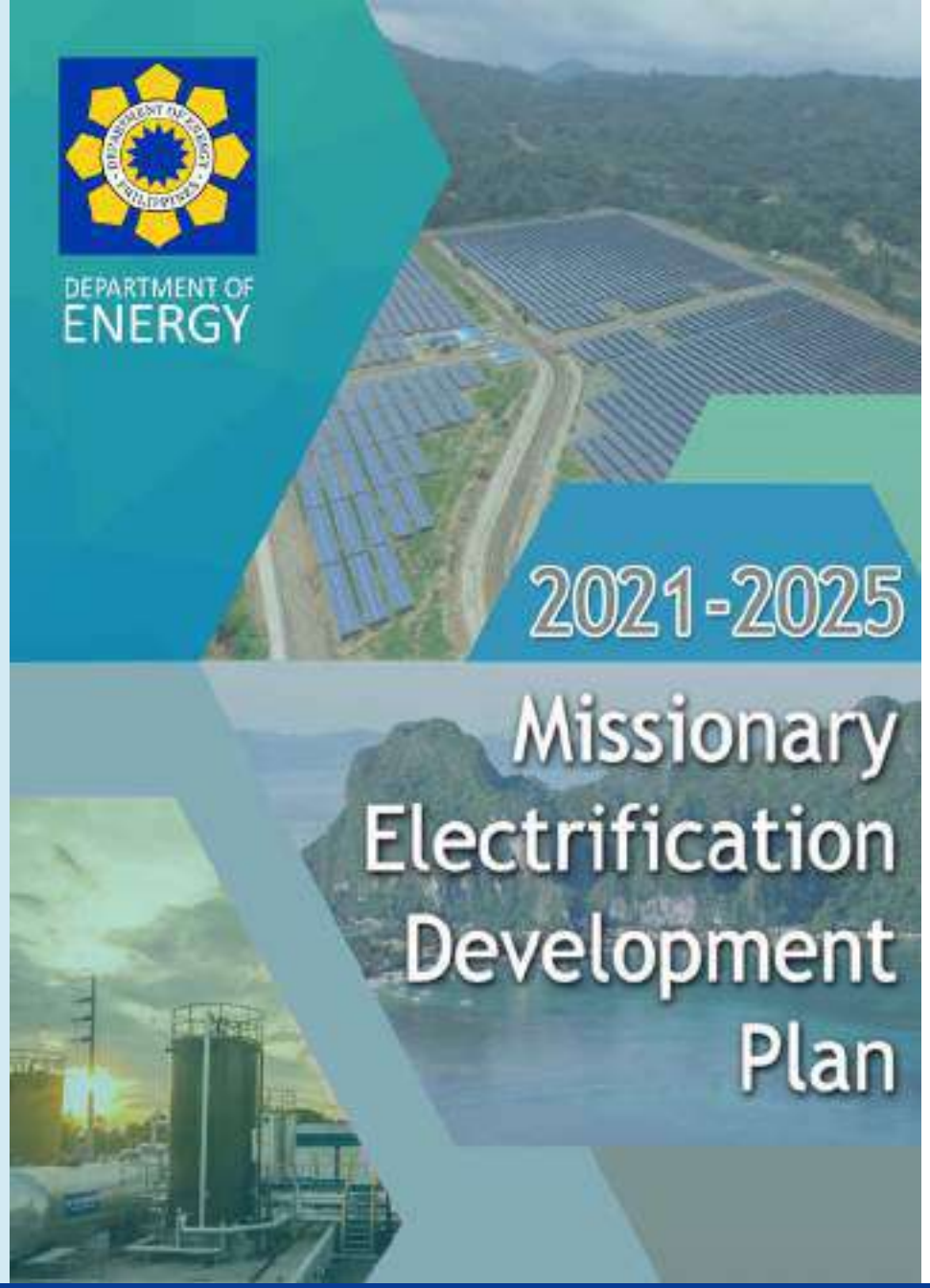
Draft 2021 – 2025 Missionary Electrification Development Plan

2021-2025 MEDP OUTLINE



- Purposes and Scope of the 2021 - 2025 MEDP
- Status of Missionary Electrification in the Philippines
- Performance Assessment of Off-Grid Power Systems
- Policy Updates
- Plans and Programs
- Next Steps

- defines major updates of the previous 2016-2020 MEDP in order to present the new policies, strategies, and governance reforms for off-grid power development and missionary electrification

In accordance with Department Circular No. DC2019-01-0001 entitled, "Prescribing the Omnibus Guidelines on Enhancing Off-Grid Power Development and Operation"

Photo Credit: Renesons Energy Pollilo, Inc.

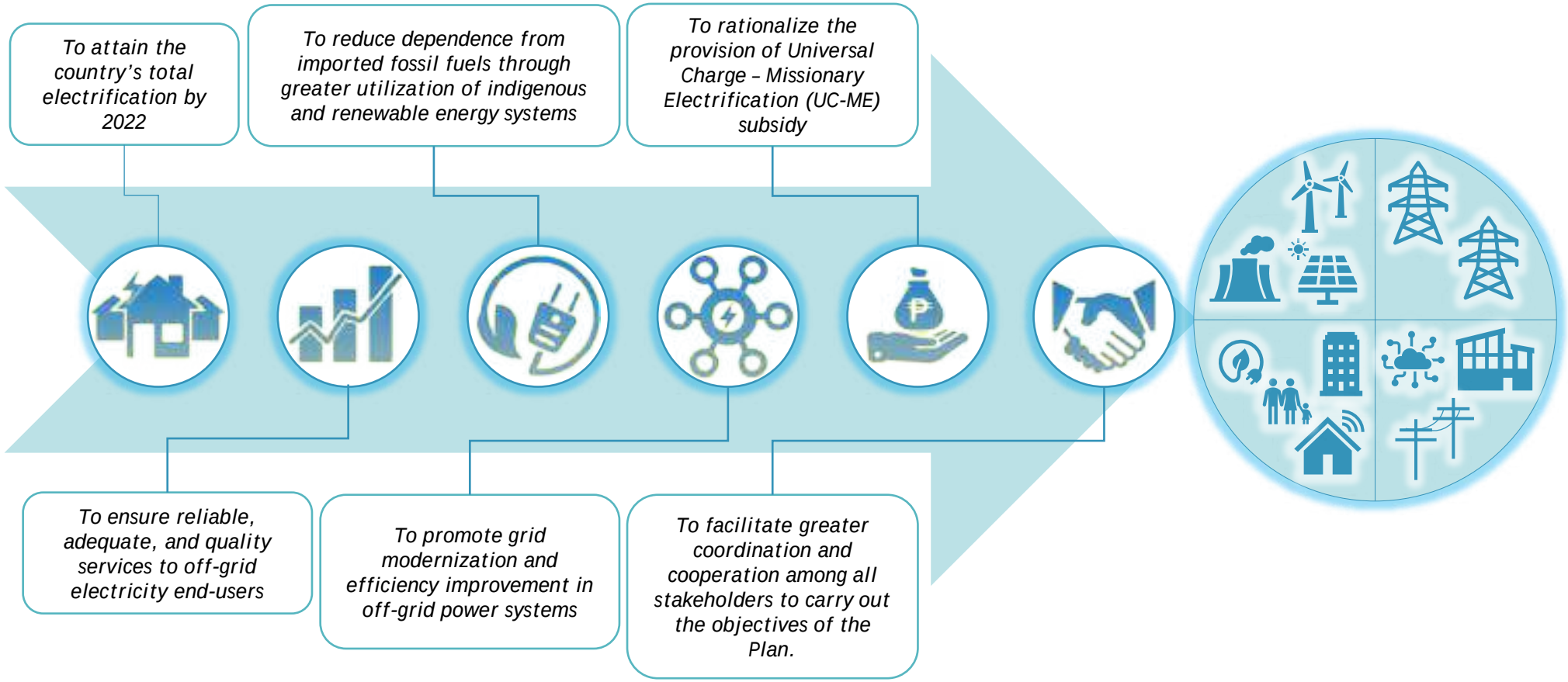
Purposes and Scope of the 2021 – 2025 MEDP

Rule 13 of the Electric Power Industry Reform Act Implementing Rules and Regulations (EPIRA-IRR)

- provides the **policy directions** and **programs of the Government** in relation to the provision of secured, adequate, reliable and efficient provision of **electricity services in missionary areas and other off-grid power systems** all over the Philippine Archipelago

2021 MEDP Main Theme: Strong Coordination and Greater Accountability by all Stakeholders

Purposes and Scope of the 2021 – 2025 MEDP



2021 MEDP Objectives

Scope of 2021 MEDP and New Categorization of Areas

Table 1. New Categorization for Missionary and Off-Grid Areas

Category	Qualifier	Served by DU?
Very Large Island Grids	Off-grid areas with more than 10MW peak demand	Yes
Large Island Grids	Off-grid areas with 5 MW to 10 MW peak demand	Yes
Medium Island Grids	Off-grid areas with 1MW to less than 5 MW peak demand	Yes
Small Island Grids	Off-grid areas with less than 1MW peak demand	Yes
Isolated Grids	Isolated systems in mainland Luzon, Visayas* or Mindanao	Yes
Underserved Areas	Areas currently served by home power systems, microgrid systems, or DUs whose supply of electricity is less than twenty-four (24) hours daily.	Yes/No
Unserved Areas	Areas with no electricity access, no distribution system lines, no home power systems, no connection to any microgrid system, or for which no distribution grid extension has been developed or implemented by the DU.	No

