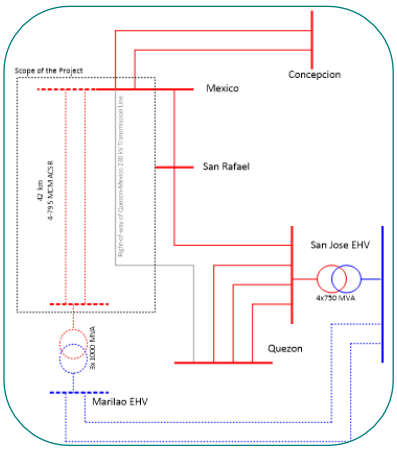
10. Marilao – Mexico 230 kV Transmission Line
Pampanga, Bulacan

Driver	Status	Project Cost	ETC
System Reliability and Security	ERC-Approved CEPNS	12,097 Mn	Jun 2035

Need / Justification:
To address the overloading of Quezon – Mexico 230 Line during N-1 contingency and maximum generation dispatch

Substation Components:
- Marilao 230 kV SS: 4-230 kV PCB and associated equipment
- Mexico 230 kV SS: 4-230 kV PCB and associated equipment, 10 ohms series reactor, 230 kV

Transmission Line Components:
Marilao – Mexico 230 kV TL: ST-DC, 4-795 MCM ACSR, 42 km (2x1,148 MW).

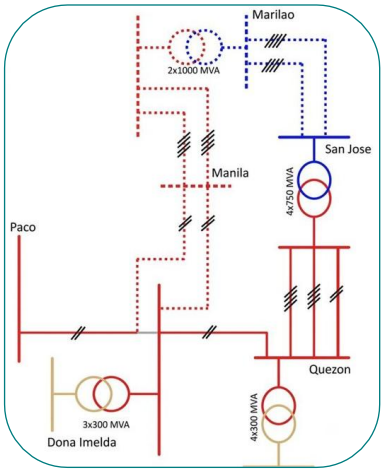


11. Navotas – Doña Imelda 230 kV Transmission Line
Metro Manila

Driver	Status	Project Cost	ETC
Load Growth Generation Entry	ERC-Approved CEPNS	3,314 Mn	Dec 2037

Need / Justification:
To address overloading of Quezon-Doña Imelda 230 kV TL during single outage contingency and to improve voltage regulation within Metro Manila

Transmission Line Components:
Navotas – Doña Imelda 230 kV TL: SP-DC, 2-410 mm2 TACSR/AS, 10.0 km (2x974 MW).



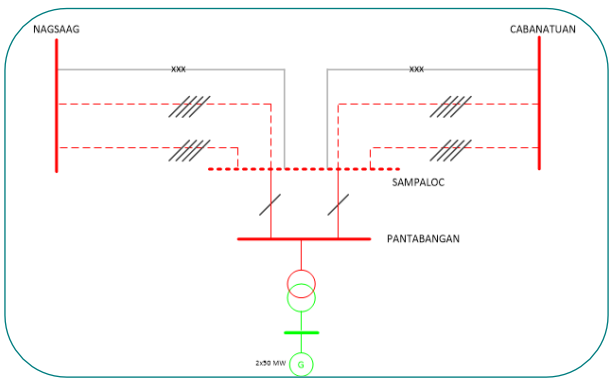
12. Cabanatuan –Sampaloc – Nagsaag 230 kV Transmission Line
Nueva Ecija, Pangasinan

Driver	Status	Project Cost	ETC
System Reliability and Security	ERC-Approved CEPNS	12,097 Mn	Jun 2036

Need / Justification:
To address the overloading and reliability issues of the existing single circuit, Cabanatuan-Sampaloc and Sampaloc-Nagsaag 230 kV TL

Substation Components:
- Sampaloc SS: 4-230 kV PCB and associated equipment
- Nagsaag SS: 6-230 kV PCB and associated equipment
- Cabanatuan SS: 2-230 kV PCB and associated equipment

Transmission Line Components:
- Sampaloc – Nagsaag 230 kV TL: ST-DC, 4-795 MCM ACSR /AS, 68 km (2x1,148 MW).
- Cabanatuan – Sampaloc 230 kV TL: ST-DC, 4-795 MCM ACSR/AS, 53 km (2x1,148 MW).



13. Tower Resiliency of Bicol Transmission Facilities

Camarines Sur, Camarines Norte, Albay, Sorsogon

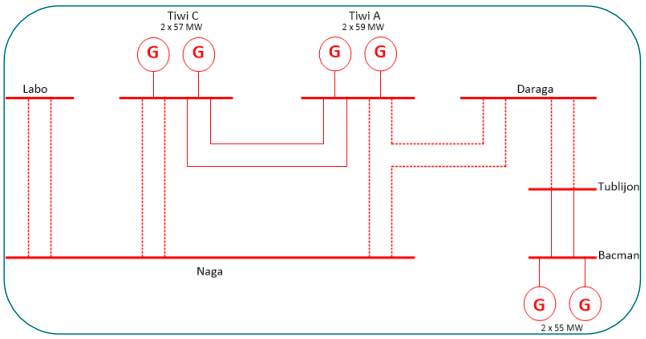
Driver	Status	Project Cost	ETC
System Reliability and Security	ERC-Approved CEPNS	35,051 Mn	Jun 2036

Need / Justification:

- To upgrade all existing steel tower structure of Naga–Tiwi–Daraga, Daraga–Tublijon and Naga–Labo TL that can withstand a wind speed of 300 kph
- To ensure the continuity of power supply in Bicol Region even during typhoons

Transmission Line Components:

- Naga – Tiwi A – Daraga 230 kV TL: ST-DC, 1-410 mm2 STACIR, 105 km (2x574 MW). (Energized)
- Naga – Tiwi C 230 kV TL: ST-DC, 1-410 mm2 STACIR, 60 km (2x574 MW). (Energized)
- Daraga – Tublijon 230 kV TL: ST-DC, 1-410 mm2 STACIR, 35 km (2x574 MW).
- Naga – Labo 230 kV TL: ST-DC, 1-410 mm2 STACIR, 98.5 km (2x574 MW).



14. Bauang – La Trinidad 230 kV Transmission Line Upgrading

La Union, Benguet

Driver	Status	Project Cost	ETC
Load growth System Reliability and Security	ERC-Approved CEPNS	8,434 Mn	Jul 2036

Need / Justification:

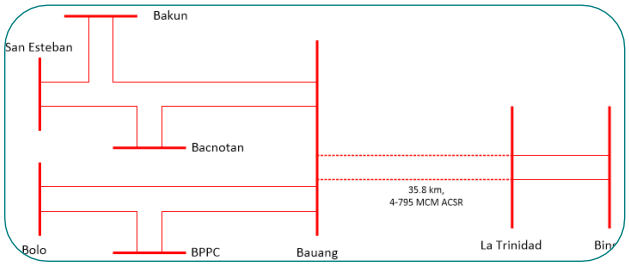
To address the overloading and reliability issue of the old Bauang–La Trinidad 230 kV Line during n-1 contingency and maximum north generation dispatch scenario.

Substation Components:

La Trinidad 230 kV SS: 9-230 kV PCB and associated equipment, 3-69 kV PCB and associated equipment.

Transmission Line Components:

Bauang – La Trinidad 230 kV TL, ST-DC, 4-795 MCM ACSR, 35.8 km (2x1,148 MW).



15. San Jose – San Rafael 230 kV Transmission Line Upgrading Project

Bulacan

Driver	Status	Project Cost	ETC
System Reliability	Awaiting ERC Approval CEPNS	10,406 Mn	Jan 2038

Need / Justification:

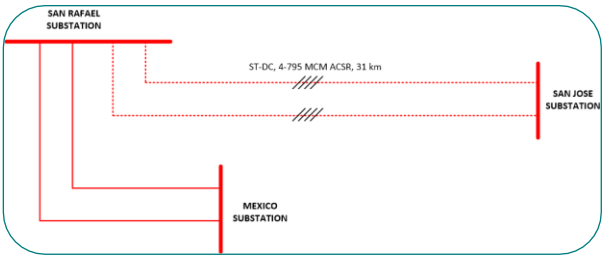
To strengthen the 230 kV transmission corridor in Bulacan and improve the reliability of the existing 230 kV transmission line.

Substation Components:

- San Jose 230 kV SS: 2-230 kV PCB and associated equipment
- San Rafael 230 kV SS: 4-230 kV PCB and associated equipment

Transmission Line Components:

San Jose – San Rafael 230 kV TL: ST-DC, 4-795 MCM ACSR, 28 km (2x1,148 MW).



16. Santiago – Gamu 230 kV Transmission Line Reconductoring Project

Isabela

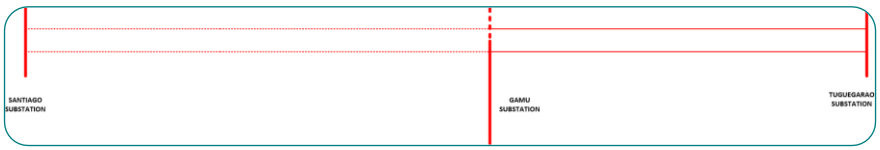
Driver	Status	Project Cost	ETC
Load Growth	Awaiting ERC Approval CEPNS	18,529 Mn	Nov 2037

Need / Justification:

To address the overloading of the existing Gamu-Santiago 230 kV Line due to entry of new generations.

Transmission Line Components:

- Reconductoring of Santiago-Gamu 230 kV TL 1: ST-SC, 1-410 mm2 STACIR, 52 km
- Reconductoring of Santiago-Gamu 230 kV TL 2: ST-SC, 1-410 mm^2 STACIR, 52 km



TRANSMISSION LINE

69 kV PROJECTS

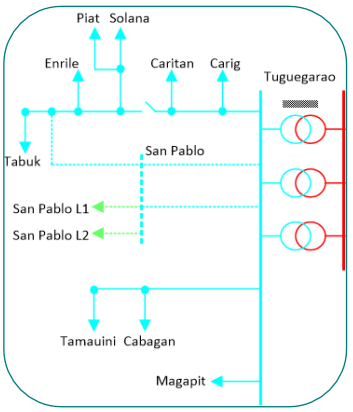
17. Tuguegarao – Enrile 69 kV Transmission Line
Tuguegarao

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	3,196 Mn	Dec 2034

Need / Justification:
- To address the anticipated overloading of the Tuguegarao–Tabuk 69 kV TL brought by the continuous load growth in the franchise area of Cagayan 1 Electric Cooperative, Inc (CAGELCO I) and Kalinga-Apayao Electric Cooperative, Inc. (KAELCO)
- To accommodate the connection of 49.4 MW San Pablo Solar Power Project Phase 1

Substation Components:
- Tuguegarao 69 kV SS: 2-69 kV PCB and associated equipment
- San Pablo 69 kV SY: 8-69 kV PCB and associated equipment

Transmission Line Components:
- Tuguegarao – San Pablo SwS 69 kV TL: SP-DC, 1-795 MCM ACSR, 14 km (2x86 MW).
- San Pablo SwS – Enrile 69 kV TL: SP-SC, 1-795 MCM ACSR, 16 km (1x86 MW).



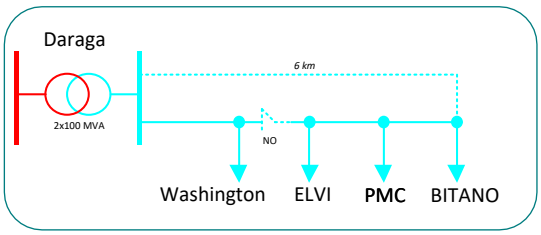
18. Daraga – Bitano 69 kV Transmission Line
Albay

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	864 Mn	Mar 2035

Need / Justification:
- To cater to the load growth of Albay Electric Cooperative (ALECO) and other directly connected industrial and commercial loads in Albay Province
- To address the overloading of the existing Daraga–Washington 69 kV TL

Substation Components:
Daraga SS: 2-69 kV PCB and associated equipment

Transmission Line Components:
Daraga – Bitano 69 kV TL: SP-SC, 1-795 MCM ACSR, 6 km (1x86 MW).



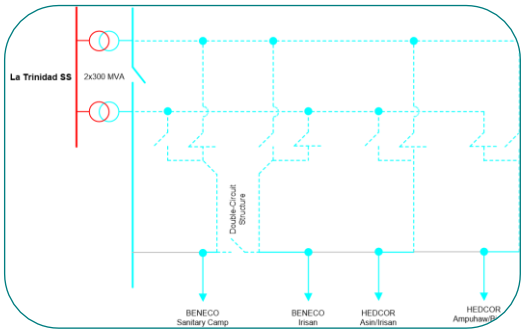
19. La Trinidad – Calot 69 kV Transmission Line
Benguet

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	1,701 Mn	Mar 2032

Need / Justification:
To improve reliability and increase the transfer capacity of the 69 kV TL serving the loads of BENECO's Lamut, Sanitary Camp and Irisan LES, and power generations from HEDCOR's Asin and Ampohaw

Substation Components:
La Trinidad 69 kV SS: 1-69 kV PCB and associated equipment

Transmission Line Components:
La Trinidad – Calot 69 kV TL: ST/SP-DC, 1-795 MCM ACSR/AS, 17 km (2x86 MW)



20. South Luzon 69 kV Transmission Line Upgrading
Batangas, Camarines Norte, Camarines Sur

Driver	Status	Project Cost	ETC
Load Growth	Awaiting ERC Approval CEPNS	15,071 Mn	Jun 2032

Need / Justification:
To relieve the overloading of various 69 kV TL in NGCP's South Luzon Region, and to prevent load dropping and power interruptions during peak loadings.

Transmission Line Components:
- Batangas – Rosario 69 kV TL: ST/SP-SC, 1-160 mm2 STACIR, 20.45 km.

- Batangas – Bauan 69 kV TL: ST/SP-SC, 1-160 mm2 STACIR, 11.44 km.
- Batangas – Taysan 69 kV TL: ST/SP-SC, 1-160 mm2 STACIR, 24 km.
- Calaca – Taal 69 kV TL: ST/SP-SC, 1-160 mm2 STACIR, 10.25 km.
- Tuy – Nasugbu 69 kV TL: ST/SP-SC, 1-160 mm2 STACIR, 12.14 km.
- Lumban – Famy 69 kV TL: ST/SP-SC, 1-160 mm2 STACIR, 18.69 km.
- Lumban – Caliraya 69 kV TL: ST/SP-SC, 1-160 mm2 STACIR, 3.68 km.
- Naga – Libmanan 69 kV TL: ST/SP-SC, 1-160 mm2 STACIR, 29.78 km.
- Naga – Iriga 69 kV TL: ST/SP-SC, 1-160 mm2 STACIR, 15.7 km.
- Naga – Lagonoy 69 kV TL: ST/SP-SC, 1-160 mm2 STACIR, 10.83 km.
- Naga – Tinambac 69 kV TL: ST/SP-SC, 1-160 mm2 STACIR, 7.08 km.
- Daraga – Sorsogon 69 kV TL: ST/SP-SC, 1-160 mm2 STACIR, 11.58 km.
- Daraga – Ligao 69 kV TL: ST/SP-SC, 1-160 mm2 STACIR, 8.82 km.

21. North Luzon 69 kV Transmission Line Upgrading Project

Pangasinan, Isabela, Nueva Ecija, Nueva Viscaya

Driver	Status	Project Cost	ETC
Load Growth	Awaiting ERC Approval	8,616 Mn	Jun 2032

Need / Justification:
To relieve the overloading of various 69 kV TL in NGCP's North Luzon Region, and to prevent load dropping and power interruptions during peak loadings

Transmission Line Components:
- Labrador – Bolinao 69 kV TL: ST/SP-SC, 1-160 mm2 STACIR, 26.68 km.
- Gamu – Cauayan 69 kV TL: ST/SP-SC, 1-160 mm2 STACIR, 5.16 km.
- Santiago – Cauayan 69 kV TL: ST/SP-SC, 1-160 mm2 STACIR, 40.579 km.
- Santiago – Aglipay 69 kV TL: ST/SP-SC, 1-160 mm2 STACIR, 5.032 km.
- Bayombong – Lagawe 69 kV TL: ST/SP-SC, 1-160 mm2 STACIR, 9.71 km.
- Cabanatuan – Fatima 69 kV TL: ST/SP-SC, 1-160 mm2 STACIR, 19.3 km.

SUBSTATION

500 kV PROJECTS

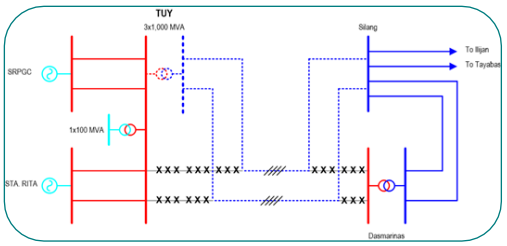
22. Tuy 500/230 kV Substation Project (Stage 2)

Batangas

Driver	Status	Project Cost	ETC
Generation Entry	ERC-Approved CEPNS	8,029 Mn	Dec 2034

Need / Justification:
To accommodate the entry of bulk generation capacity additions in Batangas

Substation Components:
- Tuy 500 kV SS: 3x1,000 MVA 230/69-13.8 kV Power Transformer 8-500 kV PCB and associated equipment 1-230 kV PCB and associated equipment.
- Silang 500 kV SS: 4-500 kV PCB and associated equipment



23. Sta. Maria 500 kV Substation

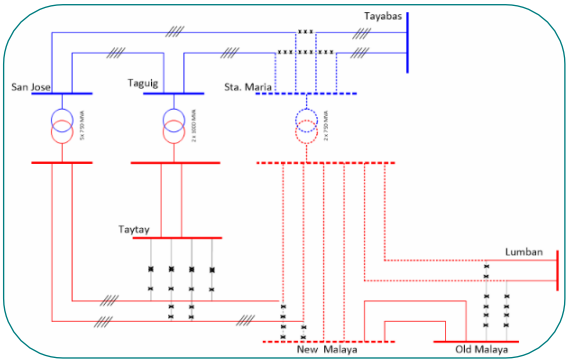
Laguna

Driver	Status	Project Cost	ETC
Generation Entry	ERC-Approved CEPNS	19,902 Mn	Sep 2035

Need / Justification:
To cater bulk RE generation capacity in Quezon, Rizal, and Laguna

Substation Components:
- Sta. Maria SS: 2x750 MVA, 500/230 kV, Power Transformer, 18-500 kV PCB and associated equipment, 18-230 kV PCB and associated equipment
- New Malaya SS Expansion: 2-230 kV PCB and associated equipment

Transmission Line Components:
- Sta. Maria 'Bus-in' to Tayabas – San Jose 500 kV TL: 500 kV, 4-795 MCM ACSR, ST-DC, 2x 1.0 km (2x2,494 MW).
- Sta. Maria – Antipolo 230 kV Line diversion through the Old Malaya –
- Taytay 230 kV Line and the portion Old Malaya – Lumban 230 kV TL: 230 kV, 4-795 MCM ACSR, ST- DC, 3 km



- Swinging of Lines in Malaya and Taytay SS, 230 kV: 4-795 MCM ACSR, ST-DC, 0.5 km (2x1,148 MW).
- Sta. Maria – Lumban 230 kV Line diversion through the portion Old Malaya–Lumban 230 kV TL: 230 kV, 4-795 MCM ACSR, ST-DC, 3 km (2x1,148 MW).
- Sta. Maria – New Malaya 230 kV TL: 230 kV, 4-410 mm2 TACSR, ST-DC, 13.3 km (2x1,948 MW).

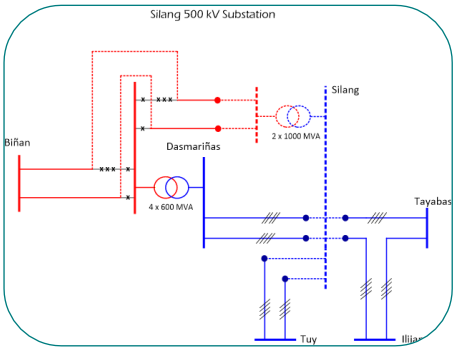
24. Silang 500 kV Substation
Cavite

Driver	Status	Project Cost	ETC
Load growth	ERC-Approved CEPNS	18,208 Mn	Dec 2034

Need / Justification:
- To address the forecasted load growth in Laguna, Cavite, and southern part of Metro Manila
- To address the overloading of the Dasmariñas 500/230 kV SS

Substation Components:
- Silang 500 kV SS: 2x1,000 MVA 500/230 kV Power Transformer and accessories, 10-500 kV PCB and associated equipment, 17-230 kV
- PCB and associated equipment, 230 MVAR, 500 kV Line Reactor 3x100 MVAR, 230 kV Shunt Capacitor

Transmission Line Components:
- Silang 500 kV bus-in TL: ST-DC, 4-795 MCM ACSR, 3 km (2x2,494 MW).
- Tuy 500 kV TL Diversion: ST-DC, 4-410 mm2 TACSR/AS, 4.5 km (2x4,234 MW).
- Biñan 230 kV TL Diversion: ST-DC, 4-410 mm2 TACSR/AS, 4.5 km (2x1,948 MW).



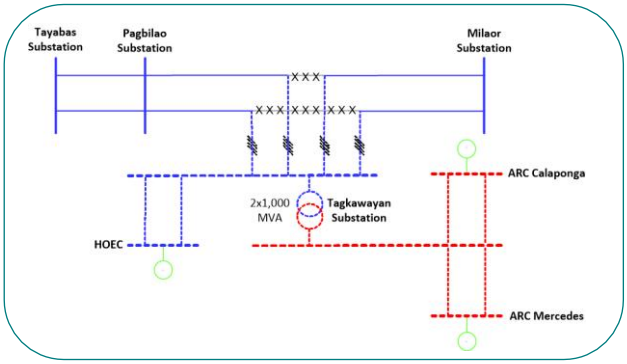
25. Tagkawayan 500 kV Substation
Quezon Province

Driver	Status	Project Cost	ETC
Generation Entry	ERC-Approved CEPNS	18,961 Mn	Jun 2035

Need / Justification:
To accommodate the proposed OSW projects in the Provinces of Camarines Norte and Quezon

Substation Components:
- Tagkawayan 500 kV SS: 2x1,000 MVA, 500/230 kV Power Transformer, 2x90 MVAR, 500 kV Shunt Reactor and Accessories 12-500 kV PCB and Associated equipment, 10-230 kV PCB and associated equipment
- Pagbilao 500 kV SS: 2-500 kV PCB and Associated equipment
- Tayabas 230 kV SS: 14-230 kV PCB and Associated equipment

Transmission Line Components:
Tagkawayan Bus-in to Pagbilao –Milaor 500 kV Line, ST-DC 4-795 MCM ACSR, 1.0 km (2x2,494 MW).



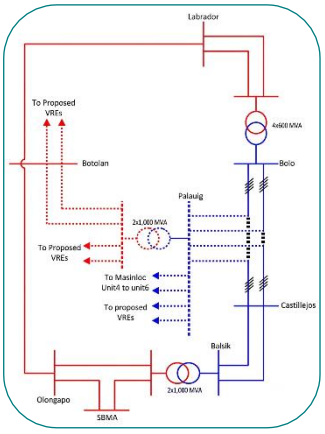
26. Palauig 500 kV Substation
Zambales

Driver	Status	Project Cost	ETC
Generation Entry	ERC-Approved CEPNS	23,398 Mn	Jun 2036

Need / Justification:
To accommodate the connection of conventional and RE power projects in Zambales

Substation Components:
- Palauig 500 kV SS: 2x1,000 MVA Power Transformer, 18-230 kV PCB and Associated equipment, 2x90 MVAR, 500 MVAR Shunt Reactor
- Palauig 230 kV SS: 13-230 kV PCB and Associated equipment, 3x100 MVAR, 230 kV Shunt Capacitor
- Botolan 230 kV SS: 2-230 kV PCB and Associated equipment

Transmission Line Components:
- Palauig 'bus-in' along Castillejos – Bolo 500 kV TL: ST-DC, 4-410 mm^2 TACSR, 2x1.0 km (2x4,234 MW)
- Botolan – Palauig 230 kV TL: ST-DC, 4-795 MCM ACSR, 18.3 km (2x1,148 MW)



27. Luzon Connection Requirements for Power Plant Project 4

Various provinces in Luzon

Driver	Status	Project Cost	ETC
Generation Entry	Awaiting ERC Approval CEPNS	16,741 Mn	Apr 2035

Need / Justification:
To accommodate proposed power plants in the Luzon Grid

Substation Components:

- Abuyog 230 kV SS: 4-230 kV PCB and associated equipment
- Labo 69 kV SS: 2-69 kV PCB and associated equipment
- Laoag 115 kV SS: 1-115 kV PCB and associated equipment
- Magat 230 kV SS: 2-230 kV PCB and associated equipment
- Marilao 500 kV SS: 2-500 kV PCB and associated equipment
- Masiit 230 kV SS: 6-230 kV PCB and associated equipment
- Milaor 230 kV SS: 2-230 kV PCB and associated equipment
- Nagsaag 500 kV SS: 2-500 kV PCB and associated equipment, 2-230 kV PCB and associated equipment
- Pagbilao 230 kV SS: 16-230 kV PCB and associated equipment
- Pinili 230 kV SS: 4-230 kV PCB and associated equipment
- San Simon 230 kV SS: 4-230 kV PCB and associated equipment
- Sta. Maria 500 kV SS: 4-500 kV PCB and associated equipment, 4-230 kV PCB and associated equipment
- Tagkawayan 500 kV SS: 2-500 kV PCB and associated equipment
- Tayabas 230 kV SS: 4-230 kV PCB and associated equipment
- Tuy 230 kV SS: 13-230 kV PCB and associated equipment

28. Baras 500 kV Substation Project

Rizal

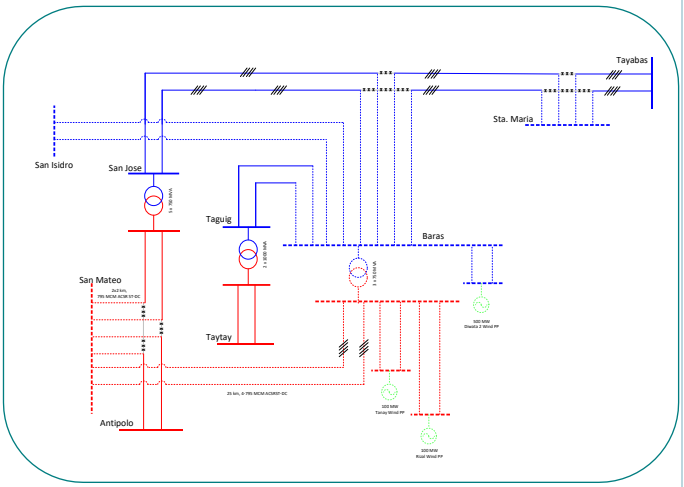
Driver	Status	Project Cost	ETC
Generation Entry System Reliability	Awaiting ERC Approval CEPNS	33,459 Mn	Sep 2038

Need / Justification:
To accommodate the potential renewable energy plants in the province of Rizal to supply the loads of Metro Manila.

Substation Components:
Baras 500 kV SS: 2x1,000 MVA, 500/230 kV Power Transformer, 14-500 kV PCB and associated equipment, 14-230 kV PCB and associated equipment

Transmission Line Components:

- Taguig 500 kV TL Diversion to Baras SS: ST-DC, 4-795 MCM ACSR, 1.5 km (2x2494 MW)
- San Jose 500 kV TL Diversion to Baras SS: ST-DC, 4-795 MCM ACSR, 1 km (2x2494 MW)
- Tayabas/Sta. Maria 500 kV TL Diversion to Baras SS: ST-DC, 4-795 MCM ACSR, 5 km (2x2494 MW)
- Baras – San Mateo 230 kV TL: ST- DC, 4-795 MCM ACSR, 25 km (2x1148 MW)



29. Bugallon 500 kV Substation Project

Pangasinan

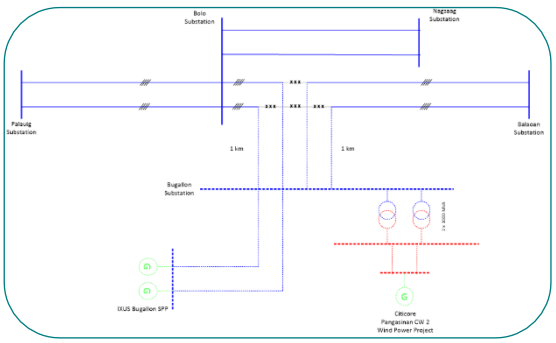
Driver	Status	Project Cost	ETC
Generation Entry	Awaiting ERC Approval CEPNS	18,099 Mn	Jul 2038

Need / Justification:
To accommodate the proposed renewable energy capacities in Pangasinan.

Substation Components:
Bugallon 500 kV SS: 2x1,000 MVA, 500/230 kV Power Transformer, 4x200 MVAR Shunt Capacitor, 14-500 kV PCB and associated equipment, 10-230 kV PCB and associated equipment

Transmission Line Components:

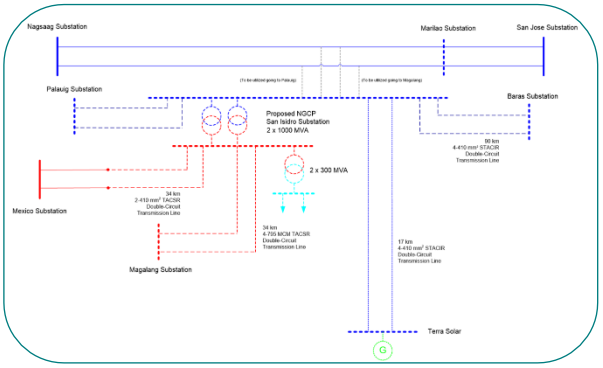
- Bolo – Bugallon 500 kV "Bus-in" TL: ST-DC, 4-410 mm² TACSR, 1.0 km (2x4234 MW)
- Balaoan – Bugallon 500 kV "Bus-in" TL: ST-DC, 4-410 mm² TACSR, 1.0 km (2x4234 MW)



30. San Isidro 500 kV Substation Project
Nueva Ecija

Driver	Status	Project Cost	ETC
Generation Entry	Awaiting ERC Approval CEPNS	102,419 Mn	Aug 2040

Need / Justification:
The project involves the development of a new drawdown substation at San Isidro, Nueva Ecija to accommodate the potential generation and address the load growth in Central Luzon.



Substation Components:
Stage 1:
- San Isidro 500 kV SS: 10-500 kV PCB and associated equipment

Stage 2:
- San Isidro 500 kV SS: 2x1,000 MVA, 500/230 kV Power Transformer, 2-500 kV PCB and associated equipment,
- San Isidro 230 kV SS: 2x300 MVA, 230/69 kV Power Transformer, 12-230 kV PCB and associated equipment, 6-69 kV PCB and associated equipment
- Baras 500 kV SS: 2-500 kV PCB and associated equipment

Transmission Line Components:
Stage 1:
- San Isidro "Bus-in" to Nagsaag –San Jose 500 kV TL: ST-DC, 4-795 MCM ACSR, 4.6 km (2x2494 MW)
- San Isidro "Bus-in" to Nagsaag – San Jose 500 kV TL: ST-DC, 4-410 mm² TACSR, 4.6 km (2x4234 MW)

Stage 2:
- San Isidro – Baras 500 kV TL: ST-DC, 4-410 mm² TACSR, 90 km (2x4234 MW)
- San Isidro – Magalang 230 kV TL: ST-DC, 2-410 mm² TACSR, 34 km (2x974 MW)
- San Isidro diversion to Mexico 230 kV TL: ST-DC, 2-410 mm² TACSR, 34 km (2x974 MW)
- San Isidro – Gapan 69 kV TL/ San Isidro – San Isidro 69 kV TL: SP/ST-DC, 1-410 mm² TACSR, 3 km (2x146 MW)

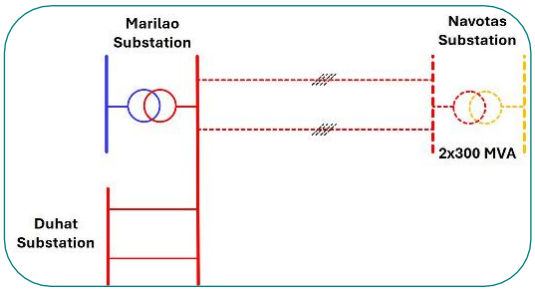
SUBSTATION

230 kV PROJECTS

31. Navotas 230 kV Substation
Navotas

Driver	Status	Project Cost	ETC
Load Growth System Reliability and Security	ERC-Approved CEPNS	26,201 Mn	Dec 2032

Need / Justification:
- To provide new 230/115 drawdown substation in Metro Manila
- To cater to the load growth in Sector 1 of MERALCO and serves as a connection point for power plants in the area such as the TMO and Millennium Power Plants.



Substation Components:
Navotas 230 kV SS: 2x300 MVA, 230/115-13.8 kV Power Transformer, 9-230 kV PCB (GIS) and associated equipment, and 15-115 kV PCB (GIS) and associated equipment

Transmission Line Components:
- Navotas – Marilao 230 kV TL, SP/ST-DC, 4-795 MCM ACSR, 20.47 km
  Tunneling: 2 x 1C 2500 mm² XLPE cables, 1.65 km,
- Submarine: 2 x 1C 2500 mm² submarine cable, 3.96 km

32. Castillejos 230 kV Substation
Zambales

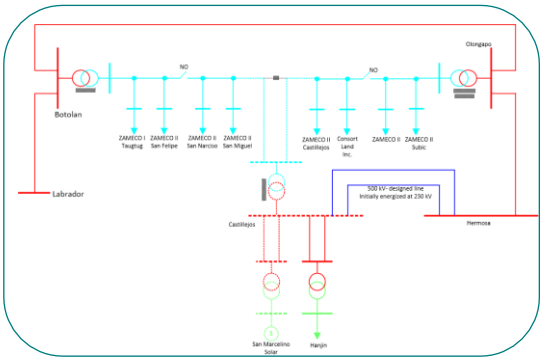
Driver	Status	Project Cost	ETC
Load Growth System Reliability and Security	ERC-Approved CEPNS	3,975 Mn	Aug 2031

Need / Justification:
- To cater for the load growth in Zambales
- To serve as an alternative source to loads of Botolan and Olongapo 230 kV Substations
- To serve as the connection point of various RE projects in the area

Substation Components:
Castillejos 230 kV SS: 2x100 MVA, 230/69 kV Power Transformer, 18-230 kV PCB, 6-69 kV PCB and associated equipment.

Transmission Line Components:

- Hermosa – Castillejos 500 kV Line Extension: ST-DC, 4-410 mm^2 TACSR/AS, 6 km (2x4,234 MW). (Energized)
- Hanjin 230 kV Line Extension: ST-DC, 1-795 MCM ACSR, 7 km (2x287 MW).
- Castillejos 69 kV Line Extension: SP/ST-DC, 1-410 mm^2 TACSR/AS, 3 km (2x146 MW).

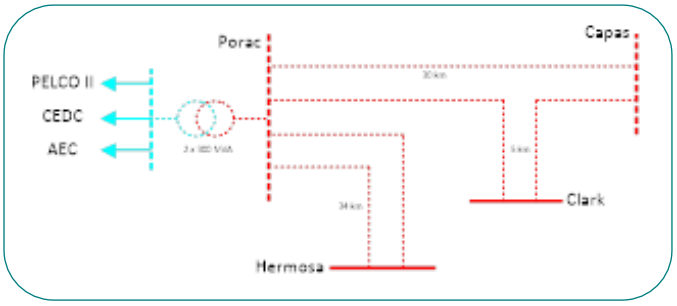


33. Porac 230 kV Substation
Pampanga

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	11,763 Mn	Nov 2031

Need / Justification:

- To support the load growth and development in Pampanga
- To establish the 230 kV backbone loop from Hermosa in Bataan to Concepcion in Tarlac
- To provide more direct access to the generation hub in Bataan



Substation Components:

- Porac 230 kV SS: 2x300 MVA 230/69 kV Power Transformer, 3x100 MVAR, 230 kV Shunt Capacitor, 13-230 kV PCB, 18-69 kV PCB and associated equipment.
- Hermosa 230 kV SS (Expansion): 2- 230 kV PCB and associated equipment
- Clark 230 kV SS (Expansion): 2x100 MVAR, 230 kV Shunt Capacitor, 8-230 kV PCB and associated equipment
- Capas 230 kV SS (Expansion), 4-230 kV PCB and associated equipment

Transmission Line Components:

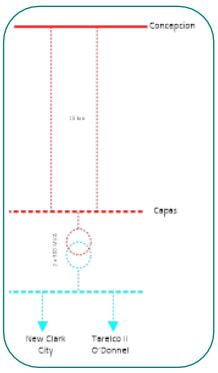
- Hermosa – Porac 230 kV TL: ST-DC, 4-795 MCM ACSR, 28.5 km (2x1,148 MW).
- Porac – Clark 230 kV T/L: ST-DC, 4-795 MCM ACSR, 28 km
- Capas – Clark 230 kV T/L, ST-DC 4-795 MCM ACSR, 30km
- Clark 230 kV TL Extension: ST-DC, 4-795 MCM ACSR, 5 km (2x1,148 MW).

34. Capas 230 kV Substation
Tarlac

Driver	Status	Project Cost	ETC
Load Growth Generation Entry	ERC-Approved CEPNS	10,703 Mn	Jun 2035

Need / Justification:

- To accommodate the connection of New Clark City and address the load growth in the franchise area of TARELCO I, TARELCO II, Tarlac Electric Inc. (TEI)
- To address the overloading of 230/69 kV Power Transformers in Concepcion SS



Substation Components:

- Concepcion 230 kV SS: 4-230 kV PCB and associated equipment.
- Capas 230 kV SS: 2x300 MVA 230/69-13.8 kV Power Transformer 3x100 MVAR 230 kV Capacitor 11-230 kV PCB and associated equipment 14-69 kV PCB and associated equipment

Transmission Line Components:

- Concepcion – Capas 230 kV TL ST-DC, 4-795 MCM ACSR, 15 km (2x1,148 MW).

35. Dasol 230 kV Substation
Zambales

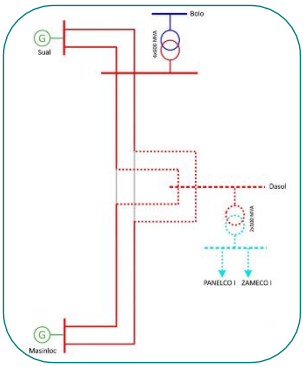
Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	7,773 Mn	Jun 2035

Need / Justification:

To cater to load growth in Pangasinan I Electric Cooperative (PANELCO I) and Zambales I Electric Cooperative (ZAMECO I) franchise areas

Substation Components:

Dasol 230 kV SS: 2x100 MVA, 230/69 kV Power Transformer, 10-230 kV PCB and associated equipment, 4-69 kV PCB and associated equipment



Transmission Line Components:

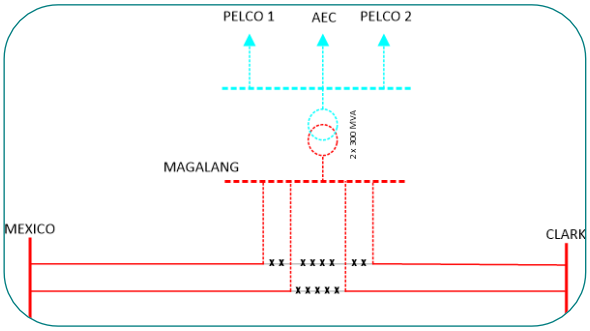
- Dasol 'Bus-in' to Masinloc –Kadampat 230 kV TL: ST-DC, 4-795 MCM ACSR, 1x2 km (2x1148 MW).
- Dasol – Dasol (PANELCO I) 69 kV TL: SP-SC, 1-795 MCM, 17.7 km (1x86 MW).
- Dasol – Sta. Cruz 69 kV TL: SP-SC, 1-795 MCM, 17.3 km (1x86 MW).

36. Magalang 230 kV Substation
Pampanga

Driver	Status	Project Cost	ETC
Generation Entry	ERC-Approved CEPNS	7,517 Mn	Dec 2034

Need / Justification:

- To provide an additional drawdown SS in the province of Pampanga
- To address the anticipated load growth of AEC, PELCO I, and PELCO II
- To accommodate the connection of 96.236 MWac Sapang Balen 1 and 463.995 MWac Sapang Balen 2 Solar Power Plant Projects of Sapang Balen Solar Sustainable Energy Corporation (SBSSEC)



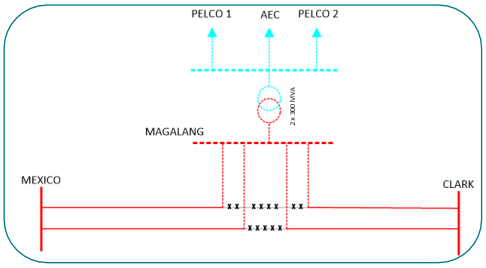
Substation Components:
Magalang SS: 2x300 MVA 230/69 kV Power Transformer, 12-230 kV PCB and associated equipment, 10-69 kV PCB and associated equipment, 2x100 MVAR, 230 kV Shunt Capacitor

Transmission Line Components:
Magalang 'bus-in' along Mexico – Concepcion 230 kV TL: ST-DC, 230 kV, 2-410 mm^2 TACSR, 3 km (2x974 MW).

37. Luzon Connection Requirements for Power Plant Project 2
Various provinces in Luzon

Driver	Status	Project Cost	ETC
Generation Entry System Reliability	ERC-Approved CEPNS	8,541 Mn	Jan 2035

Need / Justification:
To accommodate proposed power plants in the Luzon Grid



Substation Components:

- Bay 230 kV SS: 1-230 kV PCB and associated equipment, 2-69 kV PCB and associated equipment
- Pagbilao 230 kV SS: 8-230 kV PCB and associated equipment
- Tayabas 230 kV SS: 8-230 kV PCB and associated equipment
- Pinamucan 500 kV SS: 4-500 kV PCB and associated equipment
- Pinili 230 kV SS: 4-230 kV PCB and associated equipment
- Dasol kV 230 SS: 8-230 kV PCB and associated equipment
- Malaya 230 kV CS: 4-230 kV PCB and associated equipment
- Sampaloc 230 kV SS: 4-230 kV PCB and associated equipment

38. Malaya 230 kV Collector Station
Rizal

Driver	Status	Project Cost	ETC
Generation Entry	ERC-Approved CEPNS	6,662 Mn	Dec 2034

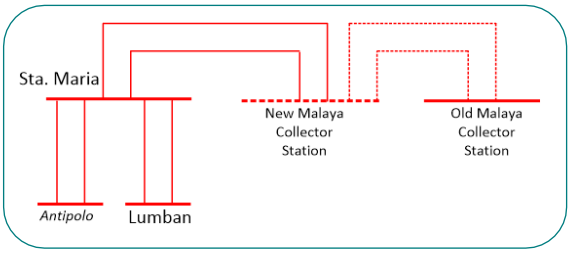
Need / Justification:
To accommodate incoming RE power plant connections

Substation Components:
Malaya Collector Station: 14-230 kV PCB and Associated equipment, 6-115 kV PCB and associated equipment

Transmission Line Components:

- Malaya 230 kV Collector Station to Old Malaya 230 kV Transmission Line, ST-DC, 4-795 MCM ACSR,0.5 km
- Lumban to Malaya 230 kV Collector Station 230 kV Transmission Line Extension, ST- DC, 4-795 MCM, 0.5 km

- Malaya 115 kV Collector Station to Old Malaya 115 kV Transmission Line, SP-DC, 2-795 MCM, 0.5 km



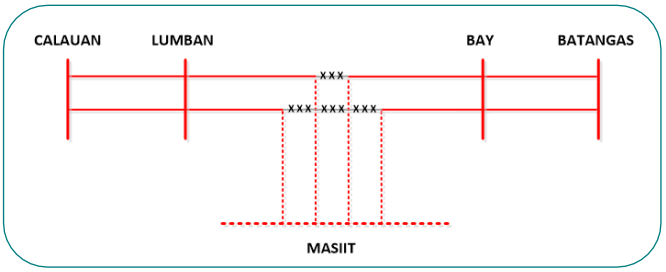
39. Masiit 230 kV Substation Project
Laguna

Driver	Status	Project Cost	ETC
Load Growth System Reliability	ERC-Approved CEPNS	5,355 Mn	Jun 2034

Need / Justification:
- To accommodate the generation capacities in the province. These generation capacities include the proposed Floating Solar Power plants in Laguna Bay, including BESS.
- To provide new substation connections for RE plants

Substation Components:
Masiit 230 kV Collector Station: 16-230 kV PCB and associated equipment

Transmission Line Components:
Masiit 'bus-in' along Lumban – Bay 230 kV TL: 4-795 MCM ACSR, ST-DC, 1 km (2x287 MW)



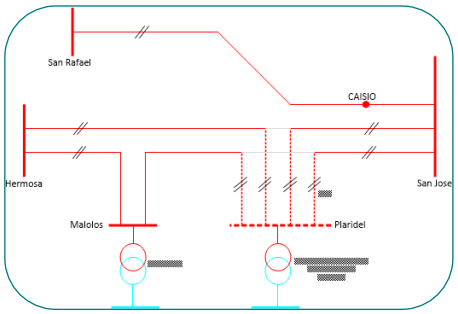
40. Plaridel 230 kV Substation
Nueva Ecija

Driver	Status	Project Cost	ETC
Load Growth System Reliability and Security	ERC-Approved CEPNS	4,534 Mn	Dec 2034

Need / Justification:
To address the continues load growth in MERALCO's Bulacan and provides N-1 contingency provision to the 230/69 kV Power Transformers at San Rafael and Malolos Substations.

Substation Components:
Plaridel 230 kV SS: 2x100 MVAR 230 kV Capacitor 12-230 kV PCB and associated equipment

Transmission Line Components:
Plaridel 230 kV bus-in 230 kV TL: ST-DC, 2-795 MCM ACSR, 1.0 km (2x573 MW)



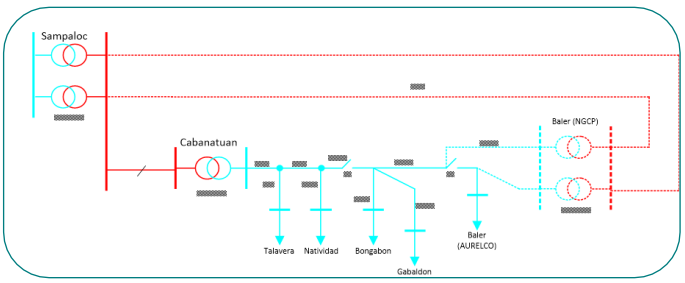
41. Baler 230 kV Substation
Nueva Ecija, Aurora

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	16,704 Mn	Jun 2036

Need / Justification:
- To address the anticipated overloading of the Cabanatuan–Baler 69 kV TL
- To provide drawdown substation in the province of Aurora

Substation Components:
- Baler kV SS: 2x100 MVA 230/69 kV Power Transformer, 11-230 kV PCB and associated equipment, 4-69 kV PCB and associated equipment, 3x25 MVAR Shunt Capacitor, 2x25 MVAR Shunt Reactor
- Sampaloc 230 kV SS: 2-230 kV PCB and associated equipment

Transmission Line Components:
- Sampaloc – Baler (NGCP) 230 kV TL: ST-DC, 2-795 MCM ACSR, 57 km (2x573 MW).
- Baler (NGCP) – Baler (AURELCO) 69 kV TL: SP-DC, 1-795 MCM CSR, 1.78 km (2x86 MW).



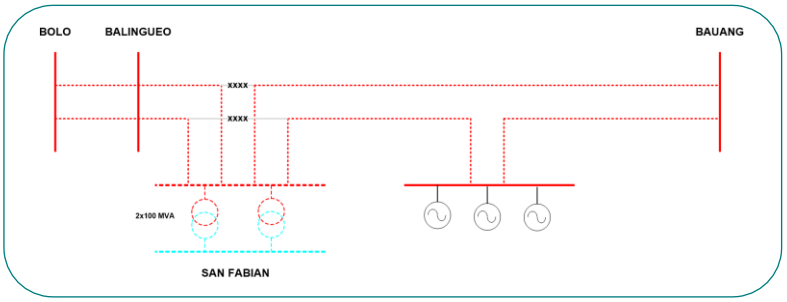
42. San Fabian 230 kV Substation
Pangasinan

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	9,118 Mn	Dec 2035

Need / Justification:
- To cater the load growth of both Pangasinan and La Union
- To address the overloading of Bolo-Balingueo 230 kV Line

Substation Components:
San Fabian 230 kV SS: 2x100 MVA, 230/69 kV Power Transformer, 10-230 kV PCB and associated equipment, 4-69 kV PCB and associated equipment

Transmission Line Components:
- San Fabian (NGCP) 'Bus-in' to Bauang – BPPC – Balingueo 230 kV TL: ST-DC 1-795 MCM ACSR/AS, 3.76 km (2x287 MW)
- Bolo – Balingueo 230 kV TL (Upgrading): ST-DC, 4-795 MCM, 40.67 km (2x1,148 MW).
- San Fabian (NGCP) – San Fabian (LUELCO) 69 kV TL: SP-SC, 1-795 MCM, 1.36 km (1x86 MW)



43. Luzon Primary Equipment Substation Upgrading
Various Provinces in Luzon Grid

Driver	Status	Project Cost	ETC
Generation Entry System Reliability and Security	ERC-Approved CEPNS	21,339 Mn	Dec 2034

Need / Justification:
- To accommodate the connection of several proposed Generating Power
- Plants in the Luzon Grid
- To replace the existing Under-rated PCB and Power Transformer installed on various Luzon Substations
- To upgrade the existing HVE at various substations in the Luzon Grid

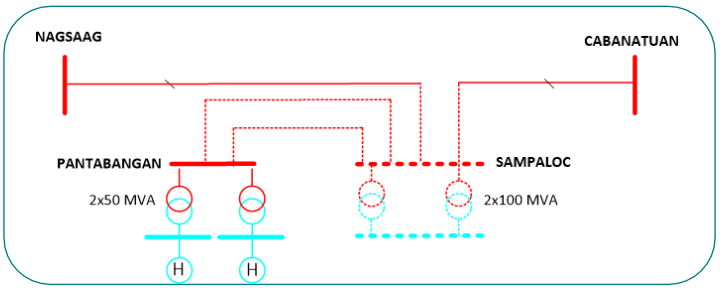
Substation Components:
- Cabanatuan 230 kV SS: 4-230 kV PCB and associated equipment
- Magat 230 kV SS: 1-230 kV Compact Air Insulated Switchgear (CAIS) PCB and associated equipment
- Pantabangan 230 kV SS: 2-230 kV PCB and associated equipment
- Quezon 230 kV SS: 7-230 kV PCB and associated equipment
- Doña Imelda 230 kV SS: 7-230 kV Gas Insulated Substation (GIS) PCB and associated equipment, 12-115 kV GIS PCB and associated equipment
- Malaya Collector Station: 4-230 kV PCB and associated equipment
- Salong 230 kV SS: 2-230 kV PCB and associated equipment
- San Rafael 230 kV SS: 1x300 MVA, 230/69 kV Power Transformer, 2-69 kV PCB and associated equipment
- Tuguegarao 69 kV SS: 2-69 kV PCB and associated equipment
- Daraga 69 kV SS: 2-69 kV PCB and associated equipment
- Bay 69 kV SS: 3-69 kV PCB and associated equipment
- Clark 69 kV SS: 3-69 kV PCB and associated equipment
- Bacnotan 69 kV SS: 1-69 kV PCB and associated equipment
- Lal-lo 69 kV SS: 3-69 kV PCB and associated equipment
- Bolo 230 kV SS: 4-230 kV PCB and associated equipment
- Laoag 230 kV SS: 2x300 MVA, 230/115 kV Power Transformer 4-230 kV PCB and associated equipment, 1-115 kV PCB and associated equipment, 3-69 kV PCB and associated equipment
- Hermosa 69 kV SS: 1x300 MVA, 230/69 kV Power Transformer, 3-69 kV PCB and associated equipment
- Tiwi-C 69 kV SS: 2-69 kV PCB and associated equipment
- Limay 69 kV SS: 1-69 kV PCB and associated equipment
- Tiwi-A SS: 1x100 MVA, 230/69 kV Power Transformer, 3-69 kV PCB and associated equipment
- Calamba 230 kV SS: 2-230 kV PCB and associated equipment

Transmission Line Components:
- Tiwi-A 'Cut-in' to Tiwi-C –Tabaco 69 kV TL: 69 kV, 1-795 MCM ACSR/AS, SP-DC, 2x1 km (2x86 MW).
- Hermosa – BPPI/Calaguiman 69 kV TL: 69 kV, 1-795 MCM ACSR/AS, SP-SC, 1.5 km (1x86 MW).

44. Sampaloc 230 kV Substation
Nueva Ecija

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	6,854 Mn	Mar 2035

Need / Justification:
- To address the forecasted load growth in Nueva Ecija
- To relieve the heavy loading of the existing 69 kV line from Cabanatuan going to Fatima (Pantabangan Load End) and address the voltage issues in the area



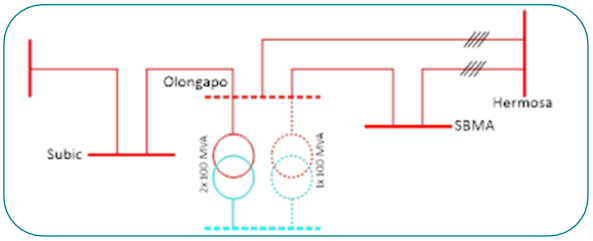
Substation Components:
Sampaloc 230 kV SS: 2x100 MVA, 230/69 kV Power Transformer, 12-230 kV PCB and associated equipment, 5-69 kV PCB and associated equipment, 2x50 MVAR Shunt Capacitor

Transmission Line Components:
- Sampaloc 'Bus-in' to Cabanatuan – Pantabangan and Nagsaag – Pantabangan 230 kV TL: 1-795 MCM ACSR/AS, 2 km (2x287 MW).
- Sampaloc 'cut-in' to Cabanatuan – Fatima 69 kV TL: ST-DC, 1-336 MCM, 1 km (2x56 MW).
- Sampaloc – SAJELCO 69 kV TL: SP-SC, 1-410 mm² TACSR/AS, 7 km (1x146 MW).

45. Olongapo 230 kV Substation Upgrading
Zambales

Driver	Status	Project Cost	ETC
Load Growth System Reliability and Security	ERC-Approved CEPNS	4,519 Mn	Aug 2036

Need / Justification:
- To improve the reliability of the Olongapo substation by allowing the continuous source of power to the load
- To address overloading of the Power Transformers during normal and N-1 contingency.

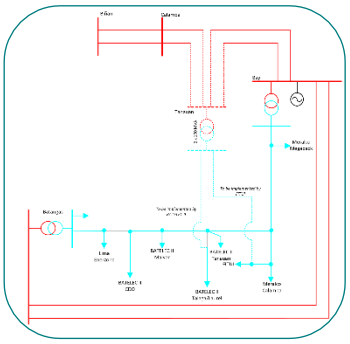


Substation Components:
Olongapo 230 kV SS: 1x100 MVA, 230/69 kV Power Transformer, 8-230 kV PCB (GIS) and associated equipment, 9-69 kV PCB and associated equipment

46. Tanauan 230 kV Substation
Batangas

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	8,518 Mn	Dec 2032

Need / Justification:
To cater the load growth and improve the power quality in Batangas and Laguna, particularly the loads of MERALCO in Calamba, Batangas II Electric Cooperative, Inc. (BATELEC II) and First Industrial Township Utilities, Inc. (FITUI)



Substation Components:
Tanauan SS: 2x300 MVA, 230/69-13.8 kV, 12-230 kV PCB and associated equipment 8-69 kV PCB and associated equipment

Transmission Line Components:
- Bay–Tanauan 230 kV 'bus-in' T/L, ST-DC, 4-795 MCM ACSR, 4.5 km
- Calamba – Tanauan 230 kV TL: T/SP-DC, 4-795 MCM ACSR, 4.5 km (2x573 MW).

47. Kawit 230 kV Substation
Cavite, Las Piñas

Driver	Status	Project Cost	ETC
Load Growth System Reliability and Security	ERC-Approved CEPNS	21,962 Mn	Dec 2035

Need / Justification:
- To cater the load growth in MERALCO's Cavite Sector
- To relieve the overloading of Dasmariñas 3x300 MVA 230/115 kV Power Transformers

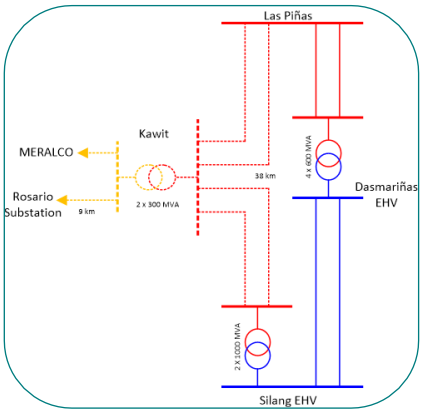
- To improve the reliability of the Rosario 115 kV SS by upgrading to a double-bus GIS substation and as well as addressing the overloading of Rosario 115/34.5 kV Power Transformers during N-1 contingency

Substation Components:

- Kawit 230 kV SS: 2x300 MVA 230/115 kV Power Transformer, 12-230 kV PCB and associated equipment, 6-115 kV PCB and associated equipment, 2x100 MVAR, 230 kV Shunt Capacitor
- Las Piñas 230 kV SS (Expansion): 4-230 kV PCB and associated equipment
- Silang 230 kV SS (Expansion): 4-230 kV PCB and associated equipment
- Rosario 115 kV SS Upgrading: 2x100 MVA 115/34.5 kV Power Transformer, 8-115 kV PCB (GIS) and associated equipment, 10-34.5 kV PCB (GIS) and associated equipment.

Transmission Line Components:

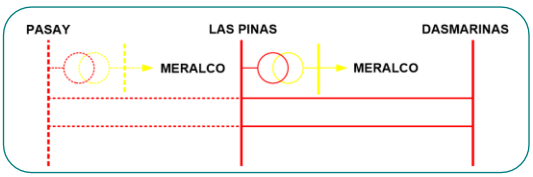
- Silang – Kawit – Las Piñas 230 kV TL: SP-DC, 4-795 MCM ACSR, 38 km (2x1,148 MW).
- Kawit – Rosario 115 kV TL SP/ST-SC, 2-795 MCM ACSR, 9 km (1x573 MW).



48. Pasay 230 kV Substation
Las Pinas, Pasay

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	21,600 Mn	Dec 2033

Need / Justification:
To cater the load growth of MERALCO's load sector 3 and support the increasing power consumption in the cities of Pasay, Parañaque, Makati, and Taguig



Substation Components:
Pasay 230 kV SS: 11-230 kV PCB and associated equipment (GIS)

Transmission Line Components:
Las Piñas – Pasay 230 kV TL: DC Underground Cable: 2x2,500 mm^2 XLPE (1-core), 9 km (2x1,170 MW).

49. North Luzon Substation Upgrading Project 4
Various provinces in Luzon

Driver	Status	Project Cost	ETC
System Reliability and Security Load Growth	Awaiting ERC Approval	5,942 Mn	Dec 2034

Need / Justification:
To cater for the load growth and provide N-1 contingency to various substations in the North Luzon Region

Substation Components:

- Laoag 115 kV SS: 1x100 MVA 115/69 kV Power Transformer, 1-69 kV PCB and associated equipment
- Concepcion 230 kV SS: 1x300 MVA 230/69 kV Power Transformer, 2-69 kV PCB and associated equipment
- San Rafael 230 kV SS: 1x300 MVA 230/69 kV Power Transformer, 1-230 kV PCB and associated equipment, 2-69 kV PCB and associated equipment
- Doña Imelda 230 kV SS: 1x300 MVA 230/69 kV Power Transformer
- Navotas 230 kV SS: 1x300 MVA 230/69 kV Power Transformer

50. Lipa 230 kV Substation
Batangas

Driver	Status	Project Cost	ETC
Load Growth	Awaiting ERC Approval	9,738 Mn	July 2038

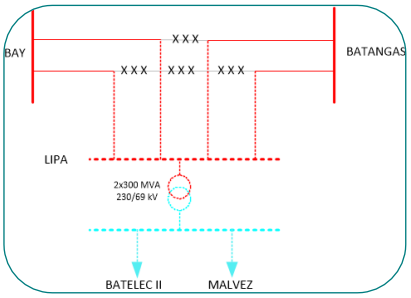
Need / Justification:
To cater the Load Growth in the Province of Batangas.

Substation Components:
Lipa 230 kV SS: 2x300 MVA, 230/69 kV Power Transformer, 10-230 kV PCB and associated equipment, 10-69 kV PCB and associated equipment

Transmission Line Components:

- Extension from the bus-in point (Bay side)-Lipa 230 kV TL: ST-DC 4-795 MCM ACSR/AS, 5 km

- Extension from the bus-in point (Batangas side)-Lipa 230 kV TL: ST-DC 4-795 MCM ACSR/AS, 5 km



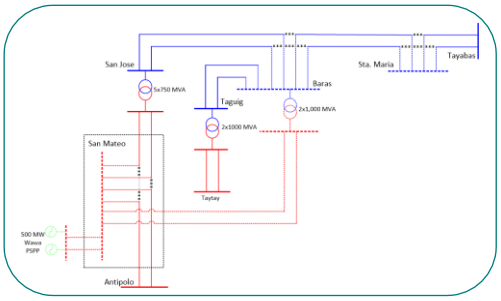
51. San Mateo 230 kV Substation Project
Rizal

Driver	Status	Project Cost	ETC
Generation Entry	Awaiting ERC Approval CEPNS	9,375 Mn	Jun 2038

Need / Justification:
To accommodate the entry of 500 MW Wawa Pumped-Storage Power Plant Project. This will also serve as a future drawdown substation of MERALCO.

Substation Components:
San Mateo 230 kV SS: 18-230 kV PCB (GIS) and associated equipment.

Transmission Line Components:
San Mateo "Bus-in" to San Jose – Antipolo 230 kV TL: ST-DC, 4-795 MCM ACSR 2x1 km (2x1148)



52. North Luzon Substation Upgrading Project 3
Various provinces in Luzon

Driver	Status	Project Cost	ETC
System Reliability and Security Generation Entry	Awaiting ERC Approval	15,962 Mn	Dec 2035

Need / Justification:
To cater for the load growth and provide N-1 contingency to various substations in the North Luzon Region

Substation Components:
- Santiago SS: 2x300 MVA, 230/69 kV Power Transformer, 6-69 kV PCB and associated equipment
- Tuguegarao SS: 2x300 MVA, 230/69 kV Power Transformer, 2-230 kV PCB and associated equipment, 10-69 kV PCB and associated equipment
- Gamu SS: 2x300 MVA, 230/69 kV Power Transformer, 5-230 kV PCB and associated equipment, 2-69 kV PCB and associated equipment
- Botolan SS: 2x300 MVA, 230/69 kV Power Transformer, 2-69 kV PCB and associated equipment
- La Trinidad SS: 1x300 MVA, 230/69 kV Power Transformer, 2-230 kV PCB and associated equipment, 3-69 kV PCB and associated equipment
- Alas-Asin SS: 1x100 MVA, 230/69 kV Power Transformer, 1-230 kV PCB and associated equipment (GIS), 1-69 kV PCB and associated equipment
- Binga SS: 1x100 MVA, 230/69 kV Power Transformer
  *Hauling and Civil Works Only 1-69 kV PCB and associated equipment
- Labrador SS: 1x100 MVA, 230/69 kV Power Transformer, 4-69 kV PCB and associated equipment
- San Rafael SS: 3-69 kV PCB and associated equipment

Transmission Line Components:
Gamu 'Bus-in' along Santiago–Tuguegarao 230 kV TL, 2x0.5 km, 230 kV, 1-410 mm^2 STACIR, ST-DC.

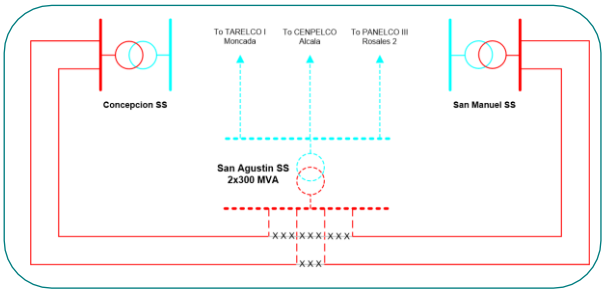
53. San Agustin 230 kV Substation
Pangasinan, Tarlac

Driver	Status	Project Cost	ETC
Load Growth System Reliability and Security	Awaiting ERC Approval	9,390 Mn	Aug 2038

Need / Justification:
- To provide additional drawdown substation in Tarlac to address the anticipated overloading of 230/69 kV Power Transformers and associated 69 kV transmission lines in Tarlac and Pangasinan.
- To provide flexibility to the customers of Tarlac and Pangasinan by having alternative connection, thus improving the reliability of their power source.

Substation Components:
San Agustin 230 kV SS: 2x300 MVA, 230/69-13.8 kV Power Transformer, 2x200 MVAR, 230 kV Shunt Capacitor, 12-230 kV PCB and associated equipment, 8-69 kV PCB and associated equipment

Transmission Line Components:
- San Agustin "bus-in" to San Manuel – Concepcion 230 kV TL, ST-DC, 2-410 mm² TACSR, 3.0 km
- San Agustin – Rosales 69 kV TL, ST-DC, 1-410 mm² TACSR, 4.5 km
- San Agustin – Moncada 69 kV TL, ST-SC, 1-410 mm² TACSR, 14.0 km



54. South Luzon Substation Upgrading Project 3
Various provinces in South Luzon

Driver	Status	Project Cost	ETC
System Reliability and Security Load Growth	Awaiting ERC Approval	12,458 Mn	Oct 2035

Need / Justification:
- To cater for the load growth and provide N-1 contingency to various substations in the South Luzon Region.

Substation Components:
- Batangas 230 kV SS: 15-69 kV PCB and associated equipment
- Lumban 230 kV SS: 2x300 MVA 230/69 kV Power Transformer, 2-230 kV PCB and associated equipment, 2-69 kV PCB and associated equipment
- Labo 230 kV SS: 2x300 MVA 230/69 kV Power Transformer, 4-230 kV PCB and associated equipment, 3-69 kV PCB and associated equipment
- Naga 230 kV SS: 1x300 MVA 230/69 kV Power Transformer, 4-230 kV PCB and associated equipment, 15-69 kV PCB and associated equipment
- Daraga 230 kV SS: 2x300 MVA 230/69 kV Power Transformer, 4-230 kV PCB and associated equipment, 11-69 kV PCB and associated equipment

SUBSTATION

115 kV PROJECT

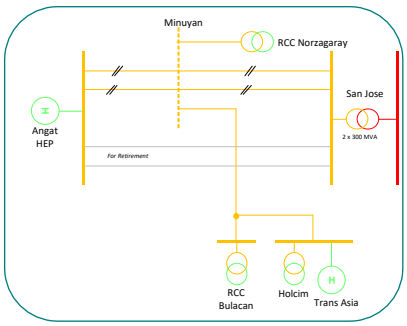
55. Minuyan 115 kV Switching Station
Bulacan

Driver	Status	Project Cost	ETC
System Reliability and Security	ERC-Approved CEPNS	3,770 Mn	Dec 2034

Need / Justification:
- To provide reliable connection of the industrial loads (cement plants) in Bulacan
- To provide flexibility and isolate the fault to prevent power interruption to the other connected customers

Substation Components:
Minuyan SwS: 11-115 kV PCB and associated equipment

Transmission Line Components:
- San Jose 115 kV Line Extension: ST-DC, 2-795 MCM ACSR/AS, 0.5 km (2x286 MW).
- Angat 115 kV Line Extension: ST-DC, 2-795 MCM ACSR/AS, 1 km (2x286 MW).



VOLTAGE IMPROVEMENT

230 kV PROJECTS

56. Luzon Voltage Improvement Project 5
Cagayan, Nueva Ecija, Zambales

Driver	Status	Project Cost	ETC
Power Quality and Technology	ERC-Approved CEPNS	7,113 Mn	Dec 2031

Need / Justification:
- To address the anticipated undervoltage problem during peak load condition at various LES in northern Luzon.
- To provide additional reactive power support in the network to maintain the system voltage within ±5% of the nominal value during normal and single outage contingencies as prescribed under the PGC

Substation Components:
- Solana LES: 4x7.5 MVAR 69 kV Capacitor Bank, 5-69 kV PCB and associated equipment
- Bongabon LES: 4x5 MVAR 69 kV Capacitor Bank, 5-69 kV PCB and associated equipment
- Candelaria LES: 4x2.5 MVAR 69 kV Capacitor Bank, 5-69 kV PCB and associated equipment
- Bani LES: 4x5 MVAR 69 kV Capacitor Bank, 5-69 kV PCB and associated equipment
- San Fabian LES: 4x5 MVAR 69 kV Capacitor Bank, 5-69 kV PCB and associated equipment
- Aglipay LES: 4x5 MVAR 69 kV Capacitor Bank, 5-69 kV PCB and associated equipment
- Cauayan LES: 4x5 MVAR 69 kV Capacitor Bank, 5-69 kV PCB and associated equipment
- Ilagan LES: 4x2.5 MVAR 69 kV Capacitor Bank, 5-69 kV PCB and associated equipment

57. Luzon Voltage Improvement Project 6 Pangasinan, Cagayan, Tarlac, Zambales, Bulacan, Laguna, Camarines Sur	Driver Power Quality and Technology	Status ERC-Approved CEPNS	Project Cost 4,617 Mn	ETC Aug 2030

Need / Justification:
- To address the anticipated undervoltage problem during peak load condition at various 69 kV LES in the north and South Luzon Grid
- To provide additional reactive power support in the network to maintain the system voltage within ±5% of the nominal value during normal and single outage contingencies as prescribed under the PGC

Substation Components:
- Lal-lo 69 kV SS: 3x5 MVAR Shunt Capacitor, 3-69 kV PCB and associated equipment (Energized)
- Tabuk 69 kV SS: 4x2.5 MVAR Shunt Capacitor, 5-69 kV PCB and associated equipment
- Litmanen 69 kV SS: 4x2.5 MVAR Shunt Capacitor, 5-69 kV PCB and associated equipment
- San Rafael 230 kV SS: 2x100 MVAR Shunt Capacitor, 2-230 kV PCB and associated equipment. (Energized)
- Calamba 230 kV SS: 2x100 MVAR Shunt Capacitor, 2-230 kV PCB and associated equipment. (Energized)
- San Jose 230 kV SS: 1x100 MVAR Shunt Capacitor, 1-230 kV PCB and associated equipment. (Energized)

58. Luzon Voltage Improvement Project 7 Metro Manila, Batangas, Bulacan, Cavite, Ifugao, Isabela, Batangas, Quezon, Pampanga, and Laguna	Driver Power Quality and Technology	Status Awaiting ERC Approval	Project Cost 21,992 Mn	ETC Feb 2036

Need / Justification:
- To address the anticipated undervoltage problem during peak load condition at various LES in the Luzon Grid
- To provide additional reactive power support in the network to maintain the system voltage within ±5% of the nominal value during normal and single outage contingencies as prescribed under the PGC

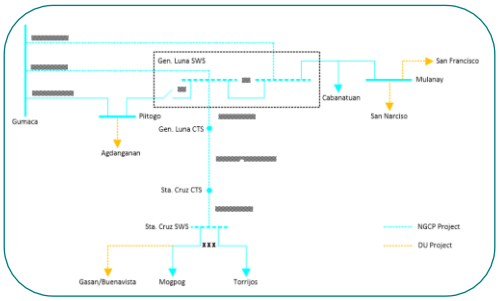
Substation Components:
- Taguig 230 kV SS: 1x200 MVAR Shunt Capacitor
- Tanauan 230 kV SS: 2x200 MVAR Shunt Capacitor, 2-230 kV PCB and associated equipment
- Marilao 230 kV SS: 1x200 MVAR STATCOM, 1-230 kV PCB and associated equipment
- Silang 230 kV SS: 1x200 MVAR STATCOM, 1-230 kV PCB and associated equipment
- Lagawe 69 kV SWS: 4x5 MVAR Shunt Capacitor, 5-69 kV PCB and associated equipment
- San Fermin SWS: 3x5 MVAR Capacitor Bank, 4-69 kV PCB and associated equipment
- Nasugbu 69 kV SS: 4x7.5 MVAR Shunt Capacitor, 5-69 kV PCB and associated equipment
- Taal 69 kV SWS: 4x7.5 MVAR Shunt Capacitor, 5-69 kV PCB and associated equipment
- Infanta 69 kV SWS: 4x5 MVAR 69 kV Shunt Capacitor, 5-69 kV PCB and associated equipment
- Mexico 230 kV SS: 3x200 MVAR Shunt Capacitor
- Dona Imelda 115 kV SS: 2x100 MVAR Shunt Capacitor
- Muntinlupa 115 kV SS: 2x100 MVAR Shunt Capacitor
- San Jose 230 kV SS: 3x200 MVAR Shunt Capacitor
- Binan 230 kV SS: 2x200 MVAR Shunt Capacitor
- Dasmarinas 230 kV SS: 2x200 MVAR Shunt Capacitor, 2-230 kV PCB and associated equipment

ISLAND / OFF-GRID INTERCONNECTION

230 kV PROJECTS

59. Quezon – Marinduque Interconnection Project Quezon, Marinduque	Driver Island Interconnection	Status ERC-Approved CEPNS	Project Cost 38,643 Mn	ETC Dec 2034

Need / Justification:
- To provide the island of Marinduque access to available power supply from the main Luzon Grid
- To address the increase in loading of the existing Gumaca – Pitogo 69 kV TL



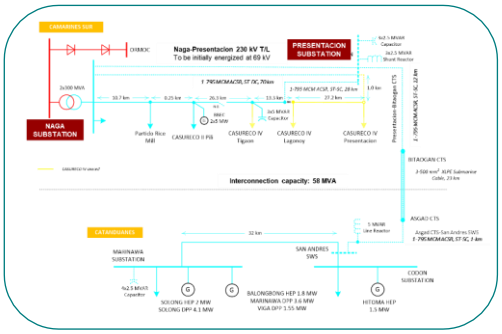
Substation Components:
- Gumaca 230/69 kV SS: 2x300 MVA Power Transformer and 4-69 kV PCB and associated equipment
- New Gumaca 69 kV Switchyard: 12-69 kV PCB and associated equipment
- General Luna SwS: 11-69 kV PCB and associated equipment
- Sta. Cruz SwS: 2x2.5 MVAR Line Reactor and 7-69 kV PCB and associated equipment
- Buenavista 69 kV Load End SS: 4x2.5 MVAR Shunt Capacitor and 4-69 kV PCB and associated equipment

Transmission Line Components:
- General Luna – General Luna CTS 69 kV TL, ST-SC, 1-795 MCM ACSR, 1.5 km (1x86 MW).
- General Luna CTS – Sta. Cruz CTS 69 kV XLPE Submarine Cable, 3-Core 500 mm^2, 22 km (50 MW).
- Sta. Cruz-Sta. Cruz CTS 69 kV TL, ST-SC, 1-795 MCM ACSR, 9 km (1x86 MW).
- Gumaca – New Gumaca Switchyard 69 kV TL, ST-DC, 2-795 MCM ACSR, 0.5 km
- New Gumaca Switchyard – General Luna 69 kV TL, ST-DC, 1-795 MCM ACSR, 37.5 km
- New Gumaca Switchyard – Pitogo/Lopez 69 kV TL, ST-DC, 1-795 MCM ACSR, 0.2 km

60. Camarines Sur - Catanduanes Interconnection Project
Camarines Sur, Catanduanes

Driver	Status	Project Cost	ETC
Island Interconnection	ERC-Approved CEPNS	43,651 Mn	Jun 2035

Need / Justification:
- To provide a reliable power source for Catanduanes Island that will support the fast-growing economic development



Substation Components:
- Naga 69 kV SS: 2-69 kV PCB
- Presentacion 69 kV SwS: 3x2.5 MVAR 69 kV Capacitor, 3x2.5 MVAR 69 kV Shunt Reactor, 14-69 kV PCB
- San Andres 69 kV SwS: 1x5 MVAR
- 69 kV Line Reactor, 6-69 kV PCB and associated equipment
- Marinawa 69 kV SwS: 4x2.5 MVAR 69 kV Capacitor, 5-69 kV PCB and associated equipment

Transmission Line Components:
- Naga– Presentacion 230 kV T/L, ST-DC, 1-795 MCM ACSR, 70 km
- Presentacion – Lagonoy 69 kV T/L, ST-SC, 1-795 MCM ACSR, 28 km
- Presentacion – Bitaogan CTS 69 kV T/L, ST-SC, 1-795 MCM ACSR, 12 km
- Bitaogan CTS-San Adres SWS T/L, SC, Submarine Cable, 3-Core 500 mm^2 XLPE, 23 km
- San Andres SWS – Codon/Marinawa 69 kV T/L, ST-DC, 1-795 MCM ACSR, 0.2 km

Other projects planned for the 2031–2040 period will primarily focus on the development of new transmission facilities to accommodate the continued growth in electricity demand and facilitate the integration of additional Renewable Energy (RE) projects.

To address forecasted demand growth outside Metro Manila, new 230 kV drawdown substations will be developed in the provinces of Isabela, Bataan, Laguna, Quezon, and Camarines Sur. In addition, capacity expansions of existing 500 kV and 230 kV substations will be undertaken to enhance system flexibility and ensure adequate transmission capacity.

Furthermore, ageing transmission facilities will be rehabilitated and upgraded to maintain the reliability, adequacy, and operational integrity of the Luzon Grid and to support its evolving transmission requirements.

Table 5.3: List of Additional Proposed Projects in Luzon for the period 2031-2040

TRANSMISSION LINE

500 kV PROJECTS

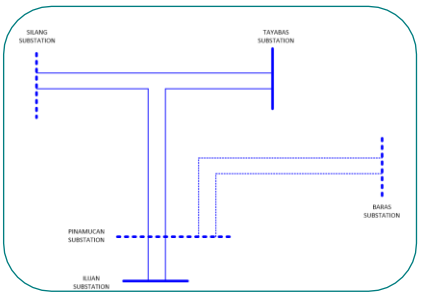
61. Baras – Pinamucan 500 kV Transmission Line
Rizal, Batangas

Driver	Status	ETC
Generation Entry	For Filing	2031-2040

Need / Justification:
To support the delivery of bulk generation from Batangas City Area going to Metro Manila

Substation Components:
- Baras 500 kV SS: 4-500 kV PCB and associated equipment
- Pinamucan 500 kV SS: 4-500 kV PCB and associated equipment

Transmission Line Components:
- Baras – Pinamucan 500 kV TL: ST- DC, 4-410 mm², 141 km 0.2 km



TRANSMISSION LINE

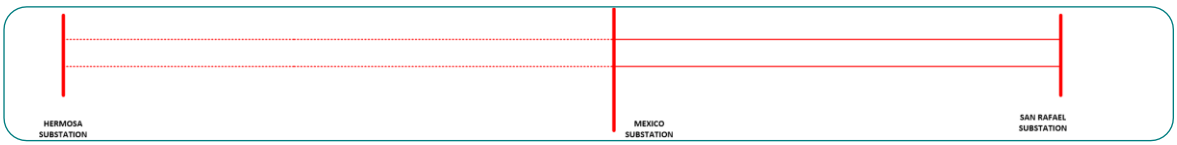
230 kV PROJECTS

62. Hermosa – Mexico 230 kV Transmission Line Upgrading
Bataan, Pampanga

Driver	Status	ETC
Load Growth	For Filing	2031-2040

Need / Justification:
To address the anticipated overloading of the Hermosa–Mexico 230 kV line due to the increase in the demand of Pampanga Province.

Transmission Line Components:
Hermosa – Mexico 230 kV TL: ST-DC, 4-795 MCM ACSR, 37.65 km.



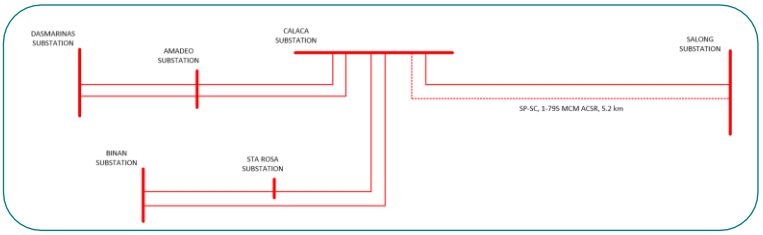
63. Calaca – Salong 230 kV Transmission Line 2
Batangas

Driver	Status	ETC
System Reliability	For Filing	2031-2040

Need / Justification:
To provide provision for single outage contingency for the existing single circuit Calaca – Salong 230 kV TL.

Substation Components:
Salong 230 kV SS: 1-230 kV PCB and associated equipment

Transmission Line Components:
Calaca – Salong 230 kV TL: SP- DC, 1-795 MCM ACSR, 5.2 km

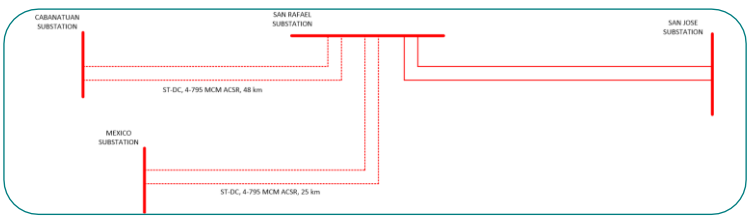


64. Cabanatuan – San Rafael – Mexico 230 kV Transmission Line Upgrading
Nueva Ecija, Pampanga, Bulacan

Driver	Status	ETC
System Reliability	For Filing	2031-2040

Need / Justification:
- To address the low reliability of the existing lines due to the ageing of the conductor cable
- To accommodate proposed Renewable Energy capacities in Central Luzon

Substation Components:
- San Rafael 230 kV SS: 1-230 kV PCB and associated equipment
- Cabanatuan 230 kV SS: 2-230 kV PCB and associated equipment



Transmission Line Components:
- Cabanatuan – San Rafael 230 kV TL: ST-DC, 4-795 MCM ACSR, 48 km
- San Rafael – Mexico 230 kV TL: ST-DC, 4-795 MCM ACSR, 25 km

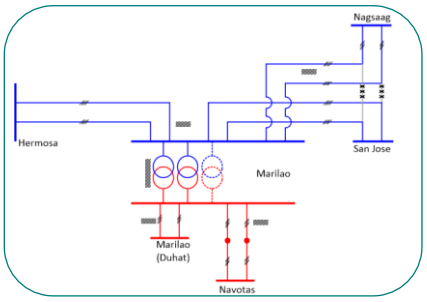
SUBSTATION

500 kV PROJECTS

65. Marilao 500 kV Substation Expansion
Bulacan | **Driver** Load Growth | **Status** For Filing | **ETC** 2031-2040

Need / Justification:
To cater additional generation capacity in the Northern and Western region and address the forecasted load growth in Metro Manila.

Substation Components:
Marilao 500 kV S/S: 1x1000 MVA 500/230 kV Power Transformer, 2-500 kV PCB and associated equipment, 1-230 kV PCB and associated equipment

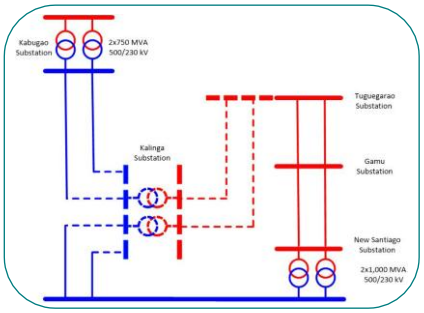


66. Kalinga 500 kV Substation
Kalinga | **Driver** Load Growth | **Status** For Filing | **ETC** 2031-2040

Need / Justification:
To accommodate the entry of power plants in Kalinga

Substation Components:
- Kalinga 230 kV SS: 2x750 MVA 500/230 kV Power Transformer, 10-500 kV PCB and associated equipment, 6-230 kV PCB and associated equipment
- Tuguegarao 230 kV SS: 2-230 kV PCB and associated equipment

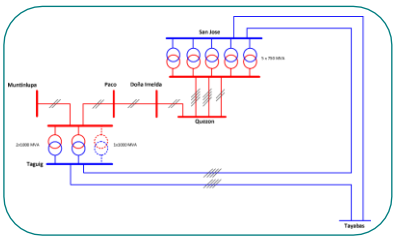
Transmission Line Components:
- Kalinga 'bus-in' to Kabugao –Santiago 500 kV TL: ST-DC, 4-410 mm² TACSR, 2x2 km
- Kalinga – Tuguegarao TL: ST-DC, 4-795 MCM ACSR, 70 km



67. Taguig 500 kV Substation Expansion
Metro Manila | **Driver** Load Growth | **Status** For Filing | **ETC** 2031-2040

Need / Justification:
To serve the continuous load growth in Metro Manila.

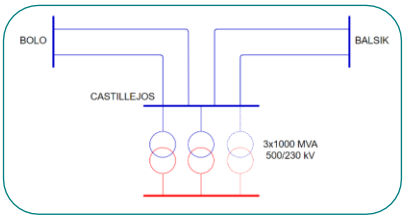
Substation Components:
Taguig 500 kV S/S: 1x1000 MVA 500/230 kV Power Transformer and associated equipment



68. Castillejos 500 kV Substation Expansion
Zambales | **Driver** Generation Entry | **Status** For Filing | **ETC** 2031-2040

Need / Justification:
To accommodate the connection of RE power projects in Zambales.

Substation Components:
Castillejos 500 kV S/S: 1x1000 MVA 500/230 kV Power Transformer 1-500 kV PCB and associated equipment, 2-230 kV PCB and associated equipment

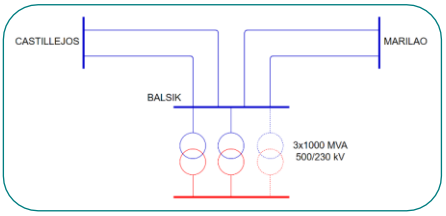


69. Balsik 500 kV Substation Expansion
Zambales

Driver	Status	ETC
Generation Entry	For Filing	2031-2040

Need / Justification:
To cater additional generation capacity in Bataan

Substation Components:
Balsik 500 kV S/S: 1x1000 MVA 500/230 kV Power Transformer 1-500 kV PCB and associated equipment, 1-230 kV PCB and associated equipment

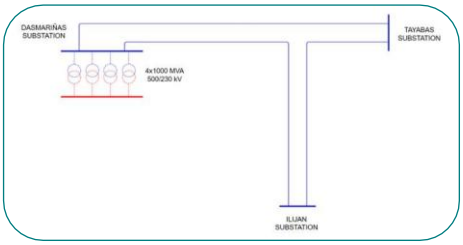


70. Dasmariñas 500 kV Substation Upgrading
Cavite

Driver	Status	ETC
Load Growth	For Filing	2031-2040

Need / Justification:
To upgrade the existing capacity of Dasmariñas 500/230 kV transformers to address the forecasted demand in Cavite and Metro Manila.

