Digital Innovations for Clean Energy Transition: A Perspective from a Liberalized Market

ROWENA CRISTINA L. GUEVARA, Ph.D.

Undersecretary, Department of Energy

ADB: Asia Clean Energy Forum 2025
Deep Dive Workshop: Digital Innovations for Just Energy Transition
ADB Headquarters, Manila | 06 June 2025

BAGONG PILIPINAS

Definition of Terms

- **Digitization** - converting and recording data into digital form
- **Digitalization** - developing processes and changing workflows to improve manual systems that have digitized data
- **Innovation** - process, product or service which is new, original or improved that is applied to create value (DOST definition)
- **Clean Energy Transition** – shifting from fossil fuel to RE and clean technologies
- **Liberalized Market** – private sector drives the energy sector

ENERGY REGULATORY COMMISSION

AT A GLANCE
PHILIPPINE ENERGY SECTOR

94.75%
Household Electrification Rate
(Source: DUs' Monthly Report to DOE, Dec 2024

PhP 3.3-TRILLION INDUSTRY

251 Generation Companies
616 Generation Facilities
Equivalent to
30,383.06 MW
319 On-Grid
297 Off-Grid

1 Transmission Concessionaire
21,027 Circuit Kilometers of Transmission Lines
48,801 MVA Sub-station Capacity
P357.7 B Total Equity

487 WESM Participants
288 intervals per day in five-minute market

142 Distribution Utilities
P337.07 B net property in service of electric cooperatives and capital stocks of private distribution utilities

153 Retail Electricity Suppliers
49 Suppliers of Last Resort
29 Local RES
56 RES

PhP28 to PhP31 TRILLION
TOTAL INVESTMENT REQUIREMENT

under the clean energy scenario in Philippine Energy Plan 2023-2050 which translates to

2.17 to 2.49
JOB OPPORTUNITIES FOR FILIPINOS

Source: DOE PEP 2023-2050

Source: ERC and DOE data as of March 2025

PISOLAR : Payment Innovation for SHS Ownership by Lay Away Routine

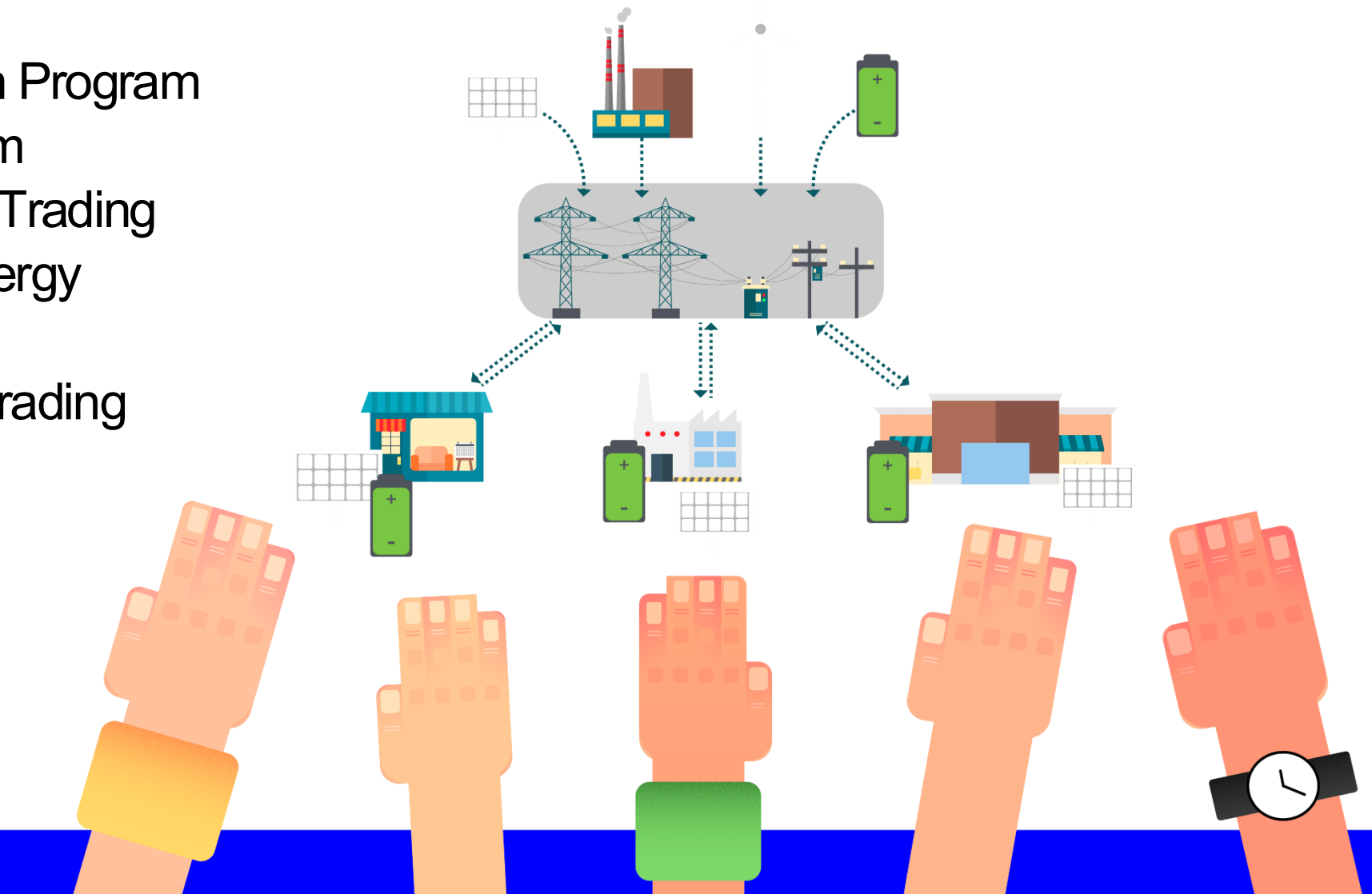
Source: https://businessmirror.com.ph/2022/06/05/pisolar-lighting-the-livesof-lumads-in-the-mountains/