**Refers to the major islands in the Visayas, such as Panay, Guimaras, Negros, Cebu, Bohol, Biliran, Samar and Leyte.*

Status of Missionary Electrification in the Philippines

2021-2025 MEDP

Overview of the 2020 Off-Grid Power System

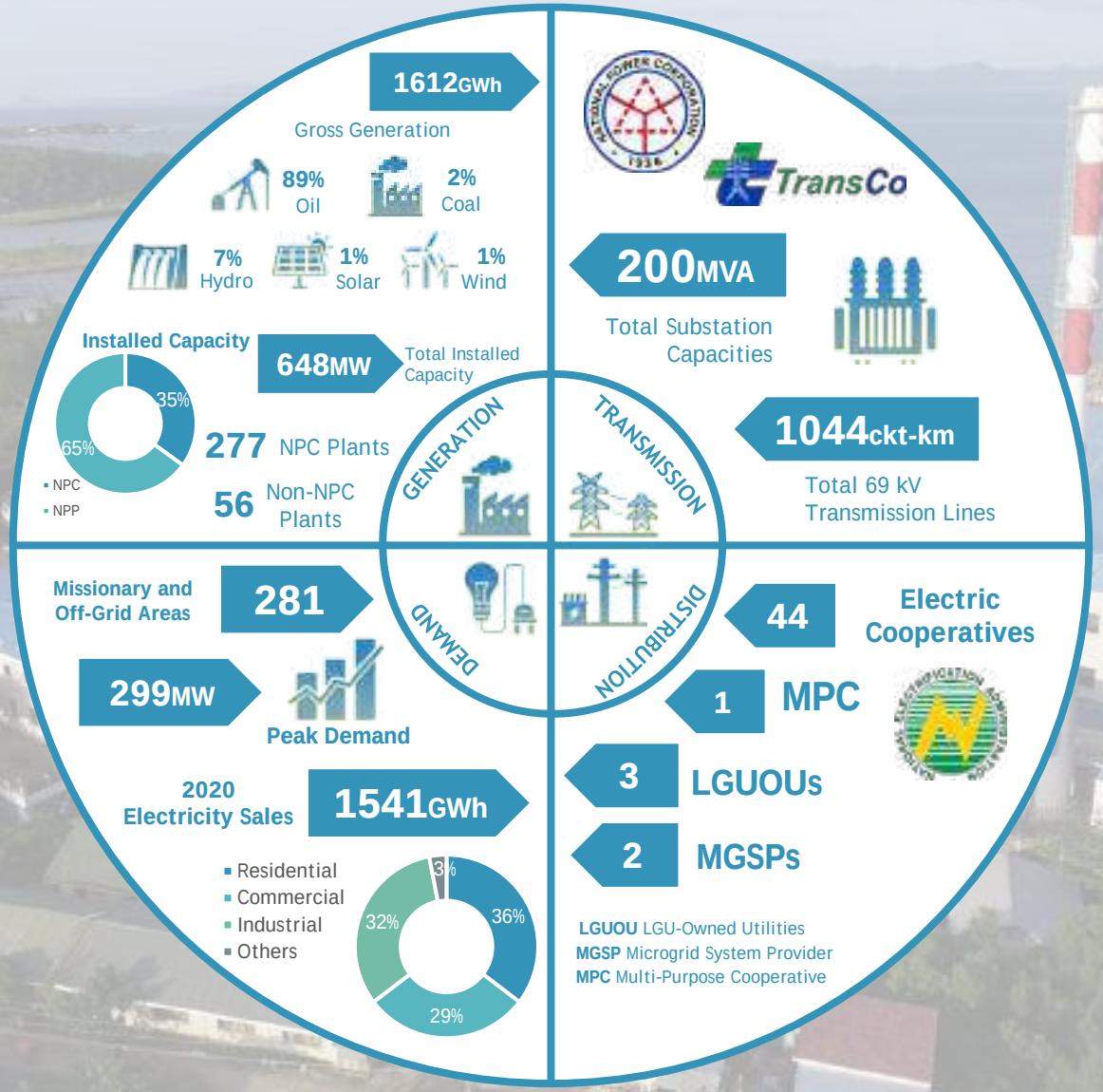


Photo Credit: DMCI Power Masbate Corporation

Status of Missionary Electrification in the Philippines

2021-2025 MEDP

Overview of the 2020 Off-Grid Power System

Generation

648MW Total Installed Capacity

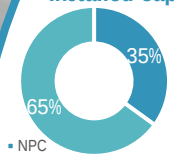
89% Oil

1612GWh Gross Generation

1612GWh Gross Generation

89% Oil
2% Coal
7% Hydro
1% Solar
1% Wind

Installed Capacity **648MW** Total Installed Capacity



277 NPC Plants

56 Non-NPC Plants

GENERATION

TRANSMISSION

200MVA Total Substation Capacities

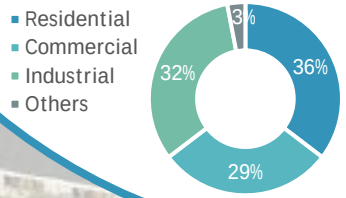
1044ckt-km Total 69 kV Transmission Lines

DEMAND

Missionary and Off-Grid Areas **281**

299MW Peak Demand

2020 Electricity Sales **1541GWh**



DISTRIBUTION

44 Electric Cooperatives

1 MPC

3 LGUOUs

2 MGSPs

LGUOU LGU-Owned Utilities
MGSP Microgrid System Provider
MPC Multi-Purpose Cooperative

Photo Credit: DMCI Power Masbate Corporation

Status of Missionary Electrification in the Philippines

2021-2025 MEDP

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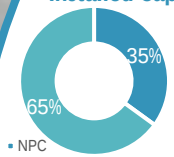

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DEMAND

Missionary and Off-Grid Areas **281**

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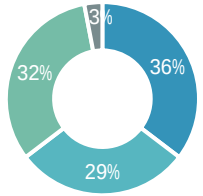
2020 Electricity Sales **1541GWh**

- Residential
- Commercial
- Industrial
- Others



Transmission

National Power Corporation
Local Transmission Facilities

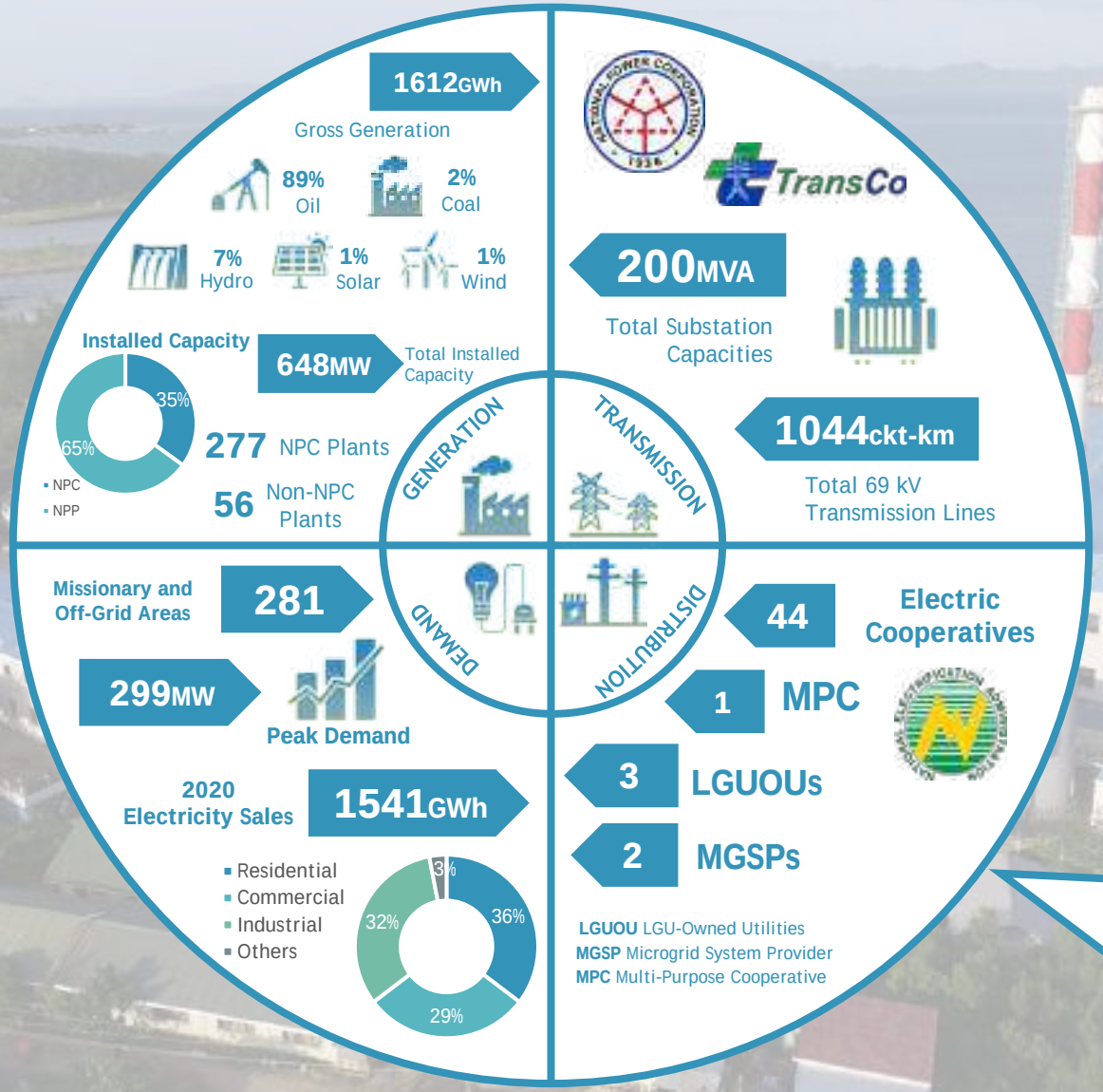
National Transmission Corporation
Small Grid System Operator

Photo Credit: DMCI Power Masbate Corporation

Status of Missionary Electrification in the Philippines

2021-2025 MEDP

Overview of the 2020 Off-Grid Power System



Distribution

National Electrification Administration

44 Electric Cooperatives

Photo Credit: DMCI Power Masbate Corporation

Status of Missionary Electrification in the Philippines

2021-2025 MEDP

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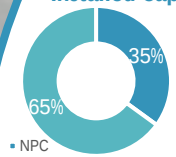

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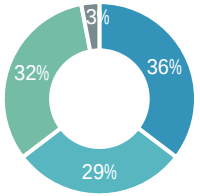