Substation Components:
Dasmariñas 500 kV S/S: 4x1000 MVA 500/230 kV Power Transformer and associated equipment



SUBSTATION

230 kV PROJECTS

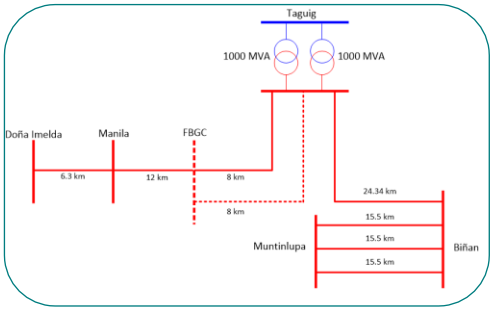
71. FBGC 230 kV Substation Project
Metro Manila

Driver	Status	ETC
Load Growth	For Filing	2031-2040

Need / Justification:
To address the anticipated overloading of the existing 230 kV Substations serving MERALCO Sector 3

Substation Components:
FBGC 230 kV SS: 3x200 MVAR, 13-230 kV PCB (GIS) and associated equipment

Transmission Line Components:
FBGC 'cut-in' to Taguig – Paco 230 kV TL: SP-DC, 2-410 mm^2 TACSR, 2x2 km.
Taguig – FBGC 230 kV TL: SP-SC, 2-410 mm^2 TACSR, 8 km.



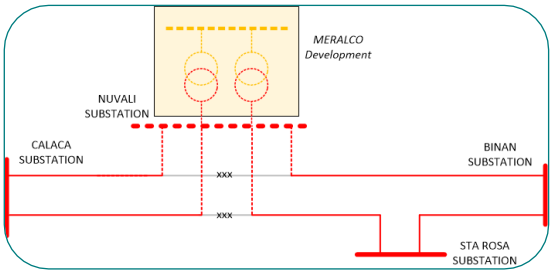
72. Nuvali 230 kV Substation Project
Laguna

Driver	Status	ETC
Load Growth	For Filing	2031-2040

Need / Justification:
To address the anticipated overloading of the existing 230 kV Substations serving MERALCO Laguna Sector

Substation Components:
Nuvali 230 kV SS: 2x200 MVAR, 13-230 kV PCB and associated equipment

Transmission Line Components:
Nuvali 'bus-in' Calaca – Sta. Rosa – Biñan 230 kV TL: ST-DC, 2-795 MCM, 2x1 km.



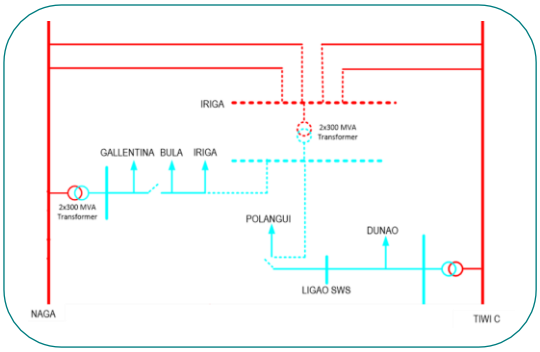
73. Iriga 230 kV Substation
Camarines Sur

Driver	Status	ETC
Load Growth	For Filing	2031-2040

Need / Justification:
To cater for the load growth in the provinces of Camarines Sur and Albay by providing a new drawdown substation in the area.

Substation Components:
Iriga 230 kV SS: 2x100 MVA, 230/69 kV Power Transformer, 12-230 kV PCB and associated equipment, 6-69 kV PCB and associated equipment 2x100 MVAR Shunt Capacitor

Transmission Line Components:
- Extension from the bus-in point (Naga side) - Iriga SS: ST-DC, 4-795 MCM ACSR/AS, 2 km (2x2494 MW)
- Extension from the bus-in point (Tiwi C side) - Iriga SS: ST-DC, 4-795 MCM ACSR/AS, 2 km (2x2494 MW)
- 69 kV Line Extension going to Iriga LES: ST-DC, 4-795 MCM ACSR/AS, 2 km (2x2494 MW)



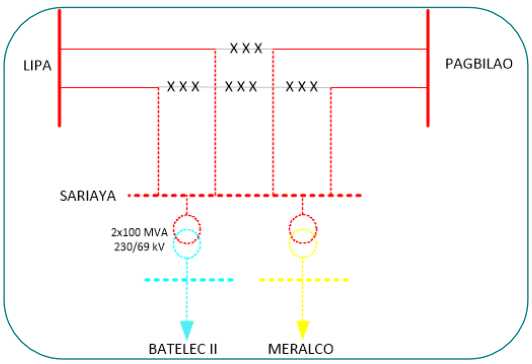
74. Sariaya 230 kV Substation
Quezon

Driver	Status	ETC
Load Growth	For Filing	2031-2040

Need / Justification:
To cater for the Load Growth of the Province of Quezon and the eastern part of Batangas.

Substation Components:
- Sariaya 230 kV SS: 2x100 MVA, 230/69 kV Power Transformer, 16-230 kV PCB and associated equipment, 5-69 kV PCB and associated equipment 2x100 MVAR Shunt Capacitor
- Lipa 230 kV SS: 2x100 MVA, 230/69 kV Power Transformer, 2-230 kV PCB and associated equipment
- Pagbilao 230 kV SS: 2x100 MVA, 230/69 kV Power Transformer, 2-230 kV PCB and associated equipment

Transmission Line Components:
- Lipa – Sariaya 230 kV TL: ST- DC, 2-410 mm² TACSR/AS, 32.6 km.
- Sariaya – Pagbilao 230 kV TL: ST-DC, 1-160 mm² STACIR, 2 km.



75. Cabatuan 230 kV Substation
Isabela

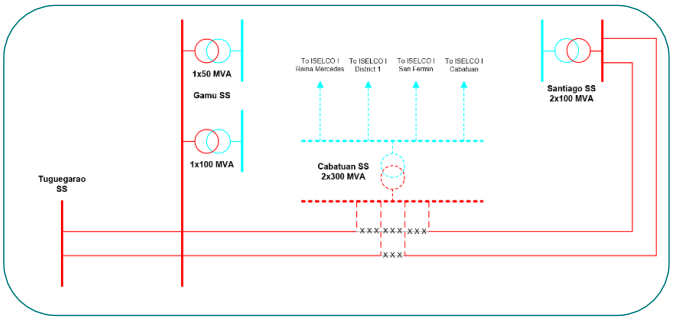
Driver	Status	ETC
Load Growth	For Filing	2031-2040

Need / Justification:
- To provide additional drawdown substation in the province of Isabela.
- To improve the reliability of supply of loads in Isabela as another connection point of distribution utilities in the area.

Substation Components:
Cabatuan 230 kV SS: 2x300 MVA, 230/69-13.8 kV Power Transformer, 2-100 MVAR, 230 kV Shunt Capacitor, 12-230 kV PCB and associated equipment, 10-69 kV PCB and associated equipment

Transmission Line Components:

- Cabatuan 'bus-in' Santiago –Gamu and Santiago –Tuguegarao 230 kV TL: ST-DC 1-795 MCM, 2 km
- Cabatuan (NGCP) – Cabatuan (ISELCO I) 69 kV TL: SP-SC 1-795 MCM, 2 km
- Cabatuan (NGCP) – San Fermin 69 kV TL: SP-DC 1-410 mm² TACSR, 16 km
- Cabatuan (NGCP) – Reina Mercedes 69 kV TL: SP-SC 1-795 MCM, 23 km



76. Balanga 230 kV Substation

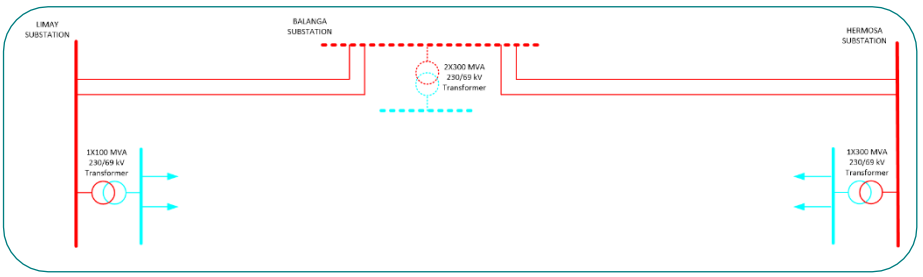
Bataan

Driver	Status	ETC
System Reliability and Security	For Filing	2031-2040

Need / Justification:
To accommodate forecasted load of PENELCO

Substation Components:
Balanga 230 kV SS: 2x300 MVA, 230 kV Power Transformer, 10-230 kV PCB and associated equipment, 6-69 kV PCB and associated equipment

Transmission Line Components:
Balanga 'bus-in' to Hermosa – BCCPP B 230 kV TL: ST-DC 2-410 mm² TACSR, 2x0.25 km



5.3 LUZON PROJECTS FOR 2041–2050

For the period 2041–2050, various projects will continue to be implemented to ensure the reliability, resilience, and adequacy of transmission capacity in the Luzon Grid. These projects include the further expansion of the 500 kV backbone network and the development of additional 500 kV substations to facilitate the integration of both conventional and RE generation projects.

Moreover, new 230 kV transmission corridors and 230 kV drawdown substations will be developed to address projected load growth and strengthen the transmission network's capability to meet increasing electricity demand across the Luzon Grid.



Figure 5.12: North Luzon Transmission Outlook for 2041-2050

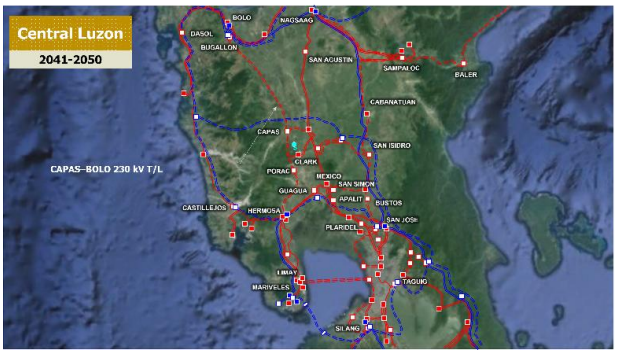


Figure 5.13: Central Transmission Outlook for 2041-2050

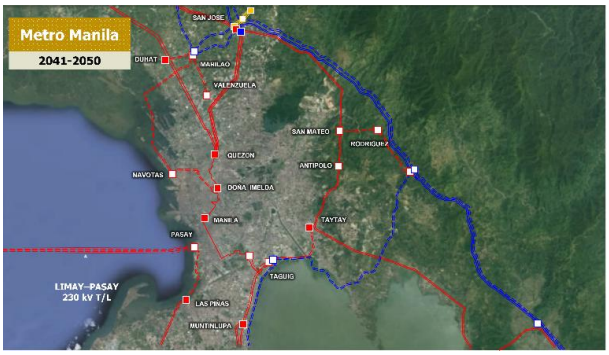


Figure 5.14: Metro Manila Transmission Outlook for 2041-2050

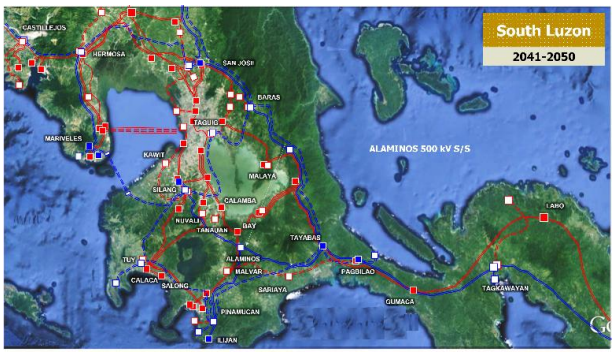


Figure 5.15: South Luzon Transmission Outlook for 2041-2050



Figure 5.16: Bicol Regional Transmission Outlook for 2041-2050

Table 5.4: List of Additional Proposed Projects in Luzon for the period 2041-2050

Project Name	Description	Location
TRANSMISSION LINE		
500 kV PROJECTS		
Bataan – Cavite 500 kV Transmission Line	• To reinforce the transmission line corridor supplying the loads of Metro Manila.	Bataan, Cavite
San Isidro – Palauig 500 kV Transmission Line	• To improve the reliability of the grid by introducing another 500 kV Backbone that will traverse the eastern and western part of Central Luzon	Zambales, Nueva Ecija
Milaor – Tublijon 500 kV Transmission Line	• To accommodate generation capacity addition to the Southernmost part of the Grid.	Camarines Sur Albay, Sorsogon
230 kV PROJECTS		
Binga – La Trinidad 230 kV Transmission Line	• To address the low reliability of the existing lines due to the ageing of the conductor cable	Benguet
Bauang – Balaoan 230 kV Transmission Line Upgrading	• To accommodate the generation capacities and increase of demand in La Union.	La Union
Taguig – Muntinlupa 230 kV Transmission Line 2	• To strengthen the corridor of the 230 kV TL in Metro Manila due to the continuous increase of loading in Metro Manila.	Metro Manila
Sagada – San Esteban 230 kV Transmission Line	• To provide a new 230 kV transmission corridor in Mountain Province Area by completing the La Trinidad – Sagada – San Esteban transmission loop.	Mountain Province, Ilocos Sur
Dinadiawan – Santiago 230 kV Transmission Line	• To increase the system reliability on the Northeastern side of the Luzon Grid.	Isabela, Aurora
Baler – Dinadiawan 230 kV Transmission Line	• To increase the system reliability on the Northeastern side of the Luzon Grid.	Isabela, Aurora
La Trinidad – Sagada 230 kV Transmission Line	• To accommodate the upcoming HEPP and Wind Farms on Mountain Province	Benguet
Pasay – Limay 230 kV Transmission Line	• To increase the reliability of 230 kV TL supplying Meralco Sector 1 and secure the supply of power in the area	Bataan, Metro Manila
Capas – Bolo 230 kV Transmission Line	• To increase the system reliability in Central Luzon	Tarlac, Pangasinan
Sorsogon - Masbate Interconnection Project	• To link the Masbate Mainland to the Luzon Grid and provide access to a more reliable and competitive generation sources.	Sorsogon, Masbate
69 kV PROJECTS		
Mexico–Clark 69 kV Transmission Line Upgrading	• To cater to the growing demands of the loads of PRESCO, AEC, Quanta Paper, Clark Electric, and PELCO I.	Pampanga
SUBSTATION		
500 kV PROJECTS		

TRANSMISSION LINE		
Project Name	Description	Location
Bacolor 500 kV Substation	• To address the load growth in Pampanga area.	Pampanga
Santiago 500 kV Substation Expansion	• To accommodate the entry of additional power plants in the area.	Isabela
Alas — Asin 500 kV Substation	• To accommodate several offshore wind power plant projects located at the Manila Bay and offshore of Mariveles	Mariveles
Calatagan 500 kV Substation	• To accommodate several offshore wind power plant projects located at Calatagan Bay and offshore of Northern Mindoro	Batangas
Alaminos 500 kV Substation	• To accommodate the entry of power plants in Batangas and Quezon Province and to supply the demand of South Luzon. This will also increase reliability of the 500 kV backbone of the South Luzon Grid	Laguna
Nagsaag 500 kV Substation Expansion	• To accommodate the entry of additional power plants in the area.	San Manuel, Pangasinan
230 kV PROJECTS		
San Marcelino 230 kV Collector Station	• To cater for the generation potential in Zambales	Zambales
Calamba 230 kV Collector Station	• To cater for the generation potential in Laguna	Laguna
Bustos 230 kV Substation	• To cater for the load growth in Bulacan and unload the San Rafael 230 kV SS.	Bulacan
Real 230 kV Substation	• To address the forecasted demand of QUEZELCO I and accommodate Renewable Energy capacities in the province of Quezon.	Quezon
Guagua 230 kV Substation	• To accommodate the forecasted demand in Pampanga and provide an additional drawdown SS.	Pampanga
Apalit 230 kV Substation	• To accommodate the forecasted demand in Pampanga and provide an additional drawdown SS.	Pampanga
Valenzuela 230 kV Substation	• To accommodate the forecasted demand in MERALCO Sector 1 and provide an additional drawdown SS.	Metro Manila
Presentacion 230 kV Substation	• To cater the Load Growth in the Eastern part of Camarines Sur.	Camarines Sur
South Luzon Substation Upgrading 4	• To cater the load growth and provide N-1 contingency to various SS in NGCP's South Luzon Region.	Batangas, Camarines Sur, Albay, Sorsogon
Matnog 230 kV Substation	• To accommodate the entry of power plants in Sorsogon.	Sorsogon
69 kV PROJECTS		
Mankayan 69 kV Switching Station	• To relieve the undervoltage issues experienced at the La Trinidad-Sagada 69 kV Transmission Line	Mankayan, Benguet

VOLTAGE IMPROVEMENT		
Project Name	Description	Location
230 kV PROJECTS		
Luzon Voltage Improvement Project 8	• To provide additional reactive power support in various substations in the Luzon Grid to maintain the system voltage within ±5% of the nominal value during normal and single outage contingencies as prescribed under the PGC. The proposed project involves the installation of Capacitor in various 230 kV Substations in Luzon.	Pampanga, Laguna, Batangas

Chapter 6

VISAYAS GRID DEVELOPMENT OUTLOOK

This section presents a forward-looking transmission outlook for the Visayas Grid from 2026 to 2050, highlighting ERC-approved projects at various stages of implementation alongside additional identified developments. While expansion is essential to meet growing demand, the region's archipelagic nature poses inherent challenges. Interconnections between sub-grids rely on submarine cables primarily to support generation reserve sharing; developing sufficient generation within each island remains the more cost-effective approach, given the higher costs and limited transfer capacity of submarine cable systems compared to overhead TL.

The DOE list of committed and indicative power plant shows that Cebu and Panay Islands are the main sites for large-capacity additions, particularly coal-fired power plants, while renewable energy power plants development, primarily solar and wind, are concentrated in Negros and Panay. The completion of the Cebu–Negros–Panay 230 kV Backbone adds 800 MW of submarine cable capacity linking these islands, enhancing interconnections for reserve sharing and supporting the integration of new generation across the Visayas Grid.

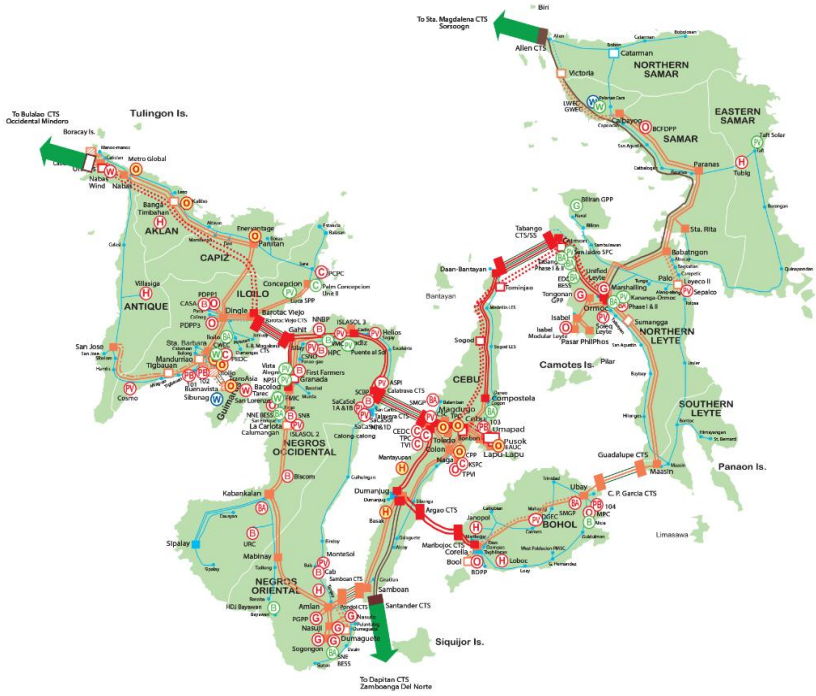


Figure 6.1: Visayas 2026 Grid Map

Cebu Island, as the primary load center in the Visayas Grid, continues to experience increasing power demand. The capacity of the existing 138 kV substations is projected to be insufficient to support future load growth, necessitating the development of additional 230 kV drawdown substations to ensure a reliable and adequate long-term power supply. However, like other highly urbanized areas, ROW acquisition remains a key challenge in advancing transmission projects in Cebu.

In Panay Island, rising demand driven by tourism growth particularly in Boracay requires further grid reinforcement. The existing 69 kV submarine cable serving Boracay is expected to be inadequate for future load requirements, making the Nabas – Caticlan – Boracay TL Project, which includes a 138 kV submarine cable, essential. Additionally, the current 69 kV submarine cable connection to Guimaras Island will not be sufficient to accommodate proposed wind power developments. This constraint is addressed through the Panay – Guimaras 138 kV Interconnection Projects, which involve upgrading the existing cable to 138 kV and installing a second submarine cable to support incoming generation.

Meanwhile, the completion of the Cebu–Bohol 230 kV Interconnection Project, with an effective transfer capacity of 2×600 MW, significantly strengthens system reliability and flexibility. It supports load growth, enhances grid resilience, and provides Bohol with direct access to major generation sources in Cebu. Moreover, this development enables the establishment of new connection points and increases transmission capacity in Bohol to support the integration of future generation projects in the Island.

The transmission development plan for the Visayas Grid adopts a phased approach, focusing on the stage-by-stage implementation of backbone loops to ensure efficient power transfer and enhance overall grid resiliency. Complementing this strategy, the upgrading of existing substations and the development of new drawdown

substations are prioritized to accommodate projected load growth and facilitate the integration of future power plant developments across the region.

6.1 VISAYAS PROJECTS FOR 2026–2030

The projects planned for 2026 to 2030 will address the increasing power supply requirements driven by expanding commercial and industrial activities across the Visayas Islands. To support this growth, upgrades to existing substations, along with the development of new drawdown substations, are proposed in key cities within the Visayas Grid. In addition, new submarine cables will be installed in Boracay and Guimaras to accommodate rising demand and enhance supply reliability for customers in these areas.

Furthermore, the 230 kV and 138 kV transmission backbones will be expanded to meet the growing load demand, improve system operational flexibility, and facilitate the integration of additional power plants in the Visayas Grid.

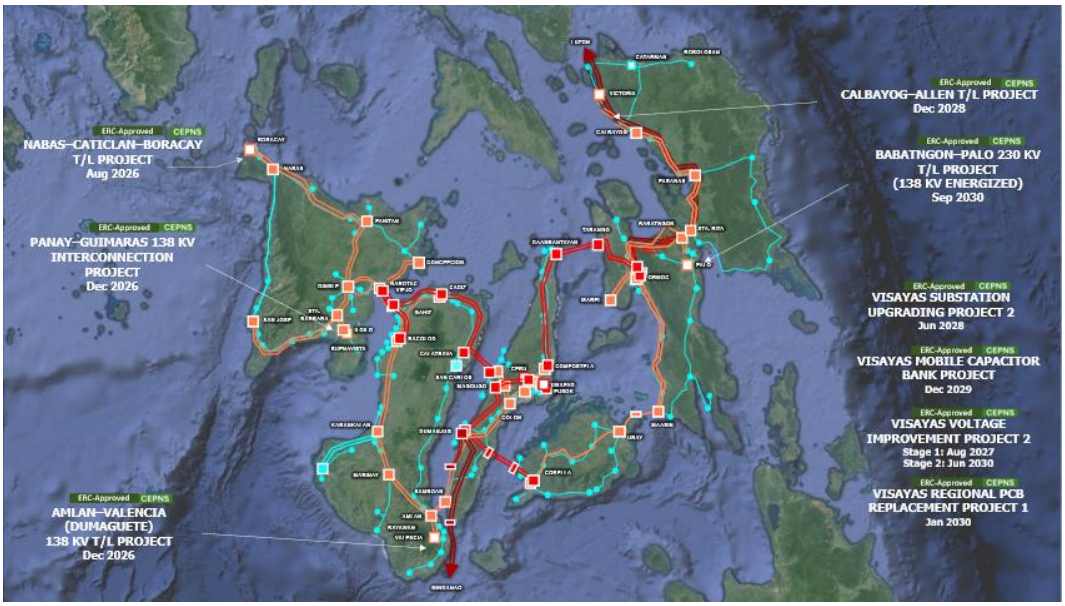


Figure 6.2: Visayas Transmission Outlook for 2026-2030

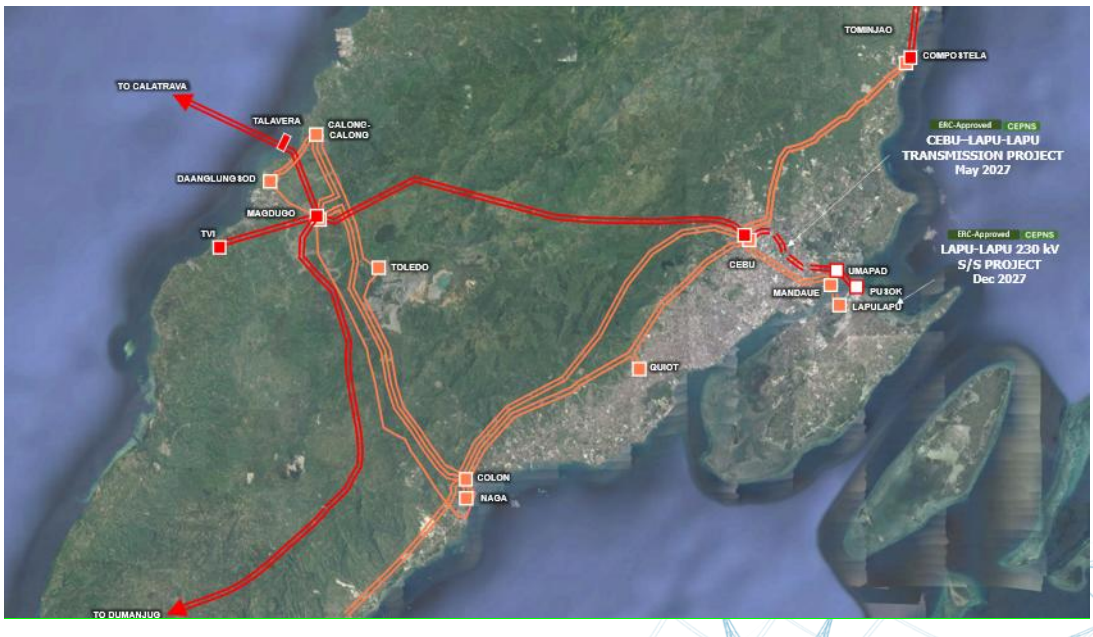


Figure 6.3: Metro Cebu Transmission Outlook for 2026-2030

Table 6.1: List of Visayas transmission projects for the period 2026-2030

TRANSMISSION LINE

230 kV PROJECTS

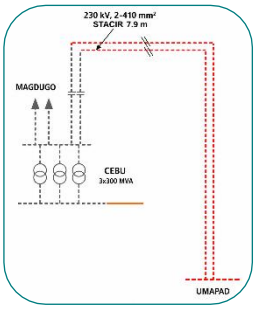
1. Cebu – Lapu-Lapu Transmission Project
Cebu

Driver	Status	Project Cost	ETC
Load Growth System Reliability	ERC-Approved CEPNS	4,662 Mn	May 2027

Need / Justification:
- To prevent overloading of the Cebu – Mandaue – Lapu-lapu 138 kV Transmission corridor in Metro Cebu during normal and N-1 conditions
- To cater to the growing demand and provide operational flexibility and reliability to the customers in Metro Cebu and Mactan Island

Substation Components:
Lapu-lapu SS: 1-138 kV PCB (GIS) and associated equipment

Transmission Line Components:
Cebu – Umapad TL: 230 kV, ST/SP-DC, 2-410 mm² STACIR, 7.9 km (2x1,225 MW)

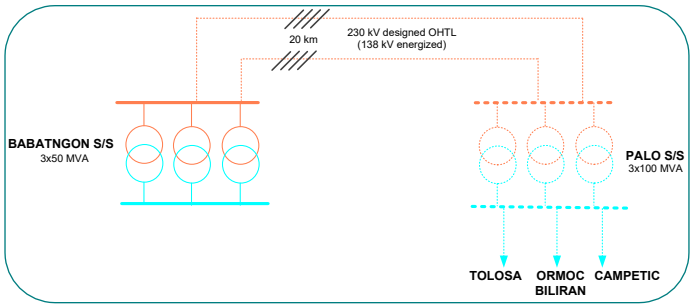


2. Babatngon – Palo 230 kV Transmission Line Project (Initially Energized at 138 kV)
Leyte

Driver	Status	Project Cost	ETC
Load Growth System Reliability	ERC-Approved CEPNS	8,536 Mn	Sep 2030

Need / Justification:
- To cater the growing demand and provide operational flexibility and reliability to the customers in Eastern Leyte
- To improve the voltage quality in the area
- This project is also part of the ultimate plan of establishing 230 kV transmission loop in Leyte, Bohol, and Cebu Island.

Substation Components:
- Palo SS: 3x100 MVA, 138/69-13.8 kV Power Transformers and accessories, 8-230 kV PCB and associated equipment, 9-69 kV PCB and associated equipment
- Babatngon SS: 3-138 kV PCB and associated equipment



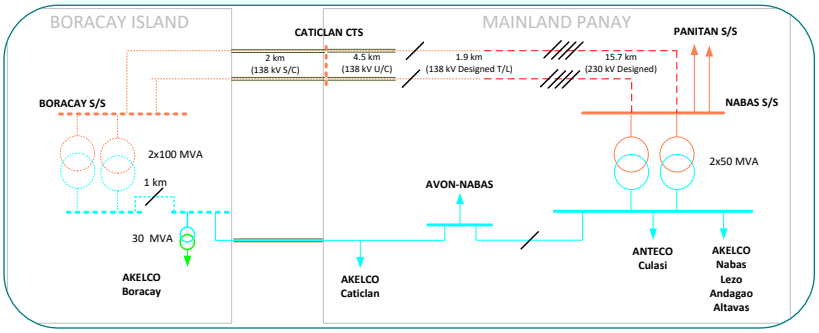
Transmission Line Components:
- Babatngon – Palo TL: 230 kV (Initially energized at 138 kV), ST-DC, 4x795 MCM ACSR, 20 km (2x1,148 MW)
- Palo – Alang-Alang TL: 69 kV, SP-DC, 1-795 MCM ACSR, 0.5 km (1x86 MW)
- Palo – Tolosa & Palo – Campetik TL: 69 kV, SP-DC, 1-795 MCM ACSR, 2x0.75 km (2x86 MW)

3. Nabas–Caticlan–Boracay Transmission Line Project
Aklan

Driver	Status	Project Cost	ETC
Load Growth System Reliability	ERC-Approved CEPNS	7,419 Mn	Aug 2026

Need / Justification:
- To prevent overloading of the Nabas – Caticlan – Boracay 69 kV Transmission Corridor
- To cate the increasing demand of Boracay and Caticlan
- To prevent load curtailment or power interruption
- To provide reliability to the customers in Boracay and Caticlan area

Substation Components:
- Boracay SS (New): 2x100 MVA 138/69-13.2 kV Power Transformers and accessories, 5-138 kV PCB (GIS) and associated equipment, 6-69 kV PCB (GIS) and associated equipment
- Nabas SS (Expansion): 4-138 kV PCB (AIS) and associated equipment
- Nabas Transition Station (New)



Transmission Line Components:
- Nabas SS – Nabas TS TL: 230 kV (Initially energized at 138 kV), ST/SP-DC, 4-795 MCM ACSR, 15.7 km (2x1,148 MW)

- Nabas SS – Nabas TS TL: 138 kV, ST/SP-DC, 1-795 MCM ACSR, 1.9
- km (2x172 MW)
- Nabas TS – Caticlan (Tabon) CTS UG: 138 kV, DC, 1C-1600 mm², Underground Cable System of 180 MW capacity per circuit, 4.5 km. (2x180 MW)
- AKELCO – Boracay Tie Line: 69 kV, SP-SC, 1-336.4 MCM ACSR, 0.4km (1x50 MW)
- Rehabilitation of Unidos – Caticlan TL: 69 kV, 1-336.4 MCM ACSR, 7 km, and other associated equipment

Submarine Cable Components:
- Caticlan – Boracay SC: Submarine Cable System, DC of 100 MW capacity at 138 kV, 2 km (2x100 MW)
- Caticlan CTS (New), Cable Sealing End

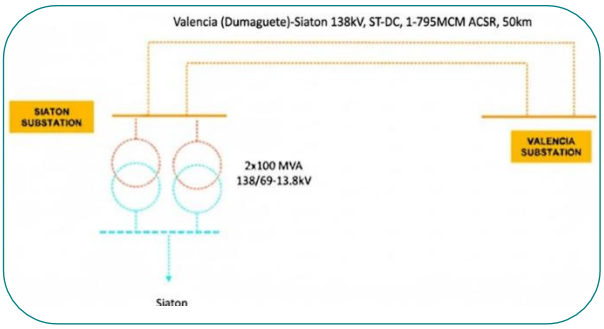
TRANSMISSION LINE

138 kV PROJECTS

4. Amlan – Valencia (Dumaguete) 138 kV Transmission Line Project
Negros Oriental

Driver	Status	Project Cost	ETC
Load Growth System Reliability	ERC-approved CEPNS	3,015 Mn	Dec 2026

Need / Justification:
- To prevent overloading of the Amlan-Siaton 69 kV Transmission Line
- To cater the growing demand and provide operational flexibility and reliability to the customers in Southern Negros
- To improve the voltage quality in the area
- The project is also part of the ultimate plan of establishing 138 kV transmission loop in Southern Negros.



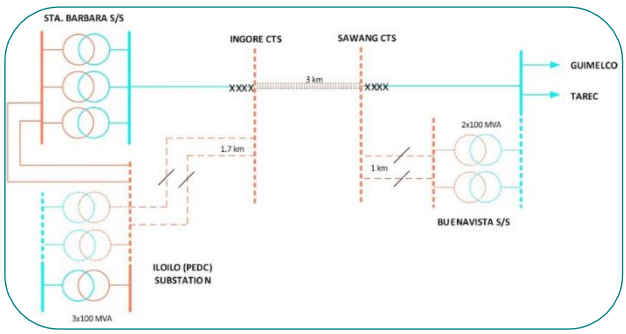
Substation Components:
- Amlan SS: 3-138 kV PCB and associated equipment
- Valencia (Dumaguete) SS (New): 2x100 MVA, 138/69-13.8 kV Power Transformers and accessories, 6-138 kV PCB and associated equipment, 6-69 kV PCB and associated equipment

Transmission Line Components:
Amlan – Valencia (Dumaguete) TL: 138 kV, ST-DC, 1-795 MCM ACSR, 18 km (2x172 MW)

5. Panay–Guimaras 138 kV Interconnection Project
Guimaras, Iloilo

Driver	Status	Project Cost	ETC
Generation Entry Load Growth System Reliability	ERC-approved CEPNS	3,553 Mn	Dec 2026

Need / Justification:
- To accommodate the full dispatch of proposed and existing power plants in Guimaras Island
- To cater to the growing demand and provide operational flexibility and reliability to the customers in Iloilo City
- To maximize the existing Panay–Guimaras Interconnection by energizing Ingore–Sawang Submarine Cable to 138 kV thus, increasing its capacity from 54 MW to 96 MW



Substation Components:
- Iloilo SS: 3x100 MVA,138/69-13.8 kV Power Transformers and accessories, 2-138 kV PCB and associated equipment, 10-69 kV PCB (GIS) and associated equipment
- Buenavista SS: 1x100 MVA 138/69- 13.8 kV Power Transformer and accessories, 6-138 kV PCB (GIS) and associated equipment, 4-69 kV PCB and associated equipment
- Transfer of existing 1x100 MVA 138/69-13.8 kV Power Transformer and accessories from Iloilo SS to Buenavista SS
- Ingore CTS: existing CTS initially energized at 69 KV SS will be energized at 138 kV
- Sawang CTS: existing CTS initially energized at 69 KV SS will be energized at 138 kV

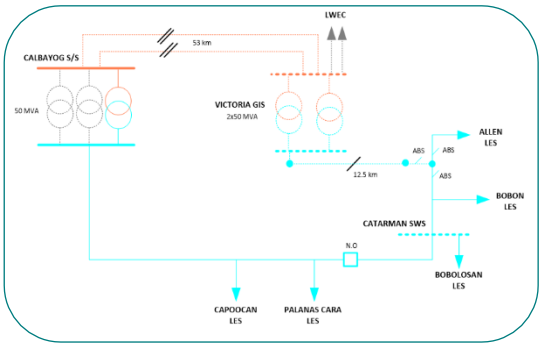
Transmission Line Components:
- Iloilo SS – Ingore CTS TL: 138 kV, ST-DC, 1-795 MCM ACSR, 1.7 km (2x172 MW)
- Iloilo SS – Ingore CTS UG: 138 kV, SC, XLPE cables of 200 MW capacity per circuit, 0.15 km (1x200 MW)
- Iloilo UC: 69 kV, Four circuits, XLPE cables of 100 MW capacity per circuit, 0.25 km (4x100 MW)
- Extension of Sta. Barbara – Iloilo TL: 138 kV, DC, XLPE cables of 400 MW capacity per circuit, 0.15 km (2x400 MW)
- Baldoza TL Transfer: 69 kV, SP-SC, 1-795 MCM ACSR, 0.07 km (1x86 MW)
- Baldoza UG Transfer: 69 kV, SC, XLPE cable of 100 MW capacity per circuit, 0.38 km (1x100 MW)
- PPC & MORE TL Transfer: 69 kV, SP-SC, 1-795 MCM ACSR, 0.09 km (1x86 MW)
- PPC & MORE UG Transfer: 69 kV, SC, XLPE cable of 100 MW capacity per circuit, 0.37 km (1x100 MW)

- Banuyao TL Transfer: 69 kV, SP-SC, 1-795 MCM ACSR, 0.8 km (1x86 MW)
- Banuyao UG Transfer: 69 kV, Single circuit, XLPE cable of 100 MW capacity per circuit, 0.36 km
- Zaldivar CTS – Buenavista SS TL: 138 kV, ST-DC, 1-795 MCM ACSR, 1 km (2x172 MW)
- Zaldivar Bypass TL: 69 kV, ST-SC, 1-336.4 MCM ACSR, 0.7 km (1x50 MW)
- Buenavista SS: Iloilo Line & 13.2 kV Guimelco Line

6. Calbayog – Allen Transmission Line Project
Samar

Driver	Status	Project Cost	ETC
Generation Entry Load Growth System Reliability	ERC-approved CEPNS	10,212 Mn	Dec 2028

Need / Justification:
- To accommodate the incoming generation in Northern Samar
- To cater to the growing demand and provide operational flexibility and reliability to the customers in Northern Samar
- To improve the voltage quality in the area
- This project is also part of the ultimate plan of establishing 138 kV transmission loop in Samar Island.



Substation Components:
- Calbayog SS: 3-138 kV PCB and associated equipment
- Catarman SWS: 5-69 kV PCB and associated equipment
- Victoria SS: 2x50 MVA, 138/69-13.8 kV Power Transformers and accessories (Redeployment of Power Transformers from Paranas SS and Panitan SS), 11-138 kV PCB (GIS) and associated equipment, 4-69 kV PCB (GIS) and associated equipment

Transmission Line Components:
- Calbayog – Victoria TL: 138 kV, ST-DC, 2-795 MCM ACSR, 53 km (2x344 MW)
- Victoria – Allen TL: 69 kV, SP-SC, 1-795 MCM ACSR, 12.5 km (1x86MW)
- Rerouting of Paranas – Calbayog & Calbayog – Catarman TL: 69 kV, 1x336.4 MCM ACSR, SP-SC, 0.5 km

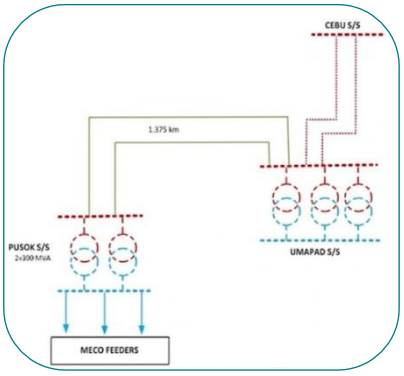
Substation

230 kV PROJECTS

7. Lapu-lapu 230 kV Substation Project
Cebu

Driver	Status	Project Cost	ETC
Load Growth System Reliability	ERC-approved CEPNS	8,481 Mn	Dec 2027

Need / Justification:
- To unload the Cebu – Mandaue –Lapu-lapu 138 kV Transmission Corridor and Lapu-lapu GIS Substation
- To provide alternative substation capacity to power consumers in Lapu-lapu and Cordova
- To cater to the growing demand and provide operational flexibility and reliability to the customers in Mactan Island



Substation Components:
Pusok SS (New) and associated 69 kV lines: 2x300 MVA 230/69-13.8 kV Power Transformers and accessories, 8-230 kV PCB (GIS) and associated equipment, 10-69 kV PCB (GIS) and associated equipment

Submarine Cable Components:
Umapad – Pusok SC: 230 kV, 600 MW per circuit, DC, 1.375 km (2x600 MW)

8. Grid Protection Relay Replacement Project (Phase 3)
Luzon, Visayas, Mindanao

Driver	Status	Project Cost	ETC
System Reliability	ERC-approved CEPNS	14,687 Mn	Jun 2028

Need / Justification:
- To ensure adequate, resilient, and efficient system
- To ensure safe, secure, and reliable Grid operation

Substation Components:
Luzon
- Bolo SS: Upgrading of 73 secondary devices and associated equipment
- La Trinidad SS: Upgrading of 27 secondary devices and associated equipment

- San Jose SS: Upgrading of 12 secondary devices and associated equipment
- Santiago SS: Upgrading of 12 secondary devices and associated equipment
- Botolan SS: Upgrading of 26 secondary devices and associated equipment
- Tayabas SS: Upgrading of 45 secondary devices and associated equipment
- Dasmarinas SS: Upgrading of 24 secondary devices and associated equpment

Visayas

- Amlan SS: Upgrading of 69 secondary devices and associated equipment
- Bacolod SS: Upgrading of 33 secondary devices and associated equipment
- Babatngon SS: Upgrading of 44 secondary devices and associated equipment
- Cebu SS: Upgrading of 24 secondary devices and associated equipment
- Colon SS: Upgrading of 59 secondary devices and associated equipment
- Mandaue SS: Upgrading of 9 secondary devices and associated equipment
- Lapu-lapu SS: Upgrading of 7 secondary devices and associated equipment
- Ormoc SS: Upgrading of 77 secondary devices and associated equipment
- Quiot SS: Upgrading of 8 secondary devices and associated equipment

Mindanao

- Lugait SS: Upgrading of 6 secondary devices and associated equipment
- Pitogo SS: Upgrading of 5 secondary devices and associated equipment
- Kibawe: Upgrading of 10 secondary devices and associated equipment
- Jasaan: Upgrading of 35 secondary devices and associated equipment
- Nabunturan SS: Upgrading of 20 secondary devices and associated equipment
- General Santos: Upgrading of 23 secondary devices and associated equipment

9. Visayas Substation Upgrading Project 2

Various provinces in the Visayas

Driver	Status	Project Cost	ETC
Load Growth Generation Entry System Reliability	ERC-Approved CEPNS	17,805 Mn	Jun 2028

Need / Justification:

- To cater to the load growth in the area and to provide N-1 contingency to the substations
- To cater to the growth in demand in each area and to provide reliability for the customers being served by the substations

Substation Components:

Stage 1:

Leyte:

- Isabel SS: 1x50 MVA 138/69-13.8 kV Power Transformer and accessories (1x50 MVA transformer transferred from Calong-calong SS), 3-138 kV PCB and associated equipment, 2-69 kV PCB and associated equipment. (Additional). 9-138 kV PCB and associated equipment, 2- 69 kV PCB and associated equipment (Replacement), Centralized Control Building (CCB), Full upgrading of secondary devices, Decommissioning of 1x30 MVA 138/69-13.8 kV PTR, Decommissioning of 2-69 kV PCB, and Decommissioning of 9-138 kV PCB
- Tabango SS: 1x50 MVA 230/69-13.8 kV Power Transformer and accessories, 2-230 kV PCB and associated equipment, 2-69 kV PCB and associated equipment, CCB, Full upgrading of secondary devices, Decommissioning of 1x10MVA 230/69-13.8 kV PTR, Decommissioning of 1-69 kV PCB
- Maasin SS: 1x50 MVA 138/69-13.8 kV Power Transformer and accessories, 3-138 kV PCB and associated equipment, 9-69 kV PCB and associated equipment, Expansion of Control Room

Samar:

- Paranas SS: 2x100 MVA 138/69-13.8 kV Power Transformer and accessories, 9-69 kV PCB and associated equipment, CCB, Full upgrading of secondary devices, Replacement of 30 MVA and 50 MVA transformers, Decommissioning of 1-69k V PCB
- Calbayog SS: 1x50 MVA 138/69-13.8 kV Power Transformer and accessories, 5-138 kV PCB and associated equipment, 7-69 kV PCB and associated equipment, Full upgrading of secondary devices, CCB, Decommissioning of 2-69 kV PCB

Cebu:

- Compostela SS: 2x100 MVA 138/69- 13.8 kV Power Transformer and accessories (Replacement of 2x50 MVA transformers), 2-230 kV PCB and associated equipment, 3-69 kV PCB and associated equipment, Relocation of Warehouse, and Decommissioning of 2-69 kV PCB
- Samboan SS: 4-138 kV PCB and associated equipment, 2-69 kV PCB and associated equipment, CCB, Full upgrading of secondary devices
- Toledo SS: 3x100 MVA 138/34.5- 13.8 kV Power Transformer and accessories (Replacement of 3x40 MVA transformers), Transfer of termination of various TL, CCB, Replacement of 3x40 MVA transformers
- Daanbantayan SS: 1x150 MVA 230/69-13.8 kV Power Transformer, 2-69 kV PCB and associated equipment, CCB, (Decommissioning of 1x100MVA PTR)

Bohol:

- Ubay SS: 1x100 MVA 138/69-13.8 kV Power Transformer and accessories, 10-138 kV PCB and associated equipment, 11-69 kV PCB and associated equipment, CCB, 69 kV line extensions, Decommissioning of 6-69 kV PCB
- Corella SS: 1x100 MVA 138/69-13.8 kV Power Transformer and accessories, 2-138 kV PCB and associated equipment, 8-69 kV PCB and associated equipment, 69 kV line extensions

Negros:

- Kabankalan SS: 2x100 MVA 138/69- 13.8 kV Power Transformer (Replacement of 30 and 50 MVA Transformers), 3-138 kV PCB and associated equipment, 4-69 kV PCB and associated equipment, CCB and Telecom Shelter, Full upgrading of secondary devices, Decommissioning of 1-138 kV PCB, Relocation of 4-69 kV PCB
- Mabinay SS: 1x50 MVA 138/69-13.8 kV Power Transformer and accessories, 4-138 kV PCB and associated equipment, 5-69 kV PCB and associated equipment, CCB and Telecom Shelter, Full upgrading of secondary devices, Decommissioning of 2-138 kV PCB, Decommissioning of 1-69 kV PCB

Panay:

- San Jose SS: 2x50 MVA 138/69-13.8 kV Power Transformer and accessories, 6-138 kV PCB and associated equipment, 5-69 kV PCB and associated equipment, Expansion of Control Building, Decommissioning of 1-69 kV PCB
- Dingle SS: 2x100 MVA 138/69-13.8 kV Power Transformer and accessories, 3-138 kV PCB and associated equipment, 9-69 kV PCB and associated equipment, CCB and Telecom Shelter, Full upgrading of secondary devices, Decommissioning of 2x50 MVA transformer and 6-69 kV PCB
- Barotac Viejo SS: 1x50 MVA 138/69- 13.8 kV Power Transformer and accessories (50 MVA Transformer transferred from Iloilo SS), 2-138 kV PCB and associated equipment, 2-69 kV PCB and associated equipment
- Sta. Barbara SS: 1x75 MVA 138/69- 13.8 kV Power Transformer and accessories (Transfer) (Spare), Upgrading of Secondary Equipment Cable, Expansion of Control Building, Decommissioning of 2x50 MVA Transformers

Stage 2:
- Panitan SS: 3x100 MVA 138/69-13.8 kV Power Transformer and accessories, 1x7.5 MVAR Power Shunt Capacitor; 8-138 kV PCB (GIS) and associated equipment, 10-69 kV PCB (GIS) and associated equipment, 1x7.5 MVAR Power Shunt Capacitor, Construction of New Control Room, CCB and Container Van and Dismantling of existing 69 kV Switchyard, Replacement of 2x30 and 50 MVA transformers, Decommissioning of 8-69 kV PCB
- Concepcion SS: 1x100 MVA 13tdpas8/69- 13.8 kV Power Transformer and accessories, 1-138 kV PCB and associated equipment
- Calong-calong SS: 3x100 MVA 138/69-13.8 kV Power Transformers and accessories (Replacement of 2x50 MVA transformers), 2-138 kV PCB and associated equipment, 11-69 kV PCB and associated equipment, Full upgrading of secondary devices, CCB, Dismantling of existing 69 kV Switchyard, Calong-calong 69 kV feeder line extensions, Decommissioning of 6-69 kV PCB

Substation

138 kV PROJECTS

10. Visayas Regional PCB Replacement Project 1
Cebu, Bohol, Negros Occidental, Iloilo

Driver	Status	Project Cost	ETC
System Reliability	ERC-Approved CEPNS	4,096 Mn	Jan 2030

Need / Justification:
- The project involves the replacement of the existing PCB in various substations in Visayas Island due to old age and underrated capacity.
- To provide reliability to the equipment in various substations in Visayas

Substation Components:
- Cebu SS: 8-138 kV PCB and associated equipment, 1-69 kV PCB and associated equipment (Replacement)
- Pajo LES: 1-69 kV PCB and associated equipment (Replacement)
- Garcia Hernandez LES: 1-69 kV PCB and associated equipment (Replacement)
- Bacolod SS: 1-138 kV PCB and associated equipment, 6-69 kV PCB and associated equipment (Replacement)
- Amlan SS: 3-69 kV PCB and associated equipment (Replacement)
- Sta. Barbara SS: 1-69 kV PCB and associated equipment (Replacement)

Voltage Improvement

138 kV PROJECTS

11. Visayas Grid Reliability and Stability Support Project 1
Samar

Driver	Status	Project Cost	ETC
Power Quality and Technology	Awaiting ERC Approval CEPNS	7,561 Mn	Dec 2029

Need / Justification:
To address transmission congestion, declining system strength and inertia, and the growing variability and uncertainty associated with high VRE penetration in Northern Samar

Substation Components:
Victoria 138 kV SS: 50 MW Battery, 4-Hours (200 MWh) and associated equipment

12. Visayas Voltage Improvement Project 2
Various provinces in the Visayas

Driver	Status	Project Cost	ETC
Power Quality and Technology	ERC-Approved CEPNS	5,366 Mn	Stage 1: Aug 2027 Stage 2: Jun 2030

Need / Justification:
- To improve the power quality in different areas in Visayas
- These voltage issues are primarily due to the load growth in the area including the load end substations that are currently served by long 69 kV transmission lines
- Furthermore, Static Synchronous Compensators (STATCOM) are proposed to be installed in Sta. Barbara, Naga, and Calbayog Substation in order to improve the voltage stability per area.

Substation Components:
Stage 1:
- Calbayog SS: ±20 MVAR 138 kV STATCOM, 2-138 kV PCB and associated equipment
- Naga SS: ±40 MVAR 138 kV STATCOM, 2x20 MVAR Capacitor Bank, 4-138 kV PCB and associated equipment
- Sta. Barbara SS: ±40 MVAR (Energized) 138 kV STATCOM, 1-138 kV PCB and associated equipment
- Baybay LES: 2x5 MVAR 69 kV Capacitor Bank, 2-69 kV PCB and associated equipment (Energized)
- Sipalay LES: 2x5 MVAR 69 kV Capacitor Bank, 2-69 kV PCB and associated equipment (Energized)
- San Jose SS: 3x5 MVAR 69 kV Capacitor Bank, 3-69 kV PCB and associated equipment

- Roxas LES: 2x5 MVAR 69 kV Capacitor Bank, 2-69 kV PCB and associated equipment

Stage 2:
- Quinapondan LES: 1x5 MVAR 69 kV Capacitor Bank, 1-69 kV PCB and associated equipment
- Balamban LES: 2x5 MVAR 69 kV Capacitor Bank, 2-69 kV PCB and associated equipment
- Carmen LES: 2x5 MVAR 69 kV Capacitor Bank, 2-69 kV PCB and associated equipment
- Valladolid LES: 5x5 MVAR 69 kV Capacitor Bank, 5-69 kV PCB and associated equipment
- Bayawan LES: 1x5 MVAR 69 kV Capacitor Bank, 1-69 kV PCB and associated equipment
- Estancia LES: 2x5 MVAR 69 kV Capacitor Bank, 2-69 kV PCB and associated equipment

Voltage Improvement

69 kV PROJECTS

13. Visayas Mobile Capacitor Bank Project Iloilo, Leyte	Driver Power Quality and Technology	Status ERC-Approved CEPNS	Project Cost 661 Mn	ETC Dec 2029

Need / Justification:
- To improve the power quality in different areas in Visayas while waiting for the completion of the transmission backbone needed
- These voltage issues are primarily due to the load growth in the area including the load end substations that are currently served by long 69 kV transmission lines. Without any transmission reinforcements, these substations will be experiencing low voltage occurrences. As the demand grows, these occurrences will worsen which may lead to load shedding and possible voltage collapse in the area.

Substation Components:
- Tigbauan LES: 1x5 MVAR 69 kV Mobile Capacitor, 1-69 kV PCB and associated equipment (Energized)
- SEPALCO MCB: 2x5 MVAR 69 kV Mobile Capacitor, 2-69 kV PCB and associated equipment

6.2 VISAYAS PROJECTS FOR 2031–2040

The projects planned for 2031 to 2040 are intended to support the projected integration of large-scale power plants within the Visayas Grid. As part of this initiative, the main transmission backbone will be extended to key areas, including Southern Negros, Northern Panay, and Northern Samar Island. In addition, new submarine cable interconnections will be established between Cebu and Negros, Negros and Panay, Cebu and Leyte, and Leyte and Bohol to facilitate the entry of major power plants in the identified CREZ.

Moreover, the HVDC link between Luzon and Visayas will be upgraded to double its transfer capacity to 880 MW, enabling more efficient sharing of excess generation across the Luzon, Visayas, and Mindanao grids.

Further growth in the commercial and industrial sectors across the Visayas is also expected to drive increased power demand. To accommodate these developments, additional drawdown substations are proposed in key cities throughout the Visayas Grid.

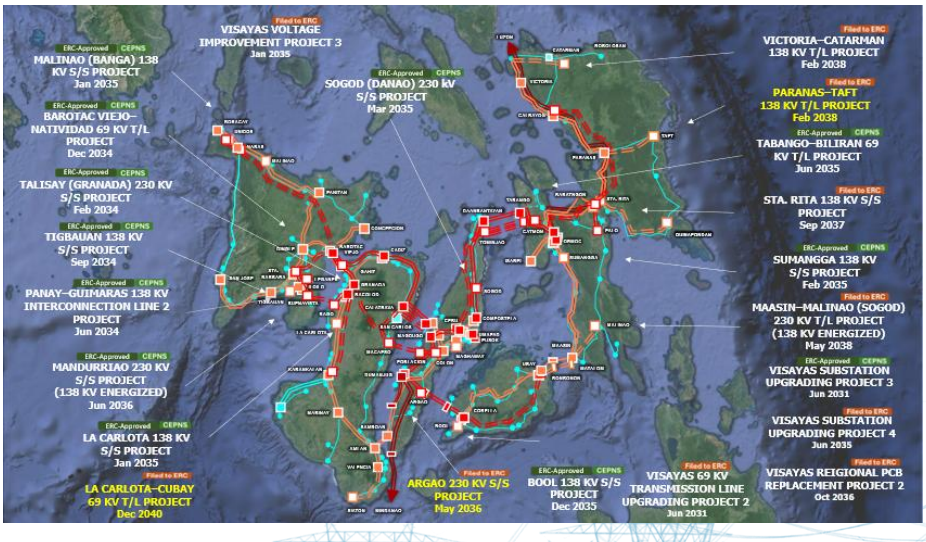


Figure 6.4: Visayas Transmission Outlook for 2031-2040

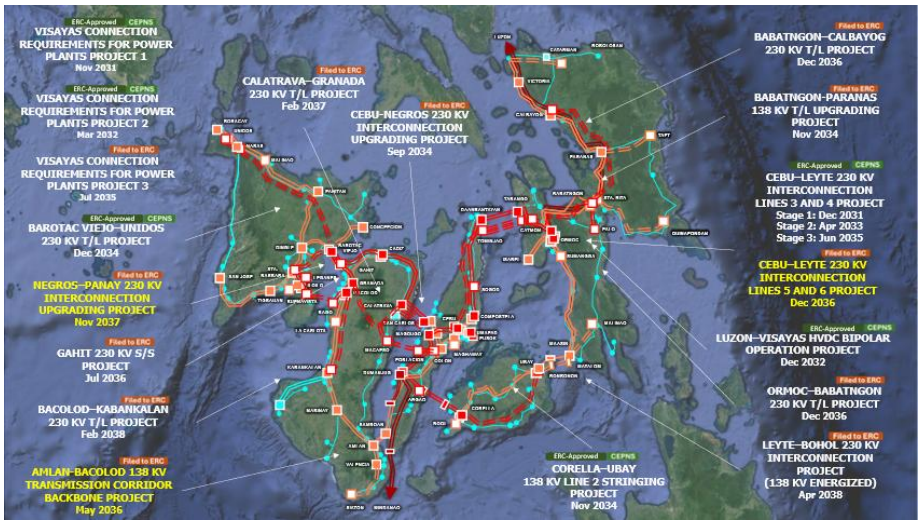


Figure 6.5: Visayas Transmission Outlook for 2031-2040

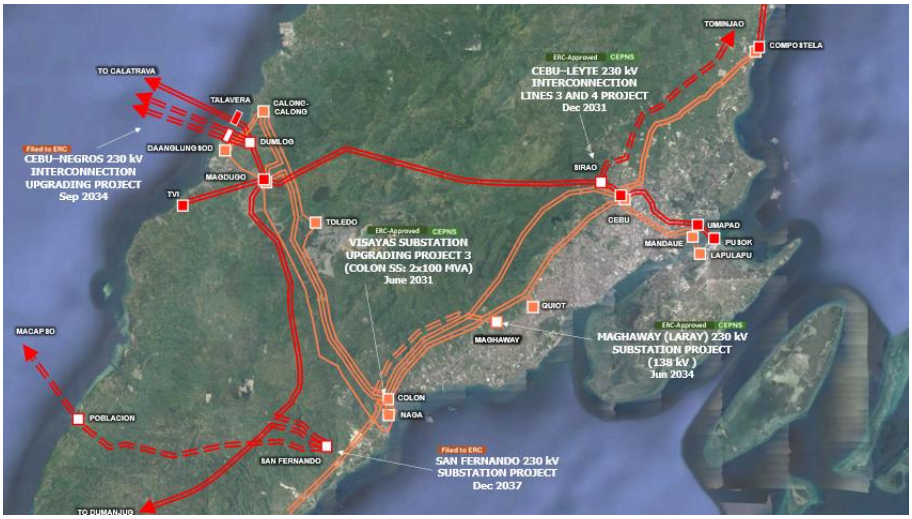


Figure 6.6: Metro Cebu Transmission Outlook for 2031-2040

Table 6.2: List of Visayas transmission projects for the period 2031-2040

TRANSMISSION LINE

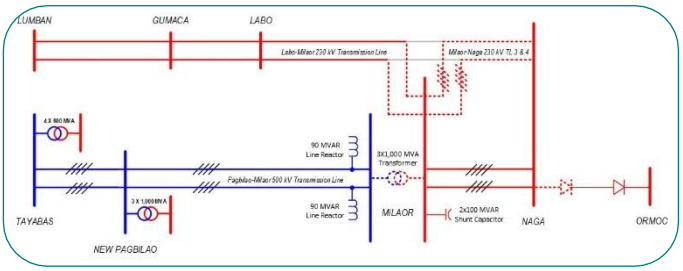
500 kV PROJECTS

1. Luzon – Visayas HVDC Bipolar Operation Project Quezon, Camarines Sur, Leyte	Driver Generation Entry	Status ERC-Approved CEPNS	Project Cost 49,628 Mn	ETC Dec 2032

Need / Justification:

- To provide an additional transfer capacity of 440 MW between Luzon and Visayas Island upon completion of the project
- To accommodate additional excess generation, and to maximize the power interchange between Luzon, Visayas, and Mindanao

Substation Components:
Luzon



- Milaor SS (Expansion): 1x1,000 MVA 500/230-13.8 kV Power Transformer and accessories, 1-500 kV PCB and associated equipment, 7-230 kV PCB and associated equipment
- Naga (Luzon) SS (Expansion): 4-230 kV PCB and associated equipment
- Naga Converter/Inverter Station (Upgrading): New Voltage Source Converter Station with a transfer capacity of 880 MW

Visayas

- Ormoc Converter/Inverter Station (Upgrading): New Voltage Source Converter Station with a transfer capacity of 880 MW
- Ormoc SS: 2-230 kV PCB and associated equipment

Transmission Line Components:

Luzon

- Swinging and Upgrading of Labo–Milaor TL at Milaor SS: 230 kV, 1-410 mm^2 STACIR, ST-DC, 1.5 km
- Swinging and Upgrading of Milaor–Naga TL 3 & 4 at Milaor SS: 230 kV, 4-795 MCM ACSR/AS, ST-DC, 3.0 km (2x1,148 MW)

TRANSMISSION LINE

230 kV PROJECTS

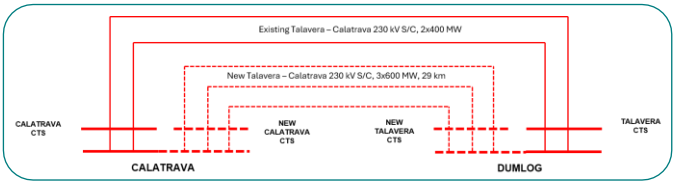
2. Cebu – Negros 230 kV Interconnection Upgrading Project

Negros, Cebu

Driver	Status	Project Cost	ETC
Generation Entry System Reliability	Awaiting ERC Approval	72,552 Mn	Sep 2034

Need / Justification:

- To accommodate the excess generation from Panay and Negros Island going to Cebu
- To prevent overloading of the existing Cebu-Negros 230 kV Interconnection during normal and N-1 condition



Substation Components:

- Calatrava SS (Expansion): 3x70 MVAR, 230 kV Line Reactor, 7-230 kV PCB and associated equipment
- Dumlog SWS (New): 3x70 MVAR, 230 kV Line Reactor, Transfer of 2x70 MVAR Line Reactor from Magdugo to Dumlog SWS, 15-230 kV PCB and associated equipment
- New Talavera CTS
- New Calatrava CTS

Transmission Line Components:

- Calatrava– New Calatrava CTS TL: 2-795 MCM, ACSR, ST-TC, 3x1 km, 230 kV, (3x573 MW)
- New Talavera CTS – Dumlog TL: 230 kV, ST-TC, 2-795 MCM ACSR, 3x1 km, (4x573)
- Dumlog Bus-in Lines to Magdugo-Talavera TL: 230 kV, ST-FC (Multi circuit tower), 4-795 MCM ACSR, 4x1 km, (2x1,148 MW)
- Reconductoring of Magdugo-Dumlog TL: 230 kV, 4-410 mm^2 TACSR or any conductor with same capacity or higher, 7.61 km

Submarine Cable Components:

Calatrava - New Talavera SC: 3-circuits of 600 MW each, 230 kV, 29 km

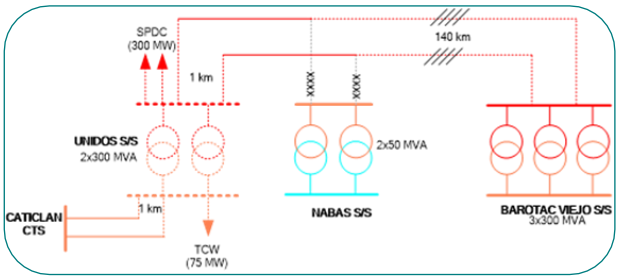
3. Barotac Viejo – Unidos 230 kV Transmission Line Project

Panay

Driver	Status	Project Cost	ETC
Generation Entry	ERC-Approved CEPNS	39,163 Mn	Dec 2034

Need / Justification:

- To accommodate the incoming power plants in Northern Panay
- To prevent overloading of the 138 kV Transmission corridor in Northern Panay during normal and N-1 conditions



Substation Components:

- Unidos SS (New): 2x300 MVA 230/138-13.8 kV Power Transformers and accessories, 7-230 kV PCB (GIS) and associated equipment, 7-138 kV PCB (GIS) and associated equipment
- Barotac Viejo SS (Expansion): 4-230 kV PCB and associated equipment

Transmission Line Components:

- Reconductoring of existing Barotac Viejo – Dingle 138 kV lines 1 and 2 with 1-410 mm^2 STACIR Conductor, 37 km (2x382 MW)
- Stringing of 3rd Circuit with 1-410 mm^2 STACIR Conductor, 37 km. (1x382 MW)
- Bus-in of Unidos SS to Nabas Caticlan TL (Going to Nabas): 230 kV, ST-DC, 4-795 MCM ACSR, 1 km (2x1,148 MW)

- Bus-in of Unidos SS to Nabas-Caticlan TL (going to Caticlan): 138 kV, ST-DC, 1-795 MCM ACSR, 1 km (2x172 MW)
- Barotac Viejo – Unidos TL (Extension up to Barotac Viejo): 230 kV, ST-DC, 4-795 MCM ACSR, 140 km

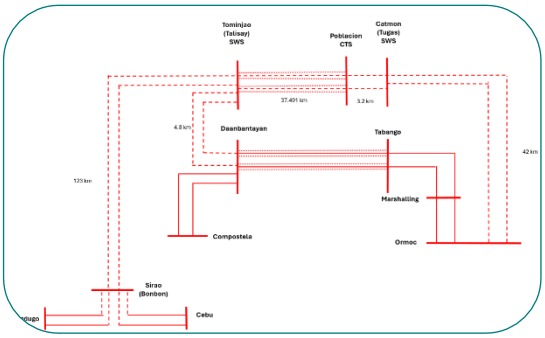
4. Cebu – Leyte 230 kV Interconnection Lines 3 & 4 Project

Cebu, Leyte

Driver	Status	Project Cost	ETC
Generation Entry System Reliability	ERC-Approved CEPNS	107,661 Mn	Stage 1: Dec 2031 Stage 2: Apr 2033 Stage 3: Jun 2035

Need / Justification:

- To prevent overloading of Daanbantayan – Tabango 230 kV submarine cables
- To maximize power interchange between Luzon, Visayas and Mindanao
- To increase reliability of the 230 kV backbone between Cebu and Leyte Islands
- To accommodate the entry of new power plants in Leyte and Samar Island



Substation Components:

Stage 1:

- Tabango SS (Expansion): 1-230 kV PCB and associated equipment
- Daanbantayan SS (Expansion): 1-230 kV PCB and associated equipment
- Tominjao (Talisay) SWS (New): 2x70 MVAR Line Reactors, 22-230 kV PCB and associated equipment
- Catmon (Tugas) SWS (New): 2x70 MVAR Line Reactors, 22-230 kV PCB and associated equipment
- Poblacion CTS (with provision for L5 and L6)

Stage 2:

- Sirao (Bonbon) SWS (GIS): 2x300 MVA 230/138-13.8 kV Power Transformers and accessories, 14-230 kV PCB and associated equipment, 8-138 kV PCB and associated equipment
- Compostela SS (Expansion):3x300 MVA 230/138 kV Power Transformers and accessories, 4-230 kV PCB and associated equipment

Stage 3:

- Ormoc SS (Expansion): 4-230 kV PCB and associated equipment

Transmission Line Components:

Stage 1:

- Tominjao Bus-in Lines to Daanbantayan – Compostela TL: 230 kV, ST-MC, 1x410 mm^2 TACSR or any conductor with the same capacity, 1.2 km (Daanbantayan portion) & 1.5 km (Compostela portion)
- Catmon (Tugas) SWS Bus-in Lines to Tabango – Marshalling TL: 230 kV, ST-MC, 1x410 mm^2 TACSR or any conductor with the same capacity, 0.9 km (Tabango portion) & 0.8 km (Marshalling portion)
- Catmon (Tugas) SWS – Poblacion CTS: 230 kV, ST-MC, 2-795 MCM ACSR, 3.2 km (Double Strung)

Stage 2:

- Bus-in of Sirao (Bonbon) SS to Cebu – Magdugo Overhead TL: 230 kV, ST-DC, 4-795 MCM ACSR, 2x0.5 km
- Sirao (Bonbon) – Compostela TL: 230 kV, 4-410 mm^2 TACSR or any conductor with the same capacity, ST-DC, 23 km

Stage 3:

- Catmon (Tugas) – Ormoc TL: 230 kV, ST-DC, 4-795 MCM ACSR, 42 km
- Sirao (Bonbon) – Tominjao TL: 230 kV, 4-410 mm^2 TACSR or any conductor with the same capacity, ST-DC, 100 km (Extension from Compostela to Tominjao (Talisay) (SWS)

Submarine Cable Components:

Stage 1:

- Tominjao (Talisay) – Poblacion SC: 230 kV, 600-MW per circuit submarine cable, Double Circuit 37.491 km

5. Babatngon–Calbayog 230 KV Transmission Line Project

Samar, Leyte

Driver	Status	Project Cost	ETC
Generation Entry System Reliability	Awaiting ERC Approval	57,816 Mn	Dec 2036

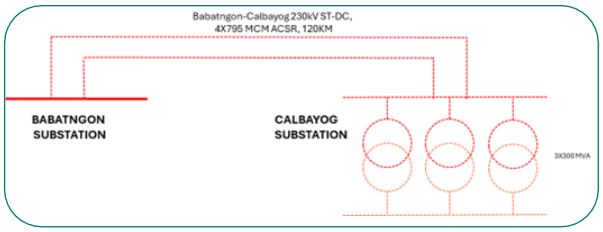
Need / Justification:

- To accommodate the incoming generation in Samar Island
- To prevent overloading of the Babatngon–Sta.Rita–Paranas–Calbayog 138 kV Transmission Corridor during normal and N-1 condition

Substation Components:

- Babatngon SS: 2-230 kV PCB and associated equipment
- Calbayog SS: 3x300 MVA, 230/138-13.8 kV Power Transformer and accessories, 8-230 kV PCB and associated equipment, 5-138 kV PCB and associated equipment

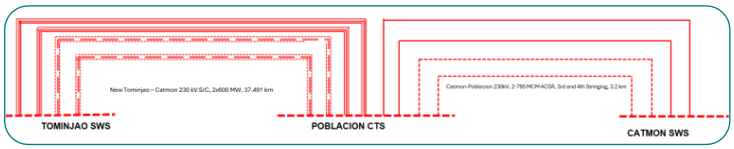
Transmission Line Components:
Babatngon – Calbayog TL: 230 kV, ST-DC, 4-795 MCM ACSR, 120 km, (2x1,148 MW)



6. Cebu – Leyte 230 kV Interconnection Lines 5 and 6 Project
Cebu, Leyte

Driver	Status	Project Cost	ETC
Generation Entry	Awaiting ERC Approval CEPNS	58,883 Mn	Dec 2036

Need / Justification:
- To prevent overloading of the Cebu-Leyte 230 kV Submarine Cables 3 and 4 during normal and N-1.
- To accommodate the entry of the power plants in Leyte and Samar.



Substation Components:
- Catmon SwS: 2x70 MVAR line reactor, 4-230 kV PCB and associated equipment
- Tominjao SwS: 2x70 MVAR line reactor, 4-230 kV PCB and associated equipment

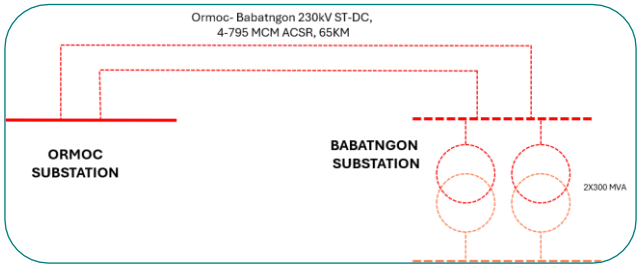
Transmission Line Components:
Catmon – Poblacion TL: 230 kV, 2-795 MCM ACSR, 3rd and 4th Stringing, 3.2 km (2x573 MW)

Submarine Cable Components:
Tominjao – Catmon SC: 230 kV, 600-MW per circuit submarine cables, Double Circuit, 37.491 km, (2x600 MW)

7. Ormoc – Babatngon 230 kV Transmission Line Project
Leyte

Driver	Status	Project Cost	ETC
Generation Entry System Reliability	Awaiting ERC Approval	19,806 M	Dec 2036

Need / Justification:
- To accommodate the incoming generation in Samar Island and Babatgnon area
- To prevent overloading of the Ormoc–Babatngon 138 kV Transmission Line during normal and N-1 condition
- This project is also part of the ultimate plan of establishing 230 kV transmission loop in Leyte, Bohol, and Cebu Island.



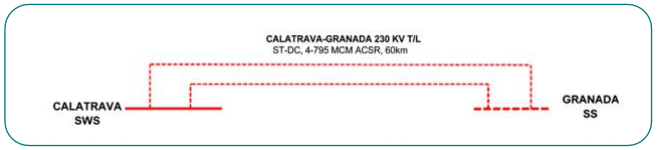
Substation Components:
- Babatngon SS: 2x300 MVA 230/138-13.8 kV Power Transformer and accessories, 10-230 kV PCB and associated equipment, 3-138 kV PCB and associated equipment
- Ormoc (Expansion): 4-230 kV PCB and associated equipment

Transmission Line Components:
Ormoc – Babatngon TL: 230 kV, ST-DC, 4-795 MCM ACSR, 65 km (2x1,148 MW)

8. Calatrava–Granada 230 kV Transmission Line Project
Negros Occidental

Driver	Status	Project Cost	ETC
Generation Entry System Reliability	Awaiting ERC Approval	15,171 Mn	Feb 2037

Need / Justification:
- The project will provide resiliency and reliability in the Negros island and will complete the future 230 kV Transmission loop in the island.
- The project aims to accommodate the excess generation from Panay and Negros Island going to Cebu.
- To prevent overloading of the Cadiz-Calatrava 230 kV Transmission Line during normal and N-1 condition



Substation Components:
- Calatrava SS (Expansion): 3-230 kV PCB and associated equipment

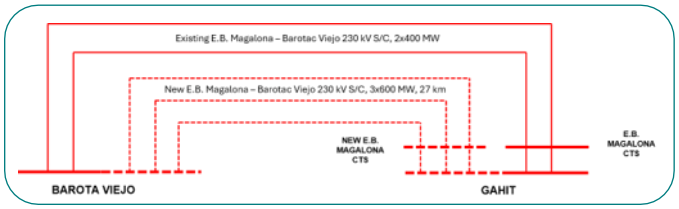
- Granada SS (Expansion): 4-230 kV PCB and associated equipment

Transmission Line Components:
Calatrava – Granada TL: 230 kV, ST-DC, 4-795 MCM ACSR, 60 km (2x1,148 MW)

9. Negros – Panay 230 kV Interconnection Upgrading Project
Panay, Negros

Driver	Status	Project Cost	ETC
Generation Entry System Reliability	Awaiting ERC Approval	71,738 Mn	Nov 2037

Need / Justification:
- The project aims to accommodate the excess generation from Panay Island.
- To prevent overloading of the Negros-Panay 230 kV Interconnection during normal and N-1 condition



Substation Components:
- Barotac Viejo SS (Expansion): 3x70 MVAR 230 kV line reactor, 6-230 kV PCB and associated equipment
- Gahit SS (Expansion): 3x70 MVAR line reactor, 7-230 kV PCB and associated equipment
- EB Magalona 230 kV CTS (new)

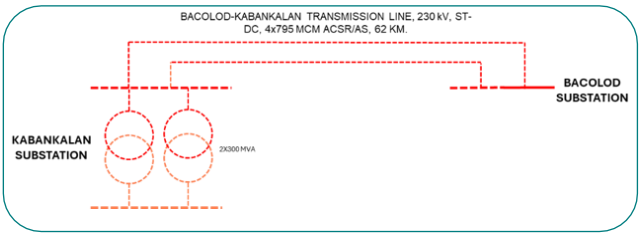
Transmission Line Components:
Gahit – New E.B. Magalona CTS TL: 230 kV, 2-795 MCM ACSR, ST-TC, 3x1 km (3x573 MW)

Submarine Cable Components:
New E.B. Magalona – Barotac Viejo SC: 230 kV, 3-circuits of 600 MW each, 27 km, (3x600 MW)

10. Bacolod – Kabankalan 230 kV Transmission Line Project
Negros Occidental

Driver	Status	Project Cost	ETC
Generation Entry System Reliability	Awaiting ERC Approval	18,597 Mn	Feb 2038

Need / Justification:
- To accommodate the incoming generation in Southern Negros
- To prevent overloading of the Bacolod–La Carlota–Kabankalan 138 kV Transmission Line during normal and N-1 condition



Substation Components:
- Kabankalan SS: 2x300 MVA 230/138 kV Power Transformers and accessories, 6-230 kV PCB and associated equipment, 2-138 kV PCB and associated equipment
- Bacolod SS: 4-230 kV PCB and associated equipment

Transmission Line Components:
Bacolod – Kabankalan TL: 230 kV, ST-DC, 4-795 MCM ACSR, 62 km.

11. Leyte – Bohol 230 kV Interconnection Project (Initially Energized at 138 kV)
Leyte, Bohol

Driver	Status	Project Cost	ETC
Generation Entry System Reliability	Awaiting ERC Approval	39,547 Mn	Apr 2038

Need / Justification:
- To accommodate the entry of the proposed power plants in Ubay area
- To prevent overloading of the existing Leyte–Bohol 138 kV Interconnection under both normal and N-1 contingency conditions by providing additional interconnection capacity
- This project is also part of the ultimate plan of establishing 230 kV transmission loop in Leyte, Bohol, and Cebu Island.

Substation Components:
- Maasin SS (Expansion): 2x70 MVAR 230 kV line reactor (Initially energized at 138 kV), 6-138 kV PCB and associated equipment
- Ubay SS (Expansion): 2x70 MVAR 230 kV line reactor (Initially energized at 138 kV), 6-138 kV PCB and associated equipment
- Bonbonon CTS (New)
- Matalom CTS (New)

Transmission Line Components:
- Maasin – Matalom TL: 230 kV (Initially energized at 138 kV), ST-DC, 4 km, 4x795 MCM ACSR

- Ubay – Bonbonon TL: 230 kV (Initially energized at 138 kV), ST-DC, 18 km, 4x795 MCM ACSR, ST-DC

Submarine Cable Components:
Bonbonon – Matalom SC: 230 kV (Initially energized at 138 kV), 17 km, 600-MW per circuit, Double circuit and associated Tie-lines

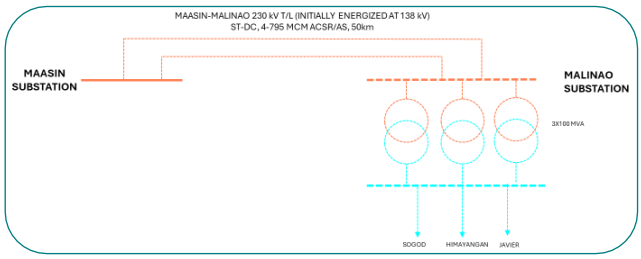


12. Maasin – Malinao (Sogod) 230 kV Transmission Line Project (Initially Energized at 138 kV)

Leyte

Driver	Status	Project Cost	ETC
Load Growth System Reliability	Awaiting ERC Approval	17,811 Mn	May 2038

Need / Justification:
- To cater to the growing demand and provide operational flexibility and reliability to the customers in Southern Leyte
- To improve the voltage quality in the area
- This project is also part of the ultimate plan of establishing 230 kV transmission loop in Leyte, Bohol, and Cebu Island.



Substation Components:
- Malinao (Sogod) SS: 3x100 MVA, 138/69-13.8 kV Power Transformers and accessories, 8-230 kV PCB and associated equipment (Initially energized at 138 kV), 9-69 kV PCB and associated equipment
- Maasin SS: 2-138 kV PCB and associated equipment

Transmission Line Components:
- Maasin – Malinao (Sogod) Overhead TL: 230 kV (Initially energized at 138 kV), 4-795 MVM ACSR, ST-DC, 50 km, (2x689 MW)
- Malinao Cut-in Lines (Sogod & Himayangan): 69 kV, 1-795 MCM ACSR, ST-DC, 2x2 km (2x86 MW

TRANSMISSION LINE

138 kV PROJECTS

13. Panay – Guimaras 138 kV Interconnection Line 2 Project

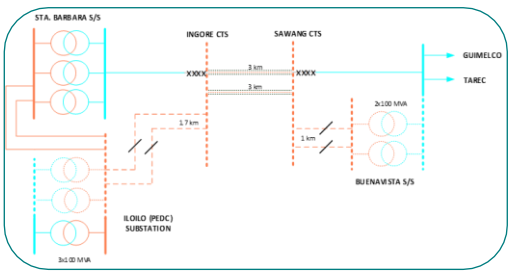
Guimaras, Iloilo

Driver	Status	Project Cost	ETC
Generation Entry System Reliability	ERC-Approved CEPNS	3,980 Mn	Jun 2034

Need / Justification:
To provide reliability to the existing and future power plants and load customers in Guimaras Island

Substation Components:
- Iloilo SS: 1-138 kV PCB and associated equipment
- Ingore CTS Expansion

Submarine Cable Components:
Ingore – Sawang SC: 138 kV, 3-400 mm² XLPE, Single Circuit, 3 km (1x100 MW)



14. Corella – Ubay 138 kV Line 2 Stringing Project

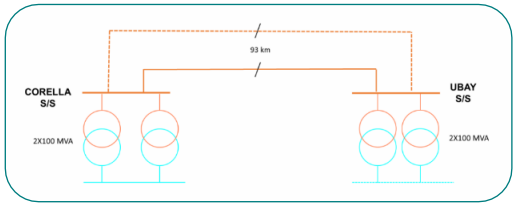
Bohol

Driver	Status	Project Cost	ETC
Generation Entry System Reliability	ERC-Approved CEPNS	2,875 Mn	Nov 2034

Need / Justification:
To accommodate and provide reliability to the existing and future power plants connected in Ubay area

Substation Components:
- Corella SS (Expansion): 2-138 kV PCB and associated equipment
- Ubay SS (Expansion): 2x5 MVAR 69 kV Capacitor Bank, 3-138 kV PCB and associated equipment, 4- 69 kV PCB and associated equipment

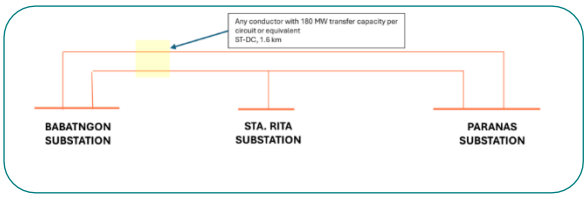
Transmission Line Components:
Corella – Ubay TL: 138 kV, ST-DC2, 1-795 MCM ACSR, 93 km (1x 172 MW)



15. Babatngon – Paranas 138 kV Transmission Line Upgrading Project
Samar, Leyte

Driver	Status	Project Cost	ETC
Generation Entry System Reliability	Awaiting ERC Approval	243 Mn	Nov 2034

Need / Justification:
- To increase the transfer capacity between Samar and Leyte Island
- To accommodate the incoming generation in Samar Island
- To prevent overloading of the Babatngon–Sta. Rita 138 kV Transmission Corridor during normal and N-1 condition

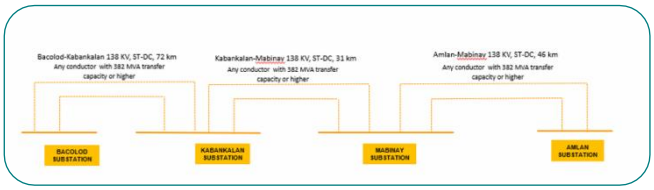


Transmission Line Components:
Babatngon – Paranas TL: 138 kV (segment along San Juanico Strait), ST-DC, Conductor with capacity of 180 MW per ckt, 1.6 km (1x180 MW)

16. Amlan-Bacolod 138 kV Transmission Corridor Upgrading Project
Negros

Driver	Status	Project Cost	ETC
Generation Entry System Reliability	Awaiting ERC Approval CEPNS	26,970 Mn	May 2036

Need / Justification:
- To accommodate the incoming generation in Southern Negros
- To prevent overloading of the Amlan-Mabinay-Kabankalan 138 kV Transmission Corridor during normal and N-1 condition

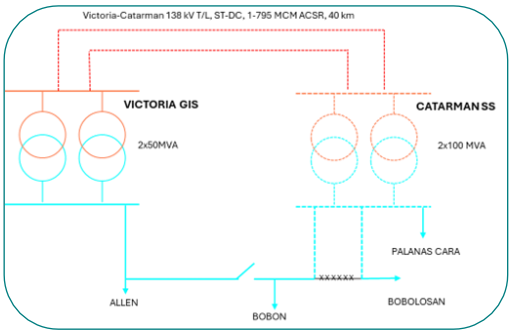


Transmission Line Components:
- Reconductoring of Bacolod-Kabankalan TL: 138 kV, ST-DC, conductor with 382 MVA transfer capacity or higher, 72 km (2x344 MW)
- Reconductoring of Kabankalan-Mabinay TL: 138 kV, ST-DC, conductor with 382 MVA transfer capacity or higher, 31 km (2x344 MW)
- Reconductoring of Amlan-Mabinay TL: 138 kV, ST-DC, conductor with 382 MVA transfer capacity or higher, 46 km (2x344 MW)

17. Victoria – Catarman 138 kV Transmission Line Project
Samar

Driver	Status	Project Cost	ETC
Load Growth System Reliability	Awaiting ERC Approval	14,717 Mn	Feb 2038

Need / Justification:
- To cater the growing demand and provide operational flexibility and reliability to the customers in Northern Samar
- To improve the voltage quality in the area
- This project is also part of the ultimate plan of establishing 138 kV transmission loop in Samar Island.