Pre-paid Electricity

- Monitor consumption and remaining pre-paid balance on mobile phone
- Free text message of notification of pre-paid balance and daily consumption every day
- No additional fees, no service deposit, free pre-paid meter installation
- If disconnected, no re-connection fee
- No expiration of pre-paid load

Democratization of Electricity

- Full Customer Choice
  - Green Energy Option Program
  - Net Metering Program
  - Peer-to-peer Energy Trading
- Energy Monopoly to Energy Democracy
- Microgrids and Power Trading
- Voluntary RE Market



MICROGRID SYSTEMS ACT
(Republic Act No. 11646)
21 January 2022

An Act Promoting the use of Microgrid Systems to Accelerate the Total Electrification of Unserved and Underserved Areas nationwide

Sabang Renewable Energy Corporation (SREC) Summary

1.4 MWp
solar energy generation capacity

14 km
transmission grid

1.2 MW
diesel generators

2.4 MWh
largest clean energy storage in Asia

550+
consumers provided with clean energy

2,950
residents provided with clean energy

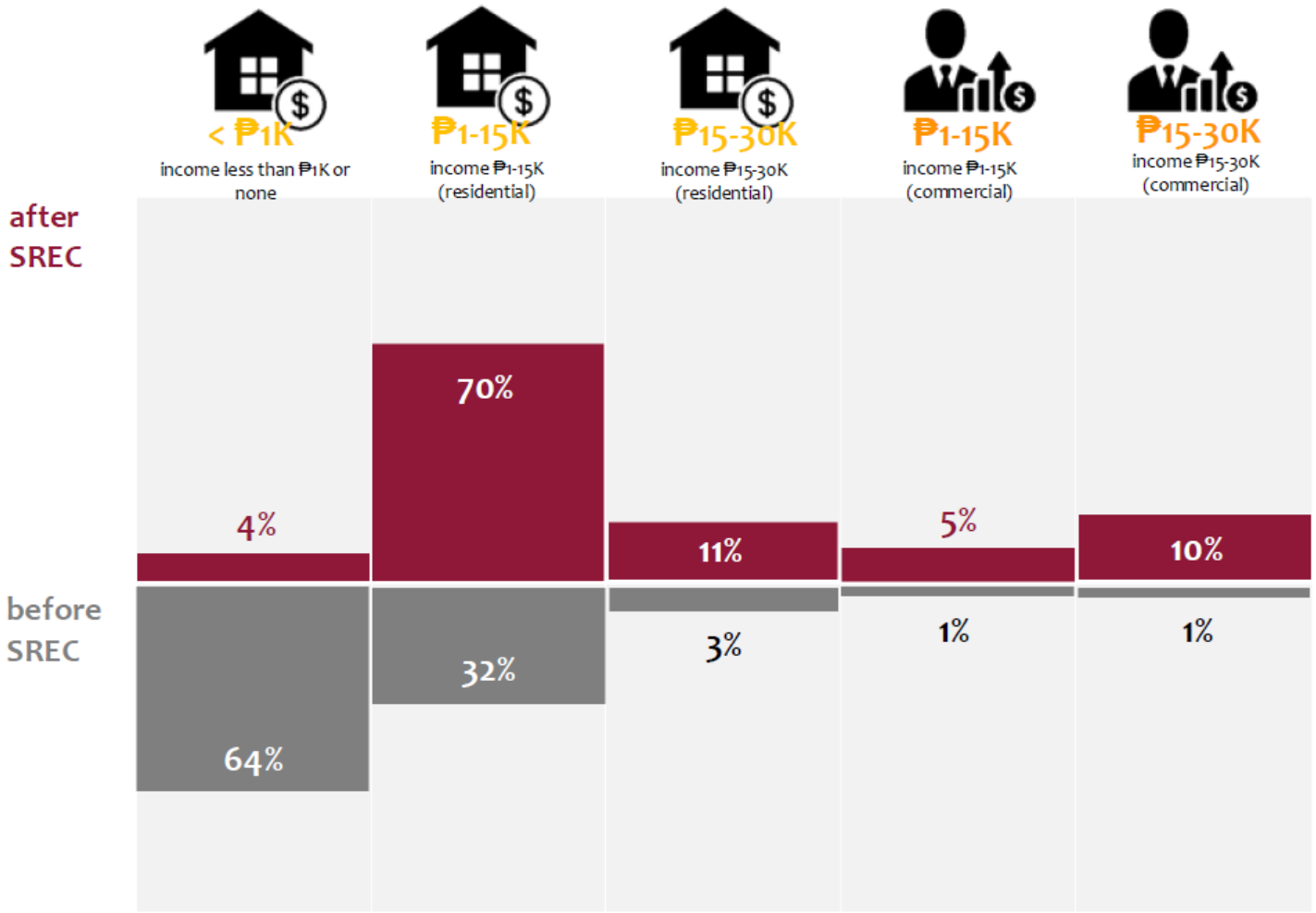
60
local SMEs energized to service > 200,000 visitors/yr

21,500
metric tonnes of CO_2
metric tonnes of CO_2 emissions avoided over 20 years (compared with a full diesel system)

SDGs contributed to:

Source: Sabang RE Corp. Impact Report

Impact Income Generation: Income Level



Note: These data sets are derived from the SREC Survey 2023.