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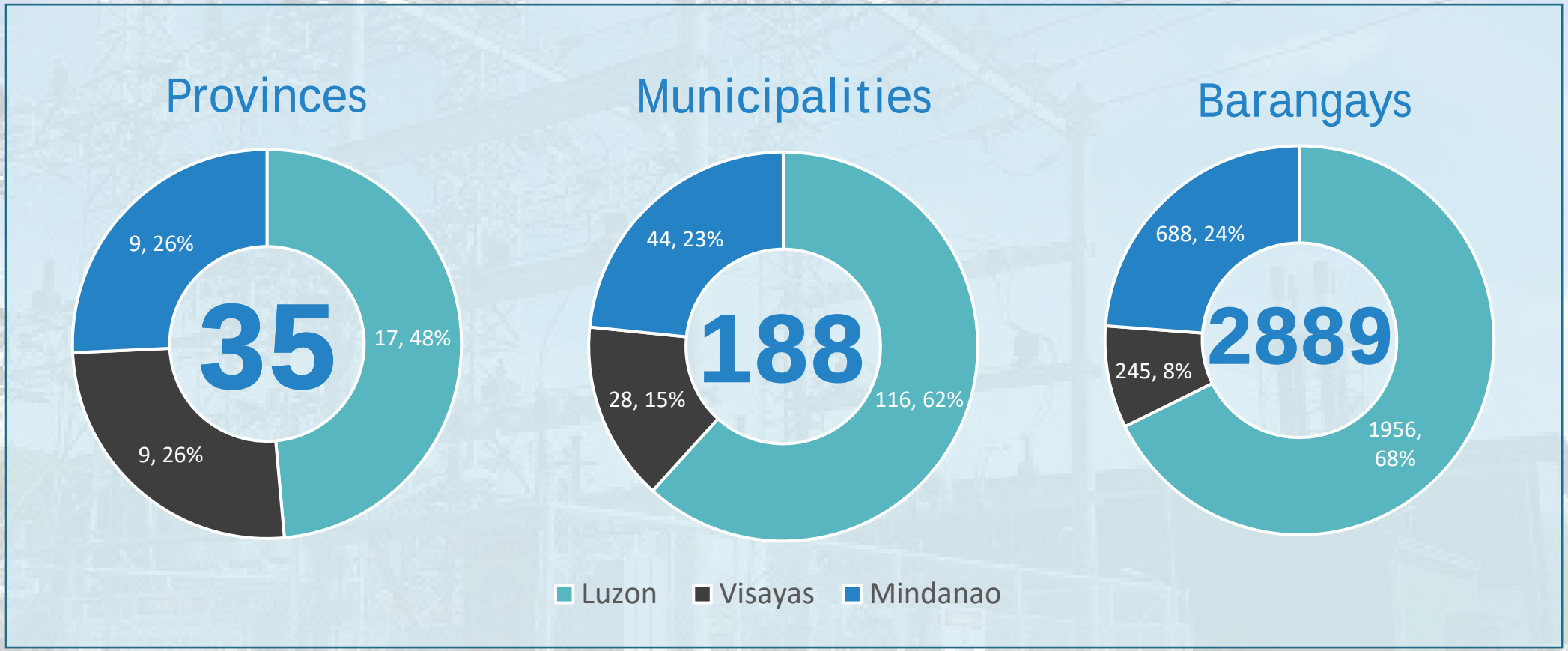
281 Missionary and Off-Grid Areas

Photo Credit: DMCI Power Masbate Corporation

Status of Missionary Electrification in the Philippines

2021-2025 MEDP



Source: NPC Missionary Electrification Plan 2022-2026

2020 Missionary and Other Off-Grid Areas

Photo Credit: Delta P, Inc.

Status of Missionary Electrification in the Philippines

Table 2. 2020 Missionary and Off-Grid Areas per Category with Service Hours

Category	No. of Missionary and Off-Grid Areas	Service Hrs.
Very Large Island Grid	7	24
Large Island Grid	6	24
Medium Island Grid	11	24
Small Island Grid	55	24
Isolated Grid	6	24
Underserved Areas	192	5 – 16
Unserved Areas	n/a	n/a
Total	**281**	

**No Data submitted but identified as missionary/off-grid areas (Cobrador Island, Semirara Island, Olango Island, Higatangan Island)*

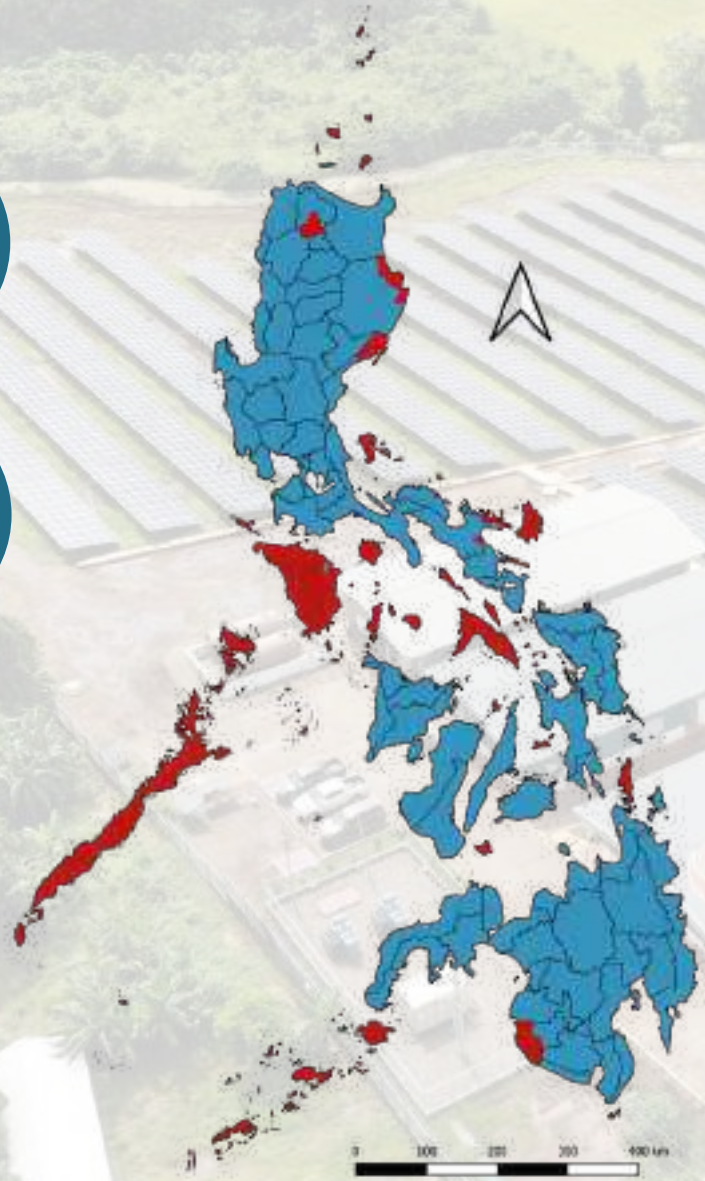
Photo Credit: National Power Corporation