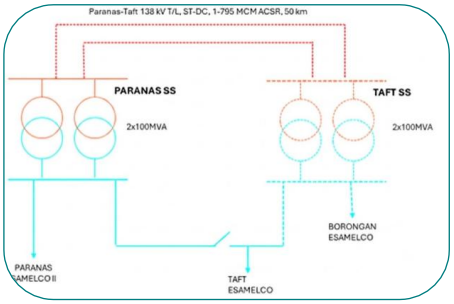
Substation Components:
- Catarman SS: 2x100 MVA 138/69 kV Transformers and accessories, 6-138 kV PCB and associated equipment, 4-69 kV PCB and associated equipment
- Victoria GIS (Expansion): 2-138 kV PCB and associated equipment

Transmission Line Components:
Victoria – Catarman TL: 138 kV, ST-DC, 1-795 MCM ACSR, 40 km. (2x1,172 MW)

18. Paranas – Taft 138 kV Transmission Line Project
Samar

Driver	Status	Project Cost	ETC
System Reliability	Awaiting ERC Approval CEPNS	14,331 Mn	Feb 2038

Need / Justification:
- To cater the growing demand and provide operational flexibility and reliability to the customers in Eastern Samar
- This project is also part of the ultimate plan of establishing 138 kV transmission loop in Samar Island.



Substation Components:
- Taft SS: 2x100 MVA, 138/69-13.8 kV Power Transformers and accessories, 6-138 kV PCB and associated equipment, 6-69 kV PCB and associated equipment
- Paranas SS (Expansion): 4-138 kV PCB and associated equipment

Transmission Line Components:

- Taft Cut-in Lines TL: 69 kV, 1-795 MCM ACSR, ST-DC, 1 km (86 MW)
- Paranas-Taft TL: 138 kV, ST-DC, 1-795 MCM ACSR, 50 km (2x172 MW)

TRANSMISSION LINE

69 kV PROJECTS

19. Visayas 69 kV Transmission Line Upgrading Project 2
Cebu, Samar, Leyte, Negros, Panay

Driver	Status	Project Cost	ETC
Load Growth	Awaiting ERC Approval CEPNS	9,321 Mn	Jun 2031

Need / Justification:
- To avoid overloading in various 69 kV transmission lines during normal conditions
- To prevent load curtailment within these lines that may affect power customers in the said areas

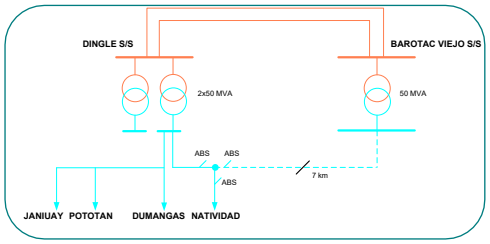
Transmission Line Components:
- Reconductoring Maasin – Hilongos Lines: 69 kV, 1-160 mm² STACIR, ST/P-SC, 33.42 km
- Reconductoring Maasin – Maasin Lines: 69 kV, 1-160 mm² STACIR, ST/P-SC, 10 km
- Reconductoring Paranas – Paranas Lines: 69 kV, 1-160 mm² STACIR, ST/P-SC, 2.54km
- Reconductoring Ubay – Trinidad Lines: 69 kV, 1-160 mm² STACIR, ST/P-SC, 20.84 km
- Reconductoring Ubay – MFI Lines: 69 kV, 1-160 mm² STACIR, ST/P-SC, 11.53 km
- Reconductoring of Calong-calong – BEZ TL: 69 kV, 1-160 mm² STACIR, ST/P-SC, 5.807 km
- Reconductoring of Bacolod – Lagasan LES TL: 69 kV, 1-160 mm² STACIR, ST/P-SC,19.51 km
- Reconductoring Amlan – Tanjay Lines: 69 kV, 1-160 mm² STACIR, ST/P SC, 10.54 km;
- Reconductoring of Panitan – Roxas LES TL: 69 kV, 1-160 mm² STACIR, ST/P SC, 10.8 km
- Reconductoring Panitan – Dao Lines: 69 kV, 1-160 mm² STACIR, ST/P-SC, 6.74 km;
- Reconductoring of Concepcion – Ajuy Lines: 69 kV, 1-160 mm² STACIR, ST/P-SC, 15.84 km
- Reconductoring Nabas – Lezo Lines: 69 kV, 1-160 mm² STACIR, ST/P-SC, 34.6 km.

20. Barotac Viejo –Natividad 69 kV Transmission Line Project
Iloilo

Driver	Status	Project Cost	ETC
System Reliability	ERC-Approved CEPNS	494 Mn	Dec 2034

Need / Justification:
To provide operational flexibility and reliability to the customers in Natividad area

Transmission Line Components:
Barotac Viejo – Natividad TL: 69 kV, ST-SC, 1x795 MCM ACSR, 7 km (1x86 MW)



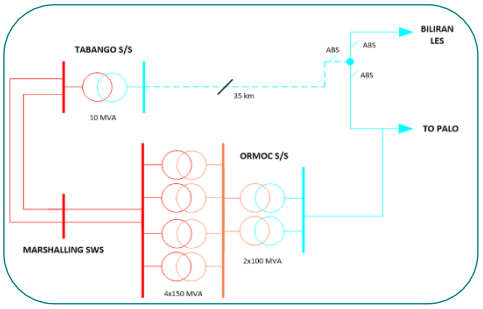
21. Tabango – Biliran 69 kV Transmission Line Project
Northern Leyte

Driver	Status	Project Cost	ETC
Load Growth System Reliability	ERC-Approved CEPNS	2,375 Mn	Jun 2035

Need / Justification:
- To provide operational flexibility and reliability for the customers connected to the line
- To improve the voltage quality in the area

Substation Components:
- Tabango SS: 1-69 kV PCB and associated equipment
- Biliran LES: 3-69 kV Air-Break Switches

Transmission Line Components:
Tabango – Biliran TL: 69 kV, ST-SC, 1-795 MCM ACSR, 35 km (1x86 MW)



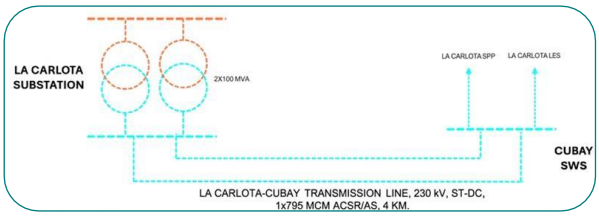
22. La Carlota – Cubay 69 kV Transmission Line Project
Negros Occidental

Driver	Status	Project Cost	ETC
System Reliability	Awaiting ERC Approval CEPNS	2,817 Mn	Dec 2040

Need / Justification:
To provide operational flexibility and reliability to the customers in La Carlota area

Substation Components:
- La Carlota SS: 3-69 kV PCB and associated equipment
- Cubay SwS: 6-69 kV PCB and associated equipment

Transmission Line Components:
La Carlota – Cubay TL: 69 kV, 1-795 MCM ACSR, ST-DC, 4 km (1x86 MW)



SUBSTATION

230 kV PROJECTS

23. Visayas Substation Upgrading Project 3
Negros Occidental, Iloilo, Cebu, Samar

Driver	Status	Project Cost	ETC
Load Growth Generation Entry System Reliability	ERC-Approved CEPNS	7,218 Mn	Jun 2031

Need / Justification:
- To accommodate the projected demand and avoid overloading of the transformer in Cadiz and Colon Substation
- To increase the substation capacity and provide reliability during N-1 condition or outage of one transformer
- To accommodate the incoming generation in each area

Substation Components:
- Cadiz SS (Expansion): 1x150 230/138-13.8 kV Power Transformer and accessories, 3x100 MVA 138/69-13.8 kV Power Transformers and accessories, 1-230 kV PCB and associated equipment, 2-138 kV PCB and associated equipment, 12-69 kV PCB and associated equipment
- Gahit SwS (Expansion): 2-230 kV PCB and associated equipment
- Sta. Barbara SS (Expansion): 2-138 kV PCB and associated equipment
- Naga SS (Expansion): 2-138 kV PCB and associated equipment
- Colon SS (Expansion): 2x100 MVA 138/69-13.8 kV Power Transformers and accessories, 1-138 kV PCB and associated equipment, 2- 69 kV PCB and associated equipment
- Calbayog (Expansion): 1-69 kV PCB and associated equipment

24. Visayas Connection Requirements for Power Plant Project 1
Leyte, Bohol, Negros, Panay

Driver	Status	Project Cost	ETC
Generation Entry	ERC-Approved CEPNS	9,419 Mn	Nov 2031

Need / Justification:
To accommodate the connection of proposed power plants and a DCC to the Visayas Grid

Substation Components:
- Ormoc SS: 2-230 kV PCB and associated equipment
- Babatngon SS: 3-138 kV PCB and associated equipment
- Corella SS: 2-69 kV PCB and associated equipment
- Ubay SS: 3-138 kV PCB and associated equipment, 2-69 kV PCB and associated equipment
- Cadiz SS: 10-230 kV PCB and associated equipment, 2-138 kV PCB and associated equipment
- Sta. Barbara SS: 8-138 kV PCB and associated equipment
- Nabas SS: 6-138 kV PCB and associated equipment, 5-69 kV PCB and associated equipment
- Barotac Viejo SS: 2-138 kV PCB and associated equipment, 1-69 kV PCB and associated equipment
- Calatrava SS: 4-230 kV PCB and associated equipment
- San Carlos SwS: 1-69 kV PCB and associated equipment

25. Visayas Connection Requirements for Power Plant Project 2

Leyte, Samar, Bohol, Negros, Panay

Driver	Status	Project Cost	ETC
Generation Entry	ERC-Approved CEPNS	3,729 Mn	Mar 2032

Need / Justification:
To accommodate the connection of proposed power plants and additional connection of load customers to the Visayas Grid

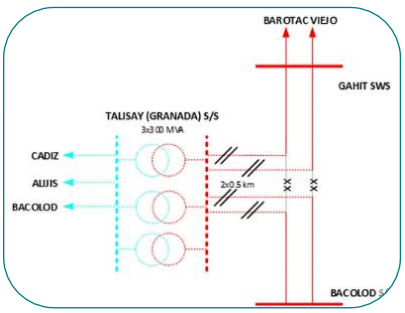
Substation Components:
- Isabel SS: 2-138 kV PCB and associated equipment
- Calbayog SS: 3-138 kV PCB and associated equipment
- Ubay SS: 4-138 kV PCB and associated equipment
- Bacolod SS: 2-138 kV PCB and associated equipment, 4-69 kV PCB and associated equipment
- Cadiz SS: 3-138 kV PCB and associated equipment
- Barotac Viejo SS: 2-138 kV PCB and associated equipment
- Corella SS: 2-69 kV PCB and associated equipment

26. Talisay (Granada) 230 kV Substation Project

Negros Occidental

Driver	Status	Project Cost	ETC
Load Growth System Reliability	ERC-Approved CEPNS	6,926 Mn	Feb 2034

Need / Justification:
- To address overloading of power transformers in Bacolod Substation.
- To cater to the growing demand and provide operational flexibility and reliability to the customers in Bacolod City
- To provide new connection point for power customers in Negros Occidental
- This project is also part of the ultimate plan of establishing 230 kV transmission loop in Negros Island.



Substation Components:
Talisay (Granada) SS: 3x300 MVA, 230/69- 13.8 kV Power Transformers and accessories, 12-230 kV PCB and associated equipment, 10-69 kV PCB and associated equipment

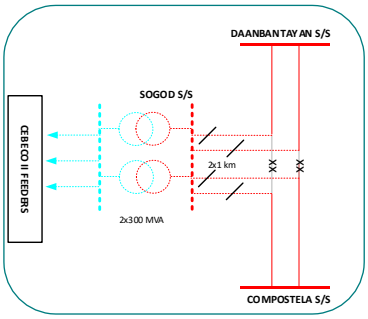
Transmission Line Components:
Talisay (Granada) Bus-in Lines: 230 kV, ST-DC, 2-795 MCM ACSR, 2x0.50 km (2x573 MW)

27. Sogod (Danao) 230 kV Substation Project

Cebu

Driver	Status	Project Cost	ETC
Load Growth System Reliability	ERC-Approved CEPNS	6,596 Mn	Mar 2035

Need / Justification:
- To unload the existing Compostela and Daanbantayan Substations
- To cater to the growing demand and to provide operational flexibility and reliability to the customers in Northern Cebu



Substation Components:
Sogod SS (Danao SS): 2x300 MVA, 230/69 kV Power Transformers and accessories, 10-230 kV PCB and associated equipment, 8-69 kV PCB and associated equipment

Transmission Line Components:
Sogod (Danao) Bus-in lines to the Compostela –Daanbantayan TL: 230 kV, ST-DC, 1x410 mm^2 TACSR or any conductor with the same capacity, 2x1 km

28. Visayas Substation Upgrading Project 4

Leyte, Negros Occidental, Cebu

Driver	Status	Project Cost	ETC
Load Growth Generation Entry System Reliability	Awaiting ERC Approval	20,934 Mn	Jun 2035

Need / Justification:
- To increase the substation capacity and provide reliability during N-1 condition or outage of one transformer
- To accommodate the incoming generation in each area

Substation Components:
- Concepcion SS: 1x100 MVA 138/69 kV Power Transformer and accessories, Replacement of existing 50 MVA PTR
- Sta. Barbara SS: 3x100 MVA 138/69-13.8 kV Power Transformer and accessories

- Ormoc SS: 1x100 MVA, 138/69-13.8 kV Power Transformer and accessories, 2-138 kV PCB and associated equipment, 1-69 kV PCB and associated equipment
- Amlan SS: 9-138 kV PCB and associated equipment, Replacement of 1x40 MVAR 138 kV Reactor and Relocation of 2x20 MVAR 138 kV shunt reactors
- Cadiz SS: 14-230 kV PCB and associated equipment
- Barotac Viejo SS: 2x100 MVA, 138/69-13.8 kV Power Transformer and accessories, 4-230 kV PCB and associated equipment, 2-138 kV PCB and associated equipment, 1-69 kV PCB and associated equipment
- Ubay SS: 1x100 MVA, 138/69-13.8 kV Power Transformer and accessories, 2-138 kV PCB and associated equipment, 1-69 kV PCB and associated equipment
- Kabankalan SS: 1x100 MVA, 138/69-13.8 kV Power Transformer and accessories, 1-138 kV PCB and associated equipment, 2-69 kV PCB and associated equipment
- Calatrava SS: 1x100 MVA, 230/69-13.8 kV Power Transformer and accessories, 1-230 kV PCB and associated equipment, 1-69 kV PCB and associated equipment
- Nabas SS: 3x100 MVA, 138/69-13.8 kV Power Transformer and accessories, 2-138 kV PCB and associated equipment, 1-69 kV PCB and associated equipment
- Bacolod SS: 3x300 MVA, 230/69-13.8 kV Power Transformer and accessories and associated tie lines, 6-230 kV PCB and associated equipment
- Iloilo SS: 1x100 MVA, 138/69-13.8 kV Power Transformer and accessories and associated tie lines, 2-138 kV PCB and associated equipment

29. Visayas Connection Requirements for Power Plants Project 3
Samar, Negros, Panay

Driver	Status	Project Cost	ETC
Generation Entry	Awaiting ERC Approval CEPNS	6,728 Mn	Jul 2035

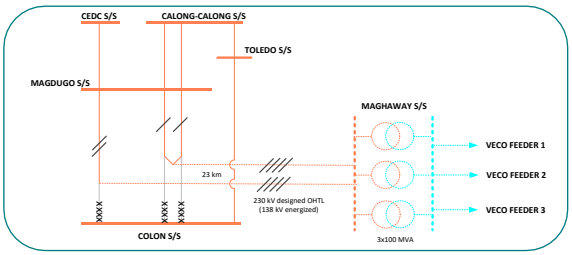
Need / Justification:
To accommodate the connection of proposed power plants to the Visayas Grid

Substation Components:
- Bacolod SS: 4-230 kV PCB and associated equipment
- Granada SS: 3-230 kV PCB and associated equipment, 2-69 kV PCB and associated equipment
- Panitan SS: 4-138 kV PCB and associated equipment
- Kabankalan SS: 4-138 kV PCB and associated equipment
- Samboan SS: 2-138 kV PCB and associated equipment, 1-69 kV PCB and associated equipment
- Isabel SS: 2-138 kV PCB and associated equipment
- Concepcion SS: 1-69 kV PCB and associated equipment
- San Carlos SS: 2-69 kV PCB and associated equipment
- Dingle SS: 2-69 kV PCB and associated equipment

30. Maghaway (Laray) 230 kV Substation Project (Initially Energized at 138 kV)
Cebu

Driver	Status	Project Cost	ETC
Load Growth System Reliability	ERC-Approved CEPNS	6,966 Mn	Dec 2035

Need / Justification:
- To provide a new drawdown substation in the area of Metro Cebu
- To prevent the overloading of Quiot SS and Cebu SS during normal condition and to ensure the reliability of power delivery in Metro Cebu through load shifting between substations during N-1 contingency.
- To accommodate future developments and will provide new terminations for customers in the area
- This project is also part of the ultimate plan of establishing 230 kV transmission loop in Metro Cebu.



Substation Components:
Maghaway SS (Laray SS): 10-138 kV PCB (GIS) and associated equipment

Transmission Line Components:
OHTL from Maghaway (Laray) to Tapping Point along Magdugo – Colon 138 kV Lines (in the area of Naga), ST-DC, 230 kV-designed (138 kV energized), 4-795 MCM ACSR, 12 km., (2x1,148 MW)

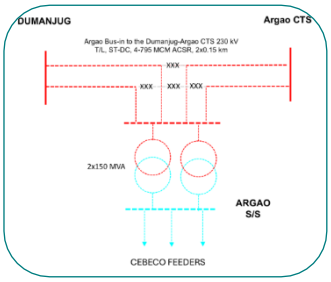
31. Argao 230 kV Substation Project
Southern Cebu

Driver	Status	Project Cost	ETC
Load Growth System Reliability	Awaiting ERC Approval CEPNS	6,301 Mn	May 2036

Need / Justification:
To cater to the growing demand and provide operational flexibility and reliability to the customers in Southern Cebu

Substation Components:
Argao SS: 2x150 MVA, 230/69-13.8 kV Power Transformers and accessories, 7-230 kV PCB (GIS) and associated equipment, 6-69 kV PCB (GIS) and associated equipment

Transmission Line Components:
Argao Bus-in to the Dumanjug –Argao CTS TL: 230 kV, ST-DC, 4-795 MCM ACSR, 2x0.15 km



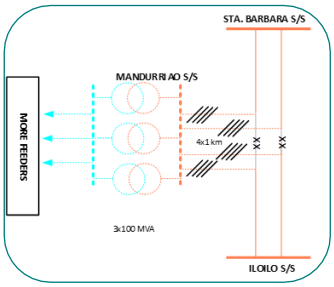
32. Mandurriao 230 kV Substation Project (Initially Energized at 138 kV)
Iloilo

Driver	Status	Project Cost	ETC
Load Growth System Reliability	ERC-Approved CEPNS	6,246 Mn	Jun 2036

Need / Justification:
- To unload the existing Iloilo Substation
- To cater the growing demand and to provide operational flexibility and reliability to the customers in Iloilo City

Substation Components:
Mandurriao SS: 3x100 MVA, 138/69-13.8 kV Power Transformers and accessories, 11-230 kV PCB and associated equipment (Initially energized at 138 kV), 9-69 kV PCB and associated equipment

Transmission Line Components:
Mandurriao Bus-in Lines to the Sta. Barbara – Iloilo TL: 230 kV, ST-DC, 4-795 MCM ACSR, 2x1 km, (2x1,148 MW)



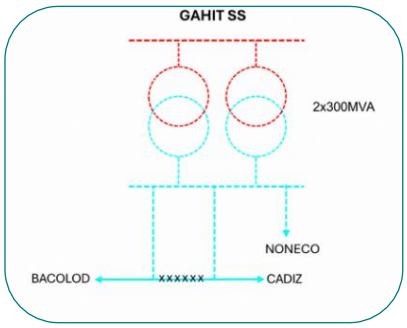
33. Gahit 230 kV Substation Project
Negros Occidental

Driver	Status	Project Cost	ETC
Generation Entry System Reliability	Awaiting ERC Approval	5,658 Mn	Jul 2036

Need / Justification:
- To accommodate the entry of new powerplants and load customers along the Bacolod-Cadiz 69 kV transmission line
- To provide operational flexibility and reliability to the customers in Negros Occidental.

Substation Components:
Gahit SS (Expansion): 2x300 MVA, 230/69-13.8 kV, 10-230 kV PCB and associated equipment, 12-69 kV PCB and associated equipment

Transmission Line Components:
Gahit Cut-in Lines: 69 kV, ST-DC, 1-795 MCM ACSR, 10 km, (2x86 MW)



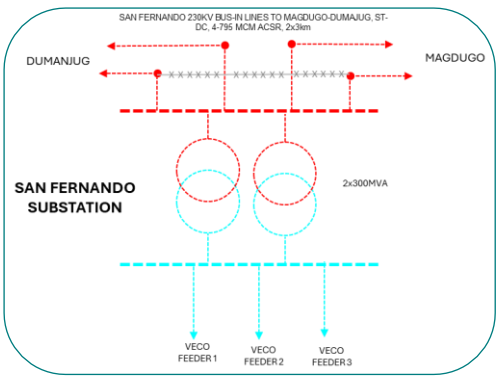
34. San Fernando 230 kV Substation Project
Southern Cebu

Driver	Status	Project Cost	ETC
Load Growth System Reliability	Awaiting ERC Approval	8,045 Mn	Dec 2037

Need / Justification:
To cater to the growing demand and provide operational flexibility and reliability to the customers in Southern Cebu

Substation Components:
San Fernando SS: 2x300 MVA, 230/69-13.8 kV Power Transformers and accessories, 7-230 kV PCB and associated equipment, 6-69 kV PCB and associated equipment

Transmission Line Components:
San Fernando Bus-in Lines to Magdugo – Dumanjug TL: 230 kV, 4-795 MCM ACSR, ST-DC, 2x3kms, (2x1,148 MW)



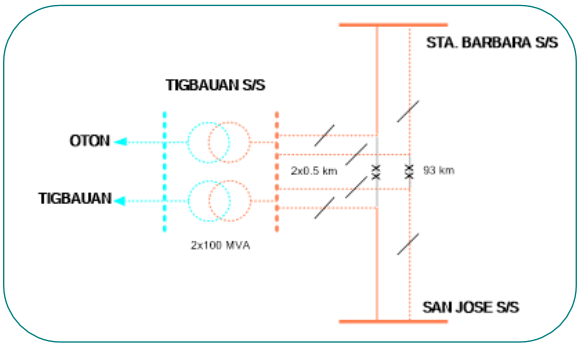
SUBSTATION

138 kV PROJECTS

35. Tigbauan 138 kV Substation Project
Iloilo

Driver	Status	Project Cost	ETC
Load Growth System Reliability	ERC-Approved CEPNS	6,394 Mn	Sep 2034

Need / Justification:
- To address overloading along Sta. Barbara–San Jose 69 kV TL and to maximize the full capacity of Sta. Barbara–San Jose 138 kV Transmission Corridor
- To cater to the growing demand and provide operational flexibility and reliability to the customers in Southern Panay



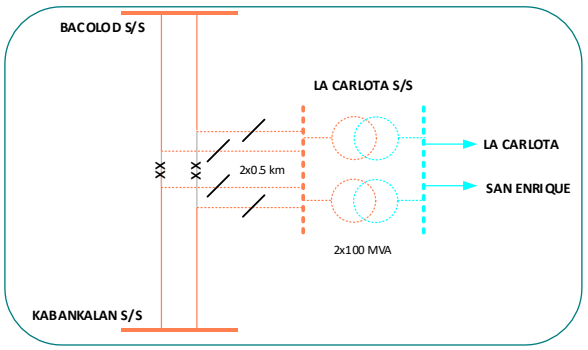
Substation Components:
- Tigbauan SS: 2x100 MVA 138/69-13.8 kV Power Transformers and accessories, 10-138 kV PCB and associated equipment, 7-69 kV PCB and associated equipment
- Sta. Barbara SS: 1-138 kV PCB and associated equipment, 2-69 kV PCB and associate equipment
- San Jose SS: 2-138 kV PCB and associated equipment

Transmission Line Components:
- Stringing of Sta. Barbara – San Jose TL: 138 kV, ST-DC2, 1-795 MCM ACSR, 93 km. (1x172 MW)
- Tigbauan Bus-in Line: 138 kV, ST-DC, 1-795 MCM ACSR, 2x0.50 km (2x172 MW)
- Tigbauan Cut-in Line: 69 kV, SP-DC, 1-795 MCM ACSR, 0.5 km. (2x86 MW)

36. La Carlota 138 kV Substation Project
Negros Occidental

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	5,756 Mn	Jan 2035

Need / Justification:
- To prevent overloading of the existing Bacolod-San Enrique 69 kV Transmission Line and Bacolod Substation
- To cater to the growing demand and to provide operational flexibility and reliability to the customers in Negros Occidental
- The project will serve as connection points to accommodate new power plants.



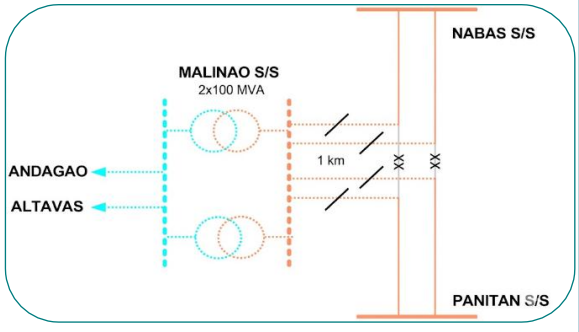
Substation Components:
La Carlota SS: 2x100 MVA, 138/69- 13.8 kV Power Transformers and accessories, 14-138 kV PCB and associated equipment, 7-69 kV PCB and associated equipment

Transmission Line Components:
- La Carlota Bus-in Lines: 138 kV, ST-DC, 1-795 MCM ACSR, 2x0.50 km (2x172 MW)
- La Carlota Cut-in Lines: 69 kV, SP-DC, 1-795 MCM ACSR, 1.5 km (1x86 MW)

37. Malinao (Banga) 138 kV Substation Project
Aklan

Driver	Status	Project Cost	ETC
Load Growth System Reliability	ERC-Approved CEPNS	5,218 Mn	Jan 2035

Need / Justification:
- To unload the existing Panitan and Nabas Substation
- To cater to the growing demand and to provide operational flexibility and reliability to the customers in Northern Panay
- To improve the voltage quality in the area



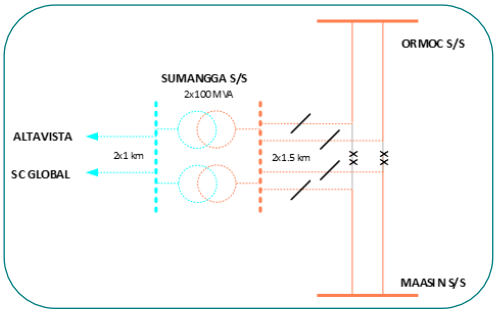
Substation Components:
Malinao (Banga) SS: 2x100 MVA, 138/69-13.8 kV Power Transformers and accessories, 10-138 kV PCB and associated equipment, 7-69 kV PCB and associated equipment

Transmission Line Components:
- Malinao (Banga) Bus-in to the Panitan – Nabas TL: 138 kV, ST-DC, 1-795 MCM ACSR, 2x1 km (2x172 MW)
- Malinao (Banga) Cut-in Lines: 69 kV, SP-DC, 1-795 MCM ACSR, 1 km (1x86 MW)

38. Sumangga 138 kV Substation Project
Leyte

Driver	Status	Project Cost	ETC
Load Growth System Reliability	ERC-Approved CEPNS	5,864 Mn	Feb 2035

Need / Justification:
- To prevent overloading of the Ormoc-Simangan 69 kV Transmission Line and Ormoc Substation
- To cater to the growing demand and to provide operational flexibility and reliability to the customers in Western Leyte
- To improve the voltage quality in the area



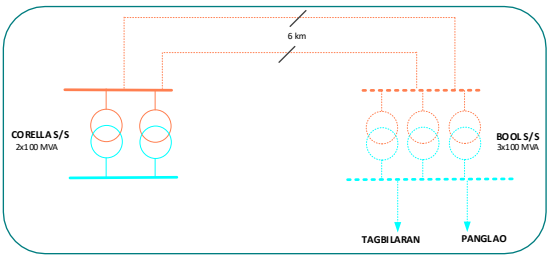
Substation Components:
- Sumangga SS: 2x100 MVA, 138/69- 13.8 kV Power Transformers, 10-138 kV PCB and associated equipment, 7-69 kV PCB and associated equipment
- Ormoc SS: 5-69 kV PCB and associated equipment

Transmission Line Components:
- Bus-in to the Ormoc – Maasin TL: 138 kV, ST-DC, 1-795 MCM ACSR, 2x1.5 km, (2x172 MW)
- Sumangga Cut-in Lines: 69 kV, SP-DC, 1-795 MCM ACSR, 1 km, (2x86 MW)

39. Bool 138 kV Substation Project
Bohol

Driver	Status	Project Cost	ETC
Load Growth System Reliability	ERC-Approved CEPNS	6,885 Mn	Dec 2035

Need / Justification:
- To unload the existing Corella-Tagbilaran 69 kV transmission line and Corella Substation
- To cater to the growing demand in Panglao and Tagbilaran area
- To provide operational flexibility and reliability to the customers in Bohol Island



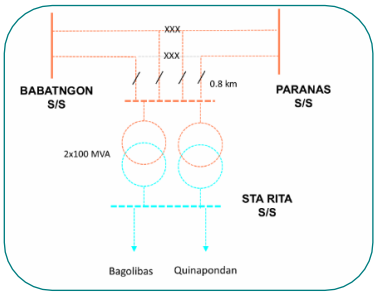
Substation Components:
- Bool SS: 3x100 MVA Power Transformers and accessories, 8-138 kV PCB and associated equipment, 11-69 kV PCB and associated equipment
- Corella SS: 2-138 kV PCB and associated equipment

Transmission Line Components:
- Corella – Bool TL: 138 kV, ST-DC, 1-795 MCM ACSR, 6 km (2x172 MW)
- Bool Cut-in Lines: 69 kV, SP-DC, 1-795 MCM ACSR, 1 km (2x86 MW)

40. Sta. Rita 138 kV Substation Upgrading Project
Samar

Driver	Status	Project Cost	ETC
System Reliability	Awaiting ERC Approval	3,308 Mn	Sep 2037

Need / Justification:
- To provide operational flexibility and reliability to the customers in Samar area
- This project is also part of the ultimate plan of establishing 138 kV transmission loop in Samar Island.



Substation Components:
Sta. Rita SS: 2x100 MVA, 138/69-13.8 kV Power Transformer and accessories, 10-138 kV PCB and associated equipment, 6-69 kV PCB and associated equipment

Transmission Line Components:
- Sta. Rita Bus-in Lines: 138 kV, ST-DC, 1-795 MCM ACSR, 2x0.8 km., (2x172 MW)
- Sta. Rita – Quinapondan and Bagolibas Line Extension: 69 kV, ST-DC,1-336.4 MCM ACSR, 2x0.5 km

41. Visayas Regional PCB Replacement Project 2
Various Provinces in the Visayas

Driver	Status	Project Cost	ETC
System Reliability	Awaiting ERC Approval	6,368 Mn	Oct 2036

Need / Justification:
- The project involves the replacement of the existing PCB in various substations in Visayas Island due to old age and underrated capacity.
- To provide reliability to the equipment in various substations in Visayas

Substation Components:
- Ormoc SS: 1-69 kV PCB and associated equipment
- Lapu-lapu SS: 5-138 kV PCB and associated equipment, 7-69 kV PCB and associated equipment
- Magdugo SS: 15-138 kV PCB and associated equipment

- Barotac Viejo SS: 4-138 kV PCB and associated equipment
- Sta. Barbara SS: 8-138 kV PCB and associated equipment
- Bacolod SS: 4-69 kV PCB and associated equipment
- Colon SS: 28-138 kV PCB and associated equipment
- Mandaue SS: 7-138 kV PCB and associated equipment

VOLTAGE IMPROVEMENT

138 kV PROJECTS

42. Visayas Voltage Improvement Project 3 Various Provinces in the Visayas	Driver Power Quality	Status Awaiting ERC Approval	Project Cost 6,440 M	ETC Jan 2035

Need / Justification:

- To improve the power quality in different areas in Visayas
- These voltage issues are primarily due to the load growth in the area including the load end substations that are currently served by long 69 kV transmission lines.
- The project will address the projected undervoltage and improve the power quality in each area.

Substation Components:

- Sirao (Bonbon) SS: 3x100 MVAR Capacitor Bank and accessories, 3-230 kV PCB and associated equipment
- Umapad SS: 2x100 MVAR Capacitor Bank and accessories, 2-230 kV PCB and associated equipment
- Bobolosan LES: 2x5 MVAR Capacitor Bank and accessories, 2-69 kV PCB and associated equipment
- Himayangan LES: 1x5 MVAR Capacitor Bank and accessories, 1-69 kV PCB and associated equipment
- Maasin SS: 2x20 MVAR Capacitor Bank and accessories, 2-138 kV PCB and associated equipment
- Tunga SS: 2x5 MVAR Capacitor Bank and accessories, 2-69 kV PCB and associated equipment
- Yapak SS: 2x5 MVAR Capacitor Bank and accessories; 2-69 kV PCB and associated equipment
- Altavas SS: 2x5 MVAR Capacitor Bank and accessories, 2-69 kV PCB and associated equipment
- Javier SS: 1x5 MVAR Capacitor Bank and accessories, 1-69 kV PCB and associated equipment

Additional projects proposed within 2031 to 2040 aims to upgrade the existing interconnection capacities between Cebu and Negros Islands. This will pave way for additional power plants on Negros and Panay Islands. Completion of the 230 kV Transmission Loop in Negros, Guimaras, Panay Island will accommodate the proposed offshore wind powerplants in the area and will provide resilience and system reliability to the islands. The 230 kV transmission backbone will also be extended to Ubay area energizing the Leyte-Bohol Interconnection to 230 kV. This will accommodate the entry of upcoming power plants in Ubay area.

Furthermore, since power supply requirements in the Visayas Grid continue to grow, new drawdown substations and upgrading of existing 69 kV transmission lines are proposed in the key cities across the Visayas Grid.

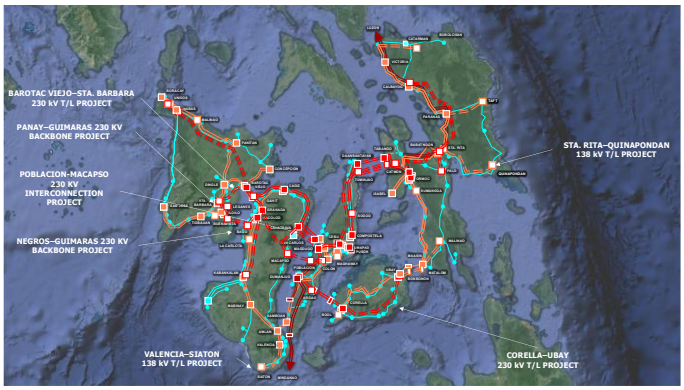


Figure 6.7: Visayas Transmission Outlook for 2031-2040 (Additional Projects)



Figure 6.8: Metro Cebu Transmission Outlook for 2031-2040 (Additional Projects)

Table 6.3: List of Additional Visayas transmission projects for the period 2031-2040

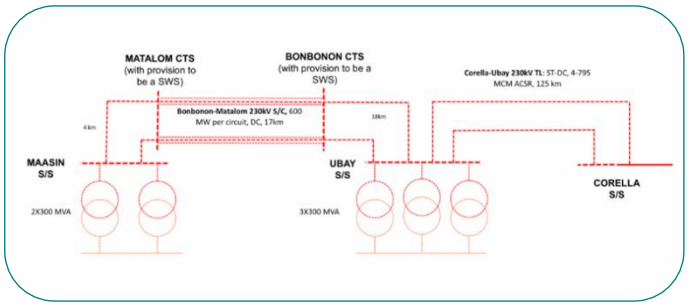
TRANSMISSION LINE

230 kV PROJECTS

1. Corella – Ubay 230 kV Transmission Line Project
Bohol, Leyte

Driver	Status	ETC
Generation Entry System Reliability	For Filing	2031-2040

Need / Justification:
- To accommodate the incoming generation in Ubay area
- To prevent overloading of the Corella–Ubay 138 kV Transmission Line during normal and N-1 condition
- This project is also part of the ultimate plan of establishing 230 kV transmission loop in Leyte, Bohol, and Cebu Island.



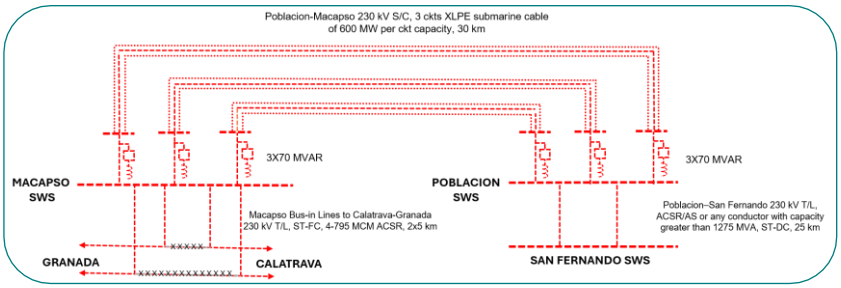
Substation Components:
- Ubay SS: 3x300 MVA 230/138 kV Transformers and accessories, 14-230 kV PCB and associated equipment
- Maasin SS: 2x300 MVA 230/138-13.8 kV Power Transformers and accessories, 10-230 kV PCB and associated equipment
- Corella SS: 4-230 kV PCB and associated equipment

Transmission Line Components:
- Corella – Ubay TL: 230 kV, ST-DC, 4-795 MCM ACSR, 125 km, (2x1,148 MW)
- Energization of Leyte–Bohol to 230 kV level

2. Poblacion – Macapso 230 kV Interconnection Project
Cebu, Negros

Driver	Status	ETC
Generation Entry System Reliability	For Filing	2031-2040

Need / Justification:
- To accommodate the excess generation from the indicative power plants in Panay and Negros Island going to Cebu
- To prevent overloading of the Cebu-Negros 230 kV Interconnection during normal and N-1 condition



Substation Components:
- Poblacion SwS: 3x70 MVAR 230 kV line reactor, 11-230 kV PCB and associated equipment
- Macapso SwS: 3x70 MVAR 230 kV line reactor, 11-230 kV PCB and associated equipment
- San Fernando SS (Expansion): 2-230 kV PCB (GIS) and associated equipment

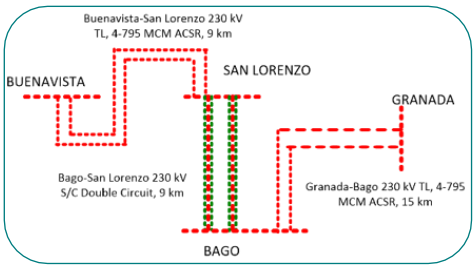
Transmission Line Components:
- Macapso Bus-in Lines to Calatrava-Granada TL: 230 kV, ST-FC, 4-795 MCM ACSR, 2x5 km (2x1,148 MW)
- Poblacion – San Fernando TL: 230 kV, ACSR/AS or any conductor with capacity greater than 1275 MVA, ST-DC, 25 km, (2x1,148 MW)

Submarine Cable Components:
Poblacion – Macapso SC: 230 kV, 3 ckts XLPE submarine cable of 600 MW per ckt capacity, 30 km (3x600 MW)

3. Negros – Guimaras 230 kV Backbone Project
Negros Occidental

Driver	Status	ETC
Generation Entry	For Filing	2031-2040

Need / Justification:
- To accommodate the upcoming powerplant under CREZ in Negros and Guimaras Island
- To provide reliability and resiliency to Negros, Panay, and Guimaras Island
- To prevent overloading of the Negros-Panay 230 kV Submarine Cables
- This project is also part of the ultimate plan of establishing 230 kV transmission loop in Panay, Guimaras, and Negros Island.



Substation Components:
Stage 1:
- Granada SS (Expansion): 6-230 kV PCB and associated equipment

- Bago SwS: 18-230 kV PCB and associated equipment

Stage 2:

- Bago SwS: 230 kV, 2x70 MVAR Line Reactor and associated equipment
- Buenavista SS (Expansion): 6-230 kV PCB and associated equipment
- Buenavista SS (Expansion): 230 kV, 2x70 MVAR Line Reactor
- San Lorezo 230 kV CTS

Transmission Line Components:

Stage 1:

- Granada – Bago TL: 230 kV, 4-795 MCM ACSR, 15 km, (2x1,148 MW)

Stage 2:

- Buenavista – San Lorenzo TL: 230 kV, 4-795 MCM ACSR, 9 km, (2x1,148 MW)

Submarine Cable Components:

Stage 2: Bago – San Lorenzo (Negros-Guimaras) SC: 230 kV, Double Circuit, 9 km, (2x600 MW)

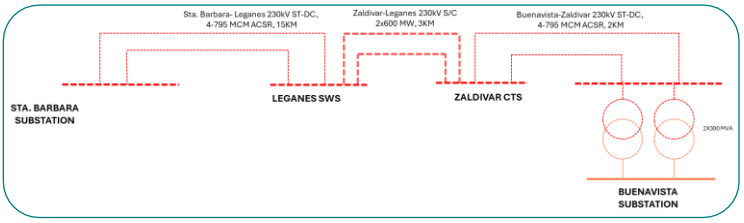
4. Panay – Guimaras 230 kV Backbone Project

Panay, Guimaras

Driver	Status	ETC
Generation Entry	For Filing	2031-2040

Need / Justification:

- To accommodate the upcoming powerplant under CREZ in Panay and Guimaras Island
- To provide reliability and resiliency to Negros, Panay, and Guimaras Islands
- To prevent overloading of the Negros-Panay 230 kV Submarine Cables
- This project is also part of the ultimate plan of establishing 230 kV transmission loop in Panay, Guimaras, and Negros Island.



Substation Components:

Stage 1:

- Leganes SWS: 2x70 MVAR Line Reactor, 12-230 kV PCB and associated equipment

Stage 2:

- Zaldivar 230 kV CTS
- Buenavista SS (Expansion): 2x300 MVA 230/138-13.8 kV Power Transformer and accessories, 2x70 MVAR Line Reactor, 8-230 kV PCB and associated equipment, 2-138 kV PCB (GIS) and associated equipment

Transmission Line Components:

Stage 1:

- Sta. Barbara – Leganes TL: 230 kV, 4-795 MCM ACSR, 15 km, (2x1,148 MW)

Stage 2:

- Buenavista – Zaldivar TL: 230 kV, 4-795 MCM ACSR, 2 km, (2x1,148 MW)

Submarine Cable Components:

Stage 2: Leganes – Zaldivar (Panay-Guimaras) SC: 230 kV, Double Circuit, 3 km (2x600 MW)

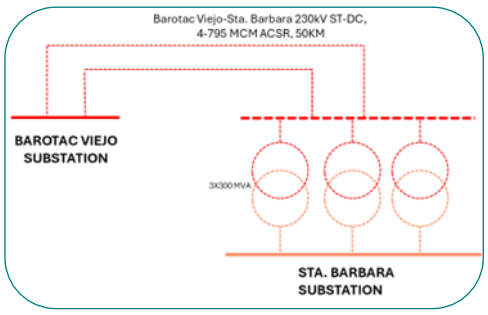
5. Barotac Viejo – Sta. Barbara 230 kV Transmission Line Project

Panay

Driver	Status	ETC
Generation Entry System Reliability	For Filing	2031-2040

Need / Justification:

- To accommodate the incoming generation in Southern Panay
- To prevent overloading of the Barotac Viejo–Sta. Barbara 138 kV Transmission Line during normal and N-1 condition
- This project is also part of the ultimate plan of establishing 230 kV transmission loop in Panay, Guimaras, and Negros Island.



Substation Components:

- Barotac Viejo SS: 2-230 kV PCB and associated equipment
- Sta. Barbara SS: 3x300 MVA, 230/138-13.8 kV Power Transformers and accessories, 11-230 kV PCB and associated equipment, 3-138 kV PCB and associated equipment

Transmission Line Components:
Barotac Viejo – Sta. Barbara: 230 kV, ST-DC, 4-795 MCM ACSR, 50 km. (2x1,148 MW)

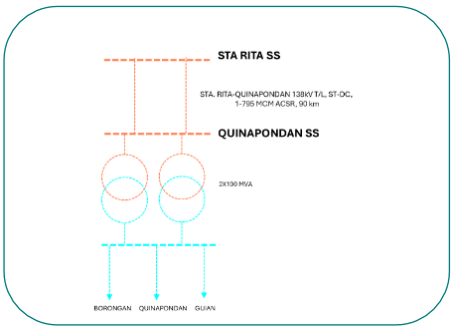
TRANSMISSION LINE

138 kV PROJECTS

6. Sta. Rita–Quinapondan 138 kV Transmission Line Project
Samar

Driver	Status	ETC
System Reliability	For Filing	2031-2040

Need / Justification:
- To cater to the growing demand and provide operational flexibility and reliability to the customers in Eastern Samar
- To improve the voltage quality in the area
- This project is also part of the ultimate plan of establishing 138 kV transmission loop in Samar Island.



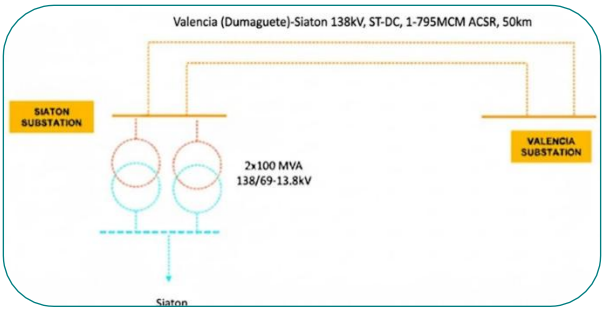
Substation Components:
- Sta. Rita SS (Expansion): 2-138 kV PCB and associated equipment
- Quinapondan SS: 2x100 MVA, 138/69-13.8 kV Power Transformers and accessories, 6-138 kV PCB and associated equipment, 8-69 kV PCB and associated equipment

Transmission Line Components:
- Quinapondan Cut-in Lines to Quinapondan-Borongan segment: 69 kV, ST-DC, 1-795 MCM ACSR, 1km, (2x86 MW)
- Sta. Rita – Quinapondan TL: 138 kV, ST-DC, 1-795 MCM ACSR, 90 km, (2x172 MW)

7. Valencia (Dumaguete) –Siaton 138 kV Transmission Line Project
Negros Oriental

Driver	Status	ETC
System Reliability	For Filing	2031-2040

Need / Justification:
- To provide operational flexibility and system reliability to the customers in Southern Negros.
- This is also part of the ultimate plan of establishing 138 kV transmission loop in Southern Negros.



Substation Components:
- Siaton SS: 2x100 MVA 138/69-13.8 kV Power Transformer and accessories, 6-138 kV PCB and associated equipment, 5-69 kV PCB and associated equipment
- Valencia (Dumaguete) SS: 4-138 kV PCB and associated equipment

Transmission Line Components:
- Valencia (Dumaguete) – Siaton TL: 138 kV, ST-DC, 1-795 MCM ACSR, 50 km (2x172 MW)
- Siaton 69 kV Extension TL: 69 kV, SP-SC, 1-795 MCM ACSR, 0.5km (1x86 MW)

SUBSTATION

138 kV PROJECTS

8. Daanglungsod Substation Upgrading Project
Cebu

Driver	Status	ETC
Generation Entry System Reliability	For Filing	2031-2040

Need / Justification:
- To enhance the reliability of power supply through the replacement of defective and aging substation equipment.

Substation Components:
- New Control Room, Replacement of old/defective equipment
- Daanglungsod 138 kV SS: 4-138 kV PCB and associated equipment
- Sangi 34.5 kV SS: 14-34.5 kV PCB and associated equipment

6.3 VISAYAS PROJECTS FOR 2041–2050

The projects proposed for 2041 to 2050 aimed to strengthen the Visayas Grid by establishing a looped transmission system with adequate redundancy to achieve a more robust and dependable network. As the 230 kV and 138 kV transmission backbones continue to expand across the Visayas, the development of looped configurations will further enhance grid security and overall system reliability.

These transmission loops will also improve grid resilience during natural calamities by providing alternative power flow paths. The 230 kV loops are planned for completion in Metro Cebu, as well as across the Cebu–Bohol–Leyte and Negros – Guimaras – Panay interconnection facilities. Meanwhile, 138 kV transmission loops will be established in Samar, Negros, and Panay Islands.

In addition, a new interconnection between Panay and Mindoro Islands is proposed to enable the efficient sharing of excess generation between these areas to further improve system reliability and resource optimization.

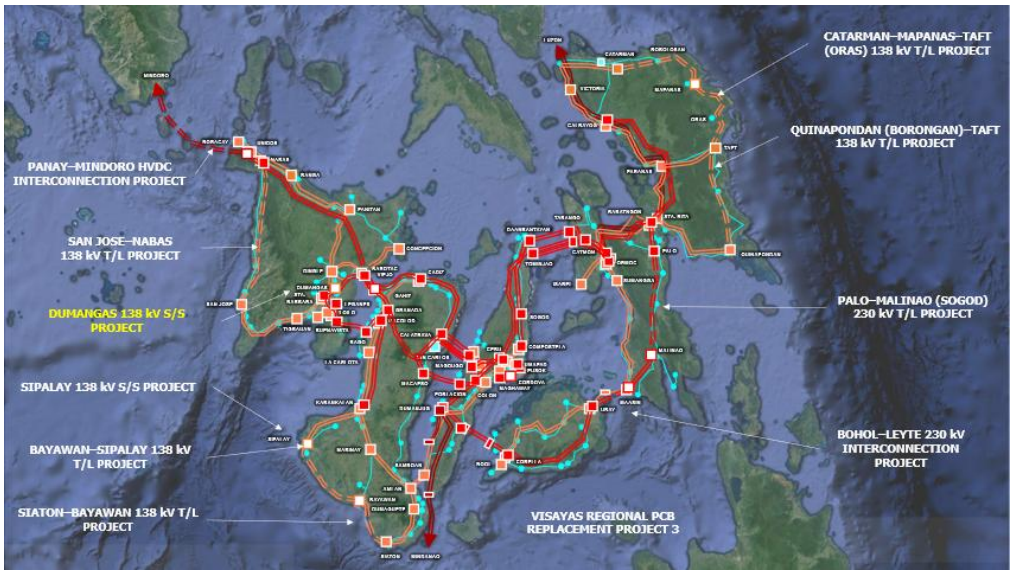


Figure 6.9: Visayas Transmission Outlook for 2041-2050

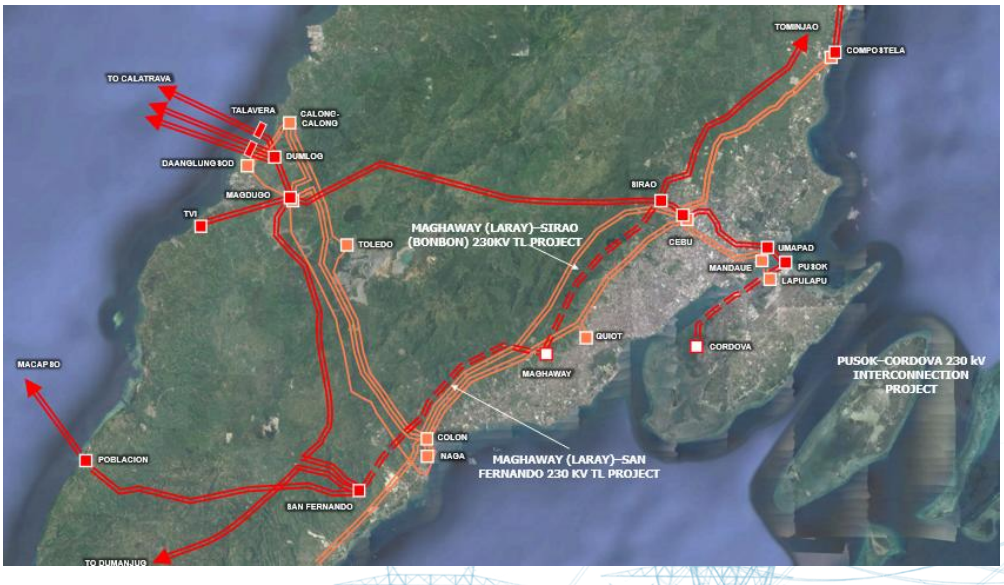


Figure 6.10: Metro Cebu Transmission Outlook for 2041-2050

Table: 6.4: List of Additional Proposed Projects in the Visayas for the Period 2041-2050

TRANSMISSION LINE		
Project Name	Description	Location
230 kV PROJECTS		
Palo – Malinao (Sogod) 230 kV Transmission Line Project	• The project aims to complete the ultimate plan of creating a 230 kV loop between Cebu, Bohol, and Leyte Islands. It involves the extension of the 230 kV transmission line from Palo going to Malinao Substation. This will strengthen the transmission reliability and will provide grid resilience in Cebu, Leyte, and Bohol Islands.	Leyte
Maghaway (Laray) – San Fernando 230 kV Energization Project	• The project involves the energization of Maghaway GIS Substation to 230 kV level. The 230 kV transmission line will be extended from Naga to San Fernando area and will be connected to San Fernando Substation. The project aims to accommodate the growth in demand in the area of SRP.	Cebu
Maghaway (Laray) – Sirao (Bonbon) 230 kV Transmission Line Project	• The project is part of the ultimate plan of establishing 230 kV transmission loop in Metro Cebu. The completion of the transmission loop will provide resilience and system reliability to the customers in Cebu Island.	Cebu
Pusok – Cordova 230 kV Interconnection Project	• This project aims to improve system reliability and resilience in Mactan Island. It involves the construction of a new drawdown substation in Cordova area and laying of 230 kV submarine cables from Pusok going to Cordova Substation.	Cebu
138 kV PROJECTS		
Catarman – Mapanas – Taft 138 kV Transmission Line Project	• The project involves the Catarman – Mapanas TL and Mapanas – Taft TL 138 kV line in Northern Samar. A new drawdown substation will be established in Mapanas area to cater to the growing demand of the customers in the area. The project is also part of the ultimate plan to establish 138 kV transmission loop in Samar Island. Completion of the transmission loop will improve system reliability and resilience to better serve the customers in Samar Island.	Samar
Quinapondan (Borongan) – Taft 138 kV Transmission Line Project	• The project aims to complete the ultimate plan of creating a 138 kV TL loop in Samar Island. It involves the extension of the 138 kV TL from Quinapondan to Taft area to improve system reliability and resilience in Samar Island.	Samar
Bayawan – Sipalay 138 kV Transmission Line Project	• The project aims to complete the ultimate plan to establish 138 kV transmission loop in Southern Negros. It involves the extension of 138 kV TL from Bayawan to Sipalay area. This will improve system reliability to the better serve the customers in Southern Negros.	Negros
Siaton – Bayawan 138 kV Transmission Line Project	• The project aims to prevent overloading of the Mabinay–Bayawan 69 kV TL and improve system reliability to better serve the customers in Southern Negros. It involves the development of a new substation in Bayawan area and the extension of a 138 kV transmission line from Siaton going to Bayawan.	Negros
San Jose – Nabas 138 kV Transmission Line Project	• The project aims to complete the ultimate plan to create a 138 kV loop in Panay Island. It involves the extension of the 138 kV transmission line from San Jose going to Nabas Substation which is approximately 125 km. This will improve system reliability and resilience in Panay Island.	Antique
69 kV PROJECTS		
Visayas 69 kV Transmission Line Upgrading Project 3	• The project aims to avoid overloading in various 69 kV transmission lines during normal conditions and to prevent load curtailment that may affect power customers in the said area.	Visayas

SUBSTATION		
Project Name	Description	Location
230 kV PROJECTS		
Visayas Substation Upgrading Project 5	• The project is intended to accommodate the projected demand and avoid overloading of the transformer in various substations in Visayas during N-1.	Visayas
138 kV PROJECTS		
Visayas Regional PCB Replacement Project 3	• The project involves the replacement of the existing PCB in various substations in the Visayas Island due to old age and underrated capacity. This project aims to improve system reliability in Visayas.	Leyte, Cebu, Negros Occidental, and Iloilo
Sipalay 138 kV Substation Project	• The project involves the upgrading of existing Sipalay 69 kV SwS to a 138 kV Substation. This project will serve as a new drawdown substation to cater the growth in demand and provide operational flexibility to customers in Southern Negros. Furthermore, the project is also part of the ultimate plan of establishing 138 kV transmission loop in Southern Negros. Completion of the transmission loop will provide resiliency and reliability to the customers in Southern Negros Island.	Negros
Dumangas 138 kV Substation Project	• The project aims to construct new drawdown substation in Dumangas, Iloilo. This will cater to the growing demand and provide operational flexibility in the area.	Panay

VOLTAGE IMPROVEMENTS		
Project Name	Description	Location
230 kV PROJECTS		

Visayas Voltage Improvement Project 4	• The project aims to address the undervoltage problems in various areas in the Visayas Island. A total of 1355 MVAR of voltage compensation device will be installed in several substations in the Visayas Grid.	Samar, Leyte, Panay, and Negros

Chapter 7

MINDANAO GRID DEVELOPMENT OUTLOOK

Mindanao's power supply outlook is steadily improving as new generation capacity particularly from hydropower and other renewable energy projects moves closer to commercial operation. Several committed developments in Bukidnon, Misamis Oriental, and Lanao del Norte are scheduled for testing and commissioning between 2025 and 2026, strengthening the region's ability to meet baseload and mid-merit demand. These additions support the broader national direction of increasing renewable energy integration, especially from hydropower and solar resources.

Alongside new generation, the deployment of Battery Energy Storage Systems (BESS) is gaining momentum. These systems play a key role in maintaining grid stability by supporting frequency control and managing the variability associated with renewable energy sources.

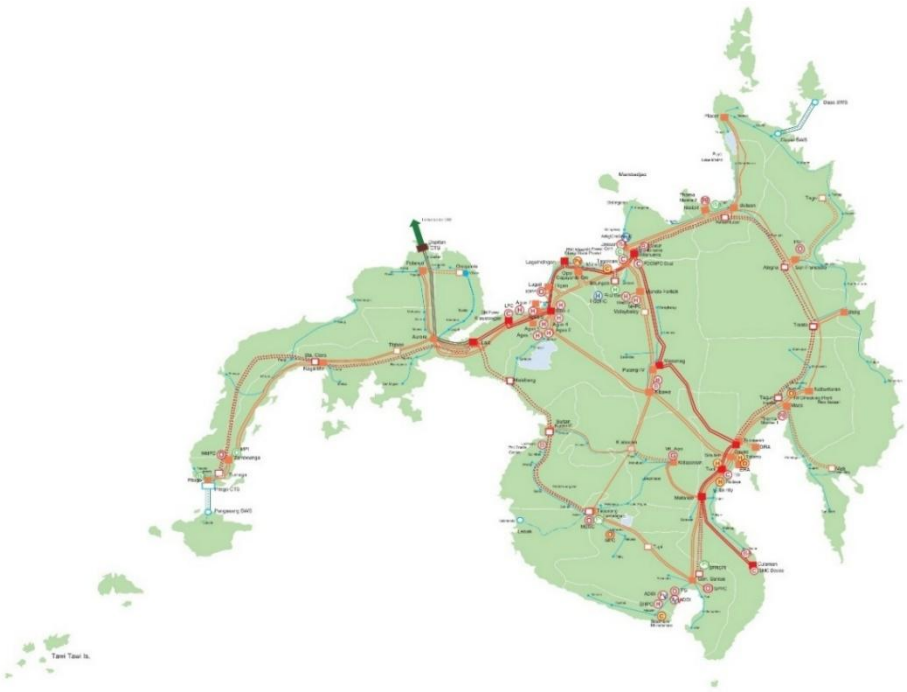


Figure 7.1 Mindanao Grid Map

Notwithstanding these developments, operational challenges remain. Security constraints in some areas continue to restrict maintenance access and delay critical transmission projects. Meanwhile, the Zamboanga Peninsula and CARAGA regions face persistent low-voltage risks due to growing demand and limited local generation, placing additional strain on the transmission network.

As renewable penetration increases, maintaining voltage stability and sufficient reactive power support becomes more critical. Near-term interventions, including reactive power compensation and power quality solutions, are necessary to address system vulnerabilities. Over the long-term, the addition of strategically located generation, either embedded or grid-connected will be essential to strengthen supply reliability.

Meeting future demand and ensuring effective renewable integration will require sustained investment in transmission infrastructure. Priority measures include upgrading 138 kV substations, expanding key 230 kV and 138 kV corridors, optimizing 69 kV network configurations, and implementing targeted reliability improvements. These efforts are vital to maintaining a stable, resilient, and adaptable power system for Mindanao.

7.1 MINDANAO PROJECTS FOR 2026–2030

From 2026 to 2030, transmission development in Mindanao will focus on reinforcing the 230 kV, 138 kV, and 69 kV networks to support sustained load growth, improve system reliability, and accommodate major new customers across the island. Key priorities include the extension of major transmission corridors such as the Maco–Mati 138 kV, San Francisco–Tago 138 kV, and Tacurong – Kalamansig 69 kV lines, along with multiple substation expansion and upgrading initiatives to meet increasing demand.



Figure 7.2 Mindanao transmission projects for the period 2026-2030

Table 7.1: List of Mindanao transmission projects for the period 2026-2030

TRANSMISSION LINE

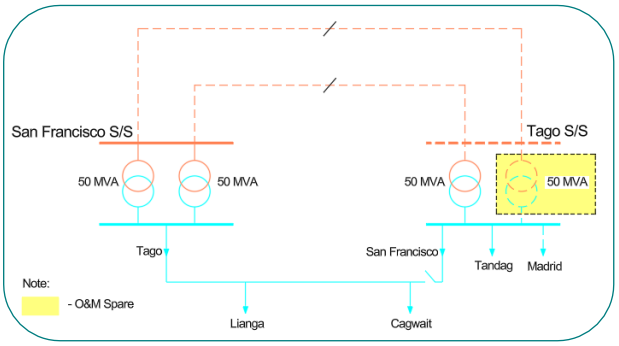
138 kV PROJECTS

1. San Francisco – Tago 138 kV Transmission Line Project
Agusan del Sur, Surigao del Sur

Driver	Status	Project Cost	ETC
Load Growth System Reliability	ERC-Approved CEPNS	6,534 Mn	Oct 2027

Need / Justification:

- To allow the switching of loads during line outages along Placer – Tago line
- To solve the power quality and reliability problems in the area
- To address the growing demand in Surigao del Sur as well as to provide a more stable and reliable supply to the area including the island of Siargao
- To provide additional transformer for the N-1 criterion of the PGC which will be sourced from O&M spare or refurbished transformer
- Formerly San Francisco – Tandag 138 kV Transmission Line Project



Substation Components:

- San Francisco 138 kV SS: 2-138 kV PCB and associated equipment (Energized)
- Tago 138 kV SS: 1x50 MVA 138/69 kV Power Transformer, 6- 138 kV PCB, 8-69 kV PCB and associated equipment

Transmission Line Components:

- San Francisco – Tago 138 kV TL, ST- DC, 1-795 MCM ACSR/AS, 90 km (2 x 172 MW)
- Madrid – Tago 69 kV TL, SP-SC, 1- 336.4 MCM ACSR, 60 km (1 x 56 MW)
- Tago S/S Cut-in to Tandag –Cagwait 69 kV segment, 69 kV T/L, SP-DC, 1-795 MCM ACSR/AS, 2km

TRANSMISSION LINE

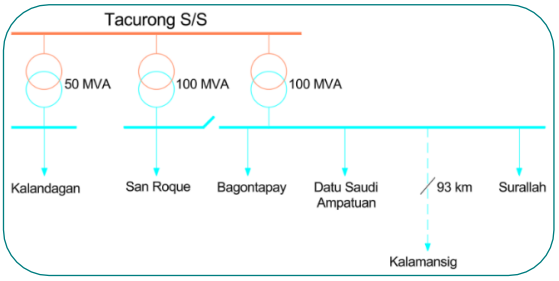
69 kV PROJECTS

2. Tacurong – Kalamansig 69 kV Transmission Line Project
Sultan Kudarat

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	2,463 Mn	Jun 2026

Need / Justification:

- To enable the municipalities of Lebak, Kalamansig, Bagumbayan, and Senator Ninoy Aquino in the province of Sultan Kudarat to access more reliable and cost-effective electricity from the grid.
- To eliminate dependence on diesel-based power generation under SPUG, thereby reducing generation cost and improving service reliability.



Substation Components:

- Tacurong 138 kV SS: 1-69 kV PCB and associated equipment (Energized)
- Kalamansig 69 kV SwS: 1x7.5 MVAR 69 kV Capacitor, 3-69 kV PCB and associated equipment (Energized)

Transmission Line Components:

Tacurong – Kalamansig 69 kV TL, ST/SP-SC, 1-336.4 MCM ACSR, 93 km (1 x 56 MW) (Energized)

SUBSTATION

230 kV PROJECTS

3. Mindanao Substation Upgrading 2 Project (MSU2P)
Lanao Del Norte, Bukidnon, Agusan Del Norte, Misamis Oriental, Davao del Sur , Sultan Kudarat, Zamboanga del Sur, Surigao del Sur

Driver	Status	Project Cost	ETC
System Reliability and Security	ERC-Approved CEPNS	11,626 Mn	Stage 1: Dec 2027 Stage 2: Jun 2028 Stage 3: Dec 2029

Need / Justification:

- To install additional power transformers and circuit breakers across 16 NGCP substations in Mindanao, supporting load growth and ensuring N 1 compliant, reliable, and quality transmission capacity; and
- To accommodate new power facilities by including: 1-69 kV PCB for KEGI (20 MW BESS) and 1-69 kV PCB for CSCI (14.9 MW Biomass) at Maramag Substation; 2-69 kV PCB for Sangali Diesel (2×28 MW Diesel) and 1-69 kV PCB for Sangali BESS (20 MW BESS) at Zamboanga Substation; 2-69 kV PCB for TAGDRC (20 MW BESS), 2-69 kV PCB for MORESCO I Line 2 at Laguindingan Substation; and 2-69 kV PCB for MHPC (12 MW Hydro) at Manolo Fortich Substation.

Substation Components:

Stage 1:

- Toril 138 kV SS: 2x100 MVA, 138/69 kV Power Transformer, 2-138 kV PCB and associated equipment (Energized)
- Davao 138 kV SS: 2x150 MVA, 138/69 kV Power Transformer, 3-138 kV PCB, 4-69 kV PCB and associated equipment (Energized)
- General Santos 138 kV SS: 2x100 MVA, 138/69 kV Power Transformer, 4-138 kV PCB, 4-69 kV PCB and associated equipment (Energized)
- Bunawan 138 kV SS: 2-100 MVA, 138/69 kV Power Transformer, 11-138 kV PCB, 5-69 kV PCB and associated equipment (Energized)
- Balo-i 138 kV SS: 1x100 MVA, 138/69 kV Power Transformer, 3-138 kV PCB, 6-69 kV PCB and associated equipment (Energized)
- Jasaan 138 kV SS: 1x100 MVA, 138/69 kV Power Transformer, 2-138 kV PCB, 6-69 kV PCB and associated equipment (Energized)
- Kibawe 138 kV SS: 1x50 MVA, 138/69 kV Power Transformer, 5-138 kV PCB, 2-69 kV PCB and associated equipment (Energized)
- Butuan 138 kV SS: 1x100 MVA, 138/69 kV Power Transformer, 1-138 kV PCB, 1-69 kV PCB and associated equipment (Energized)
- Kidapawan 138 kV SS: 1x100 MVA, 138/69 kV Power Transformer, 1-69 kV PCB and associated equipment (Energized)

Stage 2:

- Tagoloan 138 kV SS: 1x100 MVA, 138/69 kV Power Transformer, 4-138 kV PCB, 8-69 kV PCB and associated equipment
- Aurora 138 kV SS: 1x100 MVA 138/69 Power Transformer, 3-138 kV PCB, 11-69 kV PCB and associated equipment
- Bunawan 230 kV SS: 1x300 MVA 230/138 kV Power Transformer, 2-230 kV PCB and associated equipment

Stage 3:

- Toril 138 kV SS: 5-69 kV PCB and associated equipment
- Laguindingan 138 kV SS: 1-138 kV PCB and associated equipment
- Manolo Fortich 69 kV SS: 2-69 kV PCB and associated equipment
- Lala 230 kV SS: 1x150 MVA 230/138 kV Power Transformer, 1-230 kV PCB, 2-138 kV PCB and associated equipment

- Zamboanga 69 kV SS: 3-69 kV PCB and associated equipment
- Maramag 138 kV SS: 3-69 kV PCB and associated equipment

4. Mindanao Substation Expansion 3 Project (MSE3P)
Zamboanga del Sur, Surigao del Norte, Agusan del Sur, Davao del Sur

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	1,543 Mn	Apr 2028

Need / Justification:
To provide N 1 compliance, increase substation loading capability, and ensure continuous and reliable power supply to customers.

Substation Components:
- Pitogo 138 kV SS: 1x100 MVA 138/69 kV Power Transformer, 1-138 kV PCB, 1-69 kV PCB and associated equipment (Energized)
- Placer 138 kV SS: 1x100 MVA 138/69 kV Power Transformer, 2-138 kV PCB and associated equipment
- San Francisco 138 kV SS: 1x100 MVA 138/69 kV Power Transformer, 2-138 kV PCB, 2-69 kV PCB and associated equipment
- Matanao 138 kV SS: 1x100 MVA 138/69 kV Power Transformer, 2-138 kV PCB
- Lala 230 kV SS: 1x150 MVA 230/138 kV Power Transformer, 2-230 kV PCB, 2-138 kV PCB and associated equipment

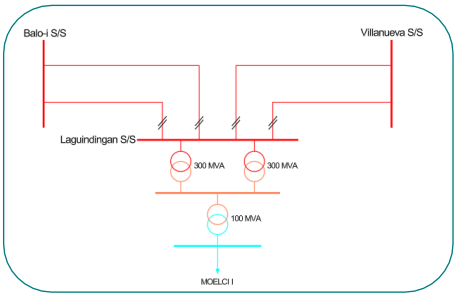
5. Laguindingan 230 kV Substation Project
Misamis Oriental

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	2,822 Mn	Energized

Need / Justification:
- To provide MORESCO I and Laguindingan Technopark with the required high-capacity power transmission corridor.
- To relieve overloading at the Opol Substation.

Substation Components:
- Laguindingan 230 kV SS: 2x300 MVA 230/138 kV and 1x100 MVA 138/69 kV Power Transformers, 10-230 kV PCB, 7-138 kV PCB, 3-69 kV PCB equipment and associated equipment. (Energized)
- Tagoloan 138 kV SS: 4-138 kV PCB and associated equipment.(Energized)

Transmission Line Components:
Laguindingan SS: Bus-in to Balo-I – Villanueva 230 kV TL, ST-DC, 2-795 MCM ACSR/AS, 5.75 km (2 x 573 MW) (Energized)



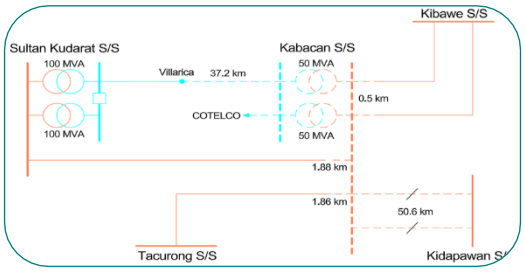
SUBSTATION

138 kV PROJECTS

6. Kabacan 138 kV Substation Project
Cotabato

Driver	Status	Project Cost	ETC
System Reliability	ERC-Approved CEPNS	6,087 Mn	Phase 1: Feb 2028 Phase 2: Feb 2028

Need / Justification:
- To enhance power supply security in the provinces of Sultan Kudarat, North Maguindanao, South Maguindanao, Cotabato, and South Cotabato during contingency conditions.
- To provide greater operational flexibility and improve the overall reliability of the transmission system, ensuring the continuity of power supply in the affected areas.
- To provide two (2) 69 kV PCB to accommodate the integration of the 80 MW Tantangan Solar Power Plant at Tacurong Substation.



Substation Components:
Phase 1
- Kabacan 138 kV SS: 2x50 MVA 138/69 kV Power Transformer, 12-138 kV PCB, 6-69 kV PCB and associated equipment
- Kidapawan 138 kV SS: 2-138 kV PCB and associated equipment (Energized)
- Tacurong 69 kV SS: 2-69 kV PCB and associated equipment
- Toril (General Santos) 138 kV SS: 5-138 kV PCB and associated equipment (Energized)

Transmission Line Components:
Phase 2

- Kabacan – Kidapawan 138 kV TL, ST-DC, 1-795 MCM ACSR/AS, 50.6 km (2 x 172 MW)
- Kabacan – Villarica 69 kV TL, SP- SC, 1-336.4 MCM ACSR/AS, 37.2 km (1 x 56 MW)
- Kibawe 138 kV Line Extension, ST-DC, 1-795 MCM ACSR/AS, 0.5 km (2 x 172 MW)
- Taurong 138 kV Line Extension, ST-SC, 1-795 MCM ACSR/AS, 1.86 km (1 x 172 MW)
- Sultan Kudarat 138 kV Line Extension, ST-SC, 1-795 MCM ACSR/AS, 1.88 km (1 x 172 MW)

7. Mindanao Substation Expansion 4 Project (MSE4P)

Zamboanga Del Sur, Zamboanga Del Norte, Lanao Del Norte, Bukidnon, Davao del Norte, Davao Occidental, Maguindanao Del Norte, Agusan del Norte

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	3,657 Mn	Oct 2026

Need / Justification:
To install additional power transformers and circuit breakers across 8 NGCP substations in Mindanao, accommodating load growth, complying with N-1 requirements, and ensuring a reliable and high-quality transmission system.

Substation Components:
- Naga Min SS: 1x100 MVA 138/69 kV Power Transformer, 2-138 kV PCB, 2-69 kV PCB and associated equipment (Energized)
- Polanco 138 kV SS: 1x100 MVA 138/69 kV Power Transformer, 2-138 kV PCB, 2-69 kV PCB and associated equipment (Energized)
- Agus 6 138 kV SS: 1x100 MVA 138/69 kV Power Transformer, 1-138 kV PCB, 3-69 kV PCB and associated equipment (Energized)
- Maramag 138 kV SS: 1x100 MVA, 138/69 kV Power Transformer, 1- 138 kV PCB, 4-69 kV PCB and associated equipment (Energized)
- Maco 138 kV SS: 1x100 MVA 138/69 kV Power Transformer, 2-138 kV PCB, 2-69 kV PCB and associated equipment (Energized)
- Culaman 230 kV SS: 1x50 MVA, 230/69 kV Power Transformer, 2-230 kV PCB, 2-69 kV PCB and associated equipment (Energized)
- Sultan Kudarat 138 kV SS: 2x100 MVA, 138/69 kV Power Transformer, 4- 138 kV PCB, 4-69 kV PCB and associated equipment (Energized)
- Nasipit 138 kV SS: 1x100 MVA 138/69 kV Power Transformer, 2-138 kV PCB, 2-69 kV PCB and associated equipment (Energized)

VOLTAGE IMPROVEMENT

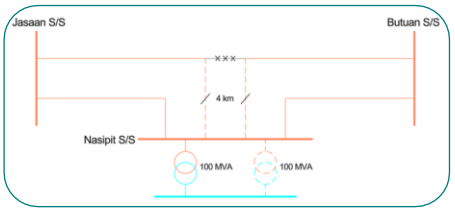
138 kV PROJECTS

8. Nasipit Substation Bus-in Project

Agusan del Norte

Driver	Status	Project Cost	ETC
Power Quality System Reliability	ERC-Approved CEPNS	873 Mn	Dec 2026

Need / Justification:
- To maintain the normal voltage in Northeastern Mindanao following an outage of the Nasipit – Butuan 138 kV Single Circuit line segment
- To ensure the continuous supply of electricity to CARAGA Region even during N-1 condition to comply with the PGC requirement



Substation Components:
Nasipit SS: 1x100 MVA Power Transformer, 2-138 kV PCB, 3-69 kV PCB and associated equipment.

Transmission Line Components:
- Jasaan – Butuan Bus-in Line, ST-DC, 1-795 MCM ACSR, 4.3 km (2 x 172 MW)
- Swinging of TM2 Lines, ST-DC, 2-795 MCM ACSR, 0.5 km (2 x 344 MW)

9. Eastern Mindanao Voltage Improvement Project (EMVIP)

Agusan del Norte, Agusan del Sur, Davao de Oro, Davao del Norte, Davao Oriental

Driver	Status	Project Cost	ETC
Power Quality	ERC-Approved CEPNS	1,470 Mn	Dec 2027

Need / Justification:
To address undervoltage in eastern Mindanao substations caused by rising demand, installing capacitors ensure compliance with PGC limits, supports contingency conditions, and maintains nominal voltage until completion of the Eastern Mindanao 230 kV TL Project.

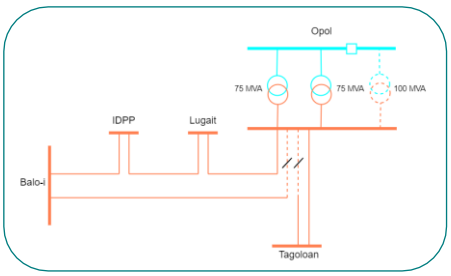
Substation Components:
- Butuan SS: 3x10 MVAR Shunt Capacitor, 3-138 kV PCB and associated equipment
- San Francisco SS: 3x10 MVAR Shunt Capacitor, 3-138 kV PCB and associated equipment
- Nabunturan SS: 3x10 MVAR Shunt Capacitor, 3-138 kV PCB and associated equipment
- Maco SS: 3x10 MVAR Shunt Capacitor, 3-138 kV PCB and associated equipment
- Tandag (SURSECO II) SS: 1x7.5 MVAR Shunt Capacitors, 1-69 kV PCB and associated equipment (Energized)

- Claver (SURNECO) SS: 1x7.5 MVAR Shunt Capacitor, 1-69 kV PCB and associated equipment (Energized)
- Asuncion SS: 2x10 MVAR Shunt Capacitor, 2-69 kV PCB and associated equipment
- Mati (DORECO) SS: 2x7.5 MVAR Shunt Capacitor, 2-69 kV PCB and associated equipment (Energized)

10. Opol Substation Bus-in Project Misamis Oriental	**Driver** System Reliability	**Status** ERC-Approved CEPNS	**Project Cost** 2,320 Mn	**ETC** Oct 2030

Need / Justification:

- To provide a double-circuit, direct connection to the Balo-i and Tagoloan Substations, enhancing power supply reliability
- To address imminent undervoltage at the Opol Substation, even during the outage of one 138 kV transmission line
- To ensure N-1 reliability through the installation of a third power transformer, in compliance with the PGC.



Substation Components:
Opol 138 kV SS: 1x100 MVA Power Transformer, 5-138 kV PCB, 1-69 kV PCB and associated equipment.

Transmission Line Components:

- Opol SS Bus-in to Balo-I – Tagoloan 138 kV Line, ST-DC, 1-795 MCM ACSR/AS, 7 km (2 x 172 MW)
- Opol – Carmen 69 kV Line Re-routing, SP-SC, 1-336.4 MCM ACSR/AS, 0.5 km (1 x 57 MW)

ISLAND / OFF-GRID INTERCONNECTION

350 kV PROJECTS

11. Mindanao-Visayas Interconnection Project (MVIP) Stage 2 Cebu, Lanao del Norte	**Driver** Island Interconnection	**Status** Awaiting ERC Approval CEPNS	**Project Cost** 27,765 Mn	**ETC** Apr 2030

Need / Justification:
To increase the transfer capacity of the existing line from 450 MW to 900 MW

Substation Components:

- Dumanjug Converter Station: 8-230 kV PCB, 2-225 MW Thyristor Valve, 2-225 MW 230 kV AC/±350 kV DC Converter Transformer
- Lala Converter Station: 8-230 kV PCB, 2-225 MW Thyristor Valve, 2-225 MW 230 kV AC/±350 kV DC Converter Transformer

7.2 MINDANAO PROJECTS FOR 2031–2040

From 2031 to 2040, development will focus mainly on improving overall system reliability. During this period, several key 230 kV transmission line segments in the Mindanao grid will be implemented, including the Villanueva – Kinamlutan, Bunawan – Tagum, and Eastern Mindanao 230 kV lines. Together, these projects will complete the 230 kV transmission loop in the eastern part of the grid. Although designed for 230 kV operation, these lines will initially be energized at 138 kV to align with current system conditions and projected demand growth.

In addition, the Lala – Sta. Clara – Tumaga 230 kV Transmission Line Project formerly known as the Lala – Naga – Zamboanga Project will establish a high-voltage corridor from Lanao del Norte to Zamboanga City. This project is expected to strengthen power delivery and improve transmission reliability across the Zamboanga Peninsula.

Several substation projects, including Tigbao, Tumaga, and Malaybalay Substations, will also be developed within the same timeframe. These facilities will support growing local demand and enhance network performance in their respective areas.



Figure 7.3 Mindanao transmission projects for the period 2031-2040

Table 7.2 List of Mindanao Transmission Projects for the period 2031-2040

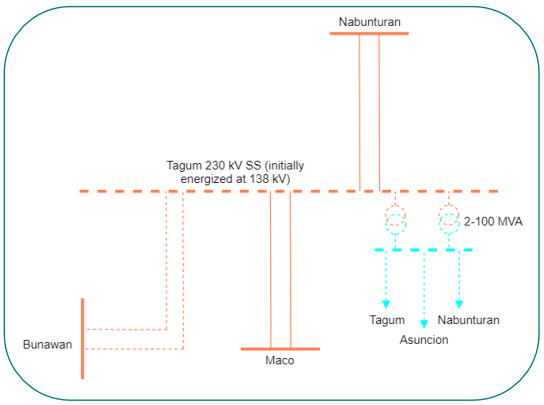
TRANSMISSION LINE

230 kV PROJECTS

1. **Bunawan–Tagum 230 kV Transmission Line Project** Davao del Sur, Davao Del Norte, Davao de Oro	**Driver** Generation Entry Load Growth	**Status** ERC-Approved CEPNS	**Project Cost** 18,182 Mn	**ETC** Dec 2036

Need / Justification:

- To be initially energized at 138 kV
- To provide a new transmission corridor that mitigates the anticipated thermal overloading of the Bunawan – Nabunturan and Bunawan – Maco – Nabunturan 138 kV TL during an outage of one of the circuits
- To accommodate the Asuncion LES of Northern Davao Electric Cooperative (NORDECO) which is currently connected to Nabunturan 138 kV Substation
- To reinforce the Maco – Tagum 69 kV Line



Substation Components:

- Tagum 230 kV SS: 2x100 MVA 138/69 kV Power Transformer, 20-138 kV PCB, 8-69 kV PCB and associated equipment
- Bunawan 138 kV SS: 4-138 kV PCB and associated equipment

Transmission Line Components:

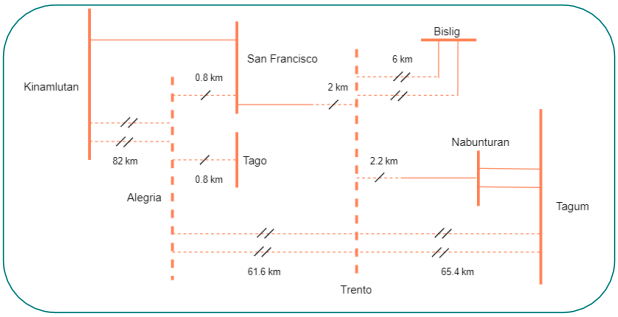
- Bunawan – Tagum 230 kV TL, ST-DC, 2-795 MCM ACSR, 45 km (2 x 172 MW)
- Tagum – Bunawan 138 kV Line Extension, ST-DC, 1-795 MCM ACSR, 1.5 km (2 x 172 MW)
- Tagum – Nabunturan 138 kV Line Extension, ST-DC, 1-795 MCM ACSR 1.5 km (2 x 172 MW)
- Tagum – Magdum 69 kV TL, SP-DC, 1-795 MCM ACSR, 3 km (2 x 86 MW)
- Tagum – Maco 138 kV Line Extension, ST-DC, 1-795 MCM ACSR, 0.5 km (2 x 172 MW)
- Magdum – Asuncion 69 kV TL, SP-SC, 1-795 MCM ACSR, 17 km (1 x 86 MW)
- Tagum Cut-in Line to Nabunturan –Asuncion 69 kV TL, SP-SC, 1-795 MCM ACSR, 0.5 km (1 x 86 MW)

2. **Eastern Mindanao 230 kV Transmission Line Project** Agusan del Sur, Agusan del Norte, Davao del Sur, Davao de Oro	**Driver** Generation Entry; System Reliability and Security	**Status** ERC-Approved CEPNS	**Project Cost** 49,826 Mn	**ETC** Jun 2035

Need / Justification:

- To be initially energized at 138 kV

- To extend the 230 kV backbone from Agusan del Norte to Agusan del Sur and from Davao del Sur to Davao de Oro
- To strengthen the transmission corridor in Eastern Mindanao that is currently in a single-circuit 138 kV configuration
- To support the mining/quarrying industry and economic development in the area



Substation Components:

Phase 1

- Alegria 230 kV SS: 12-138 kV PCB and associated equipment

Phase 2

- Trento 230 kV SS: 12-138 kV PCB and associated equipment

Transmission Line Components:

Phase 1

- Kinamlutan – Alegria 230 kV TL, ST-DC, 2-795 MCM ACSR, 82.0 km (2 x 573 MW)
- Bislig–Trento Line Extension 138 kV, ST-DC, 1-795 MCM ACSR (2 x 172 MW), 6 km
- Alegria – San Francisco 138 kV Line Extension, SP-SC, 1-795 MCM ACSR, 0.8 km (1 x 172 MW)
- Tago – Alegria 138 kV Line Extension, SP-SC, 1-795 MCM ACSR, 0.8 km (1 x 172 MW)

Phase 2

- Alegria – Trento 230 kV Line Extension, ST-DC, 1-795 MCM ACSR, 61.6 km (2 x 573 MW)
- Trento – Tagum 230 kV TL, ST-DC, 2-795 MCM ACSR, 65.4 ckm (2 x 573 MW)
- San Francisco – Bislig 138 kV Line Bus-in to Trento SS, ST-SC, 1-795 MCM ACSR, 2 km (1 x 172 MW)
- Bislig – Nabunturan 138 kV Line Bus-in to Trento 138 kV SS, ST-SC, 1-795 MCM ACSR, 2.2 km (1 x 172 MW

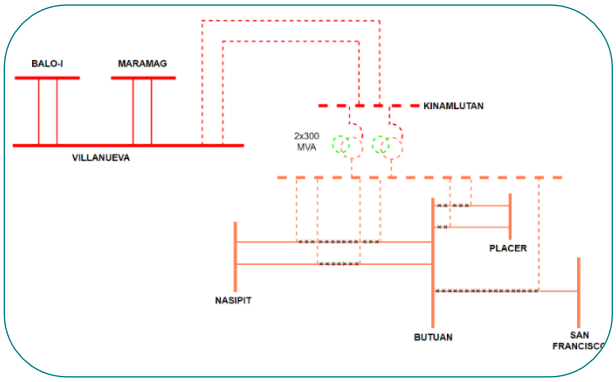
3. Villanueva – Kinamlutan 230 kV Transmission Line Project

Misamis Oriental, Agusan Del Norte

Driver	Status	Project Cost	ETC
System Reliability Load Growth	ERC-Approved CEPNS	43,997 Mn	Jun 2034

Need / Justification:

- To increase the power transfer capacity to the existing transmission line
- To provide one (1) 138 kV PCB for Battery Energy Storage System (BESS) project, four (4) 138 kV PCB for the additional feeders of Cagayan Electric Power and Light Co., Inc. (CEPALCO), and one (1) 69 kV PCB for the integration of the 3.7 MW Malitbog and 3.7 MW Silo-o Hydropower Plants at Villanueva Substation, and three (3) 69 kV PCB for the integration of the 99 MW The Ark Power Plant at Jasaan Substation
- To accommodate the anticipated increase in load demand arising from progressive development driven by mining activities in Caraga Region
- The proposed 5.5 km 230 kV line shall be energized initially at 138 kV and will be "cut-in" into the existing Jasaan – Nasipit 138 kV line to mitigate N-1 overloading of Villanueva – Jasaan 138 kV line.