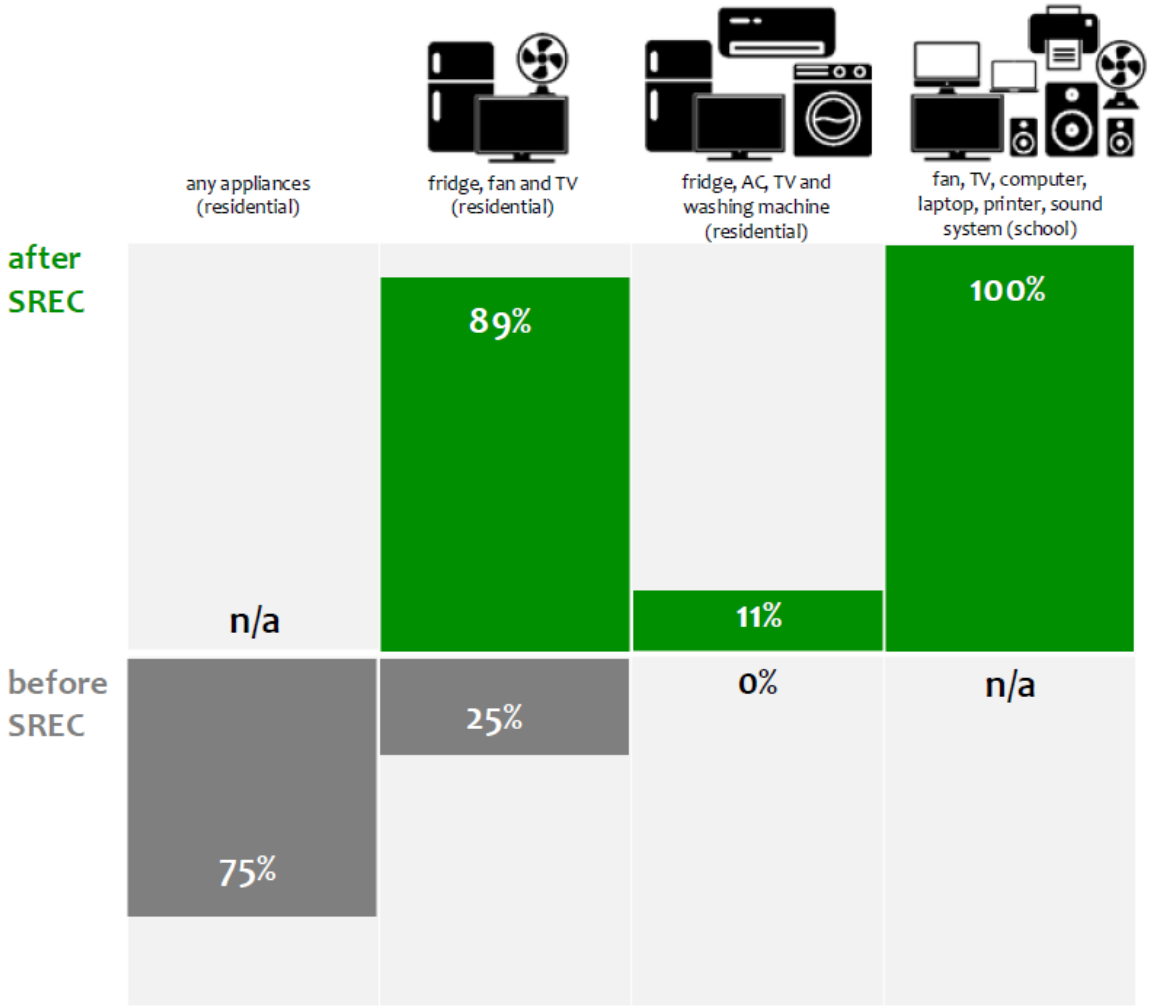
Electricity, by Sabang Renewable Energy Corporation (SREC), has significantly boosted the **community's income levels**, in the Barangay Cabayugan in Puerto Princesa City.

- The proportion of households earning less than ₱1K has dramatically decreased from 64% to 4%.
- There has been a substantial increase in residential incomes, with those earning ₱1-15K rising from 31% to 70% and those earning ₱15-30K increasing from 3% to 11%.
- Commercial incomes have also seen growth. The proportion of businesses earning ₱1-15K has increased from 1% to 5%, and those earning ₱15-30K have risen from 1% to 10%.

These improvements highlight the positive economic impact of electrification, enabling higher earnings for both households and businesses and fostering overall economic growth in the community.

Source: Sabang RE Corp. Impact Report

Impact Quality of Life: Use of Sustainable Appliances



Note: These data sets are derived from the SREC Survey 2023.