Status of Missionary Electrification in the Philippines

2021-2025 MEDP

6.68% AAGR

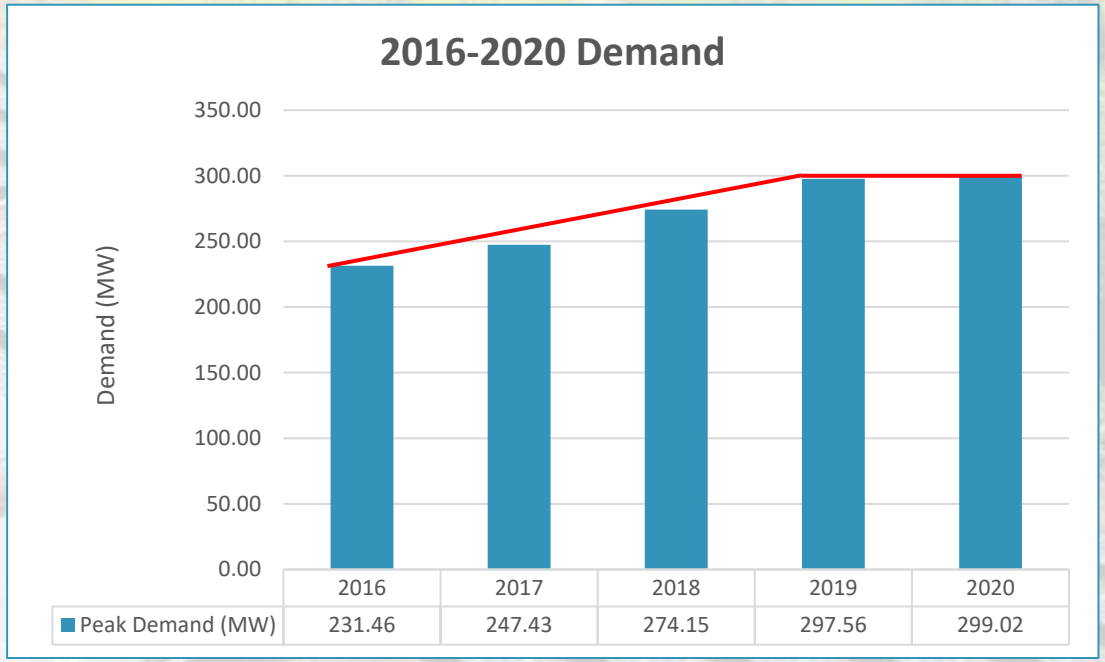
299 MW 2020 Peak Demand



Grid

Off-Grid

2020 Demand Profile



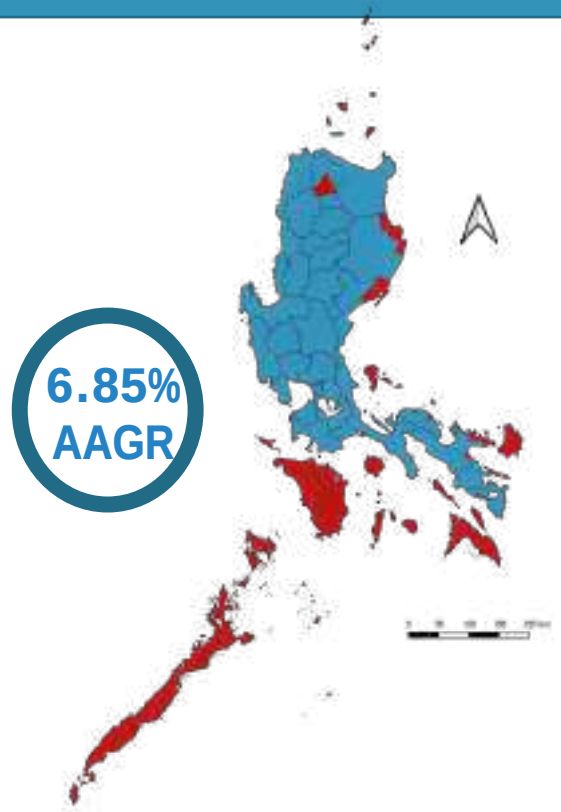
Total Off-Grid Demand from 2016-2020

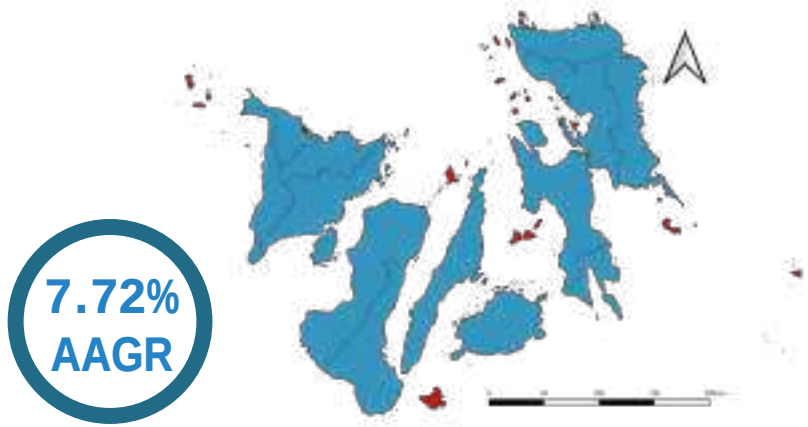
Photo Credit: SUWECO Tablas Energy Corporation

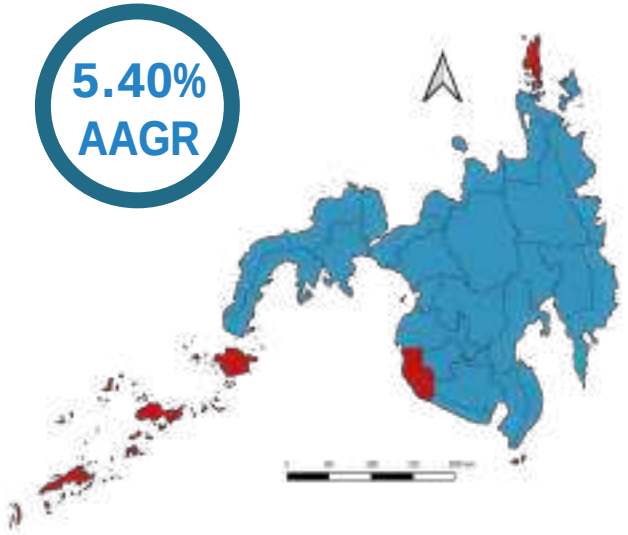
Status of Missionary Electrification in the Philippines