Substation Components:

- Kinamlutan 230 kV SS, 2x300 MVA, 230/138 kV Power Transformers and accessories, 10-230 kV PCB, 18-138 kV PCB and associated equipment
- Villanueva 230 kV SS, 2x100 Ohm Series Reactor, 4-230 kV PCB, 5-138 kV PCB, 1-69 kV PCB and associated equipment
- Jasaan 138 kV SS, 3-138 kV PCB and associated equipment

Transmission Line Components:

- Villanueva – Kinamlutan, 230 kV TL, ST-DC, 2-795 MCM ACSR, 157.5 km (2 x 573 MW)
- Kinamlutan SS Bus-in to Nasipit –Butuan 138 kV Line 1: ST-DC, 1-795 MCM ACSR, 0.85 km (2 x 172 MW)
- Kinamlutan SS Bus-in to Nasipit – Butuan 138 kV Line 1: ST-DC, 1-795 MCM ACSR, 0.85 km (2 x 172 MW)
- Placer SS 138 kV Line Extension to Kinamlutan SS: ST-DC, 1-795 MCM ACSR, 0.7 km (2 x 172 MW)
- San Francisco SS 138 kV Line Extension to Kinamlutan SS: ST-SC, 1-795 MCM ACSR, 0.7 km (1 x 172MW)

4. Sultan Kudarat – Tacurong 230 kV Transmission Line Project

Maguindanao del Norte, Sultan Kudarat

Driver	Status	Project Cost	ETC
System Reliability and Security	ERC-Approved CEPNS	26,703 Mn	Oct 2036

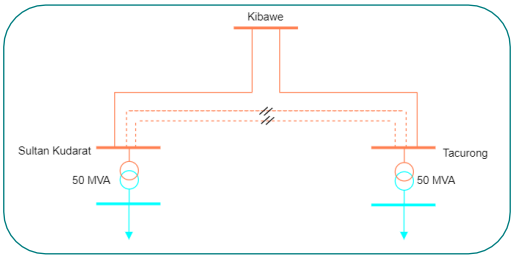
Need / Justification:

- To be initially energized at 138 kV
- To provide a reliable power delivery service for Southwestern Mindanao area
- To accommodate the load demand in the provinces of North & South Maguindanao and Sultan Kudarat

- To extend and loop the Mindanao 230 kV backbone in southwestern area
- To provide 4-138 kV PCB for the entry of the 80 MW Kalandagan Solar Power Plant at Tacurong Substation

Substation Components:
- Sultan Kudarat SS: 5-230 kV PCB, 3-138 kV PCB and associated equipment.
- Tacurong SS: 5-230 kV PCB, 7-138 kV PCB and associated equipment.

Transmission Line Components:
- Sultan Kudarat – Tacurong 230 kV TL, ST-DC, 2-795 MCM ACSR, 101 km. (2 x 573 MW)
- Sultan Kudarat 230 kV – Sultan Kudarat 138 kV Tie Line, SP-SC, 1-795 MCM ACSR, 1 km (1 x 287 MW)



5. Lala – Sta. Clara – Tumaga 230 kV Transmission Line Project

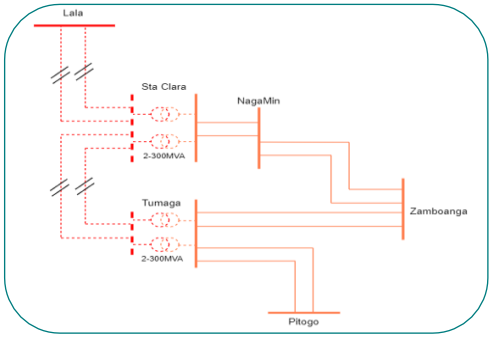
Lanao del Norte, Zamboanga Sibugay, Zamboanga del Sur

Driver	Status	Project Cost	ETC
System Reliability and Security	ERC-Approved CEPNS	44,056 Mn	Sep 2036

Need / Justification:
- To increase power transfer capacity towards the Zamboanga Peninsula and address load growth
- To strengthen operational stability by providing an additional transmission corridor to the area
- To reduce voltage issues in the peninsula caused by insufficient power supply
- To establish a more reliable high-voltage corridor that can support the integration of large-scale power plants in the region.

Substation Components:
- Lala 230 kV SS: 2-230 kV PCB and associated equipment.
- Sta Clara (Naga) 230 kV SS: 2x300 MVA Power Transformer, 10-230 kV PCB, 14-138 kV PCB and associated equipment.
- Tumaga 230 kV SS: 2x300 MVA Power Transformer, 6-230 kV PCB 2-138 kV PCB and associated equipment.

Transmission Line Components:
Lala – Sta Clara – Tumaga 230 kV TL: 2-795 MCM ACSR, STDC, 274 km (2 x 573 MW)



6. Matanao – General Santos 230 kV Transmission Line Project

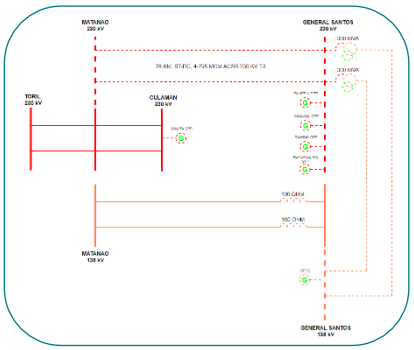
South Cotabato, Davao del Sur

Driver	Status	Project Cost	ETC
System Reliability and Security Generation Entry	Awaiting ERC Approval CEPNS	27,883 Mn	Dec 2032

Need / Justification:
- To increase power transfer capacity through a higher voltage transmission corridor.
- To provide a reliable transmission corridor serving customers in Southern Mindanao.
- To accommodate new power facilities through the installation of four (4) 138 kV PCB for 100 MW SPPC, four (4) 230 kV PCB for 75 MW Bawing SPP, four (4) 230 kV PCB for 150 MW Bluefin SPP, and two (2) 230 kV PCB for 150 MW Sinawal SPP at the General Santos Substation, and two (2) 230 kV PCB for 300 MW Malita SPP at the Culaman Substation.

Substation Components:
- Matanao 230 kV SS: 4-230 kV PCB and associated equipment
- General Santos 230 kV SS: 2x300 MVA Power Transformer, 18-230 kV PCB, 10-138 kV PCB and associated equipment, 2x100 Ohm 138 kV Series Reactor
- Culaman 230 kV SS: 2-230 kV PCB and associated equipment
- Toril 230 kV SS: 2x50 MVAR Capacitor bank and 2-230 kV PCB and associated equipment

Transmission Line Components:
Matanao – General Santos 230 kV TL: 4-795 MCM ACSR, STDC, 76 km (2 x 1148 MW)



TRANSMISSION LINE

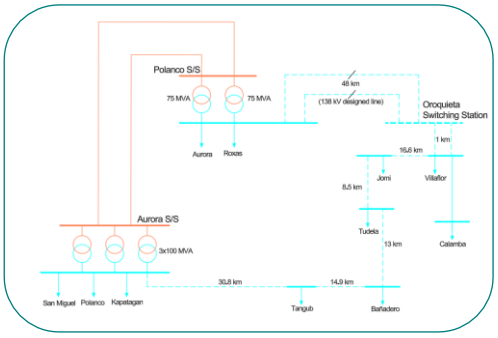
138 kV PROJECTS

7. Polanco – Oroquieta 138 kV Transmission Line Project
Misamis Occidental, Zamboanga del Norte

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	18,995 Mn	Jan 2031

Need / Justification:

- The project covers the construction of 48 km 138 kV transmission line from Polanco 138 kV Substation to Oroquieta Switching Station and upgrading of the existing 84 km 69 kV transmission line from Aurora Substation to the tapping of MOELCI I's Villaflor Substation.
- The project aims to provide reliable and uninterrupted power supply for the province of Misamis Occidental by looping the transmission line serving MOELCI I and MOELCI II to Polanco Substation and by increasing the capacity of the existing Aurora – Calamba 69 kV Transmission Line. The project will also address the low voltage problem in the area.
- To be initially energized at 69 kV.



Substation Components:

- Polanco 138 kV SS: 4x10 MVAR Shunt Capacitors 4-138 kV PCB, 1-69 kV PCB and associated equipment
- Oroquieta 69 kV SwS: 2x7.5 MVAR Shunt Capacitors 8 -69 kV PCB and associated equipment
- Aurora 69 kV SS: 2-69 kV PCB and associated equipment
- Bañadero 69 kV SS: 2x7.5 MVAR Shunt Capacitor 2-69 kV PCB and associated equipment
- Villaflor 69 kV SS: 2x7.5 MVAR, Shunt Capacitors 2-69 kV PCB, and associated equipment (Energized)

Transmission Line Components:

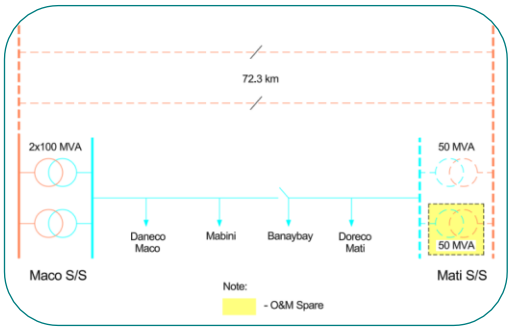
- Polanco – Oroquieta 138 kV Line, ST-DC, 1-795 MCM ACSR/AS, 48 km (2 x 172 MW)
- Oroquieta – Villaflor 69 kV Line ST-DC, 1-795 MCM ACSR/AS, 1 km (2 x 86 MW)
- Aurora – Villaflor 69 kV Line Upgrading, SP-SC, 1-795 MCM ACSR/AS, 84 km (1 x 86 MW)

8. Maco – Mati 138 kV Transmission Line Project
Davao Del Norte, Davao Oriental

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	14,732 Mn	Nov 2031

Need / Justification:

- To address the growing demand in Davao Oriental area
- To address the anticipated low voltage in the area
- To provide continuous and reliable power delivery during normal and N-1 conditions
- To enhance power supply reliability in Davao Oriental, circuit breakers will be installed in preparation for the relocation of a second 50 MVA power transformer from Nasipit Substation.



Substation Components:

- Maco 138 kV SS: 4-138 kV PCB and associated equipment
- Mati 138 kV SS: 1x50 MVA 138/69 kV Power Transformer 6-138 kV PCB and associated equipment 5-69 kV PCB and associated equipment.

Transmission Line Components:
Maco – Mati 138 kV Line, ST-DC, 1-795 MCM ACSR, 72.3 km (2 x 172 MW)

TRANSMISSION LINE

69 kV PROJECTS

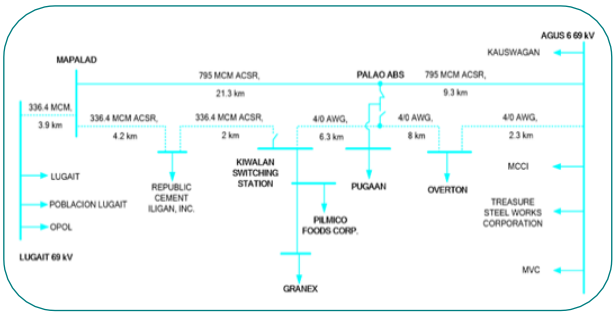
9. Agus 6 – Kiwalan – Lugait 69 kV Transmission Line Project
Lanao del Norte, Misamis Oriental

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	1,166 Mn	Jun 2036

Need / Justification:

- The existing Agus 6 – Kiwalan – Lugait 69 kV TL is reaching its full thermal capacity.
- To provide power transfer capacity through additional transmission corridor.

Transmission Line Components:
Agus 6 – Kiwalan – Lugait 69 kV TL: 1-795 MCM ACSR, SP-SC, 27 km (1 x 86 MW) with Line Structure Rehabilitation



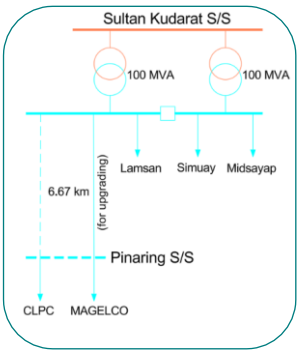
10. Sultan Kudarat – Pinaring 69 kV Transmission Line
Maguindanao del Norte

Driver	Status	Project Cost	ETC
Load Growth, System Reliability and Security	ERC-Approved CEPNS	3,098 Mn	Dec 2036

Need / Justification:
- To construct new transmission line from Sultan Kudarat SS to Cotabato City that will serve customers of Cotabato Light even during N-1 contingency
- To upgrade the existing 6.67 km Sultan Kudarat – Pinaring 69 kV line segment of Sultan Kudarat – DSA – Tacurong 69 kV Line to 1-795 MCM ACSR

Substation Components:
- Sultan Kudarat 69 kV SS: 3-69 kV PCB and associated equipment
- Pinaring 69 kV SwS: 6-69 kV PCB and associated equipment

Transmission Line Components:
- Sultan Kudarat – Pinaring 69 kV TL, SP-SC Upgrading, 1-795 MCM ACSR, 6.67 km (1 x 86 MW)
- Sultan Kudarat – Pinaring 69 kV TL, SP-SC, 1-795 MCM ACSR, 6.67 km (1 x 86 MW)



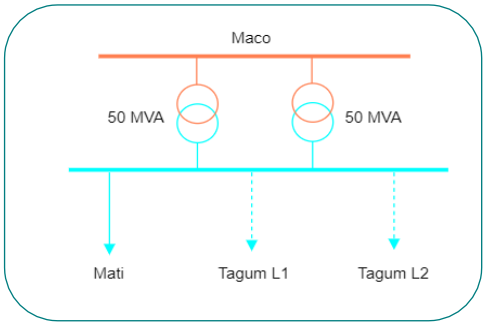
11. Maco – Tagum 69 kV Transmission Line Project
Davao del Norte

Driver	Status	Project Cost	ETC
System Reliability and Security	ERC-Approved CEPNS	4,206 Mn	Dec 2036

Need / Justification:
- To upgrade the existing 69 kV transmission line and to construct a new line that directly connects Tagum City to the nearest substation
- To solve the imminent overloading of the existing line due to rapid increase in demand of Tagum City
- To provide continuous supply of power and operational flexibility even during N-1 condition

Substation Components:
Maco 138 kV SS: 2-69 kV PCB and associated equipment.

Transmission Line Components:
- Maco – Tagum 69 kV TL (New), SP-SC, 1-795 MCM ACSR/AS, 7.7 km (1 x 86 MW)
- Maco – Tagum 69 kV TL (Upgrading), SP-SC, 1-795 MCM ACSR/AS, 31.3 km (1 x 86 MW)



SUBSTATION

230 kV PROJECTS

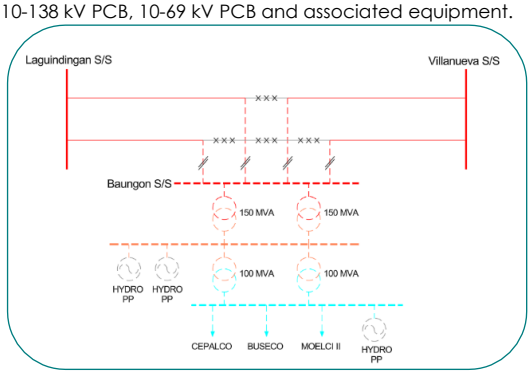
12. Baungon 230 kV Substation
Bukidnon, Misamis Oriental

Driver	Status	Project Cost	ETC
Load Growth Generation Entry	Awaiting ERC Approval CEPNS	9,149 Mn	Jun 2034

Need / Justification:
- Support for Future Load Growth of Distribution Utilities such as CEPALCO, BUSECO and MORESCO 2
- Integration of GEA Winning Hydroelectric Power Generation Proponents
- Formerly Libona 138 kV Substation Project.

Substation Components:
Baungon 230 kV SS: 2x150 MVA Power Transformer, 2x100 MVA Power Transformer, 10-230 kV PCB, 10-138 kV PCB, 10-69 kV PCB and associated equipment.

Transmission Line Components:
Laguindingan – Villanueva 230 kV Line Bus-in to Baungon SS, ST-DC, 2-795 MCM ACSR, 2-0.5 km (2 x 172 MW)



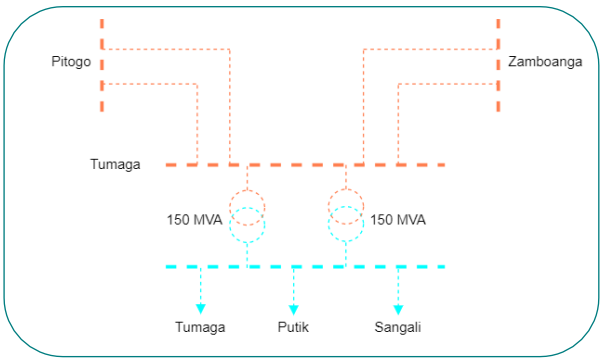
SUBSTATION

138 kV PROJECTS

13. Tumaga 138 kV Substation Project
Zamboanga del Sur

Driver	Status	Project Cost	ETC
System Reliability and Security	ERC-Approved CEPNS	6,395 Mn	Dec 2033

Need / Justification:
- To upgrade 69 kV TL from the Tumaga 138 kV SS to Zamboanga City Electric Cooperative, Inc. (ZAMCELCO's) Tumaga and Putik LES
- To accommodate the growing demand of Zamboanga City, attributed to the industrial facilities such as canning factories, shipyards, ports, warehouses, manufacturing plants, and airports
- To address the imminent thermal overloading of the Zamboanga– Tumaga – Pitogo 69 kV network in Zamboanga City by upgrading the Tumaga – Pitogo 69 kV TL
- To complement the implementation of the Lala – Sta Clara – Tumaga 230 kV TL that offers operation stability by having another transmission corridor with a higher power transfer capacity



Substation Components:
Tumaga 138/69 kV SS: 2x150 MVA 138/69 kV Power Transformer, 12-138 kV PCB, 8-69 kV PCB and associated equipment.

Transmission Line Components:
- Tumaga Bus-in Line to Zamboanga 138 kV, ST-DC, 1-795 MCM ACSR, 0.5 km (2 x 172 MW)
- Tumaga Bus-in Line to Pitogo 138 kV, ST-DC, 1-795 MCM ACSR, 0.5 km (2 x 172 MW)
- Tumaga – Putik/Tumaga LES 69 kV, SP-DC, 1-410 mm^2 TACSR, 5 km (2 x 146 MW)
- Pitogo – Tumaga 69 kV Line, SP-SC, 1-410 mm^2 TACSR, 13 km (1 x 146 MW)
- Tumaga – Zamboanga Cut-in 69 kV Line, SP-DC, 1-795 MCM ACSR, 0.5 km (2 x 86 MW)

14. Tigbao 138 kV Substation Project
Zamboanga del Sur

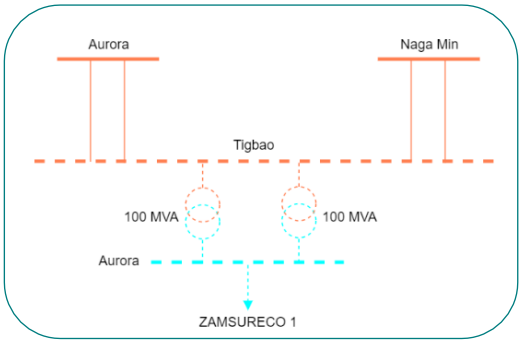
Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	3,247 Mn	Jun 2036

Need / Justification:
- To provide an additional grid connection facility for Zamboanga del Sur Electric I Cooperative (ZAMSURECO I), relieving thermal overloading at the Aurora 138 kV Substation.

- To accommodate the growing electricity demand, ensuring reliable and sufficient power supply for future requirements.

Substation Components:
Tigbao 138 kV SS: 2x100 MVA Power Transformer, 10-138 kV PCB, 6-69 kV PCB and associated equipment.

Transmission Line Components:
- Aurora – Naga Min 138 kV Line Bus-in to Tigbao SS, ST-DC, 1-795 MCM ACSR, 2-1.7 km. (2 x 172 MW)

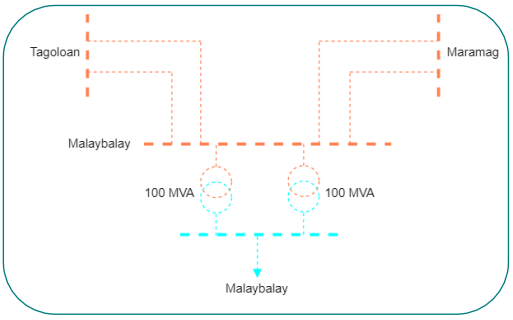


15. Malaybalay 138 kV Substation Project
Bukidnon

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	4,963 Mn	Dec 2034

Need / Justification:
- To address frequent unexpected power interruptions in Malaybalay City, Valencia City, and adjacent municipalities;
- To aid in resolving the looming undervoltage issue in the area;
- To mitigate imminent thermal overloading of the Maramag–Malaybalay 69 kV subtransmission line; and
- To improve system reliability by providing a new connection point for BUSECO, FIBECO, and other connected customers.

Substation Components:
Malaybalay 138 kV SS: 2x100 MVA Power Transformer, 10-138 kV PCB, 3-69 kV PCB and associated equipment.



Transmission Line Components:
- Malaybalay Substation Bus-in to Manolo Fortich-Maramag, 138 kV TL, ST-DC, 1-795 MCM ACSR, 2-500 meters km (2 x 172 MW)

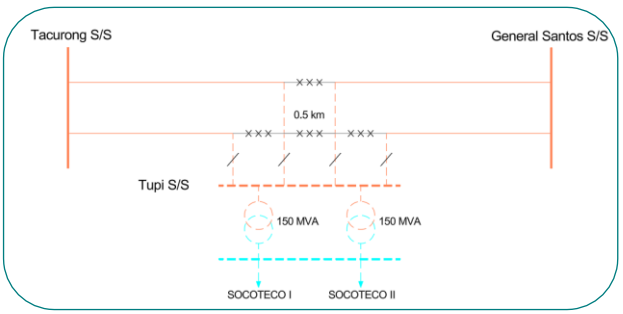
16. Tupi 138 kV Substation Project
South Cotabato

Driver	Status	Project Cost	ETC
Load Growth	ERC-Approved CEPNS	5,503 Mn	Jun 2031

Need / Justification:
- To accommodate the power demand requirements of SOCOTECO 1 and Sagittarius Mines Inc. (SMI)
- To provide an additional connection point of SOCOTECO II
- Formerly Koronadal 138 kV Substation Project.

Substation Components:
Tupi 138 kV SS, 2x150 MVA 138/69 kV Power Transformers, 14-138 kV PCB, 6-69 kV PCB and associated equipment

Transmission Line Components:
Tupi 138 kV SS Bus-in to Tacurong – General Santos 138 kV Lines, ST-DC, 1-795 MCM ACSR, 1 km (2 x 172 MW)



ISLAND / OFF-GRID INTERCONNECTION

69 kV PROJECTS

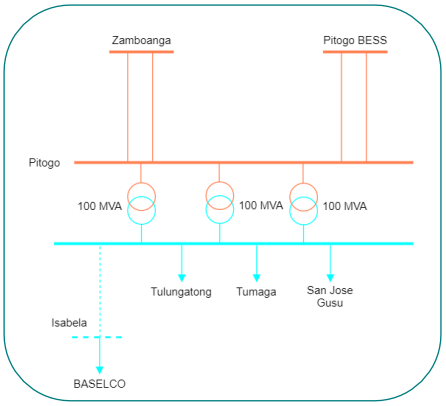
17. Zamboanga –Basilan 69 kV Interconnection Project
Zamboanga, Basilan Island

Driver	Status	Project Cost	ETC
Island Interconnection	ERC-Approved CEPNS	24,348 Mn	Apr 2037

Need / Justification:
- To connect the island of Basilan to the Mindanao Grid.
- To give the province of Basilan a reliable and efficient power service.

Substation Components:
- Pitogo 69 kV SS: 1-69 kV PCB and associated equipment.
- Isabela 69 kV SwS, 4-69 kV PCB and associated equipment, 1x7.5 MVAR Shunt Reactor

Transmission Line Components:
- Pitogo SS – Pitogo CTS, SP-SC, 336.4 MCM ACSR, 2 km (1 x 57 MW)
- Pitogo CTS – Pangasang CTS, 3-Core 500 mm² XLPE, 27 km (1 x 50 MW)
- Pangasang CTS – Isabela Switching Station, SP-SC, 336.4 MCM ACSR, 9.5 km (1 x 57 MW)



18. Claver – Siargao 69 kV Interconnection Project

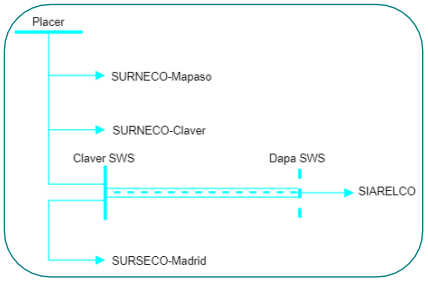
Siargao, Surigao Del Sur

Driver	Status	Project Cost	ETC
Island Interconnection	ERC-Approved CEPNS	12,939 Mn	Feb 2033

Need / Justification:
- Provide 69 kV interconnection to Siargao Island with increased power transfer capacity
- Improve voltage levels within the franchise area of SIARELCO

Substation Components:
- Claver 69 kV Switching Station : 5-69 kV PCB and associated equipment
- Dapa 69 kV Switching Station : 7-69 kV PCB and associated equipment 4x2.5 MVAR Shunt Capacitor and associated equipment

Transmission Line Components:
Claver – Dapa 69 kV Submarine Cable: 3-Core, 500 mm² XLPE, 42 km (1 x 50 MW)



The Lala – Malabang – Sultan Kudarat 230 kV Transmission Line Project, which creates a looped system through a high voltage power line emanating from Lanao del Norte, further improves the reliability of transmitted power towards southwestern Mindanao. Likewise, the various 69 kV transmission line projects such as the Siom – Sindangan – Salug 69 kV line in Zamboanga Del Norte and the upgrading of the Placer – Madrid 69 kV line in the CARAGA Region provide flexibility in supplying power to customers in that part of Mindanao. Two new substation facilities, namely the Salug and Midsayap Substations, are to be constructed for the growing demand in the provinces of Zamboanga del Norte and Cotabato, respectively.

In the long-term, the installation of transformers in the Matanao 230 kV facility ensures adequate substation capacity and improves the voltage profile for customers in Davao del Sur. Finally, the implementation of the Zamboanga – Basilan and Davao-Samal Interconnection projects significantly boosts the supply reliability supporting the load requirements of Basilan and Samal islands.

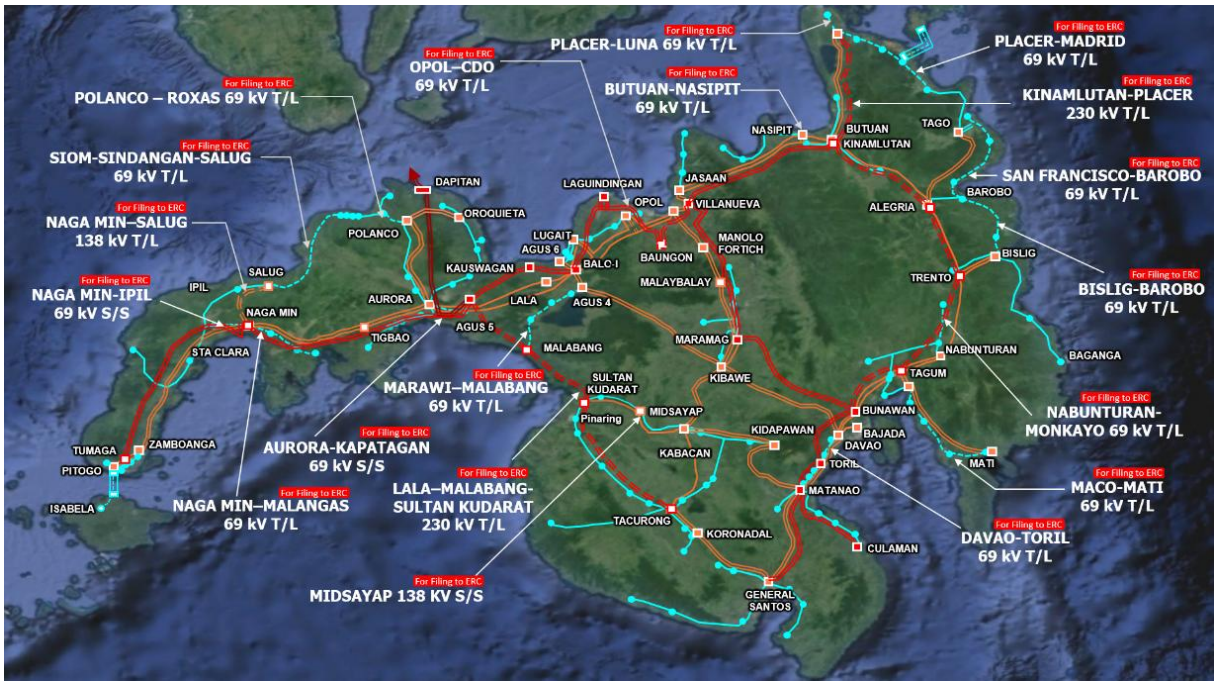


Figure 7.4 Additional Mindanao transmission projects for the period 2031-2040

Table 7.3: List of Additional Proposed Projects in Mindanao for the period 2031-2040

TRANSMISSION LINE

230 kV PROJECTS

1. Lala – Malabang – Sultan Kudarat Transmission Line Project Lanao del Norte, Lanao del Sur, Maguindanao	**Driver** System Reliability and Security; Load Growth	**Status** For Filing	**ETC** 2031-2040

Need / Justification:

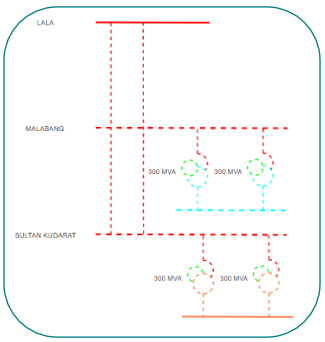
- To provide a new transmission corridor that will complete the 230 kV loop in the western part of Maguindanao Island.
- To ensure system reliability and operational flexibility in the province of Lanao del Sur and Maguindanao.

Substation Components:

- Lala 230 kV SS: 4-230 kV PCB and associated equipment.
- Malabang 230 kV SS: 2x300 MVA Power Transformer, 10-230 kV PCB, 6-69 kV PCB and associated equipment.
- Sultan Kudarat 230 kV SS: 2x300 MVA Power Transformer, 6-230 kV PCB, 2-138 kV PCB and associated equipment.

Transmission Line Components:

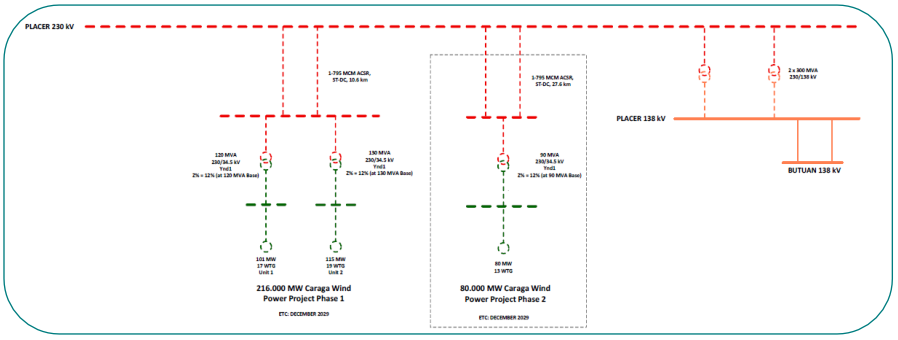
Lala – Malabang – Sultan Kudarat 230 kV TL: 2-795 MCM ACSR, STDC, 100 km (2 x 573 MW)



2. Kinamlutan – Placer 230 kV Transmission Line Project Surigao del Norte, Agusan del Norte	**Driver** System Reliability and Security Generation Entry	**Status** For Filing	**ETC** 2031-2040

Need / Justification:

- To accommodate the upcoming powerplant of Caraga Wind Energy Corporation (CWEC) and other upcoming generators along Placer Substation.
- To provide reliability and resiliency to the province of Suriagao Del Norte and Agusan Del Norte
- To prevent overloading of the existing Kinamlutan-Placer 138kV Transmission Line.



Substation Components:

- Placer 230 kV SS: 2x300 MVA Power Transformer, 14-230 kV PCB, 10-138 kV PCB and associated equipment
- Kinamlutan 230 kV Switchyard Station: 2x230 kV PCB and associated equipment.

Transmission Line Components:

Kinamlutan – Placer 230 kV TL: 2-795 MCM ACSR, STDC, 80 km (2 x 573 MW)

TRANSMISSION LINE

138 kV PROJECTS

3. Nagamin – Salug 138 kV Transmission Line Project
Zamboanga Sibugay, Zamboanga del Norte

Driver	Status	ETC
System Reliability and Security Power Quality	For Filing	2031-2040

Need / Justification:

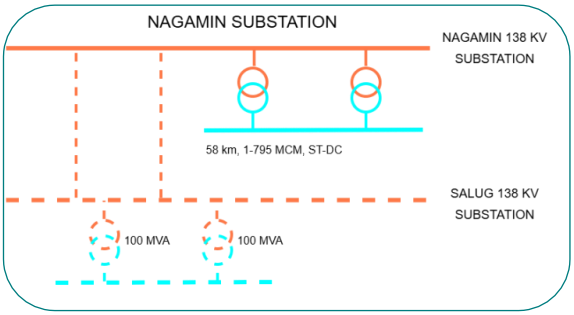
- To provide a high voltage transmission corridor towards the Municipality of Salug, Zamboanga del Norte for a more reliable and efficient energy supply
- To improve the overall power quality in Northwestern Mindanao Area

Substation Components:

Salug 138 kV SS: 2x100 MVA 138/69 kV Power Transformer, 6-138 kV PCB, 6-69 kV PCB and associated equipment

Transmission Line Components:

Nagamin – Salug 138 kV TL, ST-DC, 2-795 MCM ACSR, 58 km (2 x 573 MW)



TRANSMISSION LINE

69 kV PROJECTS

4. Polanco – Roxas 69 kV Transmission Line Project
Zamboanga Del Norte, Misamis Occidental

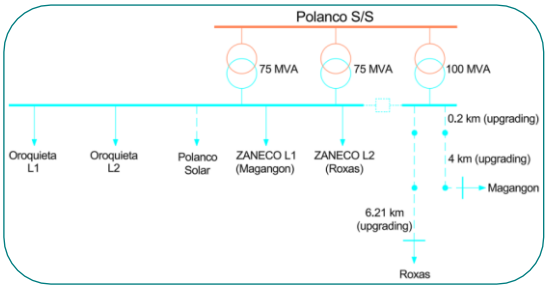
Driver	Status	ETC
Load Growth System Reliability and Security	For Filing	2031-2040

Need / Justification:

This single-circuit line enhances power supply reliability, ensuring availability during faults or preventive maintenance of the Polanco – Roxas 69 kV Line.

Transmission Line Components:

- Polanco-Magangon Tap, 69 kV TL Upgrading, SP-DC, 1-795 MCM, 4.0 km (1x86MW)
- Magangon Tap-Roxas 69 kV TL Upgrading, SP-SC, 1-795 MCM, 6.21 km (1x86MW)
- Polanco-Roxas/Magangon 69 kV Line Extension, SP-DC, 1-795 MCM, 0.2 km (1x86MW)



5. Placer – Luna 69 kV Transmission Line Project

Surigao del Norte

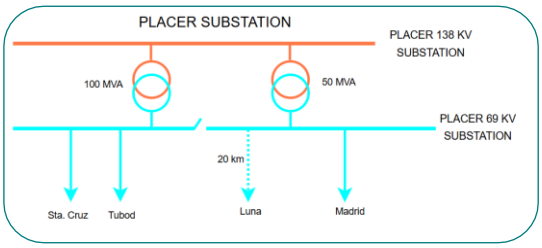
Driver	Status	ETC
Load Growth System Reliability and Security	For Filing	2031-2040

Need / Justification:

- To relieve the overloading of the existing TL
- To prevent load dropping and power interruptions during peak loading.

Transmission Line Components:

Placer – Luna 69 kV TL : 1x795 MCM ACSR, SP-DC, 20 km



6. Opol – CDO 69 kV Transmission Line Project

Misamis Oriental

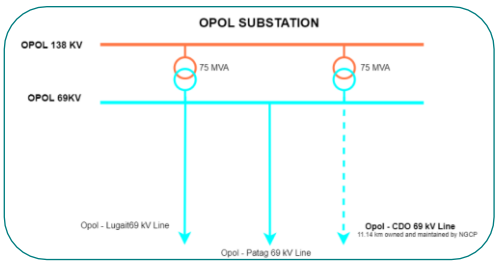
Driver	Status	ETC
Load Growth	For Filing	2031-2040

Need / Justification:

- To relieve the overloading of the existing TL
- To prevent load dropping and power interruptions during peak loading.

Transmission Line Components:

Opol – CDO 69 kV TL : 1x795 MCM ACSR, SP-DC, 11.4 km



7. Davao – Toril 69 kV Transmission Line Project

Davao del Sur

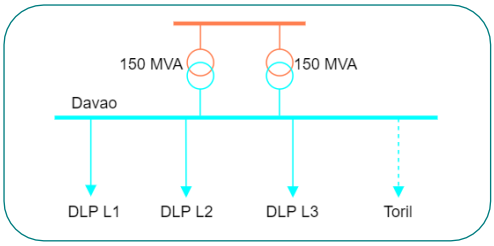
Driver	Status	ETC
Load Growth	For Filing	2031-2040

Need / Justification:

- To relieve the overloading of the existing TL
- To prevent load dropping and power interruptions during peak loading.

Transmission Line Components:

Davao – Toril 69 kV TL: 1-795 MCM ACSR, SP-SC, 14 km (1 x 86 MW)



8. Maco – Mati 69 kV Transmission Line Project

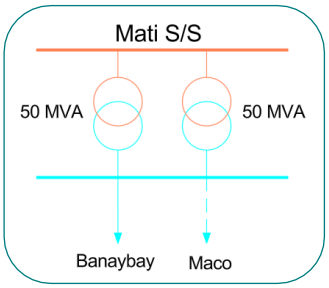
Davao de Oro, Davao Oriental

Driver	Status	ETC
Load Growth	For Filing	2031-2040

Need / Justification:
- To relieve the overloading of the existing TL
- To prevent load dropping and power interruptions during peak loading

Substation Components:
Mati 69 kV SS: 1-69 kV PCB and associated equipment

Transmission Line Components:
Maco – Mati 69 kV TL: 1-795 MCM ACSR, SP-SC,90.2 km (1 x 86 MW)

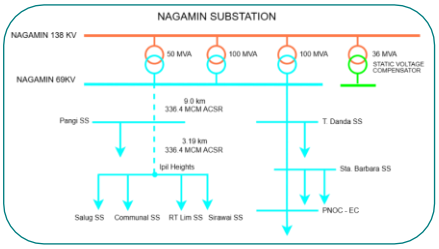


9. Nagamin – Ipil 69 kV Transmission Line Project
Zamboanga Sibugay

Driver	Status	ETC
Load Growth	For Filing	2031-2040

Need / Justification:
- To relieve the overloading of the existing TL
- To prevent load dropping and power interruptions during peak loading

Transmission Line Components:
Nagamin – Ipil 69 kV TL: 1-795 MCM ACSR, SP-SC, 12.19 km (1 x 86 MW)

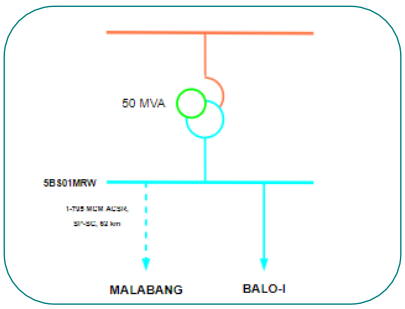


10. Marawi – Malabang 69 kV Transmission Line Project
Lanao del Sur

Driver	Status	ETC
Load Growth System Reliability and Security	For Filing	2031-2040

Need / Justification:
- To relieve the overloading of the existing TL
- To prevent load dropping and power interruptions during peak loading

Transmission Line Components:
Marawi – Malabang 69 kV TL: 1-795 MCM ACSR, SP-SC, 62 km (1 x 56 MW)

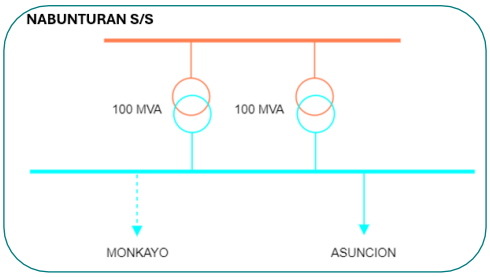


11. Nabunturan – Monkayo 69 kV Transmission Line Project
Davao de Oro

Driver	Status	ETC
Load Growth	For Filing	2031-2040

Need / Justification:
- To relieve the overloading of the existing TL
- To prevent load dropping and power interruptions during peak loading

Transmission Line Components:
Nabunturan - Monkayo 69 kV TL: 1x795MCM ACSR, SP-SC, 15.4 km (2x176)

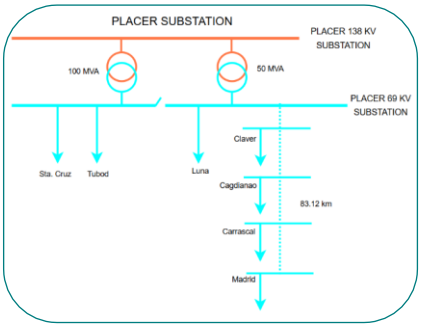


12. Placer – Madrid 69 kV Transmission Line Project
Surigao del Norte

Driver	Status	ETC
Load Growth System Reliability and Security	For Filing	2031-2040

Need / Justification:
- To relieve the overloading of the existing TL
- To prevent load dropping and power interruptions during peak loading

Transmission Line Components:
Placer - Madrid 69 kV TL: 1x795 MCM ACSR, ST-SC, 80 km

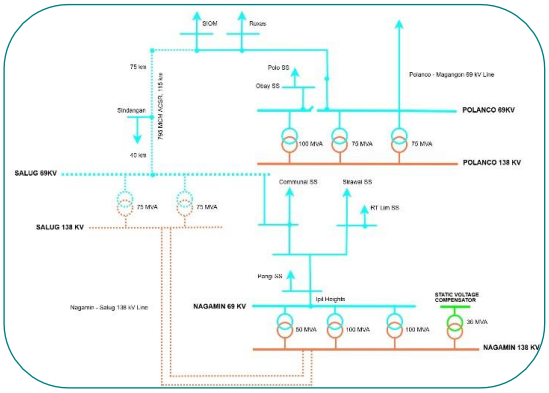


13. SIOM – Sindangan – Salug 69 kV Transmission Line Project
Zamboanga del Norte

Driver	Status	ETC
System Reliability and Security Power Quality	For Filing	2031-2040

Need / Justification:
- To relieve the overloading of the existing TL
- To prevent load dropping and power interruptions during peak loading

Transmission Line Components:
SIOM – Sindangan – Salug 69 kV TL: 1-795 MCM ACSR, SP-SC, 115 km (1 x 86 MW)

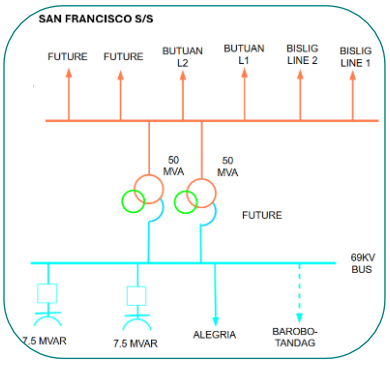


14. San Francisco – Barobo 69 kV Transmission Line Project
Agusan del Sur, Surigao del Sur

Driver	Status	ETC
System Reliability and Security Load Growth	For Filing	2031-2040

Need / Justification:
- To relieve the overloading of the existing TL
- To prevent load dropping and power interruptions during peak loading

Transmission Line Components:
San Francisco – Barobo 69 kV TL: 1-795 MCM ACSR, ST-SC, 112.1 km (1 x 86 MW)

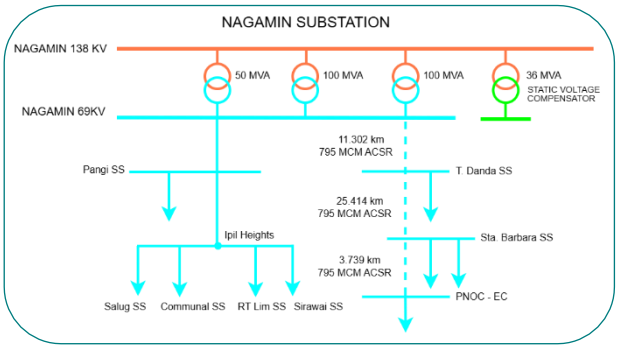


15. Nagamin – Malangas 69 kV Transmission Line Project
Zamboanga del Sur

Driver	Status	ETC
Load Growth	For Filing	2031-2040

Need / Justification:
- To relieve the overloading of the existing TL
- To prevent load dropping and power interruptions during peak loading

Transmission Line Components:
Nagamin – Malangas 69 kV TL: 1-795 MCM ACSR, SP-SC, 40.935 km (1 x 86 MW)

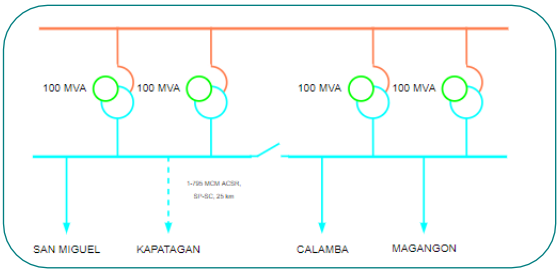


16. Aurora – Kapatagan 69 kV Transmission Line Project
Zamboanga del Sur, Lanao del Norte

Driver	Status	ETC
System Reliability and Security Load Growth	For Filing	2031-2040

Need / Justification:
- To relieve the overloading of the existing TL
- To prevent load dropping and power interruptions during peak loading

Transmission Line Components:
Aurora – Kapatagan 69 kV TL: 1-795 MCM ACSR, SP-SC, 25 km (1 x 86 MW)

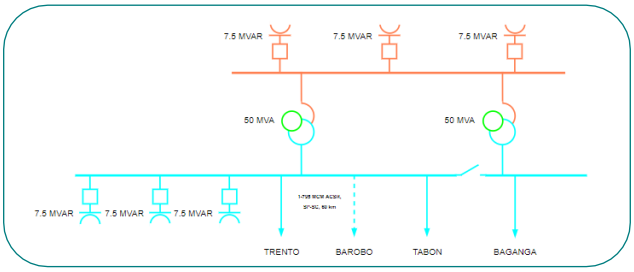


17. Bislig – Barobo 69 kV Transmission Line Project
Surigao del Sur

Driver	Status	ETC
Load Growth System Reliability and Security	For Filing	2031-2040

Need / Justification:
- To relieve the overloading of the existing TL
- To prevent load dropping and power interruptions during peak loading

Transmission Line Components:
Bislig – Barobo 69 kV TL: 1-795 MCM ACSR, SP-SC, 60 km (1 x 86 MW)

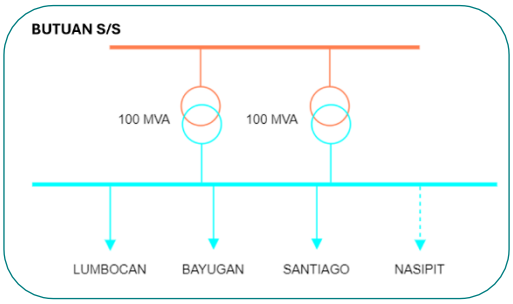


18. Butuan - Nasipit 69 kV Transmission Line Project
Davao de Oro, Davao Oriental

Driver	Status	ETC
Load Growth	For Filing	2031-2040

Need / Justification:
- To relieve the overloading of the existing TL
- To prevent load dropping and power interruptions during peak loading.

Transmission Line Components:
Butuan – Nasipit 69 kV TL: 1-795 MCM ACSR, SP-SC, 24.4 km (1 x 86 MW)



SUBSTATION

230 / 138 / 69 kV

19. Matanao 230/138 kV Transformer Project
Davao del Sur

Driver	Status	ETC
System Reliability and Security	For Filing	2031-2040

Need / Justification:
- To interconnect the 230 kV and 138 kV switchyards of Matanao SS
- To avoid possible overloading of the existing transmission corridors towards northern Davao Region

Substation Components:
Matanao 230 kV SS: 2x300 MVA Power Transformer, 4-230 kV PCB, 4-138 kV PCB and associated equipment

20. Mindanao Substation Expansion 5 Project (MSE5P)
Various substations in Mindanao

Driver	Status	ETC
System Reliability and Security Load Growth	For Filing	2031-2040

Need / Justification:
- To cater to the load growth and to provide N-1 to various SS in Mindanao
- Without the project, there can be power interruptions during outage and failure of the existing transformers and PCB.

Substation Components:
- Zamboanga 138/69 kV SS: 2x100 MVA Power Transformer and associated equipment
- Sultan Kudarat 138/69 kV SS: 1x100 MVA Power Transformer, 1-138 kV PCB, 1-69 kV PCB and associated equipment.
- Tacurong 138/69 kV SS: 1x100 MVA Power Transformer and associated equipment

21. Mindanao Substation Expansion 6 Project (MSE6P)
Various substations in Mindanao

Driver	Status	ETC
System Reliability and Security Load Growth	For Filing	2031-2040

Need / Justification:
- To cater to the load growth and provide N-1 to various SS in NGCP's south Mindanao
- Without the project, load dropping and power interruptions can happen during outage and failure of existing transformers and PCB.

Substation Components:
- Laguindingan138 kV SS: 1x100 MVA Power Transformer, 1-138 kV PCB, 2-69 kV PCB and associated equipment.
- Manolo Fortich 138 kV SS: 1x50 MVA Power Transformer, 1-138 kV PCB, 1-69 kV PCB and associated equipment.
- Placer 138 kV SS, 1x100 MVA Power Transformer

22. Mindanao Substation Expansion 7 Project (MSE7P)
Various substations in Mindanao

Driver	Status	ETC
System Reliability and Security Load Growth	For Filing	2031-2040

Need / Justification:
- To cater to the load growth and provide N-1 to various SS
- Without the project, load dropping and power interruptions can be experienced in the area during outage and failure of the existing transformers and PCB.

Substation Components:
- San Francisco 138 kV SS: 1x100 MVA Power Transformer
- Bislig 138 kV Substation: 1x 50MVA Power Transformer, 2-138 kV PCB, 1-69 kV PCB and associated equipment.
- Matanao 138 kV SS: 2x150 MVA Power Transformer and associated equipment
- General Santos 138 kV SS: 4x150MVA Power Transformer and associated equipment

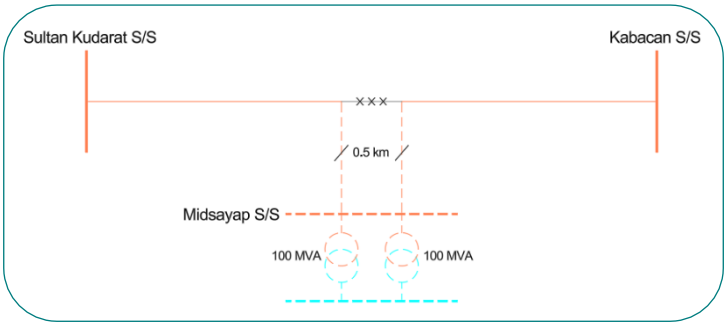
23. Midsayap 138 kV Substation Projects
North Cotabato

Driver	Status	ETC
Load Growth	For Filing	2031-2040

Need / Justification:
To support the load growth in North Cotabato and to help in unloading the Sultan Kudarat SS

Substation Components:
Midsayap138 kV SS: 2x100 MVA Power Transformer, 2-138 kV PCB and associated equipment.

Transmission Line Components:
Midsayap S/S Bus-in to Sultan Kudarat-Kabacan 138 kV TL, STDC, 1x795MCM ACSR, 0.5 km



7.3 MINDANAO PROJECTS FOR 2041–2050

During this period, transmission lines initially energized at lower voltages will be upgraded to their designed voltage levels to accommodate load development on the island. With the completion of these projects, the long-awaited 230 kV transmission line looping will be realized, enabling seamless power transfer from bulk generation sites to load centers across the Mindanao Grid. Additionally, the completion of 138 kV transmission facilities within this timeframe will provide a reliable power supply to meet growing demand. Voltage improvement projects are also planned for installation during this period to maintain desirable voltage levels.

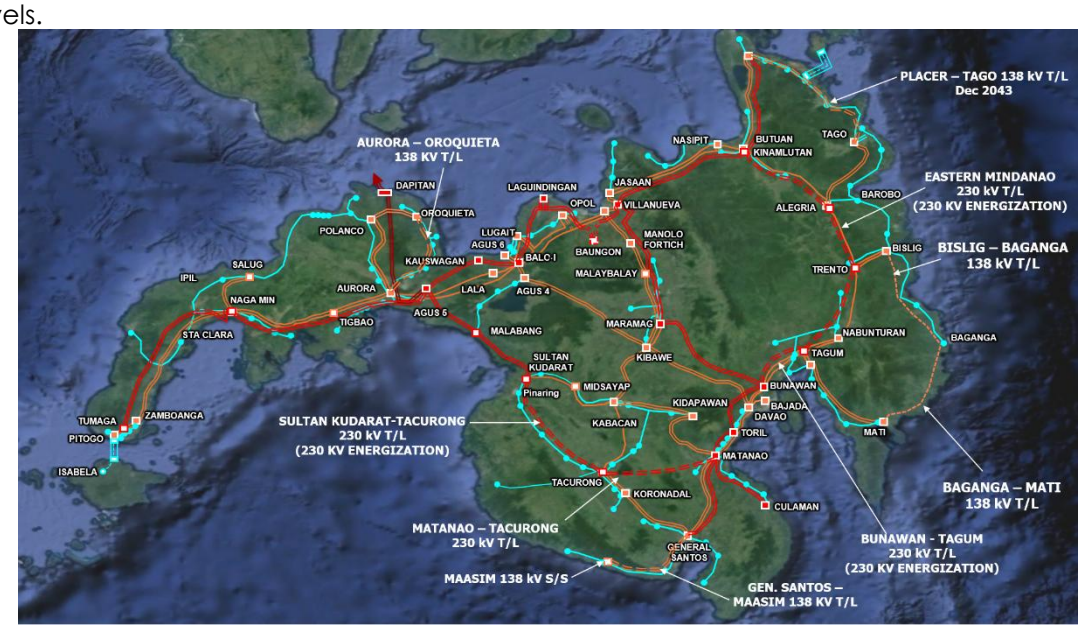


Figure 7.5 Mindanao transmission projects for the period 2041-2050

Table 7.4: List of Additional Proposed Projects in Mindanao for the period 2041-2050

Project Name	Description	Location
TRANSMISSION LINE		
230 kV PROJECTS		
Lala – Malabang – Sultan Kudarat 230 kV Transmission Line Project (230 KV Energization)	• To provide a new transmission corridor that will complete the 230 kV loop in the western part of Maguindanao Island. • To ensure system reliability and operational flexibility in the province of Lanao del Sur and Maguindanao.	Lanao del Norte, Lanao del Sur, Maguindanao
Sultan Kudarat – Tacurong 230 kV Transmission Line Project (230 KV Energization)	• To energize to a higher voltage the transmission line that was initially energized to a lower voltage level. • To accommodate the growing demand and will further complete the 230 kV loop in the Mindanao grid.	Sultan Kudarat, Maguindanao
Matanao – Tacurong 230 kV Transmission Line Project	• To directly connect the bulk generation of the Davao Region to the SS in southwestern Mindanao thru a new 230 kV corridor.	Sultan Kudarat, Davao del Sur

Project Name	Description	Location
Bunawan – Tagum 230 KV Transmission Line Project (230 KV Energization)	• To energize to a higher voltage the transmission line that was initially energized to a lower voltage level. • To accommodate the growing demand and will further complete the 230 kV loop in the Mindanao grid.	Davao del Sur, Davao del Norte
Eastern Mindanao 230 KV Transmission Line Project (230 KV Energization)	• To energize to a higher voltage the transmission line that was initially energized to a lower voltage level. • To accommodate the growing demand and will further complete the 230 kV loop in the Mindanao grid.	Surigao del Sur,Agusan del Sur, Davao de Oro
138 kV PROJECTS		
Polanco – Oroquieta 138 kV Transmission Line Project (138 kV Energization)	• To energize to a higher voltage to accommodate the growing demand	Zamboanga del Norte, Misamis Occidental
Aurora – Oroquieta 138 kV Transmission Line Project	• To provide a high voltage transmission corridor towards the Cities of Ozamis and Oroquieta, Misamis Occidental. To complete the 138 kV loop in the province for a more reliable and efficient energy supply.	Zamboanga del Sur, Misamis Occidental
Placer – Tago 138 kV Transmission Line Project	• To provide a high voltage transmission corridor towards the Municipality of Tago, Surigao del Sur • To complete the 138 kV loop in the province for a more reliable and efficient energy supply.	Surigao del Norte, Surigao del Sur
Gen. Santos – Maasim 138 kV Transmission Line Project	• To provide a higher transmission corridor towards the province of Saranggani • To provide a stable and reliable power supply of loads in Saranggani	South Cotabato, Saranggani
Bislig – Baganga 138 kV Transmission Line Project	• The project aims to provide a high voltage transmission corridor towards the Municipality of Baganga, Davao Oriental for a more reliable and efficient energy supply	Surigao del Sur, Davao Oriental
Baganga – Mati 138 kV Transmission Line Project	• The project aims to loop the 138 kV backbone from the municipality of Baganga to the city of Mati, Davao Oriental. This will provide a stable and reliable power supply of loads in Davao Oriental.	Davao Oriental
SUBSTATION		
138 kV PROJECTS		
Mindanao Substation Expansion 8 Project (MSE8P)	• To cater to the load growth and provide N-1 to various SS in Mindanao. Without the project, load dropping and power interruptions can happen during outage and failure of the existing transformers and PCB.	Various Substations in Mindanao
Mindanao Substation Expansion 9 Project (MSEP9)	• To cater the load growth and provide N-1 to various SS in NGCP's South Mindanao Region. Without the project, load dropping and power interruptions during outage and failure of existing transformers and PCB.	Various Substations in Mindanao
Maasim 138 kV Substation Project	• To support the load growth in South Cotabato and will help unload the General Santos SS. • To provide new connection points to the customers in the province of Saranggani.	South Cotabato

Chapter 8

ISLAND AND OFF-GRID INTERCONNECTION

Island and off-grid interconnection play a vital role in NGCP's efforts to provide a more reliable, efficient, and resilient power system across the Philippines. As an archipelago comprising 7,641 islands, the Philippines faces unique challenges in delivering stable electricity to geographically separated communities. To address these challenges, NGCP continues to develop inter-island transmission facilities and submarine cable systems that connect isolated and off-grid areas to the main transmission network. These interconnections help improve system reliability, strengthen grid resilience, and support the government's goal of providing reliable transmission service and increased electricity service coverage in the country.

Beyond improving system reliability, island interconnection allows electricity to be shared across regions, enabling areas with insufficient generation to draw power from neighboring grids when needed. This results in a more efficient use of available generation resources, reduces the need for additional reserve capacity, and helps lower the risk of power shortages. Interconnection facilities also support the integration of renewable energy by allowing excess power from renewable sources, such as solar, wind, hydro, and geothermal plants, to be delivered to other areas. In this way, island and off-grid interconnections contribute to a cleaner, more sustainable, and cost-effective energy system.

Consistent with the DOE's Missionary Electrification Development Plan (MEDP) and the Philippine Energy Plan (PEP), NGCP continues to pursue strategic interconnection projects that will bridge energy access gaps, modernize off-grid power systems, and accelerate nationwide electrification. These projects form part NGCP's vision of a unified Philippine Grid that can better withstand system disturbances, improve operational flexibility, and support future growth in electricity demand.

Over the years, NGCP has successfully implemented several major interconnection projects, including the Leyte–Luzon HVDC Interconnection, the Mindanao–Visayas Interconnection Project (MVIP), the Leyte–Cebu Interconnections, the Negros–Panay Interconnections, the Cebu – Bohol Interconnection, the Cebu–Lapu-Lapu Interconnection, and the Panay–Boracay and Panay – Guimaras interconnections. These interconnection facilities have significantly enhanced power transfer capability between islands/grids, improved overall system reliability, and brought the country closer to having a fully unified national power grid.

8.1 MAJOR ISLAND INTERCONNECTIONS AND CAPACITY UPGRADES

The Philippines has ten existing major undersea island interconnection systems, consisting of eight High Voltage Alternating Current (HVAC) and two High Voltage Direct Current (HVDC). These are the

- Leyte – Luzon ± 350 kV HVDC
- Mindanao – Visayas Interconnection ± 350 kV HVDC
- Leyte – Cebu 230 kV Interconnection
- Negros – Panay 138 kV and 230 kV Interconnection
- Cebu – Negros 138 kV Interconnection and 230 kV Interconnection
- Leyte – Bohol 138 kV Interconnection
- Cebu-Bohol 230 kV Interconnection
- Cebu – Lapu-Lapu 138 kV HVAC Interconnection
- Panay – Boracay 69 kV AC Interconnection facilities
- Panay – Guimaras 138 kV Interconnection (69 kV Energized)

The 432-km Leyte – Luzon ± 350 kV HVDC, with a 23-km submarine cables connecting Leyte Island (via Samar Island) to the Luzon Grid has been in monopolar operation since 1998. Its maximum transfer capacity is 440 MW with provision for upgrade to 880 MW through the implementation of Luzon – Visayas HVDC Bipolar Operation Project. The project involves the upgrading of the Naga Converter Station in Luzon and the Ormoc Converter/Inverter Station in the Visayas.

The MVIP, as discussed in the earlier chapters, was fully energized in January 2024 and marked the physical interconnection of the Luzon, Visayas, and Mindanao Grids. The project improves power transfer capability, supports system reliability, and contributes to NGCP's objective of a unified Philippine Grid. MVIP currently has a transfer capacity of 450 MW, with provision for expansion to 900 MW through the implementation of MVIP Stage 2. The MVIP Stage 2 capacity upgrade will maximize the use of the existing HVDC infrastructure, including the submarine cable system, converter stations, and associated overhead transmission lines established under the initial stage of the project. Hence, it can increase transfer capability without the need for additional submarine cable or major new transmission line construction.

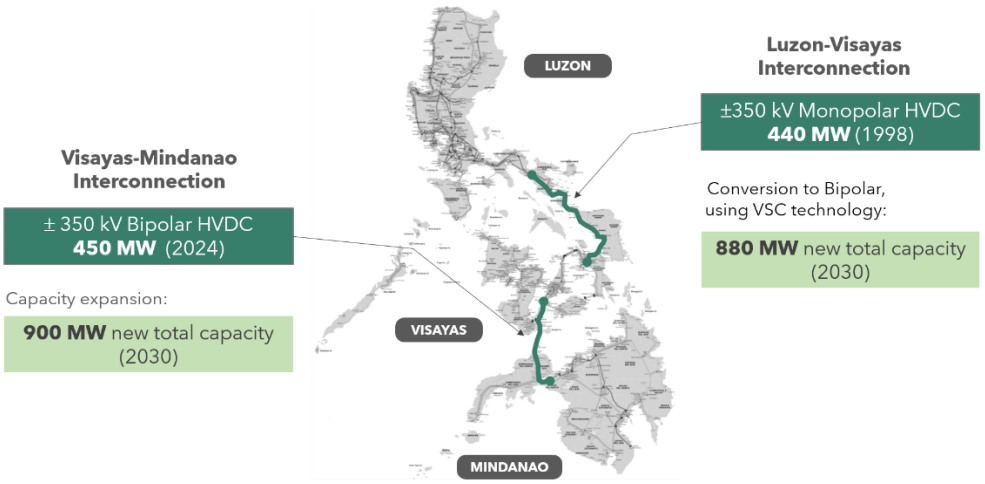


Figure 8.1: HVDC Interconnection Upgrades

The Leyte – Cebu interconnection is a 33-km double circuit 230 kV submarine cable, with a transfer capacity of about 400 MW. The first and second circuits were energized in 1997 and 2005, respectively. The double circuit Cebu-Negros Interconnection enables power-sharing of the maximum of 180 MW between Cebu and Negros Islands. Its first circuit of 18-km, 138 kV submarine cable was energized in 1993 while its second circuit was energized in 2007.From Negros Island, connected is the 18-km 138 kV Negros – Panay Interconnection, energized in 1990 with a rated capacity of 85 MW. In 2016, an additional 230 kV-designed submarine cable was installed between Negros and Panay. In 2024, the completion of the CNP 230 kV backbone project further strengthened the link between islands. It involves construction of double circuit overhead transmission lines that will traverse in Cebu and Negros Island, Submarine Cables will be laid between Cebu and Negros Island with 2x400 MW transfer capacity and Panay and Negros Island with 2x400 MW transfer capacity. This also involves the expansion of existing substations and development of new substations in Negros and Cebu Island.

Connecting the island of Mactan to mainland Cebu is the 8.5-km 200 MW capacity cable that was energized in 2005. It was laid underneath the Cebu – Mactan Bridge. Another island interconnection is the Leyte-Bohol Interconnection, a submarine cable which allows a maximum power flow of 90 MW to the island of Bohol since 2004. In December 2024, NGCP successfully energized 230 kV Cebu-Bohol Interconnection Project (CBIP), which addresses the growing power demand in Bohol, enhances grid resilience, and improves the operational flexibility of the Visayas Grid. The completion of this 2x600 MW capacity interconnection has significantly improved power supply security in Bohol by reducing reliance on diesel generators, contributing to lower electricity prices and paving the way for the future 230 kV looped system in the Visayas Grid.

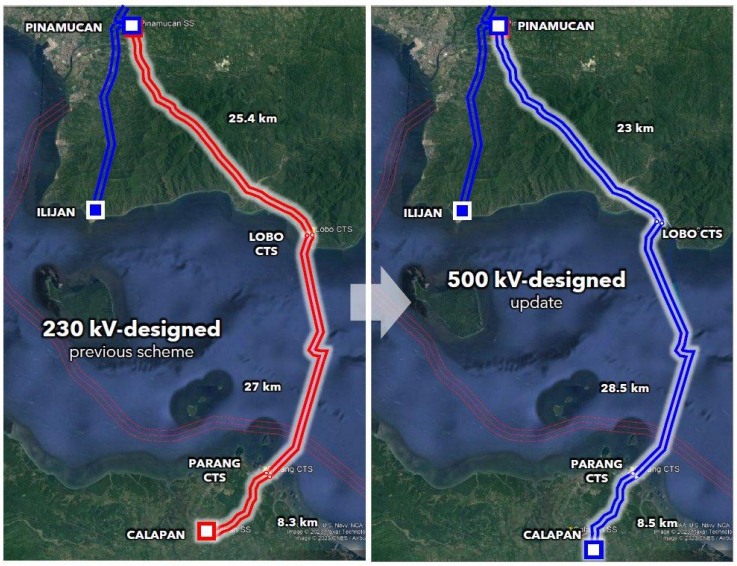
8.2 OFF-GRID INTERCONNECTION

As part of the country's power transmission infrastructure development, the DOE published in February 2019 the Department Circular No. DC2019-01-001 entitled, "Prescribing the Omnibus Guidelines on Enhancement of Off-Grid Power Development and Operation" with the following objectives:

- Improve the reliability and adequacy of power supply
- Reduce power rates
- Lead to the graduation of UC-ME subsidy

NGCP will undertake the conduct and overall due diligence to shortlist island/off-grid areas to be interconnected to the grid and document a Techno-Economic Feasibility Study (Techno-Eco FS) for the shortlisted island/off-grid areas. Further, NGCP will submit an annual program for the interconnection of off-grid areas to the network that will be included in project prioritization and annual updating of the TDP in compliance to Rule 9 of the said DOE Circular.

Project Name	Status	Project Description	ETC
Batangas–Mindoro 500 kV Interconnection and Backbone Project	ERC-approved	• The Batangas–Mindoro 500 kV Interconnection and Backbone Project (BMIBP) is an upgraded version of the Batangas-Mindoro Interconnection Project (BMIP), approved by the ERC under ERC Case No. 2021-051RC on 23 November 2022. It involves the energization to 500 kV of the overhead transmission lines and submarine cables from Pinamucan to Calapan 500 kV Substations and the full development of the Calapan 500 kV Substation. Additionally, the 500 kV interconnection system (under Stage 1) will be extended to the southern part of Mindoro Island through the development of Calapan–Magsaysay 500 kV Transmission Line and Magsaysay 500 kV Substation to serve the loads in Occidental Mindoro and to accommodate the potential OSW projects in the southern part of the Island. • The BMIBP aims to link Mindoro Island to the Luzon Grid, thus providing access to more reliable and competitive generation sources. Moreover, the project encourages the development of power generation potential in the island, such as those RE in the two (2) CREZ with an aggregate capacity of around 343 MW for Solar PV and 710 MW for Wind Farms1 due to a wider market brought about by the completion of the interconnection project. The 500 kV design upgrade and the updated implementation scheme that provides a bigger transfer capacity are based on the latest available information obtained from the Philippine Energy Plan 2023-2050 (PEP 2023-2050) of the DOE and recent government energy policy direction. Additional details on the project are discussed in the preceding Section 5.	Stage 1: Oct 2029 Stage 2: Jun 2035



Project Name	Status	Project Description	ETC

Figure 8.2: Batangas–Mindoro 500 kV Interconnection and Backbone Project

Quezon – Marinduque Interconnection Project (QMIP)	ERC-approved	• The proposed QMIP aims to address the expected long-term development in the island province of Marinduque. This project enables the province to have access to a more reliable and competitive generation sources in the Luzon Grid. In addition, the current energy mix in the province, which is mainly oil-based, is seen to improve due to the access of power supply from various generation sources in the Luzon Grid. Additional details on the project are discussed in the preceding Section 5.	Dec 2034

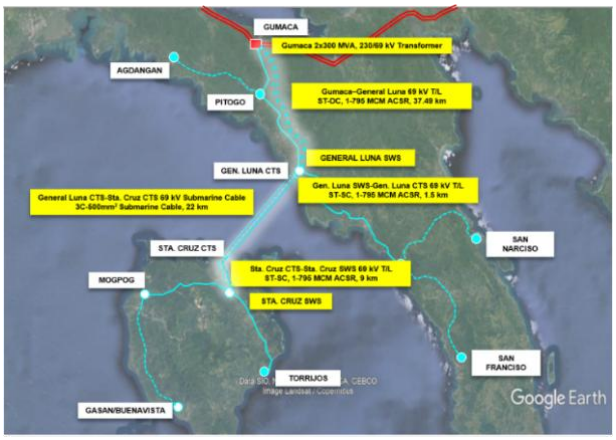


Figure 8.3: Quezon-Marinduque Interconnection Project

Camarines Sur – Catanduanes Interconnection Project (CCIP)	ERC-approved	• The proposed CCIP aims to link the Catanduanes Island to the Luzon Grid and provide Catanduanes access to a more reliable and competitive generation sources. Presently, the island of Catanduanes is being served by the First Catanduanes Electric Cooperative, Inc. (FICELCO). On the other hand, the transmission system is owned and operated by the NPC. Based on the 2024-2028 Missionary Electrification Development Plan (MEDP) of the DOE, the island's transmission system has a total existing line length of 119.69 circuit-kilometers and an existing substation capacity of 25 MVA. Additional details on the project are discussed in the preceding Section 5.	Jun 2035

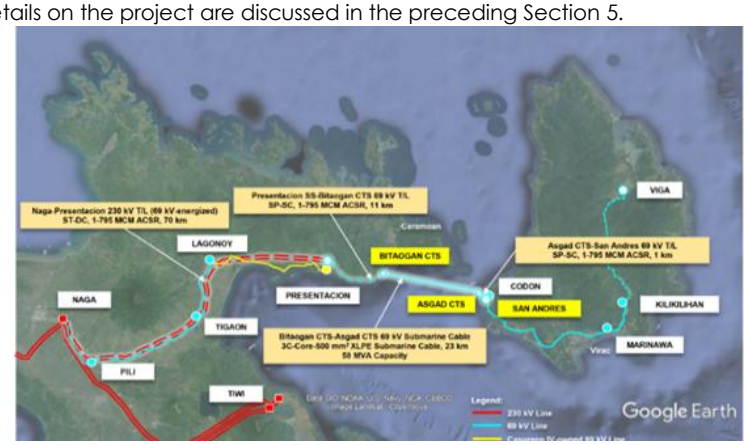


Figure 8.4: Camarines Sur – Catanduanes Interconnection Project

Claver – Siargao 69 kV Interconnection	ERC-approved	• Siargao Electric Cooperative (SIARELCO) is currently connected to the Mindanao Grid thru tap connection of their 20 MVA Cagdianao Substation to NGCP Placer – Madrid 69 kV line. Then, 34.5 kV energized submarine cables and overhead line link the island of Bucas Grande and Siargao. As tourism is booming in Siargao, the capacity of the existing power transformer in Cagdianao and 34.5 kV lines will not be sufficient to accommodate the increasing demand. This project aims to provide a 69 kV interconnection facility that increases the power transfer towards the islands and improve the voltage within the franchise area of SIARELCO. Additional details on the project are discussed in the preceding Section 7.	Feb 2033

Project Name	Status	Project Description	ETC
Zamboanga – Basilan 69 kV Interconnection	ERC-approved	• The power requirement of Basilan is being served by NPC-SPUG through missionary electrification. NPC-SPUG utilizes Basilan Diesel Power Plant and Power Barge 119. The Zamboanga – Basilan interconnection is envisioned to give the province a reliable and efficient power service. Also, this project counts out Basilan from the subsidy recipients of Universal Charge – Missionary Electrification. Additional details on the project are discussed in the preceding Section 7.	Apr 2037
Sorsogon - Masbate Interconnection Project	For Filing	• The Sorsogon – Masbate Interconnection Project aims to link the Masbate Mainland to the Luzon Grid and provide access to a more reliable and competitive generation sources. Presently, the island of Mainland Masbate is being served by the Masbate Electric Cooperative, Inc. (MASELCO). On the other hand, the 69 kV transmission system is being supervised by the NPC. In addition, several satellite power plants are not interconnected with the 69 kV main grid backbone. These facilities are operating in stand-alone or island mode, independent of the primary transmission system.	2041-2050

8.3 POTENTIAL SMALL ISLAND INTERCONNECTIONS

A significant number of islands and far-flung areas in the country remain isolated from the main grids. These are classified as off-grid areas and the power systems in these areas are being operated and managed by NPC-SPUG. Some of these small islands were initially considered for further assessment. Shown in Table 8.1 below are the potential small island interconnections indicating the length of the required facilities.

Table 8.1 Potential Small Island Interconnections

Island	Interconnection Point	Length (KM)		
		Submarine	Overhead	Total
LUZON				
Ticao	Abuyog	20	35	55
Masbate	San Jacinto	16	16	32
Tablas	San Jose	61	36	97
Lubang	Calaca	54	20	74
Busuanga	San Jose	84	52	136
VISAYAS				
Bantayan	Medellin	21	24	45
Siquijor	Bacong	20	24	44
Camotes	Isabel	18	8	26
Semirara	San Jose	33	0	33
MINDANAO				
Dinagat	Canlanipa	30	15	45
Camiguin	Esperanza	30	37	67
Siasi	Parang	43	32	75
Sulu	Taberlongan	100	34	134
Tawi-Tawi	Pagatpat	84	60	144

8.4 ASEAN POWER GRID UPDATE

The Association of Southeast Asian Nations (ASEAN) is working to create a regional power grid, known as **ASEAN Power Grid** (APG), to enable the sharing of energy sources among member countries. The NGCP, in pursuit of its goal of building One Grid continues to embark on major island/grid interconnection projects to realize this vision. The long-term transmission development gradually prepares the entire Philippine grid for integration with the APG. The **Heads of ASEAN Power Utilities/Authorities** (HAPUA) initiated the ASEAN Interconnection Master Plan (AIMS) to make this vision a reality. The APG is expected to allow power sharing, optimize generation capacity, and foster cooperation among member nations.

The ASEAN Power Grid Advancement known as APG-AP is a project conducted in partnership with Energy Transition Partnership (ETP) and Clean, Affordable, and Secure Energy (CASE) for Southeast Asia, and UN-ESCAP. The main purpose of the project is to foster a considerable increase in the share of RE through Multilateral Power Trading (MPT).

The ASEAN Interconnection Masterplan Study (AIMS III) has identified 18 potential cross-border interconnection lines. The proposed Philippine – Kalimantan Interconnection Project as illustrated in Figure 8.5 is under the Eastern System and an ETC still to be determined. The project would interconnect the Philippines to the ASEAN grid via a cross-border link to Sabah, Malaysia. For the proposed route, the plan has the following basic information:

- Kudat (Sabah, Malysia) to Palawan (Philippines): 275 kV HVDC
- Total length: **203 km (190 km subsea)**
- Capacity: **200 MW** (under AMIS III)

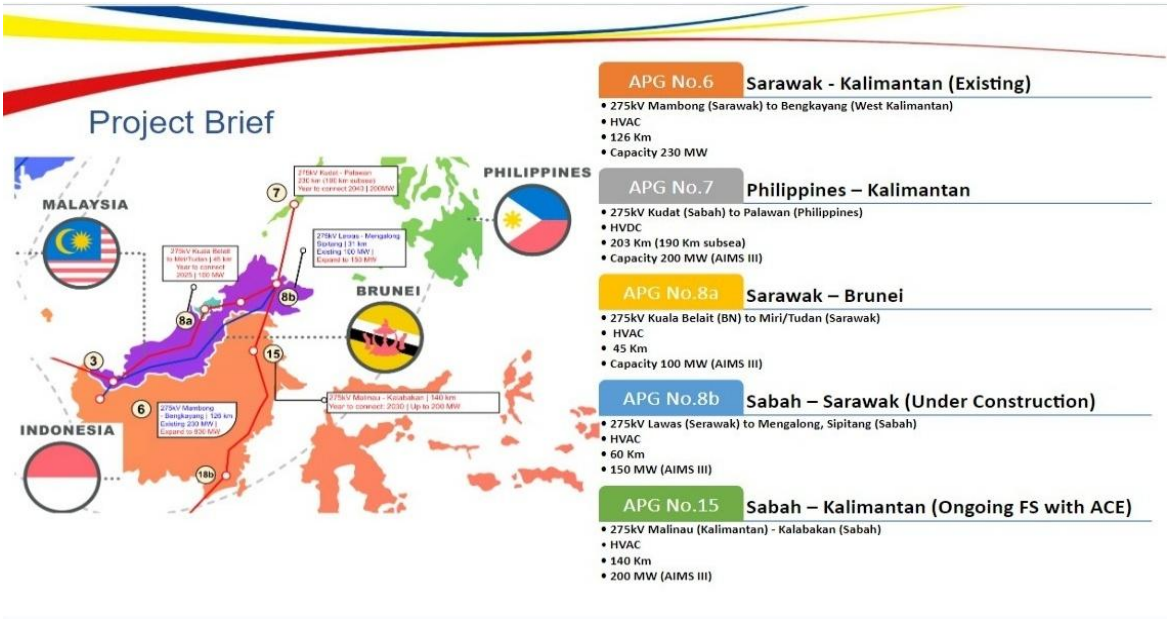


Figure 8.5: APG Project Brief

In the Philippine side, the identified connection point is in the southern part of Palawan Island which is currently not yet connected to the Luzon Grid. The long-term plan is to connect Palawan Island through the Palawan-Mindoro Interconnection Project (PMIP). NGCP's PMIP Stage 1 involves the conduct of desktop, system studies as well as hydrographic survey and cable engineering feasibility study. PMIP Stage 1, which is targeted for completion in July 2029 aims to establish the most viable route for submarine cables and determine the appropriate implementation scheme. The result of PMIP Stage 1 will be the basis to determine the detailed project components and ETC for PMIP Stage 2. A techno-economic feasibility study shall also be conducted in line with DOE DC 2023-11-0017, entitled" Guidelines for Off-Grid Power Development and Operations", prior to its filing to the ERC for approval. It must be noted, however, that the successful energization of BMIBP Stage 2 will provide the connection point for PMIP Stage 2 in the southern part of Mindoro Island. On the other hand, the potential connection point of APG (from Malaysia) would require the completion of PMIP Stage 2 as well as the strengthening of the existing transmission network within Palawan Island.

Chapter 9

OPERATIONS AND MAINTENANCE

In line with NGCP's mandate to operate, maintain, and expand the high-voltage transmission backbone, this chapter details the Operations and Maintenance (O&M) CAPEX Programs for 2026–2050. These initiatives aim to strengthen grid reliability and upgrade facilities to ensure secure, stable, and adequate power transmission service nationwide, to wit:

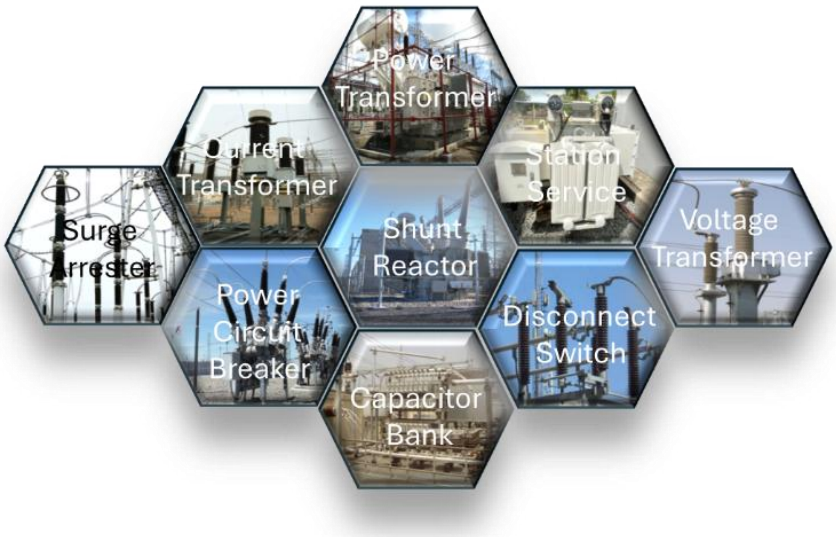
- Address the deteriorating and ageing condition of installed assets.
- Aligning with management's vision of a Smart Grid that entails the use and application of new technologies.
- Comply with existing laws, regulations, policies and standards.
- Ensure the reliable condition of substations and their installed assets by providing appropriate tools and equipment for operation and maintenance personnel.

NGCP maintains a substantial portfolio of operational assets, ranging from high-voltage equipment and secondary devices to transmission towers and structures. To accurately assess the condition of this diverse infrastructure, rigorous asset management practices must be observed.

The 25-year O&M Programs intend to improve the condition, efficiency, and safety of existing assets. It also indicates a long-term strategy that promotes proactive asset lifecycle management rather than reactive repairs. It covers the replacement of ageing and installation of additional equipment, construction and major retrofitting of substation and transmission line facilities, and acquisition of tools and equipment, as detailed in the following sections.

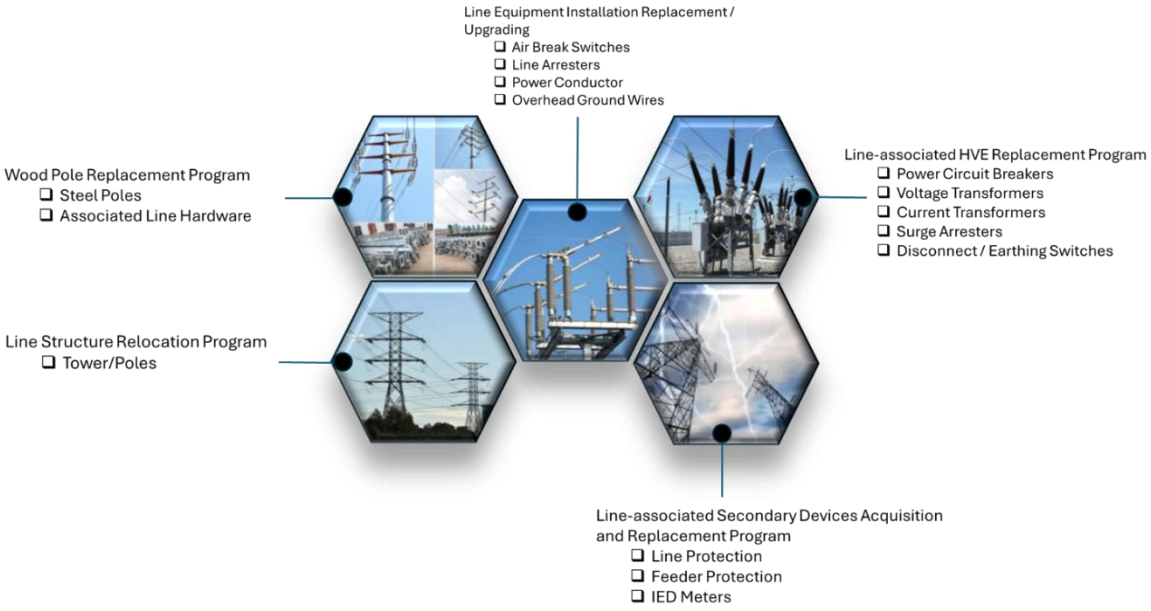
9.1 SUBSTATION, TRANSMISSION LINE AND SUBTRANSMISSION LINE RELIABILITY PROGRAMS

These programs include the replacement and installation of High Voltage Equipment and Secondary Devices, refurbishment of Transmission Lines, Acquisition and Replenishment of Spares, Establishment of Centralized Control and Monitoring System (CCMS), Installation/Replacement/Upgrading of Substation Automation System (SAS), and Installation of Intelligent Remote Monitoring System for Substations and Transmission Lines, among others. The following are the key projects under these programs:



9.1.1 Asset Replacement

To guarantee that all asset management decisions are appropriate and well-informed, NGCP integrates select methods in asset assessment into its transmission replacement program. This approach enables NGCP to optimize the value and reliability of its infrastructure by offering a comprehensive assessment of the present condition, functionality, and future viability of transmission assets.