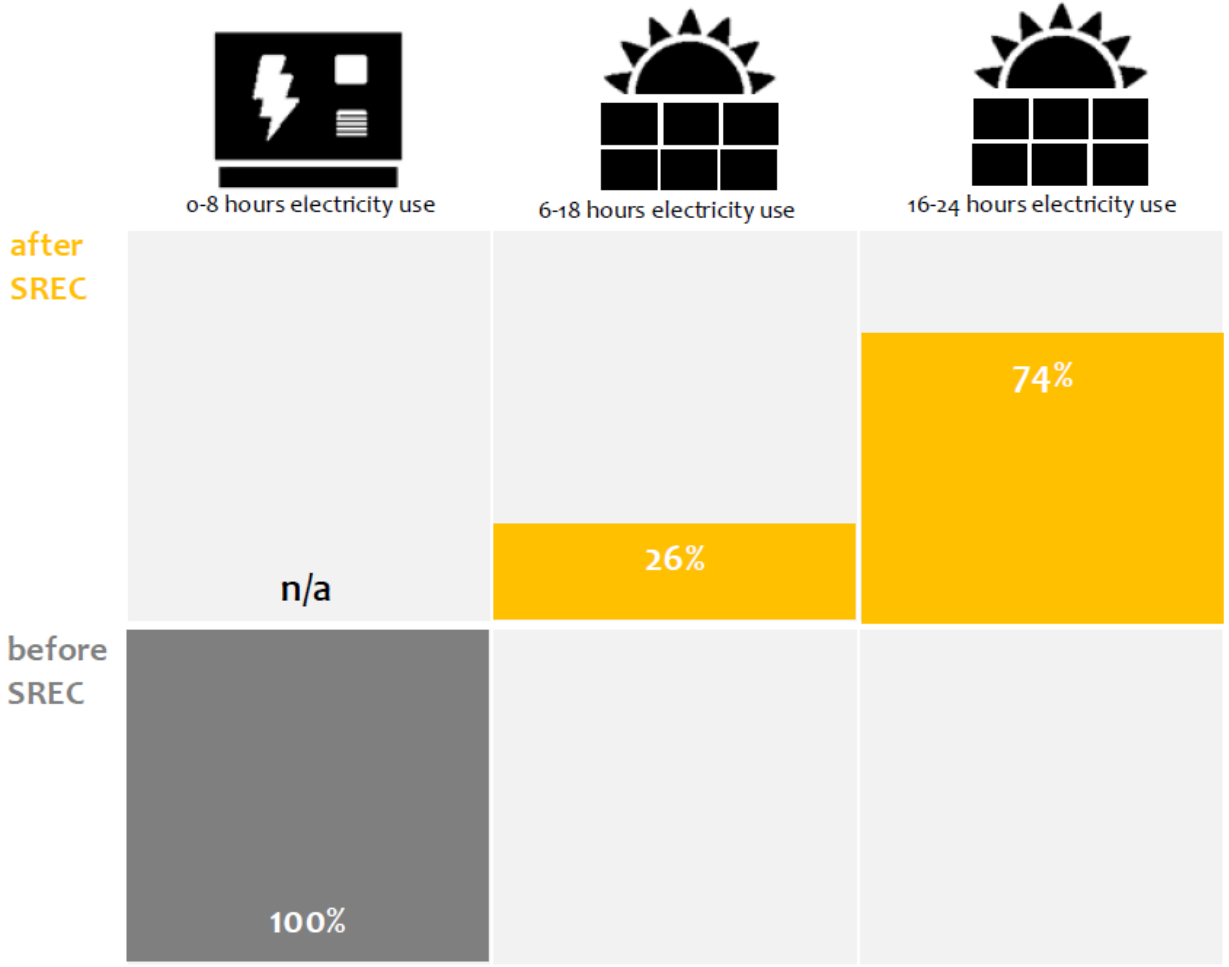
Sabang Renewable Energy Corporation (SREC) has significantly improved the quality of life in the community of the Barangay Cabayugan in Puerto Princesa City, by increasing the **use of modern, safe, and sustainable electrical appliances** at households, businesses and in schools:

- 75% across the board, acquisition and use of appliances, reducing time spent on labor-intensive tasks such as fuelwood collection, allowing for more productive activities.
- 64% increase in household amenities that represent improved income levels, well-being, and access to modern-day comfort and access to vital information for families.
- 24/7 electricity has also enabled children to study longer. teachers to better prepare classes and access information, enhancing the educational experience, and local businesses to become more productive and profitable with lower costs and higher functionality.

Powered by renewable energy sources, this electrification initiative not only provides immediate benefits, but also educates residents across all age groups and socio-economic classes to maximise opportunities for growth, and encourages sustainable practices within the community, fostering a culture of environmental responsibility.

Source: Sabang RE Corp. Impact Report

Impact Green Energy Transitions: 24/7 Electricity Access



Note: Households with electricity use of 6-18 hours per day due to reduced activity at night while sleeping (turning off lights and appliances). These data sets are derived from the SREC Survey 2023.

The increase in electricity access after the implementation of Sabang Renewable Energy Corporation (SREC) has had a major impact on the community of the Barangay Cabayugan in Puerto Princesa City.