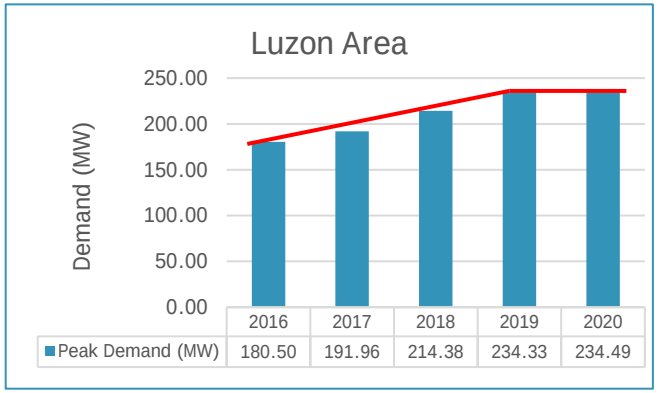
2021-2025 MEDP

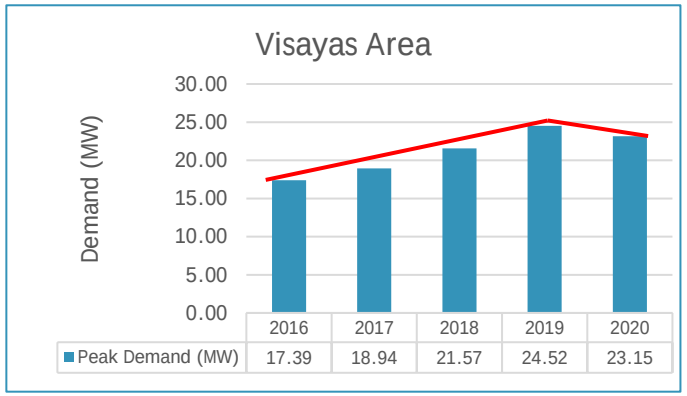
2020 Demand Profile

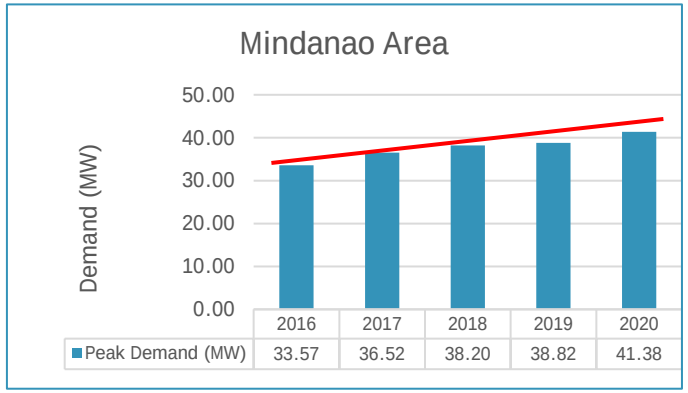










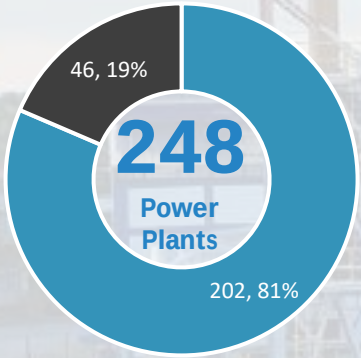


Status of Missionary Electrification in the Philippines

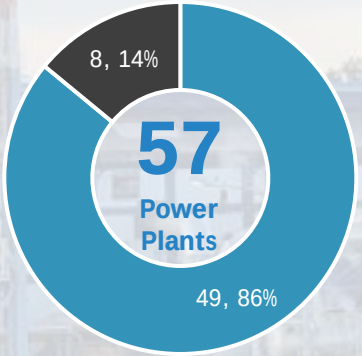
2021-2025 MEDP

Missionary Generation

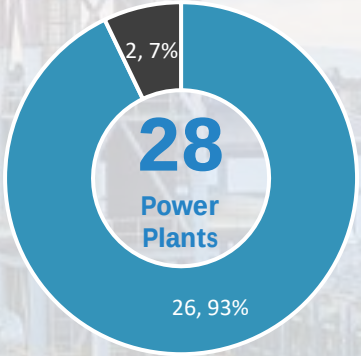
Luzon



Visayas

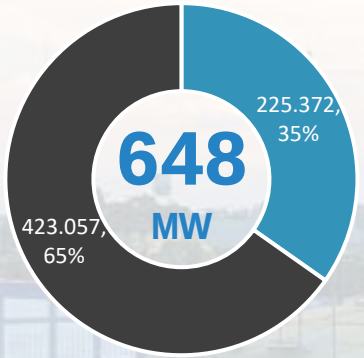


Mindanao

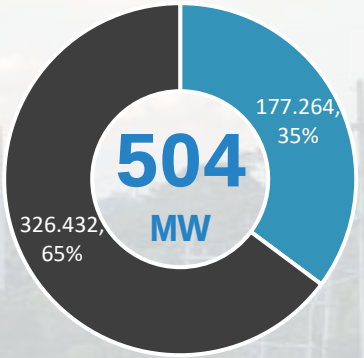


333
Total No. of Power Plants

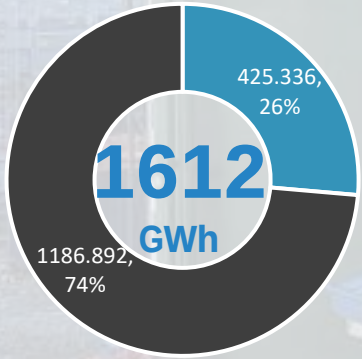
Rated Capacity



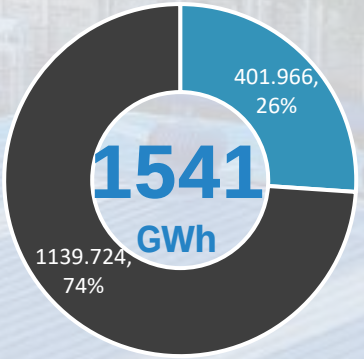
Dependable Capacity



Gross Generation



Energy Sales



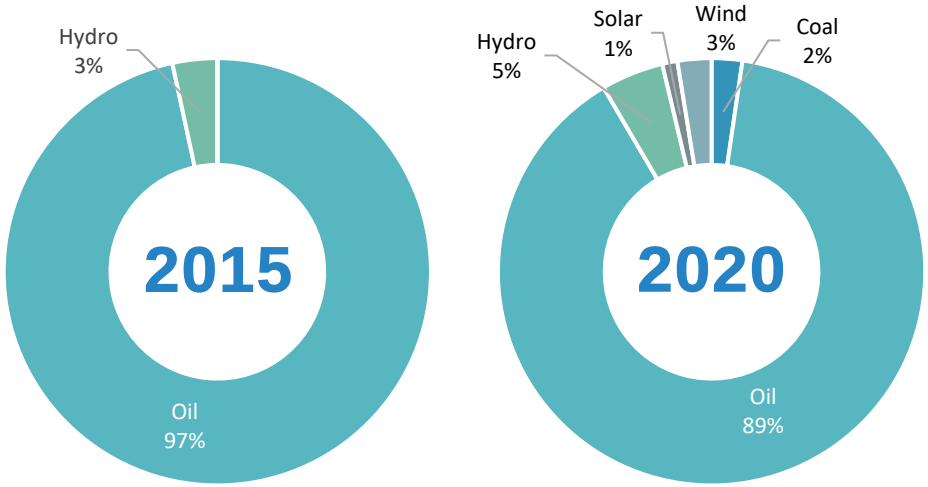
NPC NPP

Power Plants in Missionary Areas as of December 2020

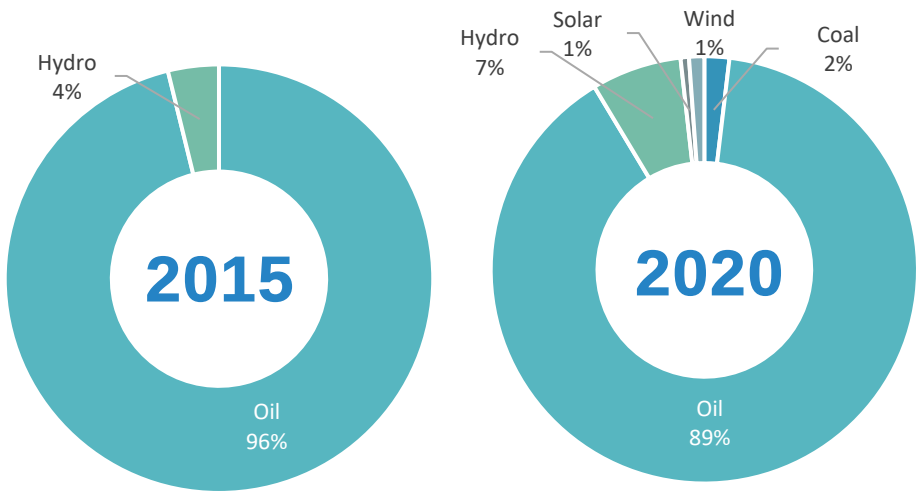
Photo Credit: DMCI Power Masbate Corporation

Status of Missionary Electrification in the Philippines

Missionary Generation



Capacity Mix



Generation Mix

Comparison of Capacity and Generation Mix between 2015 and 2020

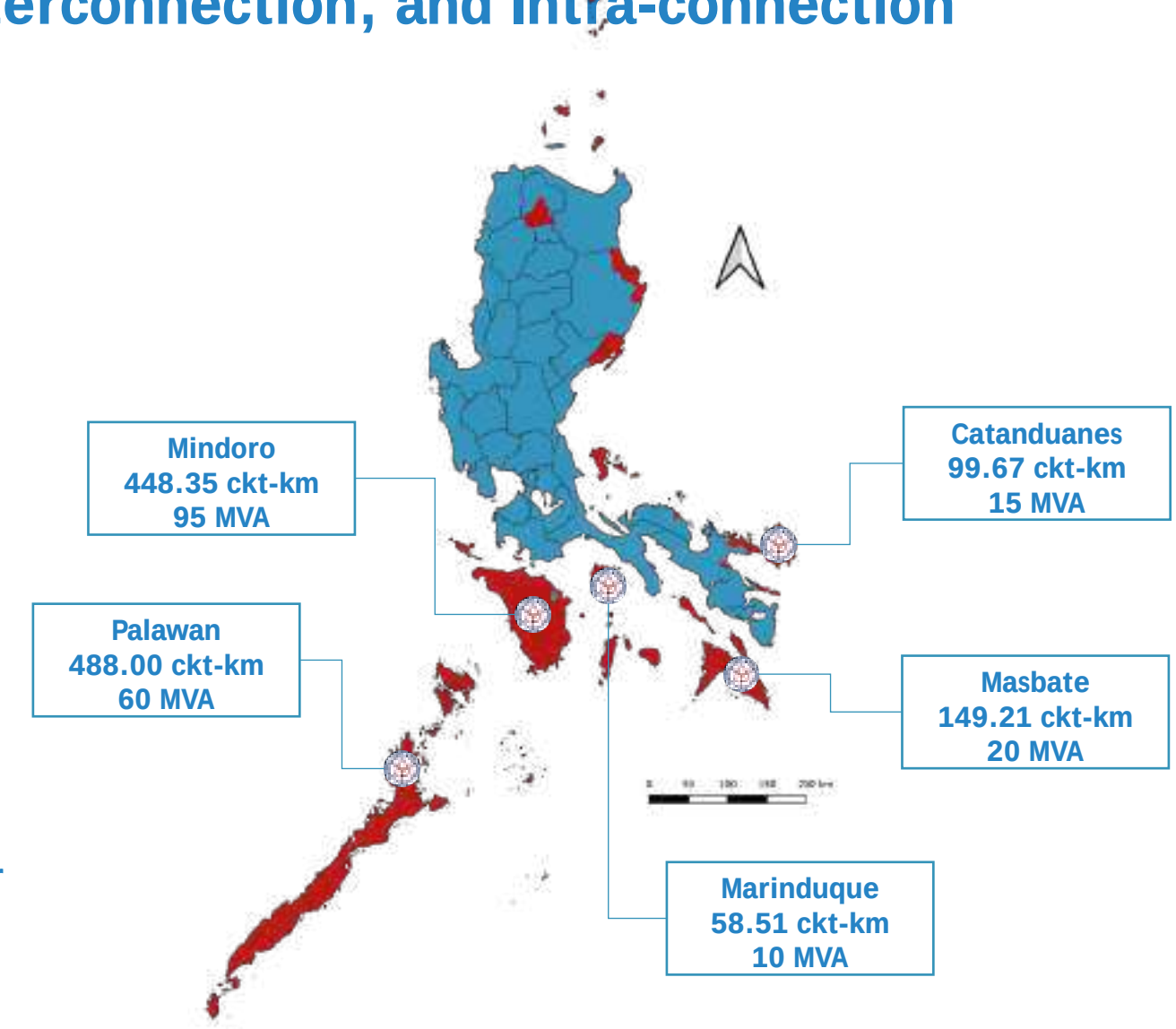
Status of Missionary Electrification in the Philippines

Local Transmission, Interconnection, and Intra-connection

1043.74 ckt-km
Transmission Line

200 MVA
Substation

Total NPC Transmission Lines and Substations in Major Island Grids



Performance Assessment of Off-Grid Power System

2021-2025 MEDP

Performance Assessment of Off-Grid Power System

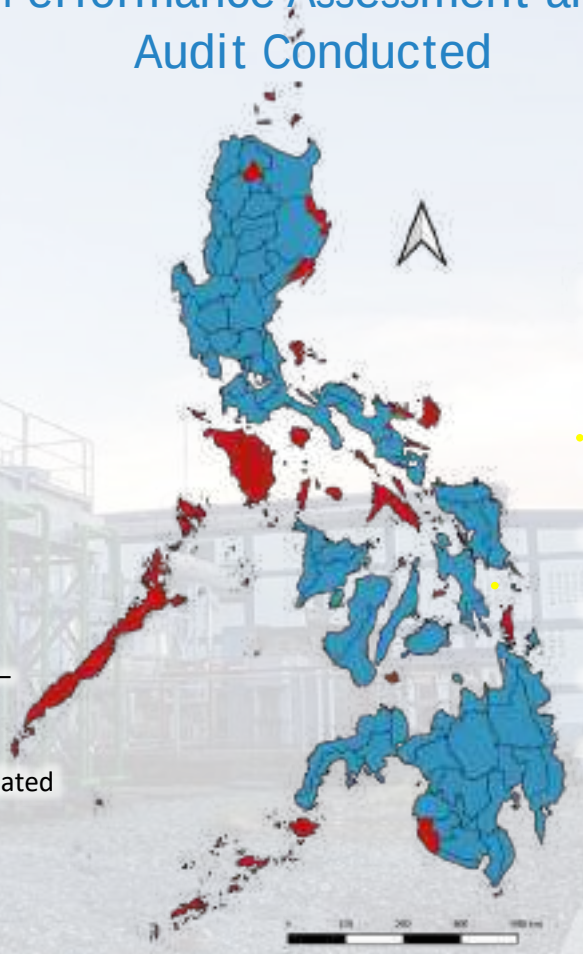
- Major Performance Assessment and Audit Activities Completed
- Power Summits Conducted
- Main Performance Issues and Concerns
- Implementation Challenges

Performance Assessment and Audit Conducted

17
Generation Facilities

Generation Facilities of:

- GBH Power Resources, Inc.
- Mindoro Grid Corporation
- DMCI Power Corporation
- Power One Corporation
- Oriental Mindoro Electric Cooperative, Inc.
- Ormin Power, Inc.
- Delta P Inc.
- Sunwest Electric and Water Company
- National Power Corporation – Small Power Utilities Group
- S.I. Power Corporation
- Occidental Mindoro Consolidated Power Corporation
- Solar Para sa Bayan Corp.