The core of NGCP's strategy rests on five interconnected principles:

1. **Comprehensive Assessment**: NGCP employs a proactive asset lifecycle management strategy that evaluates equipment condition using weighted criteria such as asset age, defect records, and operational data. By defining distinct parameters for specific assets like transformers and circuit breakers, the company calculates a "health index" that quantifies each unit's performance and remaining service life. This index serves as a critical decision-making tool, allowing NGCP to optimize resource allocation by prioritizing maintenance and replacement activities based on actual condition. Ultimately, this systematic assessment extends asset lifespan and prevents unplanned outages, ensuring the continued resilience and dependability of the Philippine power transmission system.
2. **Risk-Based Strategy**: NGCP prioritizes its resources and actions by employing a risk-based approach. By proactively identifying and managing assets that pose the highest risk of failure, NGCP can minimize potential service disruptions and maximize overall asset performance. NGCP prioritizes the maintenance and replacement of its existing infrastructure by calculating a health index for each asset, triggering further evaluation or intervention when an asset's condition falls below a set minimum threshold. Because this methodology is designed specifically for assessing current equipment rather than new installations, it ensures that resources are efficiently targeted toward assets exhibiting degradation or a high risk of failure. This proactive, quantitative approach allows NGCP to systematically identify critical needs, thereby minimizing downtime, optimizing asset performance, and maintaining the overall strength and dependability of the power system.
3. **Lifecycle Analysis**: NGCP takes a comprehensive approach, considering the transmission assets' entire life cycle; from purchase and installation to operation and eventual replacement. This enables NGCP to make investment decisions that properly balance short-term costs and long-term rewards, preserving the transmission network's viability.
4. **Data-Driven Decision Making**: NGCP is analyzing vast amounts of historical data that can identify trends that might not be immediately obvious. This might involve recognizing that a certain type of equipment failure happens more often during specific weather conditions or after a certain number of operational hours.
5. **Continuous Improvement**: NGCP is committed to constantly improving its asset evaluation process. By incorporating input from internal and external stakeholders, using industry best practices, and utilizing cutting-edge technologies, NGCP remains at the forefront of asset management approaches and can quickly react to changing market and industry trends.

NGCP aims to increase the efficiency, dependability, and economy of its transmission system by following worldwide asset assessment best practices that will eventually increase the reliability and sustainability of the Philippine electrical grid.

All things considered, NGCP's prioritization procedure, which is based on computed health indices and minimum threshold standards, facilitates well-informed decision-making and guarantees that scarce resources are allocated to the transmission network's most urgently needed regions.

9.1.2 Standard Asset Lives and Asset Database

In the initial stages of developing an asset refresh program, NGCP considered the standard asset lives adopted during the 2008 re-valuation of transmission assets for the 3rd Regulatory Period (2011-2015).

Table 9.1: Standard Asset Lives for Transmission Assets

Category	Description	Life (Years)	Notes
Transmission Lines	Lattice steel tower line	50	
	Wood pole line	25	
	Concrete pole line	50	
	Steel pole line	50	
Power Cables	Submarine HVDC	50	
	Submarine HVAC	50	
	Underground HVAC	50	
Outdoor Substations – MEAs	Transformers 500 kV	45	N-1 Security
	Transformers 230 kV	35	Without N-1 Security
		45	With N-1 Security
	Transformers 115 kV	35	Without N-1 Security
		45	With N-1 Security
	Reactors	35	
	Capacitor	40	
	Outdoor switch bays	40	500 kV, 230 kV, 138/115 kV, 69 kV outdoor assemblies (see Note 1)
Outdoor Substations – Individual equipment	Circuit breakers	40	500 kV, 230 kV, 138/115 kV, 69 kV
Indoor GIS Substations	500 kV GIS switch bay	45	
	230 kV GIS switch bay	45	
	115 kV GIS switch bay	45	
Substations Secondary	Protective relays and controls	15	
	Metering equipment	30	
	RTUs, SCADA systems	15	
Communications	OPGW links	50	
	PLC links	35	
System Control		15	

NGCP made use of the Enterprise Asset Management (EAM) program to support the asset refresh program which acts as a centralized platform for tracking, managing, and improving asset's condition and use. Utilizing the information included in the EAM system, NGCP can make well-informed decisions on the replacement or refurbishment of its transmission assets by gaining important insights into the operation and condition of such assets. Figure 2.9 shows the age profile of overhead transmission lines (OHTLs) with voltages ranging from 13.8 kV to 500 kV.

In the future, NGCP intends to develop a system-based tool that can do sophisticated data analytics to improve its asset management capabilities. NGCP will be able to systematically identify and prioritize assets for replacement based on variables including age, condition, and criticality in this platform, which will promote corporate-wide priority of aging transmission infrastructure. Through the application of data analytics, NGCP can maximize the effectiveness of its asset renewal program, guaranteeing the effective distribution of resources and the transmission network's continuous dependability.

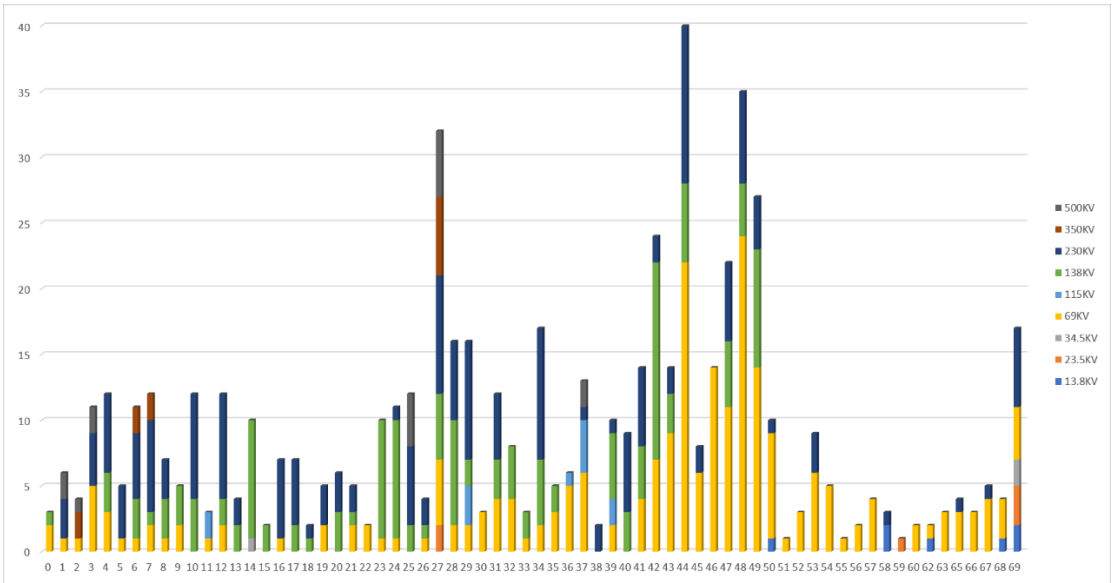
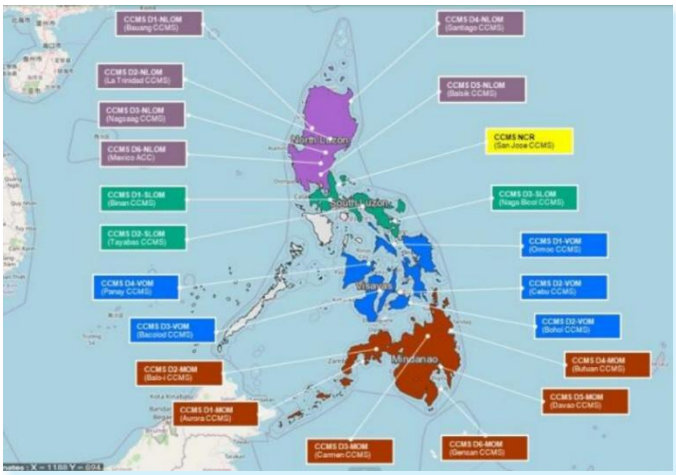


Figure 9.1: Overhead Transmission Line Age Profile (Dec 2025)

9.1.3 Centralized Control and Monitoring System (CCMS)



NGCP is advancing its grid reliability and efficiency by implementing the Central Control and Monitoring System (CCMS), a project designed to centralize substation operations. This initiative involves transitioning existing manned facilities into unmanned operational clusters, which will be managed remotely from strategic control centers equipped with advanced monitoring technologies. By streamlining coordination and enforcing standard operating procedures, this shift aims to minimize human error, reduce operational redundancies, and significantly improve decision-making times during both normal and contingency operations.

To enable this transition, specific technical prerequisites must be met, including full Microprocessor-Based Substation Controls (MBSC) compliance, the conversion of manual switches to motor-operated devices, and the installation of electrical reset relays. Significant progress has already been made, with CCMS stations successfully demonstrating the ability to remotely monitor and control equipment at priority substations. These validations confirm the system's functionality and readiness for continued expansion across the grid.

9.1.4 Intelligent Remote Monitoring System for Transmission Lines and Substations

The reliable flow of electricity depends on the condition and security of transmission lines and substations. Traditional methods of monitoring these crucial infrastructure elements often involve on-site patrols and inspections, which can be time-consuming, expensive, and limited in scope. To further enhance security,

efficiency, and reliability, NGCP is prioritizing the implementation of Intelligent Remote Monitoring for Transmission Lines and Substations. This innovative system will utilize:

- High-definition cameras and sensors to capture real-time data on the physical condition of installed infrastructure.
- Advanced analytics powered by machine learning and artificial intelligence to identify potential threats and abnormalities.
- Automated alerts and actions to notify personnel and take proactive measures in case of issues

Strategically placed, this technology provides several key benefits

Enhanced Security:
By automatically detecting unauthorized access, vandalism, or equipment tampering, NGCP can prevent potential disruptions and ensure the integrity of the grid.

Improved Efficiency:
Early identification of potential problems allows preventative maintenance, minimizing downtime and optimizing resource allocation.

Increased Safety:
Proactive detection of environmental hazards like vegetation encroachment or potential wildfires help prevent accidents and equipment failures.

By implementing Intelligent Remote Monitoring, NGCP is demonstrating its commitment to a future-proof and resilient transmission network. Equipped with real-time alerts and AI-assisted data analysis, the system will provide detailed information to O&M personnel, enabling prompt inspection and maintenance actions.

9.1.5 Transmission Line Surge Arrester (TLSA)

TLSAs are specialized protective devices installed directly on transmission towers or poles to prevent power interruptions caused by lightning. While they technically prevent any voltage surge from flashing over the insulator, including direct lightning hits to the power conductor, their primary engineering purpose on shielded transmission lines is to prevent back-flashovers caused by lightning striking the tower structure.

The following are the benefits of having TLSAs installed on Transmission Lines:



- **Lightning-Proofing:**
  Installing TLSAs, especially in areas with high lightning ground flash density (GFD) or poor/rocky soil conditions, effectively mitigates back-flashover risk. Arresters provide a secondary, low-impedance path to ground, drastically reducing the over-voltage and making the line virtually lightning-proof.
- **Targeted Protection:**
  Rather than a blanket application, planners utilize strategic modeling to install TLSAs exclusively on critical or vulnerable line sections. This focused deployment serves as a highly cost-effective alternative to expensive infrastructure overhauls, such as rebuilding lines or upgrading grounding systems across hundreds of kilometers, while still delivering maximum reliability improvements.
- **Preventing Outages:**
  Minimizing outages is paramount for regulatory compliance and continuity of service, particularly for large customers

9.2 IMPROVEMENT OF SUBSTATION FACILITY AND NON-NETWORK ASSET PROGRAM



The modernization of the Philippine power grid has introduced a rapid influx of advanced transmission technologies, shifting the network from purely mechanical systems to sophisticated digital infrastructure. This technological leap has significantly increased the volume of sensitive equipment, such as digital protection relays, communication servers, and monitoring devices, which require specific conditions that older facilities cannot provide. Consequently, facility expansions are necessary not only to house this growing inventory of critical assets but also to provide O&M personnel with a conducive working environment that meets ergonomic and safety standards, thereby supporting efficient operations.

Given the Philippines' high exposure to typhoons and heavy rainfall, NGCP facilities face significant flood risks. To address this, construction of Anti-Flood Facilities at vulnerable sites to ensure operational continuity and asset protection are proposed.

Additionally, NGCP proposes the construction of designated Laydown Areas. These facilities are required to ensure the safe handling and compliant storage of equipment before installation. By providing a controlled environment for materials, these areas support the continuous upgrade of substations and ensure the safety of both personnel and inventory.

Beyond operational and logistical needs, NGCP is bound by strict legal and ethical mandates to construct dedicated environmental protection infrastructure. The operation of high-voltage equipment, particularly oil-filled transformers and backup generators, carries inherent environmental risks. To mitigate these, NGCP is constructing specialized facilities such as oil catch basins, secondary containments, and oil-water separators designed to contain and treat potential leaks before they can contaminate the soil or groundwater. Additionally, the construction of hazardous waste storage facilities ensures that toxic materials are segregated and managed responsibly, ensuring full compliance with Philippine Environmental Laws and the organization's own IMS procedures for environmental stewardship.

9.3 TOOLS AND EQUIPMENT ACQUISITION PROGRAM



The program serves as the technological backbone of the grid's preventive maintenance strategy. By prioritizing the augmentation and replacement of test and measuring equipment, the program focuses on data-driven precision. Modern diagnostic devices allow engineers to perform sophisticated health checks, such as analyzing dissolved gases in transformer oil or measuring contact resistance, with high accuracy. Having reliable data is critical for establishing the health index of assets, allowing the company to detect hidden defects before they escalate into catastrophic failures and ensuring that maintenance decisions are based on actual equipment condition rather than just age.

Beyond diagnostics, the program addresses the physical demands of maintaining the grid through the upgrade of substation and transmission line tools. Working on high-voltage infrastructure requires specialized, heavy-duty, and insulated tooling that meets rigorous safety standards. As the grid expands, the volume of maintenance activities increases, necessitating an augmented inventory to ensure that multiple crews can operate simultaneously in different locations without equipment shortages. Replacing obsolete or worn-out tools is not merely an operational convenience but a safety imperative; it ensures that engineers, linemen and technicians are equipped with gear that minimizes the risk of accidents during hazardous live-line work or complex equipment maneuvering.

Aerial drones continue to modernize NGCP's transmission line inspection activities by providing faster, safer, and more detailed assessments of power line corridor and line components through their advanced imaging capabilities enabling early detection of potential defects. Continuous acquisition of drones will be deployed to support regular transmission line inspections, enhancing monitoring efficiency and improving maintenance planning across the transmission network.

Finally, the acquisition of maintenance vehicles is the logistical enabler that ties the entire maintenance effort together. Transmission lines have often traverse rugged, geographically isolated, and difficult-to-access terrains that standard vehicles cannot navigate. Investing in a robust fleet, ranging from heavy-lifting trucks to all-terrain service vehicles, ensures that manpower and heavy tools can be mobilized rapidly. This mobility is crucial for minimizing downtime, particularly during emergency restorations or natural disasters, ensuring that crews can reach the site of a fault and restore power with the speed and agility required to maintain a stable nationwide transmission system.

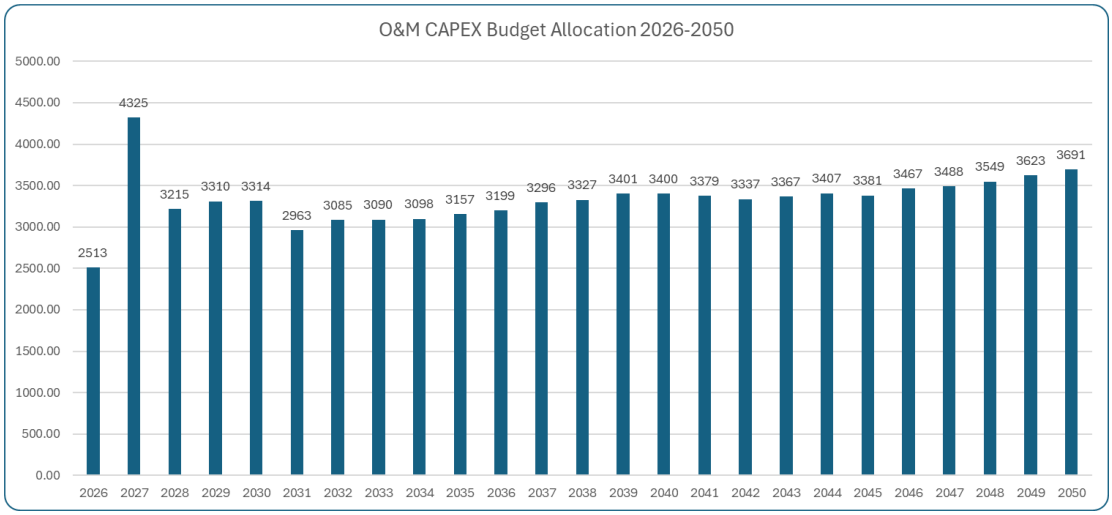
In summary, the program represents a vital investment in the operational readiness and resilience of the power grid. By synchronizing the precision of modern diagnostics with the safety of specialized tooling and the agility of a robust vehicle fleet, the program ensures that maintenance teams are not only well-equipped to detect emerging risks but also fully capable of addressing them swiftly and safely. Ultimately, this holistic approach transforms maintenance from a routine task into a strategic advantage, guaranteeing the continuous reliability and stability of the nationwide transmission system.

9.4 SUMMARY OF 2026 - 2050 O&M CAPEX BUDGET REQUIREMENTS

The planned O&M CAPEX Budget per project driver for the TDP 2026–2050 is shown below:

TDP 2026–2050 O&M PROJECTS	ASSET CONDITION	COMPLIANCE TO STANDARDS	TECHNOLOGY INSTALLATION	MAINTENANCE EQUIPMENT	RESILIENT OPERATION	TOTAL
Substation Reliability Program	46,491.44	372.24	544.96	-	6,208.09	53,616.73
Transmission Line Reliability Program	10,309.40	1,468.43	239.09	-	1,597.09	13,614.01
Subtransmission Line Reliability Program	2,879.77	650.64	4.59	-	15.89	3,550.89
Improvement of Substation Facilities and Non-Network Assets Program	28.28	691.14	408.92	-	15.53	1,143.87
Tools & Equipment Acquisition Program	0.34	-	71.33	11,385.85	-	11,457.52
TOTAL	59,709.23	3,182.44	1,268.88	11,385.85	7,836.61	83,383.01

These projects will stretch within the next 25 years with a total estimated cost of 83.383 Bn.



Below are the timelines for the implementation of the above programs:

TDP 2026-2050 O&M PROGRAMS	Estimated Time of Completion					
	5th Reg 2023-2027	6th Reg 2028-2032	7th Reg 2033-2037	8th Reg 2038-2042	9th Reg 2043-2047	10th Reg 2048-2050
Substation Reliability Program						2050
Transmission Line Reliability Program						2050
Sub-Transmission Line Reliability Program						2050
Improvement of Substation Facilities & Non-Network Assets Program						2040
Tools & Equipment Acquisition Program						2050

9.5 METERING FACILITIES

9.5.1 Obligations of Metering Service Provider for the Wholesale Electricity Spot Market

The NGCP, authorized by the ERC with a Certificate of Authority as a WESM Metering Service Provider (WMSP), is tasked with ensuring that Grid-connected Facilities adhere to the metering requirements outlined in the OATS Rules, WESM Rules and Metering Manual, PGC, PEC, and other relevant laws and guidelines issued by the ERC and DOE. This duty is specified under Article III of ERC Resolution 28 Series of 2006.

Per the ERC Resolution, only an ERC-licensed WMSP can enter a contract with a WESM Trading Participant and provide metering services, which include the installation, operation, and maintenance of metering facilities.

Additionally, the PGC 2016 Edition stipulates that a metering facility can be deemed ready for revenue metering service only when regulatory conditions are met and certified by the WMSP.

a. Revenue Metering Capital Projects

To fulfill these obligations, NGCP must consistently carry out metering capital projects, which are divided into two major categories:

Regulatory Requirements Compliance Projects
The primary drivers for this project category are compliance with the metering requirements specified by the applicable WESM rules and manuals. This project group is divided into four sub-categories:



NEW METERING FACILITIES
New connections to the Grid



RELOCATION OF METERING FACILITIES
Metered with respect to the prescribed connection points



COMPLIANCE OF METERING FACILITIES
Equipment compliant to WESM technical requirements



MEASUREMENT ASSURANCE PROGRAM
Calibration traceability of measurements

Metering Systems Reliability Projects
The primary drivers for this project category are ensuring the security and reliability of metering facilities to maintain compliance with regulatory requirements. This project group is divided into three sub-categories:



METERING REPLACEMENT PROGRAM
Timely replacement of deteriorated assets



METERING SPARES
Timely replacement of failed assets



AMR SYSTEM UPGRADE
Timely delivery of accurate data for WESM settlement

b. Revenue Metering Capital Assets

The following outlines the rationale for NGCP's metering capital projects and the essential revenue metering capital assets needed to implement these projects.

1. New Metering Facilities
   - I. Generators
   - II. Load Customers
2. Relocation of Metering Facilities
   - I. Transmission Customers
   - II. NGCP Station Service
3. Compliance of Metering Facilities
   - I. Non-compliant HVE
   - II. Conversion to Full Metering
5. Measurement Assurance Program
   - I. Laboratory Standards
   - II. Field Test Instruments
   - III. Other Tools & Equipment
6. Metering Spares
   - I. High Voltage Equipment
   - II. Meters & Accessories
7. AMR System Operation
   - I. Hardware
   - II. Software

4. Measurement Assurance Program
    I. Laboratory Standards
    II. Field Test Instrument
    III. Other Tools & Equipment

Table 9.2: Metering Capital Asset Requirements

NEW METERING FACILITES	RELOCATION OF METERING FACILITIES	COMPLIANCE OF METERING FACILITIES	MEASUREMENT ASSURANCE PROGRAM	METERING REPLACEMENT PROGRAM	METERING SPARES	AMR SYSTEM UPGRADE
Meters Combined Instrument Transformers Current Transformers Voltage Transformers Lightning Arresters Communication Devices Meter Enclosure Test Switches Cablings Grounding System Conduit System Mounting Structures Concrete Foundations Metering Perimeter	Meters Combined Instrument Transformers Current Transformers Voltage Transformers Lightning Arresters Communication Devices Meter Enclosure Test Switches Cablings Grounding System Conduit System Mounting Structures Concrete Foundations Metering Perimeter	Meters Combined Instrument Transformers Current Transformers Voltage Transformers Lightning Arresters Concrete Foundations	CMCL Standards Multi-meters Clamp Meters CT/PT Test Sets Meter Test Sets Insulation Testers Earth Testers Thermal Scanners Tools & Equipment	Meters Combined Instrument Transformers Current Transformers Voltage Transformers Lightning Arresters Meter Enclosures Meter Test Switches	Meters Combined Instrument Transformers Current Transformers Voltage Transformers Lightning Arresters Communication Devices	AMR Servers (Main and Back-up) AMR Workstations AMR Softwares Communication Devices

Table 9.3: Governing Rules

NEW METERING FACILITES	RELOCATION OF METERING FACILITIES	COMPLIANCE OF METERING FACILITIES	MEASUREMENT ASSURANCE PROGRAM	METERING REPLACEMENT PROGRAM	METERING SPARES	AMR SYSTEM UPGRADE
OATS Rules • E2.1 • E3.2 • E11.1 • E11.3 • F(AIII) 3 WESM Metering Manual • 2.3.1 PGC 2016 Edition • GRM 9.2.2.3 • GRM 9.2.4.3 ERC Resolution 23 S2016 • Sec. 6.0	OATS Rules • E2.1 • E3.2 • E11.1 • E11.3 • E11.7 • F(AIII) 3 WESM Metering Manual • 2.2 • 2.3.1 PGC 2016 Edition • GRM 9.2.1 • GRM 9.2.2.3 ERC Resolution 23 S2016 • Sec. 6.0 DOE DC 2018-05-0015 • (c) WESM Rules Clause 3.2.2.2 DOE DC2016-05-0007 Sec. 2	OATS Rules E3.2 E11.3 F(AIII) 3 WESM Metering Manual 2.3.1 2.4-2.11 PGC 2016 Edition GRM 9.2.2, GRM 9.2.3 DOE DC2016-05-0007 Sec. 1	OATS Rules • E5.1 (a) WESM Metering Manual • 2.5.4.4 (a) PGC 2016 Edition • GRM 9.2.4.1 • GRM 9.2.4.2 • GRM 9.2.5 • ERC Resolution 28 S2006 • 2.2.2.3 • 2.2.2.4 DOE DC2016-05-0007 • Sec. 1	OATS Rules • E3.2 • E11.3 PGC 2016 Edition • GRM 9.2.4.1 (e) (f) (g) • GRM 9.2.4.3 • GRM 9.2.8.4 ERC Resolution 23 S2016 • Sec. 6.0 ERC Resolution 28 S2006 • 3.4.5	OATS Rules • E3.2 • E11.3 PGC 2016 Edition • GRM 9.2.4.1 (e) (f) (g) • GRM 9.2.4.3 • GRM 9.2.8.4 • ERC Resolution 23 S2016 • Sec. 6.0 • ERC Resolution 28 S2006 • 3.4.5	OATS Rules • E6.2 • F(AIII) 3 WESM Metering Manual • 2.9.2 • Sec. 5 PGC 2016 Edition • GRM 9.3.2 ERC Resolution 28 S2006 • 2.2.2.3.4 • 2.2.2.4.3.8

9.5.2 Requirement Analysis

The metering capital project requirements, which translate to revenue metering capital assets, were derived from the technical and commercial obligations of a Metering Service Provider. These obligations were defined by the authorities governing WESM Metering through the OATS Rules, WESM Metering Manual, PGC, and guidelines issued by the ERC or DOE.

A. New Metering Facilities

This project involves the installation of Metering Facilities for new Generator and/or Load Customer connections to the Grid.

According to the 2022 Edition of the OATS Rules, the Meter Only option, where Transmission Customers provided some of the metering equipment except for the meters, is no longer available. The responsibility for providing all the necessary WESM metering equipment now lies solely with the Metering Service Provider. This requirement aligns with ERC Resolution 23 Series of 2016, which excludes metering equipment used for Metering Services from the connection assets of Transmission Customers and mandates that Transmission Customers dispose of or transfer transmission-related assets to the Transmission Provider.

The list of new metering facilities is established according to the following considerations:

- Requirements for new metering facilities for Transmission Customers, which have already been conveyed to NGCP through requests for facilities study and similar means.
- Private Sector Initiated Power Projects as published at the DOE Website.
- Growth forecast for new load customer connections.

B. Relocation of Metering Facilities

This project involves the relocation of Metering Facilities to the prescribed connection points.

As per the PGC and WESM Metering Manual, the Metering Point must be situated at the Connection Point or Market Trading Node. Additionally, DOE DC2018-05-0015 provides further clarification, stipulating that the metering equipment for the market trading node should be installed within a maximum distance of 500 meters from the connection point. Conversely, ERC Resolution 23 Series of 2016 redefined the connection point based on the functionality of assets, irrespective of ownership.

These requirements, along with the updated definition of the connection point, form the foundation for the subsequent project classifications within the Relocation of Metering Facilities category:

Transmission Customer Metering	NGCP Station Service Metering
metering points currently located away from the designated connection point will either be transferred to or totalized at the prescribed connection point.	permanent metering facilities will be installed at the prescribed connection points using WESM compliant metering equipment.

The list of metering facilities for relocation is established according to the following considerations:

- Connection point/s as defined by ERC Resolution 23 Series of 2016.
- Metering points located more than 500 meters from the connection points.
- Existing NGCP Station Service Transformers and corresponding locations of temporary metering points.

C. Compliance of Metering Facilities

This project will address non-compliances of installed metering equipment against the standards prescribed by PGC and WESM Metering Manual such as, but not limited to, the following:

- Metering Equipment or Facilities do not meet the required specifications.
- Metering Equipment not used exclusively for WESM revenue metering purpose.

As per the WESM Metering Manual, persistent non-compliance with metering installations may incur sanctions or penalties. To ensure complete adherence to this mandate, NGCP will proceed with procuring replacement assets, irrespective of the ownership of the current equipment.

In addition to the non-compliances mentioned above, the conversion of existing Meter Only metering to Full Metering facilities, not addressed by other metering project groups, will be integrated into this project category. Aligned with the OATS Rules 2022 Edition, mandating the WESM MSP to provide all Metering Equipment, NGCP will procure or replace all customer-supplied Instrument Transformers based on negotiation outcomes with the equipment owner.

The list of metering facilities for compliance is established based on the following audit results:

- NGCP Internal audit results
- External audit results by PEMC, ERC and others

D. Measurement Assurance Program

This project entails acquiring Tools and Equipment to uphold compliance with the Measurement Assurance System requirements:

- Laboratory Standards.
- Field Test Instruments.
- Other Tools and Equipment

The ERC mandates the WMSP to manage and uphold a measurement assurance system, which includes protocols, meter calibration standards, testing equipment, and a central meter calibration laboratory. The objective is to guarantee the traceability of metering equipment measurements to the National Institute of Standards or any reputable international standard body.

The list of Laboratory Standards and Field Test Instruments is established based on the following Considerations:

- Calibration traceability requirements for field test instruments and installed metering equipment.
- Operational requirements per field metering offices (existing vs. required test instruments and tools).
- Triggers such as end of asset life, obsolescence, asset condition and failures.

E. Metering Replacement Program

This project involves the procurement of replacements for metering equipment to handle the following scenario:

End of Asset Life. Considering the increased probability of older equipment failure due to natural deterioration, NGCP has integrated the replacement of aging assets into its asset management system in alignment with ERC policies.

Taking into account the recently released 2022 edition of OATS Rules, which mandates the WESM Metering Service Provider to own all metering equipment, and ERC Resolution 23 Series of 2016, which excludes metering equipment from the customer connection assets of Transmission Customers, NGCP will proceed with replacing fully aged assets, including those supplied by the transmission customer. Consequently, meter-only metering facilities will be converted to full metering upon the replacement of their equipment with NGCP-owned assets.

The metering replacement program is established based on the following considerations:

- Age of metering assets.
- Present condition of assets.
- Procurement lead time.

F. Metering Spares

This project involves the procurement of spares for metering equipment to handle the following scenario:

Equipment Failure. Metering equipment which fails the accuracy test or malfunctions must be promptly replaced. NGCP will procure metering spares, including requirements for transmission customer-owned equipment, to facilitate immediate replacements of failed metering assets. Consequently, meter-only metering facilities will be converted to full metering upon the replacement of their equipment with NGCP-owned assets. This is consistent with the provisions of the OATS Rules 2022 Edition and ERC Resolution 23 Series of 2016.

The metering spares levels are established based on the following considerations:

- Present asset conditions.
- Historical failure rates.
- Procurement lead time.
- Geographic locations of spares storage facilities.
- Installed equipment specifications.

G. AMR System Upgrade/Operation

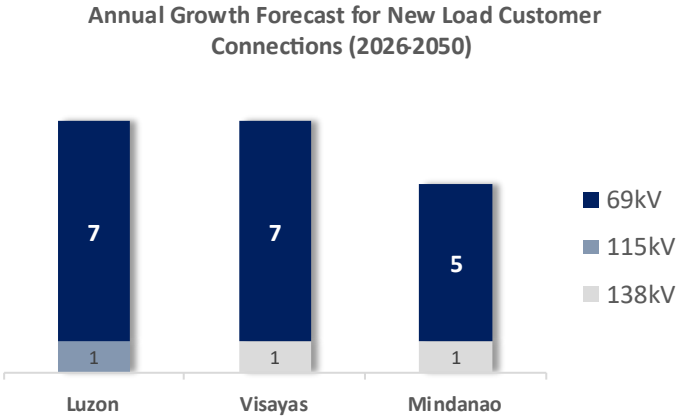
This project involves replacing and/or upgrading Automatic Meter Reading (AMR) systems, which consist of hardware, software, and communication infrastructures essential for delivering settlement-ready meter data to WESM according to the prescribed schedules.

The timelines and activities are established based on the following considerations:

- Age and conditions of AMR system hardware.
- Maintenance contract with the AMR system provider.
- Availability of alternative AMR system in the market.
- Availability of new communication technologies in the market.

9.5.3 Project Development

- New Metering Facilities



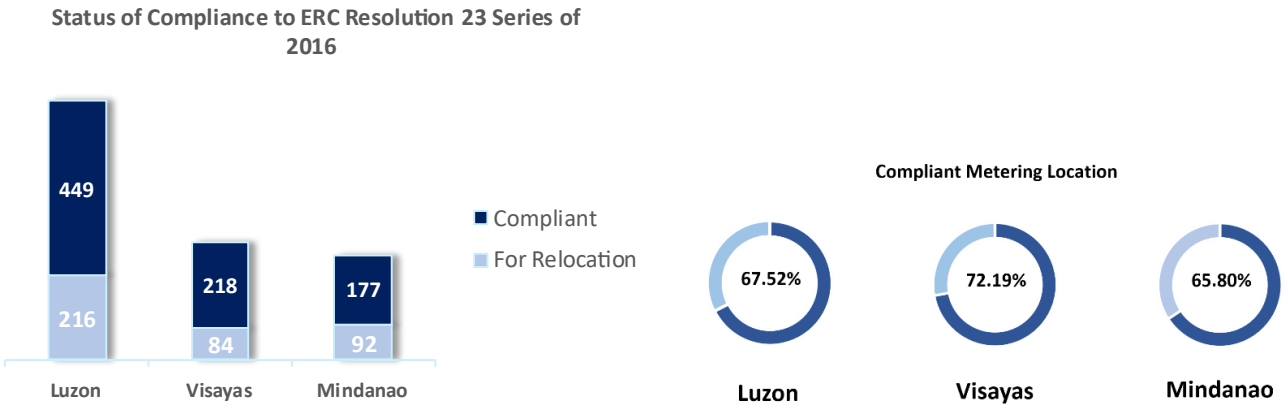
The accuracy of the proposed project list for new metering facilities heavily relies on the accuracy and promptness of the information received by NGCP regarding incoming grid connections.

For incoming generators, the list of committed and indicative Private Sector Initiated Power Projects obtained from the DOE website, along with requests for facilities study and operational assessments received by NGCP, serve as valuable references for the proposed projects.

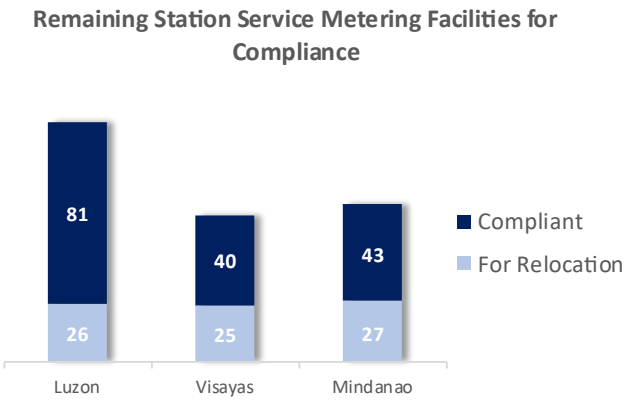
NGCP has recently begun receiving load growth forecasts from Trading Participants for incoming load customer connections. However, the quantity of planned connections submitted for reference is still relatively low. Therefore, it remains necessary to estimate the annual requirements for new load customer metering facilities. The following bar chart provides estimates of new load customer connections per year to the transmission grids, based on historical averages of annually commissioned Metering Facilities. These estimates serve as a reference for the anticipated metering points for load customers proposed in this TDP 2026–2050.

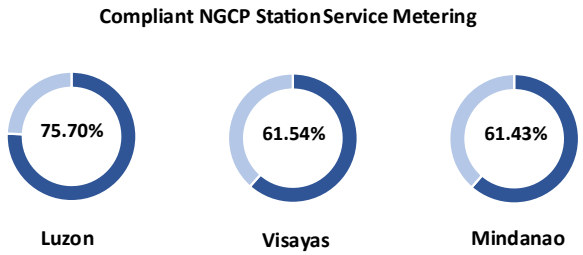
- Relocation of Metering Facilities

Transmission Customers: The following data show the compliance status of existing metering points with the DOE DC2018-05-0015, and ERC Resolution 23 Series of 2016's definition of connection points. These statistics serve as a reference for the relocation projects outlined in the TDP 2026–2050. NGCP aims to complete relocation projects by 2027 unless space, shutdown and security constraints hinder progress at the designated connection points.



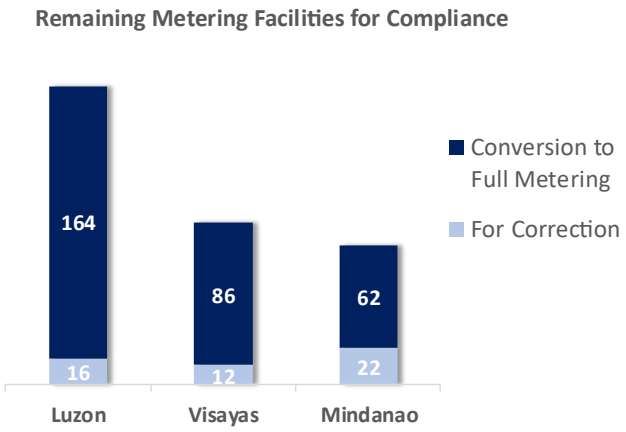
NGCP Station Service: Currently, many of NGCP Substations' station service consumptions are metered using temporary WESM meters installed in series with the statistical meters of the substations. This project aims to relocate the metering to the appropriate connection points, which are at the 13.8 kV tertiary winding of the main transformer. The following data provides the status of metering for Station Service Transformers, serving as a reference for the NGCP Station Service Permanent Metering proposed in this TDP 2026–2050. NGCP plans to initiate and complete relocation projects by 2027 unless space constraints at the designated connection points pose significant challenges.





- Compliance of Metering Facilities

Every three years, the Philippine Electricity Market Corp. (PEMC) conducts a Review of Metering Installation Arrangements (RMIA), encompassing approximately 30% of Metering Points in Luzon and Visayas. According to PEMC, Mindanao will also be included in the next RMIA. The purpose of the audit is to assess NGCP's compliance as the Metering Service Provider with the standards established by WESM.



Metering Facilities identified as non-compliant with WESM standards require rectification by the Metering Service Provider (MSP). Some audit findings from 2016 have been addressed, while others have compliance plans in place. These plans may involve replacing non-compliant metering equipment, reorganizing metering equipment to align with WESM requirements, and related rules.

In preparation for the Metering Arrangement Review, NGCP routinely conducts internal audits to develop compliance plans. The following data includes statistics on Metering Points with Non-compliances identified in audit reports. Additionally, the figure shows statistics on meter-only facilities programmed for conversion to full metering, as mandated by OATS Rules 2022. These figures serve as reference for the compliance projects outlined in the TDP 2026-2050. NGCP aims to complete compliance projects for both Full and Meter Only Metering Facilities by 2027.

- Measurement Assurance Program

Laboratory standards, field test instruments, tools and equipment bought during the 2nd, 3rd and 4th regulatory period will reach the end of their asset life by the 5th, 6th and 7th regulatory period:

Laboratory Standards	Field Test Instruments	Tools and equipment
asset life of 12 yrs	asset life of 10 yrs	asset life of 10 yrs

Existing instruments are scheduled for replacement upon reaching the end of their asset life and demonstrating declining performance. NGCP's proactive asset management system aligns with ERC policies, which monitor asset age and conditions to develop a viable replacement program. Although NGCP acknowledges both factors as significant triggers, asset conditions hold greater importance than asset age. The run-to-failure approach is applied to fully aged but still serviceable instruments, which are utilized for redundancy purposes.

The additional instruments outlined in this proposal aim to fulfill operational, maintenance, and automation needs, in accordance with regulatory obligations of the MSP. These obligations encompass testing, calibration, and maintenance of metering installations, as specified in PGC 2016 and further clarified by DOE DC2016-05-0007.

- Metering Replacement Program

Metering assets are subject to normal wear and tear. Our experience indicates that the established asset life for the following metering equipment accurately reflects their economic and technical performance:



However, electronic meters and modems, which have an assigned asset life of 10 years, tend to fail earlier than expected. Additionally, obsolescence is a significant consideration for these types of assets.

These items will be replaced as they are near the end of their assigned asset life or show signs of impending failure. Information on asset age and condition has been the primary reference for the replacement program for installed metering equipment included in this TDP 2026–2050.

- Metering Spares

Maintaining an optimal level of metering spares is crucial for ensuring the continuous and reliable operation of metering systems. The previously used standard of 3% of installed metering equipment to determine spares requirements has proven inadequate for fully meeting NGCP's operational needs due to the following scenarios:

- Unexpected failure of some metering equipment (meters and modems) prior to assigned asset life.
- Transmission customers' failure to provide spares for customer-owned metering facility in case of equipment defect.
- Unplanned metering requirements, e.g., new grid connections, new regulatory guidelines.

To partially address the aforementioned scenarios, NGCP had to utilize not only its limited spares, but also other metering equipment originally allocated for different projects.

To resolve this issue, NGCP has made several improvements to the spares program to better support its operational requirements. The new spares requirements were included in NGCP's 5RP CAPEX application to ERC.

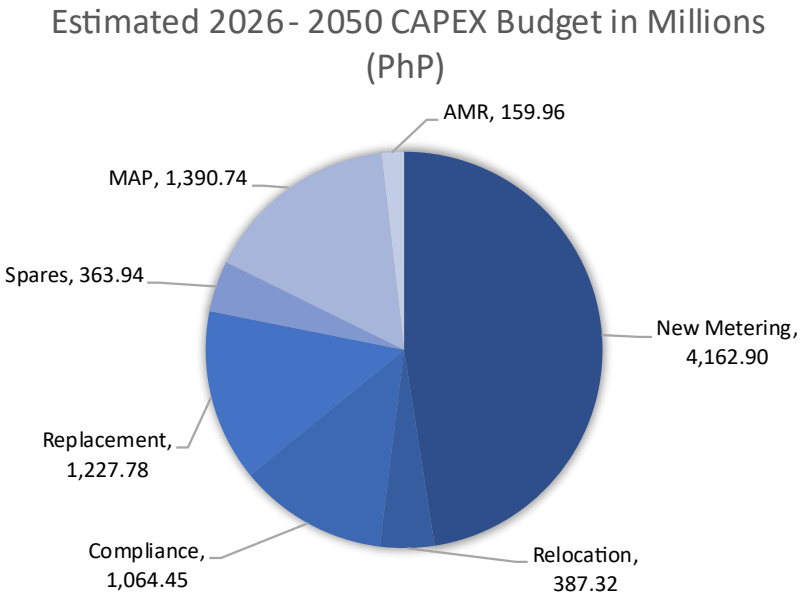
- AMR System Upgrade/Operation

The proposal for this TDP 2026–2050 project sub-category will include:

- **AMR System Hardware**
  will be replaced as they reach their assigned Asset Life or when they become obsolete or fail in service.
- **AMR System Software (currently the MV-90 System)**
  will be replaced or upgraded as they reach their assigned Asset Life (5-years) or when they become obsolete or fail in service.
- **AMR System communication infrastructure**
  will be replaced as they reach their assigned Asset Life (5-years) or when they become obsolete or fail in service.

9.5.4 Summary of 2026-2050 CAPEX Budget Requirements

The estimated CAPEX Budget for the TDP 2026–2050 is shown below:



Total: 8,757.09 M

Chapter 10

SYSTEM OPERATIONS

10.1 DEVELOPMENTAL OBJECTIVES

The development plan for the SCADA, telecommunication and protection components of the Power Grid is characterized by the need to cope with the market-driven demand for consolidation of enterprise and operations applications in the energy management systems (EMS), subsequent necessity for bandwidth and interoperability in the communications network and indispensability of redundancy, i.e., N-1 in the protection systems. The importance of integrating variable renewable sources of energy into the Grid has also made it a point to provision readiness in both the SCADA-EMS and telecommunication systems for addressing connectivity and data organization and for the protection system to be able to handle the peculiar power quality management issues.

The following are the objectives of the developmental program for the 2026–2050 planning horizon and the respective major CAPEX issues of interest.

Migration to Efficient Technologies	• Shift to IP-based transport/network • Completion of optical telecom backbone • Adoption of Smart Grid model; implementation of IEC 61850 standard • Use of hybrid power supplies • Supervision/monitoring functions employing public infra
Sustenance of Systems to Maximize Economic Lives	• Stagger the retirement/replacement of systems running through obsolescence • Technological prudence: specified functions and upgradability should be realized within expected service life • Manage maintenance and replenishment of battery banks • Employ remote fiber monitoring systems for quick detection of damaging factors • Prioritization of Infra Expansion/Upgrade to Areas of Most Benefits at Least Cost • Enhanced EMS applications, with emphasis on VRE management • OPGW retrofitting to enable access to bandwidth • Upgrade of power supply systems and other support infra • Compliance with data center standards
Address Deficiencies that Prevent Optimized Network Performance	• Completion of network synchronization system • Integration of telecom network management systems • Securing RCC interfacing to HVDC control system • Equipping RTUs with IP interfaces • Advanced supervisory and control system • Improvement of cybersecurity posture

Compliance with Grid Code and Regulatory Directions	• Monitoring and control of embedded generators • VRE forecasting • Consistency with Protection, SCADA and Telecommunication Philosophies • Meeting power quality and system availability requirements • Grid resiliency measures • Real-time monitoring and control at connection points • Cyber Security

10.2 SITUATIONAL ANALYSIS

10.2.1 Telecommunications

As the pace of development vis-à-vis geographic peculiarities of the electricity grids in Luzon, Visayas and Mindanao varies significantly, the characteristics of the respective telecommunication systems and facilities differ appreciably among each other. On a nationwide scale, backbone infrastructure is dependent on the continuity of transmission-line-embedded fibers—for this matter, relatively-recent transmission line segments without OPGW have to be retrofitted to interconnect the already-fiber-embedded lines in the new installations.

From the register of our existing telecom facilities, we define:

- The need to replace part of the installed base already without spare parts support as well as the program for replenishments of equipment upon obsolescence
- Required upgrades or replacements to address capacity/bandwidth issues resulting from a particular element's deficiency
- Additional facilities that will provide element and path redundancy in compliance with our N-1 philosophy
- Additional network management components to consolidate remote control capability over telecom network elements.

On the network level, as the open market integrates, the respective characteristics of the telecommunication networks in Luzon, Visayas and Mindanao become more similar as common performance parameters are adopted and the same operating philosophies are shared. Further, the requirement for more backbone bandwidth (and the subsequent need to reinforce synchronization of the high-speed transport network) is nonetheless increasingly and universally felt, catering to the demands of the now-mainly-IP-based applications. The 2026–2050 CAPEX projects identified in this volume reflect this trend as an integrated NGCP telecommunication network develops over the course of the planning horizon.

Following is an illustration of the geographic extent of the optical infrastructure on which basis the collective performance of NGCP's operations and business applications are founded on:

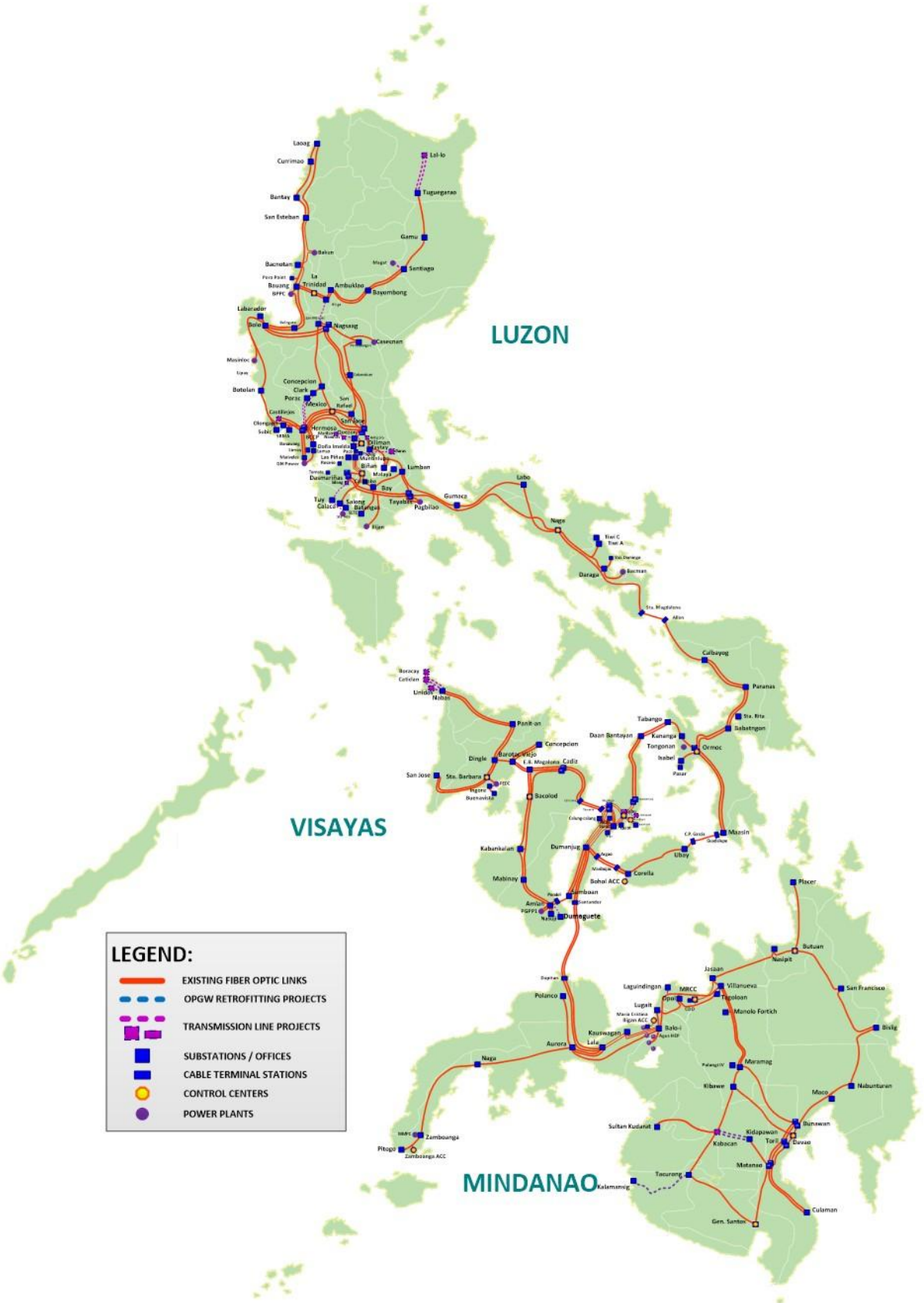


Figure 10.1: Fiber Optic network

10.2.2 SCADA-EMS

NGCP's Regional Control Centers (RCCs) are responsible for monitoring and control of the transmission systems in each of the three power grids: Luzon, Visayas and Mindanao. Backup RCCs were also established to take over the functionalities of RCCs during contingency events. Several Area Control Centers (ACCs) are situated in each Region to supervise other parts of the transmission network not directly managed by the RCCs and to coordinate with the customers in their respective areas of responsibility.

The entry into the Electricity Market of Visayas and Mindanao has resulted in significantly more complex operations in the regions. The need for comprehensive SCADA/EMS coverage has also been made more difficult by the rapid changes in Grid configuration brought about by the integration of new players.

The major issues for improvement of the existing SCADA/EMS arrangement are characterized below:

- The responsiveness of the existing SCADA system to the requirements of VRE integration as well as to the 5-minute real-time dispatch mechanism depends on enhanced computing resources as well as improved accuracy of the telemetry system.
- Inadequacies in auxiliary support facilities for some of the control centers should be addressed to avoid unreliable SCADA operations and accelerated equipment ageing and failure.
- There is limited infrastructure reach to readily address supervision of embedded generators.

The development of the Grid in response to Market demand in terms of capacity growth, geographic expansion and challenges in dispatching generators of renewable energy has manifested itself in the SCADA-EMS system through the consolidation and standardization of data collection and management processes and the employment of specialized modeling and analytical applications as part of EMS. The 2026–2050 CAPEX projects are in line with this development trend.

Figure 10.2 is an illustration of the pertinent SO-MO process flow involving NGCP's SCADA-EMS and its interface to the Market.

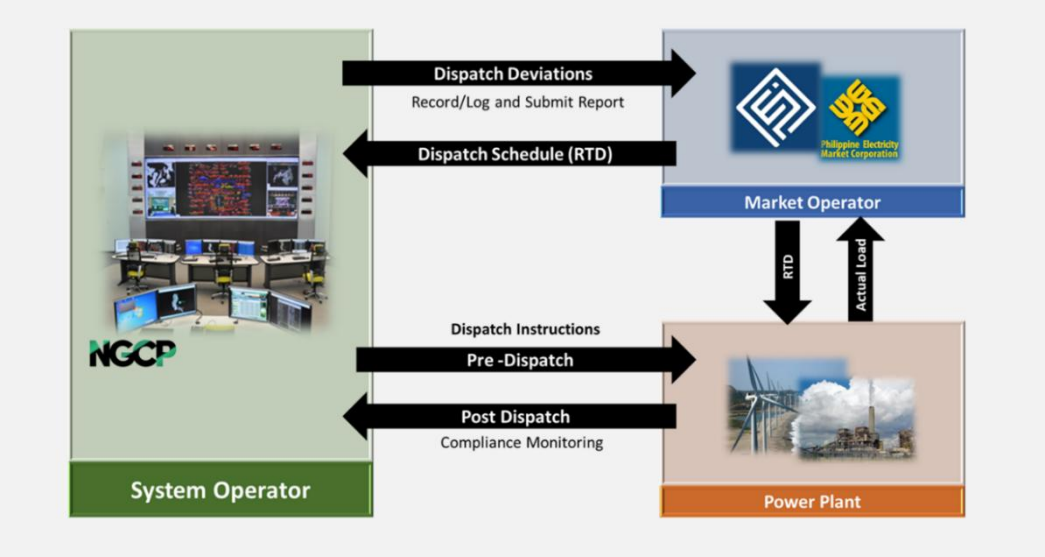


Figure 10.2: SO-MO Process Flow

10.2.3 Protection System

A resilient Power Grid made possible through an effective protection system is a requisite for the realization of the Smart Grid environment. However, the existing protection facilities are significantly lagging in terms of compliance with the Network Protection Philosophy, especially in Mindanao where complementary telecommunication facilities to support path redundancy requirements are still under development.

The challenges presently faced by the existing protection system are described by the following needs:

- Replacement of obsolete protection equipment—which has no more manufacturer support and lacks modern communication features—must be accelerated to minimize equipment failures as well as to consolidate (remote) management and maintenance.
- Redundancy requirements to meet the N-1 objective necessitate the addition of relay equipment where no Main 2's are present and upgrade of existing relays where the required philosophies governing Main 1 and Main 2 modes have not yet been realized.
- Strategic deployment of NDME and PQA to ensure quick and accurate diagnostics of network disturbances and power quality issues in compliance with PGC requirements.
- While the present state of stability still requires continued employment of SIPS in strategic areas of the Grid, SIPS would eventually be migrated to a more advanced technology on supervisory and control system intended to be more sensitive and discerning to signal of system instabilities.

While programmed substation upgrades address the above needs through the accompanying upgrading of the secondary equipment attributed to the transmission lines (radiating from the substation), such substation upgrades would not significantly cover the deficiencies in due time given the respective implementation schedules. Thus, the 2026–2050 CAPEX for protection builds up on relay, NDME, and PQA equipment—the lack of which compromises NGCP's performance objectives.

10.2.4 Cybersecurity

The technologies and facilities in the power system industry are evolving amidst the increasing active threat and vulnerability in the Operational Technology (OT) environment. As NGCP is leaning towards this modernization, it is also faced with the risks and threats that will impact the grid operation.

Traditionally, the SO networks operate in silos and use proprietary protocols, networks and technology. However, modern OT (i.e. implementation in Smart Grid) are now based on open architecture using standard interoperable interfaces where remote field devices are now accessible through centralized monitoring and measurement. With these changes in the environment, NGCP has reassessed its cyber security program to ensure that security measures are in placed across the network to maintain the availability, reliability, and safety while supporting the operational flexibility and interoperability of the grid.

TDP 2026–2050 for cybersecurity focuses on strengthening cybersecurity governance, real-time monitoring, and incident response capabilities are required to:

- Expanding OT risks and threats
- Regulatory requirements
- Industry best practices

10.3 SUMMARY OF CAPEX COSTS

CAPEX Costs 2021–2050 (In Million Pesos)

Table 10.1 CAPEX Proportion by Function

Function	Replenishments	Rehabilitation/ Upgrades	Expansions	Total
Telecoms	15,378	733	6,569	22,680
SCADA	13,325	1,071	8,594	22,991
Protection (NDME/PQA)	3,885	204	445	4,535
Connection Point Monitoring/Control	0	0	8,450	8,450
TOTAL	**32,589**	**2,008**	**24,059**	**58,656**

Table 10.2 CAPEX Proportion by Region

Region	Replenishments	Rehabilitation/ Upgrades	Expansions	Total
Luzon	12,332	391	10,927	23,649
Visayas	7,327	1,072	4,738	13,137
Mindanao	12,930	546	8,394	21,870
TOTAL	**32,589**	**2,008**	**24,059**	**58,656**

Table 10.3: Telecom Projects According to Nature of Facilities

Telecom Facilities	Luzon	Visayas	Mindanao	Total
Fiber Optics and OPGW	4,282	1,655	3,160	9,097
Microwave Radio	526	224	551	1,301
Network Management and Synchronization	1,084	1,286	879	3,250
Teleprotection Equipment	226	127	182	536
WAN and Access Equipment	1,209	383	1,265	2,857
Power Supply and Auxiliary	1,822	831	1,585	4,238
Cyber Security	575	207	149	931
Mobile Radio Network	55	59	85	199
Test Equipment	91	91	86	269
TOTAL	**9,871**	**4,864**	**7,942**	**22,680**

Table 10.4: SCADA/EMS Projects Categorized by Component Function

SCADA/EMS Components	**Luzon**	**Visayas**	**Mindanao**	**Total**
SCADA	3,973	3,760	8,863	16,596
EMS Applications	80	7	72	159
Cyber Security	1,849	639	1,682	4,170
WAMS	2,051	15	0	2,066
TOTAL	**7,952**	**4,422**	**10,617**	**22,991**

10.4 STRATEGIES

Sustenance of Assets Against Technology Shifts. System Operations' primary asset management objective - and the main CAPEX driver—is to optimize the serviceability of its existing facilities, i.e., maximizing service lives up to the extent that the costs of ownership vis-à-vis strategic benefits justify continued maintenance. Therefore, given SO's dependence on software and electronics, rapid technological advances in either field increases the need for frequent reassessment of the relevance of such assets to SO's functional objectives. Technologies and applications approaching obsolescence should be retired—albeit on an optimized schedule—and replaced with the more efficient ones for the sake of improved performance and economics. Thus, we are reducing and eventually ending acquisition of spares and maintenance support for the assets due for retirement and investing on their replacements, as follows:

Table 10.5 CAPEX Proportion by Function

Decreasing Functionality	Current Paradigm
• Power Line Carriers (PLCs) cannot be used to provide *differential* line protection and cannot be used as a redundant backbone access channel given the bandwidth requirements of current business and operations applications. PLC is also quite expensive for stations which have ready access to fiber-embedded transmission lines.	Fiber is the preferred media for line protection offering both the best bandwidth and reliability. All new transmission lines are already embedded with fiber and existing lines continue to be retrofitted with OPGW. Optical terminals are cheaper to acquire and maintain and protection relays can be outfitted with optical transceivers enabling "direct fiber" line protection setups.

• Microwave radio shall be limited to spur link applications and backup routes where no transmission lines can be used to establish optical transport.	Retrofitted fiber is much cheaper in addressing backbone needs given the exponential bandwidth growth.
▪ There would be less use of TDM channel multiplexers as service access is shifted to IP.	Routers and Ethernet switches shall begin to displace TDM multiplexers along the service access points as applications migrate towards IP communication.
▪ SDH transport facilities are already being migrated to packet-switched networks.	IP-based transport facilities shall gradually replace SDH networks that are now reaching obsolescence.
▪ PABX equipment shall be totally phased out as circuit-switched arrangements become obsolete.	Telephony and other multimedia services shall run through the IP network, not unlike other applications using networked servers.
▪ RTUs for Power Grid SCADA shall become less relevant as automation and data communication is integrated into substation and power plant design.	Remote data collection requirements shall be reduced to compliance with supervisory and communication protocol and hardware limited to intermediary access terminal for security purpose.
▪ User owned telecommunication facilities to reach remote IPPs will be less favored especially when no teleprotection complement is required.	Less CAPEX-involved public infrastructure to establish access among IPPs (especially embedded ones) shall be taken advantage of but cyber security arrangements shall be given due attention.
▪ Use of Distance Relays shall be limited only to areas where differential protection cannot be applied on account of bandwidth limitation.	Differential Relays (with direct-fiber interfaces) shall displace more and more Distance Relays as fast communication interfaces through fiber and radio become pervasive.

Timing of Projects. Given the interdependence of technology and infrastructure—as well as the role of organizational evolution adapting to market trend—in defining developmental direction, outlined below are the implementation sequence of major projects for the purpose of validation and prioritization. It is also the purpose of this development plan to make rescheduling of projects convenient when faced with limited budget or implementation resources. Optimization demands that just enough infrastructure is ready to accommodate the applications as they come and that right applications are chosen to take advantage of the minimum infrastructure components in place at the time of need.

CAPEX Priorities. As shown in the above schedule, 65% of projected CAPEX is allocated for sustenance of existing facilities and the rest for programs to address current deficiencies and new requirements. This does not mean that the same apportionment would be observed in case of budget constraints. While sustenance would ideally be the priority, the new facilities are also meant to address deficiencies in existing service areas. Should CAPEX limits be apparent as a result of transmission regulation, prevailing demand for pertinent applications shall be prioritized.

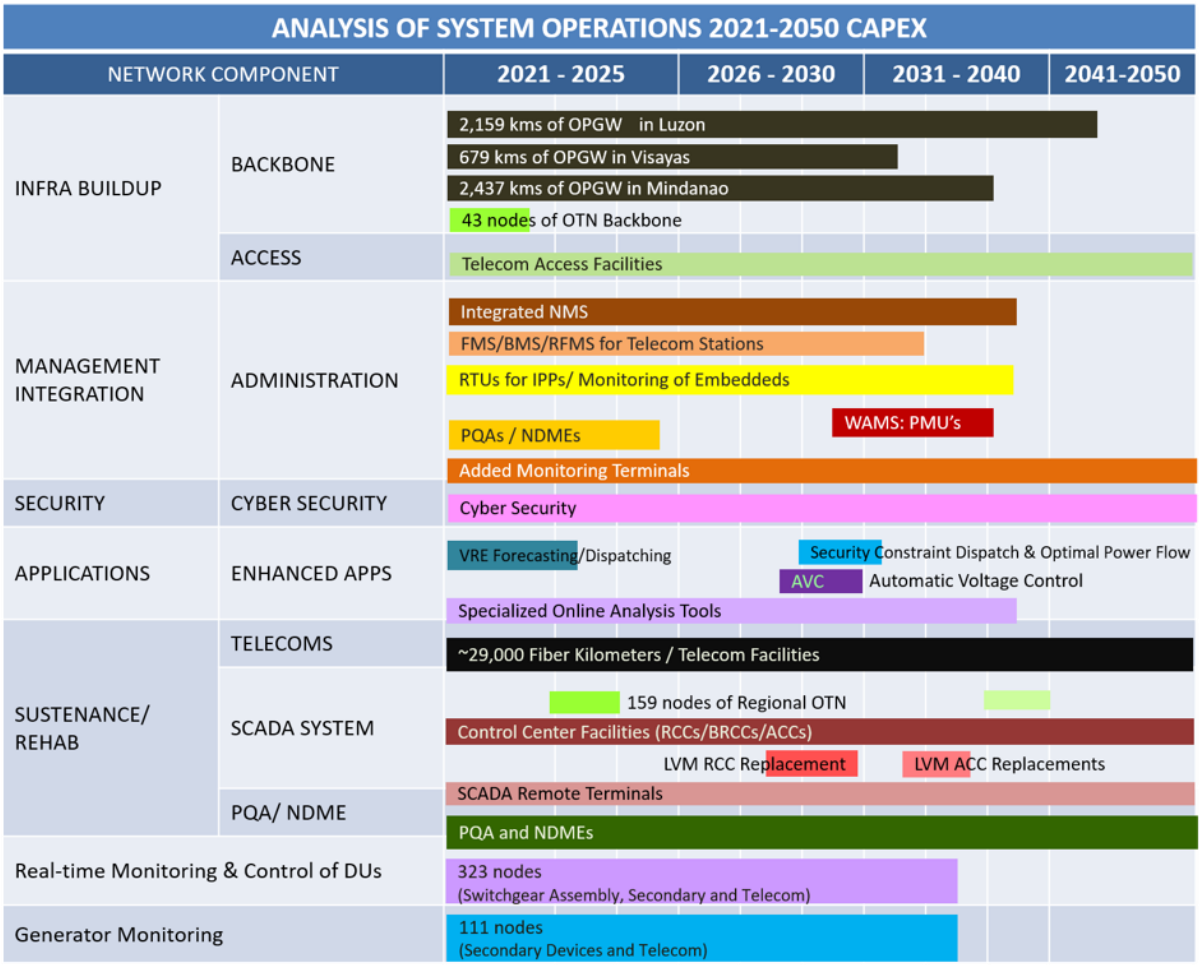


Figure10.3: Analysis of SO 2021-2050 CAPEX

As an example, EMS enhancements for the purpose of improving SO response to Grid dynamics and maximizing access to energy sources according to market conduct are lined up for implementation through the 4th ,5th, 6th and until the 8th regulatory periods. Projects for either infrastructure reinforcement or sustenance/upgrade programs would hence depend on the relative significance of the affected network elements or sections in support of said EMS applications. Prominent in this respect are the VRE forecasting and modeling applications.

Imperative also during the early years is putting in place the pertinent synchronization mechanisms and enforcing communication protocols which govern the building blocks of our automation and control systems. Finally, given the increasing dependence of SO on IT and communications systems—amid the growing pervasiveness of the internet in the business environment—the need to protect System Operations against cyber threats has manifested itself as an indispensable determinant in development planning and engineering design.

Table 10.6: CAPEX Summary

PROJECT LIST	2021	2022	5th REG					6th REG	7th REG	2038-2050	TOTAL 2021-2050
			2023	2024	2025	2026	2027	2028-2032	2033-2037		
Fiber Optic and Microwave Radio Equipment Replacement	23	12	63	446	107	31	42	475	1,876	2,512	5,589
Teleprotection Equipment Replacement	21	18	32	10	2	5	16	133	62	236	536
Telecom Access and Remote Management Component Replacement	62	28	35	47	28	145	111	1,136	793	2,790	5,175
Power Supply and Auxiliary Equipment Replenishment	88	78	148	251	118	188	133	597	947	1,915	4,463
Infra and IT Support Facilities Replacement	66	103	89	85	83	83	70	867	324	702	2,474
SCADA/EMS Facilities Replacement	44	94	133	866	232	471	1127	2,760	473	4,811	11,011
NDME and PQA Replacement	44	73	47	62	25	114	77	792	712	2,143	4,089
SCADA Expansion—Added RTUs and Monitoring Points	106	24	48	74	58	176	16	428	246	655	1,829
Telecom Access for Added Locations, Subscribers and Application Points	40	82	70	38	31	31	21	144	101	267	825
Fiber Optic Expansion	519	351	105	330	220	178	210	1,650	913	165	4,641
Cyber Security	97	54	164	121	204	192	326	1,358	744	1,831	5,089
Network and Facilities Management System and IT Support Facilities	56	193	111	68	27	70	82	535	245	426	1,814
EMS Enhancements	2	0	0	0	0	5	0	125	15	12	159
Wide Area Measurement System (WAMS)	0	0	0	0	0	15	0	568	1,483	0	2,066
NDME and PQA Expansion Program	52	22	49	7	9	29	19	214	7	38	445
Monitoring and Control of DUs	0	0	0	0	0	0	0	7,805	0	0	7,805
Generator Monitoring	0	0	0	0	0	0	0	644	0	0	644
TOTAL (Million Php)	**1,220**	**1,130**	**1,096**	**2,405**	**1,146**	**1,734**	**2,251**	**20,232**	**8,941**	**18,501**	**58,656**
			8,632								

10.5 TELECOMMUNICATIONS

10.5.1 Fiber Optic Network Expansion

The following are diagrams for the 2026–2050 programmed additions for the Fiber Optic network. The expansions include optical fiber links resulting from new transmission line projects as well as OPGW retrofitting on existing TL programmed in this section:

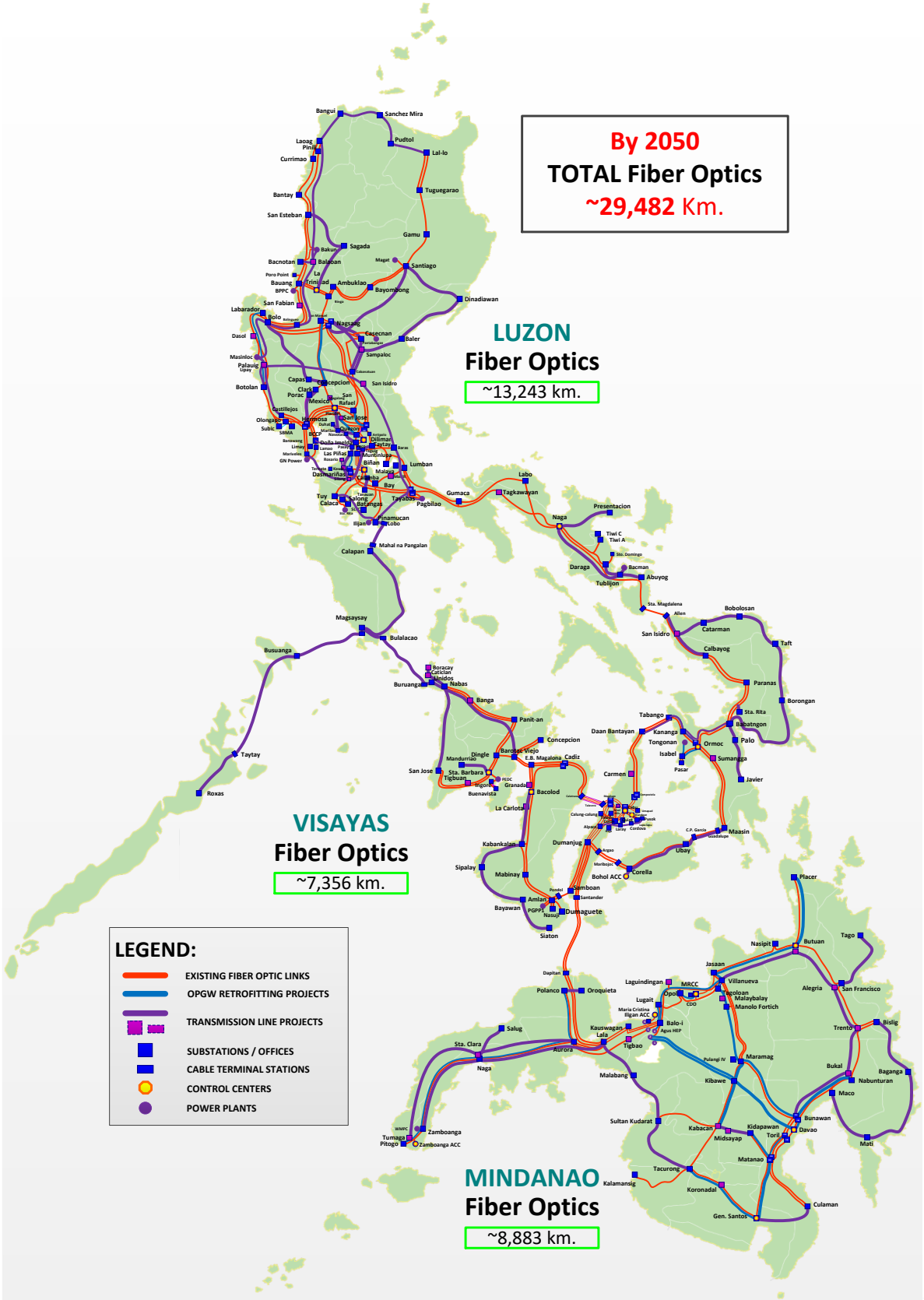


Figure 10.5: Fiber Optics Network by 2050

10.5.2 IP Transport Network Implementation

The need to adopt a high capacity and purely-IP-based telecommunication infrastructure calls for a phased implementation of the telecommunication transport system migration to optimize the life of existing TDM/SDH equipment. The cost for migration has been outweighed by the cost of sustaining and provisioning for legacy equipment whose respective O&M efficiencies have been surpassed by modern technology. Thus, the current SDH transport network would be sustained only up to the elements' economic lives where feasible and legacy TDM applications would be run on emulated mode (over IP) until such time that the applications themselves have migrated into their respective IP modes. New application requirements which demand for high bandwidth and secure telecommunication network render SDH transport system obsolete for obvious capacity limitation. The fairly mature Optical Transport Network (OTN) technology is preferred to address the new mission-critical network requirements. It offers the advantages of being flexible, open technology, scalable, and cost-effective long-term infrastructure solution. It is aimed to increase network performance by lowering latency, increasing network manageability, and paving the way for the network to embrace purely IP-based networks and Software-Defined Networking as planned.

The acquisition of new IP-based transport appliances, therefore, should be complemented by the choice of the adequate transport protocols, reinforcement of the network management centers and putting in place of appropriate out-of-band network probes to ensure that performance thresholds are met.

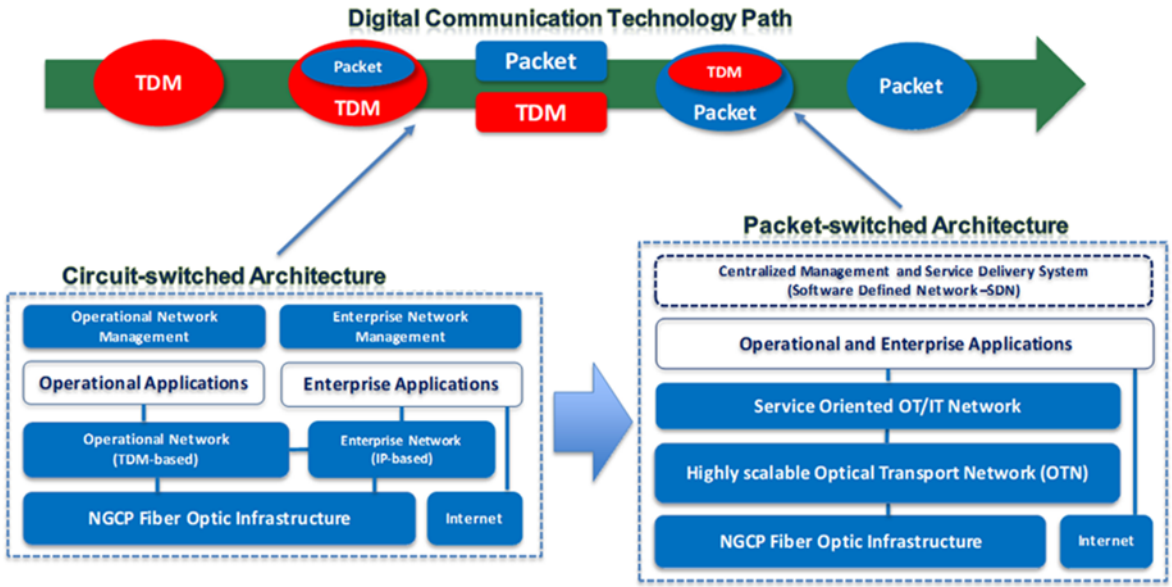


Figure 10.6: NGCP ICT Infrastructure Migration Path

10.5.3 Network Synchronization

The following NGCP network elements require a common reference clock—i.e., they need to be synchronized—for reasons peculiar to their respective functions and nature of operations:

- **Telecommunication**
  High-speed digital transmission technology requires synchronous telecommunication nodes
- **SCADA/EMS**
  Data monitoring/recording especially those from synchro phasor measurements, for purpose of power flow analysis and eventual automated control, must be synchronized
- **Grid Protection**
  Protection relays and event/waveform recorders require accurate time stamps for network performance analysis and post-event diagnostics
- **Metering**
  Accurate billing information requires standard time reference

On a national scale, a synchronized timing system is also necessary to coordinate events and activities among the various collaborating government agencies and public utilities. Republic Act No. 10535, also known as The Philippine Standard Time Act of 2013, orders the synchronization of all clocks in the country under the Philippine Standard Time (PST).

Such need for synchronization is especially relevant as NGCP prepares for Smart Grid. Precise timing is necessary if coordinated supervisory control and quick reaction to fast changes in real-time data would be realized to meet Smart Grid standards.

A unified synchronization system with stratum 1 traceability to a primary reference clock source has been established for NGCP to provide synchronization requirements to all the installed-based network elements. This shall cover all telecommunications, SCADA, protection, metering, enterprise data network and other substation devices. The sync system shall continue to provide legacy timing protocols such as IRIG-B, 1PPS and 1PPM to old but functional network elements requiring such.

The installation of synchronization clocks at 138 kV, 230 kV and 500 kV substations has been completed, and all network elements are currently being integrated for unified clock reference.

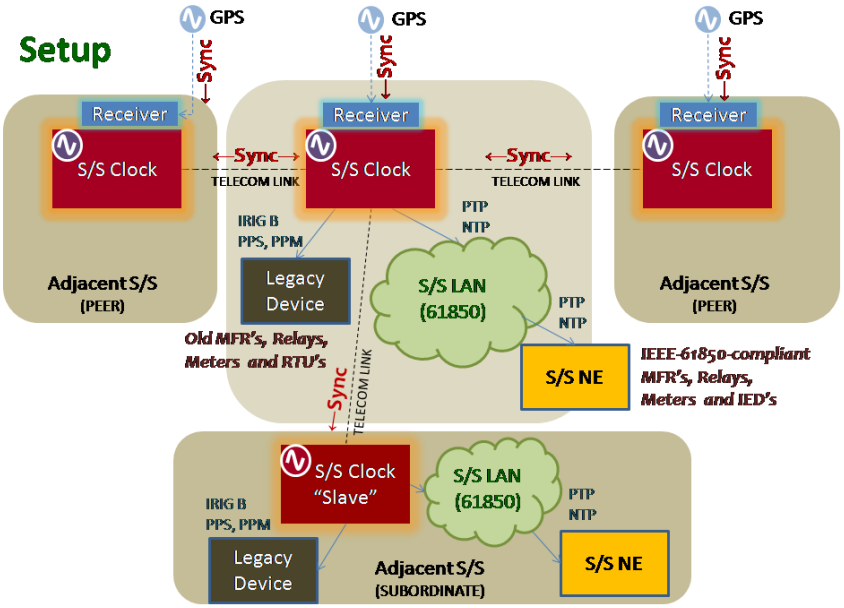


Figure 10.7: Synchronization Arrangement

10.6 SCADA PROGRAMS

10.6.1 National System Operations

With the successful interconnection of the Visayas and Mindanao Grids via the Mindanao-Visayas Interconnection Project (MVIP), the Philippine Grid is now managed as a single, holistic interconnected network. To support this, the National System Operations (NSO) has been established as a centralized body to oversee the integrated operation and dispatch of all generation across the country.

While the unified grid is operational, the upgrade of the SCADA/EMS System remains a critical requirement. The replacement of the current near-obsolete systems is necessary to fully integrate WESM operations across Luzon, Visayas, and Mindanao. This upgrade will ensure seamless, high-speed information exchange between the unified SO and the Market Operator, further optimizing nationwide resource allocation.

The NSO, co-located with the Luzon Regional Control Center, currently carries out the following grid-management functions:

- Supervise, monitor and control all interconnection of the three Regions (Luzon, Visayas and Mindanao)
- Monitor and control HVDC interconnection system during normal and emergency conditions
- Manage the respective transmission backbones of the three regions (i.e. 500 kV of Luzon, Visayas interconnection and 230 kV of Mindanao
- Conduct of simulation studies for the whole grid necessary for decision making
- Supervise the implementation of Planned Activity Notice (PAN) of HVDC interconnection and the transmission backbone
- Supervise the operations of the three Regional Control Centers
- Coordinate with the Market Operator for the implementation of the RTD schedules of the three Regions
- Forecast week ahead and day ahead of the three Regions

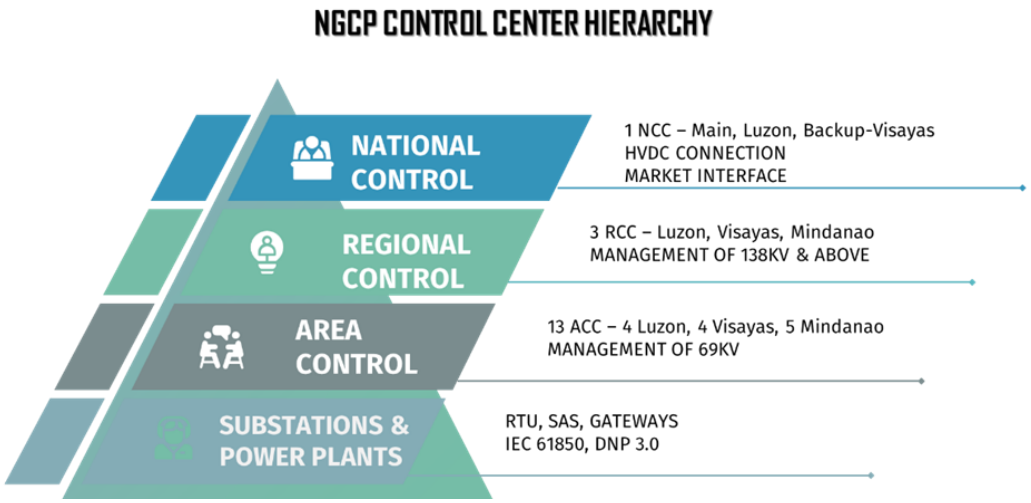


Figure 10.8: SCADA-EMS Hierarchical Framework

The backup RCCs would continue to operate using the existing platform in parallel operation with the upgraded SCADA-EMS systems to serve as redundant control center facilities for the purpose of business continuity.

10.6.2 EMS Advanced Applications

Computer-aided EMS technology has been around since the 1980s and works in conjunction with SCADA systems to optimize generation and transmission resources. EMS advanced applications (software) are automation tools employed by electric power utilities designed for specialized tasks at hand within the realm of such resource optimization. NGCP EMS enhancement project involves the acquisition of preferred EMS advanced applications intended to:

- Meet Current Market Demands
  - The rapidly growing number of network elements—especially by the integration of embedded generators into the Market—requires more management attention and faster reaction;
  - Integration of more VRE into the supply pool requires quicker anticipation and more automated control
  - Efficient dispatch means less cost of electricity
- Adapt to and Take Advantage of New Technology
  - Lower cost of electronics means faster processing—an opportunity to pack more intelligence and automation into EMS

- Greater bandwidth and less latency in IP communications afford access to more network elements, thereby facilitating greater control
- Improve Performance should tap all available tools within the bounds of economics which will allow us to ensure that service availability and power quality are within performance thresholds
- EMS is the brain behind an automated Grid management system—there is always room for more intelligence

NGCP's EMS enhancement program was started during the 3rd Regulatory Period driven by the above considerations—following is the development road map:

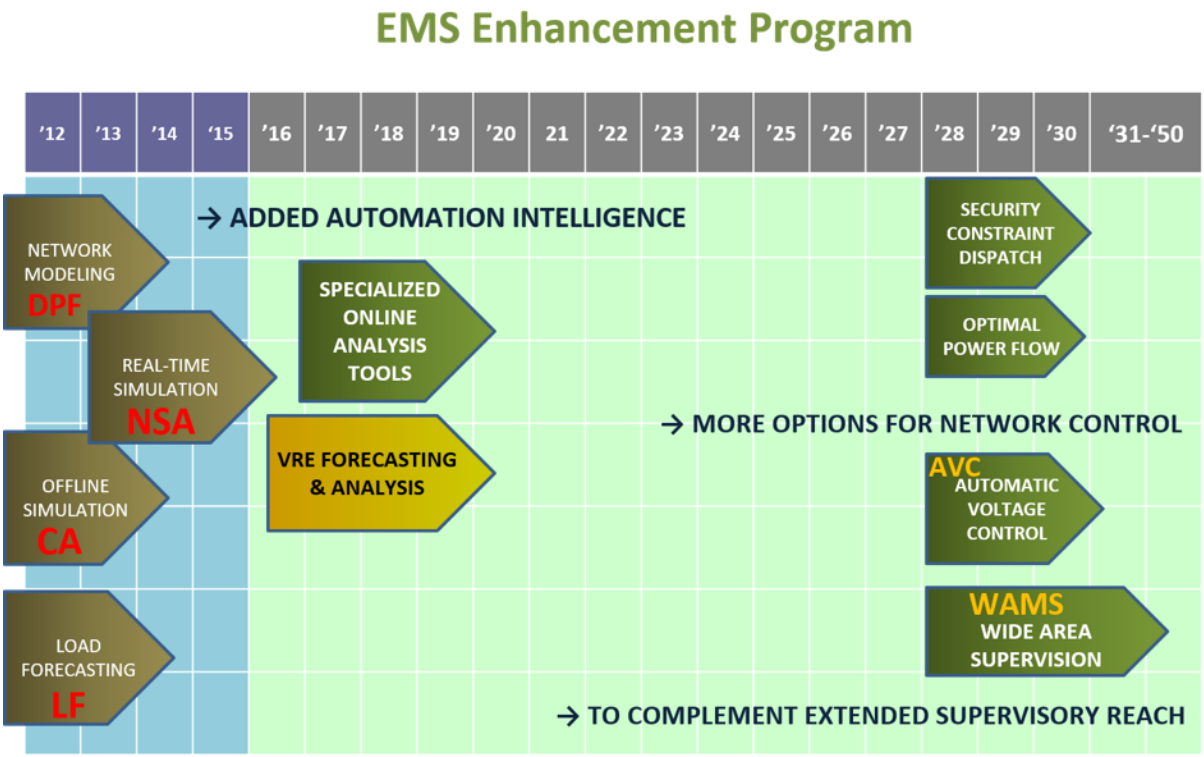


Figure 10.9: EMS Development Road Map

The project is aligned with the overall network development plan aimed to support Market growth and optimization of energy sources, especially the VREs.