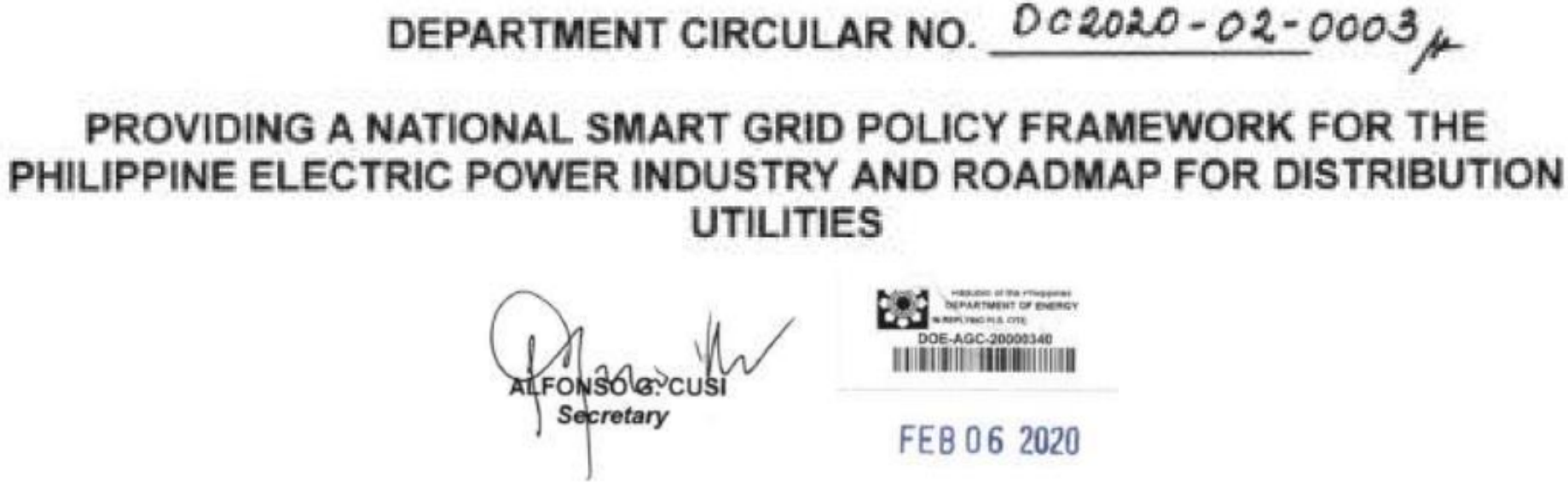
- Before SREC, all households had electricity for only 0-8 hours per day which is derived from self owned diesel generator sets.
- After SREC, 26% of households have access for 6-18 hours daily, and 74% enjoy 16-24 hours of electricity.
- Households with 6-18 hours of access often reduce usage at night while sleeping.

This improved access significantly boosts productivity. These extended electricity hours allow for better lighting, longer study hours for students, and extended business operations, driving economic growth. The enhanced access to electricity through SREC promotes a **higher standard of living and working, and sustainable development** in the community.

Source: Sabang RE Corp. Impact Report

Smart Grid and Infrastructure

National Smart Grid Policy Framework



DEPARTMENT CIRCULAR NO. DC2020-02-0003

PROVIDING A NATIONAL SMART GRID POLICY FRAMEWORK FOR THE PHILIPPINE ELECTRIC POWER INDUSTRY AND ROADMAP FOR DISTRIBUTION UTILITIES