7
Distribution Utilities

Distribution Utilities:

- Occidental Mindoro Electric Cooperative, Inc. (OMECO)
- Oriental Mindoro Electric Cooperative, Inc. (ORMECO)
- Palawan Electric Cooperative, Inc. (PALECO)
- First Catanduanes Electric Cooperative, Inc. (FICELCO)
- Province of Siquijor Electric Cooperative, Inc. (PROSIELCO)
- Masbate Electric Cooperative, Inc. (MASELCO)
- Municipality of Paluan

Photo Credit: DMCI Power Masbate Corporation

Performance Assessment of Off-Grid Power System

2021-2025 MEDP

Performance Assessment of Off-Grid Power System

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Power Summit

Area	Event Date
Mindoro Island (Occidental Mindoro and Oriental Mindoro)	05 November 2019
Marinduque	09 July 2020
Mainland Masbate	22 July 2021

Mindoro Power Summit 2019 (Source: Department of Energy Official Facebook Page)

Photo Credit: National Power Corporation

Performance Assessment of Off-Grid Power System

2021-2025 MEDP

Performance Assessment of Off-Grid Power System

- Major Performance Assessment and Audit Activities Completed
- Power Summits Conducted
- Main Performance Issues and Concerns
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Summary of Issues and Concerns in Off-Grid Power Systems

Supply-Demand Issues	Unreliable and Inefficient Services	Issues on Subsidies and Rates	Issues on Interconnection and Off-Grid Electrification
Weak Demand Forecasting	Inadequate system operation	High electricity cost in off-grid areas	No firm schedule to interconnect off-grid islands to the Main Grid
Inadequate Supply	Inefficient plant operations	Low capacity to pay of customers	"last mile" areas are difficult and costly to serve
Barriers to Private Sector Entry	Weak distribution systems	Increasing UC-ME subsidy levels	
High dependence on fossil fuels		Need for Innovative Rates	

Photo Credit: DMCI Power Masbate Corporation

Performance Assessment of Off-Grid Power System

2021-2025 MEDP

Performance Assessment of Off-Grid Power System

- Major Performance Assessment and Audit Activities Completed
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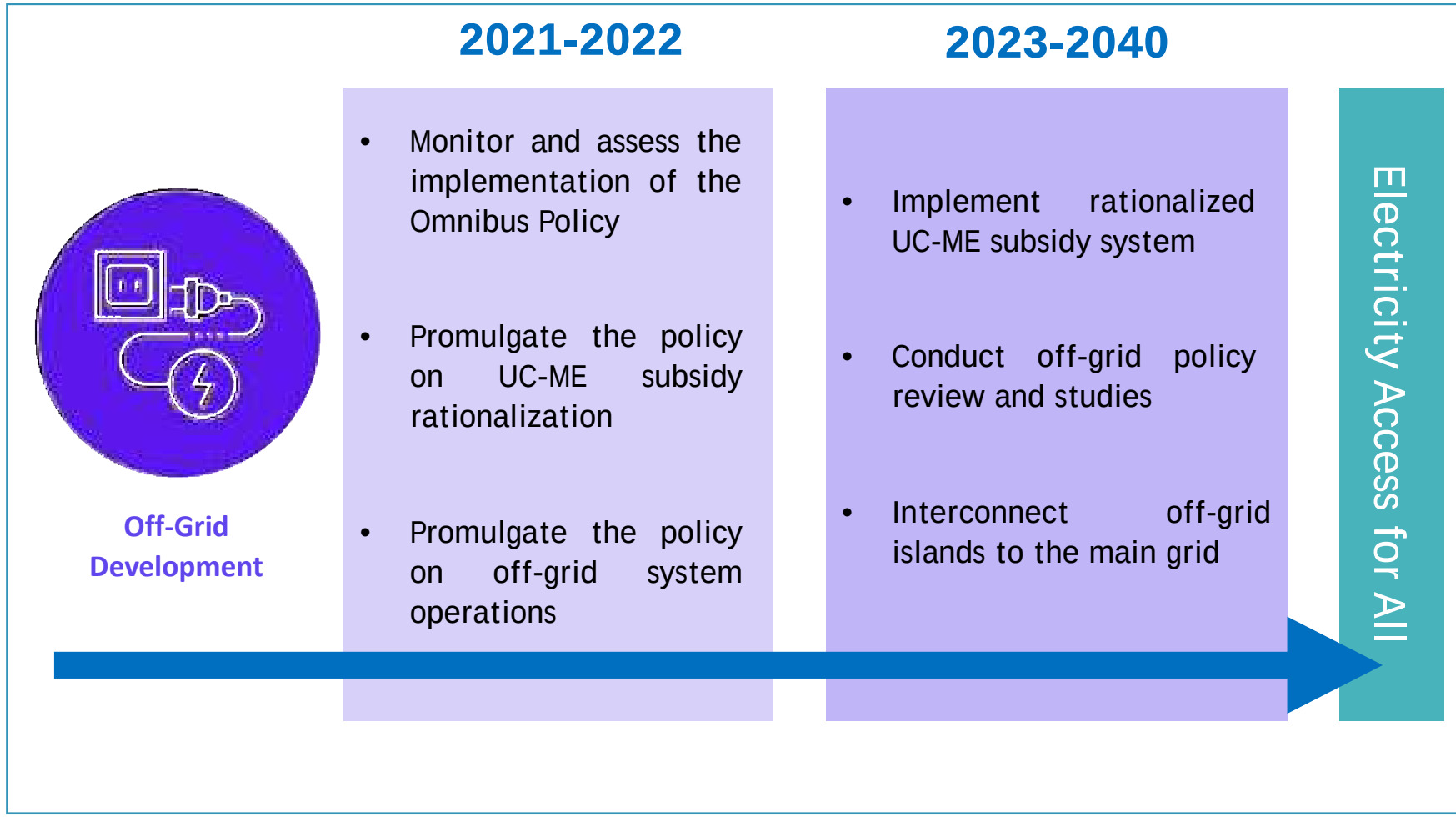
Implementation Challenges

- Unrealistic plans and targets due to poor planning, programming, monitoring and evaluation;
- Inadequate suitable training and capacity building activities in all aspects leading to inadequate management and limited technical skills;
- Weak involvement and participation of some stakeholders in the program and policy development activities resulting in lack of accountability and slack manpower;
- Inadequate coordination and communication among stakeholders resulting in ineffective implementation of policies, duplication of efforts or gaps in some cases, and difficulty promoting best practices and principles for missionary and off-grid electrification;
- Inherent resistance to objective assessment and evaluation of performance; and
- Holistic accounting of data from private sectors, LGUs, and other stakeholders.

Photo Credit: Renesons Energy Pollilo, Inc.

Power Sector Roadmap for Off-Grid Development



Policy Updates

2021-2025 MEDP

Legal Basis

Republic Act No.9136

Electric Power Industry Reform Act (EPIRA) of 2001

Section 70

- NPC, through its Small Power Utilities Group (SPUG), shall perform missionary electrification.
- Missionary electrification function of NPC-SPUG shall be funded from the revenues from sales in missionary areas and from the universal charge to be collected from all electricity end-users as determined by the ERC

Issued: 08 June 2001

Implementing Rules and Regulations for Republic Act No.9136

Rules 13

- The DOE's Missionary Electrification Development Plan (MEDP) shall include capital investment and operations regarding capacity additions in existing missionary areas and the facilities to be provided in other areas not connected to the transmission system.

Issued: 27 February 2002

Relevant Laws

Republic Act No.9513

Renewable Energy (RE) Act of 2008

- NPC-SPUG or its successors-in-interest and/or Microgrid Systems Providers, in the performance of missionary electrification, shall source a minimum percentage of its total annual generation from available RE resources.
- Eligible RE developers shall be entitled to a generation-based cash incentive equivalent to 50% of the universal charge needed to service missionary areas where it operates the same, to be charged against the UC-ME fund

Issued: 16 December 2008

Republic Act No.11234

Energy Virtual One-Stop Shop (EVOSS) Act

- Mandates the creation of an online platform which would facilitate the paperless applications for permits for new power generation, transmission, or distribution project

Issued: 08 March 2019

Executive Order (EO) No. 156 s. 2021

Instituting Measures to Ensure Consistent and Reliable Electricity Service in Inadequately Served Areas, Improve Performance of Ineffective Distribution Utilities, and Achieve Total Electrification of the Country

Issued: 09 December 2021

Republic Act No. 11646

Microgrid Systems Act

- An act promoting the use of Microgrid Systems to accelerate the Total Electrification of Unserved and Underserved Areas Nationwide
- aims to accelerate the total electrification in the unserved and underserved areas through microgrid systems by private sector investments.

Issued: 09 December 2021

Policy Updates

Legal Basis

Relevant Policies

DC2017-05-0008

Providing For the Policies and Guidelines on the Conduct of Performance Assessment and Audit for All Power Generation, Transmission and Distribution Systems and Facilities

DC2017-12-0016

Adopting the Guidelines for the Performance Assessment and Audit of All Power Generation, Transmission and Distribution Systems and Facilities

DC2018-02-0003

Adopting and Prescribing the Policy for the CSP in the Procurement by the Distribution Utilities of Power Supply Agreement for the Captive Market

DC2018-08-0024

Promulgating the Rules and Guidelines Governing the Establishment of the Renewable Portfolio Standards for Off-grid Areas

DC2019-01-0001

Prescribing the Omnibus Guidelines in Enhancing Off-Grid Power Development and Operations

DC2019-11-0015

Prescribing Revised Guidelines for Qualified Third Party

DC2021-03-0003

Prescribing the Policy and Guidelines for the Formulation of the Distribution Utilities Distribution Development Plan Integrating the Relevant Laws, Policy Issuances, Rules and Regulations

DC2021-09-0003

Amending Certain Provisions of and Supplementing Department Circular No. DC2018-02-0003 on the CSP in the Procurement by the Distribution Utilities of Power Supply Agreement for the Captive Market

DC2021-11-0039

Mandating the National Transmission Corporation (TRANSCO) as Small Grid System Operator (SO) in Specific Off-grid Areas

DC2022-05-0016

Adopting and Integrating the Policies and Programs for the Graduation and Rationalization of the Universal Charge for Missionary Electrification Subsidy Pursuant to Department Circular No. DC2019-01-0001

2021-2025 MEDP

MEDP Policy Framework

Goals of MEDP Framework for Off-Grid

- Total Electrification
- Secured, reliable, adequate, efficient, and resilient electric power services in off-grid areas
- Rationalization of Universal Charge for Missionary Electrification (UC-ME) Subsidy