10.6.3 Wide Area Measurement System (WAMS)

To ensure stability and security of the Grid, all significant components of the network should maintain operational continuity, and, for this matter, corrective actions must be taken swiftly if the system has not adequately recovered after a serious event. To address this condition, real-time monitoring should be effective on a level that the remote measurements are sufficiently synchronized such that online analysis, and automatic (closed-loop) control is not compromised by inaccuracies in the time reference. The modern data acquisition solution would be to employ Wide Area Measurement Systems (WAMS) which use vector values instead of the contemporary method of retrieving only the measured magnitudes without the benefit of synchronized point-in-time reference. WAMS provides dispatchers with instantaneous awareness of various instability issues and events as they occur and maximizes remaining time for determining alternative courses of and eventual counteraction.

The purpose of the Wide Area Measurement System project is to:

- Improve reliability of grid protection system using accurate (synchro-phasor) information and access to multiple complementary algorithms with their corresponding control actions;
- Optimize energy dispatch through automated real-time wide-area monitoring and control; and
- Enable secure integration of VRE into the Grid by the timely detection and arresting of evolving imbalance caused by the VRE intermittence as well as of inter-oscillations.

10.6.4 Cybersecurity

As SCADA and substation automation systems increasingly play a vital role in NGCP as it works towards efficient operations, the need to protect these network elements from unauthorized access and threats becomes an increasingly significant task. The risks of security breaches are great if not attended to properly. Securing these systems, however, is not so simple: these systems are exposed at all times to access by a multitude of personnel and the need for data exchange with other systems requires interconnection to external networks. A comprehensive cyber-security system should be employed to address all possible threats to the system and cyber-security principles shall be considered in all aspects from planning and design to operations and maintenance.

The continuous cyber security implementation and improvement aim to enhance protection of NGCP's facilities from internal and external cyber threats and to prevent unauthorized access of SCADA facilities to ensure utmost degree of security for a more reliable power grid. This is also in compliance with the Department of Information and Communications Technology (DICT) National Cyber Security Plan 2022 wherein Critical Infostructure (CII), including the energy sector, should assure continuous operation and implement cyber resiliency measures to enhance the ability to respond to threats before, during, and after attacks.

Figure 10.10 illustrates the SO ICS architecture based on layered security level, while Figure 10.11 shows the Cyber Security Framework Functions:

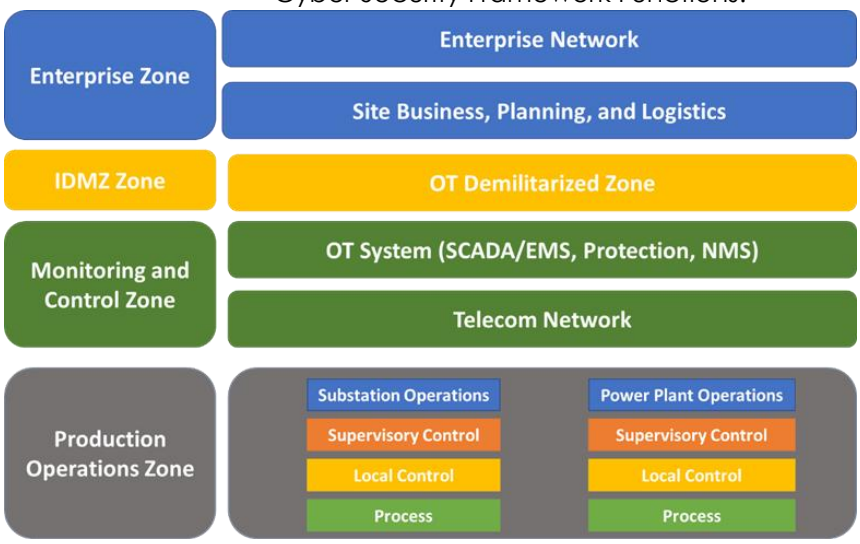


Figure 10.10: SO ICS Architecture



Figure 10.11: Cyber-Security Framework Functions

10.6.5 Real-Time Monitoring and Control for Distribution Utilities

The project to install Real-Time Monitoring and Control Equipment for DUs is in compliance with DOE's request for its inclusion in NGCP's CAPEX program. This is in compliance with the implementation of DOE's Circular No. DC2012-030994 and DC No.2010-08-0010, entitled, "Addressing Power Supply Situation including rationalization of Available Capacities in Mindanao Grid" and "Prescribing the Implementing Rules and Procedures for Department Circular No. DC2010-05-006, entitled, Terminating the Default Wholesale Supplier Arrangement for Philippine Wholesale Electricity Spot Market (WESM) and Declaring a Disconnection Policy", respectively.

At present, control of NGCP's load customers is up to the substation level only which—while adequate for managing load limits to sustain system stability and power quality—would not allow SO's selective control over the customers connected to one feeder.

Following is an illustration of the proposed installation at each DU's connection point.

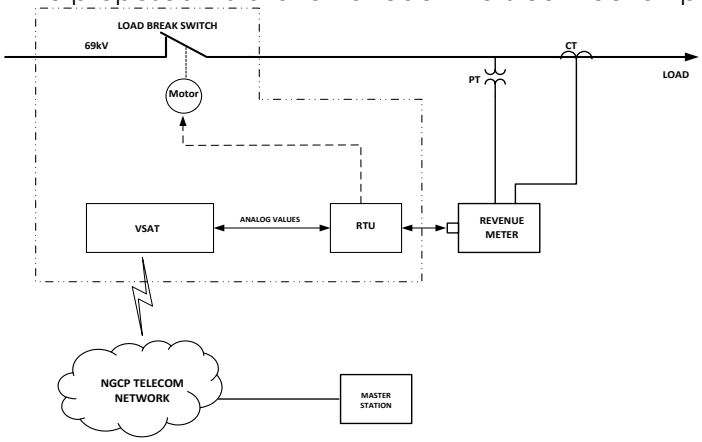


Figure 10.12: Connection Diagram for DUs

The connection diagram shows the wiring linkages of the new system facility including the telecommunication component. These will be remotely monitored and controlled by the master station located in NGCP's control center.

The figure below is an illustration of the physical setup at the customer side.

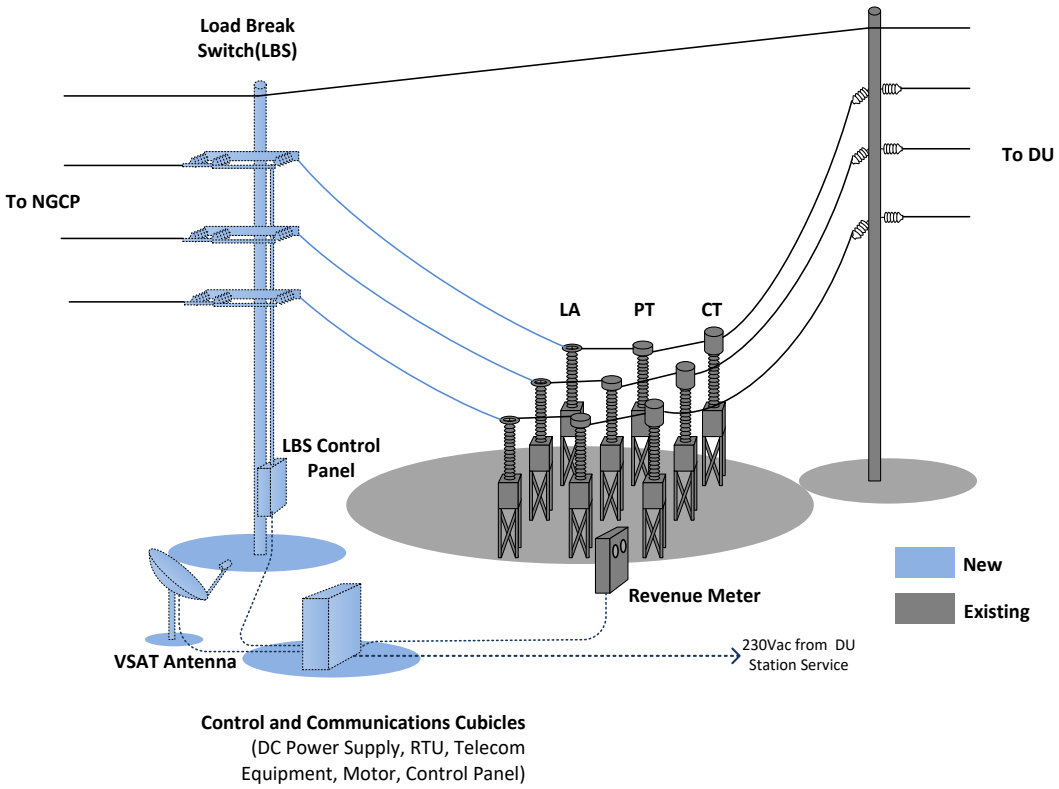


Figure 10.13: Physical Setup for DU Monitoring and Control

10.7 NETWORK PROTECTION AND POWER QUALITY

10.7.1 Network Disturbance Monitoring Equipment and Power Quality Analyzer (PQA) Program

The undesired tripping of transmission lines and high voltage equipment in the grid are sometimes caused by non-operation or malfunction of the fault clearance system. The delay in the resolution of the cause of network failure and subsequent correction of network deficiencies is on account of the non-availability of fault data due to the lack of functional NDME's. Obsolescence and degradation because of age have also lessened the effectiveness of existing NDME's. Sustenance of NDME effectiveness should therefore be addressed through a replenishment program meant to meet outstanding deficiencies in this respect.

Power quality issues are prevalent in connection points along long multi-tap feeders, those subjected to significant supply-demand incongruence between peak and off-peak periods, lines with dynamic power flows, areas with connected inverters such as those used by VRE's and battery energy storage systems as well as nodes which are connected to large non-linear time-varying loads (e.g., steel mills).

NGCP's previous plan was to install PQAs at all NGCP customer connection points. However, an alternate less-costly compliance plan was formulated where PQAs will be installed at the secondary side of transformer which would cover the monitoring of all the connected feeders—reducing the total PQAs for installation. The proposed monitoring scheme is shown in Figure 10.14. The use of portable PQAs for deeper investigation into the customer side would complement this arrangement.

Hand-in-hand with the installation of PQAs is the establishment of a centralized Power Quality Management System (PQMS). With the growing number of installed PQAs, manual processing of PQ data will require extensive effort and become time-consuming. To address this, the proposed PQMS shall be able to manage bulk, raw data coming from different brands of PQAs and will automate report generation in accordance with PGC PQ parameters.

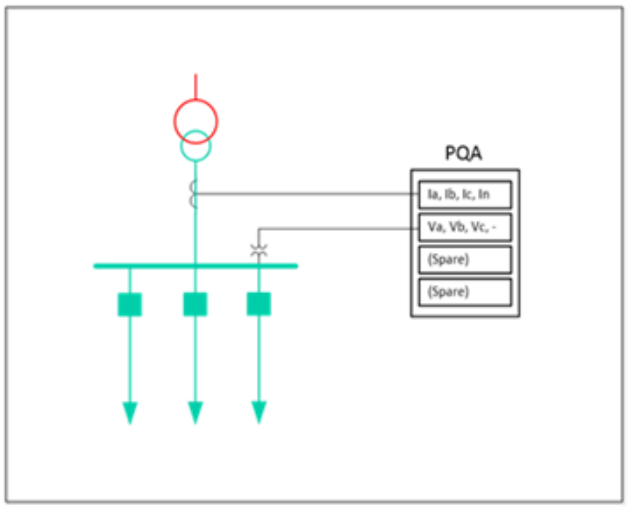


Figure 10.14: PQA installation at the secondary side of transformer

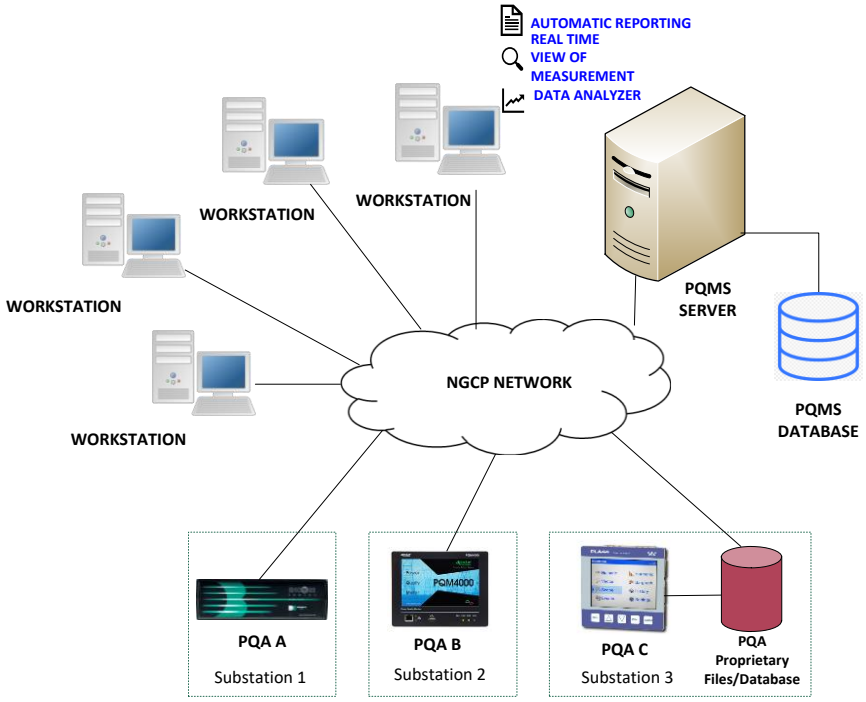


Figure 10.15: Proposed System Architecture

10.7.2 Protection Relay Replacement Program

To meet PGC security and reliability objectives, the fault clearance system needs to be enhanced through the replacement/upgrading of obsolete and defective protective devices and equipment as well as the installation of new protection systems. Aligned with the Smart Grid model, protective relays with enhanced communication systems and more interfacing options shall be incorporated to cover protection of all network elements which include transmission line, transformer, bus, and breaker-fail components.

A relay replacement program prioritized according to results of risk assessment is as follows.

Table 10.7 Overall Priority Table for Relay Replacement Program

Category	Transmission Line Protection	Transformer Protection	Bus Protection	Breaker Fail Protection	Feeder Protection	Capacitor Protection	Reactor Protection	Total
No Main 1	1	0	0	0	0	0	0	1
No Main 2	27	17	5	N/A	10	4	9	72
Non-compliant	75	16	18	10	5	0	0	124
Obsolete	220	93	48	393	65	4	20	843
Defective	0	0	0	0	0	0	0	0
Total	**323**	**126**	**71**	**403**	**80**	**8**	**29**	**1,040**

Appendix 1
PROJECT CLUSTERS

North Luzon 500/230 kV Transmission Projects for Reliability 1	North Luzon 500/230 kV Transmission Projects for Reliability 2	North Luzon 500/230 kV Transmission Projects for Reliability 3	North Luzon 230 kV/115 kV Transmission Projects for Reliability
• Bolo 5th Bank Project • Bolo – Balaoan 500 kV Transmission Line Project • Bugallon 500 kV Substation • Castillejos 230 kV Substation Project • Dasol 230 kV Substation Project • Grid Protection Relay Replacement Project (Phase 3) • Luzon Connection Requirements for Power Plant Project 1 • Luzon Connection Requirements for Power Plant Project 2 • Luzon Connection Requirements for Power Plant Project 3 • Luzon Primary Equipment Substation Upgrading Project • Luzon Voltage Improvement Project 5 • Luzon Voltage Improvement Project 3 • North Luzon Substation Upgrading Project 1 • North Luzon Substation Upgrading Project 2 • Olongapo 230 kV Substation Upgrading Project • Palauig 500 kV Substation Project • San Fabian 230 kV Substation Project • Western 500 kV Backbone– Stage 2 Project	• Ambuklao – Binga 230 kV Transmission Line • Balaoan – Laoag 500 kV Transmission Line Project • Bauang – La Trinidad 230 kV Transmission Line Upgrading Project • Binga – San Manuel 230 kV Transmission Line • Grid Protection Relay Replacement Project (Phase 3) • La Trinidad – Calot 69 kV Transmission Line Project • Laoag Power Quality Improvement Project • Luzon Connection Requirements for Power Plant Project 1 • Luzon Connection Requirements for Power Plant Project 2 • Luzon Connection Requirements for Power Plant Project 3 • Luzon Primary Equipment Substation Upgrading Project • Multicircuit Project in Ilocos • North Luzon Substation Upgrading Project 1 • North Luzon Substation Upgrading Project 2 • Northern Luzon 230 kV Loop Project • Pinili 230 kV Substation Project	• Baler 230 kV Substation • Cabanatuan – Sampaloc – Nagsaag 230 kV Transmission Line • Grid Protection Relay Replacement Project (Phase 3) • Kabugao 500 kV Substation • Luzon Connection Requirements for Power Plant Project 1 • Luzon Connection Requirements for Power Plant Project 2 • Luzon Connection Requirements for Power Plant Project 3 • Luzon Primary Equipment Substation Upgrading Project • Luzon Voltage Improvement Project 5 • Luzon Voltage Improvement Project 6 • Nagsaag – Santiago 500 kV Transmission Line Project • Nagsaag – Tumana 69 kV Transmission Line Project • North Luzon Substation Upgrading Project 1 • North Luzon Substation Upgrading Project 2 • Northern Luzon 230 kV Loop Project • Sampaloc 230 kV Substation Project • San Isidro 500 kV Substation • Santiago – Magat 230 kV TL Upgrading Project • Tuguegarao – Enrile 69 kV Transmission Line Project • Tuguegarao – Lal-lo (Magapit) 230 kV Transmission Line Project	• Capas 230 kV Substation Project • Clark – Mabiga 69 kV Transmission Line Project • Concepcion – Sta. Ignacia 69 kV Transmission Line Project • Luzon Connection Requirements for Power Plant Project 1 • Luzon Connection Requirements for Power Plant Project 3 • Luzon Primary Equipment Substation Upgrading Project • Luzon Voltage Improvement Project 3 • Magalang 230 kV Substation Project • North Luzon Substation Upgrading Project 2 • Porac 230 kV Substation Project • Relocation of Steel Poles along Hermosa – Duhat 230 kV Transmission Line Project • San Simon 230 kV Substation Project

South Luzon 500/230 kV Backbone Project for Resiliency and System Reliability	South Luzon 230/115 kV Transmission Project for Resiliency and System Reliability	Metro Manila Backbone (North_ Projects for Resiliency System Reliability and Smart Grid Development	Metro Manila Backbone (South Projects for Resiliency System Reliability and Smart Grid Development
• Batangas – Mindoro Interconnection and Backbone Project (500 kV) • Grid Protection Relay Replacement Project (Phase 3) • Ilijan 500 kV Substation Upgrading Project • Kawit 230 kV Substation Project • Luzon Connection Requirements for Power Plant Project 2 • Luzon Connection Requirements for Power Plant Project 3 • Luzon Primary Equipment Substation Upgrading Project • Luzon Voltage Improvement Project 6 • Luzon Voltage Improvement Project 4 • Masiit 230 kV Collector Station Project • Milaor 500 kV Substation Project • Pagbilao EHV Substation Project • Pagbilao – Tayabas 500 kV Transmission Line Project • Palawan – Mindoro Interconnection (Stage 1) Project • Pinamucan 500 kV Substation Project • Pinamucan – Tuy 500 kV Transmission Line	• Abuyog 230 kV Substation Project • Camarines Sur – Catanduanes Interconnection Project • Daraga – Bitano 69 kV Line Project • Eastern Albay 69 kV Transmission Line Project (Stage 2) • Luzon Connection Requirements for Power Plant Project 2 • Luzon Connection Requirements for Power Plant Project 3 • Luzon Voltage Improvement Project 6 • Luzon Voltage Improvement Project 4 • Luzon-Visayas HVDC Bipolar Operation Project • Milaor 500 kV Substation Project • South Luzon Substation Upgrading 2 • South Luzon Substation Upgrading Project • Tiwi Substation Upgrading Project • Tower Resiliency of Bicol Transmission Facilities Project	• Grid Protection Relay Replacement Project (Phase 3) • Luzon Primary Equipment Substation Upgrading Project • Manila (Navotas) 230 kV Substation Project • Manila (Navotas) – Doña Imelda 230 kV Transmission Line Project • Marilao EHV Substation Project • Mexico – Marilao 230 kV Transmission Line Project • North Luzon Substation Upgrading Project 1 • North Luzon Substation Upgrading Project 2 • Plaridel 230 kV Substation Project	• Baras 500 kV Substation • Kawit 230 kV Substation Project • Luzon Connection Requirements for Power Plant Project 2 • Luzon Primary Equipment Substation Upgrading Project • Luzon Voltage Improvement Project 3 • Malaya 230 kV Collector Station Project • Minuyan 115 kV Switching Station Project • New Antipolo 230 kV Substation • Pasay 230 kV Substation Project • San Jose – Angat 115 kV Transmission Line Project • San Jose – Quezon 230 kV Line 3 • San Mateo 230 kV Substation • San Isidro 500 kV Substation • South Luzon Substation Upgrading 2 • Sta. Maria 500 kV Substation Project • Taguig EHV Substation Project • Taguig – Silang 500 kV Transmission Line Project • Taguig – Taytay 230 kV Transmission Line Project

- Quezon – Marinduque Interconnection Project
- Silang 500 kV Substation
- South Luzon Substation Upgrading 2
- South Luzon Substation Upgrading Project
- Sta. Maria 500 kV Substation Project
- Tagkawayan 500 kV Substation Project
- Taguig – Silang 500 kV Transmission Line Project
- Tanauan 230 kV Substation Project
- Tuy 500/230 kV Substation (Stage 2) Project
- Tuy 500/230 kV Substation Project Stage 1

Metro Cebu 230/138 kV Backbone Projects for Resiliency, System Reliability and Island Interconnection	Leyte, Samar and Bohol 230/138 kV Backbone Projects for Resiliency, System Reliability, and Island Interconnection	Negros and Panay 230/138 kV Backbone Projects for Resiliency, System Reliability, and Island Interconnection	Northeastern Mindanao 230/138 kV Backbone Project for Resiliency, System Reliability, and Island Interconnection
• Cebu – Lapu-lapu Transmission Project • Cebu – Leyte 230 kV Interconnection Lines 3 and 4 Project • Danao (Carmen) 230 kV Substation Project • Grid Protection Relay Replacement Project (Phase 3) • Lapu-Lapu 230 kV Substation Project • Laray 230 kV Substation Project • Nivel Hills 230 kV Substation Project • Visayas Regional PCB Replacement Project 1 • Visayas Substation Reliability Project 2 • Visayas Substation Upgrading Project 2 • Visayas Substation Upgrading Project 3 • Visayas Voltage Improvement Project 2	• Babatngon – Palo 230 kV Transmission Line Project (138 kV energized) • Bool 138 kV Substation Project • Calbayog – Allen Transmission Line Project • Cebu – Bohol 230 kV Interconnection Project • Cebu – Leyte 230 kV Interconnection Lines 3 and 4 Project • Corella – Ubay 138 kV Line 2 Stringing Project • Grid Protection Relay Replacement Project (Phase 3) • Luzon – Visayas HVDC Bipolar Operation Project • Sta. Rita – Quinapundan 69 kV Transmission Line • Sumangga 138 kV Substation Project • Tabango – Biliran 69 kV Transmission Line Project • Visayas 69 kV Transmission Line Upgrading Project • Visayas Connection Requirements for Power Plant Project 1 • Visayas Connection Requirements for Power Plant Project 2 • Visayas Mobile Capacitor Bank Project • Visayas Regional PCB Replacement Project 1 • Visayas Substation Upgrading Project 1 • Visayas Substation Upgrading Project 2 • Visayas Substation Upgrading Project 3 • Visayas Voltage Improvement Project 2	• Amlan – Dumaguete 138 kV Transmission Line Project • Banga 138 kV Substation Project • Barotac Viejo – Natividad 69 kV Transmission Line Project • Barotac Viejo – Unidos 230 kV Transmission Line Project • Granada 230 kV Substation Project • Grid Protection Relay Replacement Project (Phase 3) • La Carlota 138 kV Substation Project • Mandurriao 138 kV Substation Project • Nabas – Caticlan – Boracay Transmission Line Project • Panay – Guimaras 138 kV Interconnection Project • Panay – Guimaras 138 kV Interconnection Line 2 Project • Tigbauan 138 kV Substation Project • Visayas 69 kV Transmission Line Upgrading Project • Visayas Connection Requirements for Power Plant Project 1 • Visayas Connection Requirements for Power Plant Project 2 • Visayas Mobile Capacitor Bank Project • Visayas Regional PCB Replacement Project 1 • Visayas Substation Reliability Project 2 • Visayas Substation Upgrading Project 2 • Visayas Substation Upgrading Project 3 • Visayas Voltage Improvement Project 2	• Butuan – Placer 138 kV Transmission Line 2 Project • Claver – Siargao Interconnection Project (CSIP) • Eastern Mindanao 230 kV Transmission Line Project Phase 1 • Eastern Mindanao Voltage Improvement Project • Malaybalay 138 kV Substation Project • Mindanao Substation Expansion 3 Project • Mindanao Substation Expansion 4 Project • Mindanao Substation Rehabilitation Project • Mindanao Substation Upgrading 2 Project • Nasipit Substation Bus-in Project • San Francisco-Tago 138 kV Transmission Line Project • Villanueva-Kinamlutan 230 kV Transmission Line Project

Northwestern Mindanao 230/138 kV Backbone Project for Resiliency, System Reliability, and Island Interconnection	Southeastern Mindanao 230/138 kV Backbone Project for Resiliency, System Reliability, and Island Interconnection	Southwestern Mindanao 230/138 kV Backbone Project for Resiliency, System Reliability, and Island Interconnection

- Agus 6 – Kiwalan – Lugait 69 kV Transmission Line Project
- Grid Protection Relay Replacement Project (Phase 3)
- Laguindingan 230 kV Substation Project
- Lala – Naga Min – Zamboanga 230 kV Transmission Line Project
- Mindanao Substation Expansion 3 Project
- Mindanao Substation Expansion 4 Project
- Mindanao Substation Rehabilitation Project
- Mindanao Substation Upgrading 2 Project
- Naga Min – Salug 138 kV TL Project
- Opol Substation Bus-in Project
- Polanco – Oroquieta 138 kV Transmission Line Project (Initially energized at 69 kV)
- Tigbao 138 kV Substation Project
- Tumaga 230 kV Substation Project
- Villanueva – Kinamlutan 230 kV Transmission Line Project
- Zamboanga Peninsula Voltage Improvement Project
- Zamboanga – Basilan Interconnection Project
- Bunawan – Tagum (New Maco) 230 kV Transmission Line Project
- Eastern Mindanao Voltage Improvement Project
- Grid Protection Relay Replacement Project (Phase 3)
- Kabacan 138 kV Substation Project
- Maco – Mati 138 kV Transmission Line Project
- Maco – Tagum 69 kV Transmission Line Project
- Mindanao Substation Expansion 3 Project
- Mindanao Substation Expansion 4 Project
- Mindanao Substation Rehabilitation Project
- Mindanao Substation Upgrading 2 Project
- Tupi (Koronadal) 138 kV Substation Project
- Kabacan 138 kV Substation Project
- Mindanao Substation Expansion 4 Project
- Mindanao Substation Rehabilitation Project
- Sultan Kudarat – Pinaring 69 kV Transmission Line and Upgrading Project
- Sultan Kudarat – Tacurong 230 kV Transmission Line Project (initially energized at 138 kV)
- Tacurong – Kalamansig 69 kV Transmission Line Project

Appendix 2
COMMITTED POWER PLANTS

Legend:
①/②/③/④ – Included under GEAP Round 1, 2, 3 or 4
Ⓢ – Project has undergone System Impact Study (SIS)
Ⓔ – Project is exempted from System Impact Study (SIS)
Ⓕ – Project has submitted/undergone Facility Study (FS)
Ⓟ - Project with phased connection arrangements
* - Awaiting ERC approval

Table A2.1: Luzon Committed Power Projects

Proposed Major Power Plants	Capacity (MW)	Target Commercial Operation	Connection Point	Associated Transmission Project	ETC/ Completion Date
COAL					
Masinloc Power Plant - Unit 4 ⓈⒻ	350.000	May 2026	Palauig 500 kV SS	Palauig 500 kV SS	Jun 2036
Masinloc Power Plant - Unit 5 ⓈⒻ	350.000	Dec 2026	Palauig 500 kV SS	Palauig 500 kV SS	Jun 2036
Mariveles Coal-Fired Power Project Phase I - Unit 5 Ⓢ	300.000	Jun 2029	Mariveles 500 kV SS	Marilao 500 kV SS	Mar 2038
Mariveles Coal-Fired Power Project Phase I - Unit 6 Ⓢ	300.000	Dec 2029	Mariveles 500 kV SS	Marilao 500 kV SS	Mar 2038
Atimonan One Energy Inc. Power Plant Project Phase 1 - Unit 1	600.000	Feb 2030	Pagbilao 500 kV SS	Expansion of Pagbilao 500 kV SS (Required PCB for connection is component of Pagbilao – Tayabas 500 kV TL)	TBD
Atimonan One Energy Inc. Power Plant Project Phase 1 - Unit 2	600.000	Feb 2030	Pagbilao 500 kV SS	Expansion of Pagbilao 500 kV SS (Required PCB for connection is component of Pagbilao – Tayabas 500 kV TL)	TBD
Total	**2,500.000**				
OIL-BASED					
Capas Bunker C-Fired DPP Ⓢ	11.040	Mar 2026	Tap connection along Concepcion 69 kV TL (TARELCO II Facility)	None	N/A
Total	**11.040**				
NATURAL GAS					
Batangas Combined Cyle Power Plant - Phase 2 Ⓕ	440.000	Feb 2028	Ilijan 500 kV SS	- Expansion of Ilijan 500 kV Switchyard and Ilijan 500 kV Upgrading of its PCB to 50 kA Interrupting Capacity - Pinamucan–Tuy 500 kV TL - Tuy–Silang 500 kV TL - Taguig–Silang 500 kV TL	2031 Jun 2035 Dec 2034 Jun 2038
Energy World Corporation 650 MW Gas Fired Combined Cycle Power Plant Ⓢ	650.000	TBD	Pagbilao 230 kV SS	Pagbilao 500 kV SS (Required PCB for connection is component of Pagbilao 500 kV SS)	Jun 2036
Total	**1,090.00**				
HYDRO					
Colasi Hydroelectric Power Project Ⓔ	4.000	Jan 2026	Embedded (CANORECO Facility)	None	-
Likud 2 Hydroelectric Power Project Ⓔ	0.560	Jan 2026	Embedded (IFELCO Facility)		-
Dipalo Hydroelectric Power Project ⒺⒻ	4.150	Feb 2026	Tap connection along Nagsaag-Umingan 69 kV TL	None	-
Dupinga Hydroelectric Power	4.680	Feb 2026	Tap connection along Cabanatuan 69 kV TL		
Biyao Hydroelectric Power Project	0.800	Apr 2026	KAELCO Facility	-	-
Tumauini Hydroelectric Power Project Ⓢ	11.300	May 2026	Tap connection along Tuguegarao 69 kV TL	None	N/A
Kapangan Hydroelectric Power Project ①ⓈⒻ	60.000	Jun 2027	Bacnotan 69 kV SS	(Required PCB for connection is component of North Luzon SS Upgrading (NLSUP)	-
Ibulao 1 Hydroelectric Power Project Ⓢ	7.600	Oct 2027	Tap connection along Bayombong 69 kV TL	None	N/A

Proposed Major Power Plants	Capacity (MW)	Target Commercial Operation	Connection Point	Associated Transmission Project	ETC/ Completion Date
Kennon Hydroelectric Power Project Ⓔ	5.000	Dec 2027	Tap connection along Bauang 69 kV TL	None	N/A
Panicuan Hydroelectric Power Project Ⓔ	3.000	Dec 2027	Embedded	None	N/A
Tubay 3 Hydroelectric Power Project Ⓔ	1.000	Dec 2028	Embedded	None	N/A
Asin-Hungduan Hydroelectric Power Project ⑤Ⓕ	9.800	2029	Tap connection along Bayombong 69 kV TL	None	N/A
Wawa Pumped Storage 1 Hydroelectric Power Project ③⑤	600.000	Oct 2030	San Mateo 230 kV SS	San Mateo 230 kV SS (Required PCB for connection is component of San Mateo 230 kV SS)	Jun 2038
Mariveles Hydroelectric Power Project ⒺⒻ	0.600	TBD	Tap connection along Limay 69 kV TL	None	N/A
Total	**712.490**				
BIOMASS					
1.2 MW Biogas Power Plant Project Ⓔ	1.200	Apr 2026	Embedded ISELCO II Facility (Mexico)	None	N/A
1.68-MW Biomass Power Plant Project (Phase 1) ⑤	1.680	Oct 2026	Tap connection along Mexico 69 kV TL	None	N/A
3.402-MW Biomass Power Plant Project (Phase 2) ⑤	3.402	Mar 2027	Tap connection along Mexico kV TL	None	N/A
Total	**6.282**				
SOLAR					
3 Angels And 2 Princess Rice Mill Solar PV System ②Ⓔ	0.280	Jan 2026	Embedded	None	-
Hermosa Solar Power Project Ⓔ	20.622	Jan 2026	Hermosa 69 kV SS	(Required PCB for connection is component of LCRPP 3)	N/A
Ilocos Norte Solar Power Project Ⓕ	87.594	Jan 2026	-	-	-
OMG Rice Mill #3 Solar PV System ②Ⓔ	0.150	Jan 2026	Embedded	None	-
VCCR Global Enterprises Solar PV System ② Ⓔ	0.900	Jan 2026	Embedded	None	-
Warehouse #1 C Teknik Compound Solar PV System ②Ⓔ	0.060	Jan 2026	Embedded	None	-
Warehouse #18 C Teknik Compound Solar PV System ②Ⓔ	0.150	Jan 2026	Embedded	None	-
Warehouse #19 C Teknik Compound Solar PV System ②Ⓔ	0.150	Jan 2026	Embedded	None	-
Warehouse #2 C Teknik Compound Solar PV System ②Ⓔ	0.090	Jan 2026	Embedded	None	-
Warehouse #20 C Teknik Compound Solar PV System ②Ⓔ	0.130	Jan 2026	Embedded	None	-
Warehouse #3 C Teknik Compound Solar PV System ②Ⓔ	0.130	Jan 2026	Embedded	None	-
Warehouse #4 C Teknik Compound Solar PV System ②Ⓔ	0.130	Jan 2026	Embedded	None	-
Warehouse #5 C Teknik Compound Solar PV System ②Ⓔ	0.130	Jan 2026	Embedded	None	-
Warehouse #6 C Teknik Compound Solar PV System ②Ⓔ	0.130	Jan 2026	Embedded	None	-
Warehouse No. 1 Geomax Compound Solar PV System ②Ⓔ	0.140	Jan 2026	Embedded	None	-
Warehouse No. 2 Geomax Compound Solar PV System ②Ⓔ	0.180	Jan 2026	Embedded	None	-
Warehouse No. 3 Geomax Compound Solar PV System ②Ⓔ	0.180	Jan 2026	Embedded	None	-
Warehouse No. 4 Geomax Compound Solar PV System ②Ⓔ	0.100	Jan 2026	Embedded	None	-
Warehouse No. B4 Geomax Compound Solar PV System ②Ⓔ	0.180	Jan 2026	Embedded	None	-
Warehouse No. B7 Geomax Compound Solar PV System ②Ⓔ	0.100	Jan 2026	Embedded	None	-
Warehouse No. B8 Geomax Compound Solar PV System ②Ⓔ	0.050	Jan 2026	Embedded	None	-
Warehouse No. C2 Geomax Compound Solar PV System ②Ⓔ	0.180	Jan 2026	Embedded	None	-
Warehouse No. C5 Geomax Compound Solar PV System ②Ⓔ	0.200	Jan 2026	Embedded	None	-
Warehouse No. C6 Geomax Compound Solar PV System ②Ⓔ	0.200	Jan 2026	Embedded	None	-

Proposed Major Power Plants	Capacity (MW)	Target Commercial Operation	Connection Point	Associated Transmission Project	ETC/ Completion Date
Warehouse No. C7 Geomax Compound Solar PV System ②Ⓔ	0.200	Jan 2026	Embedded	None	-
Warehouse No. C8 Geomax Compound Solar PV System ②Ⓔ	0.180	Jan 2026	Embedded	None	-
Warehouse No. E2 Geomax Compound Solar PV System ②Ⓔ	0.230	Jan 2026	Embedded	None	-
Warehouse No. E3 Geomax Compound Solar PV System ②Ⓔ	0.200	Jan 2026	Embedded	None	-
Warehouse No. E4 Geomax Compound Solar PV System ②Ⓔ	0.230	Jan 2026	Embedded	None	-
Warehouse No. E5 Geomax Compound Solar PV System ②Ⓔ	0.240	Jan 2026	Embedded	None	-
Warehouse No. F1 Geomax Compound Solar PV System ②Ⓔ	0.130	Jan 2026	Embedded	None	-
Warehouse No. F2 Geomax Compound Solar PV System ②Ⓔ	0.140	Jan 2026	Embedded	None	-
Warehouse No. F3 Geomax Compound Solar PV System ②Ⓔ	0.150	Jan 2026	Embedded	None	-
Warehouse No. F4 Geomax Compound Solar PV System ②Ⓔ	0.130	Jan 2026	Embedded	None	-
Bolbok 2 Solar Power Project ②Ⓢ Ⓕ	75	Feb 2026	Tuy 69 kV SS	Tuy 500/230 kV SS (Stage 1) South Luzon 230 kV SS Upgrading 2 (Proposed upgrading of the Tuy 100 MVA, 230/69 kV transformer to 300 MVA)	Jun 2027
CASURECO IV Solar Power Project	2.400	Feb 2026	-	-	-
Olongapo Solar Power Project Ⓢ	172.20	Feb 2026	Castillejos 230 kV SS	Castillejos 230 kV SS Western Luzon 500 kV Backbone (Stage 2) Required PCB for connection is component of LCRPP 3)	Dec 2025 2028
Pagbilao 1 Solar Power Project ②Ⓢ Ⓕ	70.500	Feb 2026	Pagbilao 230 kV SS	Expansion of Pagbilao 230 kV SS (component of LCRPP - 2)	Jan 2035
Pagbilao 2 Solar Power Project ②Ⓢ Ⓕ	27.000	Feb 2026	Tap connection along Pagbilao 230 kV SS	Expansion of Pagbilao 230 kV SS	Jan 2035
San Pablo Solar Power Project Phase 1 ②Ⓢ	49.400	Feb 2026	San Pablo SwS (connected to Tuguegarao 69 kV SS)	Development of San Pablo 69 kV SwS	N/A
Terra Solar Power Project Ⓢ	450.000	Feb 2026	San Isidro 500 kV SS	San Isidro 500 kV SS HVE Termination Equipment	Aug 2040
Terra Solar Power Project	400.000	Feb 2026	San Isidro 500 kV SS	San Isidro 500 kV SS HVE Termination Equipment	Aug 2040
Terra Solar Power Project	467.857	Feb 2026	San Isidro 500 kV SS	San Isidro 500 kV SS HVE Termination Equipment	Aug 2040
Terra Solar Power Project	467.857	Feb 2026	San Isidro 500 kV SS	San Isidro 500 kV SS HVE Termination Equipment	Aug 2040
Agrosolis Solar Power Project Ⓔ	3.652	Mar 2026	Tap connection along Concepcion 69 kV SS	None	N/A
Binalonan Solar Power Project (Formerly: San Manuel 1 Solar Power Project) ②Ⓢ Ⓕ	80.100	Mar 2026	San Manuel 69 kV SS	North Luzon 230 kV SS Upgrading (Required PCB for connection is component of NLSUP 2)	2027
Bolbok 1 Solar Power Project (Formerly: Tuy Batangas 4 Solar Power Project) ②Ⓢ Ⓕ	50.000	Mar 2026	Tuy 69 kV SS	Tuy 500/230 kV SS (Stage 1) South Luzon 230 kV SS Upgrading 2 Proposed upgrading of the Tuy 100 MVA, 230/69 kV transformer to 300 MVA	Jun 2027
Bugallon Solar Power Project Ⓢ Ⓕ	530.400	Mar 2026	Bolo 500 kV SS	Expansion of Bolo 500 kV SS (Required PCB for connection is component of LCRPP 3)	Oct 2027
Cordon Solar Power Project ②Ⓢ	49.000	Mar 2026	Tap connection along Santiago 69 kV TL	None	N/A
GIGA ACE 8 Solar Power Project Ⓢ	237.600	Mar 2026	Botolan 230 kV SS	Expansion of Botolan 230 kV SS	Jun 2028
Lumbangan Solar Power Project ④Ⓢ Ⓕ	90	Mar 2026	Tuy 69 kV SS	Tuy 500/230 kV SS (Stage 1) Upgrading of Tuy 230/69 kV Transformer from 100 MVA to	Jun 2027

Proposed Major Power Plants	Capacity (MW)	Target Commercial Operation	Connection Point	Associated Transmission Project	ETC/ Completion Date
Luntal Solar Power Project ④Ⓢ℗	50.1	Mar 2026	Tap connection along Tuy 69 kV SS	300 MVA (component of SLSUP 2) (Required PCB for connection is component of LCRPP 3) Tuy 500/230 kV SS Project (Stage 1) Upgrading of Tuy 230/69 kV Transformer from 100 MVA to 300 MVA	Jun 2027
San Manuel Solar Power Project Ⓢ	69.900	Mar 2026	San Manuel 69 kV SS	North Luzon SS Project 2 specifically the upgrading of San Manuel Transformer from 1x100 MVA 230/69 kV to 2x300 MVA 230/69 kV Transformers North Luzon SS 2 specifically the upgrading of San Manuel Transformer from 1x100 MVA 230/69 kV to 2x300 MVA 230/69 kV Transformers (Required PCB for connection is component of LCRPP 3)	Dec 2027
Bulacan 2 Solar Power Project Ⓢ℮	17.185	Apr 2026	San Rafael 69 kV TL (Embedded)	None	N/A
Capas Solar Power Project Ⓢ	22.048	Apr 2026	Concepcion 69 kV SS	Upgrading of Concepcion 230/69 kV Transformer from 2x100 MVA to 2x300 MVA (component of NLSUP 2) (Required PCB for connection is component of NLSUP 2)	Dec 2027
Sta. Barbara 1 Solar Power Project ②Ⓢ℗	90.000	Apr 2026	Balingueo 69 kV SS	Expansion of Balingueo 69 kV SS (Required PCB for connection is component of LCRPP 3)	Jan 2030
Arayat 3A Solar Power Project ②Ⓢ℗	30.000	May 2026	Tap connection along Mexico-Clark 69 kV TL	None	N/A
Bugallon Solar Power Project ②℗	18.560	May 2026	Embedded	With Ongoing SIS Application HVE Termination Requirement	-
Limbauan Solar Power Project ②Ⓢ	28.000	May 2026	Tap connection along Tuguegarao 69 kV TL	None	N/A
Pasuquin-Burgos 100MW Solar Power Project ②Ⓢ	49.000	Jun 2026	Tap connection along Laoag 115 kV TL	Expansion of Laoag 115 kV SS (Required PCB for connection is component of LCRPP 4)	2032
Greener Solar Power and Electric Motor, Inc. - Balanok 3 Solar Farm ℮	2.800	Jul 2026	Tap connection along Meralco thru 34.5 kV TL	None	N/A
Labrador Solar Power Project ②Ⓢ℗	120.000	Oct 2026	Bolo 230 kV SS	Expansion of Bolo 230 kV SS (Required PCB for connection is component of LCRPP 3)	-
Talugtug Solar Power Project ①Ⓢ℗	99.980	Oct 2026	Tap connection along Nagsaag 69 TL	Nagsaag–Tumana 69 kV TL	Jan 2027
Batangas Rollforming Plant Solar PV System ②℮	0.090	Dec 2026	Embedded	None	N/A
Calamba Rollforming Plant Solar PV System ②℮	0.45	Dec 2026	Embedded	None	N/A
Development of 50MW Ground Mounted Solar Power Project ②℮	50.000	Dec 2026	-	-	-
Ixus Bugallon Solar Power Project ②Ⓢ℗	274.735	Dec 2026	Tap connection along 3BEC 500 kV TL	Bauang–La Trinidad 230 kV TL Upgrading San Fabian 230 kV SS Western Luzon 500 kV Backbone (Stage 2) Proposed Bugallon 500 kV SS	Jul 2036 Dec 2035 Jul 2038
La Union Rollforming Plant Solar PV System ②℮	0.200	Dec 2026	Embedded	None	N/A
Linglingay Solar Power Project ②Ⓢ	70.140	Dec 2026	Gamu 69 kV SS	Expansion of NGCP's Gamu 69 kV SS (Required PCB for connection is component of LCRPP 3)	N/A
NKS One Floating Solar Power Project ②Ⓢ℗	90.000	Dec 2026	Lumban 230 kV SS	Expansion of NGCP's Lumban 230 kV SS (Required PCB for connection is component of LCRPP 3)	N/A
OMG Rice Mill #1 Solar PV System ②℮	0.060	Dec 2026	Embedded	None	N/A
OMG Rice Mill #2 Solar PV System ②℮	0.150	Dec 2026	Embedded	None	N/A

Proposed Major Power Plants	Capacity (MW)	Target Commercial Operation	Connection Point	Associated Transmission Project	ETC/ Completion Date
Pampanga Rollforming Plant Solar PV System ②Ⓔ	0.18	Dec 2026	Embedded	None	N/A
PAVI Green Naga Solar Power Project ②Ⓢ Ⓕ	40.400	Dec 2026	Naga 69 kV SS	Expansion of NGCP's Labo 69 kV SS (Required PCB for connection is component of LCRPP 3)	TBD
RKR Rice Mill #1 Solar PV System ②Ⓔ	0.090	Dec 2026	Embedded	None	N/A
RKR Rice Mill #2 Solar PV System ②Ⓔ	0.090	Dec 2026	Embedded	None	N/A
RKR Rice Mill #3 Solar PV System ②Ⓔ	0.100	Dec 2026	Embedded	None	N/A
San Pablo Solar Power Project ②	79.040	Dec 2026	San Pablo SwS (connected to Tuguegarao)	Development of San Pablo 69 kV SwS (Required PCB for connection is component of Tuguegara-Enrile 69 kV TL)	N/A
Sapang Balen Solar 2 Power Project ④Ⓢ	246.604	Dec 2026	Magalang 230 kV SS	Magalang 230 kV SS (Required PCB for connection is component of Magalang 230 kV SS)	Dec 2034
Sunmade Agri 1 Solar PV System ②Ⓔ	0.280	Dec 2026	Embedded	None	N/A
Sunmade Agri 2 Solar PV System ②Ⓔ	0.168	Dec 2026	Embedded	None	N/A
Sunmade Agri 3 Solar PV System ②Ⓔ	0.042	Dec 2026	Embedded	None	N/A
Sunmade Agri 4 Solar PV System ②Ⓔ	0.080	Dec 2026	Embedded	None	N/A
Sunmade Agri 5 Solar PV System ②Ⓔ	0.150	Dec 2026	Embedded	None	N/A
Warehouse #22 C Teknik Compound Solar PV System ②Ⓔ	0.120	Dec 2026	Embedded	None	N/A
Warehouse #23 C Teknik Compound Solar PV System ②Ⓔ	0.130	Dec 2026	Embedded	None	N/A
Warehouse #24 C Teknik Compound Solar PV System ②Ⓔ	0.140	Dec 2026	Embedded	None	N/A
Warehouse #25 C Teknik Compound Solar PV System ②Ⓔ	0.120	Dec 2026	Embedded	None	N/A
Warehouse #26 C Teknik Compound Solar PV System ②Ⓔ	0.140	Dec 2026	Embedded	None	N/A
Warehouse #27 C Teknik Compound Solar PV System ②Ⓔ	0.230	Dec 2026	Embedded	None	N/A
Warehouse No. C3 Geomax Compound Solar PV System ②Ⓔ	0.100	Dec 2026	Embedded	None	N/A
Warehouse No. C4 Geomax Compound Solar PV System ②Ⓔ	0.090	Dec 2026	Embedded	None	N/A
YH Pangasinan Solar Power Project Ⓢ	6.900	Dec 2026	PANELCO III Facility	-	-
Opus Solar Power Project ②Ⓢ Ⓕ	149.950	Jan 2027	Pinili 230 kV SS	Pinili 230 kV SS Expansion of Pinili 230 kV SS South Luzon 230 kV SS Upgrading	Aug 2027
PAVI Green San Vicente Solar Power Project Project Ⓢ	28.600	Feb 2027	Labo 69 kV SS	Expansion of NGCP's Labo 69 kV SS (Required PCB for connection is component of LCRPP 3)	Aug 2027
Sapang Balen Solar 1 Power Project Ⓢ Ⓕ	158.400	Feb 2027	Tap connection along Magalang 230 kV TL	Magalang 230 kV SS	Dec 2034
Terra Solar Project	714.286	Feb 2027	San Isidro 500 kV SS	San Isidro 500 kV SS	Aug 2040
YH Camarines Norte Solar Power Plant Ⓔ	8.000	Jan 2028	CANORECO Facility	None	N/A
Nueva Era Solar Power Project	87.500	Jan 2028	-	-	-
Tumingad 2 Solar Power Project	0.120	Dec 2026	Odiongan, Romblon	None	N/A
Total	**5,942.390**				
WIND					
Alabat Wind Power Project ②Ⓢ	62.400	2026	Tap connection along Gumaca 69 kV TL	None	N/A
Calatagan Wind Power Project ①Ⓢ	30.000	2026	Tuy 230 kV SS	Tuy 500/230 kV SS - Stage 1	Jun 2027
Tanay Wind Power Project ②Ⓢ Ⓕ	128.000	Mar 2026	Baras 230 kV SS	Baras 500 kV SS	Sep 2038
Talim Wind Power Project Ⓢ	218.750	Jun 2026	Taytay 115 kV TL (Embedded)	Option 1: None Option 2: With the Project as the only additional plant to the existing generation capacity in South Luzon. - Taguig EHV SS - Taguig-Taytay 230 kV TL	Sep 2026 Jun 2037
Caparispisan II Wind Power Project ①Ⓢ	70.000	Jul 2026	Tap connection along Laoag 115 kV TL	None	N/A
Pangasinan CW 2 WPP ②Ⓢ	80.000	Jul 2026	Labrador 230 kV SS	Expansion of Labrador 230 kV SS	2027-2033

Proposed Major Power Plants	Capacity (MW)	Target Commercial Operation	Connection Point	Associated Transmission Project	ETC/ Completion Date
Balaoi and Caunayan Wind Power Project ①Ⓔ	160.000	Dec 2026	Laoag 115 kV SS	Luzon Primary Expansion Substation Upgrading (LPESUP)	Completed
Quezon Wind Power Project ②Ⓢ	239.985	Dec 2026	Sta. Maria 500 kV SS	Sta. Maria 500 kV SS (Required PCB for connection is component of LCRPP 4)	Sep 2035
Sembrano Wind Power Project Ⓢ	93.750	Dec 2026	Taytay 115 kV TL (Embedded)	None	N/A
Camarines Sur Wind Power Project ②Ⓢ	49.999	Dec 2026	Tap connection along Naga 69 kV TL	Upgrading of Naga–Libmanan Wind tapping point segment of Naga–Libmanan 69 kV (South Luzon 69 kV TL Upgrading)	TBD
Kalayaan 2 Wind Power Project ④Ⓢ	100.800	Dec 2026	San Juan 230 kV SS	Taguig–Taytay 230 kV TL (Required PCB for connection is component of LCRPP 3)	Jun 2037
Camarines Sur CW Wind Power Project Ⓢ	50.000	Dec 2026	Tap connection along Naga 69 kV TL	Upgrading of Naga–Libmanan Wind tapping point segment of Naga–Libmanan 69 kV (South Luzon 69 kV TL Upgrading)	TBD
Bataan-Zambales CW Wind Power Project②Ⓢ	100.000	Dec 2029	Balsik 230 kV SS	Western Luzon 500 kV Backbone Stage 2	N/A
Quezon North Wind Power Project (formerly Isla Wind Power Project) ②④Ⓢ Ⓔ	230.000	Dec 2029	Sta. Maria 500 kV SS	Sta. Maria 500 kV SS (Required PCB for connection is component of Sta Maria SS)	Sep 2035
Total	**1,613.684**				
ENERGY STORAGE SYSTEM (ESS)					
INTEGRATED RENEWABLES WITH ENERGY STORAGE SYSTEM (IRESS)					
Bay Energy Storage Project Ⓢ	20.000	Jan 2026	Makban 500 kV SS	-	N/A
Terra Solar Project BESS (for Phase 1 Sub A) Ⓢ	300.007	Feb 2026	San Isidro 500 kV SS	San Isidro 500 kV SS HVE Termination Equipment	Aug 2040
Terra Solar Project BESS (for Phase 1 Sub B)	92.052	Feb 2026	-	-	2031
Terra Solar Project BESS (for Phase 1 Sub C)	92.052	Feb 2026	-	-	2031
Terra Solar Project BESS for Phase 1 Sub D)	92.052	Feb 2026	-	-	2031
Terra Solar Project BESS (for Phase 2)	300.000	Feb 2027	-	-	2034
STAND ALONE BESS					
Magapit Battery Energy Storage System Ⓢ	20.000	Jan 2026	Lal-lo (Magapit) 230 kV SS	Tuguegarao-Lal-lo (Magapit 230 kV) TL Lal-lo 230/69 kV SS	Dec 2026 TBD
Magapit Battery Energy Storage System Phase 2 Ⓢ	20.000	Jan 2026	Lal-lo (Magapit) 69 kV SS	Tuguegarao-Lal-lo (Magapit 230 kV) TL	Dec 2026
Binga Battery Energy Storage System Ⓔ	40.000	Jun 2026	Binga 69 kV SS	(Required PCB for connection is component of LCRPP 1)	N/A
Magat Battery Energy Storage System Phase 2 Ⓢ	16.000	Jun 2026	Magat 230 kV SS	Santiago-Magat 230 kV TL Reconductoring	Aug 2035
Mexico Battery Energy Storage System Phase 2 Ⓢ	20.000	Jun 2026	Mexico 69 kV SS	None	N/A
Mexico SJM Battery Energy Storage System Ⓢ	20.000	Jul 2026	Mexico 69 kV SS	Expansion of NGCP's Mexico 69 kV SS (Required PCB for connection is component of LCRPP 3)	N/A
Mexico Battery Energy Storage System Ⓢ	50.000	Jul 2026	Mexico 69 kV SS	None	N/A
Angat Battery Energy Storage System Project	20.000	TBD	-	-	-
Bacnotan Battery Energy Storage System	40.000	TBD	-	-	-
Bauang Battery Energy Storage System Project Ⓢ	40.000	TBD	Bauang 69 kV SS	North Luzon SS Upgrading 2 HVE Termination Equipment	Dec 2027
Bayombong Battery Energy Storage System	40.000	TBD	-	-	-
BCCP Limay Battery Energy Storage System Project Phase 2	20.000	TBD	-	-	-
Bolo Battery Energy Storage System	40.000	TBD	-	-	-
Cabanatuan Battery Energy Storage System	40.000	TBD	-	-	-
Calamba Battery Energy Storage System	40.000	TBD	-	-	-

Proposed Major Power Plants	Capacity (MW)	Target Commercial Operation	Connection Point	Associated Transmission Project	ETC/ Completion Date
Daraga Battery Energy Storage System Ⓢ	40.000	TBD	Daraga 69 kV SS	None	N/A
Dasmarinas Battery Energy Storage System	40.000	TBD	-	-	-
Gumaca Battery Energy Storage System	40.000	TBD	-	-	-
Hermosa Battery Energy Storage System Ⓢ	40.000	TBD	Hermosa 69 kV SS	North Luzon SS Upgrading North Luzon SS Upgrading 3	Dec 2026 Dec 2035
Ilijan Battery Energy Storage System	40.000	TBD	-	-	-
La Trinidad Battery Energy Storage System	40.000	TBD	-	-	-
Labo Battery Energy Storage System	40.000	TBD	-	-	-
Labrador Battery Energy Storage System	40.000	TBD	-	-	-
Laoag Battery Energy Storage System Project Ⓢ	40.000	TBD	Laoag 69 kV SS	North Luzon SS Upgrading 2	Dec 2027
Mahabang Parang Battery Energy Storage System	40.000	TBD	Batangas 69 kV SS	-	-
Naga Battery Energy Storage System	40.000	TBD	-	-	-
Navotas Battery Energy Storage System Project Ⓢ	40.000	TBD	Navotas 115 kV SS	Navotas 230/115 kV SS and its associated 230 kV TL	Dec 2032
Pagbilao Battery Energy Storage System	40.000	TBD	-	-	-
San Jose del Monte Battery Energy Storage System	40.000	TBD	-	-	-
San Rafael Battery Energy Storage System Phase	20.000	TBD	-	-	-
San Rafael Battery Energy Storage System Ⓢ	20.000	TBD	San Rafael 69 kV SS	Upgrading of the existing San Rafael 100 MVA 230/69 kV T02 transformer to 300 MVA	Completed
Sual Battery Energy Storage System	60.000	TBD	-	-	-
Subic Battery Energy Storage System	40.000	TBD	-	-	-
Tuguegarao Battery Energy Storage System	40.000	TBD	-	-	-
Urdaneta Battery Energy Storage System	40.000	TBD	-	-	-
Total	**2,142.163**				
TOTAL COMMITTED	**14,018.049**				
TOTAL COMMITTED w/o BESS	**11,875.886**				

Table A2.2: Visayas Committed Power Projects

Proposed Major Power Plants	Capacity (MW)	Target Commercial Operation	Connection Point	Associated Transmission Project	ETC/ Completion Date
COAL					
Palm Concepcion Coal-Fired Power Plant Unit II Ⓢ	135.000	Dec 2030	Concepcion 138 kV SS	PCB in Concepcion already existing	N/A
Total	**135.000**				
OIL-BASED					
Sulzer Diesel Power Plant Ⓢ	5.500	Jun 2027	Lapu-lapu 69 kV SS	None	N/A
Caterpillar Diesel Power Plant Ⓢ	2.000	Jun 2027	Lapu-lapu 69 kV SS	None	N/A
Cummins Diesel Power Plant Ⓢ	1.000	Jun 2027	Lapu-lapu 69 kV SS	None	N/A
Total	**8.500**				
GEOTHERMAL					
Bago Binary Geothermal Power Plant (formerly Northern Negros Geothermal Project) ③Ⓢ	5.645	Dec 2026	Tap connection along Bacolod 138 kV TL	None	N/A
Total	**5.645**				
HYDRO					
Igbulo (Bais) Hydroelectric Power Plant Project Ⓢ	8.100	2026	Tap connection along Sta. Barbara 69 kV TL	None	N/A
Bao Hydroelectric Power Plant Project Ⓔ	2.000	2026	Embedded	None	N/A
Binahaan Hydroelectric Power Plant Project Ⓔ	4.570	Dec 2027	Embedded	None	N/A
Binalbagan 1 Hydroelectric Power	5.300	2026		None	N/A
Total	**19.970**				
BIOMASS					

Proposed Major Power Plants	Capacity (MW)	Target Commercial Operation	Connection Point	Associated Transmission Project	ETC/ Completion Date
8 MW Biomass Cogeneration Plant (Expansion Project)	8.000	May 2026	Embedded	None	N/A
70-MW Biomass Cogeneration Plant (30-MW Expansion Project) ⑤Ⓕ	30.000	May 2026	Tap connection along Cadiz 69 kV TL	None	N/A
3 MW Biomass Cogeneration Power Plant Project (3 MW Phase 1) ⑤	3.000	TBD	Tap connection along Mabinay 69 kV TL	None	N/A
3 MW Biomass Cogeneration Plant Project (Phase 2: 3MW) ⑤	3.000	TBD	Tap connection along Mabinay 69 kV TL	None	N/A
Total	**44.000**				
SOLAR					
Taft Solar Power Project ⑤	17.500	Jan 2026	Tap connection along Paranas 69 kV TL	Visayas SS Upgrading Project 2	Jun 2028
Vista Alegre Solar Power Project ④⑤	50.100	Jan 2026	Bacolod 69 kV SS	Visayas Connection Requirements for Power Plants 2 (Expansion of Bacolod 69 kV SS: 4-69 kV PCB)	Mar 2032
1MW SAMELCO - Calbayog Solar Power Project Ⓔ	1.050	Mar 2026	Calbayog 69 kV SS (Embedded)	None	N/A
1MW SAMELCO II - Paranas Solar Power Project ⒺⒻ	1.050	Mar 2026	Tap connection along Paranas 69 kV TL	None	N/A
San Isidro Solar Power Project Project (Phase 1) ⑤Ⓕ	112.00	Apr 2026	Catmon (Tugas) 230 kV Switching Station	Cebu-Leyte 230 kV Interconnection Lines 3 and 4 (final connection) (Catmon 230 kV SwS: Expansion of 2-230 kV PCB) - same requirement as phase 2	Stage 1: Dec 2031 Stage 2: Apr 2033 Stage 3: Jun 2035
San Isidro Solar Power Project Project (Phase 2) ⑤Ⓕ	112.00	Oct 2026	Catmon (Tugas) 230 kV SwS	Cebu-Leyte 230 kV Interconnection Lines 3 and 4 (final connection) (Catmon 230 kV SwS: 2-230 kV PCB) - same requirement as Phase 1	Stage 1: Dec 2031 Stage 2: Apr 2033 Stage 3: Jun 2035
Bacolod Solar Power Project ⑤Ⓕ	117.120	Jun 2026	Bacolod 138 kV SS	Visayas Connection Requirements for Power Plants 2 (Expansion of Bacolod 138 kV SS: 2-138 kV PCB)	Mar 2032
Cadiz City Solar Power Project ⑤	96.000	Aug 2026	Cadiz 138 kV SS	Visayas Connection Requirements for Power Plants 2 (Expansion of Cadiz 138 kV SS: 3-138 kV PCB)	Mar 2032
Ajuy 1 Solar Power Plant Project ②⑤	14.000	Nov 2026	Tap connection along Concepcion Vis 69 kV TL	None	N/A
Bacolod Rollforming Plant Solar PV System ②Ⓔ	0.120	Dec 2026	Bacolod 138 kV SS (Embedded)	None	N/A
Cebu Rollforming Plant Solar PV System ②Ⓔ	0.130	Dec 2026	(Embedded)	None	N/A
Luca Solar Power Project ②④⑤	40.000	Dec 2026	Barotac Viejo 138 kV SS	Visayas Connection Requirements for Power Plants 1 (Expansion of Barotac Viejo 138 kV SS: 2-138 kV PCB) - same requirement as Phase 2	Nov 2031
Silay 2a Solar Power Project ②⑤Ⓕ	30.000	Dec 2026	Tap connection along Bacolod-Silay 69 kV TL	Upgrading of Bacolod–Silay 69 kV Line segment (NEPC owned line)	TBD
Silay 2b Solar Power Project ②⑤Ⓕ	20.000	Dec 2026	Tap connection along Bacolod-Silay 69 kV TL	Upgrading of Bacolod–Silay 69 kV Line segment (NEPC owned line)	TBD
Total	**611.070**				
WIND					
Nabas Wind Power Project ①⑤Ⓕ	13.560	Feb 2026	Tap connection along Nabas 69 kV TL	Negros – Panay 230 kV Interconnection Line 2	Completed
Gemini Wind Power Project ②⑤Ⓕ	304.00	Dec 2026	Calbayog 138 kV SS	Visayas Connection Requirements for Power Plants 2 (Expansion of Calbayog 138 kV SS: 3-138 kv PCB)	Mar 2032
Iloilo CW 1 Wind Power Project ②⑤Ⓕ	152.000	Dec 2026	Sta. Barbara 138 kV SS	Visayas Connection Requirements for Power Plants 1 (Expansion of Sta. Barbara 138 kV SS: 4-138 kV PCB)	Nov 2031
Bago Wind Power Project ②⑤Ⓕ	150.000	Aug 2028	La Carlota 138 kV SS	La Carlota 138 kV SS	Jan 2035
Total	**619.56**				
ENERGY STORAGE SYSTEM (ESS)					
Tabango Battery Energy Storage System ⑤Ⓕ	40.000	Jan 2026	Tabango 69 kV SS	Visayas SS Upgrading 2 (Expansion of Tabango 69 kV SS: 1-69 kV PCB) - same requirement as Phase 2	Jun 2028

Proposed Major Power Plants	Capacity (MW)	Target Commercial Operation	Connection Point	Associated Transmission Project	ETC/ Completion Date
Panay Battery Energy Storage Power Plant	49.900	Jun 2026		Customer-owned	N/A
Bohol Battery Energy Storage Power Plant Ⓢ	30.000	Jul 2026	Tap connection along BDPP 69 kV TL	Customer-owned	N/A
Dingle Battery Energy Storage System	20.000	Feb 2027	Dingle 69 kV SS	Visayas Connection Requirements for Power Plants 3 (Expansion of Dingle 69 kV SS: 2-69 kV PCB)	Jun 2031
Northern Negros Energy Storage System ⓈⒻ	30.000	Dec 2029	Tap connection along Bacolod 138 kV	None	N/A
Samboan Battery Energy Storage System Ⓢ	20.000	TBD	Samboan 69 kV SS	Visayas SS Upgrading 2(Expansion of Samboan 69 kV SS: 1-69 kV PCB)	Jun 2028
Compostela Battery Energy Storage System Ⓢ	20.000	TBD	Compostela 230 kV SS	Visayas SS Upgrading 2 (Expansion of Compostela 230 kV SS: 1-230 kV PCB)	Jun 2028
Nabas Battery Energy Storage System	20.000	TBD	Nabas 69 kV SS	Visayas Connection Requirements for Power Plants 1 (Expansion of Nabas 69 kV SS: 2-69 kV PCB)	Nov 2031
Calbayog Battery Energy Storage System	20.000	TBD	Calbayog 69 kV SS	Visayas SS Upgrading 3 (Expansion of Calbayog 69 kV SS: 1-69 kV PCB)	Jun 2031
Tabango Battery Energy Storage System Phase 2	20.000	TBD	Tabango 69 kV SS	Visayas SS Upgrading 2 (Expansion of Tabango 69 kV SS: 1-69 kV PCB) - same requirement as Phase 1	Jun 2028
Toledo Battery Energy Storage System Phase 2 Ⓢ	20.000	TBD	Calong-calong 69 kV SS	Visayas SS Upgrading 2 (Expansion of Calong-calong 69 kV SS: 2-69 kV PCB)	Jun 2028
San Carlos Battery Energy Storage System	20.000	TBD	San Carlos 69 kV SS	Visayas Connection Requirements for Power Plants 1 (Expansion of San Carlos 69 kV SwS: 1-69 KV PCB)	Nov 2031
Mactan Battery Energy Storage System	20.000	TBD	Pusok 69 kV SS	Lapu-lapu 230 kV SS (Pusok 69 kV Switchyard: 1-69 kV PCB)	Dec-27
Ubay Battery Energy Storage System Phase 2	20.000	TBD	Ubay 69 kV SS	Visayas SS Upgrading 2 (Expansion of Ubay 69 kV SS: 2-69 kV PCB)	Jun 2028
Total	**349.900**				
TOTAL COMMITTED	**1,793.645**				
TOTAL COMMITTED w/o BESS	**1,443.745**				

Table A2.3: Mindanao Committed Power Projects

Proposed Major Power Plants	Capacity (MW)	Commissioning Year	Connection Point	Associated Transmission Project	ETC/ Completion Date
COAL					
Misamis Oriental 2 x 135 MW Circulating Fluidized Bed Coal-Fired Thermal Power Plant Ⓢ	135.000	Mar 2027	Tap connection along Villanueva 138 kV SS	Villanueva-Kinamlutan 230 kV TL	Jun 2034
Misamis Oriental 2 x 135 MW Circulating Fluidized Bed Coal-Fired Power Plant Ⓢ	135.000	TBD	Tap connection along Villanueva 138 kV SS	Villanueva-Kinamlutan 230 kV TL	Jun 2034
Total	**270.000**				
OIL-BASED					
Sangali Diesel Power Plant Phase 1 Ⓢ	28.000	Apr 2026	Zamboanga 69 kV SS	Expansion of Zamboanga SS	TBD
Sangali Diesel Power Plan Phase 2 Ⓢ	28.000	Apr 2026	Zamboanga 69 kV SS	Expansion of Zamboanga SS	TBD
Total	**56.000**				
HYDRO					
Mangima Hydroelectric Power Plant Project Ⓢ	12.000	Jan 2026	Manolo Fortich 69 kV SS	Expansion of the Mangima SS	TBD
Pulanai Hydroelectric Power Plant Project Ⓢ	15.000	Jan 2026	Tap connection along Maramag 69 kV TL	None	N/A
Maladugao River (Upper Cascade) Hydroelectric Power Plant Project Ⓢ	8.400	Feb 2026	Tap connection along Maramag 69 kV TL	None	N/A
Titunod Hydroelectric Power Plant Project Ⓔ	3.600	Aug 2026	Embedded	None	N/A
Malitbog Hydroelectric Power Plant Project ⓘⓔ	3.700	Nov 2026	Villanueva 69 kV SS	Expansion of the Villanueva SS	TBD
Gakaon Hydroelectric Power Plant Project Ⓔ	2.230	Dec 2026	Embedded	None	N/A
Silo-o Hydroelectric Power Plant Project ⓘⓔ	3.700	Jan 2027	Villanueva 69 kV SS	Expansion of the Villanueva SS	TBD

Proposed Major Power Plants	Capacity (MW)	Commissioning Year	Connection Point	Associated Transmission Project	ETC/ Completion Date
Mat-i 1 Hydroelectric Power Plant Project ①Ⓔ	4.850	May 2027	Tap connection along Jasaan 69 kV TL	None	N/A
Bubunawan Hydroelectric Power Plant Project Ⓢ	32.000	Oct 2030	Tap connection along Opol 69 kV TL	NGCP's proposed Gango 138 kV SS	2031
Total	**85.480**				
SOLAR					
Misamis Solar Power Project Ⓢ	17.185	Jun 2026	Tagoloan 69 kV SS	Expansion of Tagoloan 69 kV SS	TBD
Butuan City 1 Solar Power Project ⒺⒻ②	11.000	Dec 2026	Tap connection along Nasipit-Butuan 69 kV TL	None	N/A
Butuan Rollforming Plant Solar PV System ②Ⓔ	0.070	Dec 2026	Embedded	None	N/A
Cagayan De Oro Rollforming Plant Solar PV System ②Ⓔ	0.110	Dec 2026	Embedded	None	N/A
Tantangan Solar Power Project ②④ⓈⒻ	80.00	Jun 2026	Tacurong 69 kV SS	Expansion of Tacurong 69 kV SS	TBD
Total	**108.365**				
ENERGY STORAGE (ESS)					
Tagum Battery Energy Storage System Ⓢ	20.000	Jan 2026	Tap connection along the Maco 69 kV TL	Maco–Tagum 69 kV TL	Dec 2036
Pitogo Battery Energy Storage System Ⓢ	60.000	Feb 2026	Pitogo 138 kV SS	Lala-Naga-Zamboanga 230 kV TL HVE Termination Requirement	2035
Nasipit Hybrid Energy Storage System Ⓢ	48.000	Apr 2026	Tap connection along Nasipit 138 kV TL	None	N/A
Sangali Battery Energy Storage System Ⓢ	20.000	May 2026	Zamboanga 69 kV SS	Lala-Naga-Zamboanga 230 kV TL Tumaga 138 kV SS HVE Termination Requirement	2035
Tagoloan Battery Energy Storage System Phase 2	20.000	TBD	-	-	N/A
Placer Battery Energy Storage System	20.000	TBD	-	-	N/A
Maramag Battery Energy Storage System Ⓢ	20.000	TBD	Maramag 69 kV SS	HVE Termination Requirement	N/A
General Santos Battery Energy Storage System	20.000	TBD	-	-	N/A
Total	**228.00**				
TOTAL COMMITTED	**747.845**				
TOTAL COMMITTED w/o BESS	**519.845**				

Appendix 3
INDICATIVE POWER PLANTS

Legend:
①/②/③/④ – Included under GEAP Round 1, 2, 3 or 4
Ⓢ – Project has undergone System Impact Study (SIS)
Ⓔ – Project is exempted from System Impact Study (SIS)
Ⓕ – Project has submitted/undergone Facility Study (FS)
Ⓟ - Project with phased connection arrangements
* - Awaiting ERC approval

Table A3.1 Luzon Indicative Power Plants

Proposed Generation Facility / Name of the Project	Rated Capacity (MW)	Location	Target Commercial Operation
COAL			
H & WB PCB Supercritical Coal-Fired Power Plant - Unit Ⓢ	350.000	Jose Panganiban, Camarines Norte	TBD
H & WB PCB Supercritical V- Unit 2	350.000	Jose Panganiban, Camarines Norte	TBD
SRPGC Coal-Fired Power Plant Project	350.000	Brgy. San Rafael, Calaca, Batangas	TBD
SRPGC Coal-Fired Power Plant Project	350.000	Brgy. San Rafael, Calaca, Batangas	TBD
Total	**1,400.00**		
OIL-BASED			
2 x 30 Diesel Power Plant Ⓢ	60.000	Malaya, Pililla, Rizal	TBD
Total	**60.000**		
NATURAL GAS			
Combined Cycle Gas-fired Turbine San Francisco Power Plant	1,200.000	Barangays Cagsiay 1 and Cagsiay 2, Mauban, Quezon Province	2028
GLEDC Luna LNG-Fired Combined Cycle Power Plant	1,128.000	Barangays Nalvo Sur and Carisquis, Luna, La Union	2030
GNPower Sisiman LNG Combined Cycle Power Plant Ⓢ	1,200.000	Barangays Alas-asin and Sisiman, Mariveles, Bataan	Dec 2029
La Esperanza Natural Gas-Fired Combined Cycle Gas Turbine (CCGT) Power Plant Project	1,800.000	Philippine National Oil Company (PNOC) Industrial Park (PIP) Barangay Alion, Municipality of Mariveles, Province of Bataan	Jul 2030
VIRES Natural Gas Floating Power Plant	450.000	Barangay Simlong, Batangas City, Batangas	Dec 2030
Santa Maria Natural Gas-Fired Combined Cycle Power Plant Ⓢ	1,260.000	Brgy. Santa Rita, Batangas City	TBD
Total	**7,038.000**		
GEOTHERMAL			
Bacman 4 Botong - Rangas Geothermal Project	20.000	Bacon District, Sorsogon, Sorsogon City	Dec 2028
Maibarara 3 Geothermal Project	20.000	Laguna/Batangas	Dec 2029
Mt. Malinao Geothermal Project Ⓢ	50.000	Tiwi, Malinao, Malilipot, Polangui, Tabaco City and Buhi (Albay/Camarines Sur)	Dec 2030
Labo Geothermal Power Project	105.000	Tagkawayan, Labo, San Vincente, San Lorenzo Ruiz, Del Gallego (Quezon/Camarines Norte & Sur)	Dec 2031
Kalinga Geothermal Project Ⓢ	120.000	Lubuagan, Pasil and Tinglayan, Kalinga	Dec 2032
Total	**315.00**		
HYDRO			
ARIIS 1 (NIA Station 4+283) Hydroelectric Power Project	0.900	San Manuel, Pangasinan	2028
ARIIS 2 (NIA Stn 5+437.50) Hydroelectric Power Project	0.750	San Manuel, Pangasinan	2028
ARIIS 3 (NIA Stn 5+898.50) Hydroelectric Power Project	0.500	San Manuel, Pangasinan	2028
ARIIS 4 (Stn 4+808) Hydroelectric Power Project	0.670	San Manuel, Pangasinan	2028
ARIS 3 + 611 Hydroelectric Power Project	1.000	San Manuel, Pangasinan	2028
Besao 2 Hydroelectric Power Project Ⓢ	7.000	Besao, Mt. Province	2028
Boga Hydroelectric Power Project	1.000	Bauko, Mt. Province	2028
Calanan Hydroelectric Power Project Ⓢ	60.000	Tabuk City, Kalinga	2028
Calanasan 1 Hydroelectric Power Project Ⓢ	30.000	Calanasan, Apayao	2028
Chico River Hydroelectric Power Project Ⓢ	52.000	Tabuk, Kalinga	2028
Coto 1 Hydroelectric Power Project	9.000	Masinloc, Zambales	2028
Coto 2 Hydroelectric Power Project	3.500	Masinloc, Zambales	2028
Dalimuno Hydroelectric Power Project	58.000	Tabuk City, Kalinga	2028
Kabayan 2 Hydroelectric Power Proje	52.000	Kabayan, Benguet	2028
Kibungan 2 Hydroelectric Power Project	40.000	Sugpon, Ilocos Sur	2028

Proposed Generation Facility / Name of the Project	Rated Capacity (MW)	Location	Target Commercial Operation
Lamut Hydroelectric Power Project	6.800	Asipulo, Ifugao	2028
Lingod River Hydroelectric Power Project	3.000	Gabaldon, Nueva Ecija and San Luis, Aurora	2028
Lower Chico Hydroelectric Power Project	2.100	Bauko, Mt. Province	2028
Lower Siffu Hydroelectric Power Project	3.000	Natonin, Mt. Province	2028
Mangayngay -1 Hydroelectric Power Project	2.400	Alfonso Castañeda, Nueva Vizcaya	2028
Masiway 2 Hydroelectric Power Project	9.000	Pantabangan, Nueva Ecjia	2028
Matuno 1 Hydroelectric Power Project	7.400	Ambaguio, Nueva Vizcaya	2028
Matuno 2 Hydroelectric Power Project	15.000	Ambaguio, Nueva Vizcaya	2028
Matuno 2 Hydroelectric Power Project	7.900	Bambang, Nueva Vizcaya	2028
Nabuangan River Hydroelectric Power Project	10.000	Conner, Apayao	2028
Olilicon Hydroelectric Power Project	20.000	Ilagan, Ifugao	2028
Pampanga Hydroelectric Power Project	26.000	Santa Fe, Nueva Vizcaya	2028
Pasil B Hydroelectric Power Project ⑤	15.684	Pasil, Kalinga	2028
Pasil C Hydroelectric Power Project ⑤	9.754	Pasil, Kalinga	2028
Piapi River Hydroelectric Power Project	4.500	Real, Quezon	2028
Tamdagan 2 Hydroelectric Power Project	5.150	Vintar, Ilocos Norte	2028
Tamdagan Hydroelectric Power Project	7.400	Vintar, Ilocos Norte	2028
Tignoan (Lower) Hydroelectric Power Project ⑤	8.000	Real, Quezon	2028
Tinglayan Hydroelectric Power Project	22.500	Tinglayan, Kalinga	2028
Tinoc 1 Hydroelectric Power Project	3.000	Tinoc, Ifugao	2028
Tinoc 2 Hydroelectric Power Project	6.500	Tinoc, Ifugao	2028
Tinoc 3 Hydroelectric Power Project	5.000	Tinoc, Ifugao	2028
Tublay 1 Hydroelectric Power Project	1.900	Tublay & La Trinidad, Benguet	2028
Tublay 2 Hydroelectric Power Project	6.000	Tublay, Benguet	2028
Upper Chico Hydroelectric Power Project	2.000	Bauko, Mt. Province	2028
Upper Siffu Hydroelectric Power Project	2.750	Natonin, Mt. Province	2028
Upper Tabuk Hydroelectric Power Project	15.000	Tabuk City, Kalinga	2028
Buaya Hydroelectric Power Project	40.000	Balbalan and Pinukpuk, Kalinga	2029
Saltan River Site E Hydroelectric Power Project	45.000	Balbalan and Pinukpuk,, Kalinga	2029
Alimit Hydroelectric Power Project	120.000	Lagawe, Ifugao	2030
Alimit-Pumped Storage Hydroelectric Power Project	250.000	Lagawe & Mayoyao, Ifugao	2030
Chico Hydroelectric Power Project	150.000	Tabuk, Kalinga	2030
Dingalan Pumped-Storage Hydroelectric Power Project	500.000	Dingalan, Aurora	2030
Gened - 1 Hydroelectric Power Project	150.000	Pudtol, Apayaw	2030
Gened 2 Hydroelectric Power Project	250.000	Kabugao, Apayao	2030
Kibungan Pumped-Storage Hydroelectric Power Project	500.000	Kibungan, Benguet	2030
Pakil Pumped Storage Hydroelectric Power Project ⑤	1400.000	Pakil, Laguna	2030
Saltan D River Hydroelectric Power Project	49.000	Balbalan and Pinukpuk, Kalinga	2030
Maton Pumped Storage (formerly Maton Hydroelectric Power Project ⑤	2000.000	Pudtol and Kabugao, Apayao	2031
San Roque Lower East Pumped-Storage Hydroelectric Power Project	400.000	Itogon, Benguet	2032
San Roque Upper East Pumped Storage Hydroelectric Power Project ⑤	600.000	Itogon, Benguet	2032
San Roque West Pumped Storage Hydroelectric Power Project ⑤	400.000	Itogon, Benguet	2032
Total	**7.398.058**		
BIOMASS			
12-MW Waste-to-Energy Power Plant Project	12.000	Pampanga	Dec 2026
100.000-MW -to-Energy Facility Project	100.000	Metro Manila	Apr 2029
Total	**112.000**		
SOLAR			
CSFirst Green Infanta Solar Power Project (Note: With Integrated BESS of 107.320 MW)	180.540	Infanta and Mabini, Pangasinan	Feb 2026
Subic New 100MWp PV Power Plant Project ⑤	24.599	Morong and Hermosa, Bataan	Feb 2026
Telos Iba 1 Solar Power Project ⑤	38.400	Iba, Zambales	Feb 2026
Aguilar Solar Power Project ⑤	225.000	Aguilar, Pangasinan	Mar 2026
Astra Solar Power Project ⑤	56.250	Curimao, Ilocos Norte	Mar 2026
Samal Solar Power Project ⑤	6.080	Gugo and San Juan, Samal, Bataan	Mar 2026
Magat Floating Solar Power Project ④⑤	54.080	Magat Reservoir, Alfonso Lista and Aguinaldo in Ifugao; and Santiago City and Ramon in Isabela	May 2026
Atimonan Solar Power Project ④⑤	53.120	Atimonan, Quezon	Jun 2026

Proposed Generation Facility / Name of the Project	Rated Capacity (MW)	Location	Target Commercial Operation
Ultra Solar Power Project ④Ⓢ	71.680	Padre Burgos and Atimonan, Quezon	Jun 2026
Amherst Laboratories Inc.	0.360	City of Biñan, Laguna	Jul 2026
Labrador Solar Power Project Ⓢ	3.250	Labrador, Pangsinan	Jul 2026
SolarAce3 Solar Power Project Ⓢ	206.500	Buguey, Cagayan	Jul 2026
CSFirst Green Dasol Solar Power Project (Note: With Integrated BESS of 82.560 MW) Ⓢ	140.420	Dasol, Pangasinan	Aug 2026
Inara Solar Power Project Phase 2 Ⓢ	39.375	Tanauan City, Batangas	Aug 2026
Inara Solar Power Project Phase 3 Ⓢ	48.825	Tanauan City, Batangas	Aug 2026
Sual Solar Power Project ④Ⓢ	49.500	Sual, Pangasinan	Aug 2026
Isabela Ground Mounted Solar PV Project Ⓢ	336.826	City of Ilagan, Isabela	Sep 2026
Lucanin Solar Power Project	178.724	Mariveles, Bataan	Sep 2026
Solana Solar Beta Inc. Solar Power Project	17.160	Hermosa, Bataan and Lubao, Pampanga	Sep 2026
Titan I Solar Power Project - Phase 1 Ⓢ	240.000	Cambitala and San Juan, Pantabangan, Nueva Ecija	Sep 2026
San Lorenzo Ruiz Solar Power Plant ④	5.120	San Lorenzo Ruiz, Camarines Norte	Nov 2026
Bay 1 Floating PV Power Plant ④Ⓢ	105.600	Laguna de Bay	Dec 2026
Bay 2 Floating PV Power Plant ④Ⓢ	105.600	Laguna de Bay	Dec 2026
Cabuyao 1 Floating PV Power Plant ④Ⓢ	105.600	Laguna de Bay	Dec 2026
Cabuyao 2 Floating PV Power Plant ④Ⓢ	105.600	Laguna De Bay	Dec 2026
Cabuyao 3 Floating Solar PV Power Plant ④Ⓢ	105.600	Laguna de Bay	Dec 2026
Cabuyao 4 Floating Solar PV Power Plant ④Ⓢ	105.600	Laguna de Bay	Dec 2026
Cabuyao 5 Floating Solar PV Power Project ④Ⓢ	105.600	Laguna De Bay	Dec 2026
Cagayan Valley Solar Power Project Ⓢ	15.200	Cauayan City, Alicia, Angadanan, Isabela	Dec 2026
Calamba Floating Solar Power Project Ⓢ	82.500	Laguna de Bay	Dec 2026
Gamu Solar Power Project	59.840	Gamu and Naguilian, Isabela	Dec 2026
Ixus Bugallon Solar Power Project Ⓢ	100.265	Bugallon, Pangasinan	Dec 2026
Linglingay Solar Power Project Ⓢ	11.942	Linglinay, Gamu, Isabela	Dec 2026
NKS One Floating Solar Power Project Ⓢ	110.200	Lumban City and Cavinty City, Laguna	Dec 2026
Opus Solar Power Project Ⓢ	168.800	Paoay, Ilocos Norte	Dec 2026
Pagbilao Floating Solar Power Project Ⓢ	98.700	Offshore of Pagbilao, Quezon	Dec 2026
Sapang Balen Solar 2 - North Power Project Ⓢ	217.391	Mabalacat City and Magalang, Pampanga	Dec 2026
Sta. Rosa Floating PV Power Plant Ⓢ	105.600	Laguna de Bay	Dec 2026
Victoria 1 Floating PV Power Plant Ⓢ	105.600	Laguna de Bay	Dec 2026
Botolan Solar PV Power Plant ④Ⓢ	57.200	Botolan, Zambales	Feb 2027
Castilla Solar Power Plant ④Ⓢ	30.03	Castilla, Sorsogon	Feb 2027
Inara Solar Power Project Phase 1	7.650	Tanauan City, Batangas	Feb 2027
Giga Ace 8 Solar Power Project	140.80	Palauig, Zambales	Mar 2027
San Ildefonso Solar Power Project Ⓢ	44.000	San Ildefonso, Bulacan	Mar 2027
Titan I Solar Power Project - Phase 2 Ⓢ	240.000	Cambitala and San Juan, Pantabangan, Nueva Ecija	Mar 2027
AC Laguna Floating Solar Power Project Ⓢ	210.000	Laguna de Bay	Apr 2027
Infanta 1 Solar Power Project	140.917	Infanta, Pangasinan	Apr 2027
SolarAce4 Floating Solar Power Project Ⓢ	104.850	Laguna de Bay	Apr 2027
AC Subic Floating Solar Power Project Ⓢ	210.000	Laguna de Bay	May 2027
Infanta 2 Solar Power Project Ⓢ	147.791	Infanta, Pangasinan	Jun 2027
Cabiao Solar Power Project Ⓢ	261.043	Cabiao, Nueva Ecija	Jul 2027
Palayan Solar Power Project	136.500	Palayan, Nueva Ecija	Jul 2027
Sta. Ignacia Tarlac Colar Power Project – Phase 2 Ⓢ	9.000	Sta. Ignacia, Tarlac	Jul 2027
Sta. Ignacia Tarlac Solar Power Project Ⓢ	9.000	Sta. Ignacia, Tarlac	Jul 2027
Laguna Lake-Los Baños Solar Power Project Ⓢ	125.000	Laguna De Bay	Sep 2027
Radius Solar Power Project Ⓢ	125.000	Laguna de Bay	Sep 2027
Burgos Pangasinan Solar Power Project Ⓢ	50.100	Burgos, Pangasinan	Oct 2027
Caronsi Solar Power Project Ⓢ	50.000	Iguig and Penablanca	Oct 2027
Fortune Lal-lo Solar Energy Power Project Ⓢ	113.652	Lal-lo, Cagayan	Oct 2027
Burgos 1 Solar Power Project	156.354	Burgos, Pangasinan	Dec 2027
Burgos 2 Solar Power Project	231.132	Burgos, Pangasinan	Dec 2027
Cagayan Valley Solar Power Project Ⓢ	32.800	Cauayan City, Alicia, Angadanan, Isabela	Dec 2027
GIGASOL1 Solar Power Project Ⓢ	185.898	Botolan, Zambales	Dec 2027
Hermosa Solar Power Project Ⓔ	22.398	Hermosa, Bataan	Dec 2027
Ingrid2 Floating Solar Power Project Ⓢ	104.850	Laguna De Bay	Dec 2027
Mapanuepe Floating Solar Power Project Ⓢ	317.883	San Marcelino, Zambales	Dec 2027
Minalabac 1 Solar Power Project	268.086	Minalabac, Camarines Sur	Dec 2027