ALFONSO G. CUSI
Secretary

DEPARTMENT OF ENERGY
DOE-AGC-20000340

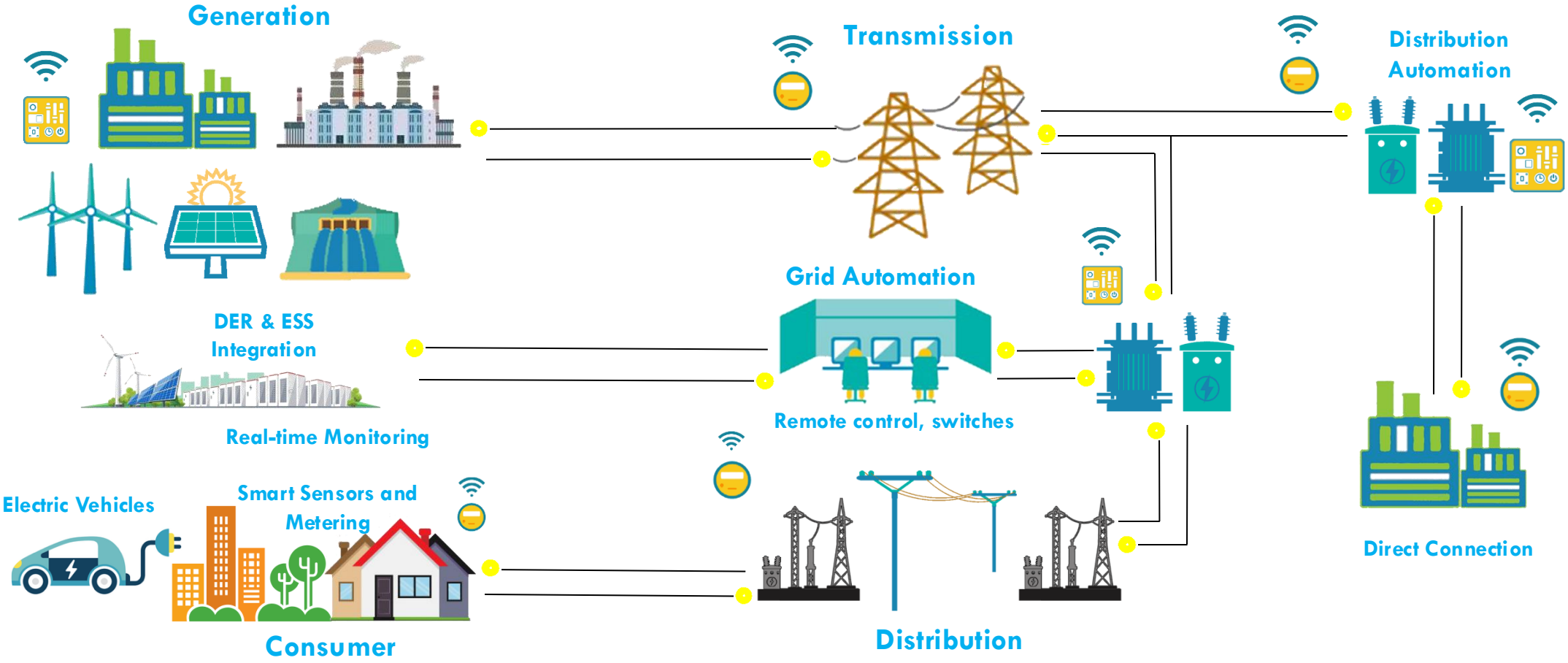
FEB 06 2020

Smart and Green Grid Plan (SGGP)

Develop a green and smart transmission system to integrate and manage the additional RE capacity expected to come online from 2024 to 2040. Target Completion: 2025 Sep

Smart Grid

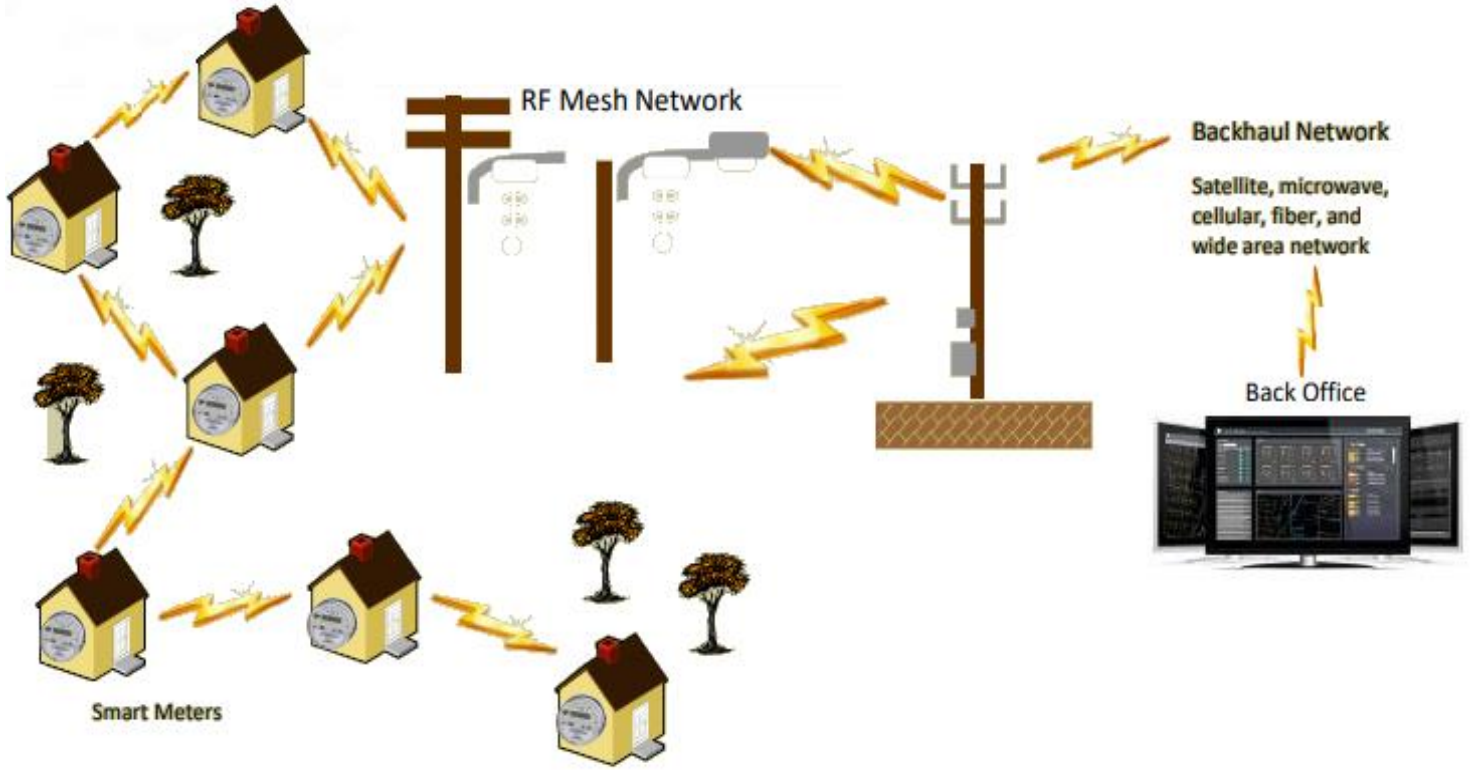
in one glimpse



SMART GRID TECHNOLOGIES

Advanced Metering Infrastructure (AMI)

- AMI is an integrated system of smart meters and other related devices, communication networks, and data management systems that enables two-way communication between utilities and its customers.