Policy Strategies

- *To attain the country's total electrification by 2022*
- *To ensure reliable, adequate, and quality services to off-grid electricity end-users*
- *To reduce dependence from imported fossil fuels through greater utilization of indigenous and renewable energy systems*
- *To promote grid modernization and efficiency improvement in off-grid power systems*
- *To rationalize the provision of Universal Charge – Missionary Electrification (UC-ME) subsidy*
- *To facilitate greater coordination and cooperation among all stakeholders to carry out the objectives of the Plan.*

Plans and Programs

- Private Sector Participation
- Short-Term Capacity Planning
- Long-Term Capacity Planning
- Greater Utilization of Indigenous and Renewable Energy Resources in Off-Grid Areas
- Improved System Operation for Small Grids
- Modernization of Off-Grid Power Systems
- Interconnection of Off-Grid Areas into the Main Grids of Luzon, Visayas, and Mindanao
- Intra-Connection of Off-Grid Areas
- Total Electrification
- Rationalization of Tariffs and Subsidies in Missionary Areas

Plans and Programs

2021-2025 MEDP

Plans and Programs

PSP Priority Activities

Technical Review of the DDPs and PSPPs

Lead: NEA & DOE

Capacity Building of DU-Third Party Bids and Awards Committees (DU-TPBACs)

Lead: NEA

Private Sector Participation

Establishment of MGSP Selection Process within the DOE in accordance with the Microgrid Systems Act

Lead: DOE

Strengthening of NPC's Planning Capabilities for the formulation of Missionary Electrification Plan for SPUG areas and Asset Optimization

Lead: NPC

Photo Credit: DMCI Power Masbate Corporation

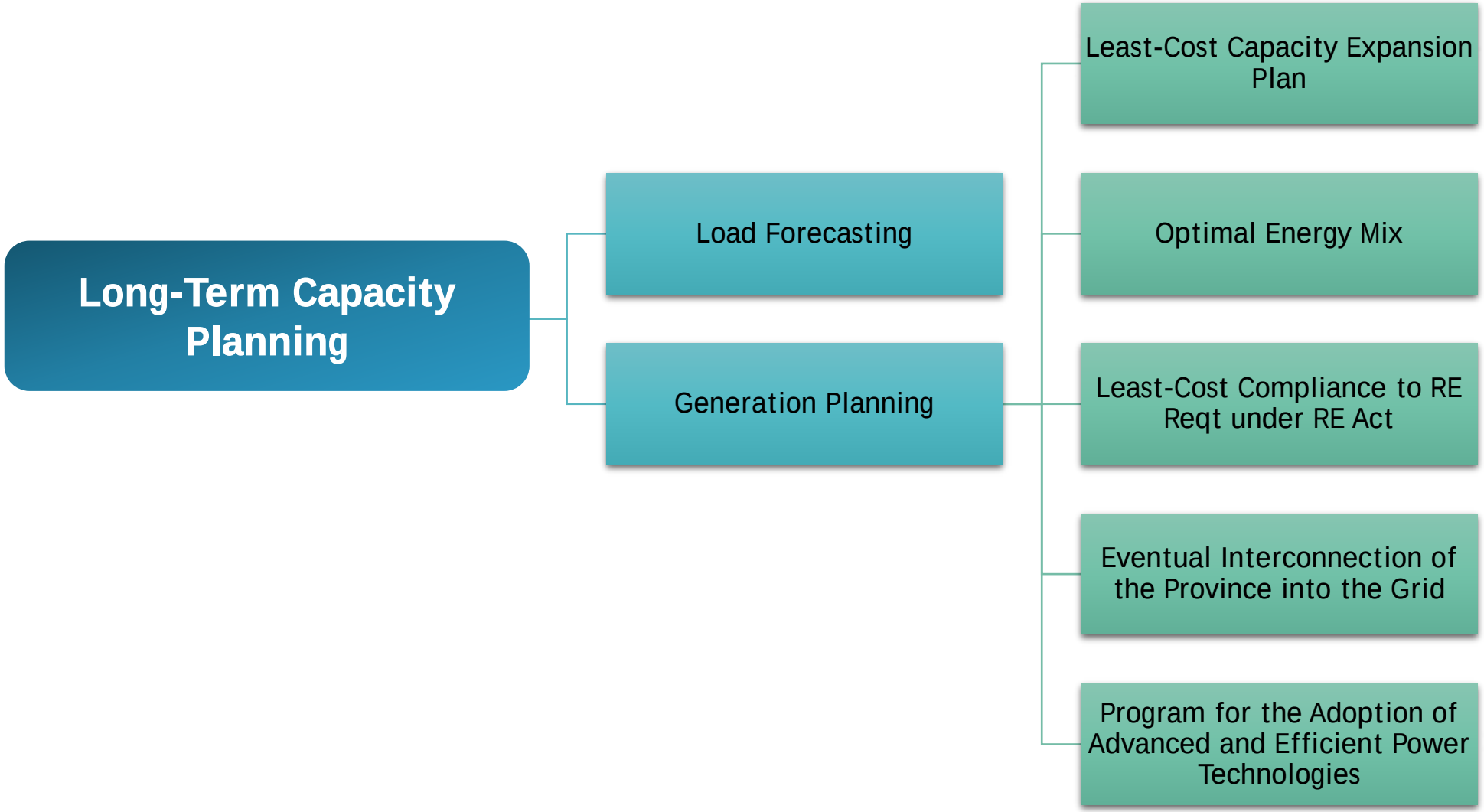
Plans and Programs

Short-Term Capacity Planning

Quarterly Supply Adequacy Assessment Report

- **Distribution Utility**
  - Historical Supply-Demand Balance (3 months)
  - Projected Supply-Demand Balance (12 months)
- **National Power Corporation**
  - Installed and Dependable Capacity per PP
  - Generation and Sales
  - Operating Hours & Heat Rate
  - Fuel and Lube Oil Consumption and Prices
  - Scheduled and Unscheduled Outages
  - Efficiency Parameters
- **NPPs/MGSPs and other Generators**
  - Net Plant Capability
  - Corrective Maintenance Activities Conducted
  - Schedule of Preventive Maintenance Plans of each PP (12 months)

Plans and Programs



LT Capacity Planning Activities

Plans and Programs

2021-2025 MEDP

Greater Utilization of Indigenous and Renewable Energy Resources in Off-Grid Areas

Development of National Renewable Energy Program (NREP)

Enforcement of the Department Circular No. DC2018-08-0024, otherwise known as the "RPS Off-Grid Rules"

Continuous streamlining of the Renewable Energy Service Contract (RESC) process

RE Priority Activities

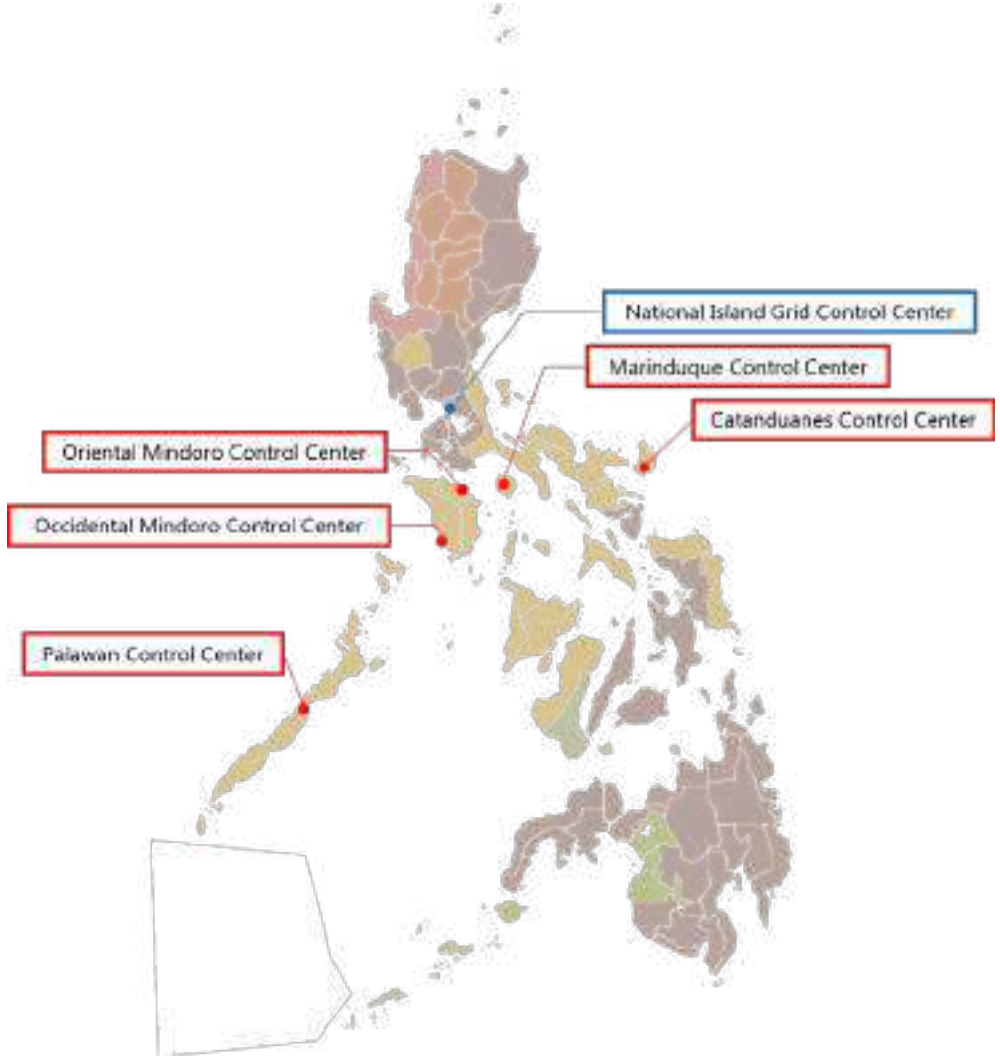
Photo Credit: SUWECO Tablas Energy Corporation

Plans and Programs

Improved System Operation for Small Grids

- Site visit and technical data gathering
- Manual Small Grid System Operation and establishment of SO Technical Committee
- Procurement, installation, commissioning of SCADA System, and Integrated System Testing with SCADA
- SCADA-aided Small Grid System Operation

TransCo Priority Activities for 2021-2025



Priority Islands for Small Grid SO

Plans and Programs

Modernization of Off-Grid Power Systems

Regular monitoring and analysis of reliability data from off-grid power systems

- Lead: NEA

Assessment of the operational performance of off-grid power systems that require immediate measures to enhance key parameters such as SAIDI, SAIFI, household electrification rate, etc.