Proposed Generation Facility / Name of the Project	Rated Capacity (MW)	Location	Target Commercial Operation
San Marcelino Floating Solar Power Project ④Ⓢ	147.400	San Marcelino, Zambales	Dec 2027
San Roque Solar Power Project	152.000	San Manuel and San Nicolas, Pangasinan and Itogon, Benguet	Dec 2027
Villaverde Ground-Mounted Solar-Photovoltaic Project ④Ⓢ	13.360	Villaverde, Nueva Viscaya	Dec 2027
Lal-lo Solar Power Project Ⓢ	95.000	Brgy. Maxingal, Lal-lo, Cagayan	Jan 2028
San Esteban 1 Solar Power Project Ⓢ	91.553	Santiago, Ilocos Sur	Jan 2028
Fuego Solar Power Project Ⓢ	75.173	Pagbilao, Quezon	Feb 2028
GigaWind 1 Floating Solar Power Project	209.700	Laguna De Bay	Feb 2028
Liberty Solar Project ④	99.800	Paniqui, Tarlac	Feb 2028
Macabebe Floating PV Power Plant ④Ⓢ	139.700	Macabebe, Pampanga	Feb 2028
Villasis-Malasiqui 1 Solar Power Project	443.373	Villasis and Malasiqui, Pangasinan	Mar 2028
Capantolan Solar Power Project ④Ⓢ	47.347	Sual, Pangasinan	Apr 2028
Labrador 1 Solar Power Project Ⓢ	333.389	Labrador, Pangsinan	Apr 2028
Nazareno Solar Power Project Ⓢ	41.400	Hermosa, Bataan	Apr 2028
Mabini Solar Power Project Ⓢ	49.900	Mabini, Pangasinan	May 2028
Malasiqui Solar Power Project Ⓢ	48.118	Malasiqui, Pangasinan	May 2028
Tumingad 2 Solar Power Plant	0.120	Odiongan, Romblon	May 2028
Currimao Solar Power Project ④Ⓢ	244.200	Currimao and Paoay, Ilocos Norte	Jun 2028
La Paz Solar Power Plant Project	4.180	La Paz, Tarlac	Jun 2028
Paoay Floating Solar Power Project Ⓢ	112.500	Paoay Lake, Paoay, Ilocos Norte	Jun 2028
Pasuquin-Burgos 100MW Solar Power Project ②Ⓢ	47.500	Municipality of Pasuquin and Burgos, Ilocos Norte	Jun 2028
Sison Solar Power Project Ⓢ	215.950	Sison, Pangasinan	Jun 2028
Tayabas Solar Power Project Ⓢ	161.000	City of Tayabas and Mauban, Quezon	Jun 2028
Tuy Solar Power Project Ⓢ	96.000	Tuy and Nasugbu, Batangas	Jun 2028
Cabcaben Solar Power Project Ⓢ	51.000	Mariveles, Bataan	Aug 2028
Olongapo Solar Power Project Ⓢ	128.000	Olongapo, Zambales	Aug 2028
Pagbilao Solar Power Project ② Ⓢ	336.000	Pagbilao, Quezon	Aug 2028
San Vicente Solar Power Project Ⓢ	140.000	San Vicente, Camarines Norte	Aug 2028
Capital1 Mabini Solar Power Project Ⓢ	59.650	Mabini, Pangasinan	Oct 2028
Capital1 Mabini Capital1 Mabini Ⓢ			
Libag Sur Solar Power Project	422.400	Brgy. Libag Sur, Tuguegarao City, Cagayan	Oct 2028
Currimao Solar Power Project ④Ⓢ	244.200	Currimao and Paoay, Ilocos Norte	Dec 2028
Pantabangan Floating Solar Power Project Ⓢ	463.995	Pantabangan, Nueva Ecija	Dec 2028
Suncastle Baao Solar Farm Project Ⓢ	495.000	Baao and Bula, Camarines Sur	Dec 2028
Talingaan-Laoag Solar Power project ④Ⓢ	149.600	Laoag City, Ilocos Norte	Dec 2028
Tamauini Solar Power Project	52.800	Tamauini, Isabela	Dec 2028
Aringay Solar PV Project Ⓢ	41.280	Aringay and Caba, La Union	Jan 2029
Dasol 1 Solar Power Project	179.200	Dasol, Pangasinan	Jan 2029
La Union Solar Power Project Ⓢ	38.850	Municipality of Bacnotan, Province of La Union	Jan 2029
Tinang Tarlac Solar Power Project Ⓢ	217.184	Brgy. Tinang, Concepcion, Tarlac	Jan 2029
Iguig Solar Power Project Ⓢ	121.000	Iguig, Cagayan	Feb 2029
San Luis Solar Power Project	191.250	San Luis, Aurora	Feb 2029
Casilagan Solar Power Project Ⓢ	151.680	Pantabangan, Nueva Ecija	Mar 2029
Sinait Solar Power Project	9.856	Tarlac City, Tarlac	Apr 2029
Magahis Solar Power Plant Project Phase I ④Ⓢ	364.32	Tuy, Batangas	May 2029
Burgos Dasol Solar Power Project	343.680	Burgos and Dasol, Pangasinan	Jun 2029
Cambitala Solar Power Project Ⓢ	185.600	Pantabangan, Nueva Ecija	Jun 2029
SolarAce2 Solar Power Project	120.295	Botolan, Zambales	Dec 2029
Cabangan Solar Project	43.750	Brgy. Mabanglit, Cabangan, Zambales	Dec 2029
Cataingan Solar Power Project	4.050	Brgy. Pitogo, Cataingan, Masbate	TBD
Cawag Solar Power Project Ⓢ	120.600	Subic, Zambales	TBD
Cordon Solar Power Project ② Ⓢ	3.800	Cordon, Isabela	TBD
Limbauan Solar Power Project ② Ⓢ	6.240	Brgy. Limbauan, San Pablo, Isabla	TBD
San Juan Solar Power Project	35.200	Botolan, Zambales	TBD
San Marcelino Solar Power Project (Phase 3) Ⓢ	96.900	San Marcelino, Zambales	TBD
Talugtug Solar Power Project ①Ⓢ	3.130	Talugtug, Nueva Ecija	TBD
Total	**15,012.154**		
WIND			
Tayabas South Wind Energy Project Ⓢ	187.200	Tayabas, Pagbilao, Quezon	May 2026
Sorsogon Wind Power Project Ⓢ	400.000	Matnog, Bulan, Irosin and Magdalena, Sorsogon	Dec 2026
Ilocos Sur Wind Power Project	100.000	Narvacan, Santa, and Bantay; San Quintin and Langiden, Ilocos Sur and Abra	Dec 2026
Panda Wind Power Project Ⓢ	150.000	Pililla and Jala-Jala; Mabitac and Pangil , Rizal and Laguna	Jan 2027
San Miguel Bay Wind Power Project Ⓢ	600.000	Provinces of Camarines Sur and Camarines Norte	Jan 2027
Camarines Sur Wind Power Project Ⓢ	500.000	Province of Camarines Sur	Mar 2027

Proposed Generation Facility / Name of the Project	Rated Capacity (MW)	Location	Target Commercial Operation
Mulanay Wind Farm Project	50.000	Mulanay and Catanauan, Quezon	Mar 2027
Camarines Norte Wind Power Project	250.000	Capalonga and Jose Panganiban, Camarines Norte	Jun 2027
Albay Wind Power Project Ⓢ	99.000	Guinobatan and Ligao City, Albay	Sep 2027
Dalupiri Island Wind Power Project	300.000	Onshore and Offshore of Dalupiri Island, Calayan, Cagayan	Oct 2027
Diwata 2 Wind Power Project	500.000	General Nakar and Real, Quezon	Oct 2027
Mauban Offshore Wind Farm	100.000	Offshore of Barangays Cagsiay I, San Lorenzo, Lual and Tapucan, Municipality of Mauban, Province of Quezon	Oct 2027
Aurora Offshore Wind Power Project	600.000	Province of Aurora	Oct 2027
Pasacao-San Fernando Wind Farm Project	300.000	Pasacao, San Fernando, Minalabac, Pamplona and Bula, Camarines Sur	Dec 2027
Presentacion 2 Wind Power Project	64.000	Presentacion, Camarines Sur	Dec 2027
Pangasinan CW 1 Wind Power Project	50.000	San Manuel, Sison, and Binalonan, Pangasina	Dec 2027
Prieto Diaz Wind Farm Project Ⓢ	150.000	Prieto Diaz, Sorsogon City, and Gubat, Sorsogon	Dec 2027
South Eastern Wind Power Project ④Ⓢ	49.990	Barcelona, Gubat, and Casiguran, Sorsogon	Dec 2027
Tinambac Wind Farm Project	50.000	Tinambac, Camarines Sur	Dec 2027
Mariveles Offshore Wind Farm	100.000	Offshore of Bataan	Jan, 2028
Dapdap East Wind Farm	30.000	Tagaytay, Cavite and Talisay, Batangas	Jan 2028
Sambong Onshore Wind Farm	60.000	Barangays Sambong, Bagong Tubig, Maharlika East, and Neogan, City of Tagaytay, Barangay Amuyung, Municipality of Alfonso, and Barangay Lucsuhin, Municipality of Silang, Province of Cavite; and Barangay of Dayap Itaas, Niyugan and Molinete, Municipality of Laurel, and Barangay Kaylaway, Municipality of Nasugbu, Province of Batangas	Jan 2028
Pandan Labayat Wind Farm	40.000	Real, Quezon	Jan 2028
Silang Maragondon Wind Farm	100.000	Real, Quezon	Jan 2028
Quezon II Plaridel Wind Power Project	50.000	Plaridel and Atimonan, Quezon	Mar2028
Aguilar Wind Power Project	99.000	Bugallon and Aguilar, Pangasinan	May 2028
Kalayaan 4 Wind Energy Project	303.800	Famy, Siniloan, Pakil, and Pangil, Laguna; and Real, Quezon	Jun 2028
Kalayaan 5 Wind Energy Project	88.000	Famy, Siniloan, Pakil, and Pangil, Laguna; and Real, Quezon	Jun, 2028
San Miguel Bay Wind Power Project	500.000	Offshore of Camarines Sur	Jun 2028
Bangui Phase IV Wind Power Project	80.000	Burgos and Bangui, Ilocos Norte	Jun 2028
Dagupan Offshore Wind Power Project	350.000	Dagupan Offshore Wind Power Project	Jun 2028
San Miguel Bay Offshore Wind Power Project	1000.000	San Miguel Bay Offshore Wind Power Project	Jun 2028
Romblon Wind Power Project	0.900	Romblon Wind Power Project	Aug 2028
Viento Power Wind Project	100.000	Viento Power Wind Project	Sep 2028
Ilocos Norte Offshore Wind Power Project	900.000	Ilocos Norte Offshore Wind Power Project	Oct 2028
Pagudpud I.N. Wind Power Project	120.000	Pagudpud, Ilocos Norte	Nov 2028
Maragondon Wind Power Project	200.000	Maragondon, Cavite	Dec 2028
Bongabon Wind Power Project	84.500	Rizal and Bongabon, Nueva Ecija	Dec 2028
Botolan Wind Power Project Ⓢ	300.000	Botolan and Cabangan, Zambales	Dec 2028
Camsur Wind Power Project	150.000	Canaman, Gainza, Milaor, San Fernando, Minalabac, and Pamplona, Camarines Sur	Dec 2028
Sorsogon 2 Wind Power Project ④Ⓢ	200.000	Magallanes and Juban, Sorsogon	Dec 2028
Taysan Wind Farm Project	50.000	Taysan, Rosario, and Lobo, Batangas	Dec 2028
Mercedes Offshore Wind Farm	100.000	Offshore of Camarines Norte	Jan 2029
Baao Wind Energy Project	210.800	Baao, Iriga City, Ocampo, and Bula, Camarines Sur	Jan 2029
Balayan Batangas Wind Power Project	104.000	Balayan, Tuy, and Calaca, Batangas	Mar 2029
Lucban Wind Power Project	90.000	Lucban and Tayabas, Quezon	Mar 2029
San Juan Wind Power Project	96.000	San Juan and Rosario, Batangas	Mar 2029
Lucena Wind Power Project	475.000	Offshore and Onshore of Quezon	Jun 2029
Maragondon Wind Energy Project	86.400	Maragondon, Cavite	Jun 2029
Ilocos Onshore Wind Power Project	400.000	Provinces of Abra, Ilocos Norte, and Ilocos Sur	Aug 2029
Bicol Wind Power Project	500.000	Provinces of Quezon, Camarines Sur and Camarines Norte"	Sep 2029
Frontera Bay Wind Power Project	450.000	Offshore of Bataan and Cavite	Oct 2029
San Vicente Wind Power Project	8.000	Bangui and Dumalneg, Ilocos Norte	Oct 2029
Bangui 2 Wind Power Project	132.000	Del Gallego and Ragay, Camarines Sur and Tagkawayan, Quezon	Oct 2029
Mt. Labo Wind Power Project 1	200.000	Bugallon, Pangasinan	Nov 2029
Bugallon Wind Power Project	86.630	Municipalities of Malibcong, Daguioman, and Licuan-Baay in the Province of Abra and Municipality of Balbalan in the Province of Kalinga	Nov 2029
Abra-Kalinga Wind Power Project	200.000	Bula, Baao, Pili and Ocampo, Camarines Sur	Dec 2029
Baao Two Wind Energy Project Ⓢ	62.000	Bulalacao, Oriental Mindoro	Dec 2029
Bulalacao Two Wind Power Project Ⓢ	112.000	Burgos, Ilocos Norte	Dec 2029
Burgos 4 Wind Power Project	100.000	Offshore and Onshore of Batangas	Dec 2029
Calatagan Offshore Wind Power Project	1024.000	Burgos, Pasuquin, Ilocos Norte	Dec 2029
Ilocos Wind Power Project	144.000	Provinces of Bataan, Cavite, and Batangas	Dec 2029
Manila Bay Wind Power Project	1248.000		

Proposed Generation Facility / Name of the Project	Rated Capacity (MW)	Location	Target Commercial Operation
Pasuquin Wind Power Project	90.000	Pasuquin, Ilocos Norte	Dec 2029
Sanchez Mira Wind Power Project	50.000	Sanchez Mira, Cagayan	Dec 2029
Tayabas Bay Wind Power Project	275.000	Province of Quezon	Dec 2029
Real Wind Power Project	250.000	Real, Quezon	Dec 2029
Calatagan Offshore Wind Farm	1830.000	Provinces of Batangas and Occidental Mindoro	Jan 2030
Quezon Wind Power Project	100.000	Atimonan and Mauban, Quezon	Jan 2030
Capalonga Offshore Wind Farm	100.000	Offshore of Camarines Norte, Barangays Binawangan, Calabaca, Mactang and Camagsaan, Municipality of Capalonga, Province of Camarines Norte	Jan 2030
Sual Wind Power Project	100.000	Sual, Mabini and Labrador, Pangasinan	Feb 2030
Laguna-Quezon Wind Power Project	100.000	Lumban and Cavinti, Laguna; Sampaloc and Mauban, Quezon	Feb 2030
Zambales Wind Power Project	100.000	San Antonio and Castillejos, Zambales	Mar 2030
Lobo Wind Power Project	112.000	Lobo, San Juan, and Rosario, Batangas	Apr 2030
Mariveles Offshore Wind Farm	1500.000	Provinces of Bataan, Cavite, and Batangas	Jun 2030
Aurelius Wind Power Project	300.000	San Marcelino and Castillejos, Zambales	Jun 2030
Doña Remedios Trinidad Bulacan Wind Farm Project	200.000	Doña Remedios, Trinidad, Bulacan	Jun 2030
Lian Wind Farm Project	50.000	Lian, Tuy, and Balayan, Batangas	Jun 2030
Mauban Onshore Wind Power Project	260.000	Mauban, Quezon	Jun 2030
San Nicolas Onshore Wind Power Project	260.000	San Nicolas & San Manuel, Pangasinan and Itogon, Benguet	Jun 2030
Santa Fe Onshore Wind Power Project	279.000	Santa Fe and Kayapa, Nueva Vizcaya	Jun 2030
Labrador Wind Power Project Ⓢ	100.000	Labrador, Pangasinan	Aug 2030
Laguna Wind Power Project Ⓢ	100.000	Kalayaan and Lumban, Laguna; Mauban, Quezon	Apr 2030
Nueva Ecija Wind Power Project Ⓢ	100.000	San Jose City, Carranglan, and Pantabangan, Nueva Ecija	Apr 2030
Bondoc Wind Power Project	2000.000	Onshore and Offshore of Quezon; and Offshore of Masbate	Dec 2030
Castillejos Wind Power Project	100.000	Barangays of Balaybay, Buenavista, Del Pilar, Looc, Magsaysay, Nagbayan, Nagbunga, San Agustin, San Jose, San Juan, San Nicolas, San Pablo, San Roque and Santa Maria, Municipality of Castillejos; Barangays of Nagbunga and Linusungan Municipality of San Marcelino; Barangays of Angeles and San Esteban, Municipality of San Antonio; and Barangays of Asinan Poblacion, Asinan Proper, and Ilwas, Municipality of Subic, Province of Zambales	Dec 2030
Northern Luzon Offshore Wind Power Project	2000.000	Offshore of Ilocos Norte	Dec 2030
Zambales South Wind Power Project	200.000	San Felipe, San Narciso and San Marcelino	Jan 2031
San Nicolas 1 Wind Power Project	100.000	San Nicolas, Pangasinan	Feb 2031
Real Wind Power Project	250.000	Real, Quezon	Mar 2031
Mabini Wind Power Project	50.000	Mabini, Batangas	Mar 2031
San Nicolas Wind Power Project ④Ⓢ	200.000	Barangays of San Roque, San Jose, Nining, Siblot, Nagkaysa, Caratan, Poblacion East, Poblacion West, San Rafael East, Cabitnongan. Lalaocan, Cacabugaoan, Santa Maria West, Lungao, Salingcob, Bensican, Dalumpinas, Fianza, and Malico, Municipality of San Nicolas, Province of Pangasinan 1	Jun 2031
Northern Mindoro Offshore Wind Power Project Ⓢ	990.000	Provinces of Occidental Mindoro and Batangas	Jul 2031
Garza Offshore Wind Power Project	480.000	Bagac, Pilar, Orion and Mariveles, Bataan	Aug 2031
Bagac Bay Onshore Wind Project	500.000	Province of Cavite	Sep 2031
Cavite Offshore Wind Project	994.000	Offshore and Onshore of Oriental Mindoro and Antique	Oct 2031
Bulalacao Bay Offshore Wind Energy Project	1200.000	Bagac, Pilar, Orion and Mariveles, Bataan	Oct 2031
NOM FL1 Offshore Wind Project	3038.000	Provinces of Batangas and Occidental Mindoro	Oct 2031
Lubang and Looc Island Wind Power Project	800.000	Province of Occidental Mindoro	Oct 2031
Bulacan 1 Wind Power Project	187.200	Doña Remedios Trinidad, Bulacan	Nov 2031
Bulacan 2 Wind Power Project	237.600	Dona Remedios Trinidad, Bulacan	Nov 2031
Ilocos Norte Onshore and Offshore Wind Power Project	900.000	Province of Ilocos Norte	Nov 2031
Cavite Offshore Wind Power Project	540.000	Baco, San Teodoro, Puerto Galera, Oriental Mindoro and Abra de Ilog, Occidental Mindoro	Dec 2031
Abra de Ilog Wind Power Project	375.000	Bulalacao and Mansalay, Oriental Mindoro	Dec 2031
San Roque Onshore Wind Power Project	500.000	Towns of Bulalacao and Magsaysay, Occidental Mindoro	Dec 2031
Bulalacao One Onshore Wind Energy Project	330.000	Towns of Bulalacao and Magsaysay, Occidental Mindoro	Feb 2032

Proposed Generation Facility / Name of the Project	Rated Capacity (MW)	Location	Target Commercial Operation
Garchitorena Wind Power Project	304.000	Garchitorena, Lagonoy, San Jose, Presentacion, and Caramoan, Camarines Sur	Mar 2032
Presentacion 3 Wind Power Project	80.000	Presentacion and Caramoan, Camarines Sur	Mar 2032
San Jose Wind Power Project	300.000	San Jose City, Lupao and Carranglan, Nueva Ecija	Mar 2032
Claveria Offshore Wind Farm	1600.000	Provinces of Ilocos Norte and Cagayan	Apr 2032
Banahaw Wind Power Project	247.000	Sariaya and Tayabas City, Quezon	Aug 2032
Mindoro Offshore Wind Power Project	1000.000	Onshore and Offshore of Occidental Mindoro and Offshore of Antique and Oriental Mindoro	Sep 2032
Tagkawayan Wind Farm Project	300.000	Tagkawayan, Quezon	Sep 2032
Nueva Ecija 1 Wind Power Project ⑤	100.000	Carranglan, Pantabangan, and San Jose City, Nueva Ecija	Oct 2032
East Ecija Wind Power Project	420.000	Laur, Gabaldon, and General Tinio, Nueva Ecija	Nov 2032
Aparri Bay Wind Power Project	600.000	Aparri, Cagayan	Dec 2032
Cagayan West Offshore Wind Power Project	1024.000	Province of Cagayan	Dec 2032
132 MW Wind Power Project	132.500	Vintar, Bangui, Pasuquin, Ilocos Norte	Jan 2033
Bulalacao Wind Power Project	85.500	Bulalacao, Oriental Mindoro	Feb 2033
Balayan Bay Offshore Wind Energy Project	750.000	Province of Batangas	Feb 2033
Pangasinan-Zambales Wind Power Project	100.000	Aguilar, Bugallon, and Infanta, Pangasinan; Santa Cruz, Zambales	Feb 2033
Basiad Bay Offshore Wind Power Project	600.000	Province of Camarines Norte	Mar 2033
Pasacao Wind Power Project	300.000	Pasacao, Libmanan, and Pamplona, Camarines Sur	Mar 2033
Quezon-Camarines Norte Wind Power Project	400.000	Guinayangan and Tagkawayan, Quezon; Santa Elena and Labo, Camarines Norte	May 2033
Offshore Wind Luzon E-1Wind Power Project	555.000	Offshore of Sorsogon	May 2033
Ilosong Wind Power Project	512.000	Atimonan, Plaridel, Gumaca, Unisan and Lopez, Quezon	Jun 2033
Pagbilao Offshore Wind Power	300.000	Offshore of Quezon	Jun 2033
Tayabas Bay Wind Power Project	500.000	Province of Quezon	Jun 2033
Roxas Onshore Wind Power Project	1246.000	Bongabong, Roxas, and Mansalay, Oriental Mindoro"	Jun 2033
Lian Batangas Wind Power Project	112.000	Lian Batangas Wind Power Project	Jun 2033
Bulalacao Offshore Wind Farm Project	3100.000	Offshore of Oriental Mindoro and Antique	Aug 2033
Haraya Zambales Onshore Wind Project	370.000	Cabangan, Botolan and San Felipe, Zambales	Aug 2033
Ilocos Norte CW Wind Power Project	120.000	Vintar, Piddig, Sarrat, Dingras, Marcos, Laoag City, and Batac City, Ilocos Norte	Sep 2033
Ombra Wind Power Project	312.500	Dingalan, Aurora; Doña Remedios Trinidad, Bulacan; and Palayan City, Laur, General Tinio, and Gabaldon, Nueva Ecija	Sep 2033
Pantabangan Wind Power Project	156.250	Pantabangan, Nueva Ecija	Nov 2033
Calabanga Wind Project ④⑤	200.000	Calabanga and Tinambac, Camarines Sur	Dec 2033
Gubat Wind Project	190.000	Casiguran and Gubat. Sorsogon	Dec 2033
Pagsanjan Wind Project ④⑤	200.000	Pagsanjan, Lumban, Kalayaan, Cavinti and Luisiana, Laguna	Dec 2033
Mindoro Wind Power Project	500.000	Rizal and San Jose, Occidental Mindoro and Bulalacao, Mansalay and Bongabong, Oriental Mindoro	Dec 2033
Pagudpud Wind Power Project	84.000	Pagudpud, Ilocos Norte	Apr 2034
Real Offshore Wind Farm	200.000	Offshore of Quezon	Apr 2034
Gumaca-Pitogo Wind Power Project	100.000	Offshore of Quezon	Jun 2034
Laguna-Quezon Onshore Wind Power Project	550.000	Gumaca and Pitogo, Quezon Cavinti and Luisiana, Laguna and Sampaloc and Mauban, Quezon	Oct 2034
Nueva Vizcaya-Nueva Ecija Wind Power Generation Facility Project	300.000	Cavinti and Luisiana, Laguna and Sampaloc and Mauban, Quezon	Aug 2035
Legazpi Albay Wind Power Project	104.000	Barangay 66 – Banquerohan, Barangay 67 – Bariis, Barangay68 – San Francisco, Barangay 70 - Cagbacong, City of Legazpi, Province of Albay	Oct 2035
Koala Wind Power Project	150.000	Pakil; Jala-Jala, Laguna and Rizal	TBD
Rizal Wind Power Project	90.000	Antipolo and Tanay, Rizal; General Nakar, Quezon	TBD
Tayabas North Wind Energy Project ④⑤	144.000	Tayabas City and Lucban, Quezon	TBD
Total	**55.901.770**		
ENERGY STORAGE SYSTEM (ESS)			
INTEGRATED RENEWABLES WITH ENERGY STORAGE SYSTEM (IRESS)			
CS First Green Infanta Solar Power Project Battery Energy Storage	107.320	Infanta and Mabini, Pangasinan	Feb 26
Aguilar Solar Power Project ⑤	100.000	Aguilar, Pangasinan	Mar 26
CS First Green Dasol Solar Power Project BESS	82.560	Dasol, Pangasinan	Aug 26
STAND ALONE BESS			
Concepcion Battery Energy Storage	20.000	Concepcion, Tarlac	2026
Labrador Battery Energy Storage	20.000	Labrador, Pangasinan	2026
Pililla Energy Storage Project	50.000	Pililia, Rizal	Mar 2027
Bay Energy Storage Project	50.000	Calauan, Laguna	Jun 2027

Proposed Generation Facility / Name of the Project	Rated Capacity (MW)	Location	Target Commercial Operation
Enerhiya Central Battery Energy Storage Project Ⓢ	40.000	Concepcion, Tarlac	Jun 2027
Enerhiya Sur II Battery Energy Storage Project Ⓢ	40.000	Lumban, Laguna	Jun 2027
Enerhiya Sur I Battery Energy Storage Project Ⓢ	40.000	Lemery and Tuy, Calaca, Batangas	Jun 2027
Binga Battery Energy Storage System 2 Ⓢ	40.000	Brgy. Tinongdan, Itogon, Benguet	Jun 2027
Ambuklao Battery Energy Storage System	40.000	Brgy. Ambuklao, Bokod, Benguet	Jun 2027
Panda Energy Storage Project Ⓢ	150.000	Pililla, Rizal	Jul 2027
Binga Battery Energy Storage System Phase 3	40.000	Brgy. Tinongdan, Itogon, Benguet	Sep 2027
Cruz na Daan (CND) Battery Energy Storage System Ⓢ	40.600	Balagtas Bypass Road, Mabalasbalas, San Rafael Bulacan	Sep 2026
Ambuklao Battery Energy Storage System Phase 2	40.000	Brgy. Ambuklao, Bokod, Benguet	Sep 2027
Currimao Energy Storage Project Ⓢ	50.000	Currimao, Ilocos Norte	Dec 2027
Enerhiya Sur 3 Energy Storage Project	40.000	Sta. Rosa, Laguna	Dec 2027
Enerhiya Sur 4 Energy Storage Project	40.000	Cabuyao, Laguna	Dec 2027
Enerhiya Sur 5 Energy Storage Project	40.000	Calamba, Laguna	Dec 2027
Currimao Solar Power Project BESS ④Ⓢ	91.000	Currimao and Paoay, Ilocos Norte	Dec 2028
Nagsaag Battery Energy Storage	20.000	Nagsaag, Pangasinan	TBD
Gumaca Battery Energy Storage Project	40.000	Barangay Progreso, Municipality of Gumaca, Province of Quezon	TBD
Lumban Battery Energy Storage	20.000	Lumban, Laguna	TBD
Laoag Battery Energy Storage	20.000	Laoag, Ilocos Norte	TBD
Malaya Battery Energy Storage System	20.000	Malaya, Pililla, Rizal	TBD
TMO Energy Storage System Project	100.000	Navotas Fishport Complex, Baradero St., North Bay Boulevard, Navotas City	TBD
CNGRA Solana Hermosa BESS Project	30.000	Balsik Hermosa Bataan	TBD
Labo Energy Storage Project Ⓢ	20.000	Labo, Camarines Norte	TBD
Lumban Battery Energy Storage	20.000	Lumban, Laguna	TBD
Total	**1.451.480**		
TOTAL INDICATIVE	**88,576.462**		
TOTAL INDICATIVE w/o BESS	**87,124.982**		

Table A3.2 Visayas Indicative Power Plants

Proposed Generation Facility / Name of the Project	Rated Capacity (MW)	Location	Target Commercial Operation
COAL			
Therma Visayas, Inc. Coal - Fired Power Plant Expansion Project	169.000	Sitio Looc, Barangay Bato, Toledo City, Cebu	Aug 2028
TPC-1B Circulating Fluidized Bed Coal-Fired Power Plant	82.000	Brgy. Daanlungsod, Toledo City, Cebu	Apr 2029
Total	**251.000**		
GEOTHERMAL			
Biliran Geothermal Power Plant Project	5.000	Sitio Pulang Yuta, Brgy. Cabibihan, Caibiran, Biliran	2030
Biliran Geothermal Power Plant Project	45.000	Naval, Culaba, Biliran, Caibiran and Cabucgayan, Province of Biliran	2037
Total	**50.000**		
HYDRO			
Bago 1 Hydroelectric Power Project	9.600	San Carlos City, Negros Occidental	2028
Bago 2 Hydroelectric Power Project	10.000	San Carlos City & Murcia, Negros Occidental	2028
Bago 3 Hydroelectric Power Project	15.000	Murcia and Salvador Benedicto, Negros Occidental	2028
Casapa River Hydroelectric Power Project	10.000	Maslog, Eastern Samar	2028
Ilog Hydroelectric Power Project	21.600	Mabinay, Negros Oriental	2028
Lower Buhid Hydroelectric Power Project Ⓢ	20.000	Maydolong, Eastern Samar	2028
Lower Himogaan Hydroelectric Power Project	4.000	Sagay City, Negros Occidental	2028
Malugo Hydroelectric Power Project	6.000	Silay City, Negros Occidental	2028
Maslog Hydroelectric Power Project	40.000	Maslog, Eastern Samar	2028
Aklan Pumped-Storage Hydroelectric Power Project ③Ⓢ	300.000	Malay, Aklan	2035
Total	**436.200**		
BIOMASS			
15.000-MW Panay Biomass Plant Project	15.000	Barotac Viejo, iloilo	Aug 2028
Total	**15.000**		
SOLAR			

Proposed Generation Facility / Name of the Project	Rated Capacity (MW)	Location	Target Commercial Operation
Ajuy 1 Solar Power Project ④ Ⓢ	35.95	Brgy. Tipacla, Ajuy, Iloilo	Jan 2026
Victorias Ground Mounted Solar PV Project	5.000	Victorias City, Negros Occidental	Jan 2026
San Miguel Solar Power Project ④Ⓢ	125.000	San Miguel, Leyte	Mar 2026
Sagay Solar on Water PV Power Plant ④Ⓢ	101.20	Sagay City, Negros Occidental	Sep 2026
Bantayan Island Solar Power Plant	5.000	Bantayan, Cebu	Oct 2026
Bohol Solar Power Project ④Ⓢ	17.50	Ubay, Bohol	Oct 2026
Bacolod Solar Power Project Ⓢ	23.68	Bacolod City, Negros Occidental	Nov 2026
Manapla Solar Power Project Ⓢ	120.295	Manapla, Negros Occidental	Nov 2026
Victorias Solar Power Project ④Ⓢ	85.925	Victorias City, Negros Occidental	Nov 2026
Luca Solar Power Project ④Ⓢ	40.000	Barangay Luca, Ajuy, Iloilo	Dec 2026
Ubay Solar Power Project Ⓢ	137.480	Ubay, Bohol	Dec 2026
Pontevedra Solar Power Project Ⓢ	36.400	Brgy. Intungcan, Pontevedra, Capiz	Febr 2027
Barotac Viejo Solar Power Plant ④Ⓢ	175.287	Barotac Viejo, Iloilo	Mar 2027
IPC Solar Power Project	10.000	Dumangas, Iloilo	Jun 2027
Victoria Green Power Corporation Solar PV Power Plant Ⓢ	31.250	Babatngon, Leyte	Aug 2027
Sikatuna Solar Power Plant ④Ⓢ	37.884	Sikatuna and Balilihan, Bohol	Dec 2027
Haribon Floating Solar Power Project	22.000	Offshore of Cebu	Jan 2028
TPC I –San Carlos 2 Solar Power Project Ⓢ	49.350	City of San Carlos, Province of Negros Occidental	Feb 2028
Luna Solar Power Project ④Ⓢ	171.11	Cadiz City, Negros Occidental	Mar 2028
Viejo Iloilo Solar Power Plant ④Ⓢ	154.400	Barotac Viejo, Iloilo	Apr 2028
Zamboanguita Solar Power Project ④Ⓢ	50.100	Zamboanguita and Siaton, Negros Oriental	May 2028
Cadiz Solar Power Project	297.00	Cadiz City, Negros Occidental	Jun 2028
Kidlat Solar Power Project	245.000	Tabango, Leyte	Jul 2028
ZMW San Vicente Ubay Solar Power Plant Ⓢ	200.400	Ubay, Bohol	Sept 2028
Ubay Solar Power Project Ⓢ	138.60	Ubay, Bohol	Dec 2028
Daanbantayan Solar Power Project ④Ⓢ	150.000	Daanbantayan, Cebu	Feb 2029
Liloan Solar Power Project Ⓢ	266.880	Liloan, Cebu	April 2029
Isabel Solar Power Project ④Ⓢ	68.850	Kananga and Ormoc City, Leyte	May 2029
Toledo Alpha Solar Power Project Ⓢ	149.140	Toledo City, Cebu	May 2029
Medellin Solar Power Project Ⓢ	303.60	Medellin and Daanbantayan, Cebu	Jun 2029
Biliran Solar Power Project	20.000	Biliran, Biliran	TBD
Kananga-Ormoc Solar Power Project Ⓢ	660.000	Kananga and Ormoc City, Leyte	TBD
San Miguel Solar Power Project ④Ⓢ	80.000	San Miguel, Leyte	TBD
Total	**4,014.281**		
WIND			
Pulupandan Wind Power Project Ⓢ	50.000	Pulupandan, Negros Occidental	Feb 2026
Aklan Wind Power Project Ⓢ	75.600	Ibajay, Tangalan, Makato, and Malinao, Aklan	Jun 2026
Cauayan Wind Project ④Ⓢ	200.00	Cauayan, Negros Occidental	Dec 2026
Tanjay Wind Power Project Ⓢ	45.000	Bais, Bayawan, Tanjay, Pamplona, Negros Oriental	Jan 2027
Guimbal Wind Power Project Ⓢ	200.000	Guimbal, Miagao, Igbaras, Tubungan and Tigbauan, Iloilo	Oct 2027
Ajuy Wind Farm Project	200.000	Ajuy, Barotac Viejo, and Lemery, Iloilo	Dec 2027
Ibajay Wind Energy Project Ⓢ	80.600	Nabas and Ibajay, Province of Aklan; and Pandan, Province of Antique	Dec 2027
Northern Wind Power Project ④Ⓢ	100.00	Municipalities of Allen, Victoria, San Isidro, and Lavezares, Northern Samar	Dec 2027
Lavezares Wind Project ④Ⓢ	200.00	Lavezares, Rosario, Victoria and Allen, Northern Samar	Mar 2028
Negros Occidental Wind Farm Project Ⓢ	300.000	Manapla, Victorias City, E.B. Magalona, and Cadiz City, Negros Occidental	Mar 2028
Sibunag Wind Power Project	103.500	Sibunag, Guimaras	Sep 2028
Kandungaw Wind Power Project	100.000	Badian, and Dalaguete, Cebu	Sep 2028
Malay Wind Power Project	500.000	Malay and Buruanga, Aklan	Oct 2028
Aklan Wind Power Project	100.000	Barangays Naasug, Dumlog, Poblacion, Cabulihan, Nabaoy, Motag, Balusbus, and Cubay Sur2, Municipality of Malay and Barangays Bel-is, Mapayay, Habana, Taga-osip, Balusbos, and Cabugan, Municipality of Buruanga	Nov 2028
Mabinay Wind Power Project	150.000	Brgys. Dahile, Pandanon, Samac and Abis, Municipality of Mabinay; Brgys. Carol-an and Mabato, Municipality of Ayungon; Brgys. Nalundan and Cabcaban, Municipality of Bindoy; Brgys. Panciao, Municipality of Manjuyod Province of Negros Oriental	Nov 2028
Caluya Wind Power Project	967.000	Offshore and Onshore of Caluya, Antique	Dec 2028
Sibonga Wind Farm Project	50.000	Sibonga, Barili, and Dumanjug, Cebu	Dec 2028

Proposed Generation Facility / Name of the Project	Rated Capacity (MW)	Location	Target Commercial Operation
Samar Norte Offshore Wind Power Project	650.000	Provinces of Northern Samar	Dec 2028
Sebaste Offshore Wind Farm	300.000	Offshore of Antique and Aklan	Jan 2029
Valencia Wind Power Project Ⓢ	200.000	Garcia Hernandez and Valencia, Bohol	Apr 2029
Dumangas Wind Power Project	200.000	Dumangas and Barotac Nuevo, Iloilo	Jul 2029
E.B. Magalona Wind Power Project	160.000	Enrique B. Magalona and City of Victorias, Negros Occidental	Jul 2029
Silay Wind Power Project	192.000	City of Victorias, Enrique B. Magalona, Silay City, and City of Talisay, Negros Occidental	Jul 2029
Ginatilan Wind Power Project	100.000	Ginatilan, Samboan, Malabuyoc, and Oslob, Cebu	Sep 2029
Malabuyoc Wind Power Project	100.000	Malabuyoc, Alegria, Ginatilan, Oslob, and Boljoon, Cebu	Nov 2029
Anini-y Wind Power Project (Former Antique Wind Power Project) Ⓢ	150.000	Nabas, Malay, Aklan	Dec 2029
Bohol 2 Anda Wind Power Project ④Ⓢ	50.000	Anda, Candijay and Guildulman, Bohol	Dec 2029
Guimaras 1 Offshore Wind Power Project	582.000	Province of Guimaras	Dec 2029
Guimaras Onshore Wind Power Project	100.000	Buenavista, San Lorenzo, Sibunag, and Nueva Valencia, Guimaras	Dec 2029
Guimaras-Negros Occidental Offshore Wind Power Project	600.000	Provinces of Guimaras and Negros Occidental	Dec 2029
Iloilo-Guimaras Offshore Wind Power Project	1000.000	Provinces of Iloilo, Guimaras and Negros Occidental	Dec 2029
Guimaras Strait Wind Power Project Ⓢ	600.000	Province of Negros Occidental	Dec 2029
Cebu Wind Energy Project	500.000	Ronda, Alcantara, Moalboal, Argao.	Dec 2029
Panaon Wind Power Project Ⓢ	49.999	Dalaguete, Alcoy, Boljoon and Badian, Cebu"	Dec 2029
Buenavista Wind Power Project Ⓢ	100.000	San Francisco, Liloan, San Ricardo and Pintuyan, Southern Leyte	Jan 2030
Concepcion Wind Power Project	100.000	Buenavista, Guimaras	Feb 2030
Kabankalan Wind Power Project Ⓢ	100.000	Concepcion, Iloilo	Feb 2030
Negros Wind Power Project	100.000	Kabankalan City, Negros Occidental; Ayungon, Negros Oriental City of Himamaylan and Binalbagan, Negros Occidental; La Libertad, Jimalalud, Tayasan, and Ayungon, Negros Oriental	Mar 2030
Antique Onshore Wind Power Project Ⓢ	150.000	Provinces of Antique and Aklan	Aug 2030
Guimaras Strait II Wind Power Project Ⓢ	600.000	Offshore of Negros Occidental and Iloilo Provinces	Dec 2030
Northern Samar Wind Power Generation Facility Project	200.000	Palapag, Mapanas, and Gamay, Northern Samar	Dec 2030
Haraya IV - Negros Occidental Offshore Wind Project	1215.000	Province of Negros Occidental	Mar 2031
Oton Bank Offshore Wind Power Project	510.000	Provinces of Iloilo and Guimaras	Jun 2031
Lemery Wind Power Project	100.000	Lemery, Iloilo	Aug 2031
San Lorenzo Bank Offshore Wind Project	593.000	Provinces of Iloilo, Guimaras, and Negros Occidental	Sep 2031
San Enrique Bank Offshore Wind Project	500.000	Buenavista, Guimaras	Sep 2031
GS4 Offshore Wind Power Project Ⓢ	910.000	Concepcion, Iloilo	Oct 2031
Pandan Wind Energy Project Ⓢ	62.000	Pandan, Antique	Oct 2031
GS1 Offshore Wind Project Ⓢ	574.000	Province of Guimaras	Oct 2031
East Panay Offshore Wind Power Project	990.000	Provinces of Iloilo and Guimaras	Jan 2032
Negros Oriental Onshore and Offshore Wind Power Project	3,400.000	Dauin and Zamboanguita, Negros Oriental	Jan 2032
Panay Wind Power Project	300.000	Municipalities of San Joaquin and Miagao , Province of Iloilo; and Municipality of Hamtic , Province of Antique Barangays of Lawigan, Doldol, Igcadlum, Igcondao, Cata-an, San Luis, Amboyuan, Balabago, Igcabutong, Tiolas, Pitogo, Cumarascas, Lomboyan, Antalon, Matambog, Igbinagon, and Roma, Municipality of San Joaquin; Barangays of Buenavista Sur, Igcatambor and Igdulaca, Municipality of Miag- ao, Province of Iloilo; and Barangays of Botbot and Pamandayan, Municipality of Hamtic, Province of Antique	Mar 2032
GS2 Offshore Wind Power Project Ⓢ	728.000	Province of Guimaras	Jun 2032
Alegria Wind Power Project ④Ⓢ	100.000	Alegria, Badian, Alcoy, and Dalaguete, Cebu	Jul 2032
Tambobo Bay Wind Energy Project	922.000	Offshore and Onshore of Negros Oriental	Nov 2032
Iloilo Onshore Wind Power Project Ⓢ	200.000	Alimodan, Leon, Tubungan, Igbaras and Miagao; Sibalom and San Remigio, Iloilo and Antique	Mar 2033
Greater Iloilo Wind Power Project	2,000.000	Province of Iloilo, Antique, and Capiz	Jun 2033
Highlands Guimaras Wind Project Ⓢ	100.000	Sibunag, San Lorenzo and Jordan, Guimaras	Jul 2033
Bais Wind Project ④Ⓢ	150.000	Bais City, Mabinay and Manjuyod, Negros Oriental	Nov 2033

Proposed Generation Facility / Name of the Project	Rated Capacity (MW)	Location	Target Commercial Operation
Leyte Wind Project ④Ⓢ	200.000	Leyte and Capoocan, Leyte	Nov 2033
Dumaguete Offshore Wind Farm	100.000	Offshore of Negros Oriental	May 2034
San Isidro Wind Power Project	206.250	San Isidro, Northern Samar	TBD
Total	**24,165.949**		
ENERGY STORAGE SYSTEM (ESS)			
INTEGRATED RENEWABLES WITH ENERGY STORAGE SYSTEM (IRESS)			
Cadiz Solar Power Project Battery Energy Storage System	114.00	Cadiz City, Negros Occidental	Jun 2028
STAND ALONE			
The Ark- Barotac Viejo Battery Energy Storage System Ⓢ	20.000	Barangay San Juan, Municipality of Barotac Viejo, Iloilo	Mar 2026
EAUC Energy Storage System Project Ⓢ	30.000	Brgy. Ibo, Mactan Export Processing Zone I (MEPZ I), Lapu-lapu City, Cebu	May 2026
Battery Energy Storage System	55.000	Brgy. Don Andres Soriano, Toledo City, Cebu	Jun 2026
Carmen Battery Energy Storage System Phase 1 Ⓢ	28.00	Brgy. Don Andres Soriano, Toledo City, Cebu	Jun 2026
Enerhiya Delas Islas I Battery Energy Storage Project Ⓢ	40.000	Amlan, Negros Oriental	Dec 2026
Enerhiya Delas Islas II Battery Energy Storage Project Ⓢ	15.000	Ormoc, Leyte	Dec 2030
Enerhiya Delas Islas III Battery Energy Storage Project Ⓢ	15.000	Compostela, Cebu	Dec 2026
San Isidro Energy Storage Project Ⓢ	200.000	Brgy. Palanit, San Isidro, Northern Samar	Dec 2026
Toledo Battery Energy Storage System Ⓢ	20.000	Toledo City, Cebu	2026
Cadiz Energy Storage Project Ⓢ	50.000	Cadiz City, Negros Occidental	Jan 2027
Ormoc Energy Storage Project Ⓢ	50.000	Ormoc, Leyte	Apr 2027
NAGA-1 Energy Storage System Project	30.000	Brgy. Colon, Naga City, Cebu	May 2027
NAGA-2 Energy Storage System Project	30.000	Brgy. Colon, Naga City, Cebu	May 2027
Tinampa-an Energy Storage	50.000	Brgy. Tinampa-an, Cadiz City, Negros Occidental	Jun 2027
Carmen Battery Energy Storage System Phase 2 Ⓢ	28.00	Brgy. Don Andres Soriano, Toledo City, Cebu	Jun 2027
Enerhiya Delas Islas 4 Battery Energy Storage Project	40.000	Cadiz, Negros Occidental	Dec 2027
Enerhiya Delas Islas 5 Battery Energy Storage Project	40.000	Concepcion, Iloilo	Dec 2027
Enerhiya Delas Islas 6 Battery Energy Storage Project	40.000	Bacolod, Negros Occidental	Dec 2027
Tabango Battery Energy Storage System Ⓢ	7.500	Tabango City, Leyte	2027
Dingle Battery Energy Storage System	20.000	Dingle City, Iloilo	2027
Ubay Battery Energy Storage System	20.000	Ubay City, Bohol	2027
Valencia Battery Energy Storage Project	40.000	Barangay Palinpinon, Municipality of Valencia, Province of Negros Oriental	TBD
Samboan Battery Energy Storage Project Ⓢ	40.000	Barangay Suba, Municipality of Samboan, Province of Cebu	TBD
Nabas Battery Energy Storage Project	40.000	Barangay Solido, Municipality of Nabas, Province of Aklan	TBD
Compostela Battery Energy Storage System	7.500	Compostela, Cebu	TBD
Sta. Barbara Battery Energy Storage System Project	20.000	Sta. Barbara, Iloilo	TBD
Calbayog Energy Storage Power Plant	30.000	Calbayog, Samar	TBD
Daanbantayan Energy Storage Power Project	20.000	Daanbantayan, Cebu	TBD
Padayon (CPPC) Energy Storage Project	20.000	Brgy. Ermita, Cebu City, Cebu	TBD
Naga (Pandora) Battery Energy Storage	20.000	Naga City, Cebu	TBD
Pandora 2 Integrated Energy Storage Project	42.000	Barangay Colon, Naga City, Cebu	TBD
Santander Energy Storage Project	30.000	Santander Cebu	TBD
Santa Rita Energy Storage Project	30.000	Santa Rita, Samar	TBD
Tabango Battery Energy Storage System	30.000	Tabango, Leyte	TBD
Total	**1,312.000**		
TOTAL INDICATIVE	**30,244.430**		
TOTAL INDICATIVE w/o BESS	**28,932.430**		

Table A3.3 Mindanao Indicative Power Plants

Proposed Generation Facility / Name of the Project	Rated Capacity (MW)	Location	Target Commercial Operation
COAL			

Proposed Generation Facility / Name of the Project	Rated Capacity (MW)	Location	Target Commercial Operation
San Ramon Power, Inc. Coal-Fired Power Station	120.000	ZamboEcozone, Brgy. Talisayan, Zamboanga City	Mar 2028
Total	**120.000**		
GEOTHERMAL			
Amacan Geothermal Project	119.00	Nabunturan, New Bataan, Maco, Mabini, Maragusan (San Mariano), Mawab and Pantukan, Compostella Valley	Dec 2030
Total	**119.00**		
HYDRO			
Agus III Hydroelectric Power Project	225.000	Pantar, Lanao del Norte & Baloi/Saguiara, Lanao del Sur	2028
Bulanog-Batang Hydroelectric Power Project	32.500	Iligan City, Lanao del Norte	2028
Casauman Hydroelectric Power Project	34.000	Manay, Davao Oriental	2028
Cateel Hydroelectric Power Project	29.000	Baganga, Davao Oriental	2028
Culaman Hydroelectric Power Project	10.000	Manolo Fortich, Bukidnon	2028
Magpet 1 Hydroelectric Power Project	18.000	Magpet, North Cotabato	2028
Magpet 2 Hydroelectric Power Project	9.500	Magpet, North Cotabato	2028
Maladugao River (Lower Cascade) Hydroelectric Power Project	15.700	Kalilangan & Wao, Bukidnon	2028
San Isidro Hydroelectric Power Project	39.000	Talakag, Bukidnon and Cagayan de Oro City	2030
South Pulangi Hydroelectric Power Project	250.000	Damulog, Bukidnon	2030
Bacolod Hydroelectric Power Project	8.620	Bacolod, Lanao del Norte	2031
Dimarao Hydroelectric Power Project	6.140	Bacolod, Lanao del Norte	2031
Total	**677.460**		
BIOMASS			
50 MW Biomass Power Plant Project Ⓢ	50.00	Surigao del Sur	Jun 2026
Total	**50.000**		
SOLAR			
Jasaan Solar Power Project	58.00	Jasaan, Misamis Oriental	Se 226
The Ark Solar Power Project Ⓢ	99.000	Tantangan, South Cotabato	Dec 2026
SPPC Solar Power Project ④Ⓢ	16.80	Alabel, Sarangani	Aug 2027
SPPC Solar Power Project Phase 2 ④Ⓢ	42.300	Alabel, Sarangani	Jul 2028
SPPC Solar Power Project Phase 3 ④Ⓢ	45.900	Alabel, Sarangani	Aug 2029
Agrovoltaic Solar Power Project Ⓢ	180.000	General Santos City, South Cotabato	Nov 2027
Zamboanga del Norte Solar Power Project	5.100	La Libertad and Dapitan, Zamboanga del Norte	Jan 2028
Bawing Solar Power Project Ⓢ	74.80	General Santos City	Apr 2028
Bluefin Solar Power Project Ⓢ	150.00	"Maasim, Sarangani and General	Apr 2028
Capital1 Davao Solar Power Plant	35.20	Santos City"	Jul 2028
Sinawal Solar Power Project Ⓢ	150.720	Alabel, Sarangani	Sep 2028
1.212-MWp SUKELCO Solar Power Plant	1.000	Tacurong CIty, Sultan Kudarat	TBD
Banaybanay Davao Oriental Solar Farm Ⓢ	49.700	Municipality of Banaybanay, Province of Davao Oriental	TBD
Titan V Solar Power Project ④Ⓢ	150.00	Barobo and Tagbina, Surigao del Sur	TBD
Total	**1,058.520**		
WIND			
Caraga Wind Power Project Phase 1 ④Ⓢ	216.000	"Surigao City, San Francisco, Malimono, Sison, Placer and Mainit, Surigao del Norte	Sep 2026
Caraga Wind Power Project Phase 2 ④Ⓢ	80.000	Jabonga, Agusan del Norte	Jun 2029
Lake Mainit Wind Power Project Ⓢ	200.000	Malimono and Mainit; Jabonga, Agusan del Norte and Surigao del Norte	Dec 2029
Bukidnon Wind Power Project	136.000	Malaybalay City, Cabanglasan, and San Fernando, Bukidnon	Jul 2030
Misor Wind Power Project Ⓢ	200.000	Balingoan, Claveria, Salay, Sugbongcogon, Kinoguitan, Talisayan, and Medina, Misamis Oriental	Jul 2030
Kauswagan Wind Power Project Ⓢ	100.000	Kauswagan, Poona Piagapo, and Munai, Lanao del Norte	Aug 2031
Camiguin Onshore Wind Power Project	100.000	Guinsiliban, Sagay, and Mahinog Camiguin	Jul 2033
Total	**1,032.00**		
ENERGY STORAGE SYSTEM (ESS)			
The Ark- Laguindingan Battery Energy Storge Project Ⓢ	24.280	Barangay Lapad, Municipality of Languindingan, Misamis Oriental	Dec 2026

Proposed Generation Facility / Name of the Project	Rated Capacity (MW)	Location	Target Commercial Operation
Kibawe Energy Storge Project	50.000	Kibawe, Bukidnon	Jul 2027
Toril Energy Storage System	20.000	Toril, Davao	TBD
Total	**134.28**		
TOTAL INDICATIVE	**3,191.26**		
TOTAL INDICATIVE w/o BESS	**3,056.98**		

Appendix 4
PROSPECTIVE POWER PLANTS

Legend:
①/②/③/④ – Included under GEAP Round 1, 2, 3 or 4
Ⓢ – Project has undergone System Impact Study (SIS)
Ⓔ – Project is exempted from System Impact Study (SIS)
Ⓕ – Project has submitted/undergone Facility Study (FS)
Ⓟ - Project with phased connection arrangements
* - Awaiting ERC approval

Table A4.1: Luzon Prospective Power Projects

Proposed Proponent	Name of the Projects	Total Capacity (MW)	Year of Entry[6]	Location
COAL				
Bataan 2020, Inc. (B2020)	25 MW Coal Cogeneration Power Plant Project	25	2020	Bataan
Mariveles Power Generation Corporation (MPGC)	2x300 MWGROSS (2x270 MWNET) Mariveles Coal-Fired Power Plant (Phase 2) Ⓢ	540	Unit 5: 2028 Unit 6: 2029	Bataan
BIOMASS				
Manila Integrated Environment Corporation (MIEC)	102.40 MWGROSS (88.69 MWNET) Manila Waste-to-Energy Facility Project Ⓢ	88.69	2029	Manila
SOLAR				
Pristine Green Fuel Solutions Corp.	10 MW Sunshine Solar Power Project Ⓢ	10	2022	Bulacan
2 Barracuda Energy Corp. (2BEC)	150 MW Bay Floating Solar Ⓢ	150	2024	Laguna
4 Barracuda Energy Corp. (4BEC)	200 MW Calamba Floating Solar Plant Project	200	2023	Laguna
AC Laguna Solar, Inc.	250 MW Rizal Floating Solar	250	2024	Rizal
Solar Power Utilities Generator Corporation (SPUGC)	45 MW Bato Solar Ⓢ	45	2023	Zambales
Greencore Power Solutions 2, Inc., (GPS2I)	51.55 MWAC Tuy Batangas 4 Solar Power Ⓢ	51.55	2024	Batangas
Citicore Solar Quezon Inc (CSQI)	98.678 MWp (70.5 MWac) Pagbilao 1 Solar Power Plant Project Ⓢ	70.5	2024	Quezon
Citicore Solar Quezon, Inc. (CSQI)	37.801MWP/27.000 MWAC Pagbilao 2 Solar Power Project Ⓢ	27	2024	Quezon
Cleantech Global Renewables, Inc. (CLEANTECH)	22 MWP (19 MWAC) Bulacan Solar Power Plant Project	22	2020	Bulacan
Electricidad Inc. (Electricidad)	321.225 MWdc (231.000 MWac) Sta. Maria Solar Power Project Ⓢ	231	2029	Cagayan
EMCRII Resource, Inc.	50 MW Pilipinas Einstein Solar PV Power Plant	50		Pangasinan
EMCRII Resource, Inc.	50 MW Pilipinas Newton Solar PV Power Plant	50		Pangasinan
Energence	35 MW Clark Solar Power Plant	35	2024	Pampanga
Ecopark Energy of Valenzuela Coro.	4.04 MW Ecopark Isla Solar Power Plant ④	4.04		
Ecopark Energy of Valenzuela Coro.	14.70 MW Ecopark Tagalag Solar Power Plant ④	14.70		
Citicore Renewable Energy Corporation	153.982 MWP / 110.100 MWAC Pagbilao 3 Solar Power Project; Phase 1 ④ Ⓢ	110.1	2026	Quezon
Citicore Renewable Energy Corporation	210.027 MWP / 150 MWAC Bolbok 3 Solar Power Project Ⓢ	150	2026	Batangas
Citicore Renewable Energy Corporation	210.027 MWP / 150 MWAC Bolbok 4 Solar Power Project; Phase 1, Phase 2 & Phase 3 ④ Ⓢ	150	2026	Batangas
Citicore Renewable Energy Corporation	210.027 MWP / 150 MWAC Bolbok 5 Solar Power Project; Phase 1, Phase 2 & Phase 3 ④ Ⓢ	150	2026	Batangas
Tai Yang 1 Power Inc.	50 MW Bataan Solar Power Project ④ Ⓢ	50	2026	Bataan
SMC Global Light and Power Corp.	300 MWp (233.7 MWac) Cauayan Solar Power Project; Phase 1 ④ Ⓢ	233.7		Isabela
SMC Global Light and Power Corp.	700 MWP (560 MWAC) Cauayan Solar Power Project Phase 2 ④ Ⓢ	560	2028	Isabela
Citadel Energy Corporation	270 MW San Vicente Solar Power Proiect Ⓢ	270		
Joy-Nostalg Solaris Incorporated	4.95 MW Naic Solar Rooftop Power Project ④ Ⓢ	4.95	2026	Cavite
Joy-Nostalg Solaris Incorporated	10.50 MW Ning*Ning Muzon-Labac Rooftop Solar Power Project	10.50		
Joy-Nostalg Solaris Incorporated	4.02 MW Ning*Ning Catmon Sta. Maria Rooftop Solar Power Project	4.02		
Joy-Nostalg Solaris Incorporated	5.35 MW Ning*Ning Dolores Magalang Rooftop Solar Power Project ④ Ⓢ	5.35		
SMC Global Light and Power Corp.	Angat Solar Power Project Phase 1 ④ Ⓢ	540		
SMC Global Light and Power Corp.	Angat Solar Power Project Phase 2 ④ Ⓢ	500		
Kanji Solar Inc. (KSI)	70.013 MWP (49.900 MWAC) Tumauini Solar Power Project Ⓢ	49.9	2028	Isabela
Jord Energy Corporation (JEC)	75.011 MWP (49.500 MWAC) Umingan Solar Power Plant Project Ⓢ	49.9	2026	Pangasinan

Proposed Proponent	Name of the Projects	Total Capacity (MW)	Year of Entry[6]	Location
Liberty Solar Energy Corporation (LSEC)	64.700 MWP / 49.900 MWAC Apulid Solar Power Plant Project ⓢ	49.9	2026	Tarlac
Liberty Solar Energy Corporation (LSEC)	64.700 MWP / 49.900 MWAC Apulid Solar Power Plant Project Connection B (Phase 2) ⓢ	49.9	2026	Tarlac
5 Hour Peak Energy Corporation (5HPEC)	10 MW Palauig II Solar Power Project ⓢ	10	2025	Zambales
Retensol, Inc. (RI)	66.700 MWDC / 49.000 MWAC Murcia Solar Power Plant Project ⓢ	49	2027	Tarlac
GreenQuest 1 Renewables Corporation (G1RC)	49.9 MWAC Hermosa 1 Solar Power Project ⓢ			
PV Sinag Power Inc. (PVSPI)	134.407 MWP (89.600 MWAC) Laoag Solar Power Project Phase 3 ⓢ	89.6	2029	Pangasinan
ExZAL Renewable Energy Corporation (EREC)	65.000 MWP/ 49.900 MWAC Villahermosa-Danlog Solar Power Project ⓢ	49.9	2027	Sorsogon
Lubao Solar Power Corporation (LSPC)	66.157 MWP (49.280 MWAC) Lubao Solar Power Project ⓢ	50	2027	Pampanga
Basic Energy Corporation (BEC)	62.500 MWP (50.000 MWAC) Mariveles Solar Power Project ⓢ	50	2027	Bataan
Electricidad Inc. (Electricidad)	321.225 MWdc (231.000 MWac) Sta. Maria Solar Power Project ⓢ	231	2029	Isabela
NewAsia Power Energy III Corp. (NAPE3C)	181.00 MWP (139.70 MWAC) Macabebe Floating Solar Power Project ⓢ	139.7	2028	Pampanga
SJC Solarpower Corporation (SJC	30 MWAC Saranay Solar Power Project ⓢ	30	2025	Nueva Ecija
SJC Solarpower Corporation (SJC	30 MWAC San Juan Solar Power Project ⓢ	30	2027	Nueva Ecija
SN Aboitiz Power Magat, Inc. (SNAPMI)	50 MW Alfonso Lista Solar Power Plant ⓢ	53.12	2027	Quezon
Bolo Renewable Energy Corp. (BREC)	62.075 MWP / 53.120 MWAC Atimonan Solar Power Project ⓢ	90	2029	Quezon
Citicore Renewable Energy Corporation (CREC)	104.993 MWP / 75.000 MWAC Pagbilao 4 Solar Power Project ⓢ	75	2026	Quezon
Bolo Renewable Energy Corp. (BREC)	97.660 MWP / 71.680 MWAC Ultra Solar Power Project ⓢ	71.68	2027	Quezon
Citicore Renewable Energy Corporation (CREC)	917.421 MWP (650.100 MWAC) Isabela Solar Power Project ⓢ	650.1	Phase 1: 2028 Phases 2 & 3: 2029	Nueva Vizcaya
Maravilla Renewable Energy Corp. (MREC)	61.770 MWP / 49.900 MWAC Labo Solar Power Project ⓢ	49.9	2029	Camarines Norte
Basic Energy Corporation (BEC)	46.990 MWP (36.400 MWAC) Bolinao Solar Power Project ⓢ	36.4	2027	Pangasinan
NATURAL GAS				
First Gen Ecopower Solutions, Inc. (FGEPS)	2X630 MW Santa Maria Combined-Cycle Power Plant Project - NATGAS	1260	2023	Batangas
WIND				
ACX3 Capital Holdings Inc. (ACX3)	600 MW Lubang and Looc Island Wind Power Project ⓢ	600	2027	Batangas
Alternergy Tanay Wind Corporation (ATWC)	49 MW Alabat Wind Power Project ⓢ	49	2025	Quezon
Arcana Wind Energy Corp. (AWEC)	400 MW Quezon-Camarines Norte Wind Power Project ⓢ	400	2033	Quezon
Cleantech Global Renewables Inc. (CTGRI)	125 MW Kalayaan 4 South Wind Energy Project ⓢ	125	2027	Laguna
Cleantech Global Renewables Inc. (CTGRI)	150 MW Tayabas South Wind Energy Project ⓢ	150	2028	Quezon
Cleantech Global Renewables Inc. (CTGRI)	330 MW Bulalacao One Onshore Wind Energy Project - Phase 1 ⓢ	144	2027	Oriental Mindoro
Cleantech Global Renewables Inc. (CTGRI)	330 MW Bulalacao One Onshore Wind Energy Project - Phase 2 ⓢ	186	2028	Oriental Mindoro
Domhain Earth Corporation	1830 MW Calatagan Offshore Wind Farm ⓢ	1830	2030	Batangas
Earth Sol Power Corp. (ESPC)	300 MW Bagac Bay Onshore Wind Project ⓢ	300	2028	Bataan
Earth Sol Power Corp. (ESPC)	500 MW Bagac Bay Offshore Wind Project ⓢ	500	2027	Bataan
Energy Development Corp	100 MW EDC Burgos 3 Wind Power Project ⓢ	100	2026	Ilocos Norte
Energy Development Corporation (EDC)	177 Matnog Wind Power Plant Project	60	2022	Albay
Energy Logics Ph Inc (ELPI)	130.50 MW Pasuquin Wind Power Project ⓢ	130	2024	Ilocos Norte
EPBWC / Energy Development Corp	120 MW EBBWPC Burgos 2 Wind Power Project ⓢ	120	2026	Ilocos Norte
Exa Wind Energy Corp. (EWEC)	500 Bicol Wind Power Project ⓢ	500	2033	Quezon
First Gen Visayas Energy Inc. (FGVEI)	100 MW Balayan Bay Wind Power Project	100	2030	Batangas
First Gen Visayas Energy Inc. (FGVEI)	100 MW Laguna - Quezon Wind Power Project	100	2030	Laguna
First Gen Visayas Energy Inc. (FGVEI)	100 MW Zambales Wind Power Project ⓢ	100	2030	Zambales
First Maxpower International Corporation (FMIC)	50 MW Sanchez Mira Wind Power Plant Project	50	2020	Cagayan
Fuego Renewable Energy Corp. (FREC)	555 MW Offshore Wind Luzon E-1 Wind Power Project ⓢ	555	2030	Leyte
Giga Ace 6, Inc.	387.5 MW Real Ace Wind Power Project	387.5	2027	Laguna
First Gen Visayas Energy Inc. (FGVEI)	100.000 MW Infanta-Dasol Wind Power Project ⓢ	100	2021	Pangasinan
Cleantech Global Renewables, Inc. (CGRI)	144.000 MW Tayabas North Wind Energy Project ⓢ	144	2028	Quezon
Amihan Power, Inc. (API)	112.000 MW Lobo Wind Power Project ⓢ	112	2030	Batangas
GigaWind1 Inc. (GW1I)	280.003 MWP / 209.700 MWAC GigaWind1 ⓢ Floating Solar Power Plant Project ⓢ	209.7	2027	Laguna
GigaWind8, Inc. (GW8I)	344.5 MW Laguna East Wind Power Project ⓢ	344.5	2028	Laguna
Green PV Energy Corporation (GPVEC)	49.9 MW Libmanan Solar Power Project ⓢ	49.9	2027	Camarines Sur

Proposed Proponent	Name of the Projects	Total Capacity (MW)	Year of Entry[6]	Location
SE Renewable Energy Inc. (SREI)	104.000 MW Balayan Batangas Wind Power Project ⓢ	104	2029	Batangas
Alba Renewables Philippines Corporation (ARPC)	300.000 MW Aurelius Wind Power Project ⓢ	300	2030	Zambales
HYDRO				
Angat Hydroelectric Corp	218 MW Angat Hydro Rehab Project	218	2022	Bulacan
Angat Hydroelectric Corp	26.571MW Angat HEPP AUX 4 AND AUX 5 Rehabilitation Project	26.571	2025	Bulacan
Bimaka Renewable Energy and Development Corp. (Bredco)	7 MW Besao 2 Hydroelectric Power Plant Project ⓢ	7	2024	Benguet
Citicore Power, Inc. (CPI)	25.7 MW Ilaguen 3A Hydro Electric Power Plant	25.7	2020	Isabela
Philnew Hydro Power Corp. (PHPC)	11.300 MW Tumauini (Upper Cascade) Hydroelectric Power ⓢ	11.3	2026	Isabela
Baguio Asin Hydropower Corporation (BAHC)	4.000 MW Asin 1 Hydroelectric Power Plant Project ⓢ	4	2028	Benguet
Baguio Asin Hydropower Corporation (BAHC)	4.000 MW Asin 2 Hydroelectric Power Plant Project ⓢ	4	2028	Benguet
Baguio Asin Hydropower Corporation (BAHC)	4.000 MW Asin 3 Hydroelectric Power Plant Project ⓢ	4	2029	Benguet
OIL-BASED				
Bicol Ancillary Services Inc. (BASI 2)	50 MW Namantao Diesel	50	2021	Albay
Bicol Ancillary Services Inc. (BASI)	100 MW Kiwalo Diesel	100	2021	Albay
Belgrove Power Corporation (BPC)	2x30 MW Malaya Diesel Power Plant ⓢ	60	2026	Rizal
ENERGY STORAGE SYSTEM (ESS)				
Camsur II Wind Energy Corp. (CWEP II)	±50 MW Bay Energy Storage Project	±50	2024	Laguna
Cell Power Energy Corporation (CPEC)	±20 MW Bay Battery Energy Storage Project	±20	2022	Laguna
Giga Ace 7, Inc.	1020 MW Calatagan Offshore Wind Power Project	1020	2028	Batangas
SolarAce3 Energy Corp. (SAEC)	80 MWAC SolarAce3 Integrated Renewable Energy & Storage System Project with 247.1 MWP (206.5 MWAC) Solar PV and 520 MWh (130 MWAC) Battery Energy Storage System ⓢ	80	2028	Cagayan

Table A4.2: Visayas Prospective Power Projects

Proponent	Name of the Projects	Total Capacity (MW)	Proposed Year of Entry[7]	Location
OIL-BASED				
Alsons Energy Development Corporation	55 MW Bunker C Fired Diesel Power Plant Project	55	2020	Samar
WIND				
Cleantech Global Renewable Inc.	62 MW Pandan Wind Power Project ⓢ	62	2027	Aklan
Earth Sol Power Corp (ESPC)	588 MW San Lorenzo Wind Power Project	588	2028	Negros Occidental
The Blue Circle Philippines Cebu Corp. (TBC)	80.6 MW Ibajay Wind Energy Project ⓢ	80.6	2027	Aklan
Earth Sol Power Corp (ESPC)	510 MW Oton Bank Offshore Wind Power Project ⓢ	510	2027	Iloilo
Tri-Conti Elements Corporation (TCEC	600 MW Guimaras Strait I Wind Power Project	600	2025	Negros Occidental
Triconti ECC Renewables Corporation (TERC)	50 MW Bohol 2 (Anda) Wind Power Plant Project	50	2021	Bohol
Tri-Conti Elements Corporation (TCEC)	PDPP 3 2-7.5 MW BESS Expansion	7.5	2022	Iloilo
Basic Energy Corporation (BEC)	200 MW Panay Wind Power Project ⓢ	200	2032	Antique, Ioilo
SOLAR				
Magallanes Solar Energy Corp.	175 MW Barotac Viejo Solar Power Plant	175	2025	Iloilo
Samar II Electric Cooperative, Inc.	1 MW Samelco II - Paranas Solar Power Project	1	2023	Samar
Visayas Cleanergy Inc. (VCI)	297 MW Daga Solar Power Project ⓢ	297	2028	Negros Occidental
Limnelos Inc.	Silay Solar on Water PV Power Plant ④ ⓢ	64.00	2027	Negros Occidental
Jin Navitas Solaris, Inc. (JNSI), formerly Joy-Nostalg Solaris Incorporated (JNSI)	Earthlight San Fernando Barotac Viejo Solar Power Project ④ ⓢ	150	2028	Iloilo
EcoSolar Energy Corporation	Panitan Solar Power Project ④ ⓢ	80.00	2026	Capiz
Joy-Nostalg Solaris Incorporated	Earthlight Concepcion Solar Power Project; Phase 1 ④ ⓢ	30.400	2027	Iloilo
Basic Energy Corporation	Cadiz 1 Solar Power Plant ④ ⓢ	43.41	2025	Negros Occidental
JICA Power and Development Corp.	Viejo Iloilo Solar Power Project ④ ⓢ	158.40	2026	Iloilo
Western Visayas Solar Energy Coro.	Ilog Solar Power Project ⓢ ④	140.10		
Magallanes Solar Energy Corp.	Barotac Viejo Solar Power Project ⓢ ④	67.00	2028	
Citicore Renewable Energy Corporation	Silay 2C Solar Power Project ⓢ ④	70.2	2026	Negros Occidental
Citicore Renewable Energy Corporation	Silay 2D Solar Power Project ⓢ ④	36.9	2027	Negros Occidental

San Carlos Sun Power, Inc. (SACASUN)	15.765 MWP / 14.100 MWAC San Carlos Sun Power Plant Expansion ©	14.1	2027	Negros Occidental
Adequate Power Inc. (API)	36.430 MWP / 30.800 MWAC Tabango Solar Power Project ©	30.8	2027	Leyte
Greenbelt Energy Inc. (GEI)	180 MWP / 140 MWAC Ilog Solar Power Project ©	140	2027	Negros Occidental
Pointe Nord Cadiz Solar Power OPC (PNCSPO)	74.415 MWP (60.000 MWAC) Pointe Nord Cadiz Solar Power Plant Project ©	60	2026	Negros Occidental
Alsons Energy Development Corporation (AEDC)	34.800 MW Bago 3 Hydroelectric Power Project ©	34.8	2028	Negros Occidental
Saravia Solar Power Corporation (SSPC)	100.030 MWDC / 86.030 MWAC Murcia Solar Power Project ©	86.03	2028	Negros Occidental
San Riz Cadiz OPC (SRCO)	242.550 MWP (202.783 MWAC) San Riz Solar Power Project ©	202.783	2026	Negros Occidental
SPC Power Corporation (SPC)	60.038 MWP (49.867 MWAC) Barotac Solar Power Project ©	49.867	2027	Iloilo
GEOTHERMAL				
Reliance Energy Development Inc. (REDI)	300 MW San Carlos Combined Cycle Gas Turbine Power Plant ©	300	2024	Negros Occidental
ENERGY STORAGE SYSTEM (ESS)				
SPC Island Power Corporation	PB 104 2.0 MW Battey Energy Storage System (BESS) Expansion	32	2022	Bohol
SPC Island Power Corporation	PDPP 1 1.85 MW MW Battey Energy Storage System (BESS) Expansion	22	2022	Iloilo
SPC Island Power Corporation	PDPP 3 2-7.5 MW MW Battey Energy Storage System (BESS) Expansion	7.5	2022	Iloilo
Ecosolar Energy Corporation (EcoSolar)	20.000 MW / 40.000 MWh Panitan Energy Storage Project ©	20	2026	Capiz

Table A4.3: Mindanao Prospective Power Projects

Proponent	Name of the Projects	Total Capacity (MW)	Proposed Year of Entry[8]	Location
COAL				
FDC Misamis Power Corporation (FDCMPC)	2x135 MW CFB Coal-Fired Power Plant Expansion Project	270	2024	Misamis Oriental
FDC Misamis Power Corporation (FDCMPC)	3x135 MW CFB Coal-Fired Power Plant Expansion Project	405	2022	Misamis Oriental
Sarangani Energy Corp. (SEC)	Interconnection Of Sec 1 & Sec 2 - Coal	234	2021	Sarangani
Sarangani Energy Corporation (SEC)	118.5 MW Sec Phase 2 Coal-Fired Power Plant Project	118.5	2020	South Cotabato
HYDRO				
Agusan Power Corporation (APC)	25 MW Lake Mainit Hydro Power Plant Project	25	2020	Agusan Del Norte
Cabanglasan Hydropower Corporation (CHC)	15 MW Pulanai Hydroelectric Power Plant Project	15	2025	Bukidnon
Cell Power Energy Corp (CPEC)	20 MW Toril Energy Storage Project	20	2023	Davao Del Sur
Mangima Hydro Power Corporation (MHPC)	12 MW Mangima Hydro Electric Power Project ©	12	2025	Bukidnon
Philnew River Power Corporation (PRPC)	3.7 MW Malitbog & 3.7 MW Silo-O Hydro Electric Power Project	7.4	2025	Misamis Oriental
Pulangi Hydro Power Corporation (PHPC)	250 MW Pulangi Hydro Electric Power Project	250	2025	Bukidnon
Siguil Hydro Power Corporation (SHPC)	14.5 MW Siguil Hydro Electric Power Plant ©	14.5	2023	South Cotabato
Maramag Hydropower Corporation (MHC)	14.0 MW Pulangui IV Hydroelectric Power Project ©	14	2028	Bukidnon
BIOMASS				
Crystal Sugar Company, Inc.	14.9 MW Biomass Cogeneration Plant ©	14.9	2024	Bukidnon
Libertad Power and Energy Corporation (LPEC)	1x6.0MW (5.0MW Net) Biomass Power Plant	6	2023	Zamboanga Del Sur
Lumino Biomass Power Incorporation (LBPI)	50 MW Lumino Cogen Biomass Power Plant Project	50	2025	Surigao Del Sur
Crystal Sugar Company, Inc.	14.9 MW Bagasse-Fired Cogeneration Power Plant Project	14.9	2020	Bukidnon
GEOTHERMAL				
Energy Development Corporation (EDC)	25 MW Mindanao Binary Power Plant Project	25	2021	North Cotabato
ENERGY STORAGE SYSTEM (ESS)				
Fort Pilar Energy, Inc. (FPEI)	±20 MW Aurora Battery Energy Storage System (BESS)	±20	2021	Zamboanga Del Sur
Fort Pilar Energy, Inc. (FPEI)	±20 MW Sangali Battery Energy Storage System (BESS)	±20	2020	Zamboanga Del Sur
Fort Pilar Energy, Inc. (FPEI)	±60 MW Pitogo Battery Energy Storage System (BESS)	±60 MW	2020	Zamboanga Del Sur

Proponent	Name of the Projects	Total Capacity (MW)	Proposed Year of Entry[8]	Location
Giga Ace 9 Inc. (GA9I)	30 MW Davao Battery Energy Storage System	30	2022	Davao Del Sur
Kind Energy Generation, Inc. (KEGI)	20 MW Maramag BESS (KEGI)	20	2021	Bukidnon
Limay Power Generation Corporation (LPGC)	±40 MW Villanueva Battery Energy Storage System (BESS)	±40	2020	Misamis Oriental
Therma Marine, Inc. (TMI)	Integration Of Battery Energy Storage System	48	2022	Davao De Oro
Therma Marine, Inc. (TMI)	48 MW Nasipit Hybrid Battery Energy Storage System	48	2024	Agusan Del Norte
Universal Power Solutions, Inc. (UPSI)	±10 MW Tagum Integrated Renewable Power Facility Hub (R-Hub)	±10	2021	Davao De Oro
Universal Power Solutions, Inc. (UPSI)	±20 MW Jasaan Integrated Renewable Power Facility Hub (R-Hub)	±20	2021	Misamis Oriental
The Ark Green Dynamic Resources Corp. (TAGDRC)	20.000 MW / 40.120 MWh The Ark – Laguindingan Battery Energy Storage System ⓒ	±20	2026	Misamis Oriental
Upgrade Energy Philippines, Inc. (UGEP)	25.000 MW / 100.000 MWh Upgrade Matanao Battery Energy Storage System ⓒ	±28	2026	Davao Del Sur
SOLAR				
Greenlight Solar Farms Tapian Corporations (GSFTC)	50 MW Solar Power Plant Project	50	2020	Sultan Kudarat
Sukelco Inc.	1 MW Embedded Solar Power Project	1	2023	Sultan Kudarat
Total Power, Inc. (TPI)	80 MW AC Solar Power Plant Project	80	2020	South Cotabato
Olympia Solar Power Corporation	Kalandagan Solar Power Project ⓒⓓ	54	2027	Sultan Kudarat
FDC Green Energy Corporation (FDCGEC)	20.774 MWp / 17.185 MWac Misamis Solar Power Project ⓒ	17.185	2025	Misamis Oriental
Alabel Solar Energy Corporation (ASEC)	64.416 MWP/ 48.600 MWAC SPPC Solar Power Project – Phase 1 ⓒ	48.6	2026	Sarangani Province
RNA Energy Corporation (REC)	59.976 MWP / 49.984 MWAC Polanco Solar Power Plant Project ⓒ	49.984	2026	Zamboanga del Norte
Mindanao Cleanergy, Inc. (MCI)	276.567 MWP/ 198.000 MWAC Manolo Fortich Solar Power Project ⓒ	198	2029	Bukidnon
San Jose Solar Power Generation Corp. (SJSPGC)	120.608 MWP / 106.750 MWAC San Jose Solar Power Plant Project ⓒ	106.75	2028	Bukidnon
RNA Energy Corporation (REC)	62.496 MWP / 49.984 MWAC Talahiron Solar Power Project ⓒ	49.984	2026	Bukidnon
Bukidnon Solar Power Corp. (BSPC)	60.024 MWP / 51.555 MWAC Maramag Solar Power Project ⓒ	51.555	2026	Bukidnon
Vivant Solenergy Bukidnon Corp. (VSBC)	183.625 MWP/ 148.500 MWAC Bukidnon Solar Power Project ⓒ	148.5	2027	Bukidnon
Kasilak Solar Energy Corporation (KSEC)	52.075 MWP / 35.200 MWAC Kasilak Solar Power Project ⓒ	35.2	2026	Davao del Norte
Cacao Solar Energy Corporation (CSEC)	25.740 MWP / 19.800 MWAC Cacao Solar Power Project ⓒ	19.8	2026	
SMC Global Light and Power Corp.	300 MWP (237.5 MWAC) Malita Solar Power Project ⓒ	237.5	2026 (Phase 1); 2027 (Phase 2); 2028 (Phase 3); 2029 (Phase 4)	Davao Occidental
Embrace Nature Power3 Corporation (ENP3C)	180.013 MWP/ 149.800 MWAC Power3 Binuangan Solar Power Plant Project ⓒ	149.8	2028	Davao De Oro
Embrace Nature Power2 Corporation (ENP2C)	360.026 MWP/ 299.600 MWAC Power2 Concepcion Solar Power Plant Project ⓒ	299.6	2028	Davao De Oro
OIL-BASED				
King Energy Generation Inc.	8.433 MW MOPP4 Diesel Power Plant	8.433	2021	Zamboanga Del Sur
Malita Power Inc. (MPI)	28 MW Sangali Diesel Project Phase 2 ⓒ	28	2024	Zamboanga Del Sur
WIND				
First Gen Visayas Energy Inc. (FGVEI)	100.000 MW Katipunan Wind Power Project ⓒ	100	2031	Zamboanga del Norte
First Gen Visayas Energy Inc. (FGVEI)	100.000 MW Siay Wind Power Project ⓒ	100	2031	Zamboanga Sibugay

Appendix 5

LIST OF DIRECTLY CONNECTED CUSTOMERS

NAME OF CUSTOMER	ABBREVIATION
NORTH LUZON	
DISTRICT 1	
Holcim Philippines., Inc.- La Union	Holcim-La Union
National Irrigation Administration - Banaoang Pump Irrigation Project	NIA-Banaoang
DISTRICT 2	
Benguet Corporation - Balatoc	BC-BALATOC
Itogon Suyoc Resources, Inc.	ISRI
Lepanto Consolidated Mining Company	LCMC/Lepanto Mines
National Irrigation Administration - Ampucao	NIA-Ampucao (MRIIS)
Philex Mining Corporation	Philex Mines (PMC)
DISTRICT 3	
Conserbest Ice Manufacturing Inc. (formerly Rosales Ice Plant)	CIMI
Northern Cement Corporation	NCC
DISTRICT 4	
FCF Minerals Corporation	FCFMC
National Irrigation Administration - Region 2	NIA-Region 2
National Irrigation Administration – Enrile (Solana)	NIA-Solana
National Irrigation Administration - MARIIS	NIA-MARIIS
North Luzon Triton Mall, Inc.	NLTMI
Oceana Gold (Philippines), Inc. (OGPI)	OGPI
Philippine Foremost Milling Corporation (FORMERLY KNOWN AS Mindanao Grain Processing Co. Inc.)	PFMC-Isabela
National Irrigation Administration - CAR	NIA- CAR
DISTRICT 5	
Philippine Resins Industries Inc.	PRII
Grand Planters International, Inc.	GPII
Kabayan Ice Plant & Cold Storage Corp.	KIPCSC
Petron Corporation (formerly Philippine Polypropylene Inc.)	PETRON
DISTRICT 6	
Altima Empire Steel Corporation	AESC
Centerra Ice Plant & Cold Storage Inc.	Centerra
Currimao Aluminum Corporation	Currimao
Edong Cold Storage & Ice Plant	ECOSIP
Formosa Ceramic Tiles Manufacturing Corporation	FCTMC
Linde Philippines	LINDE
Melters Steel Corporation	Melters
NIA-UPRIIS - Pantabangan	NIA-UPRIIS
OCT Enterprises (Gapan Ice Plant & Cold Storage)	OCT Enterprises
Quanta Paper Corporation	QPC
RJS Commodities, Inc.	RJS
Real Steel Corporation	RSC
SKK Steel Corporation	SKK Steel
United States Agency for Global Media	USAGM (formerly IBB)
Wan Chiong Steel Corporation	WCSC
DISTRICT 7	
Republic Cement & Building Materials Inc. (formerly Lafarge Republic-Bulacan)	RCBMI - Bulacan
Republic Cement & Building Materials Inc. (formerly Lafarge Republic -Norzagaray)	RCBMI-Norzagaray
SOUTH LUZON	
DISTRICT 1	
Mitsubishi Power (Philppines), Inc. (formerly MHPS (Philippines), Inc.)	MHPS
High Street Manufacturing Inc.	HSMI
Batangas Shipping Corporation (formerly Seatrium Philippines Marine, Inc. and Keppel Philippines Marine, Inc.)	KEPPEL
Puyat Steel Corporation	Puyat Steel
Primewater Infrastructure Corporation	PWIC
Republic Cement & Building Materials Inc./ LAFARGE	RCBMI-Batangas
San Miguel Mills, Inc. - Batangas	SMMI
DISTRICT 3	
Albay Agro-Industrial Development Corp.	ALINDECO
Bicol Ice Plant, Inc.	Bicol Ice Plant
Good Found Cement Corporation	GFCC
Gallintina Industria Corporacion	GIC
Philippine Hydro, Inc.	PHI
Pacific Mall Corporation- Gaisano	PMC
Partido Rice Mill Corporation	PRMC
VISAYAS	
DISTRICT 1	
Philippine Association Smelting & Refining Corporation	PASAR
Philippine Phosphate Fertilizer Corporation	PHILPHOS
SC Global Coco Products, Inc.	SC Global
Specialty Pulp Manufacturing, Inc.	SPMI
Ricor Mills Coporation formerly Visayan Oil Mills, Inc.	RMC
DISTRICT 2	
Alturas Group of Companies	AGC
Bohol Enterprises, Inc.	BEI
Carmen Copper Corporation	CCC
General Milling Corporation	GMC
Marcela Farms Inc.	MFI
Philippine Mining Service Corporation - Bohol Mines	PMSC - Bohol Mines
DISTRICT 3	
All Natural Coco Products, inc.	ANC
Distileria Bago, Inc. (San Miguel Bacolod)	DBI
Dumaguete Coconut Mills, Inc.	DUCOM
DISTRICT 4	
Philippine Foremost Milling Corporation	PFMC
MINDANAO	
DISTRICT 1	
PNOC Exploration Corp./Malangas Coal Corp.	PNOC EC/MCC
Wilmar Edible Oil Phils., Inc.	WEOPI
DISTRICT 2	
Energy Development Corp. formerly PSALM-NPC Ditucalan	EDC - M1
PSALM-NPC MRO	M2-NPC MRO
Mindanao State University	MSU
Mabuhay Vinyl Corporation	MVC
New Tech Pulp, Inc.	Newtech
Ma. Cristina Chemical Industries (MCCI Corp)	PGMC (MCCI)
Technical Education & Skills Dev't Authority-Regional Training Center	TESDA-RTC
DISTRICT 3	
Bukidnon Sugar Milling Company	BUSCO
DISTRICT 4	
National Irrigation Administration - Butuan	NIA - Butuan
DISTRICT 5	
Apex Mining Company, Inc.	Apex Mining