Digitalization at DOE

1) DEPDMS

HISTORY
OBJECTIVES
BACKGROUND
ARCHITECTURE
DEPDMS PORTAL

Welcome to DEPDMS

2) RE Data Warehouse

RFP-005-PHL-2021 Solutions Provider for the Data Warehouse & Management Information System for Renewable Energy Management Bureau, Philippines

PROCUREMENT PROCESS	OFFICE	DEADLINE
RFP - Request for proposal	UNDP Country Office - PHILIPPINES	19-Feb-21

3) GEA Platform: gea.doe.gov.ph

Energy Efficiency and Conservation

Electricity Savings*

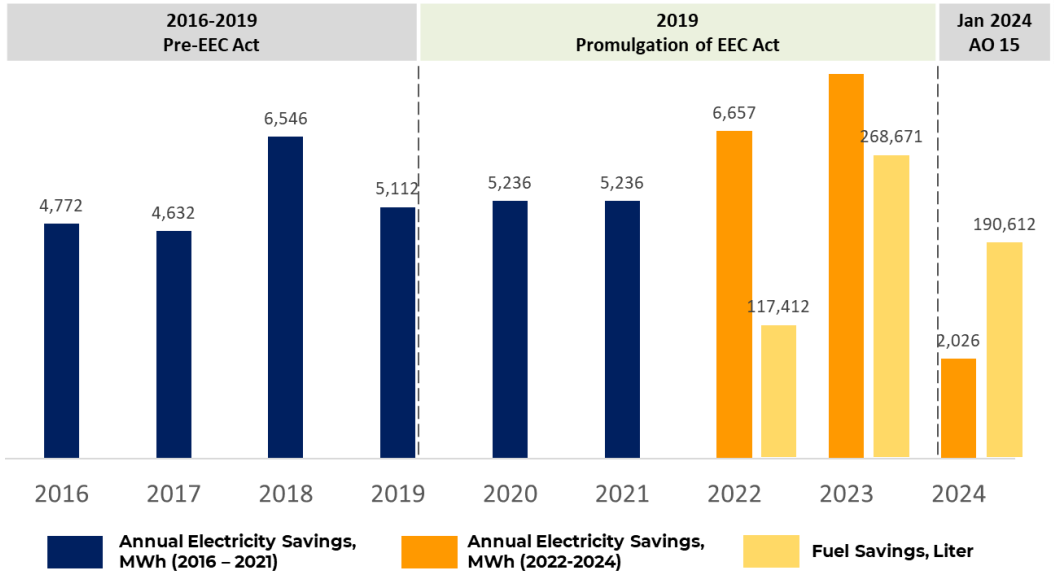
32,897.74 MWh (PhP 381.7 M)

PhP 11.80 kWh rate based on DOE 2024 ave. monthly electricity rates

Fuel Savings*

579,236.88 Liters (PhP 34.60 M)

Assuming PhP 60/Liter rate



Total CO_2 Reduction

25,504.98 t-CO_2

* As of 31 March 2025

80 POLICY ISSUANCES

(as of August 2024)

- **37** Department Circulars (DC)
- **11** Department Orders (DO)
- **1** Memorandum Circular (MC)
- **10** IAEECC Resolutions
- **21** Implementing Guidelines (IG)

REGISTERED EVCS

2 AC Charger

Under DC2023-05-0011

WESM BRIEFER

MARKET PARTICIPANTS' UPDATE 2021

WHAT IS WESM?

The **Wholesale Electricity Spot Market or WESM** is the centralized venue for trading large-scale buyers and sellers of electricity where price is based on the interaction of demand and supply.

Full Commercial Operation of RE Market

17 December 2019	**Launching of the Philippine Renewable Energy Market System (PREMS)** An online platform where trading participants can manage their REC accounts
04 October 2021	**REM Manual**
28 July 2022	**Interim Commercial Operations of the REM**
23 April 2024	**ERC Resolution No. 08, Series of 2024** A Resolution adopting the Renewable Energy Certificate (REC) Price Cap
23 April 2024	**ERC Resolution No. 12, Series of 2024** A Resolution Governing the Cost Recovery Mechanism of the On-Grid Distribution Utilities in Compliance with the Renewable Portfolio Standards
26 December 2024	**Full Commercial Operations of the REM**

RE Projects with Existing Contracts under RA 9513

BIOMASS

74 Awarded Projects

279 MW
POTENTIAL CAPACITY

775 MW
INSTALLED CAPACITY

GEOTHERMAL

32 Awarded Projects

1,108 MW
POTENTIAL CAPACITY

1,951 MW
INSTALLED CAPACITY

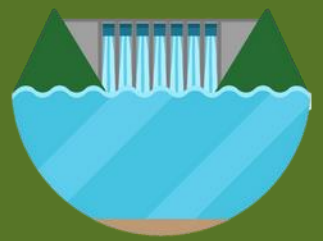
SOLAR

569 Awarded Projects

36,261.5 MW
POTENTIAL CAPACITY

2,335 MWp
INSTALLED CAPACITY

HYDROPOWER



420 Awarded Projects

15,297.9 MW
POTENTIAL CAPACITY

1,396.8 MW
INSTALLED CAPACITY

OCEAN

9 Awarded Projects

34 MW
POTENTIAL CAPACITY

WIND

307 Awarded Projects

100,825 MW
POTENTIAL CAPACITY

443 MW
INSTALLED CAPACITY

1,411
TOTAL RE CONTRACTS AWARDED

153.8 GW
EQUIVALENT TOTAL POTENTIAL CAPACITY

6.9 GW
TOTAL INSTALLED CAPACITY

BAGONG PILIPINAS

Republic Act 11234

*"An Act Establishing the **Energy Virtual One-Stop Shop** for the Purpose of Streamlining the Permitting Process of Power Generation, Transmission, and Distribution Projects"*