- Lead: NEA

Promoting investments in modern distribution technologies and schemes in the off-grid areas.

- Lead: NEA, DOE

Efficiency Improvement of NPC-SPUG Power Plants.

- Lead: NPC

Construction of local transmission and related projects in small grids for the efficient transport of power to load centers by NPC and DUs in off-grid areas.

- Lead: NPC

Plans and Programs

Interconnection of Off-Grid Areas into the Main Grids of Luzon, Visayas, Mindanao

Interconnection Priority Activities

- Review of the techno-economic feasibility of the various interconnection projects proposed under the Transmission Development Plan
- Formulation and financing of DU-initiated interconnection projects
- Policy Assessment of the Interconnection Projects as a major strategy to reduce UC-ME subsidies in the long term
- Solicit ERC Regulatory Support

Proposed Interconnection Projects of NGCP based on the Transmission Development Plan

Proposed Interconnection Projects	Status
Batangas-Mindoro Interconnection Project	Filed with the ERC with ERC Case No. 2021-051 RC
Quezon-Marinduque Interconnection Project	Filed with the ERC with ERC Case No. 2021-049 RC
Camarines Sur-Catanduanes Interconnection Project	Filed with the ERC with ERC Case No. 2022-044 RC

Plans and Programs

Intra-Connection of Off-Grid Areas

Intra-Connection Priority Activities

- Feasibility studies for the intra-connection projects by the DUs
- Assessment and Financing of the intra-connection projects by the DUs in off-grid areas
- Solicit ERC Regulatory Support

Potential Intra-Connection Projects of Concerned DUs as Identified by NPC

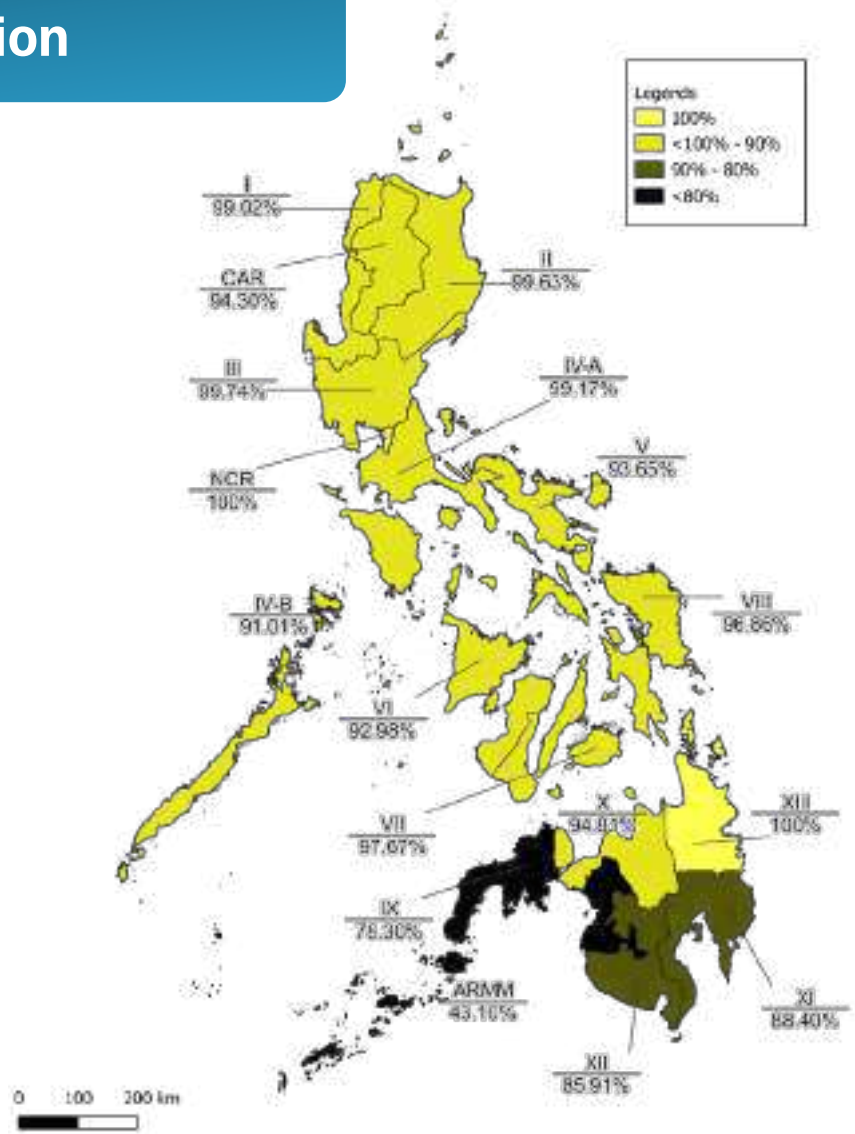
Power Plant	Connection Point	Means of Connection	Approximate Distance (km)
Palumbanes DPP	Catanduanes Grid	Submarine	11.00
Ticao DPP	Masbate Grid	Submarine	15.62
Sabtang DPP	Basco Grid	Submarine	5.89

2021-2025 MEDP

Total Electrification

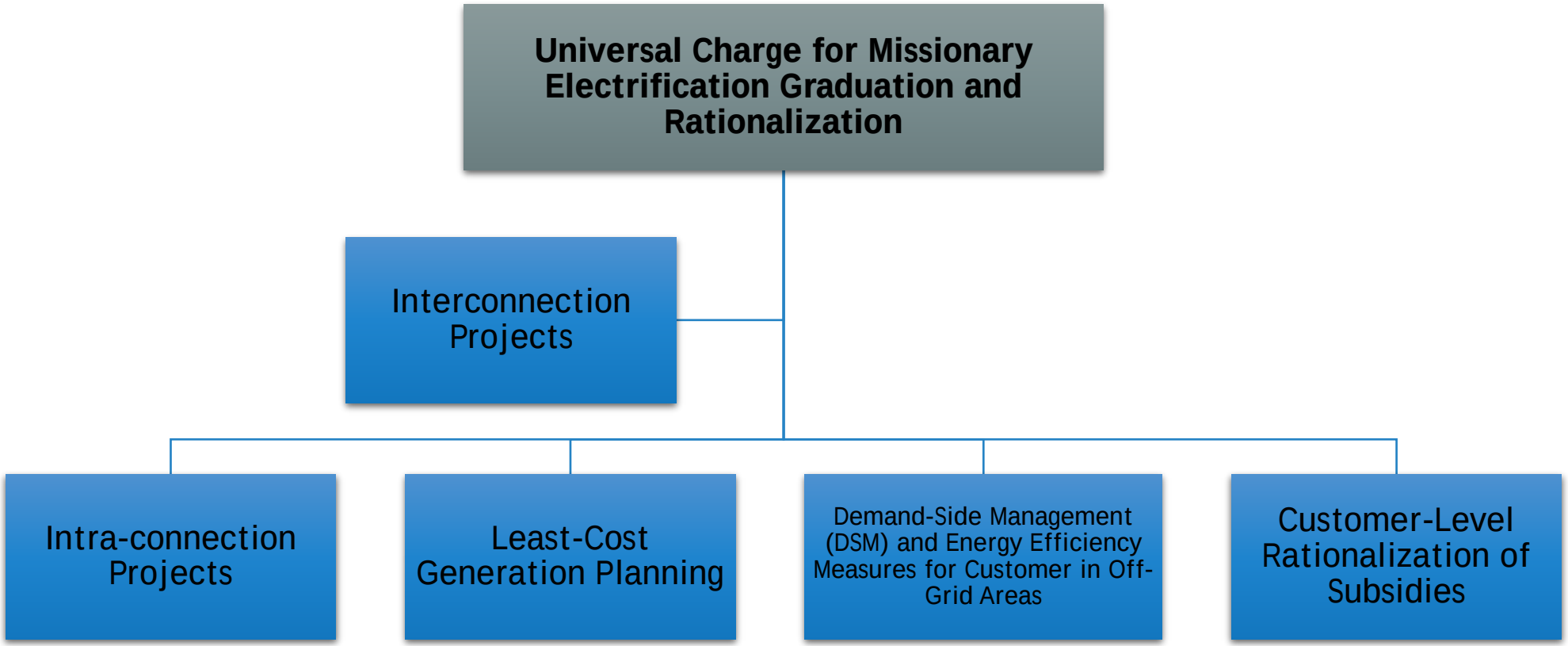
Priority Activities

- Formulation of Total Electrification Master Plan of DUs
- Least-cost electrification solutions for unviable areas including RE-based microgrids and decentralized solar home systems
- Microgrid System Provider (MGSP) Program



Plans and Programs

Rationalization of Tariffs and Subsidies in Missionary Areas



UC-ME Graduation and Rationalization Programs

Next Steps

The DOE shall take the lead in the conduct of collaborative engagement, assessment and related studies in crafting new policies and strategies to carry out reforms in the off-grid power development and missionary electrification.

The DOE shall take the lead in establishing program management support to ensure the successful implementation of all the necessary actions and interventions as discussed in this section.

Protocols shall also be sustained for reporting and collecting information on the operations, projects, and activities in off-grid areas, including the preparation of an annual accomplishment report for the entire sector.

The DOE seeks the full cooperation of the ERC, NEA, NPC, TRANSCO and other concerned government agencies in the execution of this Plan.

The plans and programs under this Plan shall be strictly monitored towards their successful implementation towards a more resilient, reliable, and adequate electricity services to a greater number of Filipinos in the off-grid areas.

Photo Credit: Renesons Energy Pollilo, Inc.

THANK YOU

Photo Credit: Flickr, Philippine Fly Boy