Appendix 6

LIST OF PROJECTS COMPLIANT WITH SINGLE OUTAGE CONTINGENCY AND LOOP CONFIGURATION

Table A6.1: List of Projects Compliant with Single Outage Contingency

	PROJECT		
	LUZON		**MINDANAO**
1	Milaor 500 kV Substation Project	49	San Francisco – Tago 138 kV Transmission Line Project
2	Pinamucan 500 kV Substation	50	Tacurong – Kalamansig 69 kV Transmission Line Project
3	Tower Resiliency of Bicol Transmission Facilities	51	Mindanao Substation Upgrading 2 Project (MSU2P)
4	Tagkawayan 500 kV Substation	52	Mindanao Substation Expansion 3 Project (MSE3P)
5	Palauig 500 kV Substation	53	Kabacan 138 kV Substation Project
6	Luzon Primary Equipment Substation Upgrading	54	Mindanao Substation Expansion 4 Project (MSE4P)
7	Olongapo 230 kV Substation Upgrading	55	Battery Energy Storage System Project to Relieve Thermal Overloading of 69 kV Transmission Line
8	Minuyan 115 kV Switching Station	56	Nasipit Substation Bus-in Project
9	Camarines Sur – Catanduanes Interconnection	57	Opol Substation Bus-in Project
10	Milaor – Tublijon 500 kV Transmission Line Project	58	Mindanao-Visayas Interconnection Project (MVIP) Stage 2
11	Alas - Asin 500 kV Substation	59	Villanueva – Kinamlutan 230 kV Transmission Line Project
12	Calatagan 500 kV Substation	60	Sultan Kudarat – Tacurong 230 kV Transmission Line Project
13	Real 230 kV Substation	61	Lala – Sta. Clara – Tumaga 230 kV Transmission Line Project
14	Matnog 230 kV Substation	62	Polanco – Oroquieta 138 kV Transmission Line Project
15	Mankayan 69 kV Switching Station	63	Maco – Mati 138 kV Transmission Line Project
		64	Polanco – Roxas 69 kV Transmission Line Project
	VISAYAS	65	Sultan Kudarat – Pinaring 69 kV Transmission Line
16	Sogod (Danao) 230 kV Substation Project	66	Maco – Tagum 69 kV Transmission Line Project
17	Banga 138 kV Substation Project	67	Tumaga 138 kV Substation Project
18	La Carlota – Cubay 69 kV Transmission Line Project	68	Tigbao 138 kV Substation Project
19	Argao 230 kV Substation Project	69	Malaybalay 138 kV Substation Project
20	Dumangas 138 kV Substation Project	70	Tupi (Koronadal) 138 kV Substation Project
21	Cebu – Lapu-Lapu 230 kV Transmission Project	71	Naga Min – Ipil 69 kV Transmission Line Project
22	Nabas – Caticlan – Boracay Transmission Line Project	72	Marawi – Malabang 69 kV Transmission Line Project
23	Amlan – Dumaguete 138 kV Transmission Line Project	73	Nabunturan – Monkayo 69 kV Transmission Line Project
24	Panay – Guimaras 138 kV Interconnection Project	74	Placer – Madrid 69 kV Transmission Line Project
25	Calbayog – Allen Transmission Line Project	75	San Francisco – Barobo 69 kV Transmission Line Project
26	Lapu-lapu 230 kV Substation Project	76	Naga Min – Malangas 69 kV Transmission Line Project
27	Visayas Substation Upgrading Project 2	77	Aurora – Kapatagan 69 kV Transmission Line Project
28	Granada 230 kV Substation Project	78	Bislig – Barobo 69 kV Transmission Line Project
29	Visayas Substation Reliability Project 2	79	Matanao 230/138 kV Transformer Project
30	Tigbauan 138 kV Substation Project	80	Mindanao Substation Expansion 5 Project (MSE5P)
31	Barotac Viejo – Unidos 230 kV Transmission Line Project	81	Mindanao Substation Expansion 6 Project (MSE6P)
32	Corella – Ubay 138 kV Line 2 Stringing Project	82	Mindanao Substation Expansion 7 Project (MSE7P)
33	Panay – Guimaras 138 kV Interconnection Line 2 Project	83	Midsayap 138 kV Substation Project
34	Barotac Viejo – Natividad 69 kV Transmission Line Project	84	Mindanao Substation Expansion 8 Project (MSE8P)
35	Tabango – Biliran 69 kV Transmission Line Project	85	Mindanao Substation Expansion 9 Project (MSE9P)
36	Visayas Substation Upgrading Project 3	86	Maasim 138 kV Substation Project
37	Maghaway (Laray) 230 kV Substation Project (initially energized at 138 kV)		
38	Mandurriao 138 kV Substation Project		
39	Sumangga 138 kV Substation Project		
40	La Carlota 138 kV Substation Project		
41	Bool 138 kV Substation Project		
42	Babatngon – Paranas 138 kV Transmission Line Upgrading Projec		
43	Visayas Substation Upgrading Project 4		
44	Luzon – Visayas HVDC Bipolar Operation Project		
45	Babatngon – Calbayog 230 kV Transmission Line Project		
46	Panay - Guimaras 230 kV Backbone Project		
47	Sta. Rita 138 kV Substation Upgrading Project		
48	Visayas Substation Upgrading Project 5		

Table A6.2: List of Projects Compliant with Loop Configuration

	PROJECT		
	LUZON		**MINDANAO**
1	Taguig 500 kV Substation	38	Laguindingan 230 kV Substation
2	Palawan – Mindoro Interconnection Project (Stage 1)	39	Bunawan – Tagum 230 kV Transmission Line Project
3	Taguig – Silang 500 kV Transmission Line	40	Eastern Mindanao 230 kV Transmission Line Project

4 Nagsaag – Santiago 500 kV Transmission Line
5 Silang 500 kV Substation
6 Santiago – Kabugao 500 kV Transmission Line
7 Baras 500 kV Substation
8 Bataan – Cavite 500 kV Transmission Line
9 Mindoro-Panay Interconnection Project

VISAYAS

10 Macapso – Granada 230 kV Transmission Line Project
11 Negros – Panay 230 kV Interconnection Lines 3 and 4 Project
12 Paranas – Taft 138 kV Transmission Line Project
13 Sta. Rita – Quinapondan 138 kV Transmission Line Project
14 Calbayog – Allen Transmission Line Project
15 Granada 230 kV Substation Project
16 Cebu – Leyte 230 kV Interconnection lines 3 and 4 Project
17 Babatngon – Palo 230 kV Transmission Line
18 Ormoc – Babatngon 230 kV Transmission Line Project
19 Maasin – Malinao (Sogod) 230 kV Transmission Line Project
20 Corella – Ubay 230 kV Transmission Line Project
21 Cebu – Negros 230 kV Interconnection Line 3 and 4 Project
20 Negros – Guimaras 230 kV Backbone Project
23 Barotac Viejo – Sta. Barbara 230 kV Transmission Line Project
24 Bacolod – Kabankalan 230 kV Transmission Line Project
25 Victoria – Catarman 138 kV Transmission Line Project
26 Siaton – Dumaguete 138 kV Transmission Line Project
27 San Fernando 230 kV Substation Project
28 Palo – Malinao (Sogod) 230 kV Transmission Line Project
29 Bohol – Leyte 230 kV Interconnection Project
30 Mahagway (Laray) – San Fernando 230 kV Energization Project
31 Catarman – Mapanas - Taft (Oras) 138 kV Transmission Line Proje
32 Quinapondan (Borongan) – Taft 138 kV Transmission Line Project
33 Bayawan – Sipalay 138 kV Transmission Line Project
34 Siaton – Bayawan 138 kV Transmission Line Project
35 San Jose – Nabas 138 kV Transmission Line Project
36 Sipalay 138 kV Substation Project
37 Gahit 230 kV Substation Project
41 Matanao – General Santos 230 kV Transmission Line Project
42 Agus 6 – Kiwalan – Lugait 69 kV Transmission Line Project
43 Baungon 230 kV Substation
44 Kinamlutan – Placer 230 kV Transmission Line Project
45 Naga Min – Salug 138 kV Transmission Line Project
46 Bislig – Baganga– Mati 138 kV Transmission Line Project
47 Placer – Luna 69 kV Transmission Line Project
48 Opol – CDO 69 kV Transmission Line Project
49 Davao – Toril 69 kV Transmission Line Project
50 Maco – Mati 69 kV Transmission Line Project
51 SIOM – Sindangan – Salug 69 kV Transmission Line Project
52 Butuan – Nasipit 69 kV Transmission Line
53 Lala – Malabang – Sultan Kudarat 230 kV Transmission Line Project
54 Lala – Malabang – Sultan Kudarat 230 kV Transmission Line Project (230 KV Energization)
55 Sultan Kudarat – Tacurong 230 kV Transmission Line Project
56 Matanao – Tacurong 230 kV Transmission Line Project
57 Bunawan – Tagum 230 KV Transmission Line Project (230 kV Energization)
58 Eastern Mindanao 230 KV Transmission Line Project (230 kV Energization)
59 Polanco – Oroquieta 138 kV Transmission Line Project (138 kV Energization)
60 Aurora – Oroquieta 138 kV Transmission Line Project
61 Placer – Tago 138 kV Transmission Line Project
62 General Santos – Maasim 138 kV Transmission Line Project

Appendix 7

AVAILABLE TRANSMISSION CAPACITY

Table A7.1: Luzon Grid Available Transmission Capacity

Connection Point/ Voltage Level	Available Transmission Capacity for GEA-5, Cumulative MW (as of January 2026)						
	2026	2027	2028	2029	2030	2031	2032
LUZON	**3,064**	**3,034**	**3,134**	**4,334**	**5,234**	**7,234**	**10,659**
I. EXISTING	**2,294**	**2,224**	**2,224**	**2,224**	**2,224**	**2,224**	**2,224**
Tap to Bauang – San Fabian 69 kV Line	40	40	40	40	40	40	40
Bacnotan 69 kV SS	60	60	60	60	60	60	60
Tap to La Trinidad – Sagada 69 kV Line	60	60	60	60	60	60	60
Tap to San Manuel – Calasiao 69 kV Line	80	80	80	80	80	80	80
Tap to Nagsaag – Umingan 69 kV Line	40	40	40	40	40	40	40
Tap to Labrador – San Carlos 69 kV Line	40	40	40	40	40	40	40
Tap to Labrador – Bani 69 kV Line	40	40	40	40	40	40	40
Balingueo 230 kV S/S	60	60	60	60	60	60	60
Balsik 230 kV S/S	300	300	300	300	300	300	300
Mariveles (Alas-asin) 500 kV S/S	584	584	584	584	584	584	584
Tap to Mexico – Calumpit 69 kV Line	40	40	40	40	40	40	40
Tap to Mexico – Apalit 69 kV Line	90	90	90	90	90	90	90
Tap to Cabanatuan – San Luis 69 kV Line	40	40	40	40	40	40	40
San Jose 230 kV S/S	400	400	400	400	400	400	400
Tap to Batangas – Rosario 69 kV Line	40	40	40	40	40	40	40
Tap to Batangas – Mabini – Cuenca 69 kV Line	40	40	40	40	40	40	40
Tap to Bay – Calamba 69 kV Line	40	40	40	40	40	40	40
Tap to Gumaca-Pitogo – Mulanay 69 kV Line	40	40	40	40	40	40	40
Labo 69 kV S/S	70	0	0	0	0	0	0
Tap to Tiwi C – Malinao 69 kV Line	30	30	30	30	30	30	30
Tap to Daraga – Irosin 69 kV Line	40	40	40	40	40	40	40
Tap to Daraga – Ligao 69 kV Line	40	40	40	40	40	40	40
Tap to Naga – Iriga 69 kV Line	40	40	40	40	40	40	40
Tap to Daraga – Sto. Domingo 69 kV Line	40	40	40	40	40	40	40
II. PROPOSED	**770**	**810**	**910**	**2,110**	**3,010**	**5,010**	**8,435**
Balaoan 500 kV SS	0	0	0	0	0	2,000	2,000
Laoag 500/230 kV SS	0	0	0	0	0	0	1,850
Castillejos 230 kV S/S	0	190	460	460	460	460	460
Porac 230 kV S/S	0	0	0	300	300	300	300
Tuy 230 kV S/S	770	620	450	450	450	450	450
Milaor 500 kV S/S	0	0	0	900	1,800	1,800	2,700
Sta. Maria 50 kV S/S	0	0	0	0	0	0	675

Table A7.2: Visayas Grid Available Transmission Capacity

Connection Point/ Voltage Level	Available Transmission Capacity for GEA-5, Cumulative MW (as of January 2026)						
	2026	2027	2028	2029	2030	2031	2032
VISAYAS	**120**	**810**	**810**	**2,192**	**2,442**	**2,442**	**3,192**
I. EXISTING	**120**	**120**	**120**	**1,502**	**1,752**	**1,752**	**1,752**
Cebu	40	730	730	1,310	1,310	1,310	2,060
Bohol	80	80	80	882	1,132	1,132	1,132
Dumanjug 230 kV S/S	0	0	0	300	300	300	300
Dumanjug 69 kV S/S	0	0	0	90	90	90	90
Toledo 138 kV S/S	0	0	0	40	40	40	40
Naga 138 kV S/S	0	0	0	150	150	150	150
Tap to Calong-calong – Asturias 69 kV T/L	40	40	40	40	40	40	40
Corella 230 kV S/S	0	0	0	600	600	600	600
Corella 138 kV S/S	0	0	0	150	150	150	150
Corella 69 kV S/S	0	0	0	52	52	52	52
Ubay 138 kV S/S	0	0	0	0	250	250	250
Tap to Corella – Tagbilaran 69 kV T/L	40	40	40	40	40	40	40
Tap to Corella – Maribojoc 69 kV T/L	40	40	40	40	40	40	40
II. PROPOSED	**0**	**690**	**690**	**690**	**690**	**690**	**1,440**
Tominjao 230 kV SwS	0	0	0	0	0	0	150
Umapad 230 kV S/S	0	600	600	600	600	600	600
Umapad 69 kV S/S	0	90	90	90	90	90	90
Bonbon 230 kV SwS	0	0	0	0	0	0	600

A7.3: Mindanao Grid Available Transmission Capacity

Connection Point/ Voltage Level	Available Transmission Capacity for GEA-5, Cumulative MW (as of January 2026)						
	2026	2027	2028	2029	2030	2031	2032
MINDANAO	**1370**	**1520**	**1630**	**1630**	**1630**	**1830**	**2280**
I. EXISTING	**920**	**920**	**1030**	**1030**	**1030**	**1030**	**1030**
Tap to Aurora – Calamba 69 kV Line	40	40	40	40	40	40	40
Tap to Aurora – San Miguel 69 kV Line	40	40	40	40	40	40	40
Tap to Zamboanga – Tumaga 69 kV Line	40	40	40	40	40	40	40
Tap to Agus 6 – Kauswagan 69 kV Line	20	20	20	20	20	20	20
Tap to Jasaan – Balingasag 69 kV Line	40	40	40	40	40	40	40
Jasaan 138 kV SS	100	100	100	100	100	100	100
Placer 138 kV SS	150	150	150	150	150	150	150
San Francisco 138 kV SS	150	150	150	150	150	150	150
Tap to Nabunturan – Asuncion 69 kV Line	40	40	40	40	40	40	40
Tap to Nabunturan – Compostela 69 kV Line	40	40	40	40	40	40	40
Tap to Maco – Banaybanay 69 kV Line	40	40	40	40	40	40	40
Tap to Maco – Tagum 69 kV Line	40	40	40	40	40	40	40
Naga 138 kV SS	100	100	100	100	100	100	100
Tap to Sultan Kudarat – Datu Saudi Ampatuan 69 kV Line	40	40	40	40	40	40	40
Tap to Tacurong – Salbu 69 kV Line	40	40	40	40	40	40	40
Tap to Tacurong – Kalamansig 69 kV SS Line	0	0	40	40	40	40	40
Tap to Polanco – Roxas 69 kV Transmission Line	0	0	40	40	40	40	40
Tap to San Francisco – Alegria 69 kV Transmission Line	0	0	30	30	30	30	30
II. PROPOSED	**450**	**600**	**600**	**600**	**600**	**800**	**1250**
Laguindingan 230 kV SS	300	300	300	300	300	300	300
Kabacan 138 kV SS	150	150	150	150	150	150	150
Tago 138 kV SS	0	150	150	150	150	150	150
Tupi 138 kV SS	0	0	0	0	0	100	100
Mati 138 kV SS	0	0	0	0	0	100	100
General Santos 230 kV SS	0	0	0	0	0	0	450

Appendix 8

ANCILLARY SERVICE AGREEMENT PROCUREMENT PLAN

a. BACKGROUND: STATE OF ANCILLARY SERVICES IN THE GRID

As System Operator, NGCP determines the levels of AS required for each grid based on the results of assessment and simulation studies. These AS levels which are variable according to network dynamics are meant to meet PGC-prescribed grid reliability and security requirements.

To qualify as provider of AS the prospective provider should undergo the certification process defined by the PGC. Subsequently, a certified AS provider would be subject to verification testing no more than once (1) every two (2) years except when there are reasonable grounds to surmise that the prevailing characteristics of the generating unit depart from the as-tested-and-certified values.

Table A8.1 lists the plants with existing Ancillary Service Procurement Agreement (ASPA); Table A8.2 lists all AS-certified power plants that have no Firm ASPA and may offer their capacities in the Reserve Market. Please note that there were plants with existing ASPA that were not included in Table 1 due to their request for suspension (Masinloc BESS, Lamao BESS, Bataan BESS, Concepcion BESS, San Manuel BESS, and Jasaan BESS) and filed for termination of their ASPA (CIP II Subic Bunker C-Fired Power Plant). There were also plants that were excluded from the tables due to their requests for decommissioning/mothballing (TMO Navotas Power Barges G02 and G04, Therma Power Visayas Incorporated).

Table A8.1: List of Existing ASPAs as of 04 November 2025

Company	Plant Name	AS Type	ERC Case No.
LUZON			
National Power Corporation	Kalayaan Pump Storage Plant	RR, CR, DR, RPS, BSS	2009-029 RC
Pagbilao Energy Corporation	Pagbilao Coal-Fired Power Plant 3	RPS	2020-037 RC
Therma Luzon, Inc.	Pagbilao Coal-Fired Power Plant 1 & 2	RPS	2020-033 RC
		CR	2023-049 RC
BacMan Geothermal, Inc.	110 MW BacMan I Geothermal Plant	BSS	2023-059 RC
First Gen Hydro Power Corporation	Pantabangan Hydroelectric Power Plant	RPS, BSS	2023-060 RC
Bulacan Power Generation Corp.	Bulacan Diesel Power Plant	DR	2023-062 RC
Giga Ace 4, Inc.	Alaminos Battery Energy Storage System	RR, CR	2023-063 RC
Therma Mobile, Inc.	Navotas Power Barges	DR, RPS	2023-065 RC
One Subic Power Generation Corp.	Subic Bunker C-Fired Power Plant	DR	2023-066 RC
SN Aboitiz - Magat, Inc.	Magat Hydroelectric Power Plant	CR, DR	2023-054 RC
		RPS	2019-016 RC
SN Aboitiz – Benguet, Inc.	Ambuklao Hydroelectric Power Plant	CR, DR	2023-089 RC
		RPS	2019-014 RC
SN Aboitiz – Benguet, Inc.	Binga Hydroelectric Power Plant	CR, DR	2023-090 RC
		RPS	2019-015 RC
Ingrid Power Holdings, Inc.	Pililla Diesel Power Plant	CR	2023-051 RC
VISAYAS			
SMGP Kabankalan Power Co. Ltd. (formerly SMCGP Phils. Energy Storage Co. Ltd.)	Kabankalan Battery Energy Storage System	RR	2021-056 RC
Therma Visayas, Inc.	CFB Coal-Fired Power Plant	CR, RPS	2023-050 RC
Meridian Power, Inc. (formerly Cebu Private Power Corporation)	Bunker C-Fired Diesel Power Plant	DR, RPS, BSS	2023-057 RC
More Power Barge, Inc.	Power Barge 101	BSS	2023-061 RC
SMGP BESS Power, Inc. (formerly Universal Power Solutions, Inc.)	Ubay Battery Energy Storage System	CR	2023-068 RC
	Ormoc Battery Energy Storage System	CR	2023-069 RC
	Toledo Battery Energy Storage System	CR	2023-074 RC
East Asia Utilities Corporation	Bunker C-Fired Diesel Power Plant	RPS, BSS	2023-075 RC
SPC Island Power Corporation	Panay Diesel Power Plant 3	DR, BSS	2023-078 RC
MINDANAO			
National Power Corporation	Pulangi 4 Hydroelectric Power Plant	RR, CR, RPS, BSS	2009-029 RC
	Agus 1, 2 & 5 Hydroelectric Power Plants	CR, RPS	
	Agus 4 & 5 Hydroelectric Power Plants	RR, CR, RPS	
	Agus 6 & 7 Hydroelectric Power Plants	CR	
King Energy Generation, Inc.	Surigao del Sur Power Plant	DR	2021-058 RC

Company	Plant Name	AS Type	ERC Case No.
King Energy Generation, Inc.	Misamis Occidental Power Plant 2	DR, RPS	2023-083 RC
King Energy Generation, Inc.	Misamis Occidental Power Plant 3	DR, RPS	2023-084 RC
SMGP BESS Power, Inc. (formerly	Malita Battery Energy Storage System	RR	2023-073 RC
Universal Power Solutions, Inc.)	Maco Battery FEnergy Storage System	RR	2023-079 RC
Therma Marine, Inc.	Bunker C-Fired Diesel Power Plant (Mobile 1)	CR, RPS, BSS	2023-052 RC
Therma Marine, Inc.	Bunker C-Fired Diesel Power Plant (Mobile 2)	DR, RPS, BSS	2023-085 RC
Mapalad Power Corporation	Bunker C-Fired Diesel Power Plant	DR	2023-087 RC
GN Power Kauswagan, Ltd. Co.	Kauswagan Coal-Fired Power Plant	CR	2023-048 RC
Western Mindanao Power Corp.	Bunker -C Fired Diesel Power Plant	DR, RPS, BSS	2023-088 RC

Table A8.2: List of AS-Certified Power Plants without ASPA as of 04 November 2025

COMPANY	PLANT NAME	AS TYPE
LUZON		
1590 Energy Corp.	Bauang Diesel Power Plant	DR
CIP II Power Corporation	Subic Bunker C-Fired Power Plant	DR
Energy Development Corporation	Bacman Battery Energy Storage System	RR, CR
Excellent Energy Resources Incorporated	Batangas Combined Cycle Power Plant	RR
First Natgas Power Corporation (FNPC)	San Gabriel Combined Cycle Power Plant	RR, CR
Fresh River Lakes Corporation	Casecnan Hydro Electric Power Plant	RR, DR, RPS
GNPower Dinginin Co. Ltd.	Dinginin Coal-Fired Power Plant	CR
GNPower Mariveles Co. Ltd.	Mariveles Coal-Fired Power Plant	CR
Masinloc Power Partners Co. Ltd. (MPPCL)	Masinloc Battery Energy Storage System	CR
Panasia Energy Incorporated	Bataan Combined Cycle Power Plant	RR, CR, DR, RPS
Prime Meridian Powergen Corporation	San Gabriel Gas Turbine PP	RR, CR, DR
SMGP BESS Power Incorporated	Bataan Battery Energy Storage System	RR, CR
	Concepcion Battery Energy Storage System	CR
	Gamu Battery Energy Storage System	RR, CR
	Lamao Battery Energy Storage System	RR, CR
	Lumban Battery Energy Storage System	RR, CR
	San Manuel Battery Energy Storage System	RR, CR
SN Aboitiz Power-Magat, Inc.	Magat BESS	RR, CR
VISAYAS		
Cebu Energy Development Corporation	Cebu Energy Development Corporation	RR, CR, RPS
Central Negros Power Reliability Incorporated (CENPRI)	Calumangan Diesel Power Plant	DR, BSS
Energy Development Corporation	Southern Negros Battery Energy Storage System	RR, CR
Green Core Geothermal Inc.	Palinpinon I Geothermal Power Plant	RR, CR, RPS
Green Core Geothermal Inc.	Palinpinon II Geothermal Power Plant	RR, CR, RPS
GT-Energy Corporation (GTEC)	Calbayog Bunker-C Fired Diesel Power Plant	DR, RPS
Isabel Ancillary Services Co. Ltd	Modular Diesel Power Plant	RR, CR, DR, RPS
KEPCO SPC Power Corporation	KEPCO SPC Power Corporation	RPS
Panay Energy Development Corporation (PEDC)	Panay Energy Development Corporation (PEDC)	RR, CR, RPS
Panay Power Corporation	PPC3 Nabas Bunker-C Fired Diesel Power Plant	DR, RPS
SPC Island Power Corporation	Bohol Diesel Power Plant	DR, RPS
SPC Island Power Corporation	Panay Diesel Power Plant 1	DR
Toledo Power Company	Toledo Power Company 1A	RR, CR, RPS
Toledo Power Company	Carmen Diesel Power Plant	DR, RPS, BSS
MINDANAO		
Energy Development Corporation	Mt. Apo Mindanao 1 Geothermal Power Plant	CR, RPS
Malita Power Incorporated	Malita Power Incorporated	CR
Mapalad Power Corporation	MPC Iligan Diesel Power Plant 2	DR, RPS
Peakpower Bukidnon Inc.	Peakpower Diesel/bunker Power Plant	DR
Peakpower San Francisco Inc. (PSFI)	Peak Power San Francisco DPP	DR
Peakpower Soccsargen Incorporated	PSI Diesel Power Plant	DR
Sarangani Energy Corp.	SEC Coal-Fired Power Plant	RR, CR
Strategic Energy Development Inc.	Bunker-C Fired Diesel Power Plant	DR
SMGP BESS Power, Inc.	Jasaan Battery Energy Storage System	RR, CR
	Villanueva Battery Energy Storage System	RR, CR

b. PLANS FOR THE PROCUREMENT OF ANCILLARY SERVICES

Because of the limited number of AS-certified power plants, as well as restrictions from available generator capacities and response times of these providers, the Grid's AS level requirements to sustain reliability objectives are not yet being met.

In 2023, the first Competitive Selection Process for the procurement of AS(AS-CSP) was conducted consistent with the DOE Circular No. 2021-10-0031, and resulted to thirty-six (36) new ASPAs with Firm arrangements. Further, with the recent commercial operations of the Reserve Market on 26 January 2024, AS-certified plants without ASPAs were able to provide its AS capacity at market prices. The new ASPAs, along with the Reserve Market scheduled capacities, have improved the AS availability in the grid.

Also, NGCP as the System Operator, conscious of its mandate, ensures that procurement of Ancillary Service is conducted in the least-cost manner. While co-optimization of offered reserves in the energy market would make for efficient energy dispatch, a secondary price cap for reserves—approved by the ERC—would be a welcome cost-control measure.

For the contracting of Reactive Power Support (RPS) and Black Start Service (BSS), NGCP has been proposing to the DOE to allow direct contracting for such AS types as these are non-competitive and not available in the Reserve Market. The nature of RPS and BSS are locational, and utilization is only when needed by the grid. Further, the ERC-approved cost recovery for RPS and BSS is on a per-occurrence basis only, without a fixed monthly charge. Nonetheless, with the plans to conduct a second AS-CSP this 2024, these AS types will be included while awaiting the approval of the DOE for direct contracting.

c. THE AS RULES

The ERC issued the OATS Rules 2022 and replaced the requirement of the submission of NGCP to the ERC of the annual AS Procurement Plan with the AS Rules. The AS Rules shall among others; describe the AS in sufficient details so that the prospective providers of the service can determine whether they have the capability to provide the service, describe the test that NGCP as the System Operator shall use to verify that the plant and Equipment meet the technical requirement and ***specify the manner of NGCP's procurement of AS***. However, the ERC has yet to issue the AS Rules to date.

Appendix 9
LIST OF OFFSHORE WIND PROJECTS

Table A9.1: Luzon OSW Projects

Item	Project Name	Year of Entry	Location	Connection Point	Associated Transmission Projects
1	500 MW San Miguel Bay Offshore Wind	2027	Camarines Sur	Direct connection to NGCP's existing Naga 230 kV Substation	• Luzon – Visayas HVDC Bipolar Operation
2	475 MW Lucena Wind Power Plant Project	2027	Sariaya and Lucena, Quezon	Direct connection to NGCP's Tayabas 230 kV Substation	• Tayabas 230 kV Substation Expansion • Tuy 500/230 kV Substation (Stage 2) • Pinamucan – Tuy 500 kV Transmission Line • Taguig–Silang 500 kV Transmission Line
3	275 MW Tayabas Bay Wind Power Plant Project	2027	Quezon Province	Direct connection to NGCP's New Pagbilao 230 kV Substation	• New Pagbilao 230 kV Substation Expansion • Tuy 500/230 kV Substation (Stage 2) • Pinamucan – Tuy 500 kV Transmission Line • Taguig – Silang 500 kV Transmission Line
4	600 MW San Miguel Bay Wind Power Plant Project	2027	Camarines Norte and Camarines Sur	Direct connection to NGCP's Naga 230 kV Substation	• Luzon – Visayas HVDC Bipolar Operation
5	450 MW Frontera Bay Wind Power Project	2030	Manila Bay (Cavite and Bataan)	Direct connection to NGCP's Mariveles 500 kV Substation	• Expansion of Mariveles 500 kV Substation • Marilao 500 kV Substation • Marilao 500 kV Substation Expansion
6	600 MW Aparri Bay Wind Power Project	2030	Aparri and Buguey, Province of Cagayan	Direct connection to NGCP's new Kabugao 500 kV Substation	• Santiago – Kabugao 500 kV Transmission Line • Nagsaag – Santiago 500 kV Transmission Line
7	500 MW Bagac Offshore Wind Power Project	2027	Bataan	Direct connection to NGCP's Mariveles 500 kV Substation	• Expansion of Mariveles 500 kV Substation • Marilao 500 kV Substation • Marilao 500 kV Substation Expansion
8	1245 MW Manila Bay Offshore Wind	Ph1-2028; Ph2-2030	Cavite and Bataan	Direct connection to NGCP's Mariveles 500 kV Substation	• Expansion of Mariveles 500 kV Substation • Marilao 500 kV Substation • Marilao 500 kV Substation Expansion
9	1020 MW Calatagan Offshore Wind Power Project	Ph1-2028; Ph2-2030	Batangas	Direct connection to NGCP's Tuy 500 kV Substation	• Pinamucan 500 kV Substation • Silang 500 kV Substation • Tuy 500/230 kV Substation (Stages 1 & 2) • Pinamucan – Tuy 500 kV Transmission Line • Taguig–Silang 500 kV Transmission Line
10	600 MW Lubang and Looc Island Wind Power Project	2027	Lubang and Looc Island, Occidental Mindoro	Direct connection to NGCP's Tuy 500 kV Substation	• Pinamucan 500 kV Substation • Silang 500 kV Substation • Tuy 500/230 kV Substation (Stages 1 & 2) • Pinamucan – Tuy 500 kV Transmission Line • Taguig – Silang 500 kV Transmission Line
11	2 GW Northern Luzon Offshore Wind Power Plant	2028	Ilocos Norte	Direct connection to the proposed NGCP's Laoag 500 kV Substation	• Bolo – Balaoan 500 kV Transmission Line • Balaoan – Laoag 500 kV Transmission Line
12	1830 MW Calatagan Offshore Wind Farm	2030	Batangas	Direct connection to NGCP's Tuy 500 kV Substation	• Pinamucan 500 kV Substation • Silang 500 kV Substation • Tuy 500/230 kV Substation (Stages 1 & 2) • Pinamucan – Tuy 500 kV Transmission Line • Taguig – Silang 500 kV Transmission Line
13	600 MW Basiad Bay Offshore Wind Power Project	2028	Camarines Norte	Direct connection to Proposed Tagkawayan 500 kV Substation	• Tagkawayan 500 kV Substation
14	1200 MW Bulalacao Bay Offshore Wind Energy Project - Phase 1	2028	Oriental Mindoro	Direct connection to the proposed NGCP's Southern Mindoro Substation	• Augmentation of capacity of the Batangas–Mindoro Interconnection • Calapan – Southern Mindoro Transmission Line • Pinamucan 500 kV Substation • Tuy 500/230 kV Substation (Stages 1 & 2) • Pinamucan – Tuy 500 kV Transmission Line • Silang 500 kV Substation • Taguig – Silang 500 kV Transmission Line

Item	Project Name	Year of Entry	Location	Connection Point	Associated Transmission Projects
15	1200 MW Bulalacao Bay Offshore Wind Energy Project - Phase 2	2029	Oriental Mindoro	Direct connection to the proposed NGCP's Southern Mindoro Substation	• Augmentation of capacity of the Batangas–Mindoro Interconnection • Calapan – Southern Mindoro Transmission Line • Pinamucan 500 kV Substation • Tuy 500/230 kV Substation Stages 1 & 2) • Pinamucan – Tuy 500 kV Transmission Line • Silang 500 kV Substation • Taguig – Silang 500 kV Transmission Line
16	1200 MW Bulalacao Bay Offshore Wind Energy Project - Phase 3	2030	Oriental Mindoro	Direct connection to the proposed NGCP's Southern Mindoro Substation	• Augmentation of capacity of the Batangas–Mindoro Interconnection • Calapan – Southern Mindoro Transmission Line • Pinamucan 500 kV Substation • Tuy 500/230 kV Substation (Stages 1 & 2); • Pinamucan – Tuy 500 kV Transmission Line • Silang 500 kV Substation • Taguig – Silang 500 kV Transmission Line
17	994 MW Cavite Offshore Wind Project	2030	Cavite	Direct connection to the proposed NGCP Silang 230 kV Substation	• Silang 500 kV Substation • Taguig EHV Substation
18	3,038 MW NOMFL1 Offshore Wind Project	2031	Occidental Mindoro and Batangas	Direct Connection to the Proposed NGCP's Pinamucan 500 kV Substation	• Pinamucan 500 kV Substation • Silang 500 kV Substation • Tuy 500/230 kV Substation (Stages 1 & 2); • Pinamucan – Tuy 500 kV Transmission Line • Taguig – Silang 500 kV Transmission Line
19	600 MW Aurora Offshore Wind Power Project	2030	Aurora	Direct connection to the proposed NGCP's Baler 230 kV Substation	• Sampaloc 230 kV Substation • Baler 230 kV Substation
20	1000 MW San Miguel Bay Offshore Wind Power Project	2028	Camarines Norte and Camarines Sur	Direct connection to the proposed NGCP's Naga 500 kV Substation	• Luzon-Visayas Bipolar Operation
21	350 MW Dagupan Offshore Wind Power Project	2028	Pangasinan	Direct connection to NGCP's proposed Bugallon 230 kV Substation	• Bugallon 500 kV Substation
22	1,500 MW Mariveles Offshore Wind Farm	2030	Cavite and Bataan	Direct connection to NGCP's Mariveles 500 kV Substation	• Expansion of Mariveles 500 kV Substation • Marilao 500 kV Substation
23	555 MW Offshore Wind Luzon E-1 Wind Power Project	2030	Sorsogon	Direct connection to proposed NGCP's Tublijon 230 kV Switching Station	• Abuyog 230 kV Substation Component: Tublijon 230 kV Switching Station • Tower Resiliency of Bicol Transmission Facilities
24	1GW Cagayan West Offshore Wind Power Project	2033	Cagayan	For assessment	*For assessment*
25	990 MW Northern Mindoro Offshore Wind Power Project	2031	Occidental Mindoro and Batangas	Direct connection to NGCP's proposed Calapan 500 kV Substation	• Batangas – Mindoro Interconnection and Backbone (Stages 1 & 2) • Pinamucan 500 kV Substation • Tuy 500/230 kV Substation (Stages 1 & 2) • Pinamucan – Tuy 500 kV Transmission Line • Silang 500 kV Substation • Taguig – Silang 500 kV Transmission Line
26	1755 MW Claveria Offshore Wind Farm	2031	Ilocos Norte	For assessment	*For assessment*
27	900 MW Ilocos Norte Offshore Wind Power Project	2028	Ilocos Norte	For assessment	*For assessment*
28	2,000 MW Northern Luzon Offshore Wind Power Project	2028	Ilocos Norte	Direct connection to the proposed NGCP's Burgos (formerly	• Bolo – Balaoan 500 kV Transmission Line • Balaoan – Burgos (formerly Laoag) 500 kV Transmission Line

Item	Project Name	Year of Entry	Location	Connection Point	Associated Transmission Projects
				Laoag) 500 kV Substation	
29	100 MW Nasugbu Bay Wind Power Project	2030	Batangas	Direct connection to NGCP's Tuy 230 kV Substation	• Tuy 500/230 kV Substation (Stage 1)
30	300.000 MW Pagbilao Offshore Wind Power	2028	Quezon Province	Direct connection to NGCP's Pagbilao 230 kV Substation	• Expansion of NGCP's Pagbilao 230 kV Substation
31	200 MW Real Offshore Wind Farm	2028	Quezon Province	Direct connection to NGCP's Sta. Maria 230 kV Substation	• Sta. Maria 500 kV Substation
32	100 MW Mauban Offshore Wind Farm	2027	Quezon Province	Direct Connection to NGCP's Tayabas 230 kV Substation	• Expansion of NGCP's Tayabas 230 kV Substation
33	100 MW Capalonga Offshore Wind Farm	2030	Camarines Norte	Direct connection to NGCP's Tagkawayan 230 kV Substation	• Tagkawayan 500 kV Substation
34	100 MW Mercedes Offshore Wind Farm	2029	Camarines Norte	Direct connection to NGCP's Tagkawayan 230 kV Substation	• Tagkawayan 500 kV Substation
35	100 MW Mariveles Offshore Wind Farm	2028	Bataan	Direct Connection to Mariveles 500 kV Substation	*For assessment*
36	700 MW Paracale Offshore Wind Project	2033	Quezon Province	Direct connection to Tagkawayan 500 kV Substation	*For assessment*
37	480 Garza Offshore Wind Power Project	2031	Oriental Mindoro	Direct connection to proposed Magsaysay 230 kV Substation	*For assessment*
38	500.000 MW Tayabas Bay Wind Power Project	2028	Quezon Province	Direct connection to NGCP's Pagbilao 500 kV Substation	• Expansion of Pagbilao 500 kV Substation
39	1000 MW Mindoro Offshore Wind Power Project	2032	Oriental Mindoro	Direct connection to NGCP's Proposed Magsaysay 500 kV Substation	*For assessment*
40	3100 MW Bulalacao Offshore Wind Farm	2031	Oriental Mindoro	Direct connection to NGCP's proposed Magsaysay 500 kV Substation	*For assessment*

Table A9.2: Visayas OSW Projects

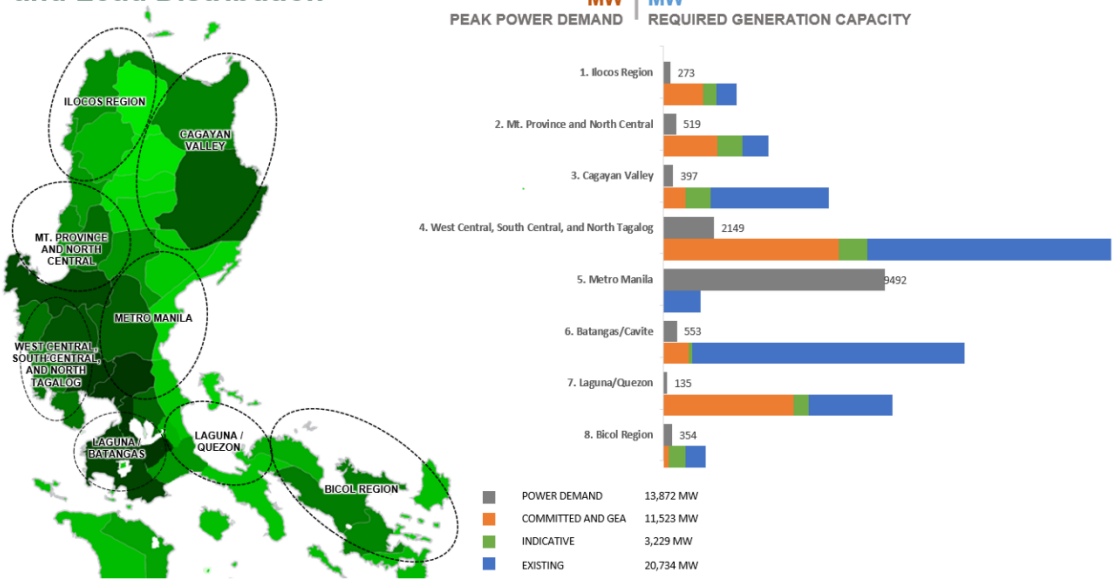
Item	Project Name	Year of Entry	Location	Connection Point	Associated Transmission Projects
1	600 MW Guimaras Strait I Wind Power Project	2025	Silay City and the municipalities of E. B. Magalona, Victorias and Manapla	Direct Connection to NGCP's E.B. Magalona 230 kV Switching Station (SwS)	• Cebu – Negros – Panay 230 kV Backbone Stage 3 • Cebu – Negros 230 kV Interconnection Lines 3 and 4 • Granada 230 kV Substation • Calatrava-Granada 230 kV Transmission Line
2	510 MW Oton Bank Offshore Wind Project	2027	Oton, Iloilo	Direct Connection to Barotac Viejo 230 kV Substation	• Barotac Viejo – Sta. Barbara 230 kV Transmission Line • Negros – Guimaras – Panay 230 kV Backbone • Negros – Panay 230 kV Interconnection Line 2
3	500 MW San Enrique Offshore Wind Project	2027	Southern section of the Guimaras Strait	Direct Connection to Bacolod 230 kV Substation	• Cebu – Negros – Panay 230 kV Backbone – Stage 3 • Granada 230 kV Substation • Calatrava – Granada 230 kV Transmission Line • Cebu – Negros 230 kV Interconnection Lines 3 and 4

Item	Project Name	Year of Entry	Location	Connection Point	Associated Transmission Projects
4	600 MW Guimaras Strait II Wind Power Project	2030	Northern section of the Guimaras Strait	Direct connection to the NGCP E.B. Magalona 230 kV SwS	• Cebu – Negros – Panay 230 kV Backbone Stage 3 • Cebu – Negros 230 kV Interconnection Lines 3 and 4 • Granada 230 kV Substation • Calatrava – Granada 230 kV Transmission Line
5	588 MW San Lorenzo Wind Power Project	2028	Central section of the Guimaras Strait	Direct Connection to E.B. Magalona 230 kV SwS	• Cebu – Negros – Panay 230 kV Backbone– Stage 3 • Granada 230 kV Substation • Calatrava – Granada 230 kV Transmission Line • Cebu – Negros 230 kV Interconnection Lines 3 and 4
6	731.225 MW GS2 Offshore Wind Project	2030	Guimaras	Direct Connection to NGCP's Proposed Substation SS	• Cebu – Negros – Panay 230 kV Backbone – Stage 3 • Granada 230 kV Substation • Calatrava – Granada 230 kV Transmission Line Cebu – Negros 230 kV Interconnection Lines 3 and 4
7	574 MW GS1 Offshore Wind Project	2031	Guimaras	Direct Connection to NGCP's Bacolod 230 kV Substation	• Cebu – Negros – Panay 230 kV Backbone – Stage 3 • Granada 230 kV Substation • Calatrava – Granada 230 kV Transmission Line Cebu – Negros 230 kV Interconnection Lines 3 and 4
8	910 MW GS4 Offshore Wind Project	2031	Guimaras	Direct Connection to NGCP's Proposed Sta. Barbara 230 kV Substation	• Barotac Viejo – Sta. Barbara 230 kV TL • Negros – Guimaras – Panay 230 kV Backbone • Negros – Panay 230 kV Interconnection Line 2
9	650 MW Samar Norte Offshore Wind Power Project	2028	Northern Samar	Direct connection to NGCP's proposed Calbayog 230 kV Substation	• Babatngon – Calbayog 230 kV Transmission Line • Ormoc – Babatngon 230 kV Transmission Line
10	100 MW Iloilo Strait Wind Power Project	2030	Iloilo & Guimaras	Direct connection to the NGCP's Sta. Barbara 138 kV Substation	None
11	500 MW Malay Offshore Wind Power Project	2028	Aklan	*For assessment*	*For assessment*
12	100 MW Dumaguete Offshore Wind Farm	2030	Negros Oriental	Direct Connection to Dumaguete 138 kV Substation	*For assessment*
13	300 MW Sebaste Offshore Wind Farm	2029	Aklan	Direct Connection to NGCP's Unidos 230 kV Substation	*For assessment*
14	440 MW Santa Fe Offshore Wind Project	2033	Aklan	Direct connection Unidos 230 kV Substation	*For assessment*

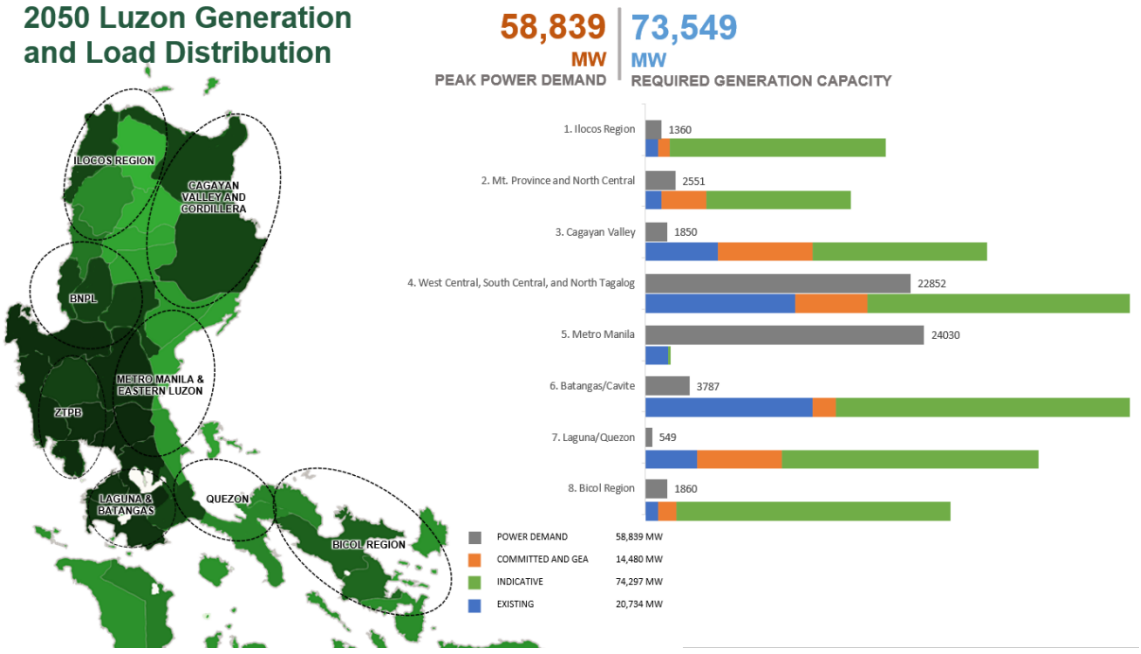
Appendix 10

GENERATION AND LOAD DISTRIBUTION

2026 Luzon Generation and Load Distribution

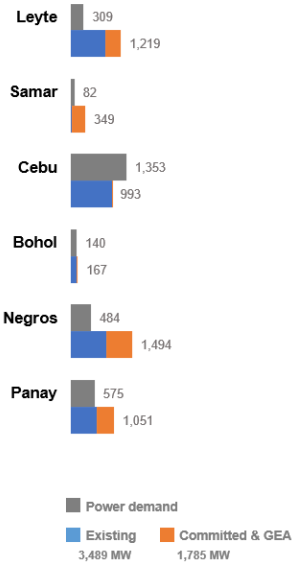


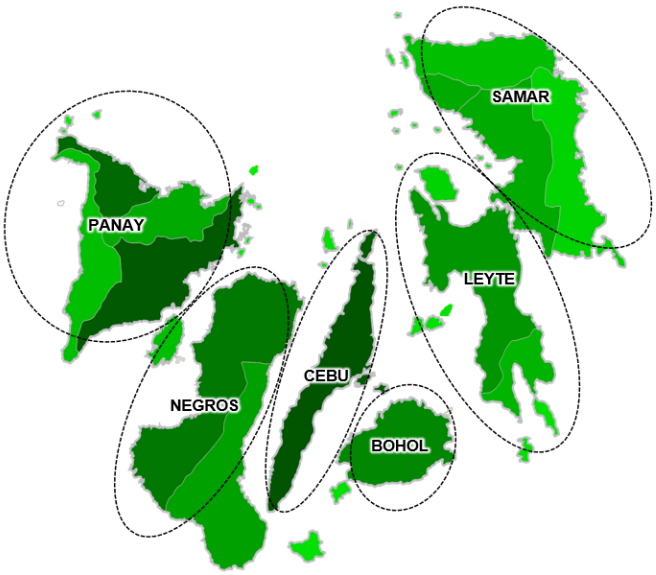
2050 Luzon Generation and Load Distribution



2026 Visayas Generation and Load Distribution

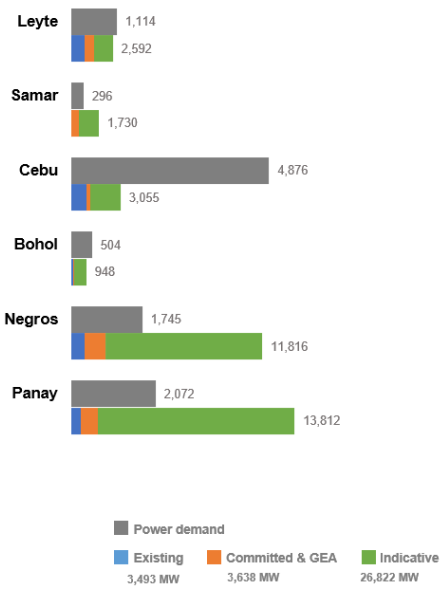
2,942 MW PEAK POWER DEMAND | **3,677 MW** GENERATION CAPACITY

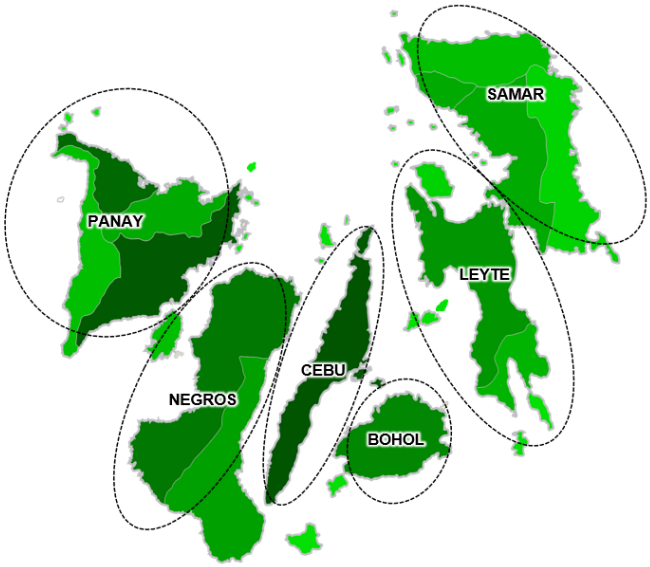




2050 Visayas Generation and Load Distribution

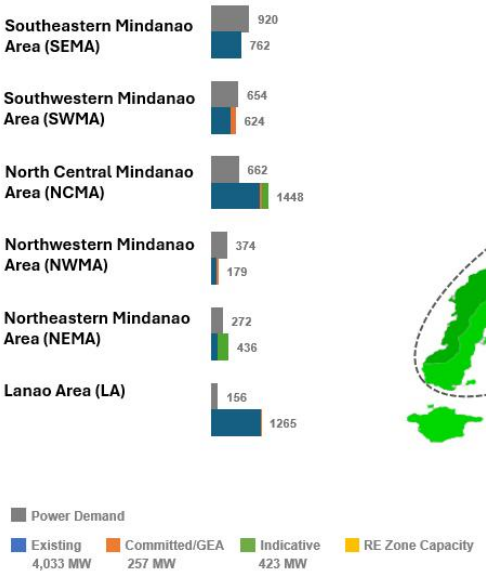
10,606 MW PEAK POWER DEMAND | **13,258 MW** GENERATION CAPACITY

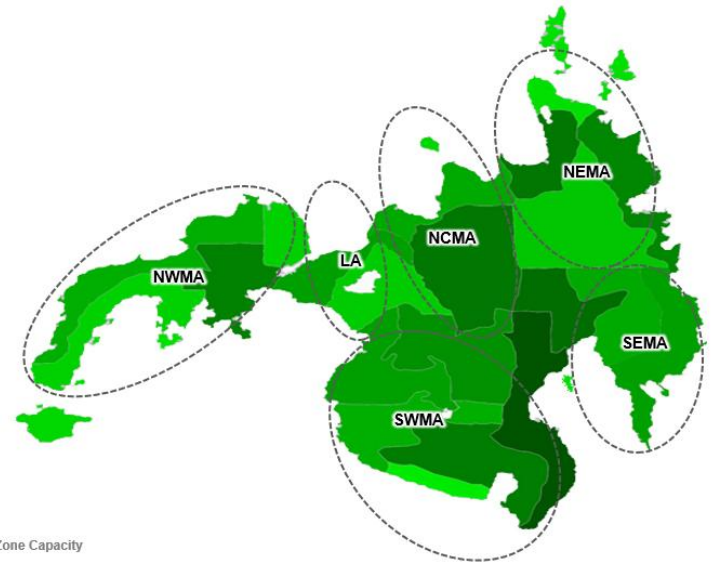




2026 Mindanao Generation and Load Distribution

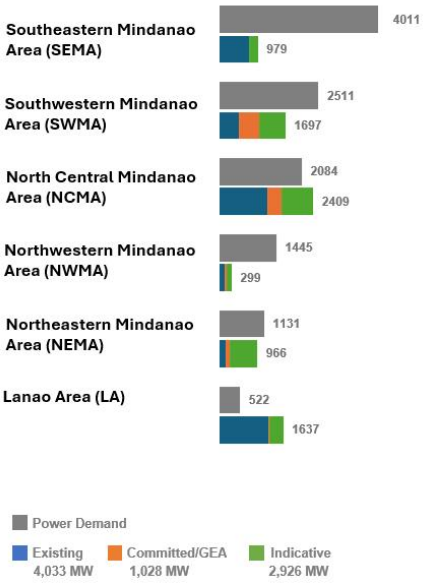
3,038 MW PEAK POWER DEMAND | **3,798 MW** REQUIRED GENERATION CAPACITY

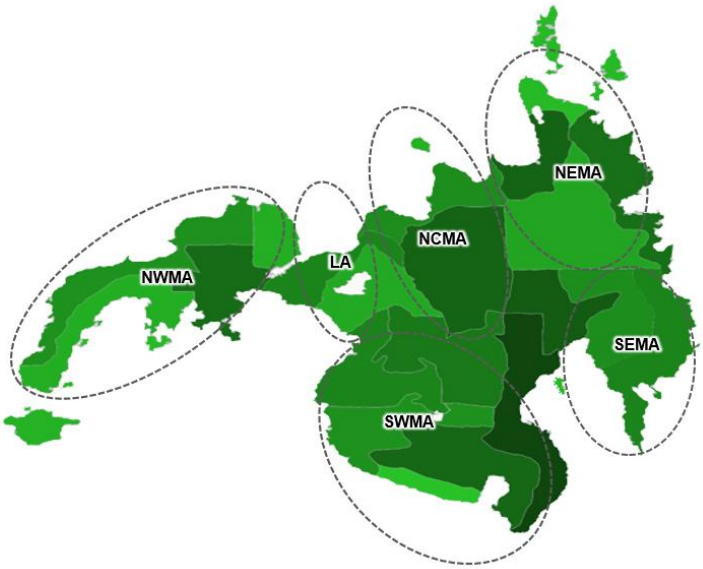




2050 Mindanao Generation and Load Distribution

11,705 MW PEAK POWER DEMAND | **14,631 MW** REQUIRED GENERATION CAPACITY





Appendix 11

POWER RESTORATION HIGHWAY

System blackout occurred when all generation in the grid has ceased and the entire power system has shutdown. The process of recovery from total system blackout using a generating unit with the capability to start and synchronize with the power system without an external power supply is called Black Start. Power plants that serve as Black Start Provider must have a black start capability or the ability to go from a shutdown condition to an operating condition within a specified period without feedback power from the grid and to start delivering power to the sections of the grid such as generating plants and critical loads.

Black start generators must be capable of starting themselves quickly without the need for external power supply from the grid, with sufficient real (MW) and reactive power (MVAR) to energize transmission lines and restart other generators. They must also be able to control frequency, as well as voltage, which can sustain a self-reliant operation for at least 12 hours and extend power within 30 minutes.

Luzon, Visayas and Mindanao have five (5) sub-grids. Luzon sub-grids are Metro Manila sub-grid (LRCC), Northern Luzon sub-grid (NLACC), Central Luzon sub-grid (CLACC), and Southern Tagalog sub-grid (STACC), Bicol sub-grid (BACC). In Visayas, these includes Panay, Negros, Cebu, Bohol, Leyte-Samar, while in Mindanao, these are Zamboanga ACC, Iligan Cagayan ACC, Butuan ACC, Davao ACC and General Santos ACC. Each sub-grid has its own designated power restoration highway and must have at least two black start service providers, in case the other fails to operate. However, at present there are sub-grids that have a deficiency in Black Start Providers, hence, NGCP continuously encourages other generating units to participate as Black Start Providers for the improvement of the restoration time.

It is also crucial to monitor and ensure the health of the breakers as well as protective relays which are connected to all restoration highway (substation/power plant). Similarly, setting and proper coordination of power plant protection relays and grid protection relays could prevent any undesired tripping during occurrence of system disturbance.

Furthermore, installation of NDMEs are also necessary for real-time monitoring, recording of system disturbance and retrieving of fault data remotely particularly in these critical substations as part of the restoration highway. Similarly, installation of PQAs could be used effectively for online monitoring of power quality problems such as generating current/voltage harmonics beyond power system network limits, voltage imbalance and fluctuation and harmonic resonance in the substations and power plant which are part of the power restoration highway.

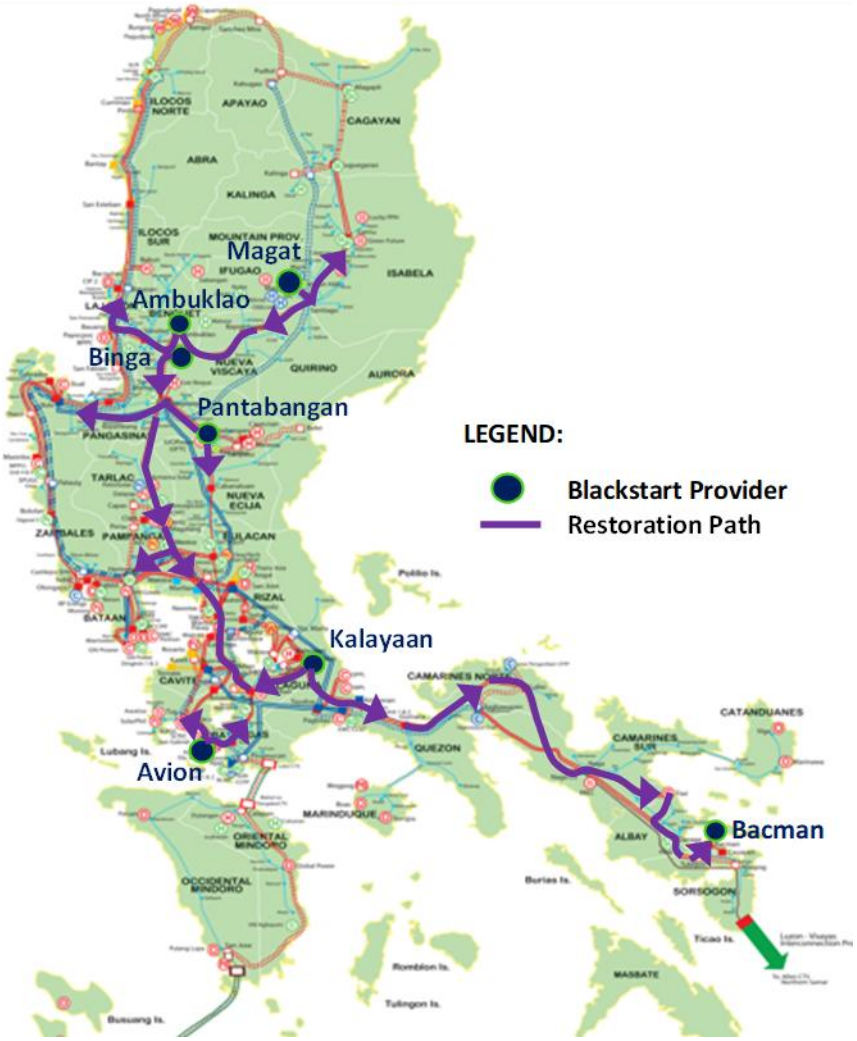


Figure A11.1: Luzon Power Restoration Highway



Figure A11.2: Visayas Power Restoration Highway

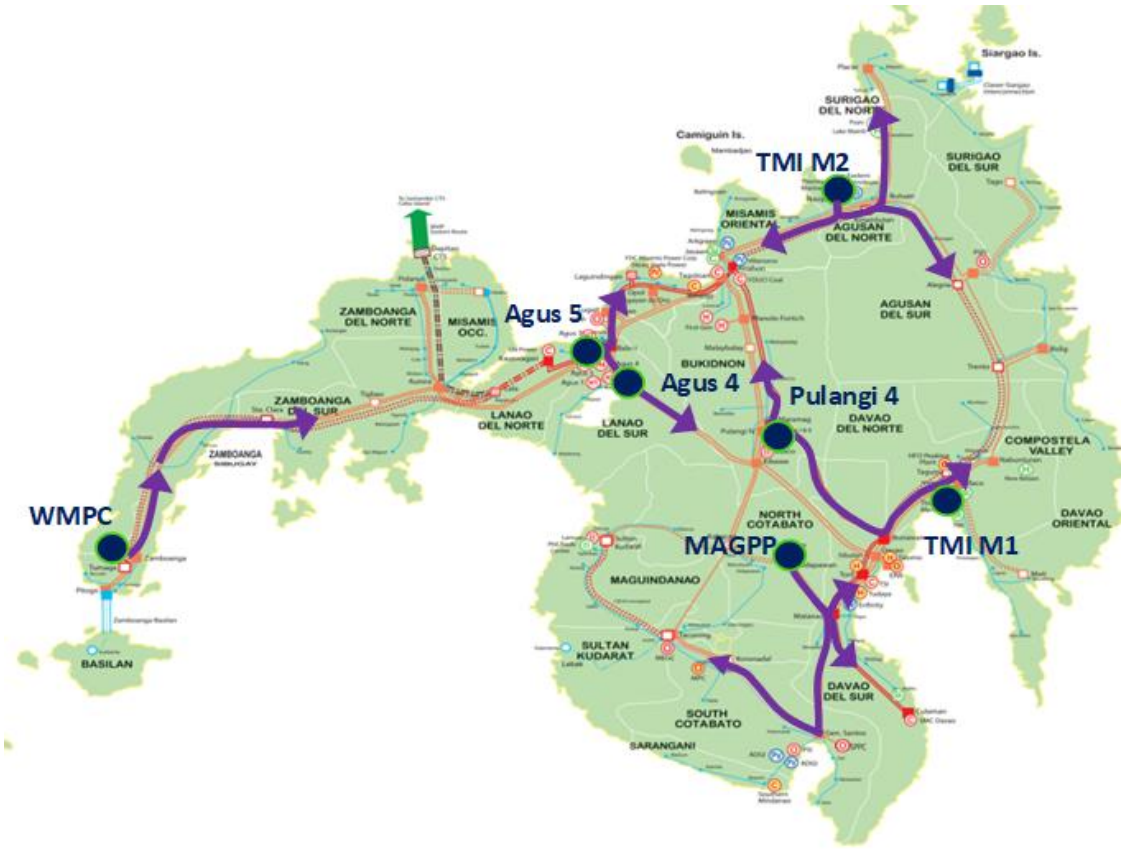


Figure A11.3: Mindanao Power Restoration Highway

Appendix 12

NGCP-RECOMMENDED, EXISTING AND GENCO-PROPOSED BESS SITES AND CAPACITIES

Table A12.1: NGCP-Recommended, Existing and GenCo-Proposed BESS Sites and Capacities in Luzon Grid

Priority Substations	NGCP Recommended		Existing BESS Installed			Proposed BESS		
	Voltage	Capacity (MW)	Voltage	Capacity (MW)	Ancillary Service Type	Voltage	Committed Capacity (MW)	Indicative Capacity (MW)
Daraga	69 kV	40	-	-	-	69 kV	40*	-
Laoag	69 kV	40	-	-	-	69 kV	40*	20*
San Rafael	69 kV	20	-	-	-	69 kV	20*	-
			-	-	-	-	20	-
Labo	69 kV	20	-	-	-	-	40	-
			-	-	-	69 kV	-	20*
Mexico	69 kV	20	-	-	-	-	90*	-
San Manuel	69 kV	20	69 kV	60.8	RR, CR	-	-	-
Bay	69 kV	20	-	-	-	-	-	50*
Labrador	69 kV	20	-	-	-	-	40	20
Lamao	230 kV	30	230 kV	66.1	RR, CR	-	-	-
Lumban	69 kV	40	69 kV	57.1*	-	-	-	40
Total	270 MW		184 MW				290 MW	150 MW
							440 MW	

Table A12.2: NGCP-Recommended, Existing and GenCo-Proposed BESS at Other Sites in Luzon

Other Substations	Existing BESS		Proposed BESS		
	Voltage	Capacity (MW)	Voltage	Committed Capacity (MW)	Indicative Capacity (MW)
Alaminos	69 kV	60	-	-	-
Bataan	69 kV	47.5	-	-	-
Gamu	-	20	-	-	-
Gamu Phase 2	-	20	-	-	-
Magapit	-	-	-	20*	-
Magapit Phase 2	-	-	-	20*	-
Concepcion Phase 1 and 2	69 kV	72.3	69 kV	-	20*
Mahabang Parang	-	-	-	40*	-
Bauang	-	-	-	40*	-
Cabanatuan	-	-	-	40	-
Hermosa	-	-	-	40*	30*
Navotas	-	-	-	40*	-
Pagbilao	-	-	-	40	-
Bacnotan	-	-	-	40	-
Subic	-	-	-	40	-
San Jose del Monte	-	-	-	40	-
Bolo	-	-	-	40	-
Tuguegarao	-	-	-	40	-
Bayombong	-	-	-	40	-
Calamba	-	-	-	40	-
Naga	-	-	-	40	-
Bac-Man	230 kV	29*	-	-	-
Sual	-	-	-	60	-
Urdaneta	-	-	-	40	-
Dasmarinas	-	-	-	40	-
Ilijan	-	-	-	40	-
Gumaca	-	-	-	40	40
La Trinidad	-	-	-	40	-

Other Substations	Existing BESS		Proposed BESS		
	Voltage	Capacity (MW)	Voltage	Committed Capacity (MW)	Indicative Capacity (MW)
BCCP Limay Project Phase 2	-	-	-	20	-
Angat Project	-	-	-	20*	-
Magat	230 kV	32.4	-	-	-
Magat Phase 2			-	20	-
Cruz na Daan (CND)	-	-	69 kV	-	40.6*
Currimao BESS	-	-	69 kV	-	50*
Currimao Solar	-	-	69 kV	-	91
Pililla	-	-	-	-	50
Panda	-	-	-	-	150*
Ambuklao	-	-	-	-	40*
Ambuklao Phase 2	-	-	-	-	40
CNGRA Solana Hermosa	-	-	-	-	30
Enerhiya Central Project	-	-	69 kV	-	40*
Enerhiya Sur II Project	-	-	69 kV	-	40*
Enerhiya Sur I Project	-	-	69 kV	-	40*
Enerhiya Sur 3	-	-	-	-	40
Enerhiya Sur 4	-	-	-	-	40
Enerhiya Sur 5	-	-	-	-	40
TMO	-	-	-	-	100*
Malaya	-	-	-	-	20
Nagsaag	-	-	-	-	20
Binga Phase 1	-	-	-	40*	
Binga Phase 2 and 3	-	-	-	-	40* 40
Magat Phase 2	-	-	-	16	-
CSFirst Green Infanta	-	-	-	-	107.320
Aguilar	-	-	-	-	100
CSFirst Green Dasol	-	-	-	-	82.560
Total	281.2 MW			976 MW 2,307.48 MW	1,331.48 MW

** - with SIS Application*

Table A12.3: NGCP-Recommended, Existing and GenCo-Proposed BESS Sites and Capacities in the Visayas Grid

Priority Substations	NGCP Recommended		Existing BESS Installed			Proposed BESS		
	Voltage	Capacity (MW)	Voltage	Capacity (MW)	Ancillary Service Type	Voltage	Committed Capacity (MW)	Indicative Capacity (MW)
Kabankalan	138 kV	10	138 kV	33.9	-	-	-	-
Ormoc	69 kV	20	69 kV	40	CR	69 kV	-	50*
Samboan	69 kV	10	-	-	-	69 kV	20*	40
Sta. Barbara	138 kV	10				138 kV		20*
Compostela	230 kV	20	-	-	-	69 kV	20*	7.5
Total	**70 MW**		**73.9 MW**				**40 MW**	**117.5 MW**
							157.5 MW	

Table A12.4: NGCP-Recommended, Existing and GenCo-Proposed BESS at Other Sites in Visayas

Other Substations	Existing BESS		Proposed BESS		
	Voltage	Capacity (MW)	Voltage	Committed Capacity (MW)	Indicative Capacity (MW)
Toledo	69 kV	23.7	-	-	20
Toledo (MEDC)	-	-	-	-	55
Calong-Calong (Toledo Phase 2)	-	-	69 kV	20	-
Ubay	69 kV	21.4	-	-	20
Ubay Phase 2	-	-	-	20	-
Tabango	-	-	69 kV	20*	37.5

Other Substations	Existing BESS		Proposed BESS		
	Voltage	Capacity (MW)	Voltage	Committed Capacity (MW)	Indicative Capacity (MW)
				20	
Tabango Phase 2	-	-	-	20	-
Dingle	-	-	138 kV	20*	20
Nabas	-	-	69 kV	20	40
Calbayog	-	-	69 kV	20*	30
Tongonan	138 kV	14.5*	-	-	-
Nasuji (Southern Negros)	138 kv	14.5*	-	-	-
NNGPP (Northern Negros)	-	-	138 kV	30*	-
Calatrava (San Carlos)	-		69 kV	20	-
Carmen Phase 1	-	-	-	-	28*
Carmen Phase 2					28*
The Ark- Barotac Viejo	-	-	-	-	20*
Pusok (Mactan)	-	-	69 kV	20	-
Tinampa-an	-	-	-	-	50*
Cadiz BESS	-	-	69 kV	-	50*
Cadiz Solar	-	-	-	-	114
San Isidro	-	-	138 kV	-	200*
Cadiz BESS	-	-	69 kV	-	50*
Cadiz Solar	-	-	-	-	114
San Isidro	-	-	138 kV	-	200*
Enerhiya Delas Islas I	-	-	-	-	40*
Enerhiya Delas Islas II	-	-	-	-	15*
Enerhiya Delas Islas III	-	-	-	-	15*
Enerhiya Delas Islas 4	-	-	-	-	40
Enerhiya Delas Islas 5	-	-	-	-	40
Enerhiya Delas Islas 6	-	-	-	-	40
Daanbantayan	-	-	-	-	20
Padayon (CPPC)	-	-	69 kV	-	20*
Pandora (Naga)	-	-	-	-	20**
Pandora 2 Integrated	-	-	-	-	42*
Panay	-	-	-	49.9*	
Santander	-	-	-		30
Sta Rita	-	-	-		30
Bohol	-	-	-	30*	
EAUC	-	-	-	-	30*
NAGA-1					30
NAGA-2					30
Valencia					40
San Carlos				20	
Mactan				20	
Total	74.1 MW			349.9 MW 1,908.4 MW	1,558.5 MW

Table A12.5: NGCP-Recommended, Existing and GenCo-Proposed BESS Sites and Capacities in the Mindanao Grid

Priority Substations	NGCP Recommended		Existing BESS Installed			Proposed BESS		
	Voltage	Capacity (MW)	Voltage	Capacity (MW)	Ancillary Service Type	Voltage	Committed Capacity (MW)	Indicative Capacity (MW)
Villanueva	138 kV	10	138 kV	22.8*	-	-	-	-
Davao	69 kV	20	-	-	-	-	-	-
Maco	69 kV	20	69 kV	24.3	RR	-	-	-
Kibawe	69 kV	20	-	-	-	-	-	50*
Butuan	69 kV	20	-	-	-	-	-	-
Total	90 MW		47.1 MW			0 MW		50 MW

			50 MW

Table A12.6: NGCP-Recommended, Existing and GenCo-Proposed BESS at Other Sites in Mindanao

Other Substations	Existing BESS		Proposed BESS		
	Voltage	Capacity (MW)	Voltage	Committed Capacity (MW)	Indicative Capacity (MW)
Malita	138 kV	22.8	-	-	-
Maco (TMI)	138 kV	49	-	-	-
Pitogo	-	-	138 kV	60*	-
Zamboanga (Sangali)	-	-	69 kV	20*	-
Jasaan	69 kV	24.3	-	-	-
Tagum	-	-	-	20	-
Aurora	-	-	-	-	-
Tagoloan Phase 2	-	-	-	20	-
Placer	-	-	-	20	40
Maramag	-	-	-	20	-
Gen Santos	-	-	-	20	-
Toril	-	-	-	-	20
Nasipit	-	-	-	48*	-
Ark- Laguindingan	-	-	-	-	24.280*
Total	96.1 MW			228 MW 312.28 MW	84.28 MW

Appendix 13

EXISTING VRE PLANTS AS CANDIDATE LOCATIONS FOR NEW BESS

Table A13.1: Existing VRE Plants in the Luzon Grid

VRE Projects	Location	Rated Capacity (MW)
Calatagan Solar	Calatagan and Balayan, Batangas	63.3
Clark Solar	Mabalacat, Pampanga	22.3
Concepcion 1 Solar - phase 1	Concepcion, Tarlac	23.1
Concepcion 1 Solar - phase 2	Concepcion, Tarlac	76.9
Currimao Solar	Currimao, Ilocos Norte	20.0
Mariveles Solar	Mariveles, Bataan	18.0
Petrosolarsssssssss	Tarlac City, Tarlac	50.1
Petrosolar 2	Tarlac City, Tarlac	20.0
Sta. Rita Solar (Phase I, II and 3A)	Subic, Subic Bay Freeport Zone	62.4
Sta. Rita Solar (Phase 3B)	Subic, Subic Bay Freeport Zone	38.1
Yh Green	Hermosa, Bataan	14.5
PFBSI	San Miguel, Bulacan	80.9
Tagalag Solar	Valenzuela City, Metro Manila	16.0
Gigasol3 Solar	Palauig, Zambales	63.0
Alaminos Solar	Alaminos, Laguna	120.3
Sta. Rosa Solar	Concepcion, Tarlac	60.1
Bataan Solar Energy	Mariveles, Bataan	4.4
Arayat-Mexico Solar	Arayat, Pampanga	72.0
Arayat-Mexico Solar Phase 2	Arayat and Mexico, Pampanga	43.7
RASLAG iii	Mabalacat and Magalang, Pampanga	18.0
Currimao 2 Solar	Currimao, Ilocos Norte	83.3
Trust Solar	Mabalacat City, Pampanga	20.9
Cayanga-Bugallon Solar	Labrador, Mabini and Infanta, Pangasinan	94.7
San Marcelino PH 1 & 2	San Marcelino, Zambales	384.8
Calabanga Solar	Calabanga, Camarines Sur	74.1
Cagayan North Solar	Lal-lo, Cagayan	133.5
Orion Solar	Orion, Bataan	20.4
Laoag Solar PH 1 & 2	Aguilar, Pangasinan	159.0
Tanauan Solar	Tanauan, Batangas	64.1
Maragondon Solar	Maragondon, Cavite	64.6
Bongabon Solar	Bongabon, Nueva Ecija	42.9
Gamu Solar	Isabela, Gamu	56.6
Armenia Solar	Tarlac City, Tarlac	46.7
RASLAG IV	Magalang, Pampanga	36.6
Sto. Domingo Solar	San Manuel, Pangasinan	59.8
Subic New PV Solar (Phase 4A)	Morong and Hermosa, Bataan	72.1
San Jose Solar	San Jose, Nueva Ecija	19.6
Samal Solar	Samal, Bataan	49.2
Paluig Solar	Samal, Zambales	75.2
Bongabon Solar	Bongabon, Nueva Ecija	25.5
Bangui Wind Power Ph1 and Ph2	Bangui, Ilocos Norte	33.0
Bangui Wind Power Ph3	Bangui, Ilocos Norte	18.9
Burgos Wind	Burgos, Ilocos Norte	150.0
Caparispisan Wind	Pagudpud, Ilocos Norte	81.0
Balaoi Wind	Pagudpud, Ilocos Norte	25.0
Caparispisan II Wind	Pagudpud, Ilocos Norte	50.0
	TOTAL	**2,828.6**

Table A13.2: Existing VRE Plants in the Visayas Grid

VRE PROJECTS	Location	Rated Capacity (MW)
COSMO SOLAR	Miag-ao, Iloilo	5.7
FIRST TOLEDO SOLAR	Toledo, Cebu	60.0
HELIOS	Cadiz City, Negros Occidental	132.5
ISLASOL II	La Carlota City, Negros Occidental	32.0
ISLASOL III	Manapla, Negros Occidental	48.1
MONTESOL	Bais City, Negros Oriental	18.0
SACASOL I - A	San Carlos, Negros Occidental	13.0
SACASOL I - B	San Carlos, Negros Occidental	9.0
SACASOL I - C & D	San Carlos, Negros Occidental	23.0

SACASUN	San Carlos, Negros Occidental		59.0
SEPALCO	Palo, Leyte		49.8
SILAY SOLAR	Silay City, Negros Occidental		25.0
SOLEQ	Ormoc, Leyte		30.4
DAGOHOY SPP	Dagohoy, Bohol		27.1
CALATRAVA SPP	Calatrava, Negros Occidental		169.0
NABAS WIND Ph1	Nabas, Aklan		36.0
TAREC	San Lorenzo, Guimaras		54.0
		TOTAL	**791.6**

Table A13.3: Existing VRE Plants in Mindanao Grid

VRE PROJECTS	Location		Rated Capacity (MW)
DIGOS	Digos City, Davao del Sur		28.6
KIBAWE	Kibawe, Bukidnon		10.5
		TOTAL	**39.1**

Appendix 14
ABBREVIATIONS AND ACRONYMS

Development Plans	
DDP	Distribution Development Plan
ESMAP	Energy Sector Management Assistance Program
GEAP	Green Energy Auction Program
NREP	National Renewable Energy Program
PDP	Power Development Program
PEP	Philippine Energy Plan
TDP	Transmission Development Plan
Electricity Market	
IEMOP	Independent Electricity Market Operator of the Philippines
PEMC	Philippine Electricity Market Corporation
WESM	Wholesale Electricity Spot Market
Government Agencies	
ERC	Energy Regulatory Commission
DICT	Department of Information and Communications Technology
DENR	Department of Environmental and Natural Resources
DOE	Department of Energy
LLDA	Laguna Lake Development Authority
MGB	Mines and Geosciences Bureau
NEDA	National Economic & Development Authority
Government-owned and Controlled Corporation and other Government Agencies	
NPC	National Power Corporation
PSALM	Power Sector Assets & Liabilities Management
TransCo	National Transmission Corporation
SPUG	Small Power Utilities Group
Legal, Environmental and Other Requirements	
BCMS	Business Continuity Management System
EMS	Environmental Management System
EPIRA	Electric Power Industry Reform Act
IMS	Integrated Management System
ISMS	Information Security and Management System
ISO	International Organization for Standardization
IRR	Implementing Rules and Regulation
OHSMS	Occupational Health and Safety Management System
PGC	Philippine Grid Code
QMS	Quality Management System
RE Law	Renewable Energy Law
Other Companies	
BEI	Bohol Enterprises, Inc.
BSTC	Bukidnon Sub transmission Corporation
IFC	International Finance Corporation
NREL	National Renewable Energy Laboratory
USAID	United States Agency for International Development
Power Generating Companies	
CEDC	Cebu Energy Development Corporation
EERI	Excellent Energy Resources Inc.
EWC	Energy World Corporation
FGHPC	First Gen Hydro Power Corporation
GN Power	General Nakar Power
GNKEILCO	KEPCO Ilijan Corporation
KEPCO	Korea Electric Power Corporation
KSPC	KEPCO SPC Power Corporation
MAEC	Mirae Asia Power Corporation
PCPC	Palm Concepcion Power Corporation
PEDC	Panay Energy Development Corporation
QPPL	Quezon Power Philippines Limited
RP Energy	Redondo Peninsula Energy
SCPC	Sta. Clara Power Corporation

Power Plants	
CCPP	Combined Cycle Power Plant
CFPP	Coal-Fired Power Plant
BPP	Biomass Power Plant
DPP	Diesel Power Plant
GPP	Geothermal Power Plant
HEPP	Hydro Electric Power Plant
LNG	Liquified Natural Gas
NGPP	Natural Gas Power Plant
RE	Renewable Energy
SPP	Solar Power Plant
Solar PV	Solar Photovoltaic
VRE	Variable Renewable Energy
Private Distribution Utilities	
APEC	Power and Energy Corporation
AEC	Angeles Electric Corporation
CEPALCO	Cagayan Electric Power & Light Company
CEDC	Clark Electric Distribution Corporation
DLPC	Davao Light and Power Company
MERALCO	Manila Electric Company
TEI	Tarlac Electric Inc.
VECO	Visayan Electric Company, Inc.
Regions/Areas	
CALABARZON	Cavite, Laguna, Batangas, Rizal, and Quezon
CBD	Central Business District
LA	Lanao Area
NCC	New Clark City
NCR	National Capital Region
NCMA	North Central Mindanao Area
NEMA	North Eastern Mindanao Area
NWMA	North Western Mindanao Area
SEMA	South Eastern Mindanao Area
SOCCSKSARGEN	South Cotabato, Cotabato, Sultan Kudarat, Sarangani & Gen Santos
SRP	South Road Properties
SWMA	South Western Mindanao Area
Regulatory	
ASAI	Ancillary Services Availability Indicator
ASAPP	Ancillary Service Agreement Procurement Plan
CA	
CC/RSTC	Connection Assets Connection Charges/Residual Subtransmission Charges
ConA	Congestion Availability
CSI	Customer Satisfaction Indicator
FD	Final Determination
FIT	Feed-in-Tariff
FLC	Frequency Limit Compliance
FOT / 100 Ckt-km	Frequency of Tripping per 100 circuit-km
OATS	Open Access Transmission Service
PA	Provisional Authority
PBR	Performance-Based Regulation
PIS	Performance Incentive Scheme
RAB	Regulatory Asset Base
RSTA	Residual Subtransmission Assets
RTWR	Rules for Setting Transmission Wheeling Rate
SA	System Availability
SEIL	Std. Equipment Identification and Labeling
SISI	System Interruption Severity Index
VLC	Voltage Limit Compliance VLC

Appendix 15

CONTACT DETAILS

For all inquiries regarding the TDP, you may contact any of the following:

Eufemio C. Buluran, Jr.
Transmission Planning Senior Manager
Luzon System Planning Division
Planning and Engineering
ecbuluran@ngcp.ph

Michael R. Baylosis
Transmission Planning Senior Manager
Visayas System Planning Division
Planning and Engineering
mrbaylosis@ngcp.ph

Fernando S. Javier
Transmission Planning Senior Manager
Mindanao System Planning Division
Planning and Engineering
fsjavier@ngcp.ph

Vicente N. Loria
Transmission Development Senior Manager
Transmission Development Division
Planning and Engineering
vnloria@ngcp.ph

Germiniano S. Caseria III
O&M Planning Manager
O&M Planning Division
Operation and Maintenance
gscaseria@ngcp.ph

Armando C. Nicdao
Metering Assets and Services Management
Senior Manager
Metering Assets and Services Management Division
Operation and Maintenance
acnicdao@ngcp.ph

Mark Angelo A. Silvala
Infrastructure and Integrated Development Manager
Infrastructure and Integrated Development Division
System Operations
masilvala@ngcp.ph