EVOSS System Features

1	Contains the Checklist of Requirements, Process Flow Diagrams and Fees of the Processes within the System.	8	Provides system generated email notifications and SMS notifications.
2	Provides separate log in for an agency/entity and the applicant users.	9	Enables the applicants to monitor the status of their applications thru the EVOSS System.
3	Restricts access of designated users to specific projects within the company.	10	Retains an audit trail of the changes made on the system
4	Provides a dashboard for each agency indicating the list of applications per project, forms and attachments submitted, number of days elapsed, etc.	11	Capable to integrate with online payment systems
5	Indicates the deadline or due date to respond to an action assigned to them specific to the deliverable.	12	Capable to accept complaints related to the five (5) offenses stated in the EVOSS Act
6	Automatic escalates the task after exceeding the due date/deadline set for the assigned task.	13	Capable to integrate with other existing systems with the use of APIs (Application Programming Interface)
7	Automatic issues the Deemed Complete and Deemed Approved Certificates, if processing is beyond the time frame.	14	Capable to generate operational reports based on the format, parameters and requirements.

EVOSS System

The enhanced EVOSS System was rolled-out to accept online applications of the following agencies:

10 National Government Agencies

- **DOE (25 processes) on July 24, 2020**
- NEA (1 process) on March 1, 2021
- TransCo (1 process) on March 1, 2021
- NPC (3 processes) on April 23, 2021
- DOLE (8 processes) on October 25, 2021
- NCIP (3 processes) on June 30, 2022
- DOJ (2 processes) on 25 Jul 2022/3 Nov 2022
- IEMOP (2 processes) on January 31, 2024
- ERC (2 processes) on January 31, 2024
- NGCP (3 processes) on April 11, 2025

5 Local Government Units

- LGU BAY (3 processes) on June 30, 2022
- LGU Burgos Ilocos Norte (3 processes) on 17 Jul 2023
- Cagayan de Oro on October 15, 2022
- Ormoc City on August 24, 2023
- Iloilo City on September 14, 2023

Green Energy Auction Program

GEA 1 (Jun 2022)		GEA 2 (Jul 2024)		GEA 3 (Feb 2025)	
Technology	**Capacity Awarded (MW)**	**Technology**	**Capacity Awarded (MW)**	**Technology**	**Capacity *Targets** (MW)**
Hydropower	99.15	Rooftop solar	9.39	Pumped - storage hydro	4,250
Ground - mounted solar	1,490.38	Ground - mounted solar	1,878.982	Impounding hydro	300
Onshore wind	273.20	Onshore wind	1,462.384	Geothermal	100
Biomass	3.4	Floating solar	90		
TOTAL	**1,866.13**	**TOTAL**	**3,440.756**	**TOTAL**	**4,650.00**

*GEA-3 Notices of Award to be issued in June 2025

Consumer-based Options for RE

Green Energy Option Program

Registered End-Users

	GEOP End-Users	Peak Demand, kW
Luzon	469	154,168.81
Visayas	93	40,131.90
Mindanao	-	-
TOTAL	562	194,300.71

As of March 2025

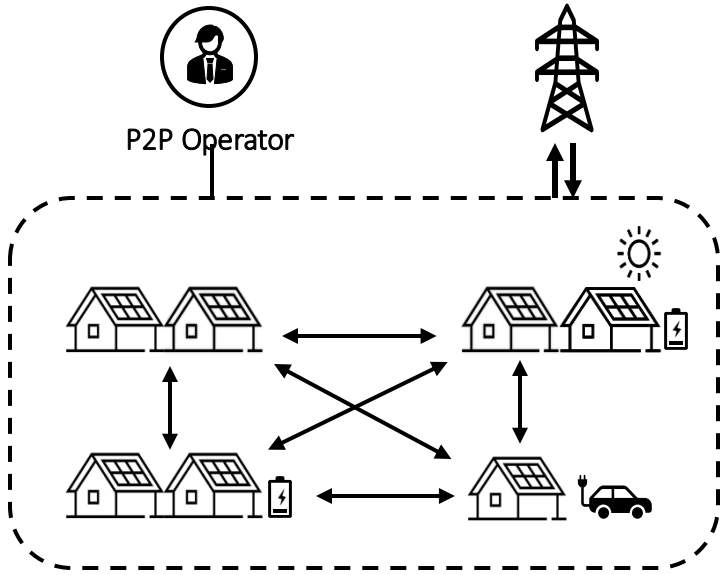
Net Metering Program

Installed Capacity

	Qualified End-Users	Capacity, kWp
Luzon	12,903	104,592.33
Visayas	2,543	33,883.61
Mindanao	699	7,691.60
TOTAL	16,145	146,167.54

As of February 2025

Peer-to-peer Energy Trading



BAGONG PILIPINAS

DEPARTMENT OF ENERGY • PHILIPPINES •

Thank you!

For further details on RE Investments Opportunities, kindly scan this QR code:

RE BOOKLETS

For further inquiries, kindly contact our Investment Promotion Office through this QR code:

Rizal Drive Corner 34th Street Bonifacio Global City Taguig City

(02) 8479-2900

www.doe.gov.ph

doe.gov.ph

DOEgovph